
Balance on Monetary Policy and Macroprudential Policy

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Abstract: Monetary policy is based on the theoretical rationale of the insufficient effective demand. The mainly logical difference between Keynes and Friedman are what domain interest rate directly and which factor will offset the effect of interest rate. The empirical application of monetary policy has several aspects deserving study: (1) the target, range, strength and effect of its monetary policy, (2) the theoretical development of Western monetary policy transmission, (3) monetary transmission channel in China, (4) the difference effect of monetary policy. The aggregate financing to real economy is China's innovation to monetary policy. The background of macroprudential policy is financial crisis, its theoretical backup and application in real world including situation analysis, taking countermeasures, and tools application. By practical experience of China, the systematic financial risk lies on the unhealthy condition of most financial institute. The stock market crisis in 2015 is a reflection of systematic financial risk. Therefore, we should focus our attention on the special mechanism of financial risk and financial cycle in background of socialist political system with Chinese characteristics. We also should study liquidity condition by the central bank qualitatively and quantitatively.

Keywords: Monetary Policy, Macroprudential Policy, Excess Liquidity

1. Introduction

Fiscal policy and monetary policy are the most common and noticeable forms of government intervention in economic life. Each year and for certain economic cycles, the government needs to formulate, implement and evaluate these policies - the same issues are closely followed and discussed by academia as well [1-3].

Over the past decades, cyclical financial and economic crises erupting amid socio-economic development concerned governments and international academia [4]. The question is how the government should intervene in economic life in a way that promotes socio-economic development and benefits humanity while weeding out risks and minimizing the losses [5]. What can be learned from the cyclicity and worldwide ramifications of economic and financial crises is that: when intervening in economic life and conducting macro-regulation, the government must use a combination of monetary and macroprudential policies - referred to by the policymakers and academia as "two-pillar policy regulation" [6, 7]. On this topic, there have been extensive discussions in government and academic circles.

It is believed that monetary policy emerged with the development of macroeconomics. Macroeconomics is based

on the philosophy of state intervention first advocated by British economist John M. Keynes during the Great Depression in the 1930s. Keynes suggested that the government should adopt an expansive fiscal policy to overcome depression. However, his proposal was not accepted until after being "rejected by Hoover and Roosevelt for seven years during the Great Depression" [8]. The implication is that the theory of state intervention was established during the recovery from - rather than before - the Great Depression. Specifically, it was preceded by the publication of Keynes's *General Theory of Employment, Interest and Money* ("*General Theory*"). In this book, Keynes believed that economic crises - as manifested in economic depression and unemployment - stemmed from the lack of effective demand as a result of the "three psychological laws"¹.

Thus, the way out lies in stimulating effective demand.

¹The "three psychological laws" refer to the marginal diminishing propensity to consume, the marginal diminishing efficiency of capital, and liquidity preference. In Keynes's interpretation, the marginal diminishing propensity to consume means that consumption growth is not as much as income growth; the marginal diminishing efficiency of capital means that the marginal efficiency of capital will reduce with increasing capital investment; the liquidity preference means that people tend to retain a certain amount of currency as a highly liquid asset. (see p. 85 and p. 110 of the *General Theory*).

To stimulate effective demand, the government should reduce tax, raise public spending, increase the money supply, and use deficit spending to spur economic activity, boost national income and reach full employment. It is fair to say that Keynes's proposition was generally consistent with the reality of his time. It revealed that the spontaneous market adjustment mechanism was insufficient in stimulating demand. Keynes's *General Theory* challenged his times. Yet in the *General Theory*, Keynes gave prominence to fiscal policy as a primary instrument, while considering that monetary policy played an auxiliary role. Regarding the role

of monetary policy in macro-regulation, economists have engaged in protracted debates ever since.

In such debates, U.S. economist Milton Friedman and his followers offered representative arguments.

Their theoretical system is described as: Money supply Influences Gains Influences Interest rate (price) [9]. Changes in money supply influence gains by adjusting the value of assets and liabilities held by the general public, thus directly increasing their monetary income. Income changes influence interest rate or price through purchase or exchange. Derivation process is as figure 1.

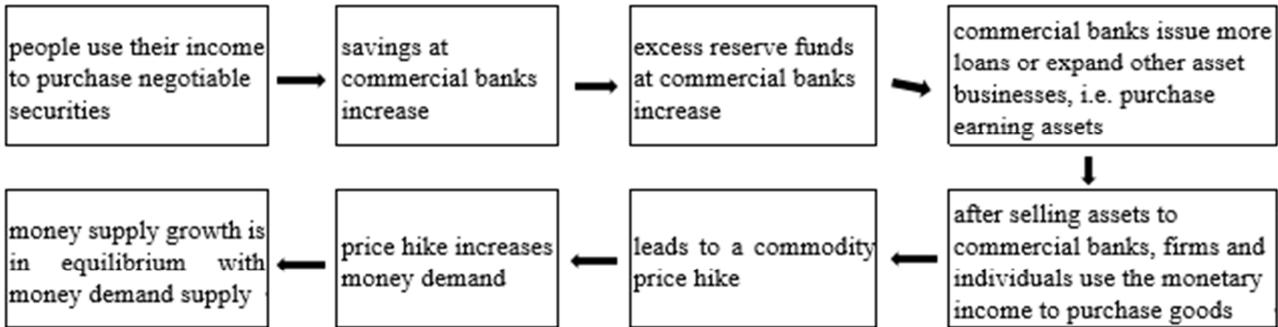


Figure 1. Milton Friedman and his followers offered representative arguments.

Friedman believed that with more money supply, people would hold more money and thus have greater purchasing power, which led to a commodity price hike. Bank loans must maintain constant real interest rate. Under this condition, the interest rate of loan money (nominal interest rate) = real interest rate + inflation rate.

Following Friedman's approach, the management of money entails the management of debts, including government debts, which requires coordination of funds between the central bank and the treasury. The key to such coordination is whether or not fiscal revenue may directly come from the central bank's money supply. According to Friedman, even if the answer is no, fiscal revenue may indirectly come from the central bank's money supply, such as through open market transactions. He argued that if fiscal

funds directly or indirectly came from the central bank, monetary policy effect should become fiscal policy effect.

Keynes and his followers developed this analytical framework: Money supply Influences Changes in interest rate Influences Investment. The question is how changes in the money supply influence interest rate? Money supply can influence loanable funds, and when the supply of loanable funds exceeds demand from the lender's perspective, the monetary interest rate falls (Keynes assumes that potential production capacity exists). How do interest rate changes affect investment? It can affect investment through the comparison between the monetary interest rate and natural interest rate (Keynes believed that with increasing money supply, the interest rate would fall). The derivation process is as figure 2.

