Macroeconomic Effects of China's Financial Policies

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I. Introduction

Since the beginning of China's economic reforms in 1978, the Chinese economy has undergone three major phases. The first phase (1978-1997) marks an economy led by growth and reforms of state owned enterprises (SOEs). The economy in the second phase (1998-2015) was driven by investment in large and capital-intensive enterprises, which form what we call "the heavy sector." The heavy sector includes both SOEs and private owned enterprises (POEs). In recent years (2016-present), we have witnessed a transition to what the Chinese government calls "a new normal economy." All three phases have been shaped by particular government policies. In this chapter, we focus on macroeconomic effects of financial policies throughout these phases and provide *stylized facts* to substantiate our analysis.[2]

We define financial policies in China as *a set of credit policy, monetary policy, and regulatory policy*. Monetary policy in China has always aimed to control the money supply and aggregate credit, even until today. Credit policy in China plays an essential role in directing banks' credits to different sectors or firms. Such a policy consists of a number of administrative tools such as loan quotas and window guidance to limiting credits to specific sectors or industries. In the SOE-led economy, credit policy is crucial for achieving balanced growth between heavy and light sectors and between investment and consumption. For the investment-driven economy, monetary policy, coupled with credit policy, played a crucial role in promoting overall economic growth through investment in the heavy sector. Monetary policy was particularly potent in combating the 2008 financial crisis in the short run but with the cost of a high debt burden in the long run (measured by the debt-GDP ratio). Most of the stimulus was channeled to real estate and infrastructure, which formed a large portion of the heavy sector.

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[2] Most time series data used in this article and many other related data can be downloaded from https://www.frbatlanta.org/cqer/research/china-macroeconomy.aspx?panel=1 (the English version) or http://cmf.cafr.cn/ under 数据下载 (the Chinese version).

Since the massive monetary stimulus in 2009, the effectiveness of monetary policy has been eclipsed by the rise of shadow banking due to lax regulatory policy. In recent years since 2016, there have been improvements in coordination between monetary and regulatory policies within the framework of Macro Prudential Assessment (MPA). In particular, the Chinese government has placed a number of unifying rules on asset management across different financial sectors (i.e., across formal banking and shadow banking).

The impacts of China's financial policies work through transmission channels different from those in developed economies. Bank credits have always played a special role in promoting China's economic growth. And the government has always given preferential credits to certain firms or industries, although the preference has shifted through the three different phases.

In the SOE-led economy, bank credits were directed to SOEs in both heavy and light sectors. As a result, SOEs, especially those in the light sector (e.g. the textile industry), suffered from problems with excess capacity and overleverage. Most of these SOEs were small and medium-sized. In the late 1990s, reforms were focused on SOEs by reducing overcapacity of small and medium-sized SOEs. This movement is called in Chinese "Grasp the large and let go of the small." Reforms in the banking sector also focused on nonperforming loans to SOEs with overcapacity.

In the investment-driven economy, preferential credits were given to the heavy sector. During this phase, most industries in the heavy sector were favored by the Chinese government as part of the government's industrialization policy to promote the heavy sector. The asymmetric credit allocation in favor of the heavy sector was exacerbated during the stimulus period (2009-2010). The main consequence is overstock in the real estate, overcapacity in industries supporting the real estate, and overleverage in both real and financial sectors. Reforms in this economy, different from those in the SOE-led economy, focused on destocking the real estate, deleveraging overcapacity firms (e.g., steel, cement, and glass), and deleveraging the financial sector.

While these reforms continue in the new normal economy, China faces new challenges. In particular, financial reforms have unintended consequences. For example, financial deleveraging has reduced bank credits to nonbank financial institutions and thus shadow banking loans to POEs. At the same time, the default rates of POEs and therefore systemic risks have increased. SOEs in upstream industries, however, have continued to receive preferential credits and remain unproductive and monopolistic. Implicit guarantees by local governments to such zombie firms make difficult the deleveraging of corporate debts.

The rest of the chapter is organized as follows. In Section II, we provide the institutional background of China's financial policies. In Section III, we analyze the macroeconomic impacts of financial policies on the SOE-led economy, the investment-driven economy, and the new normal economy. Section IV concludes.

II. Institutional background of financial policies

Review of financial policies

As defined in the Introduction, China's financial policies consist of credit policy, monetary policy, and regulatory policy. We review the interactions of these policies in the context of their impacts on the macroeconomy.

Credit policy. Prior to 1978, China had long pursued a credit policy in favor of the heavy sector, which led to severely unbalanced developments between heavy and light sectors. In January 1980, the central government decided to develop the light sector to avoid a shortage of consumption goods. The emphasis was given to production of consumer durables to generate demands for the heavy sector. The light sector was granted "six priorities", including the priority of receiving bank loans. As a result, bank credits were reallocated to firms in the light sector, most of which were SOEs prior to 1998.

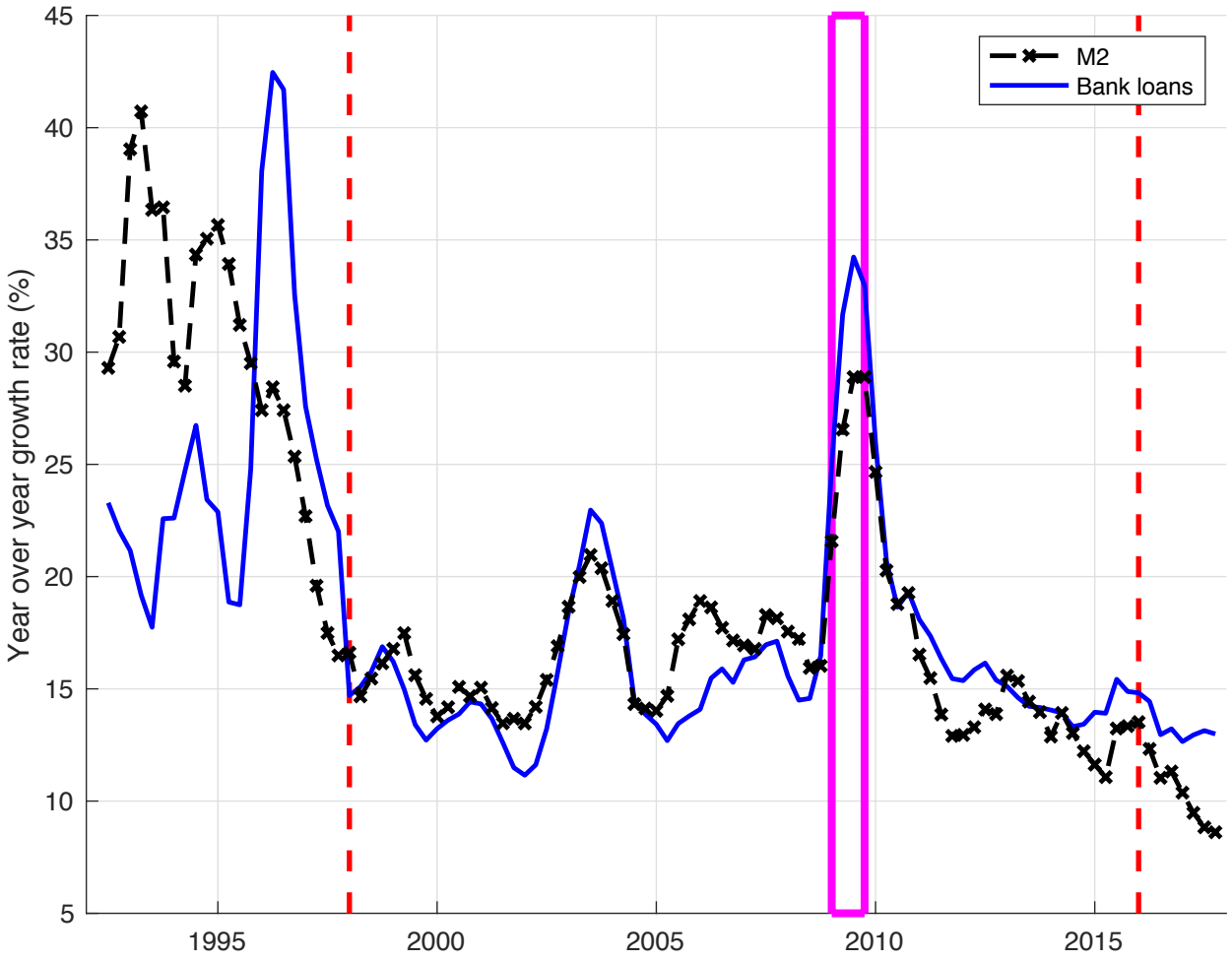

Figure 1. Year over year growth of M2 supply and bank loans. The pink box marks the 2009 stimulus period. The first vertical line divides the SOE-led economy and the investment-driven economy. The second vertical line divides the investment-driven economy and the new normal economy. Data source: Chen, Higgins, Waggoner, and Zha (2017).

From 1998 to 2017, the People's Bank of China (PBC) used an explicit target of growth rates of M2 supply as an effective way to control aggregate bank loans and promote an investment-driven economy. In this phase, credit policy, through window guidance and loan quotas, was also centralized to be in line with the growth of M2 supply. The PBC utilized window guidance to control the total volume of bank credits and to redirect loans to the targeted industries (e.g., real estate and infrastructure). Such loans were made regardless of prevailing interest rates. In line with M2 growth, the PBC planned the aggregate credit supply for the coming year at the end of each year and then negotiated with individual commercial banks to redirect credits to targeted industries when necessary during the coming year.

Monetary policy. Before 1984, the PBC was the only bank in China. In 1984, the PBC became the central bank and the central government established the banking system comprised of four specialized banks to make loans to firms in different industries: Bank of China, China Industrial and Commercial Bank of China, China Construction Bank, and Agricultural Bank of China. All these four banks were directly controlled by the government. The aggregate credit volume was chosen to be the intermediate target of monetary policy. But this target was seldom met because there was no *marketized* policy instrument to help achieve the target. Instead the mandatory administrative plan for credit quotas was implemented and local governments played an integral part in allocating these quotas to firms through local branches of the four state banks. The limited coordination among local governments made it impossible to control the aggregate volume of bank credits and the efficiency of their allocations. In 1998, targeting the aggregate credit volume as monetary policy was eventually abolished.

The ineffectiveness of monetary policy though administrative means made the PBC gradually switch to targeting M2 growth. Before 1993, the PBC directly controlled the bank credit supply and its allocations often at local levels. In 1993, for the first time, it announced to the public the index of monetary supply; in 1996, it began a transition to using the money supply as a target for monetary policy at the national level. In 1998 the PBC announced that M2 supply was the only policy target.

New marketized instruments were subsequently established to help achieve the targeted M2 growth. In May 1998, open market operations were initiated to serve as the main tool for the PBC to manage the money supply on a regular basis. In addition, the PBC used reserve requirements to adjust the banks' liquidity.[3] From then to the end of 2017, China adhered to this quantity-based monetary policy framework, especially during the entire period of the investment-driven economy.

Monetary policy during the period of the new normal economy has undergone a gradual transition from the quantity based framework to the interest-rate based framework. The discussion of this transition was initiated in the Thirteenth Five-Year Plan for "Economic and

[3] For example, in March 1998, the PBC reduced the required reserve ratio from 13% to 8% to increase the liquidity in the banking system.

Social Development" held in 2016. In addition to the discussion of monetary policy, the plan outlined a new normal economy that features financial reforms and a promotion of consumption growth to be supported by monetary policy. In 2018Q1, for the first time since 1998, the M2 growth target was no longer among the government's key economic objects.

Figure 1 shows the time series of year-over-year growth rates of M2 supply and aggregate bank credit. The rectangular bar (with pink edge) marks the 2009 monetary stimulus period (2009Q1-Q3) for Figure 1 as well as other graphs in the rest of this chapter.[4] There are two vertical lines. The first line marks the beginning of 1998 and the second line the beginning of 2016. These vertical lines are plotted in other graphs of this chapter. Clearly, the M2 supply and bank loans do not co-move in the SEO-led economy (the graph to the left of the first vertical line in Figure 1). In 1989-1991, the government used "macroeconomic regulations" to reduce the growth rates of both bank credits and M2 supply in order to cool down the overheated economy generated during 1987-1988.[5] As a result, GDP growth in 1989-1991 was at the lowest point in the SOE-led economy (see Section III for further discussions).[6] To prevent GDP growth from declining further, the central government reversed its macroeconomic policy by expanding bank credits through a rapid increase of M2 growth in 1992 as well as during the first half of 1993. This credit expansion filled the gap between insufficient household deposits and firms' strong demands for credits when the deposit rate was administratively fixed at a low level (Chapter 8, Lin 2013). Because the government did not set a target on the growth of monetary aggregates, M2 growth overshot in 1992-1995 during the process of supporting credit expansions across regions in the country. Consequently, the overshooting of M2 supply led to an unprecedented rise of inflation.

The series of these zigzag policies was one of the main reasons for the government to change its monetary policy in the late 1990s by targeting the M2 supply explicitly with development of various marketized tools to make the target credible. As a direct result of targeting M2 growth mandated by the central government, the M2 supply and bank loans co-move in the investment-driven phase (see the graph between the two vertical lines in Figure 1), implying that monetary policy was effective in controlling aggregate bank loans. During this phase, two sets of tools were developed to meet the M2 growth target and control the growth of bank loans. The first set, including the benchmark reserve requirement ratio and open market operations, was used to meet the M2 growth target. The second set, including differential reserve requirements for different commercial banks, credit quotas (implicit or explicit), and window guidance, was used to keep growth of bank loans in line with growth of M2 supply.

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[4] Chen, Higgins, Waggoner and Zha (2017) identify monetary stimulus as monetary policy switching to a more aggressive regime to combat the fall of GDP growth below its official target.

[5] In November 1989, the Fifth Plenary Session of the Thirteenth Central Committee of the Communist Party passed the "*Decision of the Central Committee of Communist Party of China to Further Govern, Reorganize, and Deepen Reforms.*" This decision was a starting point of the next three-year macroeconomic regulation.

[6] There is no official data for the M2 supply prior to 1992 but the time series of aggregate bank credit can be found in Chen and Zha (2018).

But this effectiveness was eclipsed by the rise of shadow banking activities in the aftermath of the 2008 financial crisis (Chen, Ren, and Zha, forthcoming). In the third phase (the new normal economy), the small divergence between M2 growth and bank-loan growth (the graph to the right of the second vertical line in Figure 1) is driven mostly by reduction of bank credits to non-banking financial companies (NFCs), which, in turn, reduced their bank deposits through the financial deleveraging. Bank loans to the real economy, however, remained stable during this period.

Regulatory policy. Regulatory policy also went through the three phases. In the first phase in which the state banks were fully owned and managed by the government, administrative tools were used to control bank credit advancements while the system for regulation and supervision on NFCs was immature and loose.

