

# Spillover Effect of U.S. Quantitative Easing Policy on China's Economy

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**Abstract.** In the context of economic globalization, the independence of monetary policy in each of the world's economies is declining. This is mostly demonstrated by the substantial economic spillovers that financial policy changes have on other countries' economies. The last two decades have witnessed a dramatic change in US monetary policy, which is the implementation and withdrawal of Quantitative Easing. The existing literature examining the spillover effects of US Quantitative Easing on the Chinese economy is mainly based on one specific channel. However, it lacks a complete framework of transmission channels. This paper reviews these findings and outlines a conceptual framework that unifies them. The framework comprehensively analyses the spillover effects of the US Quantitative Easing from three channels, which are the interest rate channel, trade channel and commodity price transmission channel. By analyzing its impact on China's economy in a comprehensive manner, it will help China's government better grasp the current international economic situation and better deal with the shocks to China's economic growth caused by changes in the monetary policies of other countries.

**Keywords:** Economic globalization; Quantitative Easing; China; US.

## 1. Introduction

Quantitative Easing usually refers to the government printing large amounts of money to buy treasury bonds or other collateralized bonds to put money into the market and relieve liquidity. And the aim is to achieve the goal of lowering market funding rates and stimulating economic growth [1].

The United States has launched several rounds of Quantitative Easing since 2008, which has had a profound impact on the global economy. The Federal Reserve first declared on November 25, 2008, that it will start buying Agency Bonds and MBS, marking the first round of Quantitative Easing. Over the course of that period, the Fed bought assets in the amount of \$1.725 trillion. The Fed announced the beginning of its second round of quantitative easing on November 4th, planning to spend a total of \$600 billion buying long-term Treasury bonds. At the same time, the Fed Fund Rate was maintained at a range of 0-0.25%. The third round began on September 13, 2012. It planned to purchase more MBS in the amount of \$40 billion per month and continued to maintain the Fed Fund Rate at a range of 0-0.25%. On 13 December 2012, the Fed launched its fourth round of Quantitative Easing, declaring that it would purchase an additional \$45 billion of Treasury notes and Treasury bonds on top of \$40 billion of MBS per month. In October 2014, the Fed officially stated that it would stop buying negotiable securities and assets, representing the withdrawal of the US Quantitative Easing, which had lasted for six years, from international financial markets [2]. The epidemic had a huge impact on the liquidity of the US financial markets. Therefore, the Federal Reserve once again introduced the combination of "zero interest rate and Quantitative Easing" after 12 years since 2008. The aim was to avoid the market from falling into the current state of low liquidity and so fend off the economic effects of the epidemic's rapid spread.

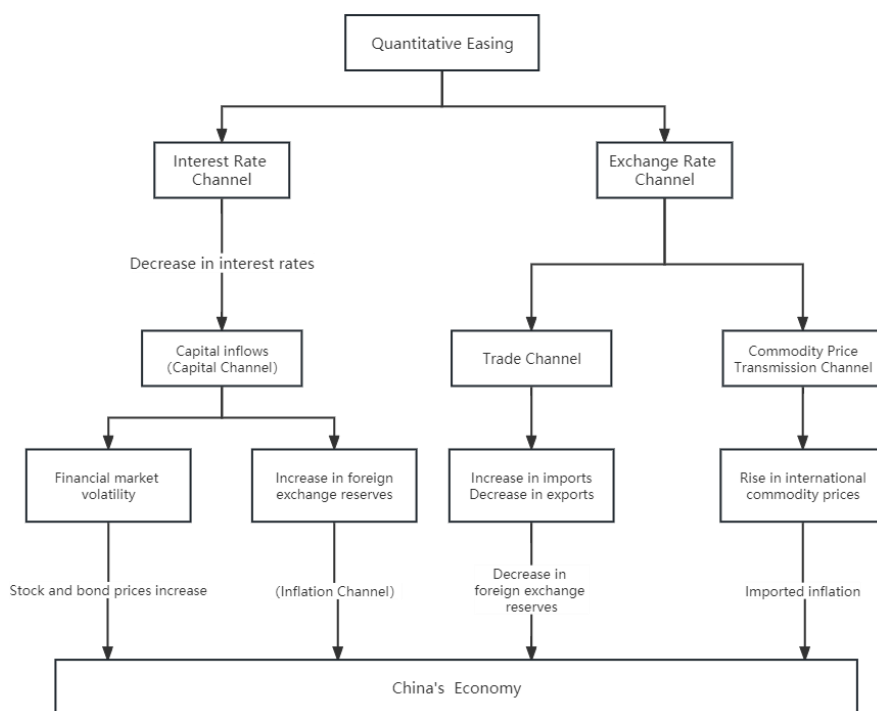
The Federal Reserve announced a 100 basis points cut of the federal funds rate on March 15, 2020 and restarted Quantitative Easing. On March 23, the Fed announced the implementation of "unlimited" Quantitative Easing policy, meaning that it would no longer stipulate the asset purchase limit and ceiling at this stage, so as to help the economic recovery, promote employment and stabilize the market and prices. Since then, the Federal Reserve's balance sheet has grown greatly in size, increasing by nearly \$3 trillion in three months and the market is full of dollar foam.