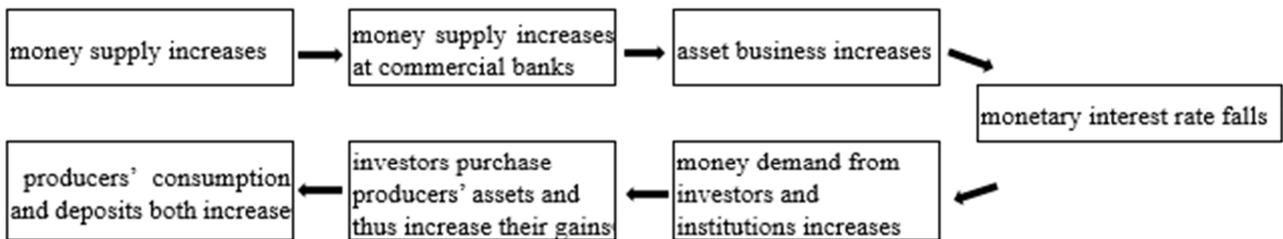


Figure 2. Keynes and his followers developed this analytical framework.

Friedman and Keynesians mainly disagree over the following questions: which factors determine interest rate? Which ones offset the effects of interest rate on the economy? Friedman and his followers believed that interest rate was primarily determined by *income*, i.e. gains, and that the effects of interest rate could be offset by price and income factors. Yet Keynes and his followers considered that interest

rate was mainly decided by *money supply and demand*; they did not examine whether the effects of interest rate would be offset by price and gains.

It must be pointed out, however, that Keynesians had a very different logic. In *A Treatise on Money*, Keynes argued that price stability and economic equilibrium depended on whether the investment was equal to savings, which was

subject to whether the market interest rate was consistent with natural interest rate. In his *General Theory of Employment, Interest and Money*, Keynes noted that interest was a compensation that people receive by foregoing liquidity preference, and that money demand increased with liquidity preference. In such a situation, the interest rate would have to be raised for people to be willing to forgo money liquidity. According to Keynesian economics, when the money supply is fixed, the money interest rate is decided by money demand under the effect of liquidity preference. By lowering the future marginal efficiency expectation of money and reducing interest rate elasticity, an expansionist monetary policy has a limited effect in stimulating consumption and investment demand. Therefore, Keynes advocated that fiscal policy should be used as a primary instrument by the government to intervene in the economy.

Based on the IS-LM curve analysis, neoclassical economists led by Paul A. Samuelson believed that monetary policy would not function at a certain low interest rate level, where an expansionist fiscal policy must be adopted. At a high interest rate level, fiscal policy will not work, and an expansionist monetary policy is required. In the medium range, fiscal policy and monetary policy should function in combination. This paper attempts to examine the evolution of the “two-pillar policy regulation” based on theory and practice.

2. Contemporary Practice of Monetary Policy

In today's world, the following questions warrant our attention in the practice of monetary policy:

2.1. New Progress in the Western Monetary Policy Transmission Theory

Traditional Western monetary policy transmission theory considers that monetary policy is transmitted via changes in interest rate, i.e. money supply increases → interest rate falls → borrowing cost falls → manufacturing investment increase → household consumption increase → total output increases. The above relationship, once reversed, will lead to opposite effects. This theory is focused on how changes in money supply affect only one type of assets, i.e. the price of monetary funds, while neglecting the effects on the types of assets.

If we take into account the effects of changes in money supply on the prices of other assets, the monetary policy will also be transmitted via exchange rate and equity asset prices.

2.1.1. Exchange Rate

Money supply increases → Demand for foreign exchange increases → Foreign exchange rate rises → Import increases → Export falls → Total output increases. Conversely, we have: Money supply reduces → Demand for foreign exchange reduces → Foreign exchange rate falls → Export

increases → Import falls → Total output reduces.

In a word, changes in money supply influence import and export by regulating the exchange rate and thus affect total output.

2.1.2. Equity Asset Price

Equity asset price or owner's equity includes capital and undistributed profits (owner's equity such as stocks is recognized at the liability side of the accounting record but is assets for investors). Owner's equity is the value basis for the entire firm. Price of equity assets is the market price of the firm and means how much the firm is worth. For instance: Money supply increases → Equity asset price of a firm rises → Capital replacement cost becomes smaller (e.g. cheaper to purchase new factories and equipment) → Firms will have higher return through the issuance of additional equity assets → Thus increase investment → Cause total output to increase.

2.1.3. Wealth Effect

Money supply increases → Share price rises → Value of financial assets increases → Wealth Increases → Consumer spending increases → Aggregate demand increases → Total output increases.

2.1.4. Bank Credit Channel

Money supply increases → Loanable funds at banks increase → Corporate investments increase → Total output increases (especially for firms highly dependent on banks).

2.1.5. Corporate and Household Income and Spending

Money supply increases → Corporate equity price rises → Corporate net value increases → Enhanced reputation and competitiveness → Falling reverse choice and moral barriers → Bank loans increase → Investment spending increases → Total output increases.

In sum, the effect of monetary policy can be transmitted by improving corporate and household financial conditions.

2.2. Transmission of China's Monetary Policy Effect

In China, the effect of monetary policy also depends on the method and target of policy transmission. In recent years, China's central bank has taken various steps to promote monetary policy effect. For instance, it canceled credit limit, lowered interest rate for many times, reduced reserve requirement for commercial banks, extended loan period, and adopted lending guidelines. Yet the effects of these measures are undesirable. A question to be discussed is how monetary policy transmission takes place? Monetary policy transmission is highly dependent on the operation of commercial banks, which must be proactive and effective in order for the central bank's monetary policy objectives to materialize. Factors that impede commercial bank operation include corporate, bank and psychological factors.

2.2.1. The Corporate Factor Means

- a) A reduction in the number of customers who are eligible for commercial loans. For instance, firms are

loss-making and their products are unmarketable.

- b) Clients are not in need of capital either because their demand for capital has been satisfied or they are yet to find desirable investment projects;
- c) They have alternative access to financing and do not need bank loans.

2.2.2. *The Bank Factor Means*

- a) Interest rate structure is unreasonable.

If the central bank sets a relatively high interest rate, financial institutions would rather deposit funds at the central bank to earn interest without assuming risks. Prior to lowering interest rate on March 25, 1998, China's central bank set an interest rate of 5.22% on the reserve funds of commercial banks - equivalent to the one-year time deposit interest rate and higher by 3.51 percentage points than the demand deposit interest rate of 1.71%. This difference made it profitable for commercial banks to attract savings and deposit them at the central bank as reserve funds. If the central bank's lending interest rate was high, commercial banks would be discouraged from borrowing from the central bank. Prior to the interest rate reduction on March 25, 1998, China's one-year central bank lending interest rate was 0.72 percentage points higher than the one-year loan interest rate of commercial banks. Hence, commercial banks would rather repay their loans borrowed from the central bank to reduce cost.

