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The Macro Prudential Assessment Framework of China

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Abstract: This paper first introduces the basic concepts of macro-prudential assessment (MPA), and briefly introduces the background of MPA policy implementation, the key indicators of process and MPA assessment, the reward and punishment mechanism, as well as the purpose of China's macro-prudential assessment system. On this basis, this paper selected 15 listed banks as samples to analyze the achievement of the key indicators of MPA. In addition, it analyzes the influence of MPA evaluation system on bank management, introduces the broad credit standard to restrain the asset allocation mode; capital becomes the core constraint; the development mode needs to be adjusted. In addition, the countermeasures of strengthening the capital control, cultivating the awareness of enterprise capital saving, strengthening the strategic management, innovating the asset allocation system, improving the price management system, promoting reasonable pricing, innovating the development model, doing risk prevention and other improvement measures under the MPA mechanism are discussed.

Keywords: macro prudential assessment, banking industry, China

1. Introduction

After the outbreak of the world economic crisis, in order to further effectively prevent dissolve and effective management of economic and financial systemic risk, the People's Bank of China successively to China's financial system supervision mechanism has made a series of major reform adjustment, established the financial systemic risk monitoring and early warning mechanism as the main core content of the new risk management system, gradually formed and further improve the MPA system framework system and the main evaluation index, innovative financial system regulation mechanism, using rewards and punishment mechanism to improve commercial Banks to control risk attention, strengthen the vigilance of risk prevention, promote the stable and healthy development of commercial Banks. Under the supervision of the MPA evaluation system, banks should seek for business development and also prevent risks under the guidance of the assessment framework. The MPA evaluation system not only strictly controls risks for enterprises, but also brings constraints and challenges for the development of banking institutions. Here are some basic overview of MPA [1].

The so-called macro-prudential management refers to the evaluation system that meets the development needs of asset diversification under the new normal, takes counter-cyclical adjustment as the core, and considers banking financial institutions' broad credit, inter-bank deposits and financial services according to the degree of importance, which is conducive to preventing regional system financial risks.

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The background and process of MPA policy implementation are included in the following three points. First, the economic environment is severe, various financial products emerge in an endless stream, uneven, the world economy is in a downturn, financial institutions frequently go bankrupt, or even the national bankruptcy [2]. In China, the Internet economy is rising rapidly, the capital market is active, the performance of the real industry and manufacturing industry is not satisfactory, and the financial management and real estate bubble is gradually becoming more and more obvious. Second, banks have transformed from the traditional main business of deposit and loan to a mixed business bank, which derivative a series of fund-raising investment, asset management, asset trading and other businesses. My colleagues also have a large number of cross-market capital flows. Without adjusting the regulatory model, it will be difficult to control the new risks. Third, the regulatory framework lags behind. Under the general trend of mixed operation, cross-financial products have problems such as regulatory arbitrage, concealment, transfer and risk amplification. At the same time, the main regulatory agencies have system and interest game. The shadow banking, banking, securities and bancassurance businesses are in lack of supervision, exposing the lag and lack of the regulatory system.

Macro-prudential management is mainly to realize the transformation from narrow credit to broad credit, from time point management to daily management, and from benchmark interest rate to market-oriented interest rate [3]. Through MPA evaluation system to establish China's banking industry risk difference management system and comprehensive market price risk management and control system will continue as banking under the condition of continuous operation and development of a core competitiveness, pay attention to and fully consider the expected loss factors and potential risk causes, increase the banking price risk management control research breadth and research depth, effectively prevent systemic risk [4].

The indicators of MPA mainly include seven aspects: capital and leverage situation, balance sheet situation, liquidity, pricing behavior, asset quality, cross-border financing risk, and credit policy implementation. As for the reward and punishment mechanism, the MPA assessment mechanism divides financial institutions into three levels: the A-level institution refers to more than 90 points in seven aspects, which is the excellent level, and the optimal level incentive is implemented, and the legal reserve interest rate is increased to 1.1 times to 1.3 times. The B-level organization: refers to the institution that meets the standards but has not yet reached the highest requirements, and will not make any adjustment to the statutory reserve interest rate. Level C institution refers to a capital and leverage situation, pricing behavior of less than 60 points; or two in the other five items. For such institutions, appropriate constraints will be given, and the statutory reserve ratio will be reduced to 0.7 times to 0.9 times.

2. Implementation of the MPA Indicators of Listed Banks

In this study, 15 major listed banks will be selected to analyze the implementation of their MPA indicators. These 15 banks are all domestic systemically important banks. The three years from 2019 to 2021 were selected to analyze the implementation of MPA indicators [5].

2.1. Capital and Leverage

In terms of the MPA monetary adequacy ratio, the MPA monetary adequacy ratio (C*) is calculated to determine the standard to measure the status of banks' monetary adequacy ratio indicators. For the MPA C* equals to structural parameter α_i which equals to minimum capital adequacy ratio requirement of 8% plus systemically important additional capital plus reserve capital of 2.5% and plus counter-cyclical capital buffer. The structural parameter α_i can be set to 1, and the systematic importance additional capital value is 1%. For the counter-cyclical capital buffer equals to the max between β_i multiply institutional I broad credit growth rate minus the sum of target GDP growth rate and target

CPI and 0, which β_i is between 0.4 and 0.8, and this calculation takes β_i =0.4. Institutional i broad credit growth needs to use the broad money supply M2 growth target as a reference. In Table 1, M2, GDP growth and CPI values will refer to the data given by the National Bureau of Statistics. In Table 2, The lower limit and upper limit of broad credit growth are brought into the formula to calculate the calculation results [6].