In the second phase, the loan-to-deposit ratio (LDR) regulation became one of the most important components of regulatory policy; it requires a commercial bank to keep the ratio of its loans to its deposits under 75%. The LDR regulation was established in 1994, but it was not credibly enforced until the late 2000s. The second most important component of regulatory policy is the restriction of advancement of bank credits to certain risky industries, which is often called in Chinese the "safe loan regulation." In 2006, the State Council, concerned with China's real estate and many overcapacity industries, issued a notice to accelerate the restructuring process of these risky industries. In 2010, the PBC and Chinese Banking Regulatory Commission (CBRC) jointly issued another notice to reinforce the 2006 notice issued by the State Council, making it operational to prohibit commercial banks from originating new bank loans to these industries. Although these regulatory actions prevented newly originated traditional bank loans from flowing to the risky industries, lax regulatory policy on shadow banking activities, combined with monetary policy tightening after the massive 2009 monetary stimulus, created the shadow banking boom and dampened the effectiveness of monetary policy in affecting the aggregate bank credit as a sum of traditional and shadow banking credits.

To achieve financial stability, deleveraging has become a priority for the financial policies in the third phase. In December 2016, deleveraging corporate debts was a major discussion for the Central Economic Work Conference. In March 2017, the Report on the Work of the Government (RWG) made it a priority to deleverage overcapacity firms that supported the real estate. In July 2017, the National Financial Work Conference reiterated this priority. In December 2017, the RWG no longer specified the M2 growth target for 2018, marking a gradual transition from quantity based monetary policy to interest-rate based monetary policy. In April 2018, the first meeting of the Central Financial Commission emphasized the importance of deleveraging zombie firms associated with local government debts.

Since 2016, the central government has adopted the MPA System to ensure the financial stability and a cooperation between monetary and regulatory policies. Put in place were various regulations on specific banking assets and liabilities (e.g. interbank CDs) and on shadow banking products (e.g. entrusted loans and wealth management products). More important are a number

of unifying rules enacted by the government on asset management across different financial sectors (i.e., across formal banking and shadow banking).[7]

The nexus between GDP growth and financial policies

The SOE-led economy. In 1978, economic reforms with the so-called "opening-up policy" were initiated by the Third Plenary Session of the Eleventh Central Committee of the Communist Party. In 1984, decentralization took place, giving the local governments a stronger managerial power. In 1987, economic development was the central theme as well as the bottom line of the Thirteenth Central Committee of the Communist Party. In 1992, Deng Xiaoping advanced further economic reforms throughout the country. In 1994, the government implemented tax reforms with the tax sharing system.

The year 1984 was a pivotal point for GDP growth. Since then, promoting local GDP growth has become the major task of local government officials as their performance has always been based on local economic grow.[8] In 1984, the external financing of SOEs switched from direct fiscal appropriations to indirect bank loans. Credit policy aimed at promoting growth of SOEs in each province, city, and district. By relaxing credit quotas on state banks, the government used administrative tools to control credit advancements to SOEs and helped close, restructure, or merge small and medium-sized SOEs that experienced large profit losses. Since SOEs were prevalent in every industry (in both heavy and light sectors), such credit policy influenced investment and consumption simultaneously.

The central government's plan for controlling the aggregate credit volume was compromised by local governments' actions. Local governments often directed local branches of state banks to advance credits to SOEs beyond their quotas (the soft budget constraints). Pressures exerted by local governments on local branches of state banks to increase credits to local SOEs resulted in pressures from local branches on their headquarters to loosen credit quotas, which in turn forced the PBC to eventually raise the aggregate credit volume and money supply (this is called the "reverse loan quota transmission" or 倒逼机制 (Dao Bi Ji Zhi) in Chinese).

Apart from banking lending, Brandt and Zhu (2007) show that during this phase, NFCs, including the rural credit cooperatives, urban credit cooperatives, and trust and investment corporations, emerged to be important sources of financing. Unlike state banks, NFCs were usually controlled or owned by local cooperatives and their lending largely fell outside of the government's credit plan. Lending from NFCs contributed 20-25% to the total source of funds.

[7] In April 2018, PBC and CBRC issued the joint notice "*Guiding Opinions on Regulating Asset Management Business of Financial Institutions*" to forbid the practice of guaranteed redemption of asset management plans.

[8] Zhou (2007) calls such an incentive system for local governments the "promotion tournament." He argues that the promotion tournament is the key source of China's miraculous growth.

The investment-driven economy. In this phase, the central government laid out multiple policy objectives, including (real) GDP growth, inflation, employment, foreign exchange rate, social stability, and environment. Out of these objectives, only two economic targets are of primary importance: GDP growth and consumer price index (CPI) inflation. Since 1988, the GDP growth target has been specified in the State Council's Report on the Work of Government (RWG). This is the overriding objective among all policy objectives. From 1999 to 2017, the M2 growth target was also specified in the RWG, along with the GDP growth target. The PBC is not an independent institution in making monetary policy. The State Council and other government units exerted considerable and often dominant influences on the official target of M2 growth.

Chen, Ren and Zha (Forthcoming) develop and estimate a quantity-based monetary policy rule based on China's institutional facts. Under this rule, monetary policy endogenously switches between two regimes, according to whether actual GDP growth is above or below the targeted GDP growth. In the normal situation where GDP growth is above the target, M2 growth responds positively to the gap between actual and targeted GDP growth rates. By contrast, in a shortfall state where the actual GDP growth is below the targeted GDP growth, monetary policy takes an unusually aggressive response to stem the shortfall to meet the GDP growth target.

For the most part, quantity-based monetary policy in the investment-driven economy followed its systematic response to output and inflation targets (the graph between the two vertical lines in Figure 2). We compute *counterfactual* paths of M2 growth and its endogenous component in the period of the SOE-led economy. These counterfactual paths, shown in the graph to the left of the first vertical line in Figure 2, reveal that in contrast to the investment-driven economy, monetary policy in the SOE-led economy would not have followed its systematic rule had it been implemented in this period. These results confirm that without appropriate marketized tools as in the SOE-led economy it would be difficult to control either M2 or the aggregate credit volume.

Unlike in the SOE-led economy in which the government provided credits to SOEs across both heavy and light sectors, most of preferential credits in this phase were channeled to the heavy sector in order to stimulate investment as a way to meet the overriding GDP growth target. The heavy sector includes both SOEs and large POEs that are capital intensive. The government's objective of targeting GDP growth is asymmetric: the GDP growth target has been a lower bound for growth. Monetary policy was carried out to support GDP growth and at the same time control CPI inflation through effective ways of influencing bank loans (see various monetary policy reports (MPRs). This is one of the main features in the investment-driven economy.

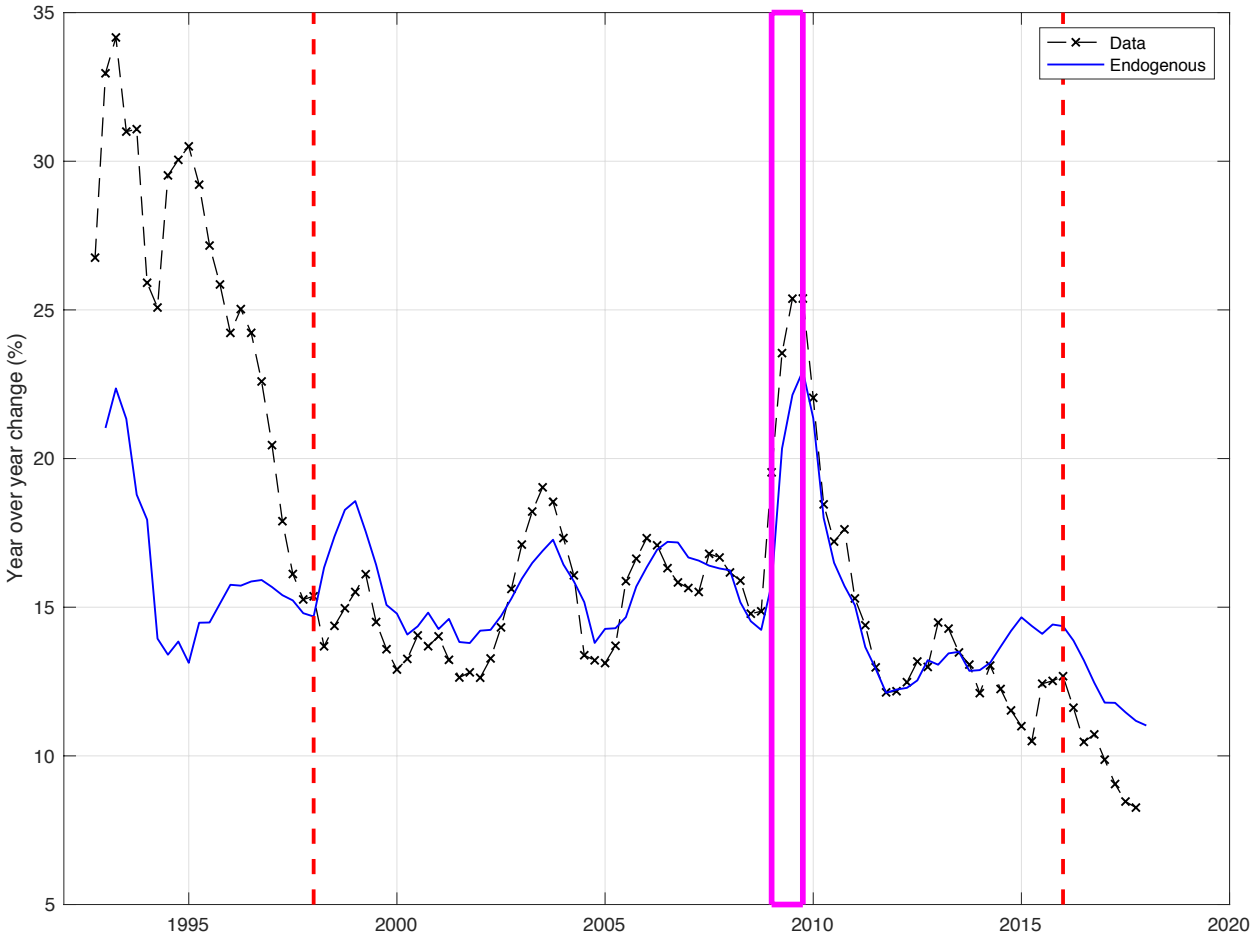

Figure 2. M2 growth and its systematic component. Data source: Chen, Ren and Zha (Forthcoming).

The new normal economy. In recent years, Chinese central government strived to achieve a balance between GDP growth and the financial stability. The Central Economic Work Conference held in December 2014 declared for the first time that the Chinese economy entered the "new normal stage." The 2015 RWG listed the dual objective: maintaining a healthy rate of growth while moving towards a sustainable level of development. The Central Economic Work Conference held in December 2015 called for ``structural reforms on the supply side," which include deleveraging debts, reducing overcapacity, and destocking the real estate.

This effort shows up as negative monetary policy shocks since 2014 (Figure 2). According to the monetary policy rule since 1998, GDP growth lower than the target in this episode would demand higher M2 growth (shown as the endogenous component in Figure 2). Considerations of accumulated debts due to the monetary stimulus and the financial stability in general, however, induced the government to lower M2 growth at the sacrifice of GDP growth. These considerations and their effects, which are abstracted from our monetary policy rule, are captured as negative monetary policy shocks (i.e., the difference between the solid and the dashed-x lines to the right of the second vertical line in Figure 2).

III. Macroeconomic Effects of Financial Policies

We now analyze the effects of financial policies on the macroeconomy. As Figure 3 shows, GDP growth experienced expansion and slowdown in both SOE-led economy and investment-driven economies. And financial policies affected both trends and cycles of China's macroeconomy. In this section, we first document key patterns of trend and cycle for each economy and then analyze the role of financial policies in driving the trends and cycles.

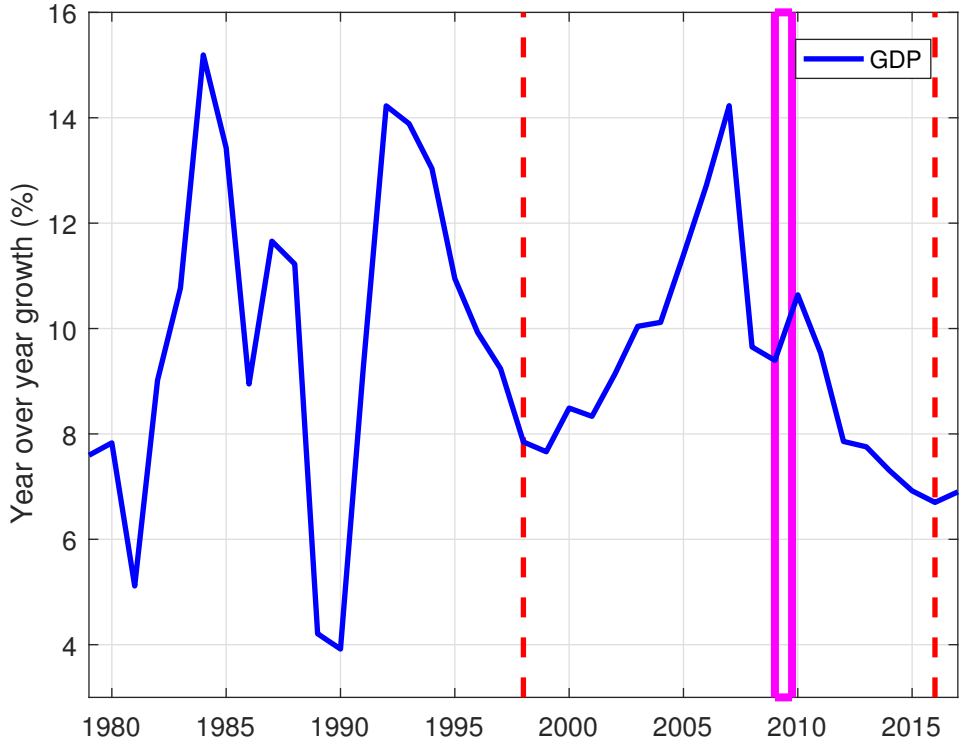

Figure 3. GDP growth (annual data). Data source: CEIC.

Effects of financial policies on the SOE-led economy (1978-1997)

In the SOE-led economy, SOEs permeated through the whole economy, including all the industries and across the light and heavy sectors. Monetary policy was the main financial policy in allocating credit quotas to the banking system that channeled most of its loans to SOEs. Credit policy as another financial policy played an indispensable role for firms in both heavy and light sectors to receive bank credits. Bank loans to various SOEs include long-term as well as short-term loans.

The role of credit policy in the SOE-led economy is summarized by Figure 4. State banks provided credits to SOEs in both heavy and light sectors. This is the most important aspect of credit policy in this economy. Under the central government's pro-growth policy and local government's GDP growth tournament, SOEs in both sectors obtained implicit government guarantees of their bank

credits. With these financial guarantees, state banks were willing to advance credits to SOEs in both sectors and across all industries.

