Diverging Capital Resilience, but Very Stable Funding

A Deep Dive into Chinese Banks' Credit Quality

July 2023

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Contents

Overview

Key takeaways:

- ❑ Domestic banks' overall credit quality remains stable.
- ❑ High-risk banks only account for a small part of banking assets thanks to the dominating market share of big banks which remain resilient.

Domestic banks' overall credit quality remains stable

- We conducted credit estimate on 120 commercial banks, including 6 mega banks, 12 joint-stock banks, 66 city banks, and 36 rural banks, accounting for 90% of the industry's total assets.
- The credit estimates shown in this presentation are based on S&P China Ratings' methodology, different and independent from S&P Global Ratings.

Distribution of Indicative Issuer Credit Quality of 120 Major Domestic Banks

Note*: The indicative credit quality distributions expressed in this report are only our indicative views of credit quality derived from a desktop analysis based on public information without interactive review with any particular institution or the full credit rating process such as a rating committee (except for a few cases where we have already assigned public ratings on a company). The opinions expressed herein are not and should not be represented as a credit rating and should not be taken as an indication of a final credit rating of any particular institution.

Source: S&P Global (China) Ratings.

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Stable funding base and supportive governments ensure stable credit outlook for China's banking sector

Small banks' capital resilience weakens under various stress factors, causing diverging stand-alone credit quality.

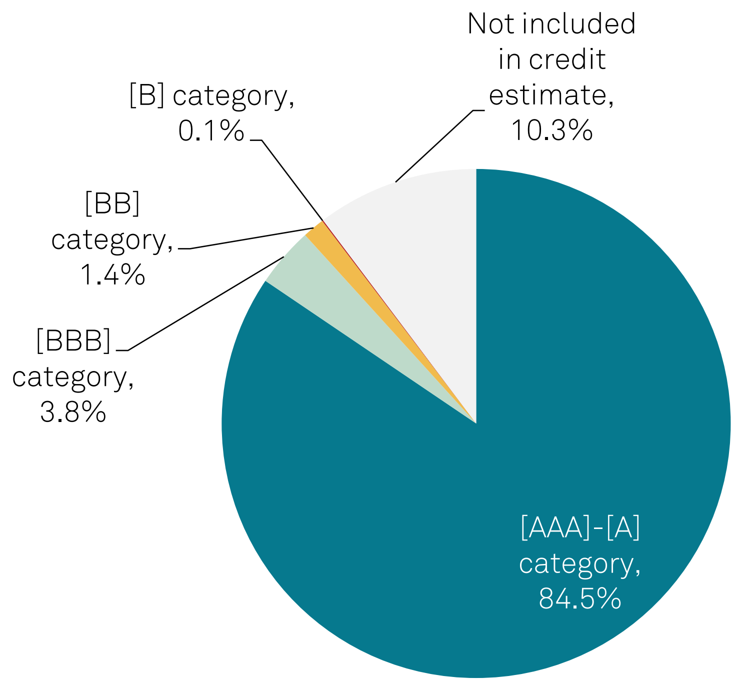
Base case for our credit estimation:

- ❑ Sector-wide problem loan ratio at 6%, and bad debt ratio of mortgage at 0.7%.
- ❑ High-risk local government financing vehicles (LGFV) confines to certain regions.
- ❑ Average sector net interest margin (NIM) not lower than 1.5%.
- ❑ Ample interbank market liquidity, and stable deposit base.
- ❑ Regional governments remain very supportive of local banks, and regional government credit quality remains generally stable.
- ❑ Central government is willing to support regional banks when necessary.

Dominating market share of big banks helps ensure credit stability of the industry

- Credit risk remains the dominating risk for Chinese banks. The main stress factors include forbearance loans for small businesses during the pandemic, real estate loans, and high-risk LGFV loans.
- The continuing government support serves as increasingly important backstop for bank credit. Troubled regional banks are receiving capital injection from governments.
- Due to strong government supports, there are only two isolated bankruptcy cases of small banks in China in 2022, which didn't cause any noticeable market impact.
- Baoshang Bank tier 2 capital bond was the first and only case of hybrid bond credit loss among Chinese banks. So far, the government tends to bail out hybrid bonds when they save troubled banks. Nevertheless, hybrid bonds issued by high-risk small banks continue to be the most vulnerable bank debts.

Composition of Bank Asset by Indicative Issuer Credit Qualities of 120 Major Domestic Banks



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Source: S&P Global (China) Ratings.

Business Position

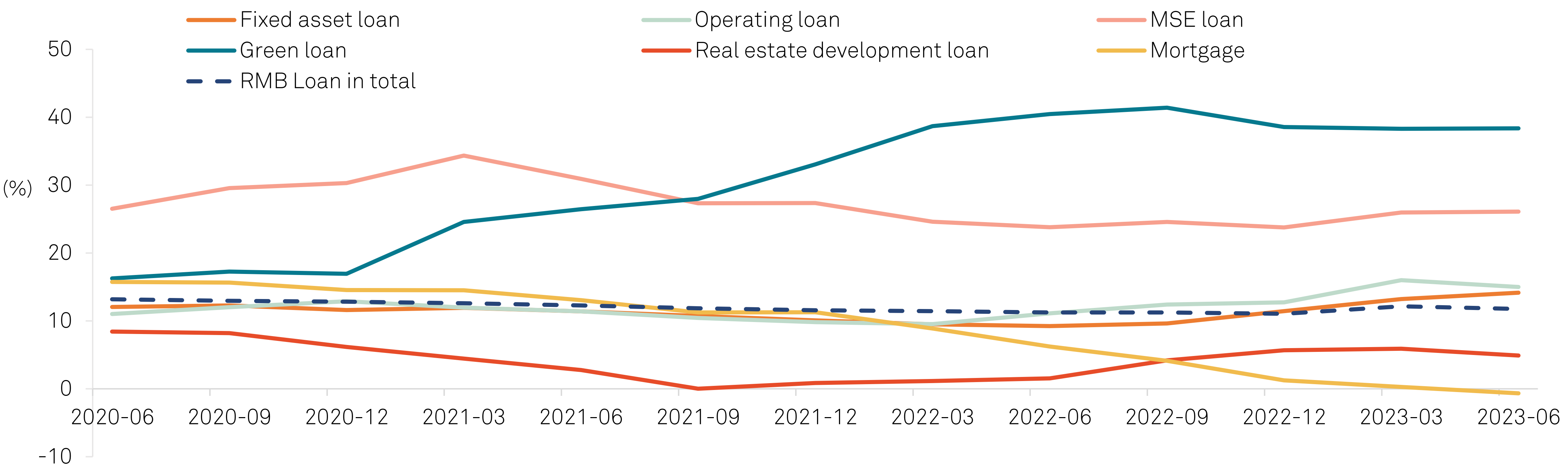
Key takeaways:

- ❑ The industry remains lower double-digit asset and loan growth.
- ❑ Mortgage lending continues to slow down in 2023.

