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China's Leverage Paradox, Collective Action Logic and Systematic Financial Risk

Fei Qiu

Business School, Zhejiang Wanli University, Ningbo, Zhejiang, China

Abstract:

The existing research on China's leverage paradox focuses only on the real sector, and it only considers the liquidity leverage paradox. Taking into account the situation both of real and financial sectors, the panel date regression analysis based on China's listing companies shows that there is liquidity leverage paradox in the real sector, but there is no scale leverage paradox in the real sector. There is no liquidity leverage paradox in the financial sector, but there is scale leverage paradox in the financial sector. The essence of the leverage paradox is the collective action paradox caused by the enterprise's risk-taking behavior preference. To eliminate the paradox of collective action in the real sector, it needs to encourage innovating so as to improve the heterogeneity of enterprises. To eliminate the paradox of collective action in the financial sector, it needs to reduce the hidden guarantees of the government and the external effects of the behavior of financial institutions. From the point of view of preventing systemic financial risks, even if there is a weak liquidity leverage paradox effect in the whole economy, it is not appropriate to reduce the leverage of the whole society by creating an environment of high-speed monetary growth.

Keywords: Leverage paradox, Collective action, Implicit guarantees, Systematic financial risk

I. INTRODUCTION

According to statistics released by the People's Bank of China (PBC), RMB loans increased by 1.08 trillion yuan in July 2021, while the aggregate financing to the real economy (AFRE) increased by only 1.06 trillion yuan. The amount of AFRE is less than the amount of new loans, indicating that the marginal role of new monetary liquidity in supporting the real economy is declining. However, Chinas economy still relies very heavily on monetary policy stimulus. In the meeting of analyzing economic situations in July 2021, the Political Bureau of the CPC Central Committee required monetary policy to maintain reasonably abundant liquidity. The difficulty in achieving reasonable abundance is that insufficient liquidity will lead to financial crisis for enterprises, and excess liquidity will bring systemic risks to the economic system. The 10th meeting of the Financial and Economic Commission of the CPC Central Committee held in August once again stressed the need to prevent and defuse major financial risks. This shows that the dilemma faced by monetary policy between providing liquidity and guarding against systemic risks remains grim. Internationally, the Fed has maintained the highest growth rate of the money supply since 1981(see figure 1), which has brought new problems to China's control of liquidity levels. In order to

maintain the balance between the exchange rate of the US dollar and the RMB, The PBC has the pressure to increase the growth rate of the money supply, but it is not conducive to control systematic financial risk.

There is generally a positive correlation between the level of financialization and the level of systemic financial risk. Measured by private sector credit as a percentage of GDP, the level of financial risk pressure in China is very close to that of the United States, which has experienced a systemic risk crisis. During the subprime crisis, the financialization level reached an all-time high, with a global average of 34.6% in 2008, 196.7% in the United States and 97.2% in China. The level of financialization in the United States declined briefly after the subprime crisis, but returned to an upward trend after 2012. China's level of financialization has been on the rise since the subprime crisis. According to the latest available statistics, private sector credit as a percentage of GDP in the United States was 183.1% in 2017 and in China it was 150.6% (see figure 2). The level of financialization in the United States than in subprime crisis period. This shows that China faces considerable pressures on systemic financial risks, and the PBC is faced with the dilemma between the liquidity provision and prevention of systemic risks.



Data source: Federal Reserve Bank of St. Louis(https://fred.stlouisfed.org) Fig 1: M2 monthly growth rate of USA (1981.11-2021.6)

However, some scholars have found that there is a "leverage paradox" in China, that is, the leverage ratio of enterprises is negatively correlated with the growth rate of money supply [1-3]. If this leverage paradox exists in both real and financial sector, then the dilemma between the central bank's liquidity provision and the prevention of systemic risks will not exist. Because at the presence of leverage paradox, high-speed monetary growth will reduce the leverage ratio of enterprises, high-speed monetary growth not only meets the demand for liquidity provision, but also reduces the leverage ratio of all enterprises and meets the need to prevent systemic risks. If the leverage paradox really exists in a large scope of China's

economy, then it can alleviate the dilemma faced by monetary policy, so it is of great significance to confirm whether there is a leverage paradox.