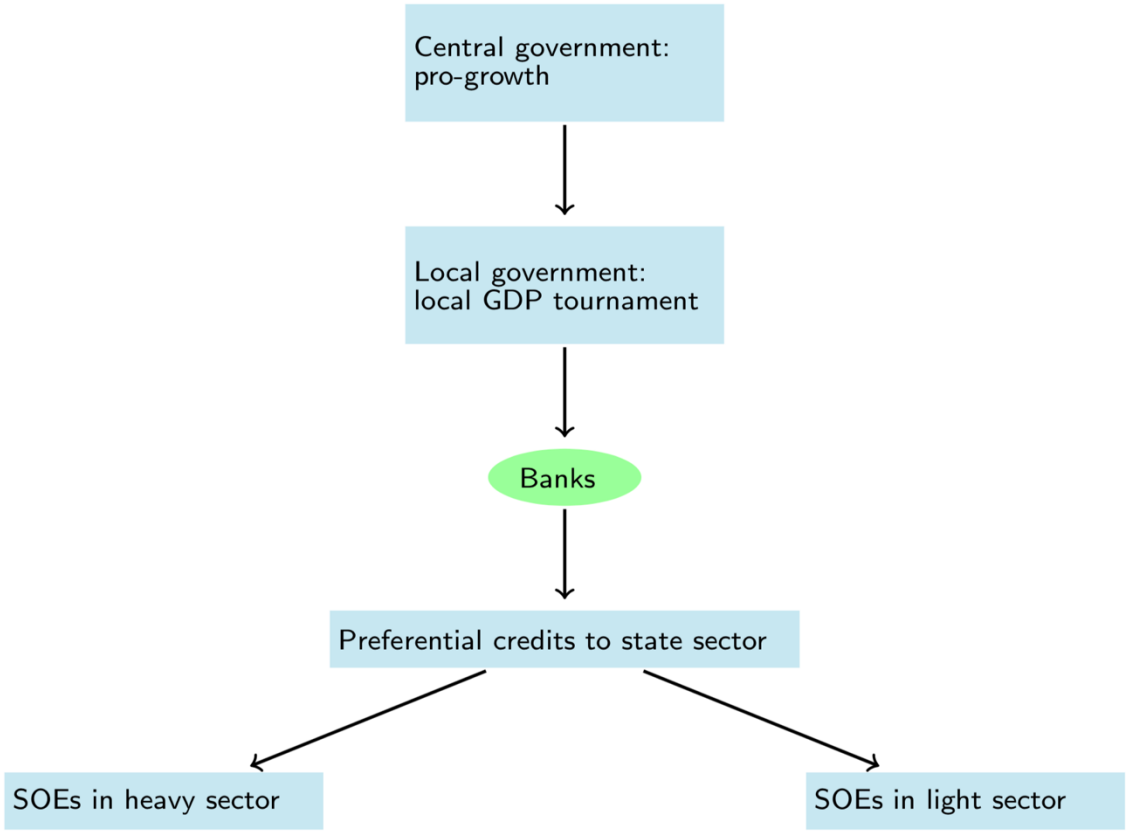

Figure 4. Role of credit policy in the SOE-led economy.

Credit policy was essential to promoting both investment and consumption for the 1978-1997 phase. Since the data on consumption are fragmentary, we focus on an analysis of investment with the understanding that consumption and investment comoved in this phase. Figure 5 shows that FAI and bank loans to FAI moved hand in hand. Throughout the 1978-1997 period, the share of SOEs in FAI remained high (Figure 6) and the share of SOEs in credit allocations to investment also remained at a very high level (Figure 7). According to Brandt and Zhu (2007), in most years during this phase, 80-85% of total credits were extended to SOEs through state banks in the form of either working capital or fixed investment loans. This observation reflected the central government's commitment to workers and job growth in SOEs while fiscal resources in local governments declined. The shares of SOEs in FAI and its loan volume were much higher in the period prior to 1998 than in the post-1997 period. High shares imply that SOEs, which enjoyed preferential bank credits, are a driving force of the aggregate investment fluctuation.

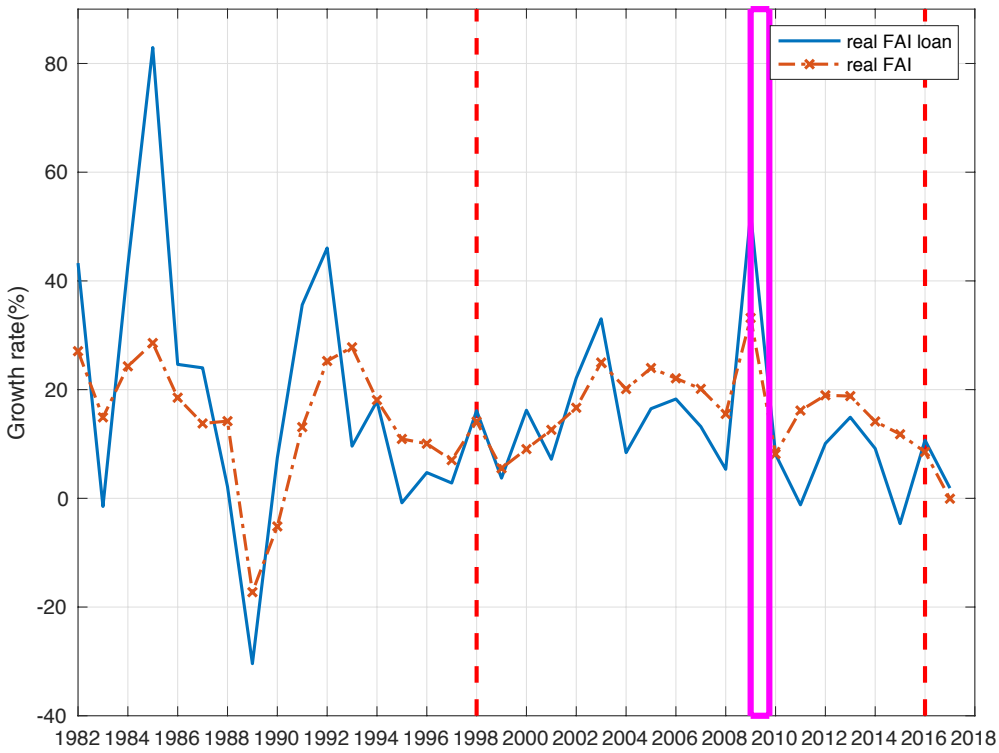

Figure 5. Year-over-year growth rates of FAI and bank loans to FAI. Data source: Chen and Zha (2018).

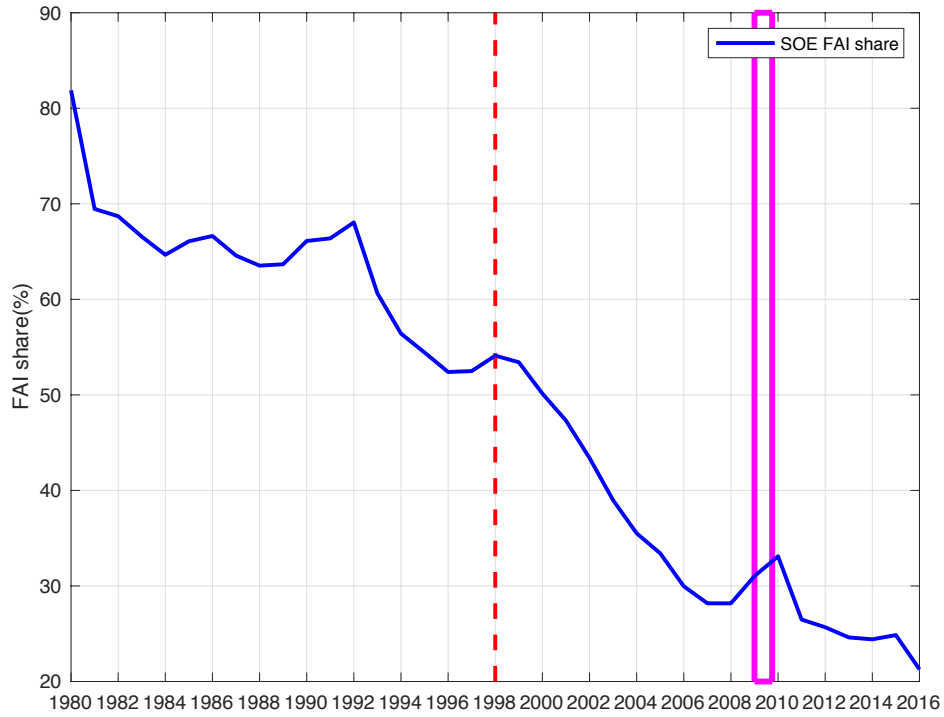

Figure 6. Share of SOEs in FAI (compiled from the aggregate data). Data source: Chen and Zha (2018).

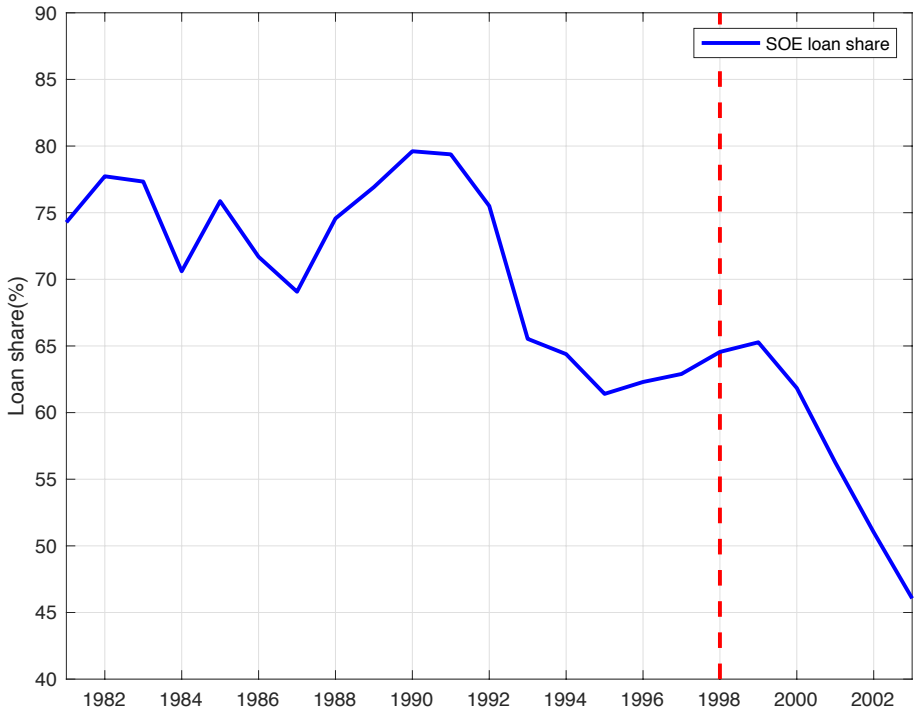

Figure 7. Share of SOEs in bank loans to investment. This series was discontinued by China's National Bureau of Statistics. Data source: Chen and Zha (2018).

Despite the lack of sectoral loan data in this phase, credit allocations to the heavy and light sectors can be inferred from the ratio of medium- and long-term (MLT) loans to total loans outstanding. The light sector demands more working capital loans (short-term) to pay the wage bills than the heavy sector, while the heavy sector demands more MLT loans for capital investment than the light sector. The ratio of MTL loans to total loans is available from 1994Q1. Figure 8 shows that there was no secular trend for this ratio prior to 1998, in contrast to the trend of a steady increase since 1998.[9]

[9]Using the annual data from the cash flow table that dates back to 1992, Chen and Zha (2018) find that the ratio of MLT loans to total domestic bank loans remained stable between 0.2 and 0.31 during the phase of the SOE-led economy.

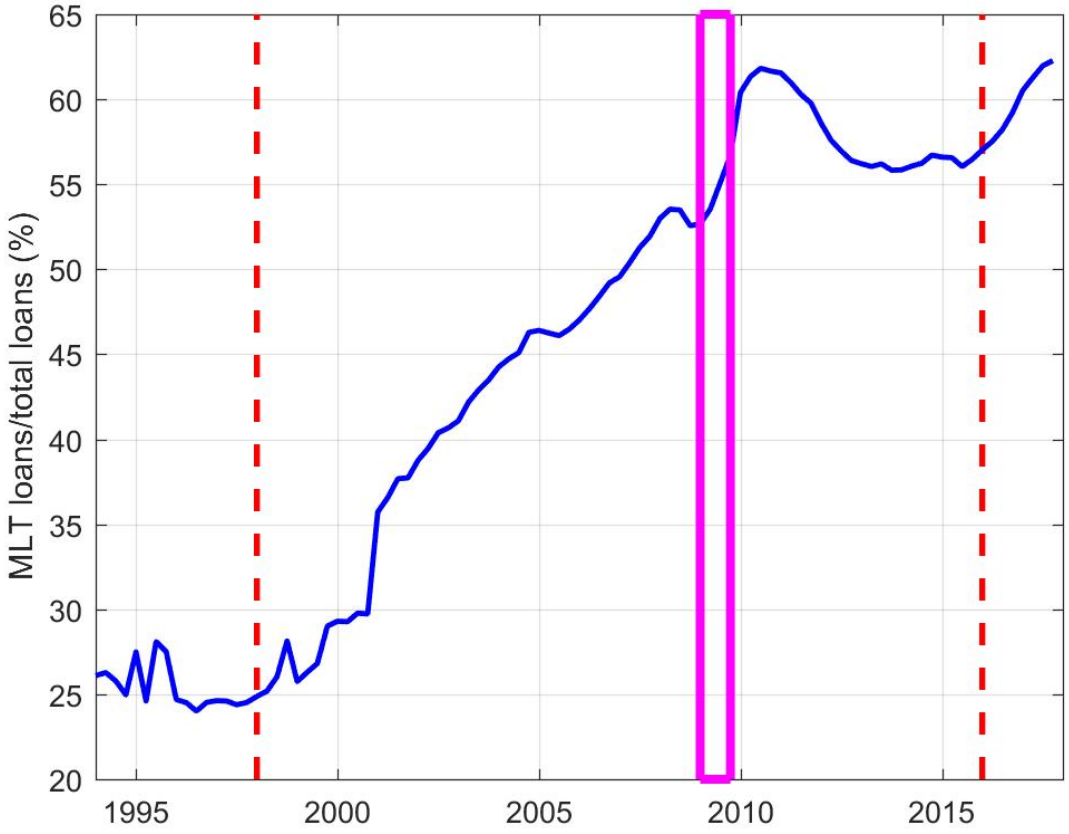

Figure 8. Share of medium and long term (MLT) loans in total bank loans outstanding. Data source: CEIC and authors' calculation.