Under government guidance, banks keep high lending growth to support the real economy

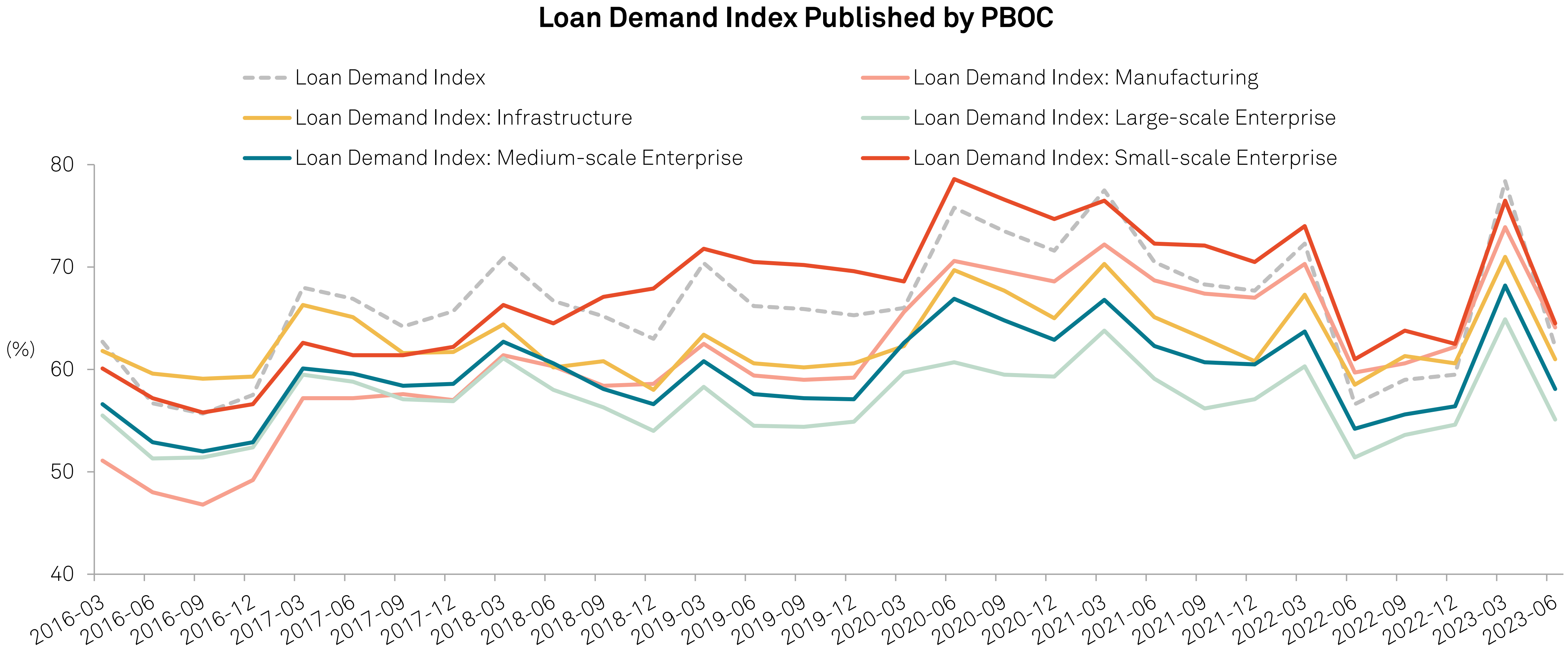
- ❑ As of the end of 2022, RMB loan grew by 11% YoY. As of the end of June 2023, RMB loan grew by 12% YoY.
- ❑ Real estate development lending has regained momentum since mid-2022 due to government policy change, while mortgage lending stalls.

YoY Growth Rate of Loans from Financial Institutions into Varies Sectors



Source: PBOC, collected by S&P Global (China) Ratings.

Credit demand dropped in Q2 after a surge in Q1



Note: Loan demand index is a diffusion index that reflects bankers' estimation on the overall demand for loans.
Source: PBOC, collected by S&P Global (China) Ratings.

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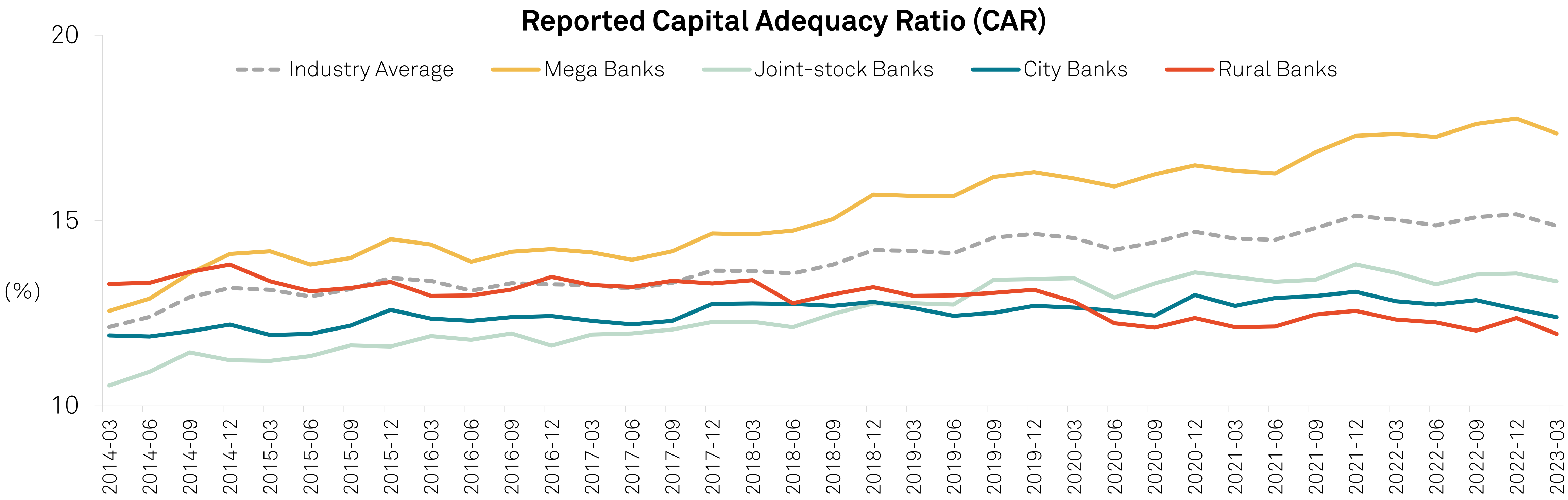
Capital and Earnings

Key takeaways:

- ❑ Reported capital ratios remain stable.
- ❑ Banks are showing diverging capital resilience, with mega banks being the strongest, city banks the most vulnerable.
- ❑ Due to narrowing NIM and high credit cost, profitability of the sector is expected to continue its downward trend.