The follow-up arrangements of this paper are as follows: the second part reviews the existing research on China's leverage paradox and proposes the idea of verifying the existence of leverage paradox; the third part introduces the econometric model and data sources for verifying the leverage paradox effect; the fourth part is the econometric result of the leverage paradox effect; the fifth part is the discussion and policy recommendations related to the results; and the final sixth part is the summary.

II. LITERATURE REVIEW

The dilemma of monetary policy is most obvious in the contradiction between "sustaining growth" and "reducing leverage". It is generally believed that loose monetary policy can promote economic growth in the short-term, but the currency over-issue will bring about an increase in the leverage ratio. Therefore, in the stage of risk prevention, regulators will generally try to reduce leverage by reducing monetary expansion. However, there will also be abnormal situations where the growth rate of money declines but brings about an increase in leverage. song [2] studied this abnormality early, liu and zhang [1] and wang and li [3] called this negative correlation between money growth and leverage as "China's leverage paradox". They explain leverage paradox from the perspective of financial accelerators: when reducing the growth rate of money supply, under the reverse effect of financial accelerators, the degree of output reduction is greater than the degree of reduction of money supply, resulting in an increase in leverage. Therefore, they believe that the way to reduce leverage in the short or medium term is to increase the growth rate of the money supply.

But if high currency growth can help reduce leverage, then why didn't China see a reduction in corporate leverage in the previous high-currency growth stage? In fact, since the relatively loose macro policy environment from 2008, the leverage ratio of China's enterprises has risen at a high speed [4]. The high currency growth rate not only brings the problem of "idling funds" within the financial sector [5, 6], but also induces the real sector diverts out funds into the financial sector in the hope of sharing capital gains through financialization [7, 8].

This paper argues that the studies of song [2] and liu and zhang [1] tacitly assume that financial accelerators will only increase physical output, but will not incur systemic risk. However, high monetary growth increases the opportunity for financial capital to make profits, which will bring incentives for financial institutions to increase leverage, thus inducing funds circulating within the financial sector without entering the real economy and raising the level of systemic risk. And Dávila and Walther [9] points out that large financial institutions will take aggressive business practices and increase their leverage in order to increase the likelihood that they will be rescued. This behavior of large institutions increases the possibility of the government's overall rescue of the financial industry, so small financial institutions will also increase leverage. Even worse, small institutions will take the initiative to add leverage collectively [10]. Under the incentive of high leverage and high profits, all institutions will choose high-risk business strategies, and this collective moral hazard will lead to systemic risk [11]. If a large institution needs to hedge its own risk, it will only find another large institution that is implicitly guaranteed by the government, so as to bring it extra security [12]. So big institutions will be tied to each other, which leads to the collapse of the entire financial system when there is a crisis in the market. All in all, if the leverage-accumulate behavior of financial institutions is strategically complementary, then regulators reducing leverage by creating a loose monetary policy environment will actually sow the seeds of systemic risk.

The value of song [2] and liu and zhang [1] is to highlight the non-neutral role of monetary policy on output, which was confirmed in the discussion of bailout policies after the subprime crisis [13, 14]. The source of the non-neutrality of monetary policy lies in heterogeneity, such as heterogeneity at the industrial sector level and at the individual level of companies. Existing empirical tests of the China's leverage paradox focus on the manufacturing sector only [3, 15, 16], and lack consideration of systemic risk factors. An important reason for this deficiency is the difficulty of obtaining systemic risk monitoring indicators for microscopic individuals. Pflueger, Siriwardane, and Sunderam [17] proposes a risk perception indicator that can be constructed from the stock price data of listed companies, and this indicator is an important driver of the economic cycle. Because systemic risk is related to changes in economic cycles, this paper proposes that the systemic risk measurement of listed companies can be obtained based on risk perception indicators.