Credit policy in the SOE-led economy had two notable effects on the Chinese economy. First, the fluctuation of (real) GDP was driven by the fluctuations of both investment and consumption (the graphs to the left of the first vertical line in Figure 9). Second, the correlation between investment and consumption growth rates during 1978-1997 is as high as 0.80 and this correlation is statistically significant. Table 1 reports this correlation along with its p-value based on the HP-filtered log annual series. In contrast to the investment-driven economy, as we discuss later, the investment-to-output ratio was stationary during this episode but at the same time very volatile (Figure 10).

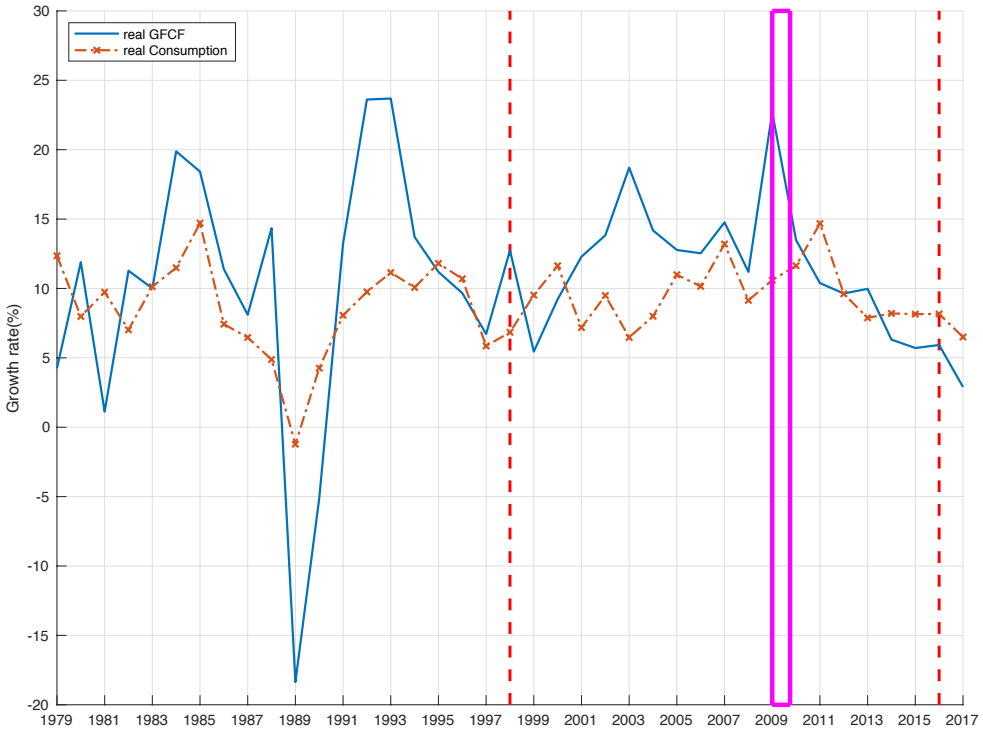

Figure 9. Year-over-year growth of aggregate investment and household consumption. Aggregate investment is measured by gross fixed capital formation (GFCF). Data source: Chen and Zha (2018).

Table 1. Correlation between household consumption and aggregate investment based on HP-filtered log annual series. Each series is deflated by its own price index.

	1979-1997	1998-2015
Correlation	0.8062	-0.3500
p-value	0.0	0.1545

Other important facts of the SOE-led economy are the stationary ratio of gross output in the heavy sector to that in the light sector (Figure 11) and the stationary ratio of gross fixed assets in the heavy sector to those in the light sector (Figure 12). These observations were an outcome of credit policy in the SOE-led economy that was engineered to support SOEs across all sectors, not just the heavy sector. For instance, a large quantity of bank credits were channeled to the industries producing consumer durables. Many bank credits were allocated to SOEs producing watches, bicycles, and sewing machines in 1978-1982, color televisions and refrigerators in 1983-1988, and automobiles in 1992-1997. Thus, we observe one prominent feature of the SOE-led economy: investment and consumption co-move. As a result, the labor share of income was also stable prior to 1998 (Figure 13).

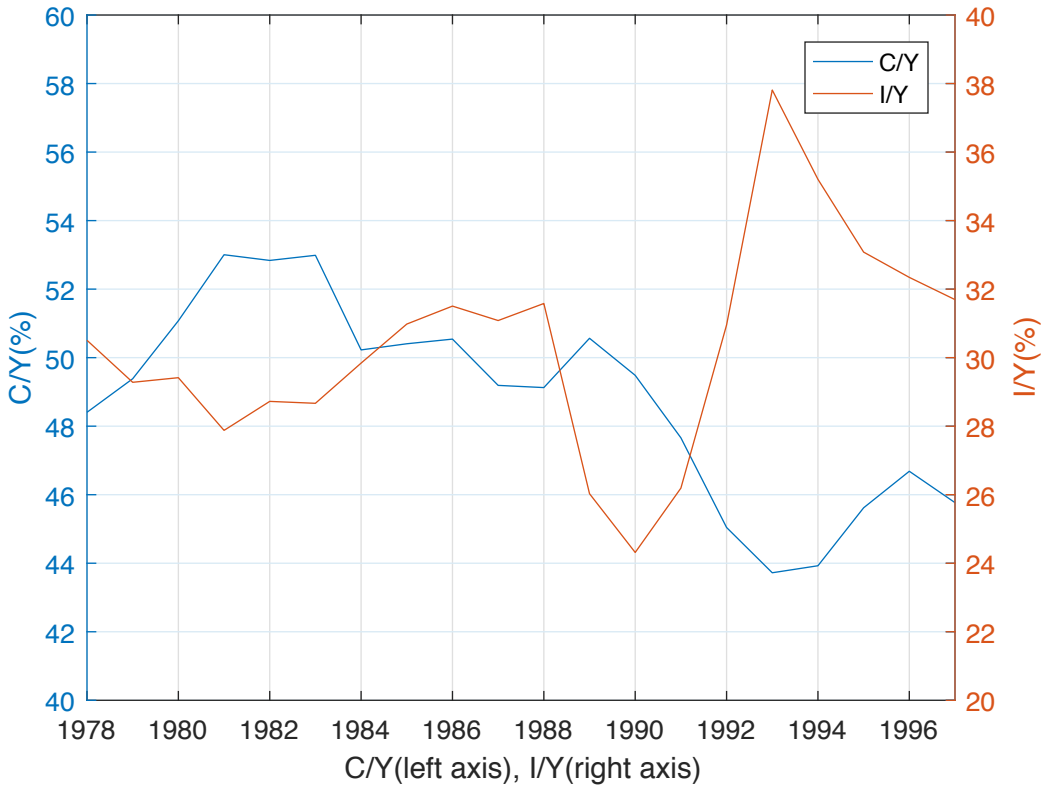

Figure 10. Ratios of investment and consumption to GDP. The symbol "C" represents household consumption, "I" gross fixed capital formation, and "Y" GDP. Data source: Chen and Zha (2018).

The observation that credit policy fueled the demand for both investment and consumption in the 1978-1997 phase is also supported by the pattern of fluctuations for the two measures of inflation rate, as shown by Figure 14 and by their summary statistics reported in Table 2. According to Table 2, the PPI volatility was similar in magnitude to the CPI volatility in 1978-1997.

Table 2. Standard deviations of CPI and PPI inflation rates

	1978-1997	1998-2015
CPI inflation	0.0618	0.0202
PPI inflation	0.0695	0.0397
Difference	0.0077	0.0195
(p-value)	(0.6235)	(0.0083)

There was, however, one important difference between the heavy and light sectors in the SOE-led economy. SOEs in the light sector were typically small and medium-sized (e.g., firms in the textile industry). As small SOEs were less productive than large SOEs, reforms on SOEs during the period of the SOE-led economy emphasized the task of ``grasping the large and let go of the small" to reduce excess capacity problems in small and medium-sized SOEs. These reforms led to a birth

of many productive POEs in the light sector during the phase governed by the investment-driven economy.

The trends and cycles in the SOE-led economy are summarized as follows.

- Trends:
  - (T1) Stationary investment-output ratio.
  - (T2) Stationary labor share of income.
  - (T3) High shares of SOEs in FAI and in bank loans to investment.
  - (T4) Stable ratio of gross output (measured by the ratio of sales revenues) in the heavy sector to that in the light sector and stationary ratio of the capital stock (measured by gross fixed assets) in the heavy sector to that in the light sector.

- Cycles:
  - (C1) Aggregate investment and household consumption tended to co-move.
  - (C2) Booms and busts of investment and its credits were driven mainly by SOEs.
    (C3) The volatility of produce price index (PPI) inflation had a magnitude similar to the volatility of CPI inflation.

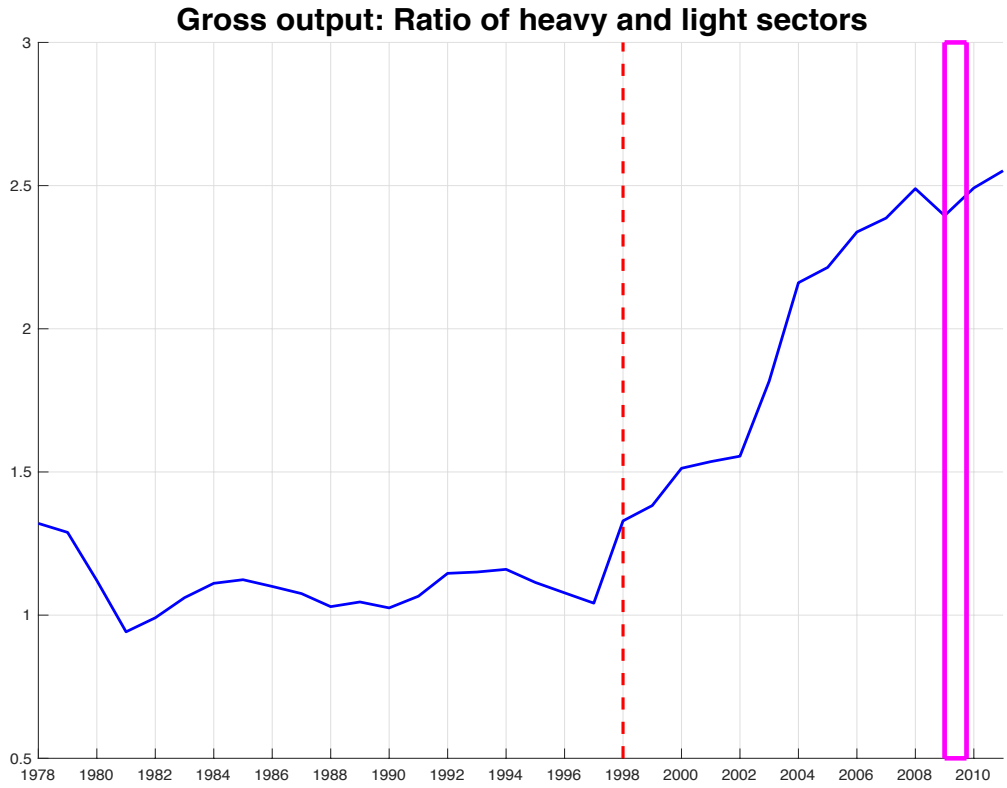

Figure 11. Ratio of gross output in the heavy sector to that in the light sector. Data source: Chen and Zha (2018).

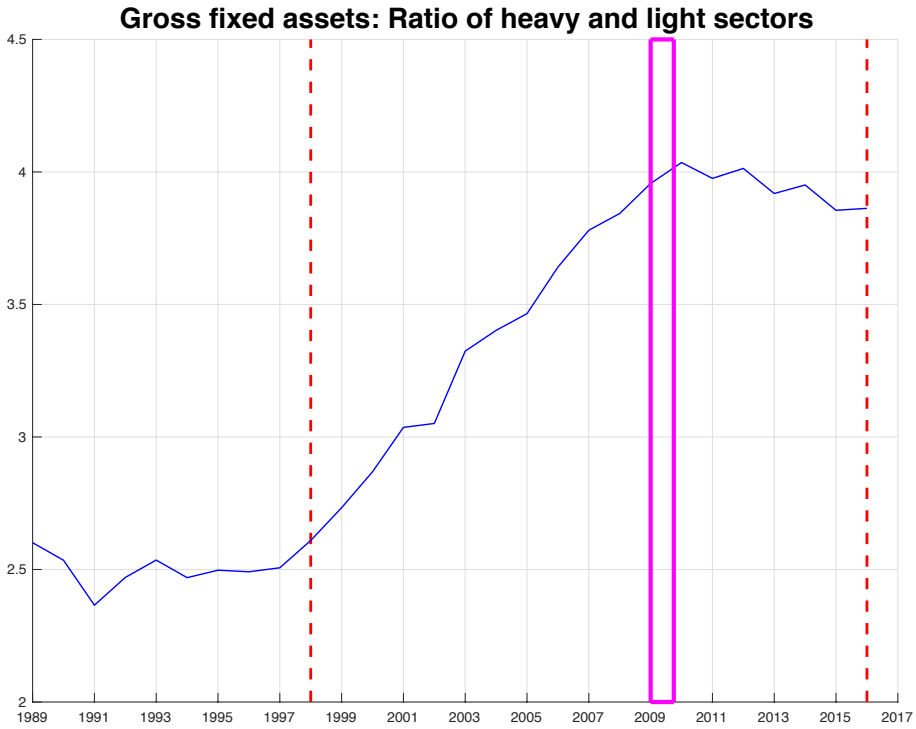

Figure 12. Ratio of gross fixed assets in the heavy sector to that in the light sector. Data source: Chen and Zha (2018).

