CSCanada
Management Science and Engineering
Vol. 12, No. 2, 2018, pp. 1-7
DOI:10.3968/10654

ISSN 1913-0341 [Print]
ISSN 1913-035X [Online]
www.cscanada.net
www.cscanada.org

Spillover Effects of US Balance-Sheet Normalization Program on Financial Markets of China and US

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Received 8 April 2018; accepted 10 June 2018
Published online 26 June 2018

Abstract

The strong spillover effects of an US balance sheet normalization program are estimated by our research, which will reduce its securities holdings by decreasing its reinvestment of the principal payments it receives from securities held in the System Open Market Account. Using financial data and analyzing graphs, we find that program might put pressure on its liquidity, motivate foreign capital back to US, have some impact on stock and bond markets, and surely influence emerging market economies. China, who plays one of important roles of emerging market economies, should take active and advanced measures and supervise the possible devaluation pressure on RMB and the recession in domestic bond market in order to prevent capital outflows.

Key words: The federal reserve's balance sheet normalization program; Spillover effect; Financial risks

Huo, Z. Q., & SU, Y. Y. (2018). Spillover Effects of US Balance-Sheet Normalization Program on Financial Markets of China and US. *Management Science and Engineering*, *12*(2), 1-7. Available from: URL: http://www.cscanada.net/index.php/mse/article/view/10654
DOI: http://dx.doi.org/10.3968/10654

1. BALANCE SHEET NORMALIZATION

The quarterly balance sheet development report published by the Federal Reserve in August show the item of total assets is about $4.46 trillion (though the money had dropped off compared to the number in April, the assets have still increased by 1 billion dollar than the same period last year.), which was largely about $4.42 trillion securities the Federal Reserve held outright that consists of two main parts. One is U.S. treasury securities about $2.47 trillion, another is $1.77 trillion worth of Mortgage-backed securities (MBS), two of which accounted for 55.2% and 39.7% of the total assets, respectively. According to the report, these rates experienced a slight decline.

Since the end of October 2015 announcing six years' Quantitative Easing policy come to an end, U.S. gradually take step to normalize their monetary policy. After three interest rate increases in late 2015 and early 2017, the fed has introduced an important move, which is to normalization the balance sheet in October 2017. Table 1 shows the main components and changes of the U.S. balance sheet in 2017(Billions of dollars).

Table 1
Main Components and Changes of the U.S. Balance Sheet

Item	July 26, 2017	Change from April 26, 2017	Change from July 26, 2016
Total assets	4,465	-5	1
U.S. Treasury securities	2,465	<0.5	2
Mortgage-backed securities	1,769	<-0.5	28
Total liabilities	4,424	-5	＜-0.5
Federal Reserve notes in circulation	1,515	19	98
Other deposits held by depository institutions	2,294	93	-39

As one part of the fed's recovery plan, the System Open Market Account's (SOMA) holdings of Treasury securities were little changed, by contrast, agency debt declined because of bond maturities.

This time U.S. is in the process of reducing its mainly holdings of treasuries and MBS. In June 2017, the federal reserve's policy normalizing principles and plan appendix provides an overview of the fed's plan and general steps. In October 2017, the FOMC initiated a balance sheet normalization program that will gradually reduce the size of these holdings by decreasing the reinvestment of the principal payment received from securities held in the SOMA. "Initially, for October 2017 to December 2017, the decline in SOMA securities holdings will be capped at $6 billion per month for treasury securities and $4 billion per month for agency debt and agency MBS. These caps are anticipated to gradually rise at three-month intervals to maximums of $30 billion per month for Treasury securities and $20 billion per month for agency debt and agency MBS. Once the caps have reached their respective maximums, they are anticipated to remain in place so that the Federal Reserve's securities holdings will continue to decline in a gradual and predictable manner until the Committee judges that the Federal Reserve is holding no more securities than necessary to implement monetary policy efficiently and effectively" published by the Federal Reserve .

According to the data from fed's official website on July 27, 2017, the fed holds a minority of assets that mature within a year and is dominated by Treasury bonds, most of which are more than a year(Table 2 and Figure 1). Therefore, the trend of American financial market changed before and after the scale is worthy of attention.