From the above literature review process, the following enlightenment canbe drawn: First, the existence of China's leverage paradox needs to be verified both in the real and financial sectors. Verifying

whether there is a leverage paradox in the financial sector is the main task of this paper; Secondly, when analyzing the mechanism of the leverage paradox, it is not appropriate to assume that the financial accelerator only brings an increase in output without brings an increase in systemic risk, and analyzing the impact of the risk level on the leverage paradox is another task of this paper; Finally, heterogeneity in economies needs to be considered when empirically testing the effect of leverage.

III. MODEL

3.1 Econometric Model Specification

The main purpose of this modeling is to analyze the impact of monetary policy growth on the company's leverage ratio, so the explanatory variable is the company's leverage ratio (leverage), and the core explanatory variable is the money supply growth rate (m2g). zhang and zhen [7] pointed out that in addition to the impact of monetary policy, the financial expansion behavior of enterprises is also affected by capital profit-seeking and risk aversion factors. Thus, the explanatory variables of the model also include the company's profit margin (profit) and the company's systemic risk level (risk).

Other control variables such as the company's financing constraints, the size of the company, and the company's ability to grow are also generally considered when analyzing the financialization behavior of the company [18, 19]. In the context of analyzing the impact of systemic risk on corporate financing decisions, we only select the size of the company size (scale) as the main control variable, because according to the theory of "too big to fail", the larger the size of the company, the greater its systemic impact, the greater the possibility of its rescue, and thus the greater the incentive to increase leverage. Therefore, when considering systemic risk, only the variable of company size is the most relevant.

To account for differences between different firms and different time periods, we use panel regression models that incorporate individual effects at the enterprise level (c_i) and time effects between different years (d_i) . Finally, the regression model of this article is set as follows:

$$leverage_{it} = c_i + d_t + m2g_t + profit_{it} + risk_{it} + scale_{it} + \epsilon_{it}$$

The criterion for judging whether there is leverage paradox of monetary policy is the coefficient sign of m2g (money supply growth rate): if the coefficient sign is negative, it means that leverage ratio is negatively correlated with the central bank's monetary growth rate, and the more liquidity the lower the leverage ratio, that is, there is a leverage paradox at this time; On the contrary if the coefficient is negative, it means that there is no leverage paradox.

The above-mentioned leverage paradox related to monetary policy is the leverage paradox discussed in the existing literature, which we call the "liquidity leverage paradox". In this paper we propose that there is another kind of leverage paradox called "scale leverage paradox", and it can be judged by looking at the

coefficient sign of scale (company's size). According to Myers [20] proposed pecking order theory, the leverage ratio of a firm is negatively correlated with its size. So, if coefficient sign of variable scale in the regression result is negative, there is no scale leverage paradox; if its sign is positive, it indicates that there is a scale leverage paradox.

3.2 Data and Variable

Except the money supply growth rate (m2g) from China's National Bureau of Statistics, the data in this article are from the MindGo quantitative trading platform. The quarterly data runs from 2005Q1 to 2021Q1.

3.2.1 Leverage

Leverage is the ratio of total liabilities to total assets. The query metric for total liability data in the MindGo database is the "Total Liabilities (total_liabilities)" indicator in the balance sheet, and the query metric for total asset data in MindGo database is the "Total Asset (total_assets)" indicator in the balance sheet.

3.2.2 M2g

Money supply growth rate (m2g) comes from China's National Bureau of Statistics, the indicator is "money and quasi-money (M2) supply year-on-year growth (%)". The original data of this indicator is monthly data, and we average the monthly money supply growth rate in each quarter, using this mean as the quarterly year-on-year growth rate of the money supply.

3.2.3 Profit

The company's profit margin (profit) is measured by return on total assets. The query metric for this data in the MindGo platform database is "Return on Total Assets (ROA)" indicator in the list of financial factors.