Chinese banking sector continues to report stable capital ratios

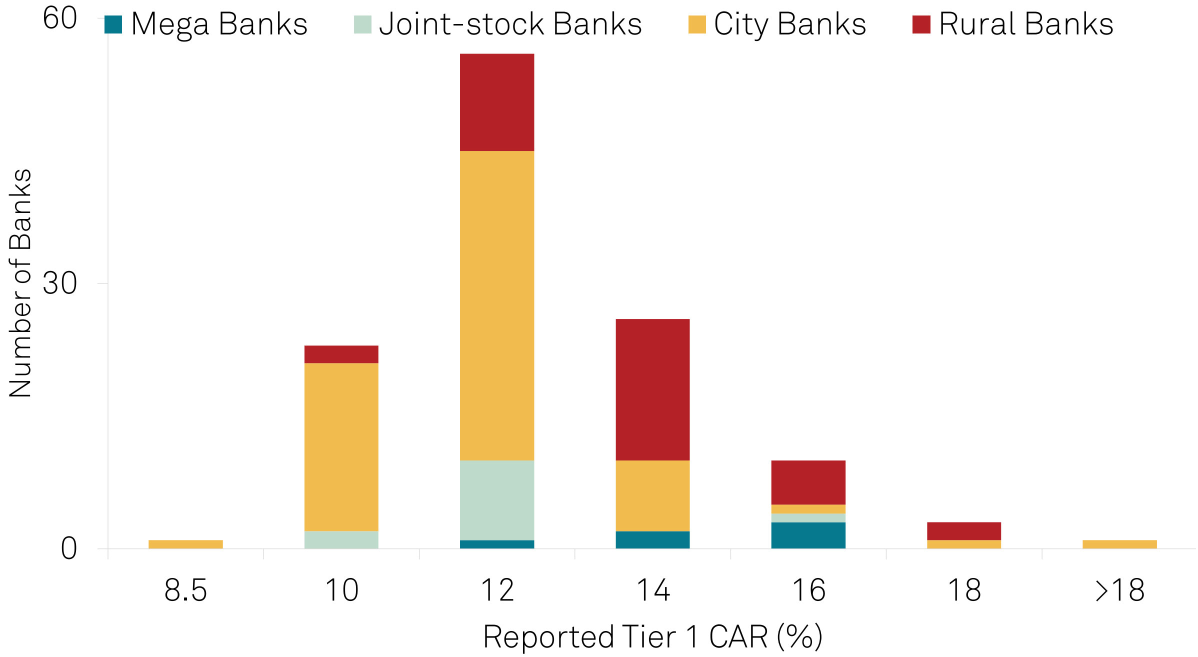
- As of March 2023, the industry reported a capital adequacy ratio (CAR) of 14.86%, comfortably above minimum regulatory requirements.
- The higher capital ratios of mega banks are attributable to two reasons: 1) five of them use internal models to calculate capital ratios, while most other banks use the standard approach; 2) mega banks have higher capital ratios if converted to the standard approach.



Source: NAFR, collected by S&P Global (China) Ratings.

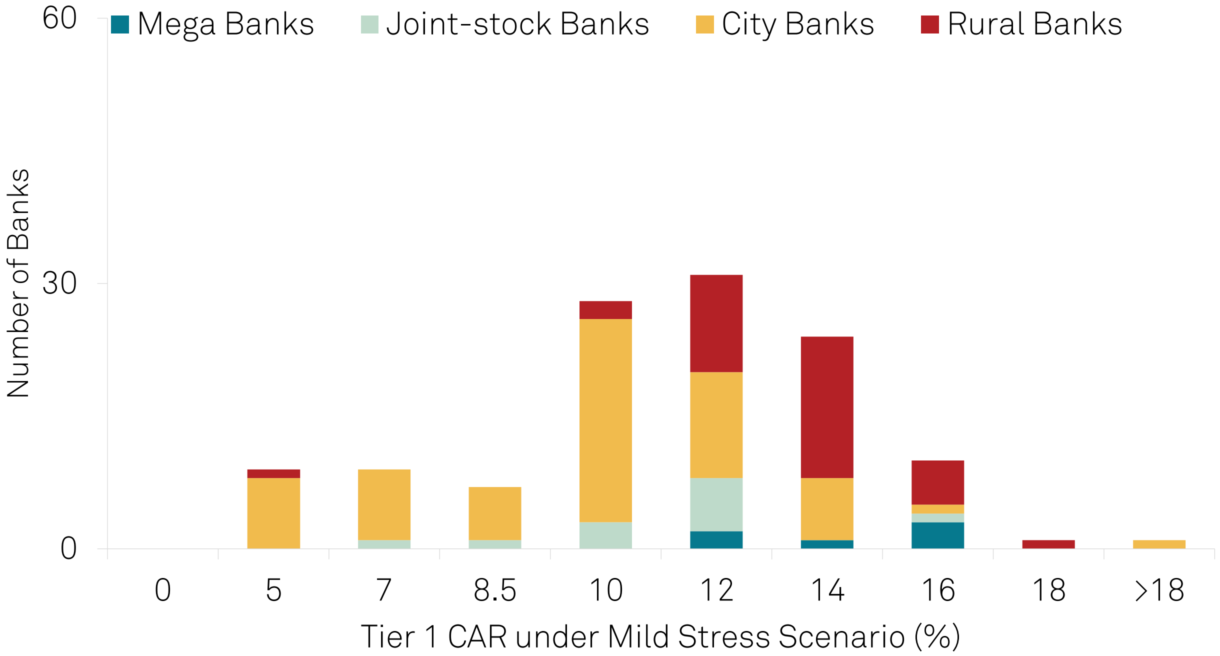
Although reported CAR remains healthy, banks show diverging capital resilience in stress testing

Distribution of Reported Tier 1 CAR of 120 Major Domestic Banks, as of end of 2022



Source: Wind, collected by S&P Global (China) Ratings.

Distribution of Tier 1 CAR under Mild Stress Scenario of 120 Major Domestic Banks



Note: Key assumptions include: 100% of banks' SML migrate to NPL; 100% of banks' stage 2 loans/investment migrate to stage 3; 30%-50% of forbearance loans migrate to NPL; if the problem loan ratio calculated above is less than 6%, we use 6% in our stress testing; loss rate of the problem loans is between 70% and 90%.
Source: S&P Global (China) Ratings.

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Stress testing has been increasingly important to differentiate Chinese banks' capital resilience

We stress test banks' capital resilience against: 1) general asset quality weakening in loan and investment books; 2) deterioration of micro and small business exposure; 3) deterioration of real-estate exposure; 4) high-risk LGFV exposure.