Table 2
Securities' Mature Date of Federal Reserve'

Remaining Maturity	Within 15 days	16 days to 90 days	91 days to 1 year	over 1 year to 5 years	over 5 years to 10 years	over 10 years
U.S. Treasury securities	11794	32799	276684	1152633	357353	633907
Mortgage-backed securities	0	0	0	782	11261	1756956

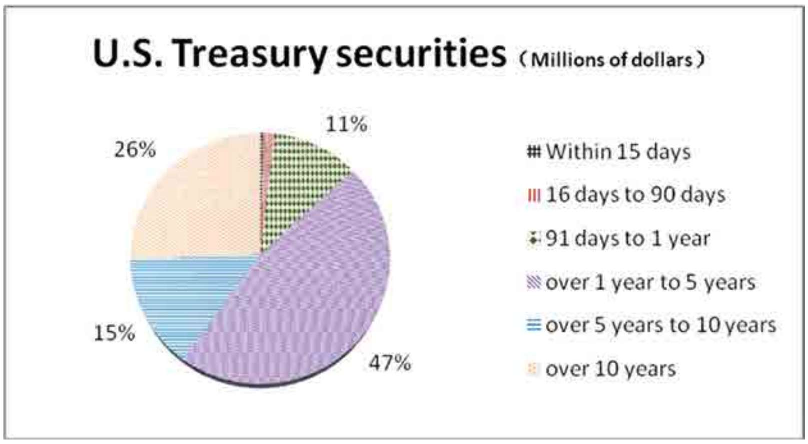


Figure 1
The Mature Date of the U.S. Treasury Securities

2. A HISTORICAL COMPARISON

It is not the first time. As professor Li Hongjian and his team summarized and analyzed in his article *the Impact of the Fed's Previous Reduction of the Balance Sheet* that U.S. has experienced six times. They thought this policy typical came out each time within four years after the world war or at the end of an economic crisis and will mostly last a year. And the scale raged from 2% to 15%. The six crises were World War I, the Great Depression, World War II, the drastically increased demand of gold, Oil Crises and the bubble burst of dot-com. Each time effects on economy after carried out the policy based on the different attitude. For example, in 1930 and 1960, the U.S. economy was experiencing low growth rate or even a long time recession. Unlike negative attitude, the other four active movement have a little but not much improvement. From Li's work we know that shrinking the table need to have a better understanding of the current economic situation and try to find the suitable way in case of deflation or even recession.

The reduction of the balance sheet, began in October, is partly similar to the previous six: it was accompanied by an increase in interest rates after the economic crisis. The rate hike is seen as a return to the mean of earlier low interest rate, with domestic and foreign scholars predicting three or four more increases in 2018. The difference is that the rate rises were started 10 years after the 2008 economic crisis and experienced 4 artificial QEs. At present, the United States is experiencing low inflation, and the core PCE has not yet reached the target value of 2%. If a sharp rise in interest rate happened and the normalization were wildly enforced, the risk of deflation would be very significant. In order to prevent the deflation and recession that

The United States has caused in the past several times, it is believed that the action will be very gentle.

3. SPILLOVER EFFECTS OF THE US

The effects of several downscaling the balance sheet in the history of the United States were mainly the sound improvement in the U.S. economic data (such as GDP), the growth in capital inflows (ie, FDI), asset prices changes in the stock and bond markets, and the short-term volatility in the U.S. dollar index.

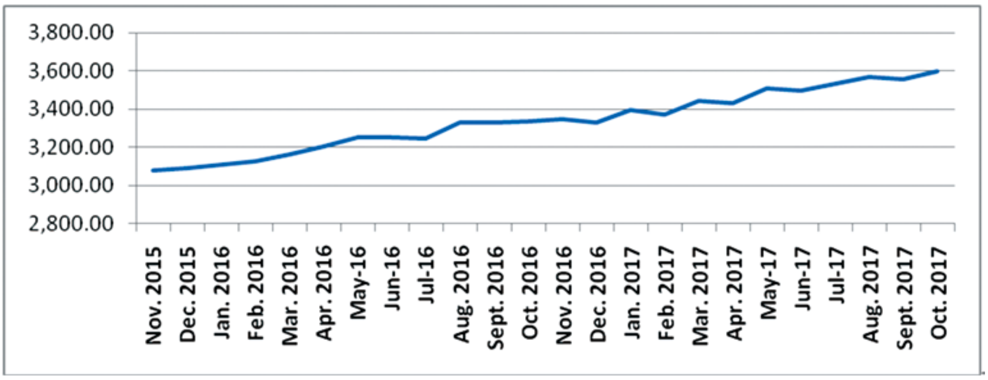
3.1 Current Economic Conditions in the United States