Table 1: M2 growth rate, GDP growth rate and CPI 2019-2021.

	2019	2020	2021
M2 growth rate	8.70%	10.10%	9.00%
Broad credit growth ceiling (N-SIFIs)	28.70%	30.10%	29.00%
GDP speed increase	6.00%	2.20%	8.10%
CPI	2.90%	2.50%	0.90%

Table 2: Scope of MPA currency adequacy ratio 2019-2021.

	2019 (%)		2020 (%)		2021 (%)	
Structural parameters α_i	1	1	1	1	1	1
Minimum capital adequacy ratio	8.00	8.00	8.00	8.00	8.00	8.00
Systemically important additional capital	1.00	1.00	1.00	1.00	1.00	1.00
reserve capital	2.50	2.50	2.50	2.50	2.50	2.50
β_i	0.4	0.4	0.4	0.4	0.4	0.4
Structure i of the broad credit growth rate	8.70	28.70	10.10	30.10	9.00	29.00
GDP	6.00	6.00	2.20	2.20	8.10	8.10
Target CPI	2.90	2.90	2.50	2.50	0.90	0.90
Counter-cyclical capital buffer	0.00	7.92	2.16	10.16	0.00	8.00
C*	11.50	19.42	13.66	21.66	11.50	19.50
Standard bottom line C*-4%	7.50	15.42	9.66	17.66	7.50	15.50

Comparing the monetary adequacy ratio of the 15 listed banks from 2019 to 2021 (in Table 3). First, set βi equals to 0.4 and institutional I broad credit growth rate equals to M2 [7]. In 2019,15 banks were able to meet the standards and entered the highest level. By 2020, all 15 banks will meet the standards, Shanghai Pudong Development Bank (SPD bank) , China Merchants Bank (CMB), Agricultural Bank of China (ABC), Bank of Communications (BC), Industrial and Commercial Bank of China (ICBC), China Everbright Bank (CBE), China Construction Bank (CCB) and Bank of China (BOC) entered the highest ranking positions. In 2021, all 15 banks will meet the standards and enter the highest level. Second, set β_i equals to 0.4 and institutional I broad credit growth rate equals to M2 plus 20%. In 2019, CMB, ABC, ICBC, CCB, and BOC were able to reach values above C * minus 4%. In 2020, none of the 15 banks managed to reach C* minus 4%. In 2021, CMB, ABC, ICBC, CCB, and BOC will be able to reach values above C * minus 4% [8-22].

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Table 3: Capital adequacy ratio of 15 major listed banks from 2019 to 2021.

Listed banks	2019	2020	2021
Ping An Bank	13.22%	13.29%	13.34%
SPD Bank	13.86%	14.64%	14.01%
Huaxia Bank	13.89%	13.08%	12.82%
CMB[1]	13.17%	13.04%	13.64%
CMB	15.54%	16.54%	17.48%
CIB	13.36%	13.47%	14.39%
ABC	16.13%	16.59%	17.13%
BC	14.83%	15.25%	15.45%
ICBC	16.77%	16.88%	18.02%
CBE	13.47%	13.90%	13.37%
CCB	17.52%	17.06%	17.85%
BOC	15.59%	16.22%	16.53%
Citic	12.44%	13.01%	13.53%
BOB	12.28%	11.49%	14.63%
Bank of Shanghai	13.84%	12.86%	12.16%

[1]China Minsheng Bank; [2]China Merchants Bank.

Through the above calculation results, it can be seen that the 15 listed banks have a good monetary adequacy ratio (see Figure 1). There will be some fluctuations in 2020, which is partly related to the outbreak of COVID-19 in 2020. In addition, in 2019 and 2021, CMB, ABC, ICBC, CCB and BOC will still meet the standards while using the ceiling of broad credit growth as the parameter. It can be seen that these five listed banks have performed well in the monetary adequacy ratio.