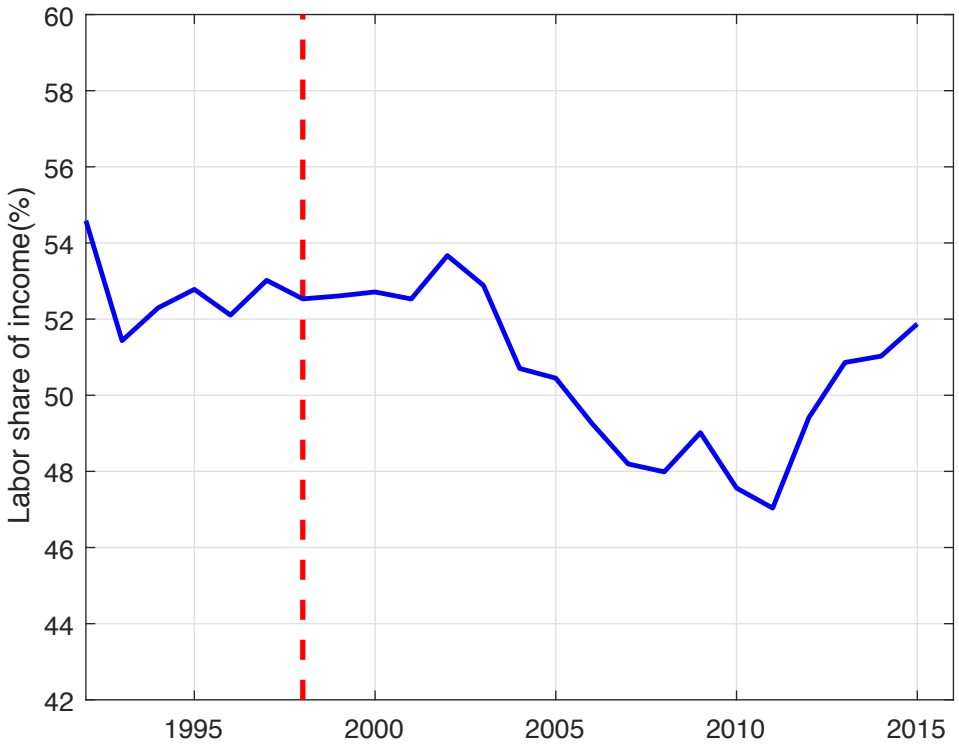

Figure 13. Share of labor income in GDP. Data source: CEIC and Chang, Chen, Waggoner and Zha (2016)

These trend and cycle patterns observed in the data for the SOE-led economy can be explained by the theoretical framework of Chen and Zha (2018). The economy contains two sectors, heavy and light, differentiated by the capital intensity. The crucial model ingredient is that the government 's implicit guarantees to SOEs, represented by its net worth, are symmetric across both light and heavy sectors. SOEs in the heavy sector do not face the borrowing constraint because the banks are not commercialized and as part of the government are willing to make intertemporal (long-term) investment loans without conditions. Loans to SOEs in the light sector are of short term to fund working capital for paying labor wages and other factor inputs. Such loans are harder to be fully pledged than investment loans to the heavy sector. Thus, the light sector faces the binding collateral constraint governed by a fraction of their assets. As the government net worth increases, the collateral constraint of the light sector is relaxed, which increases its factor demand. This, in turn, increases the demand for capital investment of the heavy sector due to the imperfect substitutability between these two sectors. Accordingly, the ratio of gross output in the heavy sector to that in the light sector was stationary.

Effects of financial policies on the investment-driven economy (1998-2015)

The period 1998-2015 marks an economy *qualitatively different* from the SOE-led economy. The most conspicuous difference was a change from the government's direct credit control policy to explicitly targeting growth of M2 supply as an effective way to control aggregate bank loans. Such monetary policy was designed to provide adequate and accurate liquidity to the banking system to support investment in the heavy sector, which includes both large SOEs and large POEs. Consequently, the share of SOEs in FAI declined steadily in 1998-2015 until it hovered below 20% (Figure 6). Since monetary policy was used to support investment in the heavy sector, the share of SOEs in total bank loans to investment declined steadily after 1998 (Figure 7).

The most striking facet of the investment-driven economy is that GDP growth was driven mostly by investment (so-called capital deepening). To illustrate this feature, we calculate growth decompositions from the following production function:

$$\mathrm{Y_t} = \mathrm{TFP_t}\, \mathrm{K_t^{\alpha}}\, \mathrm{N_t^{1-\alpha}}\,,$$

where Y represents output, TFP total factor productivity, K capital, N labor (employed workers), and α the share of capital income in total income. The decomposition of growth per worker is

$$\Delta \log \frac{\mathrm{Y_t}}{\mathrm{N_t}} = \Delta \log \mathrm{TFP_t} + \alpha\, \Delta \log \frac{\mathrm{K_t}}{\mathrm{N_t}}\,,$$

where the second term on the right-hand side of the equation represents the contribution from capital intensity (capital per worker) or investment.[10]

[10] The U.S. Bureau of Labor Statistics labels K/N "capital intensity". It is often defined as "the ratio of capital services to hours worked in the production process" (see chart 2 on page 2 and page 10 of https://www.bls.gov/news.release/pdf/prod3.pdf). We use employment instead of hours because of the lack of the Chinese data on hours.

Tables 3 and 4 report the growth accounting according to the above decomposition formula. The computation uses the value of the capital share set at 0.5 as in the literature. For the approach of Bai, Hsieh, and Qian (2006), the data of gross fixed capital formation for ``structures and buildings'' and ``machinery and equipment'' goes back only to 1981. The investment price data for these two categories goes back only to 1990. The values reported under the column with the heading 1978-1997 in Table 4, marked by the symbol *, are for the period 1990-1997. For 2017, the approach of Bai, Hsieh, and Qian (2006) requires gross investment price inflation in 2018 to be available, which we do not have at the time of writing a draft of this chapter.

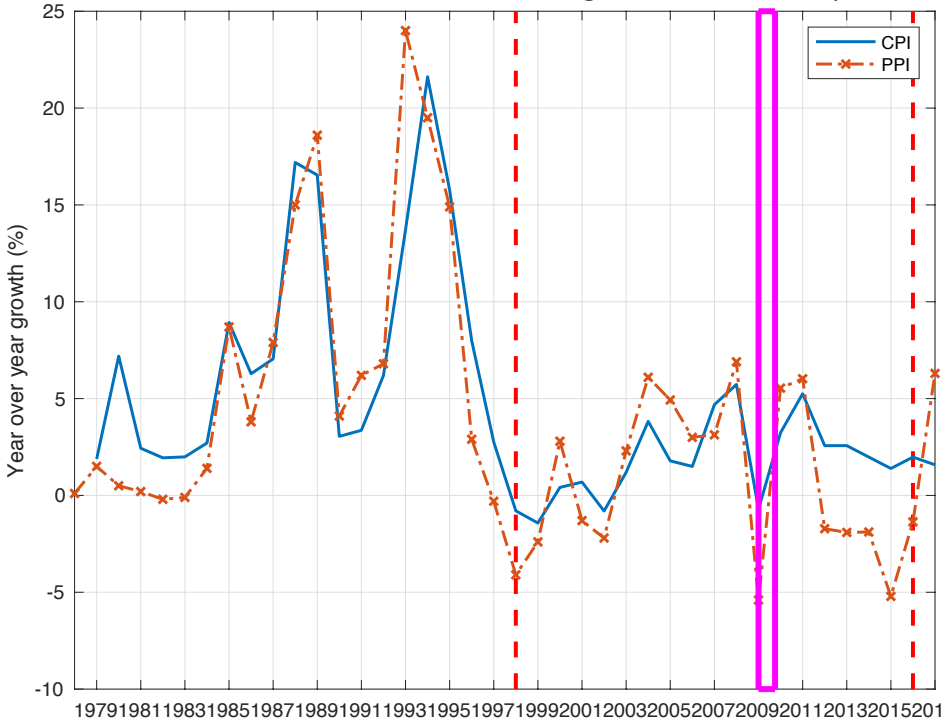

Figure 14. Inflation rates of PPI and CPI. Data source: CEIC and authors' calculation.

Both tables show that TFP contributed most to the growth of GDP per worker in the SOE-led economy, but investment played a dominant role in driving GDP growth in the investment-driven economy. This finding is consistent with an independent study by Lagakos (2018). As a result, we see that the ratio of investment to GDP has increased steadily since 1998 (Figure 15).

Table 3. Growth accounting according to Long and Herrera (2016)

Growth (%)	1978-1997	1998-2015	2016	2017
GDP per worker	6.67	8.36	6.26	6.55
Due to capital intensity	2.89	5.71	4.55	4.11
Due to TFP	3.78	2.65	1.71	2.45
Contribution by investment	43.4	68.3	72.7	62.7

Data source: Chen and Zha (2018)

Table 4. Growth accounting according to Bai, Hsieh, and Qian (2006)

Growth (%)	1978-1997	1998-2015	2016	2017
GDP per worker	7.05*	8.36	6.26	N/A
Due to capital intensity	2.48*	5.61	4.69	N/A
Due to TFP	4.57*	2.75	1.57	N/A
Contribution by investment	35.1*	67.1	74.9	N/A

Data source: Chen and Zha (2018)

The investment-driven economy experienced three distinct episodes: the golden decade (1998-2008), the stimulus period (2009), and the post-stimulus period (2010-2015). Along with preferential credit policy toward the heavy sector, both monetary and regulatory policies during these three episodes have distinctive features. We discuss the role of financial policies in each of these three episodes separately.

The golden decade. The government's early planning for the investment-driven economy was crucial for the success in the whole period. In 1995, China enacted the People's Bank of China law and other banking laws with decentralization of the banking system, which ironically led to the concentration of *large loans to large firms*.[11] In March 1996, the Eighth National People's Congress of China laid out a first five-year strategic plan to develop infrastructure, real estate, basic industries (metal products, automobile, and high-tech machinery), and other heavy-sector industries (petroleum and telecommunication). By 1998 the government completed the process of privatizing SOEs (grasp the large, let go of the small) and began a privatization of the housing market. Prior to 2003, most houses were transacted below their market values (affordable housing). In 2003, affordable housing was largely abolished. Instead, the government encouraged the transactions of houses at the market value. These houses are called "commodity houses." In 2000, real estate and auto industries were chosen to be the pillar industries by the government for its strategic plan. In 2001, China joined the World Trade Organization (WTO), which marked an important advancement in China's openness to the world economy and its trade liberalization.

In 2002, the four state banks became commercialized and thereafter there emerged many new commercial banks, including Bank of Communications---the fifth largest state bank. The banking system was the most important source of external financing until the late 2000s when a rise of shadow banking eclipsed the importance of the traditional banking role. Until the rise of shadow banking, monetary policy of explicitly targeting M2 growth had been effective on total bank credit as well as total social financing.

[11] See Brandt and Zhu (2007) for a comprehensive list of the laws and regulations enacted during this period.

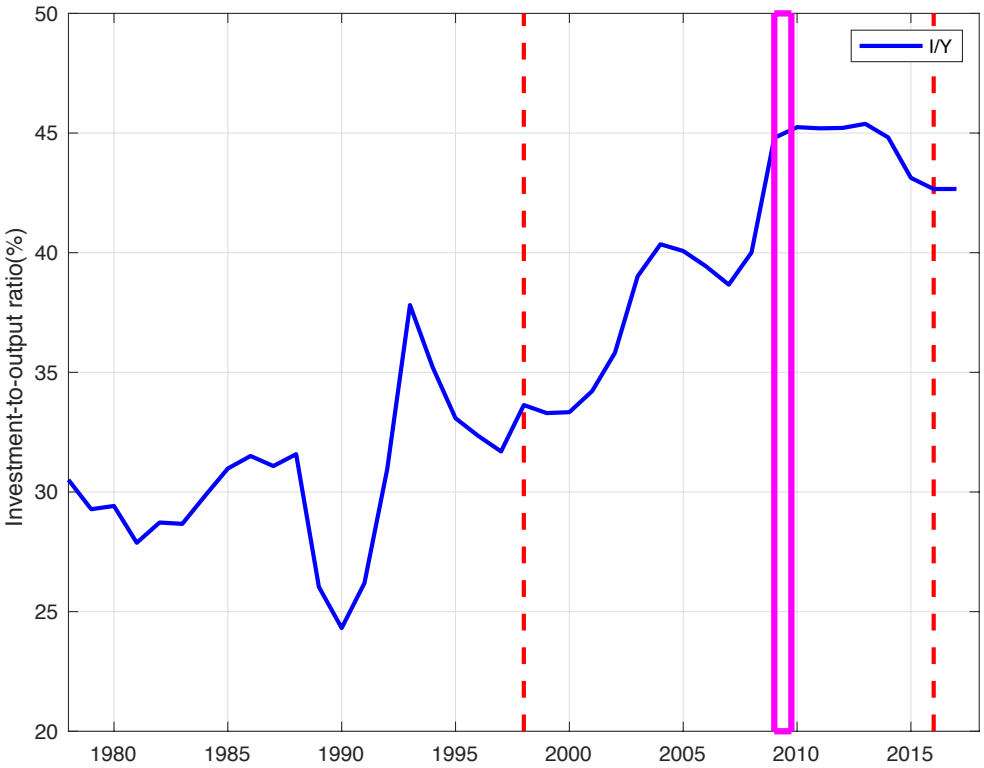

Figure 15. Secular pattern of the investment-to-GDP ratio. The symbol "I" represents investment measured by GFCF and "Y" represents output measured by aggregate value added. Data source: Chen and Zha (2018).

One crucial banking regulation that interacted with the monetary policy to affect the total bank credit is a regulation on the ceiling of the loan-to-deposit ratio (LDR). In a theoretical framework, Chen, Ren, and Zha (forthcoming) show that when PBC tightens monetary policy via open market operations, the probability of deposit withdrawals by primary dealers increases, which makes the LDR ratio more likely to be binding under the LDR regulation. Consequently, commercial banks, especially non-state banks, have to incur extra costs to recoup the deposit shortfalls (known as "last minute rush costs" or 冲时点 (Cong Shi Dian) in Chinese). These expected regulatory costs reduce the effective return of bank lending and induce banks to engage in shadow banking by reducing formal banking.

As Figure 16 shows, local governments' implicit guarantees on credits to the real estate and its supporting heavy industries played a crucial role in credit allocations during the golden decade. When assessing loan applications, banks favored large loans to large firms and were biased against small loans to small firms. This practice was not only due to the asymmetric information problem facing small firms when banks assessed loan applications, but also because large firms in the heavy sector gained implicit guarantees from local governments (Jiang, Luo and Huang, 2006). In short, banks favored lending to large firms or industries in the heavy sector targeted by the state (e.g. real estate and infrastructure). Compared to small firms, large firms produced more sales, provided more tax revenues, and helped boost GDP of the local economy---the most important criterion for the political benefits of local government officials.