As the normalization program has just entered the implementation phase, unable to obtain the future economic trend, only the current economic status data of the U.S. can be given. Due to monetary policy in the United States has begun to move toward normalization after the quantitative easing in 2015, as an important step toward currency normalization, the situation from the end of 2015 to the present may be taken as an approximate trend of development.

From the Federal Reserve's semi-annual monetary policy published on on July 21 and February 14, it can be seen that although the GDP has increased by 1.9% compared with that of 2016, and the unemployment rate, which fell by 5.5% in June from its peak in 2010, has not been highly affected by the hurricane happened in April and May. The Federal Reserve acknowledged that corporate investment remained weak, labor participation rate was low and housing construction grew slowly as mortgage rates rose. Therefore, many scholars worry whether the program under progression will have a negative effect on the recovering economy.

3.2 The U.S. Current Financial Situation

This paper selects the M1 data from November 2015 to October 2017. From Figure 1, it can be seen that the M1 in the United States shows a slight fluctuation and a general upward trend, which shows that the number of U.S. currency does not decrease in spite of the stop of QE. Over creating money could be sowing the seeds of the next crisis. Therefore, the normalization program is an inevitable choice.



www.federalreserve.gov/releases/h6/current/default.htm

Figure 2
M1 of the U.S. (Billions of Dollars)

Lou Feipeng, a postdoctoral researcher at the Chinese Academy of Fiscal Sciences, believes that the essence of the U.S. balance sheet reduction is to reduce the base currency supply. Based on the data from DRCnet, we can see that the base currency in Figure 2 fluctuated significantly from the beginning of 2016 to April 2017. Compared with the broad money from 2008 to 2016, which rose obviously whereas the base money changed little, and the gap between the two enlarged year by year, which indicated that the money multiplier tended to expand. For this reason, it can be predicted that with the process of the program, the reduction of the base currency and the broad money may have a certain impact on the domestic liquidity.

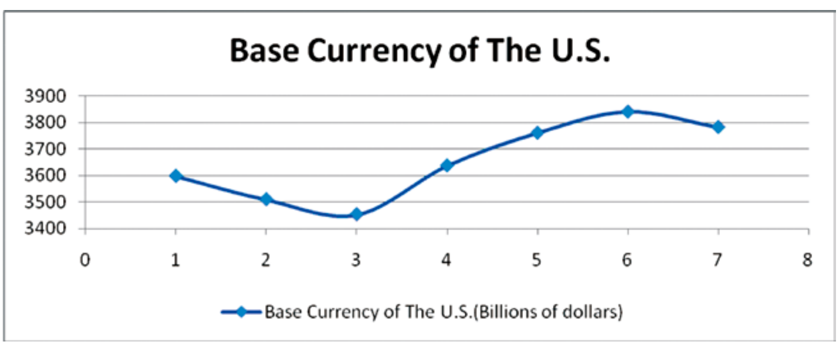


Figure 3
Base Currency of U.S.