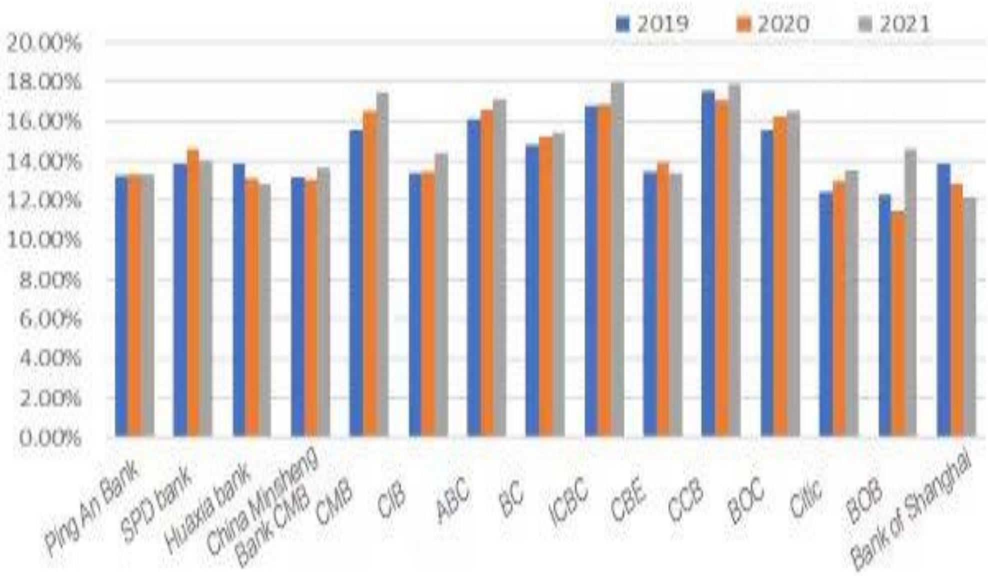

Figure 1: Monetary adequacy ratio of 15 listed banks.
(Photo credit: Original)

In terms of the leverage rate, The leverage ratio in the MPA assessment index should not be less than 4%, once less than will be 0 points. According to the data provided by the financial statements

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of the listed banks, the 15 banks all have leverage ratios (in Table 4) of more than 4%, with full marks on this index.

Table 4: Leverage ratio of 15 listed banks from 2019 to 2021.

Listed banks	2019	2020	2021
Ping An Bank	6.44%	6.48%	6.33%
SPD Bank	6.83%	6.97%	7.04%
Huaxia Bank	7.68%	7.40%	7.12%
CMB	6.87%	6.93%	7.60%
CMB	6.79%	7.39%	8.00%
CIB	6.43%	6.58%	6.72%
ABC	7.09%	7.42%	7.83%
BC	7.43%	7.50%	7.60%
ICBC	8.31%	8.14%	8.69%
CBE	6.83%	7.03%	7.00%
CCB	8.28%	7.99%	8.13%
BOC	7.43%	7.70%	7.65%
Citic	6.71%	6.40%	6.78%
BOB	6.68%	6.57%	8.33%
Bank of Shanghai	6.92%	6.84%	6.49%

[1]China Minsheng Bank; [2]China Merchants Bank.

2.2. Assets and Liabilities

According to the MPA assessment requirements, the broad credit growth rate of N-SIFIs shall not exceed 20 percentage points from the target M2 growth rate by 20 percentage points, otherwise the index will be counted as 0 points. Based on the year-on-year loan growth data of the 15 listed banks from 2019 to 2021. The growth rate of broad credit of the 15 listed banks in these three years did not deviate from more than 20% (see Figure 2). In 2019, ICBC, CCB and BC were the closest to their M2 growth targets. In 2020, the BC, China Minsheng Bank, CBE and ICBC saw the least deviation from the M2 growth rate. In 2021, the broad credit growth rate closest to the M2 growth target is the general banks and Citic.

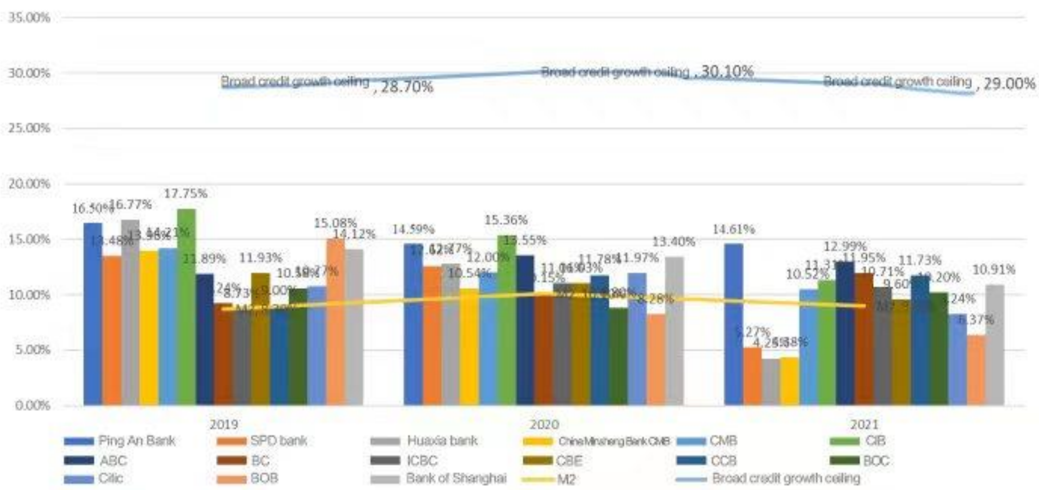

Figure 2: Broad credit growth of 15 listed banks 2019-2021.
(Photo credit: Original)

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Inter-bank liabilities generally refer to the assets that may generate liabilities from inter-bank lending or financing activities between inter-bank banks and other financial institutions in the same industry. MPA evaluation index system is mainly for the national systemic institutional liabilities main evaluation index for financial institutions trade assets and liabilities accounted for the proportion of the total assets and liabilities of financial institutions, the evaluation criteria for if not score higher than 25 percent is higher score, in between 25 percent and 33 percent is the mid-range, if the score more than 33 percent of the index will directly assign zero points. According to the batch of 15 new listed bank financial statements disclosed all trade liabilities data and all total trade liabilities data, the conclusion is as the above three (see Figure 3), 15 new listed Banks are expected to disclose in the next three years financial statements of all trade liabilities / total debt ratio will be less than 25 percent, in the highest score gear.