- b) Appropriateness of management approach.

China's asset-to-liability ratio management essentially aims to control loan-deposit ratio, i.e. the issuance of loans is limited by the amount of deposits. Without doubt, limiting loans by the amount of deposits helps prevent risks, but it also hurts loan business development. It is hard to set fair loan issuance limits to various levels of commercial banks whose deposits are uneven.

A key target of management is to incentivize people. The operation of commercial banks to a large extent depends on frontline credit officers. How to incentivize credit officers has always been an important question for the banking sector. Inappropriate incentives and disincentives would hurt banks' credit business.

- c) In-depth market research.

Formulation of monetary policy entails sufficient market research on capital flow, industrial policy orientation, changing consumption structure, and corporate operation. Policymakers must keep learning and update their knowledge to keep pace with the changing market.

- d) Establishment of a sound policy transmission mechanism.

Incentives and disincentives must be created to motivate people to achieve intended policy transmission effect.

From a psychological perspective, people's expectations play an important role. For instance, if there is an expectation that Renminbi will depreciate, people will buy foreign exchange with Renminbi borrowed from banks to repay foreign currency loans ahead of time, and capital supplied by the banks will not become a production factor.

3. China's Innovation in Monetary Policy Regulation

After the global financial crisis erupted in 2008, monetary authorities and economists started to reflect upon the causes of the crisis. They realized that the lack of financial statistical information and the defects of the statistical system were some of the reasons. This finding received a great deal of attention from leaders of the People's Bank of China (PBoC), China's central bank. In November 2010, the PBoC's Financial Survey and Statistics Department started to formulate the indicator of aggregate financing for the economy.

The aggregate financing for the economy - which is based on relevant data on the asset side of financial institutions' balance sheets - reflects the monetary funds of the financial system that enter into various sectors of the economy via different channels (mainly loans and negotiable securities). This indicator reflects the effect of monetary policy transmission and in combination with absolute and relative changes in money supply, can be used to examine monetary policy transmission effect. As a financial macro-regulatory instrument invented by the PBoC, the aggregate financing for the economy offers the following capabilities:

3.1. *Assessing the Total Amount of Monetary Funds Entering the Real Economy by Category*

Professor Sheng Songcheng made the following interpretation: "the aggregate financing for the economy consists of 10 elements in four categories. The four categories of financing include: a. Balance sheet loans of financial institutions, including Renminbi and foreign currency loans. b. Off-balance-sheet financing offered by financial institutions, including entrusted loans, trust loans and undiscounted bank acceptance notes. c. Direct financing, including bonds from non-financial enterprises and domestic stock financing. d. Funding support offered to the real economy via other channels, including compensation from insurance companies, investment properties of financial institutions, loans from microcredit and lending companies." He further explained that: "financial system is a holistic concept. In terms of institutions, it includes financial institutions such as banking, securities and insurance institutions. In terms of the market, it includes credit market [10], bond market, stock market, insurance market and intermediate business market. In terms of geography, it includes all funds received by the real economy from the domestic financial system."

3.2. *Reflecting the Achievements of Financial Supply Structure Reform*

According to Professor Sheng Songcheng, the aggregate financing structure for the economy has evolved in distinctive stages. From 2002 onwards, the increase of Renminbi loans as a share in the aggregate financing for the economy initially declined but later increased. It plunged

from 91.9% in 2002 to around 50% in 2012 and 2013 before recovering to 73%. Since 2017, off-balance-sheet financing has been moved to the balance sheet amid China's financial deleveraging process, resulting in a significant increase in the share of Renminbi loans.

From January to August 2018, Renminbi loans accounted for 92.8% of the aggregate financing for the economy, up 24.9 percentage points over 2017. The off-balance-sheet financing received by the real economy via financial institutions initially increased but subsequently reduced. From 2006 to 2013, financing received by the real economy via such channels as entrusted loans, trust loans and undiscounted bank acceptance notes had maintained an annual average growth rate of 39.5%, while such off-balance-sheet business volume was very small in 2002. In recent years, however, off-balance-sheet financing has

dwindled. From January to August 2018, entrusted loans, trust loans and undiscounted bank acceptance notes accounted for -8.3%, -3.1% and -5.1% respectively in aggregate financing for the economy, and total off-balance-sheet financing represented -16.5% of aggregate financing for the economy.

Direct financing accounted for a rising share. In 2016, the total financing of non-financial enterprises from domestic bonds and shares amounted to 4.2 trillion yuan, which was 42.6 times that of 2002, accounting for 23.9% of aggregate financing for the economy, up 18.95 percentage points over 2002. Since 2017, the share of direct financing dived to 6.5%. From January to August 2018, the total financing of non-financial enterprises from domestic bonds and shares reached 1.86 trillion yuan. In particular, financing from corporate bonds increased by 1.57 trillion yuan year-on-year.

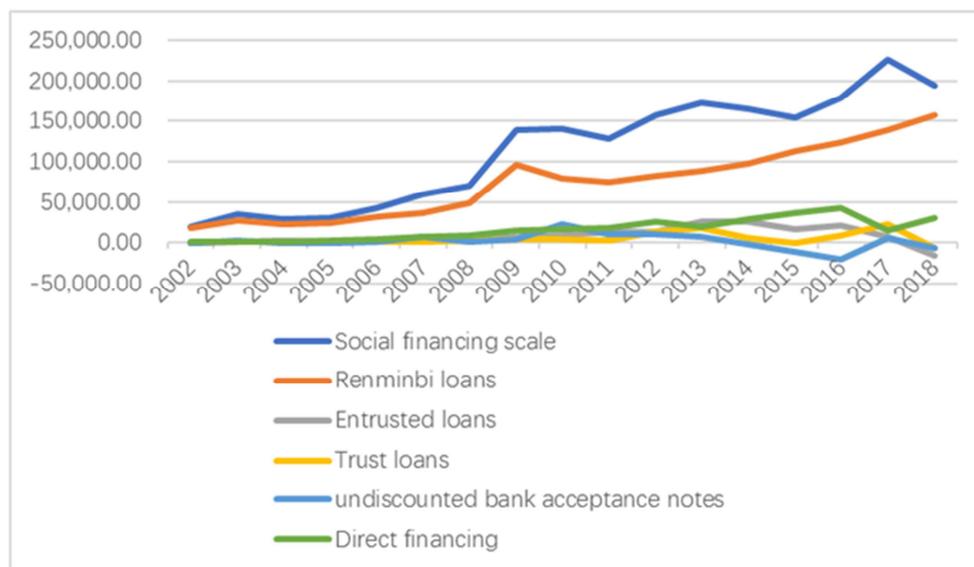


Figure 3. Level of financings scale.