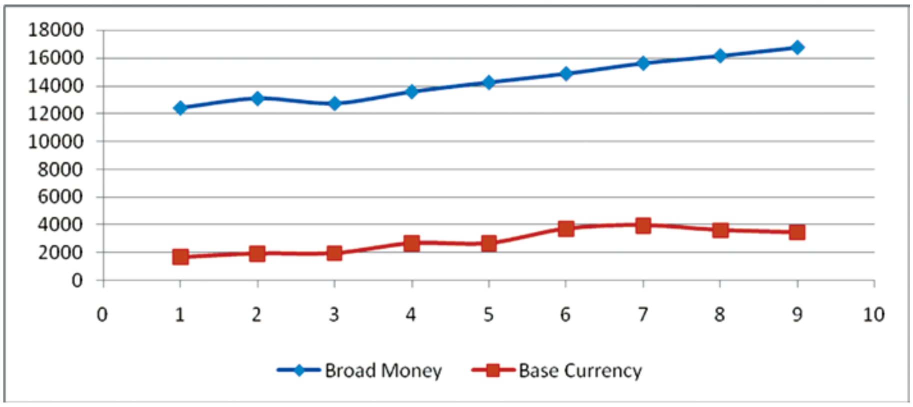


Figure 4
American Broad Money and Base Currency Comparison Chart (Billions of Dollars)

According to the interest rate released by the Federal Reserve, domestic interest rates in the U.S. have risen from 0.25% in November 2008 to 0.5% in December 2015, 0.75% in December 2016, 1% in April 2017, and 1.25% in July. The raised interest rates will stimulate commercial banks to lift the loan-to-deposit ratio and increase credit support to the real economy.

The U.S. stock and bond markets. Since mid-late October, besides three times of slight declines, the S & P 500 index has shown a rather strong upward trend in general. The Dow Jones Industrial Average Index (DJIA) rose sharply from the end of 2016 to October 2017, with some little drops which were owing to two hurricanes according to the U.S. quarterly financial report, rising from around 18477.46 in 2016 to around 23420.17 in 2016, and experienced a noticeable growth in trading volume over the last four years. The U.S. stock market rebound modestly after the official announcement in October. However, under the pressure of raising the interest rates and the shrinking of the U.S. balance sheets, a strong wave of selling off bonds exists.

U.S. foreign exchange market. US Dollar Index(USDX) showed a downward trend in the first half of October, rising to about 94.73 in the other half of the month, and then, however, dropping to a record low since October. In the short term, USDX has not been overly affected. Under the dual impact of interest rate hike and shrinking balance sheets, it is easily to say the US dollar will rise in a certain proportion. And in the light of “anti-J-Curve Effect”, US export will be influenced to some extent in the long run.

4. SPILLOVER EFFECT ON CHINA

Chinese market was not fully opened during US preceding normalization program, so the impact by the programs was not obvious and both the integrity and authenticity from all aspects of economic data need to be improved. Therefore, professor Li Hongjian mainly analyzed the impact of the sixth balance sheet reduction of the Federal Reserve on China’s economy and found that the monetary policy in our country shifted from a prudent easing to a partial tightening before and after the contraction. From 2000, it started to recall money through the open market operations of the central bank and then raised the RMB Deposit-reserve Ratio, lowered foreign currency deposit rates for 9 times and raised the benchmark deposit and lending interest rates 8 times in a row.

Early before starting this program, or even in the final phase of QE, some scholars have already worked on the exit mechanism and the spillover effect on China’s economy. Scholar Tan Xiaofen et al. (2013) considered from the aspect of funds outstanding for foreign exchange that China is experiencing a risk of capital outflow when US windup the quantitative easing policy in terms of foreign exchange terms. Then she analyzed the Chinese real estate market and conclude that it has the risk of asset price bubbles bursting. In the context of US normalization program, scholars Sun Xinxin and Lu Xinsheng (2017) concluded that the Fed’s monetary policy has an effect on international capital flows, investors’ risk appetite and expectation through pushing channels and pulling channels, and then the U.S. dollar against the RMB exchange rate

4.1 Changes in the Policy of the Central Bank of China During the Normalization of American Monetary Policy

When US stopped QE and gradually began the normalization program, the Central Bank of China have turned down reserve rates for 6 times between 2015 and 2016 of which the early ones mainly targeted small and micro enterprises, agriculture, rural areas and farmers and capital finance companies. Besides, later reasons were to guarantee the liquidity of commercial banks and make room for supply-side structural reforms. In addition, deposit and loan interest rates on deposits and loans have been lowered respectively.