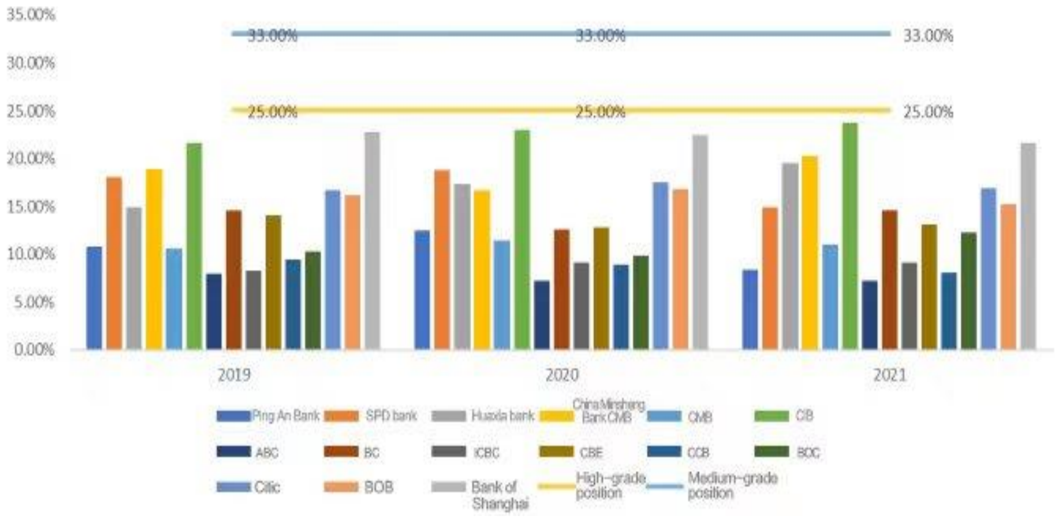

Figure 3: Inter-bank liabilities/total liabilities of 15 listed banks 2019-2021.
(Photo credit: Original)

2.3. Liquidity of Assets

According to the CBRC's requirements, the liquidity coverage rate of commercial banks should reach 100%, and the 15 listed banks have reached this rate in the past three years from 2019 to 2021 (see Figure 4). Among them, the flow coverage rate of Ping An Bank is close to the edge of reaching the standard in 2021, only exceeding 4 percentage points.

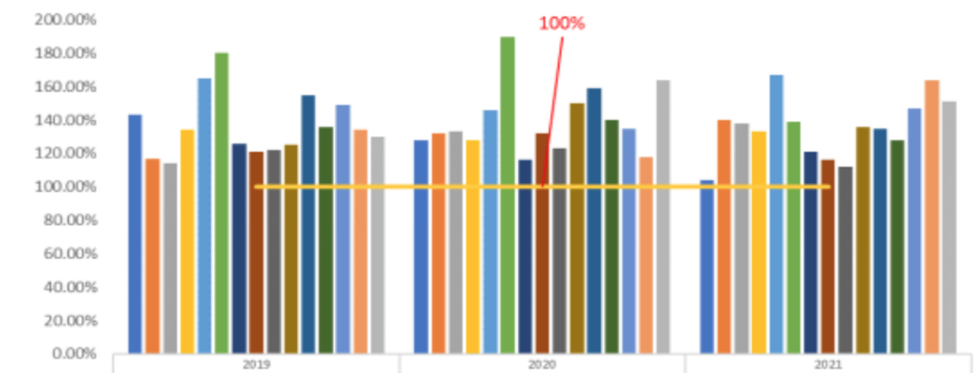

Figure 4: Flow coverage rate of 15 listed banks 2019-2021.
(Photo credit: Original)

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2.4. Asset Quality

The median non-performing loan ratio of the 15 listed banks in 2019 was 1.47%. The highest non-performing loan ratio is in SPD Bank, with more than 2%. CIB, China Minsheng Bank, CBE, Ping An Bank, China CITIC Bank and Huaxia Bank have non-performing loan ratios of more than 1.5 percent. Bank of Shanghai and China Merchants Bank had the lowest non-performing loan ratios, both at 1.16 per cent (see Figure 5). The median non-performing loan ratio of the 15 listed banks in 2020 was 1.57%, with the highest value being 1,82% for China Minsheng Bank. CCB, ABC, BOB, ICBC, China Citic Bank, BC, SPD Bank and Huaxia Bank also had non-performing loan ratios of more than 1.5 percent. China Merchants Bank had the lowest non-performing loan ratio, at 1.07% (see Figure 6). The median non-performing loan ratio of the 15 listed banks in 2021 was 1.42%, with the highest value being 1.79% for China Minsheng Bank. SPD Bank and Huaxia Bank also had non-performing loan ratios of more than 1.5 percent. The lowest non-performing loan ratio was 0.91% (see Figure 7).