Mild stress: General loan book shock	Moderate stress: + real estate stress	Severe stress: + high-risk LGFV stress
100% of banks' special-mention loans migrate to non-performing loans, 100% of stage 2 loans/investment migrate to stage 3; 30%-50% of forbearance loans migrate to NPL; if the above problem loan ratio is less than 6%, we assume a problem loan ratio of 6% for stress testing purpose. Loss rate of problem loans is between 70% and 90%.	Same as mild stress scenario	Same as moderate stress scenario
	NPL ratios of real estate and construction loans are 30%. Loss rates of these problem loans are 70%.	
		NPL ratio of [B_{spc}] category LGFVs is 50%. Loss rates of these problem loans are 50%.

Key factors affecting capital stress testing results:

- ❑ Reported tier 1 capital ratio
- ❑ Reported loan credit quality classification
- ❑ Size of forbearance loans
- ❑ Size of bad investment assets
- ❑ Exposure to real estate and construction sectors
- ❑ Exposure to high-risk LGFVs
- ❑ Reserve coverage level
- ❑ Overall profitability

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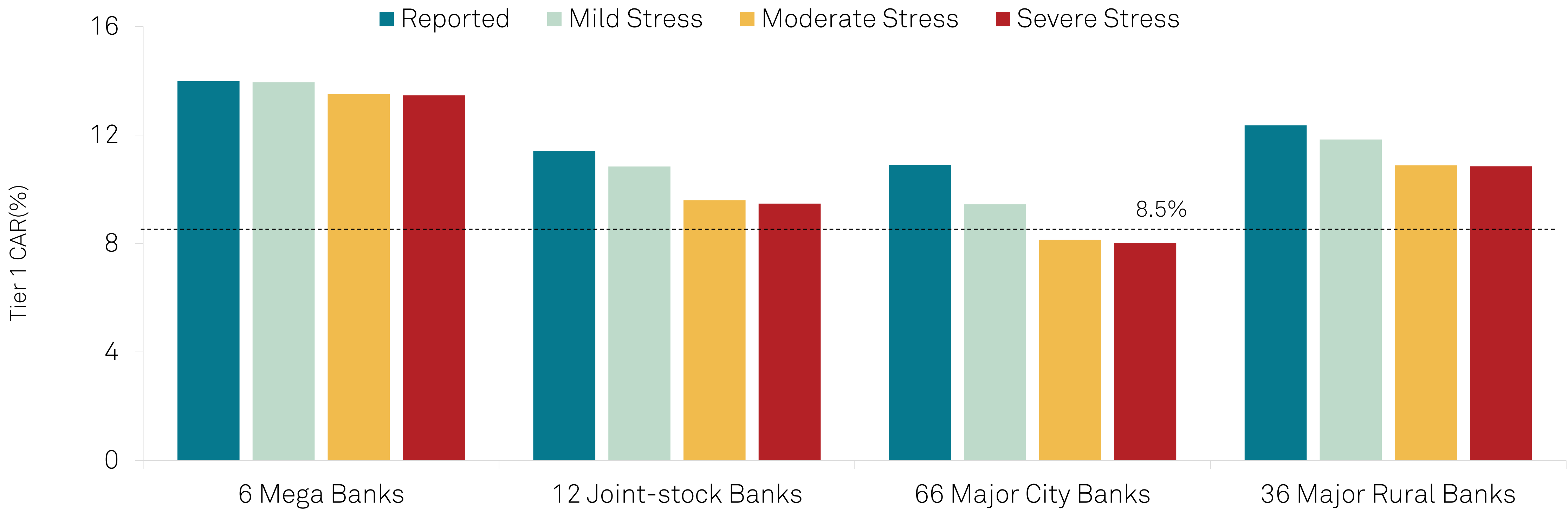
Note: we assume banks take 100% provision against uncollectible portion of problem loans/investment.
Source: S&P Global (China) Ratings.

Mega banks show strong capital resilience

City banks show the weakest resilience due to their lower reported capital level, higher risk concentration, lower reserve level and weaker profitability.

Average Tier 1 CAR under Stress Scenarios of 120 Major Domestic Banks



Note 1: See details of the stress scenarios in page 13.
Note 2: Reported Tier 1 CAR is as of end of 2022.
Source: Wind, S&P Global (China) Ratings.

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Sub-investment grade banks lack capital resilience in stress

Key Capital Metrics of 120 Major Domestic Banks		
Median as of end of 2022（%）	Reported Tier 1 CAR	Tier 1 CAR under Severe Stress
Median of 120 banks	10.89	9.14
[AAA]* Issuer Credit Quality	14.11	13.37
[AA]* Category Issuer Credit Quality	11.08	9.80
[A]* Category Issuer Credit Quality	10.86	9.78
[BBB]* Category Issuer Credit Quality	10.64	7.47
[BB]* Category Issuer Credit Quality	10.69	3.80
[B]* Category Issuer Credit Quality	8.27	(1.34)

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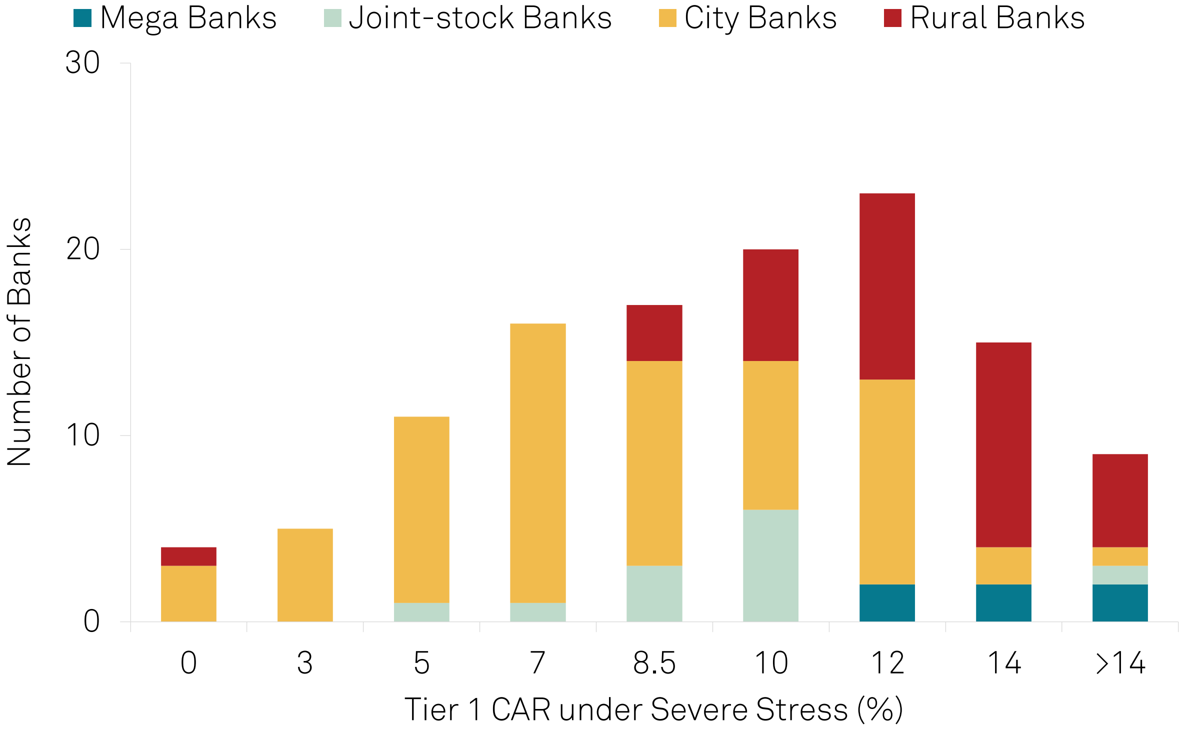
Source: Wind, public information of banks, S&P Global (China) Ratings.