3.2.4 Risk

The variable risk measures a company's systemic risk level. Pflueger, Siriwardane, and Sunderam [17] found that the difference of book-to-market ratio between low-volatility stocks and high-volatility stocks can be used as a measure of risk perception in financial markets, and this indicator is highly correlated with economic cycles. Because changes in the economic cycle are associated with systemic risk, we propose that this indicator can be used to obtain a measure of the systemic risk of individual companies. Pflueger, Siriwardane, and Sunderam [17] focuses on the perception of investors in the financial market, and the perception of the subject is the most sensitive to changes in differences, so the difference in the book capitalization ratio of different types of companies should be used in their research. The research focus of this paper is on the attributes of listed companies as objects, so there is no need to make differences to reflect changes, therefore we use the value of the book capitalization ratio of each company as an indicator to measure its systemic risk level. And since the book value ratio is equal to the reciprocal of the price-to-

book ratio, we use the inverse of the company's price-to-book ratio to measure the risk level of the company. The PB ratio query metric in the MindGo database is "Price-to-Book Ratio (PB)" in the list of financial factors.

3.2.5 Scale

The company's size scale data is based on the total asset data indicator from MindGo platform, in which the query metric is "Total Asset (total_assets)" in the Balance sheet data. The total asset data takes log transformation when entering the model.

Regarding the size of the data sample, the MindGo platform has data on 4226 listed companies in Shanghai and Shenzhen stock market. After data cleaning we retain 3654 samples. There are 496 companies have screened out for data less than 6 quarters, 65 companies with incomplete data, 10 companies with negative leverage, and 3 companies with zero total assets. Descriptive statistics of the variable data that the model uses are shown in table I.

Table I. Data description summary

Variable	Mean	Std	Min	Max
leverage	0.470	0.691	0.0002	94.249
m2g	13.106	4.487	8	29
roa	3.775	9.205	-298.566	2,199.999
risk	0.385	0.301	-6.983	12.210
scale	21.963	1.370	14.108	29.955

Data source: National Bureau of Statistics of China; MindGo

IV. RESULT

In table II the random effect model reflects result that do not distinguish heterogeneities among firms, and the fixed effect model is the result that do distinguish heterogeneities among firms; The result of the real sector and the financial sector is the econometric results within the industrial and financial sectors, respectively, after distinguishing between industry heterogeneity.

4.1 Whether to Distinguish Heterogeneity among Firms Determines Whether There is a Liquidity Leverage Paradox

From regression equation (1) of table II we can see that, without taking into account the heterogeneity among firms, the coefficients of money supply growth (m2g) in the random effect model are positive, i.e., the money supply is positively correlated with the firm's leverage (leverage). Therefore, there is no liquidity leverage paradox in random effect model.

As can be seen from the regression equation (2) of table II, in a fixed effect model that takes into

account the heterogeneity among firms, the coefficient of money supply growth (m2g) is -0.005 and the coefficient significance level is 1%. Therefore, it can be judged that the money supply is negatively correlated with the leverage of the company. That is, there is indeed a liquidity leverage paradox in fixed effect model.

Since the sample of this paper contains listed companies in various industries and periods, the differences among companies should be significant, so we think it is appropriate to choose a fixed effect model at this time. That is to say there is indeed a liquidity leverage paradox in listed companies in China.

	Leverage						
	The whole economy		Real sector		Financial sector		
	random effect	fixed effect	random effect	fixed effect	random effect	fixed effect	
	(1)	(2)	(3)	(4)	(5)	(6)	
m2g	0.033***	-0.005***	0.035***	-0.006***	0.029	0.004**	
	(0.002)	(0.000)	(0.002)	(0.000)	(0.019)	(0.002)	
roa	-0.026***	-0.002***	-0.026***	-0.002***	-0.022	-0.004^{***}	
	(0.001)	(0.000)	(0.002)	(0.000)	(0.014)	(0.001)	
risk	-0.543***	-0.371***	-0.540***	-0.369***	-0.535***	-0.447***	
	(0.032)	(0.007)	(0.032)	(0.007)	(0.178)	(0.022)	
scale	0.096***	-0.038***	0.092***	-0.043***	0.138***	0.058***	
	(0.005)	(0.003)	(0.005)	(0.003)	(0.030)	(0.005)	
Constant	-1.778***		-1.695***		-2.661***		
	(0.100)		(0.104)		(0.849)		