Through the above results, it can be seen that among the 15 listed banks, China Merchants Bank controls the non-performing loan ratio relatively well. China Minsheng Bank, SPD Bank and Huaxia Bank need to pay more attention to this index.

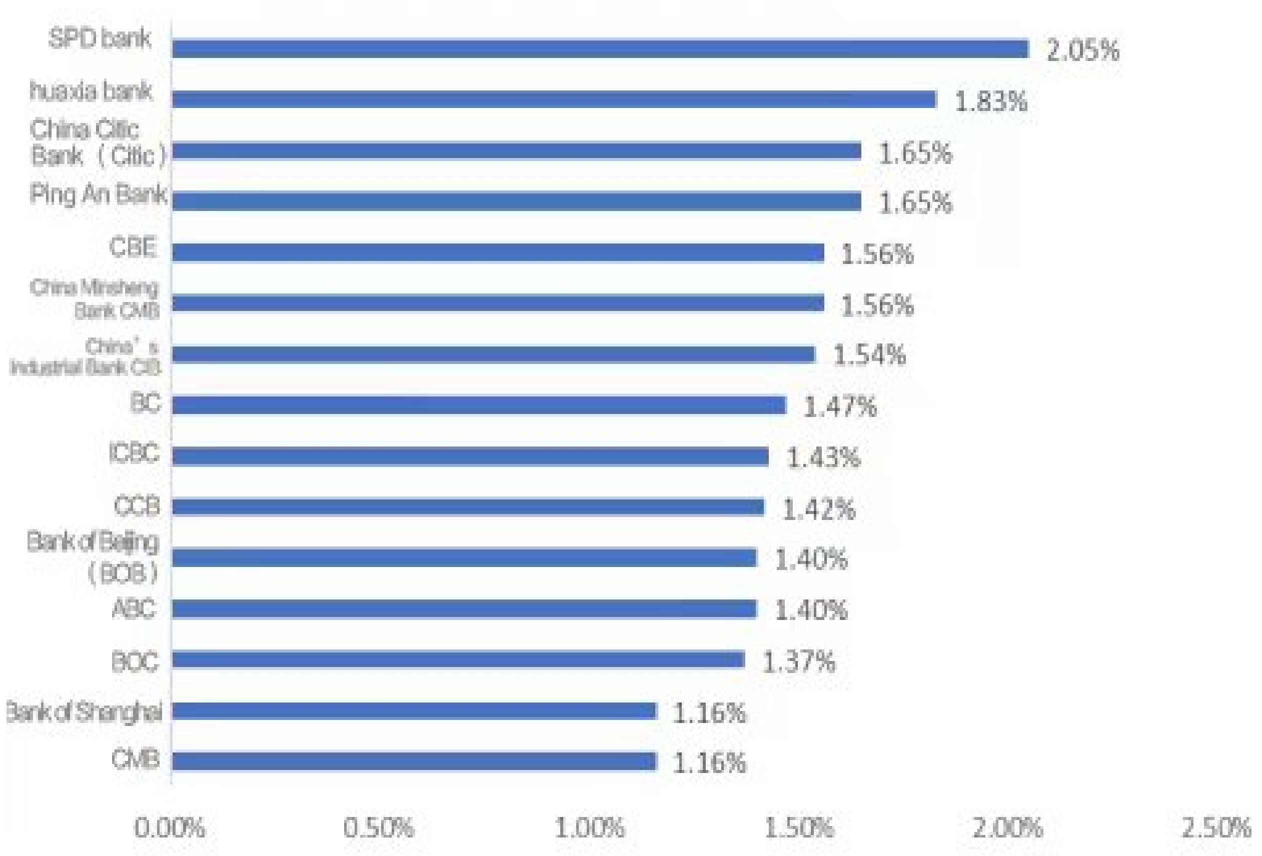

Figure 5: Non-performing loan ratio of 15 listed banks in 2019.
(Photo credit: Original)