4.2 The RMB Foreign Exchange Market is Still Greatly Influenced by the United States, Especially the Foreign Trade Situation

RMB has been gradually recognized by the world, for example the IMF declared RMB "freely usable" in 2015 and put it in the SDR basket alongside the US dollar, Japanese Yen, Sterling and Euro. Moreover, for the first time, the European Central Bank has included the equivalent of 500 million yuan in foreign exchange reserves. It can be seen from the above that the internationalization of RMB in China has progressed well and the influence of the RMB gradually improves. In October 2017, China's foreign exchange reserves stood at 3.1092 trillion U.S. dollars, which was the highest this year so far. As a result, foreign exchange reserves continued to rise. In December 25, 2015, the formal establishment of Asia Infrastructure Investment Bank is a milestone in China's efforts to promote regional financial governance and promote Asian economic cooperation. At the same time, it is also a new way to solve China's lack of foreign exchange reserves investment channel.

However, judging from the 2017 forward Settlement and Sale Exchange released by the State Administration of Foreign Exchange (ie Table 2), the amount of selling in January and from September and October is larger than the settlement's, the time of which corresponds exactly to US rate hike at the end of 2016 and the contraction program in 2017. It will put great pressure on the RMB to be depreciated by the impact of the dollar's upvaluation, which is also not conducive to the process of China's RMB internationalization.

Tan Xiaofen believed that with the exit of the US QE, hot money in the short term will outflows that might risk China's liquidity. Hot money, according to the calculation formula of the World Bank, is the increase of foreign exchange reserves of the country (or region) - the amount of foreign direct investment (FDI) - the amount of trade surpluses, the amount of which was found almost negative in recent two years. Because, from January 2015 to October 2017, foreign exchange reserves first decreased slightly and then increased slightly. The added value of each period was less than the sum of FDI and the trade surplus.

Although China reduced its holdings of 19.7 billion U.S. treasuries in September 2017, who is still the largest U.S. creditor nation. When the rising rate and contraction program in the United States increased the bond yield, US treasury bonds held by China were at risk of massive evaporation of value. Looking the yield of 1 - and 10 - year treasury bonds from January 2016 to September 2017 (Figure 4), we found that the rate of return has gone up from 2.73% and 2.16% to 3.61% and 3.47% respectively since September 2016. China Financial Futures Exchange's (CFFE) 10-year Treasury Futures trading volume rose sharply from November 2016 (Figure 5), reaching an all-time high of about 6.127 trillion yuan in December, but began to fluctuate downwards after entering 2017, especially when words of US Balance Sheet spread out. Unlike the 10-year volume of government bonds, the 5-year's was less volatile. Under the effect of the Fed's contraction, investors are less confident about the future long-term government bond market.