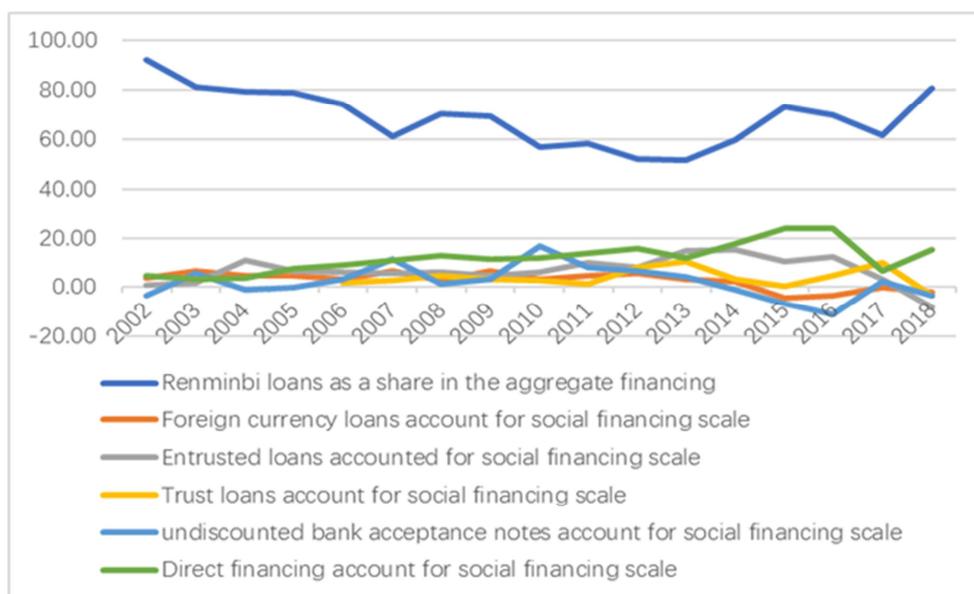


Figure 4. Proportion of financing scale.

3.3. Revealing the Balance Between Obligations and Rights in Financial System and Reflecting Financial Risk Distribution and Concentration from Another Aspect

Professor Sheng Songcheng said: “aggregate financing for the economy was rather close to M2 in terms of absolute value and growth. The reason is that they respectively reflect the asset side and liability side financial institutions’ balance sheet. They supplement and verify each other and are the two sides of the same coin. Aggregate financing for the economy is accounted from the asset side of financial institutions and the issuance side of the financial market. It reflects how the financial industry supports the real economy from an aggregate capital supply perspective. That is to say, aggregate financing for the economy means assets for the financial system and liabilities for the real economy. It covers a majority of asset-side items on the balance sheet of financial companies.

On the contrary, money supply M2 is accounted from the liability side of financial institutions and forms their liabilities. M2 is the liquidity and purchasing power provided by the financial system to the real economy and reflects aggregate demand. As such, aggregate financing for the economy and M2 supplement and verify each other from an asset-liability perspective. “Such mutual verification reveals the financial system’s check and balance of obligations and rights and reflects financial risk distribution and concentration. The liability side of financial institutions’ balance sheet reflects money supply, i.e. the rights of the financial system, and its risk resilience. We may use the liability side as numerator and asset side as denominator as the asset-liability ratio of the financial system at a certain time point. When this ratio exceeds 1, although the financial system’s risk resilience remains constant, asset quality warrants our attention. For instance, if asset quality deteriorates or asset vehicle disappears, the financial risk resilience becomes virtualized. The structure and change of assets and liabilities create a quantitative condition for reflecting financial risk distribution and concentration.

Aggregate financing for the economy as a macroeconomic regulatory indicator invented by the PBoC has enriched the monetary policy transmission theory.

At the dawn of the 21st century, major advanced economies all adopted quantitative easing (QE) policy. The earliest country to do so was Japan. In the wake of significant yen appreciation following Plaza Accord in 1985, the Bank of Japan started to substantially cut the benchmark interest rate as of January 1986 to stimulate the economy. Yet the easy monetary policy created bubbles in housing and stock markets. In response, the Bank of Japan started to raise interest rate as of May 1989, which caused the stock and real estate market bubbles to burst. As a result, Japan’s economy was dealt a heavy blow, and banks saw a surge in bad loans. In February 1999, Japan’s central bank reduced the benchmark interest rate from 0.5% to 0 and even lowered the nominal interest rate for the financial market to below zero.

In this situation, Japan faced serious deflation. In March 2001, the Bank of Japan adopted quantitative easing to curb deflation [11].

After the global financial crisis erupted in the second half of 2007, the Federal Reserve also launched the first round of QE in November 2008.

QE policies of Japan and the U.S. share the following commonalities: (1) interest rate leverage failed in financial macro-regulation; (2) both countries generated liquidity by purchasing treasury bonds and financial institutions’ bonds; (3) monetary liquidity was increased. Yet Japan and the U.S. set different priorities in QE. Japan focused on the liability side of financial institutions’ balance sheets. In implementing QE (from March 2001 to March 2006), the primary purpose of the money supply was to purchase treasury bonds and bank bills, as well as a small percentage of asset-backed securities, stocks and other non-traditional assets (only accounted for 7% of total assets). The U.S. Federal Reserve not only increased the money supply by purchasing treasury bonds and bank bills, but adjusted financial institutions’ asset structure as well. In conducting QE, the Federal Reserve focused on both liability and asset sides of financial institutions’ balance sheets. The two countries had different priorities in conducting QE. While the Bank of Japan aimed to inject monetary funds into the banking system to encourage lending to firms and households, the Fed Reserve improved financial institutions’ asset quality and liquidity through asset restructuring. Such a difference is attributable to both countries’ heterogeneous financial systems. Japan’s financial system was dominated by indirect financing through banks, while direct financing held sway in the U.S. financial system.

QE is a non-conventional monetary policy with different intermediate and final targets. (1) From March 2001 to March 2006, the intermediate target of Japan’s QE changed from uncollateralized overnight call rate in normal hours to commercial banks’ current account balance at the central bank. Policy transmission process: the central bank purchased long-term treasury bonds from commercial banks → Commercial banks raised monetary funds at a relatively low cost → Commercial banks’ current account balance increased → Encouraged them to increase loans and investments → Induced overnight call rate to fall. In the third round of QE, the U.S. Federal Reserve focused on the ratio between asset-side loans and securities, as well as the effects of different asset portfolios on the housing market and the real economy. The intermediate targets of conventional monetary policy include: central bank lending, rediscounting and open market transactions. (2) In summary, QE was intended to achieve the following final targets: a. end deflation and stabilize prices; b. restore the credit market and safeguard financial stability. In comparison, the conventional monetary policy aims to achieve the following targets: economic growth, price stability, full employment, and international balance of payments.