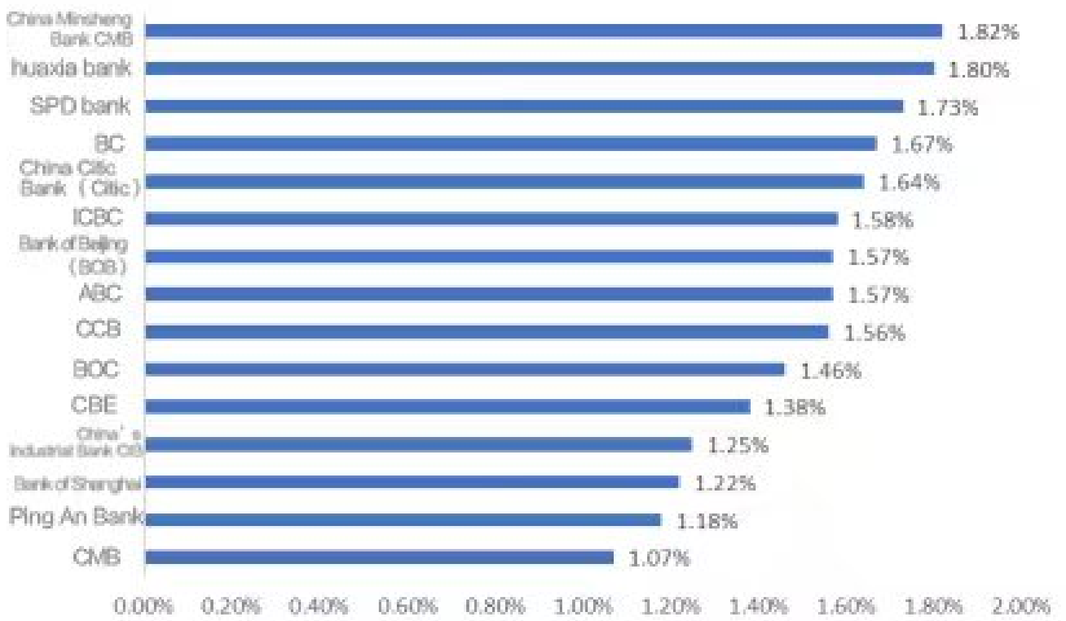

Figure 6: Non-performing loan ratio of 15 listed banks in 2020.
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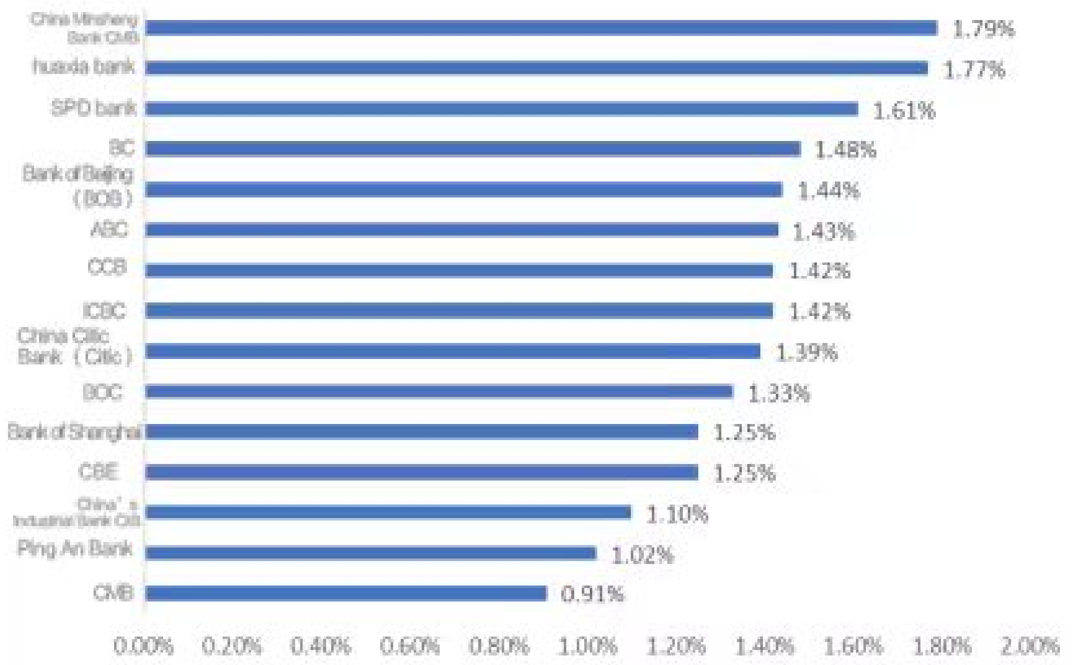

Figure 7: Non-performing loan ratio of 15 listed banks in 2021.
(Photo credit: Original)

The MPA requires that the provision coverage rate should be no less than 120%, and more than 150% will get the highest classification level. The provision coverage rate of 15 listed banks will exceed 120% from 2019 to 2021 (see Figure 8). In 2019, except for SPD Bank and Huaxia Bank, the provision coverage rate of the other 13 banks all exceeded 150 percent. In 2020, except for SPD Bank, Huaxia Bank and China Minsheng Bank, the provision coverage rate of the other 12 banks will all

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exceed 150%. In 2021, except SPD Bank and Minsheng Bank, the provision coverage of the other 13 banks will exceed 150% [23].