Table II. Econometric result

Note: *p<0.1; **p<0.05; ***p<0.01. The whole economy=real sector + financial sector

4.2 Whether Distinguish Heterogeneity between Financial and the Real Sector Determines Whether There is a Liquidity Leverage Paradox

From regression equation (4) of table II, it can be seen that in real sector, the coefficient of money supply growth (m2g) is -0.006, and the coefficient significance level is 1%. The negative coefficient indicates that there is a liquidity leverage paradox within the real sector. Moreover, the absolute value of the coefficient of money supply growth (m2g) is greater than its absolute value in the regression equation (2), which indicates that the paradox effect of liquidity leverage is more prominent in the real sector.

As can be seen from the regression equation (6) in table II, the coefficient of money supply growth (m2g) is 0.004 and the coefficient significance level is 1%. The positive coefficient indicates that there is no liquidity leverage paradox in the financial sector.

In other words, the liquidity leverage paradox exists only in the real sector and not in the financial

sector. The coefficient of (m2g) in equation (2) of table II is -0.005, while the coefficient of (m2g) in the regression equation (4) is -0.006. That is to say, the liquidity leverage paradox effect in the whole economy (financial plus real sectors) is weaker than that of the real sector. This is because there is no liquidity leverage paradox in the financial sector, thus diluting the liquidity leverage paradox effect of the whole economy.

4.3 Whether to Consider the Risk Transmission Channel Determines the Size of the Effect of Liquidity Leverage Paradox

Table III shows the regression results after removing the company's risk level variable risk. Comparing the regression results of Equations (2) and (4) between table II and table III, it can be seen that the coefficients of the money supply growth rate (m2g) are all negative, but the absolute values in table III is smaller than in table II. This shows that the liquidity leverage paradox is still exists without considering the level of risk, but the degree of effect is reduced.

	leverage								
	The whole economy		Real sector		Financial sector				
	random effect	fixed effect	random effect	fixed effect	random effect	fixed effect			
	(1)	(2)	(3)	(4)	(5)	(6)			
m2g	0.029***	-0.002***	0.031***	-0.003***	0.005	0.007***			
	(0.002)	(0.000)	(0.002)	(0.000)	(0.018)	(0.002)			
roa	-0.020***	-0.002^{***}	-0.020^{***}	-0.002***	-0.014	-0.005***			
	(0.002)	(0.000)	(0.002)	(0.000)	(0.015)	(0.001)			
scale	0.049***	-0.067***	0.044***	-0.072^{***}	0.071***	0.028***			
	(0.004)	(0.002)	(0.004)	(0.003)	(0.022)	(0.005)			
Constant	-0.918***		-0.826***		-1.055				
	(0.089)		(0.093)		(0.715)				

Table III. Econometric result without variable risk

Note: *p<0.1; **p<0.05; ***p<0.01. The whole economy=real sector + financial sector

Comparing the regression results of equation (6) between table II and table III, we can see that the coefficients of the money supply growth rate (m2g) are all positive, but the absolute values are larger in table III than in table II. This shows that the financial sector still does not have liquidity leverage paradox even without considering the level of risk, but the sensitivity of financial companies to monetary policy responses has increased in model (6). When the coefficient of money supply growth (m2g) is positive, from the perspective that the closer the coefficient is to 0 the stronger the leverage paradox effect and the farther away the coefficient value is to 0 the weaker the leverage paradox effect, it means that the effect of the liquidity leverage paradox is reduced in model (6).