Distribution of Tier 1 CAR under Severe Stress of 120 Major Domestic Banks



Note 1: Key assumptions of the severe stress scenario include: 100% of banks' SML migrate to NPL; 100% of banks' stage 2 loans/investment migrate to stage 3; 30%-50% of forbearance loans migrate to NPL; if the problem loan ratio above is less than 6%, we use 6% in our stress testing; loss rate of above problem loans is between 70% and 90%; NPL ratios of real estate and construction loans are 30% with loss rates of 70%; NPL ratio of [B_{spc}] LGFVs is 50% with loss rates of 50%.

Note 2: Testing is performed based on 2022 data.

Source: S&P Global (China) Ratings.

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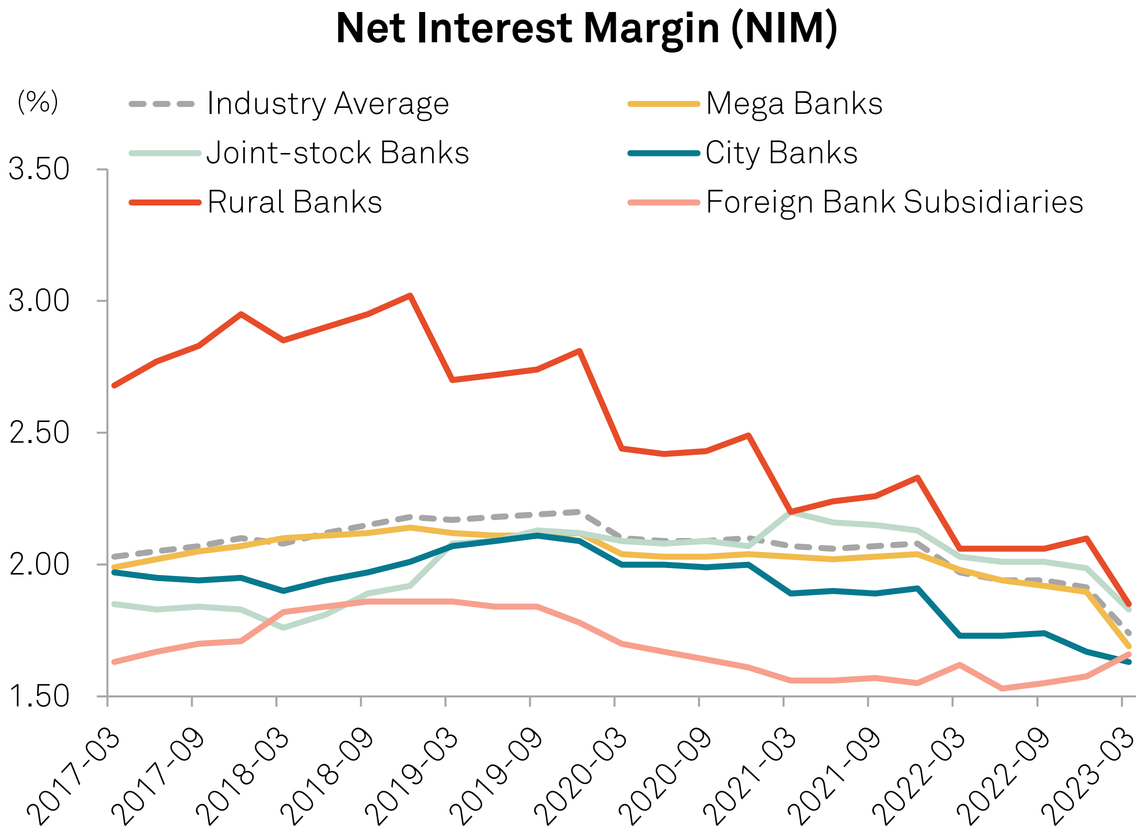
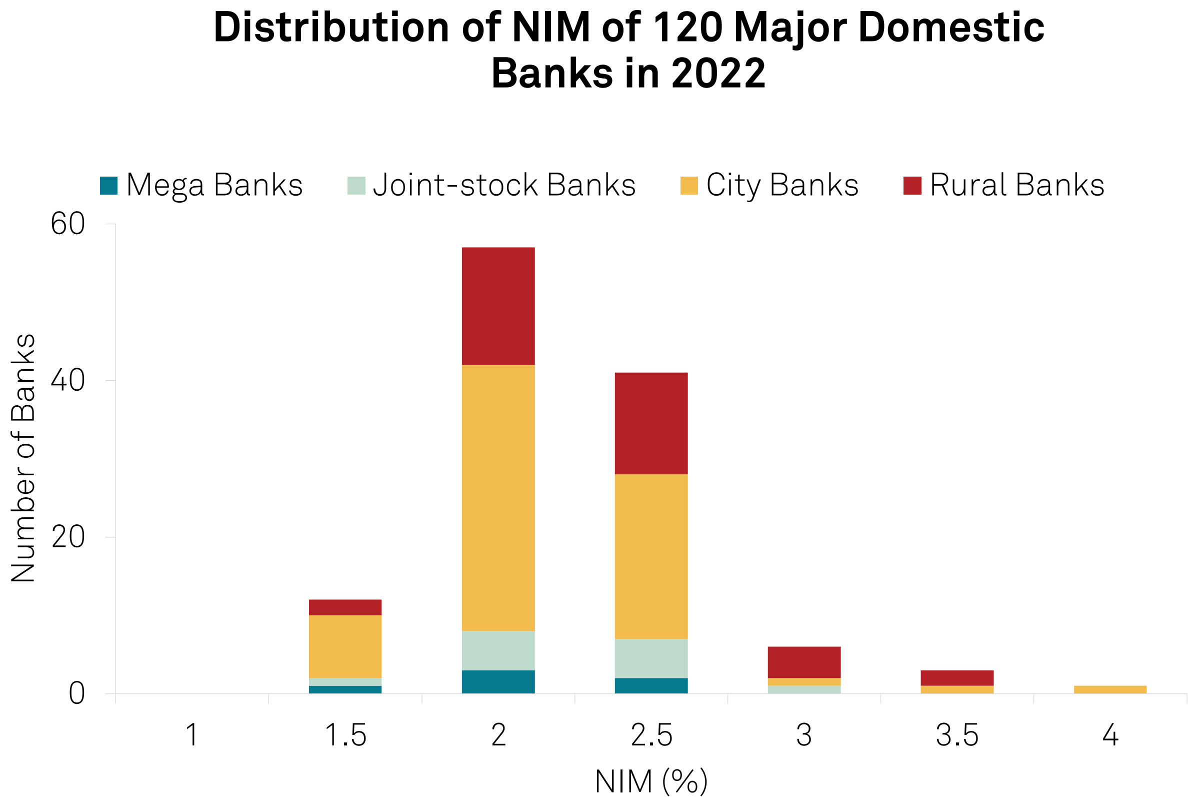
Drop of net interest margin is one main driver of weakening profitability