As financial policies switched from a reliance on credit policy supporting both light and heavy sectors in the SOE-led economy to an emphasis on quantity-based monetary policy in the investment-driven economy, this new economic regime also changed its characteristics. Because the government's monetary/credit policy focused on investment in the heavy sector during 1998-2015, the relationship between investment and consumption broke down. That is, the correlation between growth rates of investment and consumption changed from 0.80 in the SOE-led economy to being statistically insignificant in the investment-driven economy (Table 1 and Figure 9). And the correlation between investment and labor income was also close to zero (0.026 with the p-value 0.919). The promotion of investment at the sacrifice of consumption caused PPI inflation to be more volatile than CPI inflation (Table 2 and Figure 14) and the labor share of income to decline (Figure 13).[12]

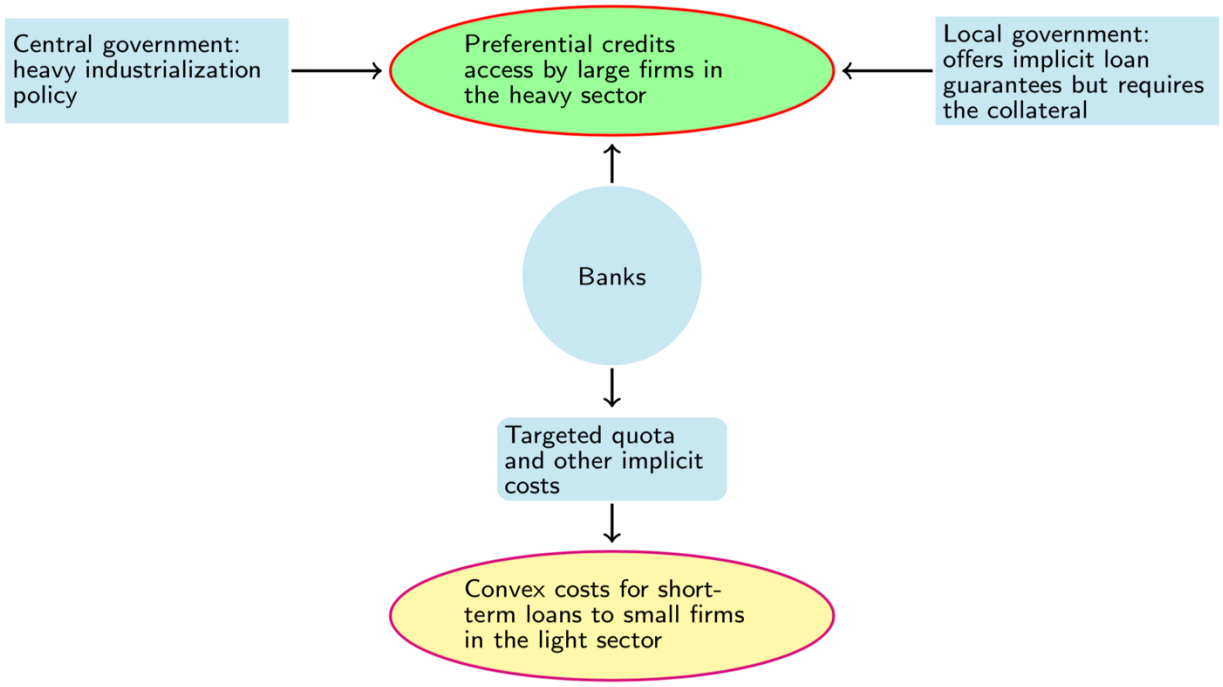

Figure 16. Monetary/credit policy in the investment-driven economy.

Investment during the golden decade was fueled by long-term bank credits at the sacrifice of short-term bank credits to working capital in the light sector (Figure 8). In other words, the increase in bank credits under expansionary monetary policy was channeled disproportionally

[12] The decline of China's labor income share since the late 1990s is a robust fact, as confirmed by Bai and Qian (2009) and Qian and Zhu (2012), who have made data adjustments to take into account changes in the statistical coverage of labor compensations over time.

into long-term bank credits to finance investment. Accordingly, the correlation between short-term and long-term bank loans in the investment-driven economy is negative (Table 5).

Contrary to the common belief, the external sector played a limited role in investment growth during the golden decade. After China jointed the WTO, most exports were produced in the light sector (e.g., the textile, toys, and shoes), as documented in Huang, Ju, and Yue (2015). In a number of newly industrialized economies in Asia (e.g., South Korea, Singapore, and Taiwan), the export-led economy concentrated on capital-intensive goods. Rapid investment in China's capital-intensive sector (i.e., the heavy sector) was not led by its exports.[13]

SOEs also played a limited role during the golden decade. As discussed earlier, the SOE share in investment as well as in investment loans declined steadily. Given the same preferential credit policy toward SOEs, these facts imply that the investment-to-output ratio would have declined. But instead the investment rate rose steadily. This is because the investment boom was not driven by SOEs during this period, but by real estate and supporting heavy industries (e.g. steel and cement). In particular, large POEs in the real estate industry and other heavy industries received preferential bank credits to finance their investment.[14] In 2002, for instance, 65% of all firms were POEs in number and the POE share of gross industrial output in total gross industrial output was 55%. In 2004Q1, the FAI growth rate in urban areas was 42.8% (80.7% for POEs vs. only 22.3% for SOEs).[15]

The preferential credit policy to firms in heavy sector leads to the fact that gross output in the heavy sector increased much faster than gross output in the light sector. By contrast, growth of gross output in both sectors was balanced in the SOE-led economy. This explains the increasing share of heavy sector GDP in total GDP since 1998 (Figure 17). In particular, the share of value added to the real estate industry in GDP increased steadily (except for the global financial crisis) in the investment-driven economy (Figure 18). As documented in Chen, Ren, and Zha (forthcoming), most firms in the real estate industry are not SOEs.

Table 5: Correlation between newly issued short-term and MLT bank loans

Sample	Loan growth (yoy)	New loan as % of GDP
1998Q1-2015Q4	-0.37	-0.29

The shift of a focus to invest in the heavy sector during the golden decade from a focus to promote SOEs across all sectors in the SOE-led economy resulted in more volatile PPI inflation

[13] According to Huang, Ju, and Yue (2015), between 1999 and 2007, labor intensive firms increased their export shares and capital-intensive firms reduced their export share; at the same time, the capital intensity of export firms was reduced.

[14] Examples of large and important POEs during the investment-driven phase include 华为 (communications), 联想 (information and technology), 吉利 (automobile), 万达 and 万科 (real estate).

[15] See Liu (2005).

than CPI inflation (Table 2). In addition, growth in the real land (house) price was more volatile than inflation by an order of magnitude and on average much faster than (real) GDP growth (Figure 19).

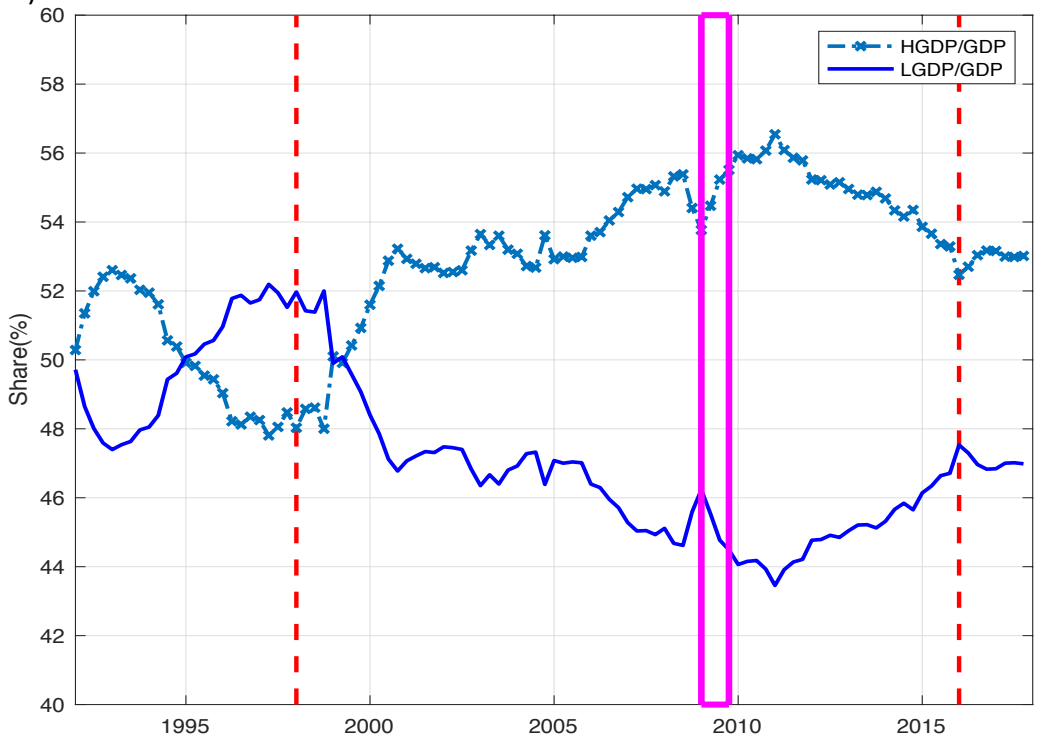

Figure 17. GDP in the heavy and light sectors. Data source: CEIC and authors' calculation.

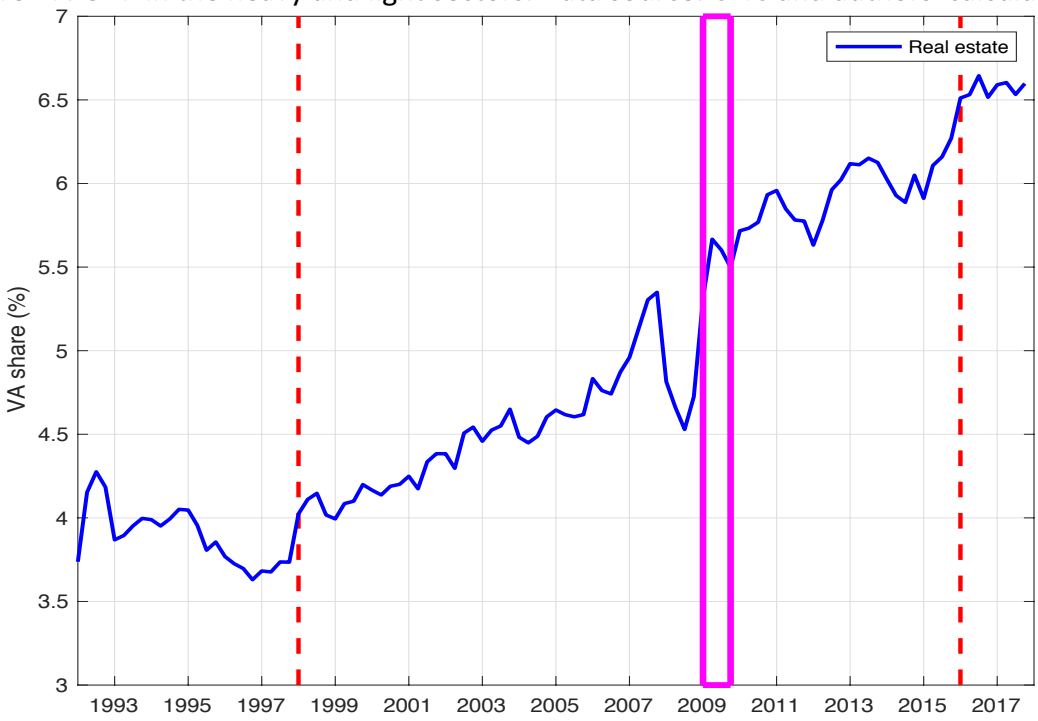

Figure 18. The share of value added (VA) to the real estate industry in total value added (GDP). Data source: CEIC and authors' calculation.

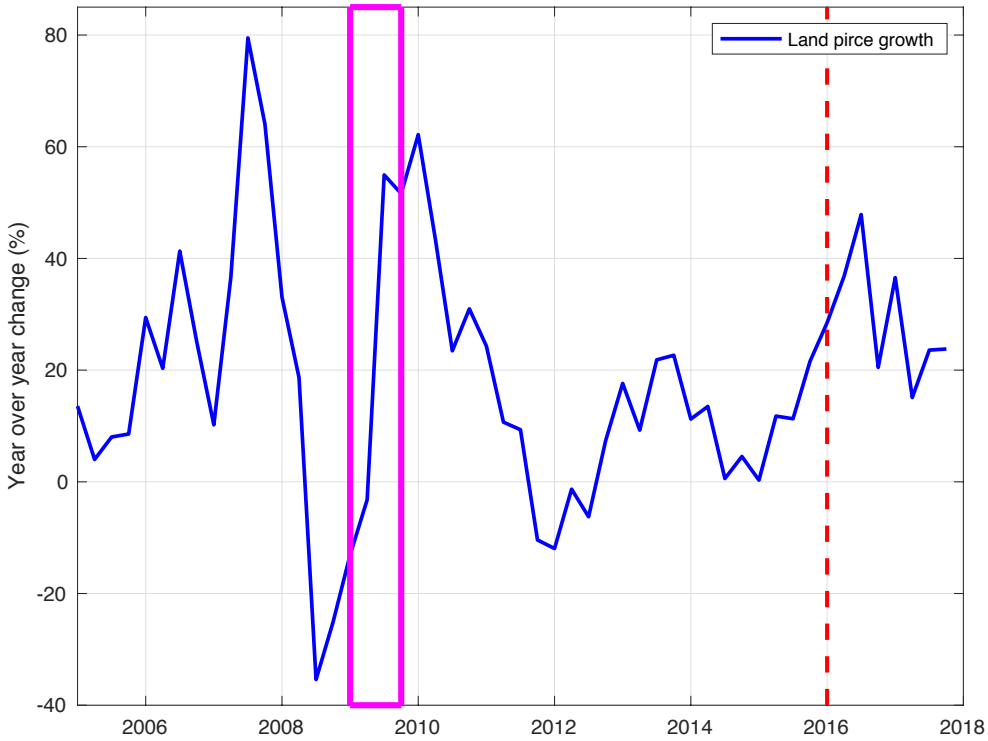

Figure 19. Annual growth in the land price. Data source: Wu, Gyourko, and Deng (2012) and authors' calculation.

The trends and cycles in the investment-driven economy, especially during the golden decade, are summarized as follows.

- Trends:
  - (T1) A steady increase (decrease) of the ratio of aggregate investment (consumption) to GDP.
  - (T2) A declining share of income.
  - (T3) A steady increase in the ratio of MLT bank loans to short-term bank loans.
  - (T4) A steady increase in the ratio of gross output (and gross fixed assets) in the heavy sector to that in the light sector.

- Cycles:
  - (C1) No co-movement between aggregate investment and consumption.
  - (C2) No co-movement between aggregate investment and labor income.
  - (C3) A negative co-movement between MLT bank loans and short-term bank loans.

Chang, Chen, Waggoner and Zha (2016) develop a theoretical framework to explain these key facts of the investment-driven economy. The crucial difference between this model and the model of Chen and Zha (2018) is that the government's funding through monetary/credit policy goes to the heavy sector as part of a shift of the strategic emphasis to financing investment in the heavy sector. Such a preferential credit reallocation caused resources to be reallocated

toward the heavy sector as government net worth increased, which led to the upward trend of gross output in the heavy sector relative to that in the light sector, especially the real estate industry. Since the heavy sector had a higher investment rate than the light sector, the ratio of aggregate investment to aggregate output kept increasing during the golden decade. The preferential credit reallocation also made bank loans to the light sector costly. These costs, captured by the convex function of bank loans in the theoretical model, are one of the main explanations for the observed negative or insignificant correlation between investment and consumption.

Song, Storesletten, and Zilibotti (2011, SSZ) provide a complementary explanation for the rapid growth during the golden decade. Their benchmark economy assumes one production sector in which less productive SOEs enjoy preferential credits while productive POEs do not. Capital accumulation by POEs relies on their own savings. As a result, when POEs' capital stock increases, they demand more labor, which forces SOEs to downsize due to the competitive labor market. The capital reallocation from SOEs to POEs leads to an increase in allocative efficiency and therefore the aggregate TFP. As shown by Chen and Wen (2017), most of the increase in the share of private employment in total employment occurred between 1998 and 2004 (from 15% to 50%) and this share kept increasing by another 10% between 2004 and 2011. Therefore, the SSZ model is crucial in understanding TFP growth during this period, which accounts for one third of GDP growth (Tables 3 and 4). The rest of GDP growth is accounted for by investment. Zilibotti (2017) regards all the years up to 2005 as an episode of "investment-led growth" and productivity growth as a by-product of investment even in the absence of innovations or technical changes.