As globalization continues to intensify, a country's or region's macroeconomic policies will have an impact on the economies of other countries and regions in addition to their own. Especially in developed countries and regions such as the United States, the changes of monetary and fiscal policies will have an impact on the macro-economy of other countries and regions. Therefore, in the face of the frequent implementation of Quantitative Easing in the US, how to resist the impact of its implementation on the economy and reduce the looting of Chinese property by the US? This is a key question that China should urgently address [1].

The impact of changes in US money-related policies on other economies is transmitted through three direct channels: trade, interest rate, and exchange rate, and two indirect channels: inflation and capital flows [3]. Having studied how the America's currency-related policies affects other economies, Kim concluded that changes in interest rates were the most important influential factor [4]. Besides, Chinese scholars have shown the importance of exchange rate transmission by constructing a model to analyze how monetary policy travels [5]. Some scholars also argued that the trade and output channels affected China mainly through import and export demand and price levels [6].

However, previous scholars have mostly studied the impacts of Quantitative Easing from a single perspective, while there is a lack of research on the summary of its spillover effects on the Chinese economy, especially the overall transmission channels and consequences. This review focuses on the spillover effects of the US Quantitative Easing policy on the Chinese economy through three main channels. This will shed light on how changes in US economic policies affect Chinese production, trade and so on. Meanwhile, it may provide China with solutions to the challenges in this area, with the aim of keeping the Chinese economy on track.

## 2. Framework



**Fig. 1** Transmission channels from US Quantitative Easing to the Chinese economy

By constructing a transmission pathway diagram of the spillover effects of Quantitative Easing on China's economy, this review compares the literature mainly from three aspects: interest rate channel, trade channel and commodity price transmission channel. As a result, this review summarizes the impacts of Quantitative Easing in the US on China and conclude with lessons learned in order to deal with future monetary policy changes (See Fig. 1).

## 2.1 Interest Rate

From the interest rate parity equation, it is clear that interest rate differentials are an important factor in the flow of capital across borders. As the US implements Quantitative Easing, US interest rates tend to fall, thus leading to a narrowing of the US-China gap. Then the capital, attracted by the higher level of Chinese interest rates, would flow into China in large amounts.

## 2.2 Capital

From interest rate parity theory, it is clear that the existence of interest rate differentials is the basis for causing capital flows across borders. When Quantitative Easing is implemented in the US, it leads to a large influx of capital into China in pursuit of returns due to the transmission effect of interest rates. It then leads to an increase in domestic financial market capital and higher stock and bond prices. Because the capital channel is an extension of the interest rate channel, its spillover effects are presented together.

## 2.3 Inflation

In this review, the inflation channel is defined as the passive absorption of foreign exchange and base money by other countries in order to hedge against the spillover effects generated by Quantitative Easing in the US, thereby affecting the domestic price level. Therefore, this channel is considered as an indirect channel, excluding the imported inflation due to the trade channel [3].

## 2.4 Trade

Changes in a country's monetary policy will directly affect the liquidity of its currency and influence the exchange rate through the supply and demand and the level of purchasing power. When the US decides to carry out Quantitative Easing, variations of Sino-US exchange rate will have an income absorption effect and an expenditure conversion effect. As a result, these will affect China's import and export trade [2].

## 3. Spillover Effect

### 3.1 Commodity Price Transmission Channel

America's implementation of quantitative easing will spread liquidity throughout commodities, causing the price of commodities denominated in dollars to increase. China is a big demander in the commodity market, and the increase in the price of commodities as industrial raw materials will be transmitted to end consumer goods through the industrial chain. This will lead to an increase in the price of domestic commodities in China and eventually lead to imported inflation [3].

Most scholars believe that US quantitative easing would lead to higher commodity prices and hence imported inflation. Li and Zhang conducted an empirical analysis by building a SVAR model, and they came to the conclusion that by acting on international commodity prices, Quantitative Easing has influenced the occurrence of inflation in China to some extent. In addition, the influence on the PPI was more significant than that on the CPI [7]. By using the VAR model, Chen and Ma found that Quantitative Easing in the US has a relatively significant positive effect on the price index, suggesting that the imported inflation phenomenon actually existed [8].

Besides, some scholars have found that Chinese commodity prices and exchange rates were stable in 2020 when the US implemented unlimited Quantitative Easing compared to 2008-2014 Quantitative Easing. Lu found, through constructing a DSGE model for empirical analysis, that the transmission mechanism of the unlimited Quantitative Easing in 2020 has changed as a result of the global epidemic. There was no significant imported inflation in China. This was probably because of China's active anti-epidemic actions against the backdrop of disrupted global supply chains and the rapid restart of business. It gave China a great advantage in commodity exports, and to some extent eased inflationary pressures [6].