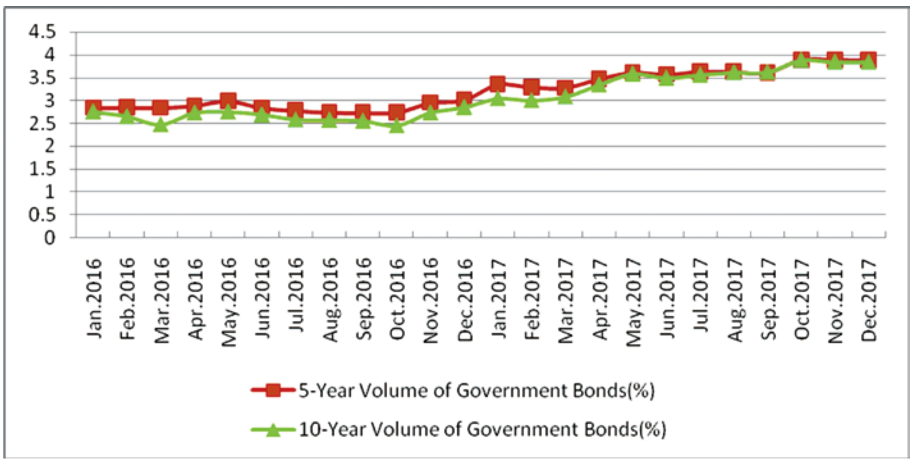


Figure 5
Yields of 5 - and 10 - Year Treasury Bonds

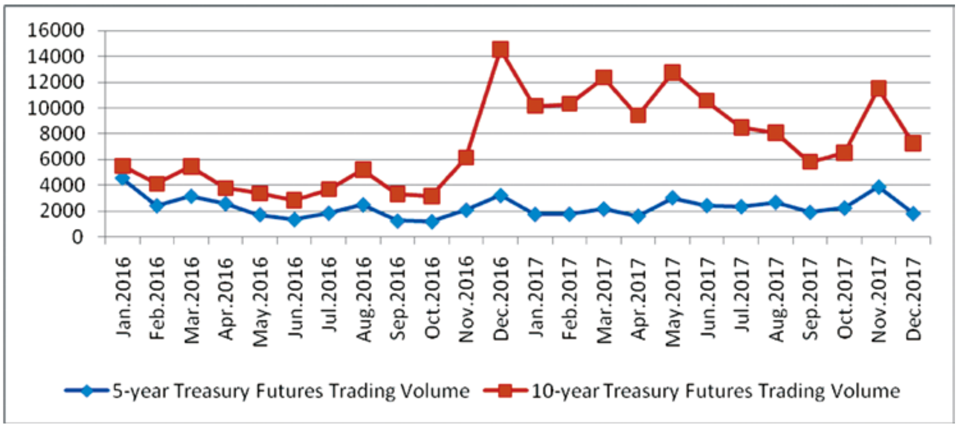


Figure 6
5 - and 10 - year Treasury Futures Trading Volume (100 Million yuan)

5. CHINA'S RESPONSE TO U.S. SHRINKING MEASURES

After the analysis, China, who plays one of important roles of emerging market economies, has greatly been affected by US normalization program, which makes RMB has the potential of devaluation, lose the confidence of the bond market and intensify the foreign exchange fluctuation, making it more tough for foreign trade.

The normalization of the U.S. monetary policy and capital returned back to U.S. market have brought an impact on the emerging markets. Scholar Chen Jiaqian et al. (2015) analyzed the influence of national fundamentals on the suppression or enlargement of spillover effects through signal and market factors. They thought GDP growth and current account can help to restrain shocks whereas inflation and larger foreign debt can amplify the spillover effect. China's economy has entered a new phase called "new normal" which means the growth slowdown from a high rate, the economic structure will undergo comprehensive and "fundamental changes, and real estate bubbles, local government debt and financial uncertainties have surfaced" released by China Daily. Also the macroeconomic leverage needs to be narrowed and the phenomenon of "de-solidification and virtualization" exists. These problems are not conducive to attracting capital inflows to the highly efficient sectors but also to curbing economic fluctuations.

In the short term, as the program to reduce the size of the balance sheet has been slow, China should pay close attention to the trends while monitoring the domestic foreign exchange market and financial markets such as bonds, as well as hot money flow, in order to prevent large-scale international capital flight and the following risks. At the same time, through the open market operation, the Central Bank of China can control the over-volatility. In addition, making a rational use of foreign exchange reserves and make efforts to strengthen its own risk management are also good choices.

In the long run, if the United States shrinks its list successfully and reaches the scale of the initial design, it will surely have a greater impact on the world economy, especially in emerging markets. China's economy is highly correlated with the world economy. Currently, the exchange rate of the RMB against the U.S. dollar is under downward pressure due to the effect of the U.S. interest rate hike and the shrinking of the list. Other major currencies such as euro, Japanese yen and pound do not have the same tendency. It can be attributed to the fact that China's economic fundamentals are relatively stable; the economy maintains a mid- to high-speed growth with a steady monetary policy. And also because the structural reform of supply side set down; the "deleveraging" and the "Control risk" action of the financial sector are proposed and the counter-cyclical factors have added into China's foreign exchange pricing model. At the same time, with the gradual deepening of China's trade liberalization, RMB internationalization and diversification of foreign exchange reserves, it is believed that China will not be over-riddled and stabilized for the better.

CONCLUSION

Using financial data and analyzing graphs, we find that program might put pressure on its liquidity, motivate foreign capital back to US, have some impact on stock and bond markets, and surely influence emerging market economies. China , who plays one of important roles of emerging market economies, should take active and advanced measures and supervise the possible devaluation pressure on RMB and the recession in domestic bond market in order to prevent capital outflows.

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