The average net interest margin (NIM) of the banking sector dropped by 17 bps in 2022, and another 23 bps in the first quarter of 2023.



Source: NAFR, collected by S&P Global (China) Ratings.



Source: Wind, collected by S&P Global (China) Ratings.

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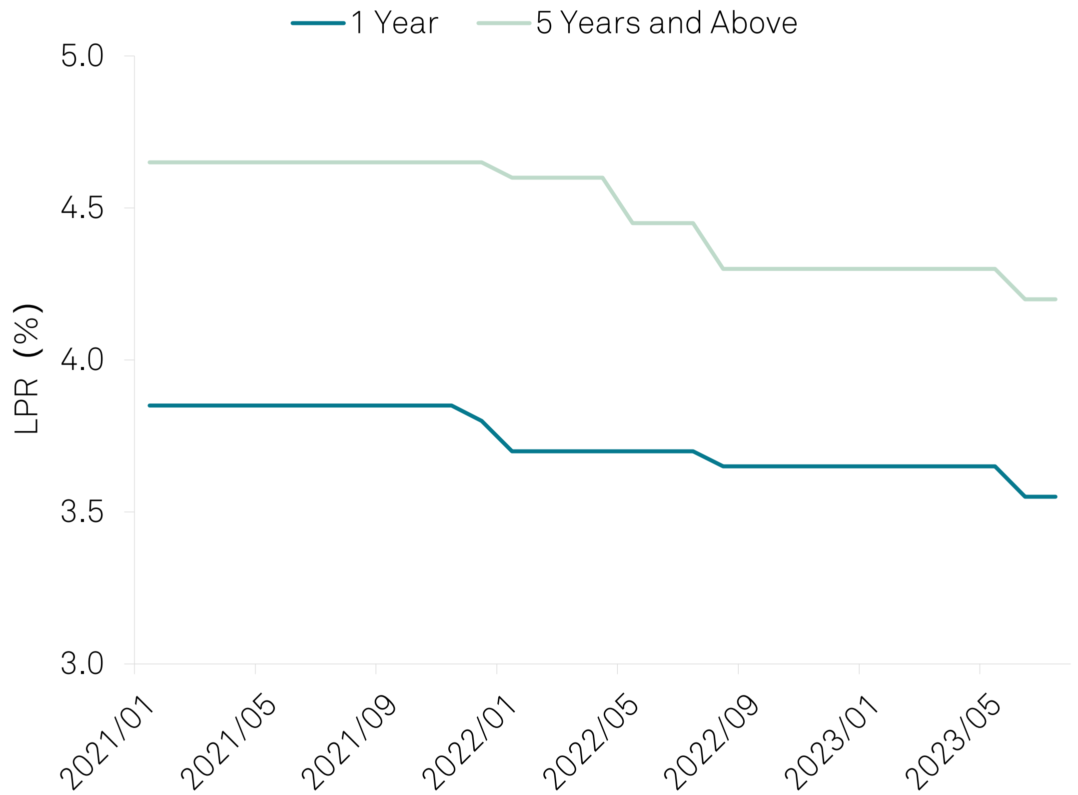
Net interest margin continues to be under pressure due to drop in LPR

Deposit interest rate cuts mitigate the NIM pressure.

Changes of Loan Prime Rate (LPR)



Source: PBOC, collected by S&P Global (China) Ratings.

Change of Interest Rate of Mega Banks's Deposits

Interest Rate (%)	October 2015	September 2022	June 2023
Demand Deposit	0.30	0.25	0.20
1-Year Term Deposit	1.75	1.65	1.65
3-Year Term Deposit	2.75	2.60	2.45
5-Year Term Deposit	2.75	2.65	2.50

Source: State-owned mega banks, collected by S&P Global (China) Ratings.

Due to large mortgage loan portfolio, mega banks are more sensitive to interest rate cut of existing mortgage portfolio

- ❑ Existing mortgage portfolio is paying higher interest rate than new ones. There is pressure on refinancing existing mortgage to lower rates.
- ❑ Although city banks' mortgage portfolio is small, any drop of mortgage interest rate will still hurt their profitability given their thin earnings.

Sensitivity Analysis on Change of Pre-tax Earnings (%)	Impact on Pre-tax Earnings of Decreasing Interest Rate on Mortgage Portfolio				
	Rate Down by 10 bps	Rate Down by 20 bps	Rate Down by 30 bps	Rate Down by 40 bps	Rate Down by 50 bps
State-owned Mega Banks	(1.75)	(3.50)	(5.25)	(7.00)	(8.75)
Joint-stock Banks	(1.19)	(2.39)	(3.58)	(4.77)	(5.97)
60 Major City Banks	(1.46)	(2.92)	(4.38)	(5.84)	(7.30)
30 Major Rural Banks	(0.74)	(1.48)	(2.22)	(2.96)	(3.70)