The 2009 monetary stimulus. During the phase of the investment-driven economy, the global financial crisis erupted in 2008. China's GDP growth (at a year-over-year rate) plummeted from 13.6% in 2007Q2 to 6.4% in 2009Q1. In November 2008, the State Council announced a plan to inject the 4 trillion RMB liquidity into the economy over the two-year period from 2009Q1 to 2010Q4. The plan listed ten areas with real estate as the number one area for massive investment. As it turned out, the monetary injection was far larger than 4 trillion within the first three quarters of 2009 (Figure 1). The real estate industry benefited the most. The real estate price bounced back immediately after the 2009 stimulus (Figure 19) and the value added to the real estate not only bounced back but also kept increasing (Figure 18).

Overall, GDP growth jumped from 6.91% in 2008Q4 to 11.59% in 2009Q4 (Figure 3) and aggregate investment grew by over 20% during this period (Figure 5). Growth in aggregate consumption growth, however, barely changed during this period. Chen, Higgins, Waggonor, and Zha (2017) show that the monetary stimulus, represented mainly by a switch of monetary policy rule from the normal state to a more aggressive state, can explain 85% of the increase in GDP growth during the stimulus period.

In the investment-driven economy, moreover, investment played even a larger role in propelling economic growth during and after the monetary stimulus period. Tables 6 and 7 report the growth accounting by breaking down the period of the investment-driven economy into three sub-periods: 1998-2008, 2009-2010, and 2011-2015. Across these three sub-periods, the

contribution from investment increased from 61.3% to 75.8% and then to 83.0% (Table 6) and from 60.5% to 73.9% and then to 81.3% (Table 7).

Table 6. Growth accounting according to Long and Herrera (2016)

Growth (%)	1998-2008	2009-2010	2011-2015
GDP per worker	8.72	9.2	7.22
Due to capital intensity	5.35	6.97	5.99
Due to TFP	3.38	2.23	1.22
Contribution by investment	61.3	75.8	83.0

Table 7. Growth accounting according to Bai, Hsieh, and Qian (2006)

Growth (%)	1998-2008	2009-2010	2011-2015
GDP per worker	8.72	9.2	7.22
Due to capital intensity	5.27	6.80	5.87
Due to TFP	3.45	2.40	1.35
Contribution by investment	60.5	73.9	81.3

Investment was mainly financed by massive credit injections engineered by loosening monetary policy (Figure 1). Most of the increase in bank loans under the government's stimulus was channeled into fixed-asset investment, especially in the real estate industry and its supporting heavy industries. Such a monetary stimulus played a pivotal role in the recovery of GDP growth, but the asymmetric credit allocation during the golden decade was exacerbated during the stimulus period. The exacerbation can be seen in Figure 16, as the share of MLT loans in total bank loans sprang up during the stimulus period. The ratio of total bank loans to GDP also sprang up during the stimulus period and kept increasing even after the stimulus was over (Figure 21). Chen, Higgins, Waggonor and Zha (2017) show that the 2009 monetary stimulus produced an intertemporal tradeoff between short-run GDP growth and long-run indebtedness. In a similar spirit, Zilibotti (2017) argues that China's stimulus plan delayed innovations and created a tradeoff between fast short-run growth and sustainable long-run growth.

Bai, Hsieh and Song (2016) argue that an important part of financial stimulation was through an establishment of local government financing vehicles (LGFVs). Although local governments were legally prohibited from borrowing or running budget deficits, they circumvented the budget laws in 2009 and 2010 by creating off-balance-sheet companies, known as LGFVs, to finance investment in infrastructure and other commercial projects. According to Obstfeld (2016), LGFV borrowing as a percent of GDP increased from 16.3% in 2008 to 25.09% in 2010 (an increase of 8.79 percentage points), but this increase still paled in comparison to an increase of 31.58 percentage points in private sector borrowing as a percent of GDP during the same period.

In this period, SOEs also played a limited role in the soaring investment rate under the monetary stimulus. Figure 8 shows that the SOE share of aggregate FAI increased moderately during the stimulus period and resumed its declining trend when the stimulus was over. The reason is that most firms in the real estate industry, which is the largest recipient of the bank credit during the stimulus period, are POEs.

The post-stimulus episode (2010-2015). To combat the rising inflation after the 2009 massive stimulus, the government implemented tightening monetary/credit policy to slow down investment in the heavy sector and place economic growth on a sustainable path. GDP growth declined from 11.59% in 2009Q4 to less than 7% in 2015Q4. Yet, the contribution of investment to GDP growth continued to increase (Tables 5 and 6); Investment in the heavy sector and upstream industries continued to play a major role (Bai, Liu, and Yao, 2018). Although the value added to the heavy sector and upstream industries declined as the shares of GDP after the 2009 monetary stimulus, these shares still remained at an unsustainably high level and bank credits continued to be channeled to not just upstream industries but the heavy sector in general.

While monetary policy tightened after the 2009 stimulus, regulatory policy on shadow banking remained lax, which gave rise to the boom of shadow banking that fueled investment in real estate, infrastructure, and other supporting industries with excess capacity. The lack of coordination between monetary and regulatory policies gave non-state banks a strong incentive to avail themselves of the regulatory arbitrage to engage in shadow banking activities, especially in entrusted lending. As shown in Figure 20, both off-balance-sheet financing and corporate bond financing increased significantly since 2009. Consequently, the gap between bank loans and total social financing widened during and after the monetary stimulus (Figure 21).

From 2009 to 2015, entrusted loans became the second largest financing source of loans after formal (traditional) bank loans. Entrusted lending is a loan made from one nonfinancial firm to another nonfinancial firm. It was first facilitated by commercial banks off balance sheet but then brought onto the balance sheet to take advantage of lax regulatory policy. According to Chen, Ren, and Zha (forthcoming), over 60% of entrusted loans during the period from 2009 to 2015 were funneled to the real estate and its supporting heavy industries. And for the entrusted lending that went to real estate companies, 75.33% of loan volumes were channeled to enterprises that are *not* state owned.

As shadow banking activities blossomed, so did investments in shadow banking products on banks' balance sheets such as account-receivable investment (ARI) and investments in NFCs. NFCs include asset management companies and security companies. These companies issue assets to banks (such as asset management plans) and use the funds to finance investments in risky assets that were often shadow banking products. As shown in Figure 22, bank credits to NFCs have waxed and waned when monetary policy has tightened since 2009. In 2010-2015, these credits, as well as the issuance of municipal corporate bonds, “waxed” in response to

tightened monetary policy.[16] The effectiveness of tightening monetary policy to reduce the investment rate, therefore, was hampered by other financial policies that failed to coordinate with monetary policy. The failure of coordination between monetary policy and other financial policies was a good lesson for researchers and policymakers to understand the limitation of monetary policy.

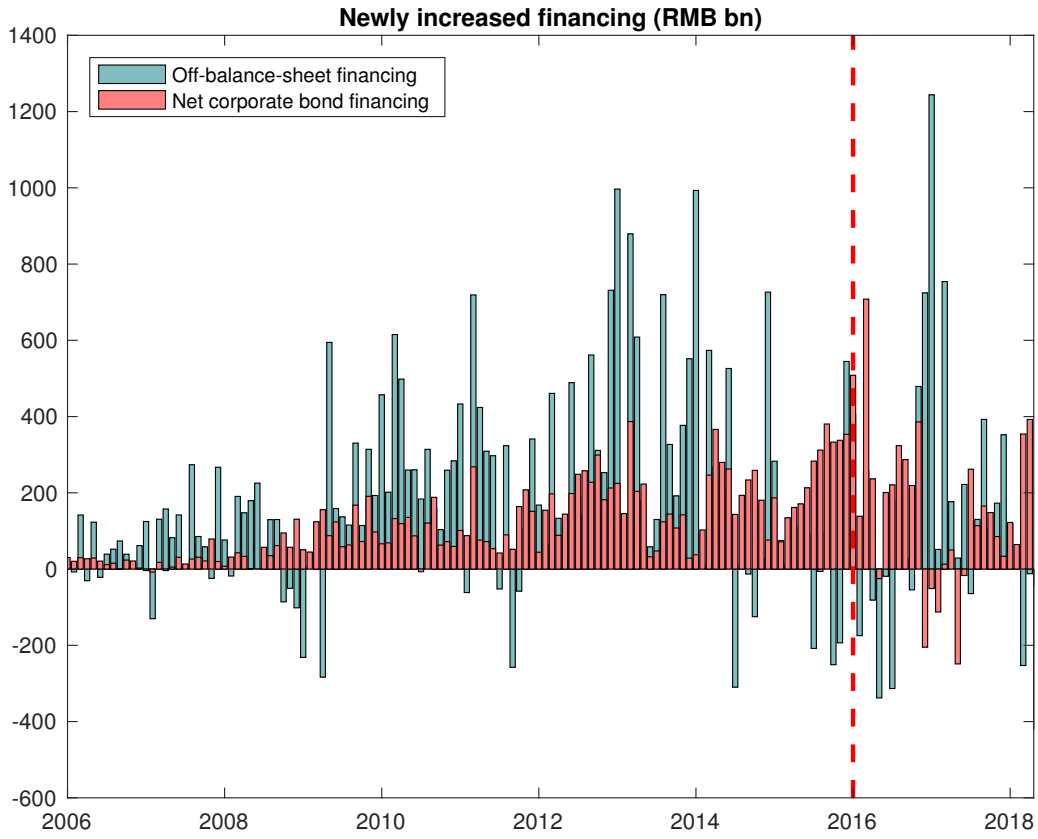

Figure 20. Nonbank financing to investment. Off-balance-sheet financing is the sum of entrusted loans, trust loans, and bank acceptances. Source: CEIC and authors' calculation.

Xiong (2018) develops a theoretical growth model featuring local government GDP tournaments to highlight another potential source for the rising shadow banking industry during this period: the agency frictions between the central and local governments due to the inability of the central government to distinguish a governor's administration ability from infrastructure investment in the governor's province. Consequently, the governor faces a tradeoff between debt and career. To advance his/her personal career, the governor takes on more debts to finance infrastructure investment with an advantageous growth rate of regional productivity. But the governor has to face the high cost of paying the debts next period. This model implies that the governor's career

[16] Chen, Liu, and He (2018) use the province-level data to show that provinces experiencing an abnormally fast growth rate of bank loans in 2009 also had fast growth of municipal corporate bond issuances during 2012-2015.

development can lead to an overleverage of the local government and a booming shadow banking industry.

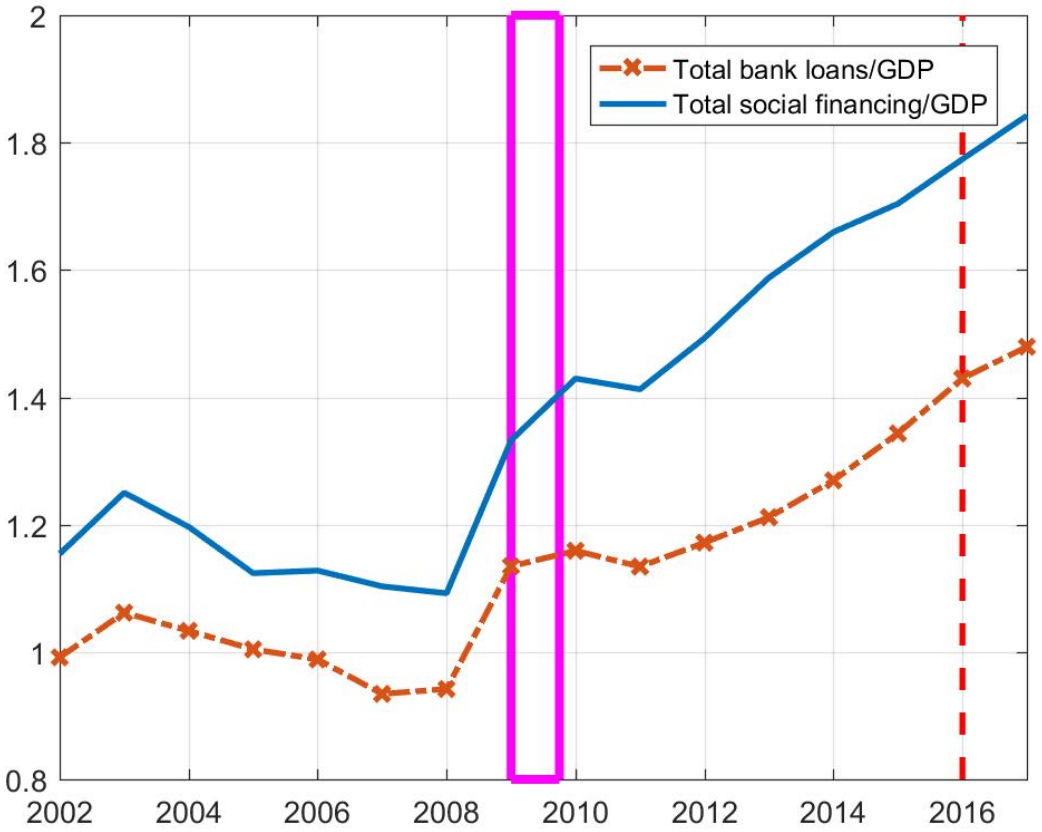

Figure 21. Ratios of total social financing and bank loans to GDP. Total social financing is calculated as the sum of bank loans, entrusted loans, trusted loans and bank acceptances. Data source: CEIC and authors' calculation.

In the post-stimulus period, the real estate overstock problem persisted in small- and medium-sized cities. To reduce the overstock of real estate, credit policy for mortgage financing was loosened in 2014Q4-2016Q3, which created a boom of mortgage loans and an increasing concentration of bank loans to the real estate (Figure 23). The concentration in recent years has further raised systemic risks to the financial system.

In summary, the massive credit expansion during both the stimulus and post-stimulus episodes has led to rapid growth of the debt burden as a percent of GDP as well as a widening gap between total social financing and aggregate bank loans. Both the rapid growth of shadow banking products and the increasing concentration of bank loans on the real estate industry have raised systemic risks to the financial system. For shadow banking products, systemic risks are associated

with default risks to real estate companies and LGFVs.[17] For bank loans, systemic risks are associated with default risks to the household sector if the housing market collapses.