Monetary non-neutrality theory is the first underlying

theory for QE. According to Swedish economist Wicksell's (1898-1926) view on the non-neutrality of money, money is not a veil of the economy, and it is due to the existence of money that the economy fluctuates and loses its balance. Hayek (1899-1992) and Keynes (1883-1946) et al. believed that changes in the money supply would influence the relative price system and thus affect economic variables like output and employment. The second underlying theory for QE is the "liquidity trap" theory, which was also hypothesized by Keynes. According to Keynes, when interest rate level drops to the lowest point in a certain period of time, there will be an expectation for rising interest rate and falling bond rate. In such a condition, the speculative motive will infinitely expand money supply and induce a "liquidity trap". When the "liquidity trap" occurs, the central bank's conventional monetary policy cannot alter people's investment and consumption behavior through interest rate, thus causing traditional monetary policy to fail. U.S. economist Paul Krugman (Krugman, 1953-) contended that when an economy experienced falling total demand with nominal interest rate falling zero, while total demand remained smaller than productivity, this economy can be regarded as having fallen into the "liquidity trap". This is a definition of the liquidity trap in a broad sense. The key idea is that when total supply cannot meet the demand while potential productivity exists, conventional monetary policy cannot be used to spur investment and consumption. Instead, the non-conventional monetary policy should be followed to overcome the liquidity trap.

As a large developing country, China is improving its socialist market economic system. Its domestic economic situation and reform and opening-up require a combination of conventional and nonconventional monetary policies. Non-conventional monetary policy theories - including the money non-neutrality theory and the liquidity trap theory - are still relevant for China. China has made monetary policy innovations by developing the non-conventional monetary policy. As a financial regulation indicator, aggregate financing for the economy concerns both the liability side and asset side of the financial system's balance sheet, particularly their symmetry and equilibrium, and is a Chinese invention. For China as a large socialist developing country, it is necessary to take into account both sides of the balance sheet.

4. Historic Background of Macroprudential Policy

Macroprudential policy was developed after the global financial crisis struck in 2008. Given the gaps in the original monetary policy framework and micro-prudential regulation, it became necessary to create and enhance the macroprudential regulatory framework. The United States and the European Union announced their plans in 2009 to create a macroprudential regulatory system together with special execution agencies. Other economies and

international organizations also started to enhance financial regulatory reforms in this respect. China's central bank announced the initiation of macroprudential management in 2010 and started to create differentiated reserve fund adjustment and desirable loan management mechanisms in 2011 to prevent systemic financial risks. To discover why regulators of various countries - particularly Western countries with sophisticated market economies - agreed on macroprudential regulation, we need to take a look at the global financial crisis of 2008.

The economic and financial crisis of 2008 is also known as the "sub-prime mortgage crisis". But fundamentally, the crisis originated from the "NASDAQ bubbles", i.e. surge in NASDAQ index of the U.S. stock market fueled by speculation in the NASDAQ-listed internet firms, or tech stocks.

When speculation in internet firms started in 1996, the NASDAQ index was only a little over 1000 points, but in March 2000, it reached 5100 points, up five times in four years. The rising stock index gave rise to bubbles which inevitably burst. In March 2001, the NASDAQ index fell to less than 2000 points in a matter of one year, and total market capitalization shrank from 6.7 trillion U.S. dollars to 2.7 trillion U.S. dollars - with 4 trillion U.S. dollars written off. From beginning to end, the turbulence lasted for four years and eight months from July 1997 to March 2001.

The financial tsunami of 2008 originated from the Wall Street speculation in the U.S. housing market. After President Bush took power in 2001, the U.S. government increased the money supply to encourage housing investment without developing the real economy to offer alternative investment channels. The homeownership policy incentivized people to invest in the housing market - in some cases, a person bought as many as seven houses as an investment. Naturally, the financial industry joined the fray and invented the "sub-prime mortgage loans" for low-income people to buy a house. In this context, U.S. housing price shot up by 70% from 2001 to 2007. In addition, the financial industry made extensive innovations. For instance, they securitized sub-prime mortgage loans or transferred them to issue new financial products to be sold to investors. In essence, the risks of sub-prime mortgage loans were transferred to others. Consequently, money flooded in the housing market. As the prices of financial products sold to investors dived, many financial institutions were unable to recover their loans and suffered tremendous losses, causing the crisis to erupt.

It is fair to say that the crisis of 1998 shared many things in common with that of 2008: both erupted in one country with ramifications worldwide, and both were closely related to the housing market. The Asian Financial Crisis of 1998 was triggered by international investors who sold real estate properties and withdrew capital in the four Southeast Asian countries. The financial crisis of 2008 was primarily triggered by the burst of real estate price bubbles in the U.S., which led to bankruptcies and closures of banks and some real estate companies. The third reason has to do with lax supervision and increased money supply. Lax supervision

was manifested in the lack of a clear boundary between bank credit business and securities trading, i.e. mixed business operation. Despite the increased money supply, investment channels were rather limited.

However, the two crises also differ in many ways: in the run-up to the first crisis, speculation in internet stocks led to a change in exchange rate regime and currency depreciation. The second crisis was somewhat induced by government behavior. The Bush administration encouraged public and private sectors to work together to reach its homeownership goal and supported the sub-prime loans.

From the historic background of this policy, financial regulators came to realize that:

- a) While information technology and the internet offer many benefits, such benefits may only be materialized in a conducive credit environment in which people refrain from dishonesty, short-term behaviors and fraud.
- b) When increasing money supply and liquidity, standard investment channels must be created to facilitate capital flow. Excessive speculation should not be tolerated.
- c) The government should focus on developing the real, rather than the virtual, economy, and refrain from excessive speculation in the housing market.
- d) Financial risks and crisis are always supported by leverage, whose use should not be manipulated.
- e) Financial macro-regulation should be carried out countercyclically.