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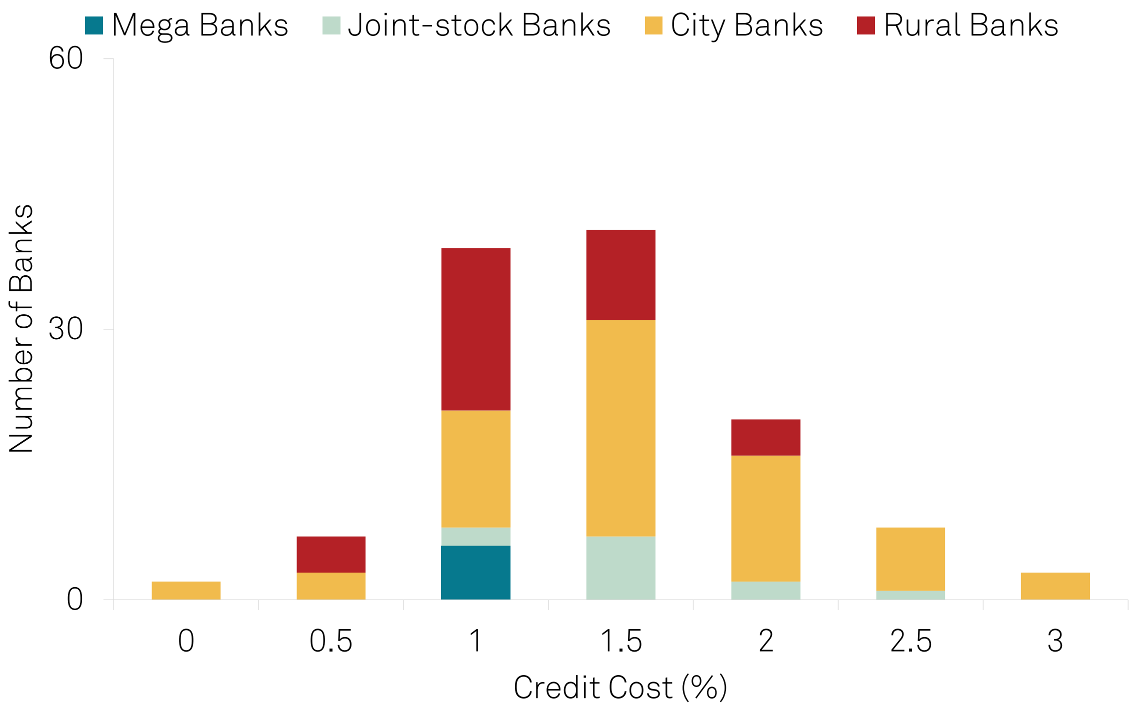
Note: Sensitivity analysis is based on 2022 data.
Source: S&P Global (China) Ratings.

Banks continue to report very different credit cost

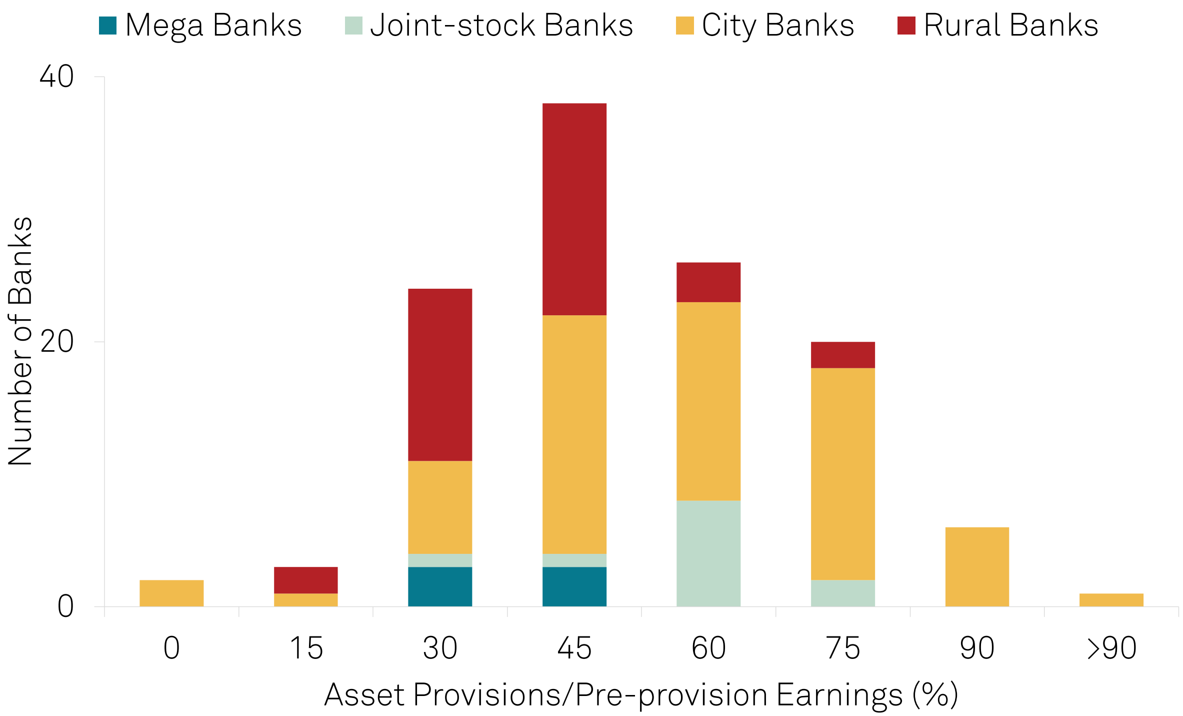
The average credit cost dropped in 2022. In 2022, for the 120 major domestic banks we monitored, their average credit cost (asset provision/average loans) was 1.2%, 24 bps lower than in 2021.

Distribution of Credit Cost of 120 Major Domestic Banks in 2022



Note: Credit cost = asset provision/average loans
Source: Wind, public information of banks, collected and adjusted by S&P Global (China) Ratings.

Distribution of Asset Provisions/Pre-provision Earnings of 120 Major Domestic Banks in 2022



Source: Wind, public information of banks, collected by S&P Global (China) Ratings.

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Sub-investment grade banks are troubled by under-provisioning which weighs on their capitalization and earning quality

Key Metrics of 120 Major Domestic Banks' Credit Cost, Asset Quality, Provisioning and Capital Strength

Median as of 2022（%）	Credit Cost	Provisioning/Pre-provision earnings	NPL + SML Ratio	Problem Loan Ratio by S&P (China) Ratings	Reserve Coverage Ratio	Loan Loss Reserve/ (NPL + SML)	Loan Loss Reserve/ Problem Loans	Tier 1 CAR under Severe Stress
[AAA]* Issuer Credit Quality	0.77	28.80	2.83	2.94	241.53	93.54	84.94	13.37
[AA]* Category Issuer Credit Quality	1.20	40.40	2.88	3.71	236.44	99.49	76.69	9.80
[A]* Category Issuer Credit Quality	1.19	41.95	2.51	4.24	281.30	130.34	82.54	9.78
[BBB]* Category Issuer Credit Quality	1.04	40.01	3.15	6.47	239.60	86.08	53.92	7.47
[BB]* Category Issuer Credit Quality or Below	1.39	59.82	4.76	15.09	175.96	68.32	24.38	3.63