The new normal economy (2016-present)

As the debt-to-GDP ratio rose rapidly in the latter part of the investment-driven economy and has continued to rise in the new normal economy, the tension between robust GDP growth and the financial stability has begun to build up. As a result, financial policies in the new normal economy are featured by strengthened regulations on shadow banking products and a better coordination between monetary and regulatory policies under the MPA system. In this phase, two deleveraging processes have begun: financial deleveraging to guide banks to reduce shadow banking loans (e.g., bank credits to NFCs) and firm deleveraging to reduce corporate debts (e.g., ceasing the rollover of corporate debts). As one can see from Figure 22, both NFC credits and M2 supply have declined in tandem since 2016.[18]

The macroeconomic impacts of the financial and real deleveraging processes in the new normal economy need time to assess. Early evidence indicates that investment in both real estate and infrastructure, the two industries that were the largest beneficiaries of the rising shadow banking, has recently lost steam. Various regulations on shadow banking activities since 2017 has forced real estate developers to deleverage. The housing market and construction investment have begun to cool down. In 2018Q1, the premium rate in the land auction market was only 10%, far below the level of 30% during 2015-2017. Infrastructure investment has also slowed down since last year due to a series of regulations to rectify local government financing guarantees.[19] The year-over-year growth rate of infrastructure investment has fallen since the second quarter of 2017 to 7.3% in the first half of 2018.

One unintended consequence of deleveraging is that POEs, especially the small and medium-sized ones, have had even a harder time to gain access to bank financing. During the deleveraging processes, the tightening of regulations on the shadow banking industry has led to defaults of unprofitable POEs, creating a tradeoff between cleansing effects and systemic risks as borrowing costs for healthy POEs have also increased. The mounting default risks, together with increasing deposit shortfalls under the financial deleveraging, have made banks more reluctant to lend to

[17] Bai and Zhou (2018) find that the municipal corporate bond yields across provinces are negatively influenced by the value added to real estate (as a share of provincial GDP).

[18] While the recent cooperation between monetary and regulatory policies improved banks' balance-sheet standing, off-balance-sheet activities and corporate debts continued to be a serious problem. In 2017, trust loans (a major part of off-balance-sheet banking) soared in response to the shrinking activities of on-balance-sheet investments (Figure 20).

[19] For example, PBC, Ministry of Finance, and four other government agencies issued a *Notice on Further Regulating Local Government's Debt Financing Behavior* in May 2017 for the purpose of rectifying local government's financing guarantees.

POEs, including the healthy ones.[20] Since 2016, investment growth in the manufacturing industry has been continuously below GDP growth. And as GDP growth continues to slow down, the tension between GDP growth and financial stability challenges the government's determination for further deleveraging.

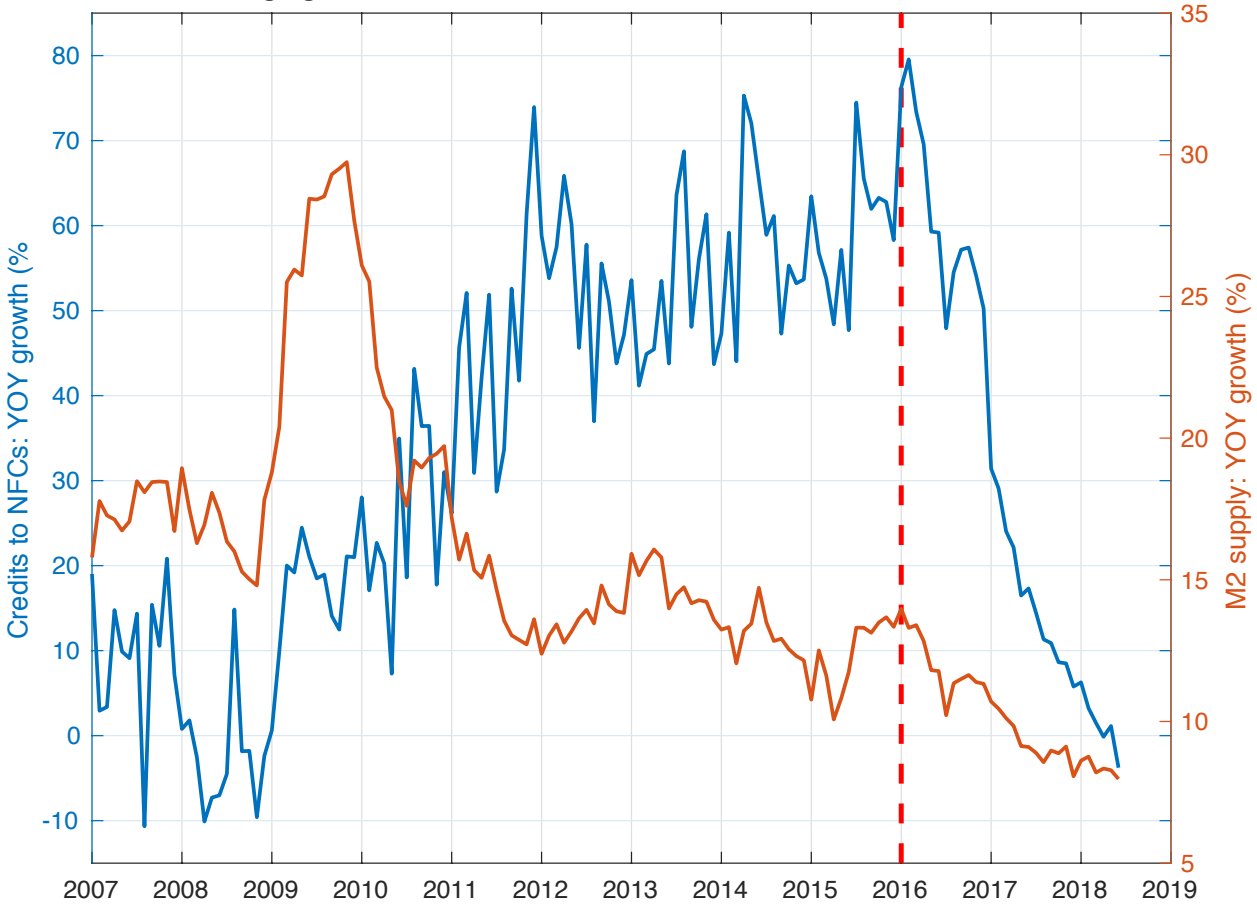

Figure 22. Growth rates of bank credits to NFCs and M2 supply. Data source: CEIC and authors' calculation.

A deeper concern is the limited impact of deleveraging on SOEs in upstream industries, which have continued to receive preferential credits and remain unproductive and monopolistic. Implicit guarantees by local governments to such zombie firms make difficult the deleveraging of corporate debts. Figure 24 shows that in recent years, the share of newly issued bank loans to SOEs has increased rapidly, while the share of bank loans to POEs has declined. To deal with this asymmetry between the treatments of SOEs and POEs, the government introduced reforms in 2016 to reduce the production of upstream industries in the heavy sector through administrative means. The production reduction resulted in an increase of PPI in the upstream firms while these unproductive and monopolistic firms continued to receive preferential credits. The increase of PPI in turn raised the costs to downstream industries, most of which belong to the light sector. It would inevitably exacerbate the credit and resource misallocations, putting further downward

[20] A similar situation occurred in the corporate bond market, as implied by the increasing credit spread.

pressures on economic growth. As investment growth in the light sector has slowed in recent years, GDP growth has also slowed while the investment-to-GDP ratio has remained persistently high, over 42% as shown in Figure 14.

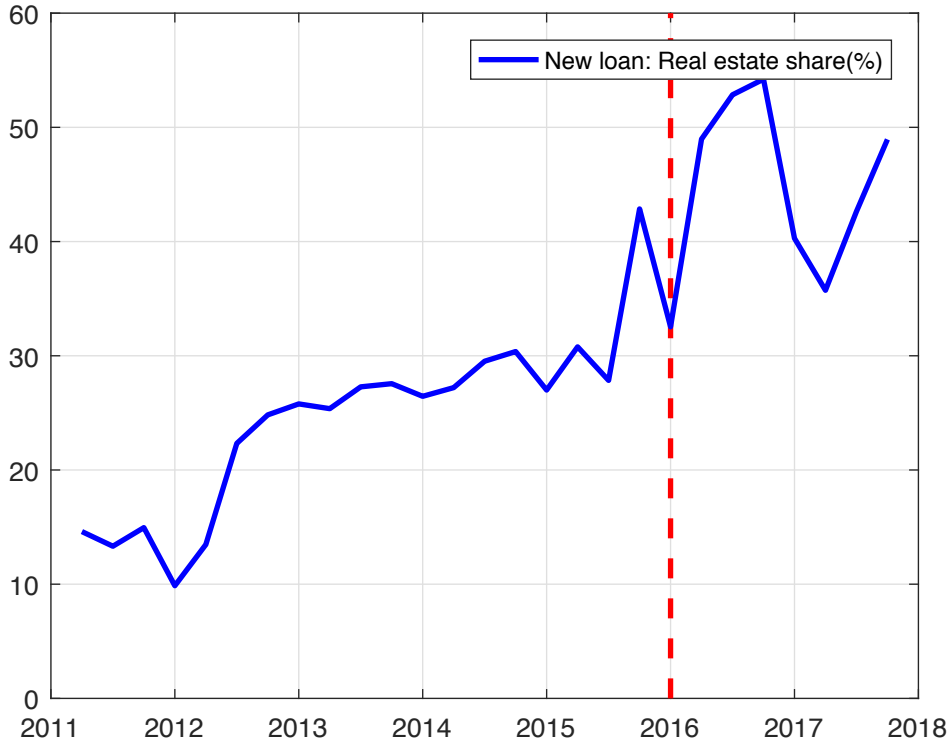

Figure 23. Loan concentration: the share of bank loans to the real estate in total bank loans. Data source: CEIC and authors' calculation.

IV. Conclusion

The preceding sections provide an overview of how regime shifts in the government's financial policies influenced the ways preferential credits were allocated to SOEs and the heavy sector. The analysis highlights the role of the government in the structural changes of the economy. The regime switching from the SOE-led economy to the investment-driven economy and then to the new normal economy has been a product of changes in the government's active financial policies.

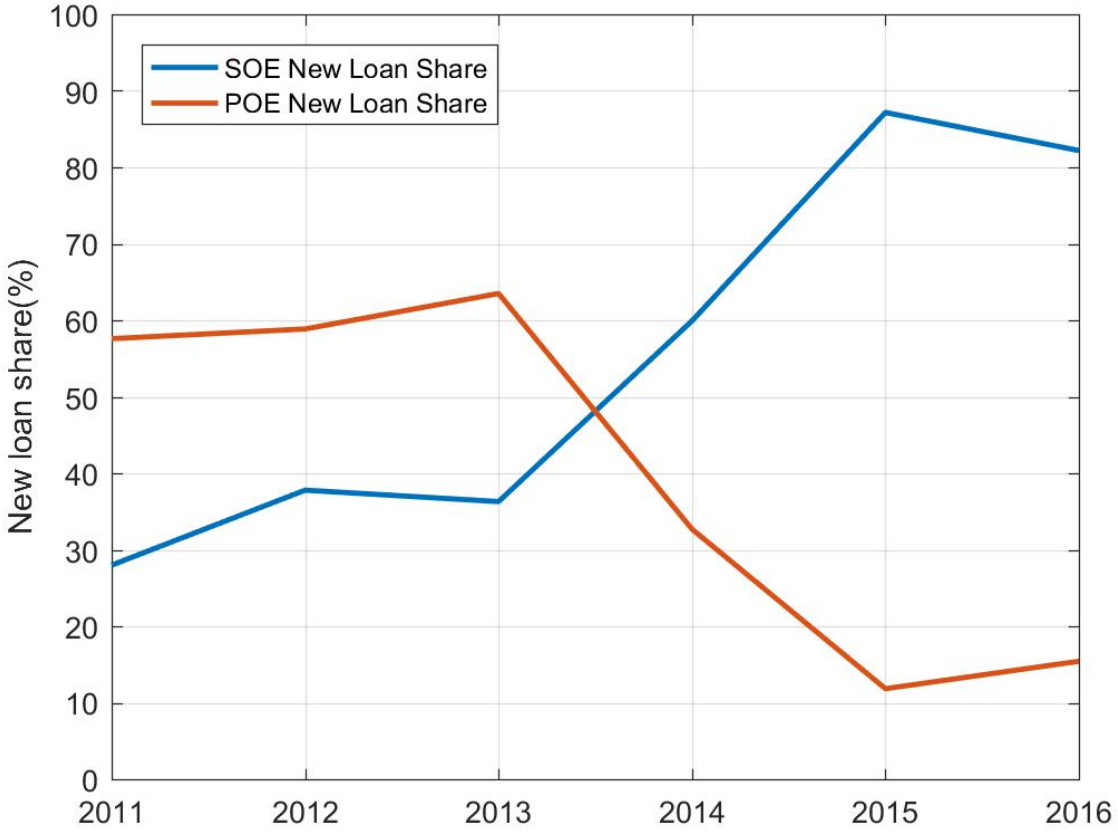

Figure 24. The share of newly issued bank loans to SOEs and POEs in total newly issued bank loans. Data source: CEIC and authors' calculation.

Policy tools since 2016 have been adapted to assist a transition to the new normal economy. At the beginning of 2016, the government incorporated the MPA System to ensure an effective coordination between monetary and other financial policies. Other unifying rules on asset management across different financial sectors (formal banking and shadow banking) have been developed. Monetary policy has begun to experience a regime change as well: a transition from the quantity based framework to an interest-rate based framework.[21] In addition to the conventional policy tools, the government has applied many unconventional tools such as Standard Lending Facility (SLF), Medium-term Lending Facility (MLF), and Pledged Supplementary Lending (PSL) to assist this transition.

Such a transition, however, will not be smooth under China's institutional constraints. The GDP growth target still remains the foremost goal of monetary policy. According to the central government's Thirteenth Five-Year Plan (2016-2020), the GDP growth target as a lower bound

[21] See Ma and Guan (2018) for a detailed assessment of the transmission mechanism and the effectiveness of the reforms on the interest rate liberalization and Liu, Spiegel, and Zhang (2018) for a theoretical analysis.

will continue for the next five years. High GDP growth vigorously pursued by the central government as the overriding policy goal puts a severe constraint on how the PBC to conduct its monetary policy and on how tight regulatory policy should be. As long as the GDP growth target is in force, monetary and credit policies, with implicit government guarantees to SOEs in the SOE-led economy and to the heavy sector in the investment-driven economy, will remain to be a useful guidance for how to allocate bank credits to different firms, industries, or sectors. Therefore, we conclude that the heavy hand of government in influencing how commercial banks allocate their loans will continue, making M2 growth an effective tool for monetary policy not only in the past but also in the near future.

The new normal economy is marked by other challenges as well. Financial markets are in the development stage and still suffer from market frictions such as deposit rate ceilings and illiquidity in bond markets. Coordination between monetary and regulatory policies should continue to improve. The effects on the macroeconomy of a regime switch in monetary policy to an interest rate based framework are unknown and difficult to measure at this point. Nor is known about how effective is the monetary transmission from the policy rate to interbank interest rates and eventually to bank lending rates. In sum, China will face new challenges to its reforms on financial policies and its policy impacts on the new normal economy.

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