5. Underlying Theory of Macroprudential Policy

The underlying theory of macroprudential policy answers the question as to why this policy should be implemented in various countries or in most countries, not just in a specific country or a few countries. To answer this question, we should first reflect upon the global financial crisis that erupted in 2008. In the previous section, we mentioned that the global financial crisis has taught people five lessons - these lessons offer an interpretation of the causes of the crisis. Of course, the causes of the crisis alone cannot reveal the underlying theory of macroprudential policy. In our view, the underlying theory of macroprudential policy encompasses the following four elements:

5.1. Price Stability Does Not Equal Financial Stability

One of the ultimate goals of monetary policy regulation is to rein in inflation, which directly affects people's economic life and business investment. Price stability is essential to controlling inflation. Before and during the recent global financial crisis, the U.S. price level - primarily consumer price level - was stable, yet financial asset - mainly real estate - prices surged. As China's policy insiders described, housing price hikes were driven by a speculative rather than real demand since real estate properties were seen as an investment. Investors regarded real estate properties as a financial product whose return was guaranteed. Unchecked

speculation in the housing market caused financial system instability and systemic financial risks. However, excessive speculation caused prices to deviate from intrinsic value, giving rise to bubbles that destabilized the financial system.

5.2. Financial Risks Are Contagious Across Markets

Contemporary financial activities take place through the vehicle of money, credit and negotiable securities, which are generic and tradable. Given they are generic and tradable attributes, money, credit and negotiable securities not only serve as vehicles of financial activity but also become objects of speculation that gave rise to the cross-market contagion of financial risks.

5.3. Finance Is Procyclically Expansive

In an economic cycle, financial expansion is determined by people's expectation. When people have a very strong expectation, they tend to become irrational and make a collective misjudgment. In such a case, financial expansion occurs regardless of costs and benefits. Financial expansion is a result of procyclical misjudgment and leads to economic repercussions and reversals.

5.4. Aggregation of Regulatory Effects on Individual Financial Institutions Does Not Equal Overall Regulatory Effect on the Financial System as a Whole

This is due to the following reasons: first, there are always loopholes in the regulation on specific financial institutions; second, the objectives, measures and temporal-spatial boundary for specific financial institutions are different from those for the financial system as a whole. In overseeing financial institutions, regulators focus on their business performance, such as capital adequacy ratio, non-performing assets, provision funds and profits. However, good business performance does not mean financial stability, which depends on not only financial institutions themselves but external factors such as people's expectation and investment behaviors. Third, supervision on specific financial institutions usually takes place at the end of a period when the result of business performance is published. The goal of regulation on the financial system is to prevent asset bubbles from turning into systemic risks. Therefore, regulation on the financial system must focus on the operation of financial institutions rather than the result of their business performance.

The above four elements constitute the underlying theory for financial macroprudential management and answer the question as to why countries or most countries need to formulate and implement such a policy. In general, the purpose is to prevent the negative impact of modern finance on human society.

6. Implementation of Macroprudential Management

Macroprudential management was officially adopted at the

G20 Summit in Pittsburgh on September 20, 2009. Since then, all countries must attach attention to and implement macroprudential management.

China officially introduced this concept at the Central Economic Working Conference by the end of 2010, which comprises the following three elements: (a) macroprudential analysis; (b) selection of macroprudential policy; (c) application of macroprudential regulator instruments.

In conducting macroprudential analysis, one needs to discern whether the financial system is dominated by banks or the securities market. Attention should also be paid to the balance sheet structure of banks if it is dominated by banks and securities market prices if it is dominated by the securities market. In examining a bank's balance sheet structure, one should look at its non-performing assets, capital leverage ratio, provision and liquidity. As for securities market prices, one should look at such indicators as volatility, price/net asset ratio, and price-to-earnings (P/E) ratio.

In adopting policy measures, the following considerations should be made: whether reverse adjustment such as capital increase and restriction of asset expansion is needed; whether cross-market risk contagion needs to be prevented by such means as creating a firewall; how the financial system's risk resilience should be enhanced - particularly the risk resilience of systemically important financial institutions.

In selecting instruments, the seven indicators of financial macroprudential management should be used. In using such indicators, attention should be paid to policy interlinkages. In December 2012, the Committee on the Global Financial System (CGFS) released the report *Operationalizing the Selection and Application of Macroprudential Instruments*, which gives the following recommendations on the use of macroprudential instruments (MPIs):

- a) The activation and release of MPIs should be guided by the stage of the financial cycle. When the financial cycle is booming and the economy is strong, MPIs should be tightened. When the financial cycle is in the downswing without systemic risks, previously tightened MPIs should not be released. It is important to differentiate whether the downswing coincides with a financial crisis. If so, a release may help to absorb some of the impact of the turning financial cycle, thus mitigating the severity of the crisis.
- b) The transmission mechanism of MPIs should be properly controlled. In the upswing of the financial cycle, tightening MPIs enhances the risk resilience of the financial system in a direct manner. For instance, raising capital or provisioning requirements gives financial institutions additional buffers to weather negative potential shocks. Raising liquidity requirements enhances the ability of banks to cope with liquidity stress more easily by reducing their reliance on more volatile short-term funding. In turn, this will inhibit the contagion effects and negative impacts on the real economy. In addition, tightening MPIs will also effectively influence credit cycles. For instance, banks

may reduce credit demand or supply by increasing lending spreads, decreasing dividends and bonuses, issuing new capital, or reducing asset holdings while shifting the composition of assets to cope with higher liquidity requirements. In the downswing of the financial cycle, absent a crisis, the transmission mechanism of relaxing MPIs is similar to that during the upswing, and the only difference is the opposite direction. In a crisis, relaxing MPIs gives financial institutions sufficient buffers to absorb losses and enhances the financial system's risk resilience. However, during a severe crisis, losses and liquidity demand may exceed the buffers, which requires the financial system to raise capital and liquidity through either retained earnings, external equity or capital injections by the state.

- c) Policy linkages warrant attention. The CGFS report considers that MPIs interact with other policy instruments. First, the policy transmission channels may overlap with each other. For instance, raising liquidity requirements for financial institutions will affect demand for the central bank liquidity and thus affect monetary policy operations. Second, policy instruments may conflict with, rather than complement, each other, particularly when the tendencies of the real economy and the financial cycle are inconsistent with each other. For instance, when the downward pressure on inflation arising from high productivity growth coexists with irrational exuberance in financial markets, macroprudential policy and monetary policy may work in opposite directions. When the financial cycle is in the downswing, the macroprudential policy may contradict with microprudential policy. Policy interlinkages should, therefore, be enhanced, highlighting the central bank's critical role in macroprudential management.

As part of macro-regulation, macroprudential management is consistent with the central bank's goal to maintain macroeconomic and financial stability. Central banks have the responsibilities and advantages to conduct macroprudential analysis and apply monetary policy instruments. They play an important role in macroprudential management. Macroprudential management is also closely related to macro-regulation and microeconomic regulation. While macroprudential objectives may interact with monetary policy and financial regulation objectives, the implementation of MPIs is also dependent on the application of monetary policy instruments, microeconomic regulatory instruments and fiscal instruments. In conducting macroprudential management, therefore, relevant departments should closely work with each other and share information. To ensure transparent and consistent macroprudential management, they should make joint research efforts, unified decision-making, and respectively implement MPIs at their disposal. Enforcing macroprudential management over cross-border financial activities also requires various economies to enhance cooperation to avoid cross-border regulatory arbitrage.