However, some scholars believe that since the epidemic, there has been a rise in international commodity prices, which brought inflationary pressure to China to a certain extent. Through analysis, Fan found that China's PPI and international commodity prices have essentially changed in the same way. It demonstrated a significant relationship between the cost of imported raw materials and the level of prices in China. In other words, the price of imports has soared as a consequence of an increase in commodity prices. This pushed up the price of industrial goods in China. This differs from the findings of Lu's study [9].

### 3.2 Trade Channel

Most studies have focused on the effects of trade exports. Nie as well as Jin examined the impacts of US Quantitative Easing on China's exports in different sectors using an SVAR model. They discovered that it had a detrimental impact on China's exports [10]. By building the TVP-VAR model, Yu et al. analysed that the impact of money supply shocks on China's trade exports during the US Quantitative Easing process fluctuated widely across lags, with positive and negative responses changing alternately [11]. Based on the FGLS method, Liu and Lai showed that US Quantitative Easing significantly harmed China's industrial exports through the RMB exchange rate channels [12].

### 3.3 Interest Rate Channel

By using the TVP-VAR model, Zhou analysed that the Quantitative Easing of the US would negatively impact the level of interest rates in China. Furthermore, by changing the China-US yield spread, it would ultimately affect short-term capital flows across countries [13]. Lu and Fang also used the VAR model to analyze how changes to US Quantitative Easing affected short-term capital flows into China. They found that fluctuations in China-US yield spread due to policy changes had a noticeable effect on capital flows in the short run, while it tended to equalise in the long run [14]. Through an empirical analysis of monthly data on short-term capital flows, Yuan found that China's short-term capital flows were influenced to different degrees by the China-US interest rate differential, the Sino-US exchange rate, and the US money supply. Among them, the impact of interest rate differential was the most consistent and stable [15].

#### 3.3.1 Financial markets

Using a VAR model, Jiao analyzed the impacts of Quantitative Easing on the SSE index in China through impulse responses. It found that the adoption of QE by the US would cause the dollar to depreciate in expectation and a large amount of dollar capital would enter China to seek to rise in value, which in turn might push up the SSE index [3]. According to Bartkiewicz's analysis of the literature, QE decreased bond yields, raised stock prices, and enhanced net equity flows to emerging markets [16]. Steven discovered, using a VAR model, that there was a good chance that the significant inflow of hot money into China and the decline in US policy rates had caused a lengthy growth in housing investment in China in addition to a rise in the SSE Composite Index [17]. Through empirical research, Liu found that the adoption of Quantitative Easing in the US would lead to an increased risk of a stock market bubble in China [18].

#### 3.3.2 Inflation

According to Zhang and Yu, the US monetary expansion has caused the dollar to lose value, the RMB to appreciate, and the yields on Chinese financial assets to rise. Then, it led to an inflow of US capital into China, excess domestic liquidity, and increased inflationary pressure [19]. Li believed that due to the upward pressure on the RMB exchange rate against the USD, it caused a depreciation of foreign exchange reserves and a decrease in the international trade surplus. In order to keep the value of the dollar reserves and maintain a stable exchange rate, the People's Bank of China must achieve these objectives by releasing currency, but this would inevitably lead to excess domestic liquidity and therefore inflation [20].

## 4. Conclusion

By constructing an overall framework, this paper examines the spillover effects of US Quantitative Easing on China's economy deeply and specifically from several channels. Through comparison, it is found that the channels of Quantitative Easing in the US that affect the Chinese economy are not independent of each other, instead they are intertwined and work together. For instance, the connected variables of the trade channel and the commodity price transmission channel are impacted by exchange rate.

Moreover, by studying the large amount of literature, it is found that the channels of influence of US unlimited Quantitative Easing on China's economy differ from those of traditional Quantitative Easing. This is shown in the absence of significant imported inflation and export growth.

This paper circumvents the bias of previous studies that focus on a single channel while ignoring the integrated channel. It also avoids a generalized summary of multiple effects without an overall framework building. This article constructs a complete transmission system for the spillover effects of Quantitative Easing and helps China to deal with the impact of other countries' economic policies on China theoretically.

The shortcoming, however, is that this review focuses mainly on the effects of the implementation of Quantitative Easing from 2008-2014 and unlimited Quantitative Easing in 2020. It does not pay attention to the withdrawal of Quantitative Easing, such as the spillover effects of interest rate hike by the Federal Reserve. To give a more thorough knowledge of the effects of monetary policy, future research might pay more emphasis to the study of the transmission channels of the withdrawal of Quantitative Easing.

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