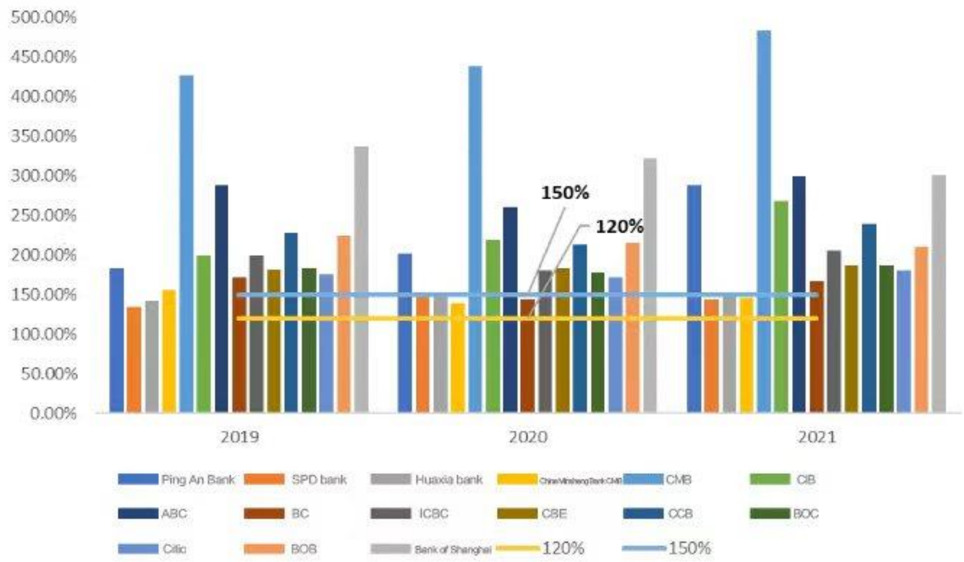

Figure 8: Provision coverage of 15 listed banks 2019-2021.
(Photo credit: Original)

3. Impact of the MPA Mechanism on the Banks

The MPA mechanism has a wide impact on the banking financial institutions, especially it will have a more important impact on the capital allocation, operation and development mode. Under the new architecture of the MPA, broad credit standards will include the following five aspects: one is all kinds of credit, the second is securities financing, 3 it is investment in stocks and other financing tools, four is buying resale financing, five is stored in non-bank institutional loans, etc., as a result, in the commercial Banks and other financial institutions are common "big information" asset allocation mode will be introduced into the financial prudent assessment framework, and strictly restricted by the broad credit standards. This will have a fundamental impact on the asset structure of commercial banks and other financial institutions, especially the stock financing that has soared since 2015. In addition, the MPA mechanism takes capital as the basic condition of economic macro-prudential economy. As a relatively basic factor in the macro-prudential evaluation system, capital is also one of the important means for the People's Bank of China to implement counter-cyclical control. The most important change is to measure capital in the caliber of broad credit.

The enterprise capital adequacy ratio standard of commercial banks generally includes the following two components: first, the underlying capital index of risk-weighted assets, which is calculated in accordance with the regulations of CBRC on the capital management method of commercial banks, and is basically the same criteria as all financial institutions and is not directly affected by MPA; the regulations must be made in strict accordance with the scope of broad credit standards. For financial institutions with a high growth rate of capital allocation other than conventional loans, the counter-cyclical demand for financing funds has the opportunity to reach 2.5%, and even meet the cost requirements of low-risk-weighted assets.

In the situation of increasing capital demand, the industry with large capital consumption of the banking industry will be under great pressure, and the scarcity of capital will be more prominent, which provides a test for the investment level of commercial banks. In addition, due to the assets of the operating costs under the premise of yield marketization is still quite rigid, so cannot effectively

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reduce, under the broad credit management model of the asset side profits there is a lot of pressure, so the financial department of commercial Banks, risk management institutions, such as operating burden will rise significantly.

Moreover, the trade service on the basis of commercial banking service development has always been the main service mode of China's banking industry, with the implementation of the macro-prudential appraisal system, the development of the trade service suffered great impact, especially through short-term trade liabilities to realize the long-term asset reasonable allocation of business model will be subject to great constraints. At the same time, as the interest rate becomes more market-oriented, the credit spread relationship between commercial banks and the financial market will gradually emerge and form. With low capital adequacy ratio, weak capital strength, few deposit sources, blind expansion of off-balance-sheet business, especially in non-standard industries or those with serious non-term mismatch, they will face great survival pressure; and the negative impact on large and medium-sized commercial banks with stable operation, high capital adequacy ratio and extensive non-balance-sheet business will be relatively small.

4. Response to Improve the MPA Mechanism of Banks

Banks should improve the financial forward-looking financial control, carry out dynamic and refined financial calculation, planning and control, according to the macro situation and operation and management needs of enterprises, handle the relationship between emergency and remote, handle the relationship between reducing risk-weighted measurement liabilities and increasing effective capital, and put an end to extensive control. In addition, we should improve the detail degree of financial work, constantly innovate financial means, and implement effective performance appraisal. For the development of financing, we should first do a good job of research and judgment, follow the supervision policy guidance, and achieve the goal of low-cost financing [24].

The regulatory authority should give full play to the forward-looking and guiding role of assets and liabilities, and actively promote the reform of financial management mode. The company's asset and liability management will be completed to eliminate negative management, perform risk management and other important responsibilities. In addition, it is necessary to analyze and study the macroeconomic forms, political forms and market environment, take comprehensive consideration, formulate a reasonable asset and liability allocation plan, and form a dynamic market adjustment mechanism.

Financial institutions should establish a scientific pricing system. In accordance with the trend of interest rate liberalization, we should gradually improve the internal price mechanism of banks, combine prices with distribution, adjustment, income expectation control and market and inter-bank competition, and strive to form a price model based on market income sensitivity. At the same time, differentiated prices should be implemented, based on the unified price system, based on the contribution of market supply and demand, commodity characteristics and regional characteristics, and based on the business strategy of enterprises and market supply and demand.