Since 2016, the People's Bank of China (PBoC) - China's central bank - started to carry out monthly monitoring and guidance and quarterly evaluation on the activities of financial institutions in accordance with the CGFS's requirements. The overall requirement is to enhance the depth and scope of financial regulation. In terms of depth, financial regulators should monitor both the asset side and liability side. In terms of the scope, financial regulators should monitor both balance-sheet business and off-balance-sheet business. They should monitor not only the banking sector but the securities and insurance sectors as well.

In macroprudential management, countercyclical regulation is an important initiative. In summary, countercyclical regulation creates an internal restraint on capital - and thus assets - and an external constraint on the volume and prices of investment transactions such as bonds and stocks. When necessary, commercial bank investments in such fields must be returned.

For Chinese regulators, they should first assess the potential of systemic financial risks [12]. In this regard, countries follow different criteria. But in general, most countries will focus on risks from vicious inflation and asset bubbles. China's policy insiders believe that systemic financial risks in China mainly stemmed from the fact that financial institutions extensively engaged in unhealthy operations. In our view, systemic financial risks are risks that are inevitable for the entire financial system. They exist in financial institutions and financial market and are manifested in wild volatility and decrease of asset prices, including various product prices. Such risks are also embodied in the insolvency, liquidity shortfall and payment crisis of commercial banks, which may result in the bankruptcy of financial institutions and the collapse of the financial market.

Systemic financial risks primarily stem from the loss of control over the macroeconomic operation, government decision-making mistakes, as well as misinformation - which include both objective and subjective factors. Such risks cannot be eliminated by scattering investments. For this reason, they are also known as undiversifiable risks. They incur general losses to people whose assets depreciate and even become written off. Such risks are latent and cumulative: they are not perceived by most people in normal times, but once erupted, will become inevitable.

China's stock market crash of 2015 also arose from systemic financial risks. During the crash, the stock markets plummeted across the board, leaving investors unable to purchase other stocks that could maintain share value. Tremendous losses were suffered by institutional and individual investors. Apart from mistakes in government decisions and manipulation, regulatory practices that China aggressively learned from Western countries that were not appropriate for its national conditions also contributed to the market crash. We need to reflect upon one question: who made the decision to allow bank credit funds to be invested in the stock market? Back then, most securities companies could offer margin trading business, allowing investors to

borrow funds equal to or several times higher than their own capital. Investments with borrowed funds led to an upsurge in China's stock markets. In other words, over-leveraging led to systemic financial risks [13]. We must draw lessons from this setback.

Moreover, we should also analyze the mechanism of financial risks under China's socialist system. On October 10, 2016, the State Council issued a document *We Must Proactively and Steadily Reduce Corporate Leverage Ratio*. This document specifies seven policy measures, among which two were the most important, i.e. M&A and debt for equity swap. On debt for equity swap, this document stresses that: "market-based debt for equity swap is of great significance to stabilizing growth, promoting reforms, adjusting economic structure, and preventing risks." In my view, however, this initiative was intended to alleviate corporate interest burden and rescue a group of enterprises. Instead of absorbing the non-performing assets of banks, the debt for equity swap aimed to bail out some enterprises.

But which firms are to be rescued? The document made it clear: "enterprises with a good development outlook; enterprises with advanced technology and products in market demand and meeting environmental and safety standards; enterprises with good credit standing". But who is responsible to find out such firms? Although these firms are claimed to be picked by the market, in my view, the NDRC and SASAC also play a role. By taking a closer look, one might ask: If all these three criteria are satisfied, a company's balance sheet must look rather nice. Why is debt for equity swap necessary for such firms, whose interest burden should be tolerable? In this consideration, I am skeptical that "market-based" debt for equity swap will not be applied to "zombie companies" as the document claims. I do not believe that zombie companies will be fully banned from swapping debts for equities since there is always a human factor.

The document says that debt for equity swap should be carried out in accordance with laws and regulations. As far as I know, relevant laws and regulations include the *Civil Law*, *Company Law*, *Property Law*, and *Guarantee Law*. Under the *Civil Law*, investment-related equity rights and contractual creditor's rights are two different rights. There is a distinction between creditor's rights and equity rights. Creditor's rights are contractual rights, while equity rights are non-contractual rights. Creditors have the right to make enforceable claims, but equity holders do not. Liabilities arising from obligations increase corporate expenses and reduce their profits. The capital stock formed with equity increases corporate capital without reducing profits [14]. Obviously, creditor's rights and equity rights have different legal implications. From an economic perspective, therefore, debt for equity swap cannot lead to a win-win situation.

In 1999, China created four financial asset management companies for the disposal of non-performing assets of its banks worth trillions of yuan, which led to reductions in the indebtedness of enterprises and the NPL ratio of banks with limited fiscal input. This seems to be a desirable result. But what remains unclear is the amount of non-performing assets

that have been recovered by financial asset management companies. Were there any non-performing assets not recovered? What should be done with them? It is said that some non-performing assets have remained and become the central bank's negative assets. In the long run, such negative assets will be written off. In other words, the "debt for equity swap" would still incur losses, which are a disguised form of risk. Who shall bear the consequences of such risks? In fact, the consequences are borne by all taxpayers.

Through the above discussions, I would like to convey the following message: under China's socialist system, discussions on financial risks must take into account the fact that the way financial risks are formed in China is unique, and so are the manifestations, transfer, disposal and assumption of financial risks. Such uniqueness characterizes China's socialist financial risk mechanism.