4.4 Whether to Distinguish Industry Heterogeneity Determines Whether There is Scale Leverage Paradox

Pecking order theory indicates that the leverage of the company is negatively correlated with the size of the company [20]. Intuitively the negative correlation between leverage and the size of the firm can be understood as follow: generally speaking, as the size of the enterprise expands its ability to invoke resources will be enhanced, so they can use funds without increasing their leverage (such as using the capital of upstream and downstream enterprises'), which can not only save financial costs but also control their own risks. The coefficient of firm's size (scale) in equation (4) of table II is -0.043, indicating that the negative correlation between leverage and asset size in the real sector is in line with the pecking order theory.

The coefficient of company's size (scale) regression equation (6) of table II is 0.058. This suggests that the leverage of companies in the financial sector is positively correlated with the size of the company, which we call the scale leverage paradox. In contrast to liquidity leverage paradox considering leverage from the perspective of outer factors as monetary policy, scale leverage paradox considers firm's inner factors that affect leverage decision. The negative correlation between leverage in the financial sector and asset size suggests that there are certain factors that allow financial firms to ignore the impact of risk in their growth processes and to accumulate leverage.

V. DISCUSSION

5.1 The Liquidity Leverage Paradox and Pro-Cyclical Behavior in the Real Sector

Leverage paradox exists in Chinas real sector, which indicates that the risk taking of the real sector is pro-cyclical. When the economy is at risk of a downturn, the central bank will adopt a loose monetary policy. Anticipating the downturn risk, the real sector will reduce their own leverage from the point of view of avoiding economic uncertainty, so that the stimulus effect of loose monetary policy is reduced. When the economy is at risk of overheating, central banks will tighten liquidity. But anticipating the high profit, the real sector investment enthusiasm is high and will increase leverage. The conclusion obtained in this paper that risk-taking of the real sector is pro-cyclical is consistent with conclusion of lu and xu [21] that the leverage of China's industrial enterprises is pro-cyclical.

From the perspective of pro-cyclical risk taking, the leverage paradox is a rational profit-seeking and risk-avoidance behavior. If the effect of liquidity leverage paradox needs to be reduced for the purpose of improving the effectiveness of macroeconomic policies, then the direction of policy should be to mitigate the risks faced by market subjects. Besides, for the sector that does not have the liquidity leverage paradox, we should carefully analyze the causes and effects of the counter-cyclical risk-taking behavior, because a market subject that does not consider its own risks must bring externalities to the economy.

5.2 The Liquidity Leverage Paradox and "Excessive Financialization"

As mentioned earlier, the existence of liquidity leverage paradox in the real sector shows that the risktaking of the real sector is cyclical, then the nonexistence of liquidity leverage paradox in the financial sector indicates that the risk-taking of financial institutions is counter-cyclical. Different risk-taking preferences in the real and financial sectors provide a new explanation for "excessive financialization". The traditional interpretation of "excessive financialization" is that the financial sector actively chooses to circulate funds within the financial system in pursuit of high profits. However, if the risk-taking preference mode of real and financial enterprises is different, when the risk is increased, the real sector reduces leverage and the financial sector increases leverage, the liquidity generated by loose monetary policy must have to go somewhere. Therefor this extra liquidity can only enter the leverage-increasing financial sector, but not into the leverage-decreasing real sector.

Therefore, the essence of "excessive financialization" is a manifestation of the collective action paradox, Farhi and Tirole [11] points out that the collective action paradox will make the financial sector collectively increase leverage, while in this paper we point out that the collective action paradox will make the real sector collectively reduce leverage. Therefore, although the phenomenon of "excessive financialization" is the speculative arbitrage behavior of market subjects, but the direct fight against speculation cannot solve the problem of "excessive financialization", the fundamental means should be to alleviate collective action paradox of the real sector. The macroeconomic policy of regulating the market is a counter-cyclical policy, which must be coordinated by the micro-subject in order to be effective. The premise of micro-subject cooperation is that the pro-cyclical of its risk-taking behavior cannot be too strong, otherwise it will offset the effect of counter-cyclical policy under the behavior of collective profitseeking and risk-avoiding behavior. An important reason of China's success in macroeconomic policy is that there are many state-owned enterprises (SOEs). These SOEs' risk-taking behavior are weak procyclical, so they can support the government's counter-cyclical control policy. Therefore, to enhance the effectiveness of regulatory or bail-out policies, the next step should be to reduce the cyclical behavior of private sector enterprises. Reducing the pro-cyclical of private sector firms depends on improving the heterogeneity of private enterprises. Improving the heterogeneity of private sector can be achieved by encouraging entrepreneurial innovation.