Banks should carry out the business purpose of the steady development of the company, minimize short-term behavior, focus on the long-term development of the company, strive to complete the major transformation from extensive economic development to connotative development, and maintain the stability of the financial system on the basis of complying with the MPA regulatory regulations. At the same time, we should adhere to the financial service entities, focus on preventing traditional financing from the "real to the virtual", strengthen policy support for small and medium-sized enterprises, "agriculture, rural areas and farmers", precise assistance, green finance, so as to improve the virtuous cycle of financial services for the real economy.

5. Conclusion

Macro-prudential assessment has become a major development trend of regulation in all countries in the world today, which is of certain importance to improving the operational quality and efficiency of micro-financial institutions as the main body and maintaining the sound operation of the macroeconomic financial system. Due to the increasing competition among the same industry, the original extensive operation model and ineffective capital operation mode which rely on scale growth and deposit and loan spreads have been difficult to maintain, nor can they meet the evaluation needs of MPA. Therefore, we need to constantly adjust the business philosophy, seek higher returns with the most limited funds, and strive to realize the diversification of enterprise operation and development mode and the refinement of enterprise operation and management, so as to achieve the balanced development of efficiency and scale.

References

[1] *Ma, T.: Study on the influence effect and internal mechanism of non-performing asset securitization on the capital adequacy ratio of banks. Hebei University of Economics and Business, 2022.*

[2] *Li Y.: Relationship between sufficient capital and the sound operation of commercial banks. Business Watch, 2022 (01): 31-33.*

[3] *Zhang J.: Research on risk early warning of commercial Banks in Listed cities. Shenyang University of Technology, 2021.*

[4] *Yang C.: The impact of the dual-pillar regulation of "monetary policy and macro-prudential policy" on bank credit risk. Yunnan University of Finance and Economics, 2020.*

[5] *Yan X.: The People's Bank of China head office survey and Statistics Department research group. The Broad Credit Research Study. Shanghai Finance, 2019 (04): 1-16.*

[6] *Qin Y.: Research on the Broad Credit Risk Management of Commercial Banks under the MPA System. Southwestern University of Finance and Economics, 2019.*

[7] *Ren D., Zhang Y., & Yin L. Research on broad credit statistics under the macro-prudential policy framework. Research on Financial Development, 2018 (05): 56-63.*

[8] *SPD Bank 2020-2022 Annual Report. https://eng.spdb.com.cn/investor_relations/, last accessed 2023/1/8.*

[9] *Ping An Bank 2020-2022 Annual Report. https://ebank.pingan.com.cn/ir#/pc/index.html/home/relation/relationPage/changehome, last accessed 2023/1/8.*

[10] *Hua Xia Bank 2020-2022 Annual Report. https://www.hxb.com.cn/en/abouthuaxiabank/investorrelationship/informationdisclosureannualreport/index.shtml, last accessed 2023/1/8.*

[11] *China Minsheng Bank. https://ir.cmbc.com.cn/en/investor-relations/financial-information/financial-reports/, last accessed 2023/1/8.*

[12] *China Merchants Bank 2020-2022 Annual Report. https://english.cmbchina.com/CmbIR/intro.aspx?type=report, last accessed 2023/1/8.*

[13] *Industrial Bank 2020-2022 Annual Report. https://www.cib.com.cn/en/aboutCIB/investor/reports/, last accessed 2023/1/8.*

[14] *Agricultural Bank of China 2020-2022 Annual Report. https://www.abchina.com/en/investor-relations/performance-reports/annual-reports/, last accessed 2023/1/8.*

[15] *Bank of Communications 2020-2022 Annual Report. https://www.hk.bankcomm.com/hk/shtml/hk/en/2005773/2500020/list.shtml?channelId=2005773, last accessed 2023/1/8.*

[16] *Industrial and Commercial Bank of China 2020-2022 Annual Report. http://www.icbc-ltd.com/en/column/1438058343653851171.html, last accessed 2023/1/8.*

[17] *China Everbright Bank 2020-2022 Annual Report. http://www.cebbank.com/site/ceb_homepage33/investor_relations3/financial_reports20/h_share42/index.html, last accessed 2023/1/8.*

[18] *China Construction Bank 2020-2022 Annual Report. http://www.ccb.com/eng/investor/performancereports/annual_reports/index.shtml, last accessed 2023/1/8.*

[19] *Bank of China 2020-2022 Annual Report. https://www.boc.cn/en/investor/ir3/, last accessed 2023/1/8.*

[20] *China Citic Bank 2020-2022 Annual Report. https://www.cncbinternational.com/about-us/investor-relations/interim-and-annual-reports/en/index.jsp, last accessed 2023/1/8.*

[21] *Bank of Beijing 2020-2022 Annual Report. https://www.bankofbeijing.com.cn/en/investment/secondlist?column=1590188709410660352, last accessed 2023/1/8.*

DOI: 10.54254/2754-1169/19/20230139

[22] Bank of Shanghai 2020-2022 Annual Report. https://www.bankofshanghai.com.hk/en/Channel/xinxi.html, last accessed 2023/1/8.

[23] Wang X., Xie X.: Broad credit, capital adequacy ratio and monetary policy robustness. Economics and Management, 2018, 32 (03): 40-43 + 78.

[24] Huang Z. MPA assessment of the impact on small and medium-sized banks and their coping strategies. Finance and Economy, 2018 (04): 46-48.