Another important question is how to identify financial cycles under China's socialist system. The financial macroprudential management and "two-pillar policy regulation" are intended to prevent and weed out procyclical financial risks that have the potential to evolve into systemic risks. In its *Q3 Monetary Policy Execution Report* released in November 2017, China's central bank mentioned for the first time the concept of "financial cycles"[15]. This concept aroused academic discussions, in which some believed that monetary policy and macroprudential policy as two regulatory instruments could replace and reinforce each other. Further, they contended that "when a financial cycle approaches its apex, monetary policy needs to tighten a little bit, while macroprudential management also needs to be enhanced. When the financial cycle turns, housing price starts to adjust and credit growth slows, monetary policy should be relaxed with macroprudential management in place (see China Finance 40 Forum). Admittedly, expert opinions expressed on such forums are insightful. The question is how can we tell when China's financial cycle is approaching its apex or when the financial cycle starts to turn? We should not forget that China is a large developing country with uneven and inadequate development and will remain so in the foreseeable future. Under China's socialist system and the leadership of the Communist Party of China, economic cycles roughly coincide with political cycles. China keeps public ownership has the mainstay of its economy and allows various forms of ownership to develop side by side. While the market determines resource allocation, the government also plays a role in steering economic development. The apex and turning point of an economic cycle are usually manifested by economic bubbles and price volatility in a certain field - which are often supported by leverage and spurred by policymaking [16]. That is to say, such economic bubbles and price volatility contain human factor and may not have formed naturally. Take housing market regulation for instance, the government adopts a "one city, one policy" principle, which means that housing market policies are formulated by individual cities according to their own conditions. In such circumstances, housing price volatility or the existence of bubbles cannot serve as the basis for

determining whether the financial cycle has reached its apex or turning point. In other words, there may only be a regional apex and turning point of the financial cycle, which is impossible to reach a national apex and turning point. In a word, macroprudential management must take into account the uniqueness of China's socialist system in order to be targeted and effective.

It should be recognized that financial macroprudential management is a continuous process. Institutional framework for global financial governance is authoritative but may not be comprehensive [17]. A country must develop suitable economic and financial policies and build a firewall against financial risks. Policy-making must proceed from its immediate needs and focus on the priorities and entry points of risk prevention and countercyclical regulation. Given China's reality, financial regulators should implement macroprudential financial management without losing sight of micro-prudential financial management. In particular, they should strive to prevent cross-regional and cross-sectoral financial risks. They should eliminate government-to-enterprise and region-to-region risk contagions in explicit and implicit forms. They should observe, analyze and guide people's expectations to prevent and absorb financial risks. They should stabilize finance by enforcing proper management of people and money and implementing rules and regulations.

7. Whether the Central Bank's Regulation Creates Excess Liquidity: Qualitative and Quantitative Analysis

On February 15, 2019, China's central bank announced its January financial data, which indicates that China's Renminbi loans increased by 3.23 trillion yuan. Aggregate financing for the economy rose by 4.64 trillion yuan. Both indicators hit record highs. In terms of money supply, M2 balance amounted to 186.59 trillion yuan, up 8.4% year-on-year, and M1 balance stood at 54.56 trillion yuan, up 0.4% year-on-year. M0 balance grew by 8.75 trillion yuan, up 17.2%. These figures made people wonder: is a new round of monetary deluge underway?

The implication of a "monetary deluge" is that excessive money supply will drown the economy. The key question is how to determine whether increased money supply is needed in monetary circulation?

7.1. In Terms of Stock, We Should Look at Whether M1 Growth Is Consistent with GDP Growth

Based on our estimate, China's money supply M1 during the decade from 1992 to 2012 was more closely related to its GDP. M1 is money with purchasing power in circulation, and GDP growth is the newly increased value of total output, which can only be realized through purchase. (see Zeng Kanglin's "Research on China's Phenomenal Growth Requires Innovative Thinking", *Finance & Trade Economics*, Vol. 2, 2014). Money after M2-M1 is quasi-money, which is

not in circulation. Growth of quasi-money was eight percentage points higher than M1 growth, which indicates that as people's deposits increased, their consumption diminished on relative terms [18].

7.2. Structurally, We Also Need to Look at Whether Or Not the Channels of the Central Bank's Base Money Issuance Are Restricted

The central bank issues base money mainly through such channels as the medium-term lending facility (MLF), the targeted medium-term lending facility (TMLF), the standing lending facility (SLF), as well as the pledged supplementary lending (PSL). In practice, MLF is the main channel of base money supply, upon which commercial banks are inevitably dependent. In supplying money, therefore, the central bank should consider whether loans under SLF operations are recovered in a timely fashion (MLF maturities include three-month, six-month and one-year terms). In this manner, the central bank lending to commercial banks can be shortened or extended. In examining the SFL flow - rather than stock - for commercial banks, if SLF lending is targeted and one-on-one, there will not be excessive money supply. Of course, if SLF lending is not targeted and not recovered in time, there may be an excessive money supply. Among the central bank's monetary policy instruments, many are targeted. For instance, SLF must have designated trading parties and be operated by the central bank's subsidiaries and branches. Such operations will lead to additional money supply without causing excess liquidity. Financial macro-regulation instruments employed by China's central bank serve specific purposes, so that the channels for base money issuance are restrained and will not lead to a excess liquidity.

7.3. In terms of Economic Structure, We Need to Look at Which Sectors and Economic Elements Received the Monetary Capital to Support Their Development

General Secretary Xi Jinping stressed that "we should respect market laws", "offer targeted support", and "support private enterprises experiencing temporary difficulties provided that such enterprises meet the national industrial policy with primary business in the real economy and possess advanced technology and market potentials". From this perspective, we should look at the base money's issuance channels and monetary capital liquidity in the real economy. In other words, we should examine the monetary policy's transmission effect and the readiness of monetary capital.

7.4. We Should Examine the Status of Derivative Deposits

Through commercial bank operations, base money derives deposits, and the multiplier of derivative deposits should be the ratio between M0 (cash) and M1 in circulation, or the ratio between M0 and M2-M1-M0. While the deposits of commercial banks at the central bank are also base money, they do not derive deposits. The more deposits for settlement and positions commercial banks have at the central bank, the

more likely deposits will be derived. But to turn the possibility into reality, commercial banks must expand credit supply.

7.5. We Should Look at Where the Money Goes

Money funds from the derivative deposits either flow into the real economy or the virtual economy, e.g. purchase of negotiable securities, to form a monetary fund flow. Money funds that flow into the real economy may not always be good, and those that flow into the virtual economy may not necessarily be bad. Whether the flow of such monetary funds is good or bad depends on the purpose of their use.

Money in circulation is not entirely "fiat money" (the supply of base money by the central bank and the creation of derivative deposits by commercial banks are all carried out lawfully and generally referred to as "fiat money"). A significant portion of the money is created by financial and non-financial institutions, as represented by "digital currency". Digital currency is based on credit and reputation. Put simply, it is a digital quantification of rights and obligations by financial and non-financial institutions based on credit and reputation. Quantified relations of rights and obligations can replace "fiat money" and serve as money in circulation. In this manner, the central bank is not the sole actor that regulates the economy by adjusting base money and thus deriving deposits. In this sense, whether the central bank supplies liquidity and whether money supply leads to excess liquidity cannot be entirely attributed to its own operations.

With the implementation of the two-pillar regulation policy, the central bank assumes the roles of both macro-regulation and macroprudential supervision. Even if the central bank's money supply leads to excess liquidity, it still has the instruments to manage the risks and avoid unintended consequences.

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