5.3 The Scale Leverage Paradox and Implicit Government Guarantees

The reason that China's financial sector does not have liquidity leverage lies in the characteristics of companies. Through the analysis of the scale characteristics, this paper finds that there is scale leverage paradox in the financial sector, that is, the leverage ratio of financial institutions is positively correlated with the scale of assets, while the leverage ratio of non-financial enterprises is negatively related to the scale of the company [20, 22]. No matter financial institutions increase leverage against the cycle or increase leverage after scale growth, these all indicates that there are factors that make financial enterprises ignore risks or help them bear risks. We argue that the factors that are most likely to affect the risk-taking

behavior or risk-bearing costs of financial institutions are the implicit guarantees of the government to the financial sector. Therefore, no matter the non-existence of liquidity leverage paradox or the existence of scale leverage paradox in the financial sector, their essences are all the implicit guarantee of the government.

The government's implicit guarantee is not only present in China, the Greenspan put option that exists in the US market is a kind of government implicit guarantee too [13]. To alleviate the government's implicit guarantee for the financial sector is the core task of the regulatory authorities of various countries. The scale leverage paradox in the financial sector found in this paper supports the policy orientation of reducing the government's implicit guarantees through limiting the size of financial institutions.

5.4 The Non-Existence of Liquidity Leverage Paradox in Financial Sector and Systemic Financial Risk

Although there is liquidity leverage paradox in the real sector, there is no liquidity leverage paradox in the financial sector in China, so we do not agree with liu and zhang [1] and song [2] to create loose monetary policy environment to reduce leverage. The profound lesson of the subprime crisis is that the financial crisis will bring economic crisis, even if the real sector is in a healthy state. Reducing leverage by maintaining high monetary growth brings the risk of a financial crisis in two ways: First, in the financial sector, high currency growth will induce even more funds circulate among financial institutions without get into real sector, so it will continue to push up the risk of the financial sector; Second, in the real sector, the capital gains under the condition of long-term loose monetary policy will induce real sector enterprises to accumulate leverage, thereby triggering systemic financial risks.

VI. CONCLUSION

China's liquidity leverage paradox exists only in real sector and does not exist in the financial sector. The risk pro-cyclical behavior of real sector enterprises causes the liquidity leverage paradox in the real sector. The implicit guarantee of the government makes the risk taking of financial institutions can be countercyclical, so there is no liquidity leverage paradox in financial sector. For the real sector, pro-cyclical patterns of behavior lead not only to the leverage paradox, but also to the failure of collective actions such as "excessive financialization". Reducing the pro-cyclical behavior of real sector enterprises should be achieved by encouraging entrepreneurs to innovate so as to improve the heterogeneity of enterprises. China's scale leverage paradox exists only in financial firms and does not exist in the real sector. For the financial sector, the implicit guarantees of the government make financial institutions ignore their own leverage-taking externalities, and limiting the size of financial institutions can reduce the impact of their externalities.

For the whole society, although the growth rate of money has different effects on the leverage of the financial and real sectors, the financial sector will cause systemic risks under the sustained high monetary growth. Therefore, it is not wise to reduce the leverage ratio of the whole society by creating a high

monetary growth environment on the grounds that there is liquid leverage paradox in the real sector. From the perspective of supporting the development of real enterprises, it is not enough to rely on monetary policy alone, but also needs to be supplemented by industrial policies that open up the investment field. At the same time, in order to help entrepreneurs to share risks, it is necessary to have financial product innovation policies that expand direct financing channels and the size of qualified investors who are willing to take risks.

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REFERENCES

- [1] Xiaoguang Liu and Jieping Zhang. China's leverage paradox: Is it really impossible for monetary policies to cut down leverage while maintaining economic growth? Financial and trade economics, (08):5–19, 2016.
- [2] Guoqing Song. The less the more money. CaiJing, (2):37–37, 2000.
- [3] Ren Wang and Zhiwei Li. financial accelerator effect and "leverage ratio paradox": an empirical analysis of the manufacturing sector. Journal of Shanghai University of Finance and Economics, 21(06):35–49, 2019.
- [4] Yuwei Wang, Tianxiang Sheng, and Geng Zhou. macroeconomic policy, financial resource allocation and high leverage ratio of enterprise sector. Journal of Financial Research, (01):36–52, 2018.
- [5] Guang Yang and Puyang Sun. Does excess liquidity cause "money shortage": analysis based on heterogeneous DSGE framework analysis based on heterogeneous DSGE framework. Nankai Economic Studies, (05):59–73, 2015.
- [6] Yi Guo. The essence of financial deleveraging and conditions for its realization. reform, (04):73–81, 2018.
- [7] Chengsi Zhang and Ning Zhen. what drives the financialization of China's real sector: monetary expansion, profit-seeking capital or risk aversion? Journal of Financial Research, (09):1–19, 2020.
- [8] Mingquan Sheng, Shun Wang, and Yuping Shang. financial assets allocation and entity enterprises' total factor productivity: "integration of industrial finance capital" or "removing reality to virtual". Finance and Trade Research, 29(10):87–97+110, 2018.
- [9] Eduardo Dávila and Ansgar Walther. Does size matter? bailouts with large and small banks. Journal of Financial Economics, 136(1):1–22, April 1, 2020.
- [10] Viral V. Acharya and Tanju Yorulmazer. Too many to fail an analysis of time-inconsistency in bank closure policies. Journal of Financial Intermediation, 16(1):1–31, January 1, 2007.
- [11] Emmanuel Farhi and Jean Tirole. Collective moral hazard, maturity mismatch, and systemic bailouts. American Economic Review, 102(1):60–93, February 2012.
- [12] Levent Altinoglu and Joseph E. Stiglitz. Collective Moral Hazard and the Interbank Market, Washington: Board of Governors of the Federal Reserve System, December 2, 2020.
- [13] Gideon Bornstein and Guido Lorenzoni. Moral hazard misconceptions: the case of the Greenspan Put. IMF Economic Review, 66(2):251–286, June 1, 2018.

- [14] Todd Keister. Bailouts and financial fragility. The Review of Economic Studies, 83(2):704–736, April 1, 2016.
- [15] Ren Wang and Qijia Zhang. financial resource mismatch and leverage response mechanism: micro-positive analysis on overcapacity industries in China. finance and economics, (04):1–13, 2020.
- [16] Ren Wang and Zhiwei Li. difference of monetary policy operation type and response mechanism of microenterprise leverage in manufacturing industries. Modern Economic Science, 42(03):80–91, 2020.
- [17] Carolin Pflueger, Emil Siriwardane, and Adi Sunderam. Financial market risk perceptions and the macroeconomy. The Quarterly Journal of Economics, 135(3):1443–1491, August 1, 2020.
- [18] F. Demir. Financial liberalization, private Investment and portfolio choice: financialization of real sectors in emerging markets. Journal of Development Economics, 88(2):314–324, 2009.
- [19] chengsi zhang and butan zhang. the falling real investment puzzle: a view from financialization. Economic Research Journal, 51(12):32–46, 2016.
- [20] Stewart C. Myers. The capital structure puzzle. The Journal of Finance, 39(3):574–592, 1984.
- [21] ting lu and qiyuan xu. corporate leverage in China: is it a cyclical problem? Journal of Financial Research, (02):1–19, 2021.
- [22] Stewart C. Myers and Nicholas S. Majluf. Corporate financing and investment decisions when firms have information that investors do not have. Journal of Financial Economics, 13(2):187–221, 1984.