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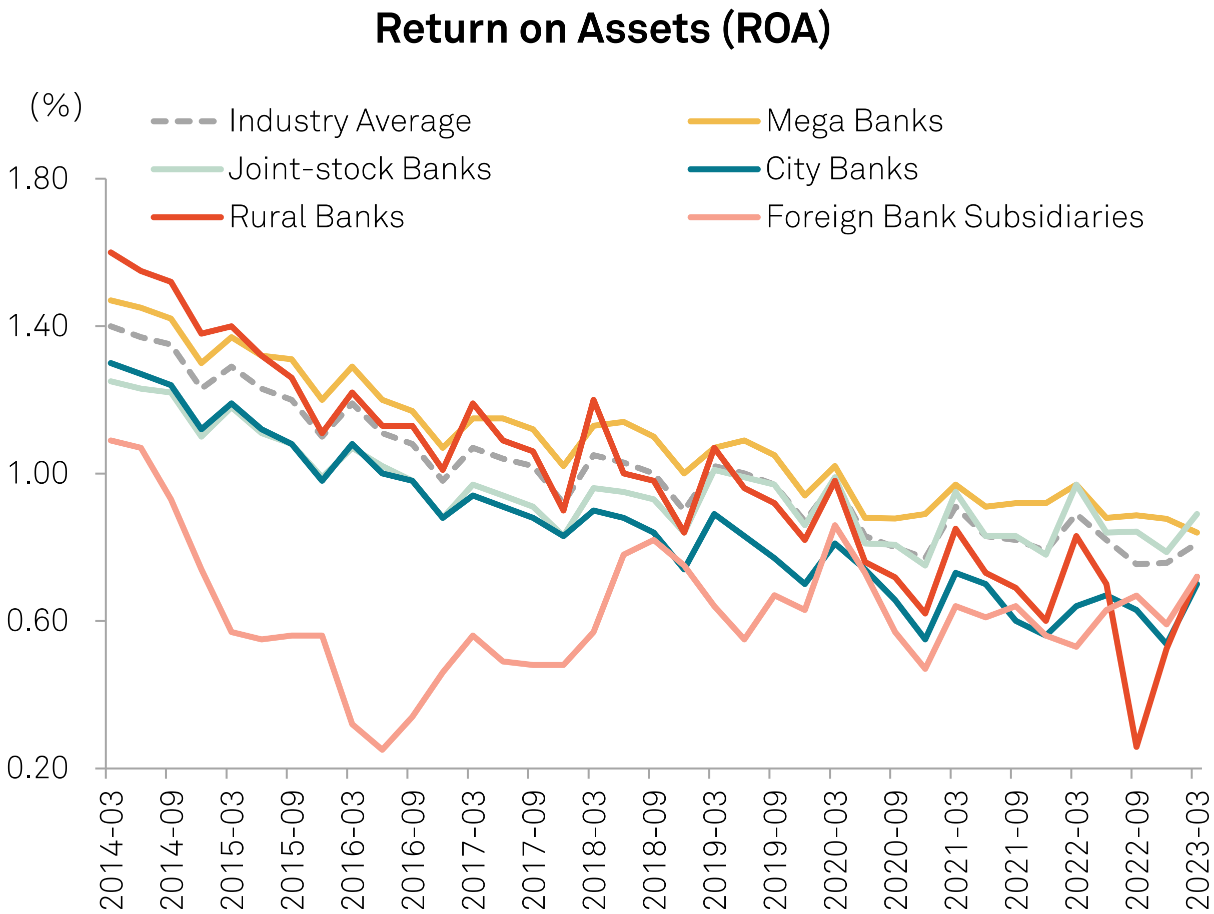
Source: Wind, public information of banks, S&P Global (China) Ratings.

Banking sector's profitability is on downward trajectory due to lower NIM and elevated credit cost



Source: NAFR, collected by S&P Global (China) Ratings.

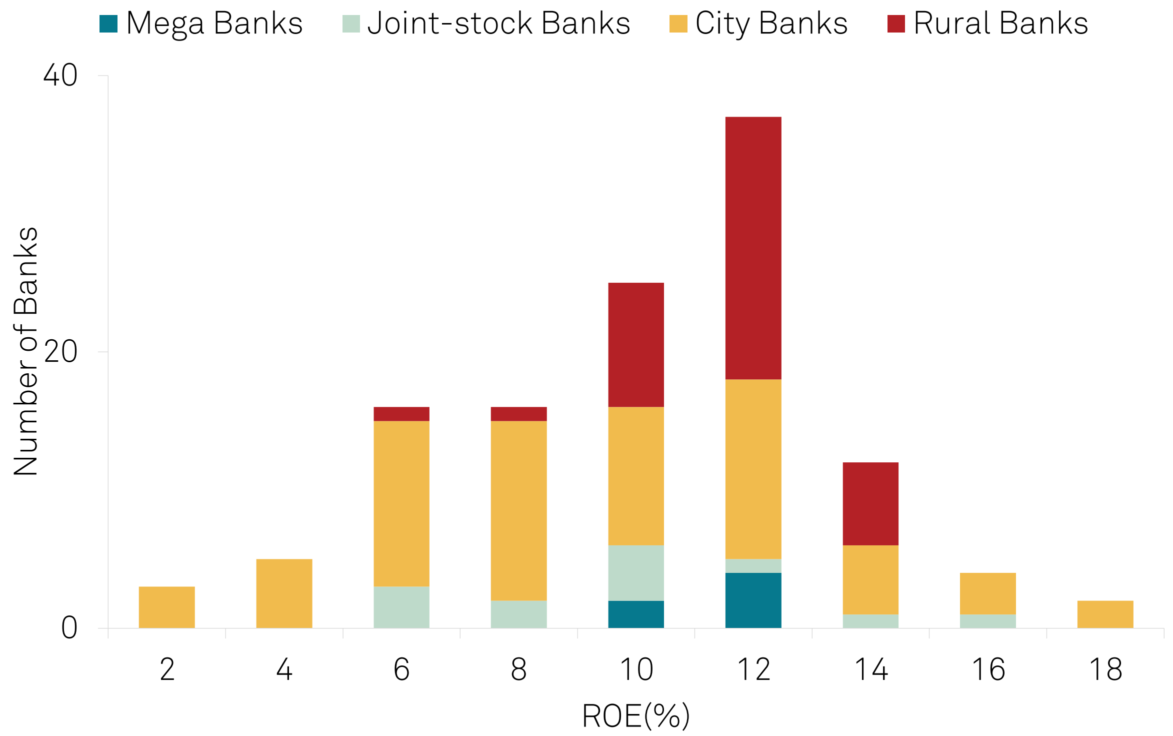
ROA (%)	2022 Q1	2022 Q2	2022 Q3	2022 Q4	2023 Q1
Industry Average	0.89	0.82	0.75	0.76	0.81
State-owned Mega Banks	0.97	0.88	0.89	0.88	0.84
Joint-stock Banks	0.97	0.84	0.84	0.79	0.89
City Banks	0.64	0.67	0.63	0.54	0.70
Rural Banks	0.83	0.70	0.26	0.53	0.72
Foreign Bank Subsidiaries	0.53	0.63	0.67	0.59	0.72

Source: NAFR, collected by S&P Global (China) Ratings.

The most profitable banks include mega banks, leading joint stock banks, and well-managed regional banks in Yangtze River Delta

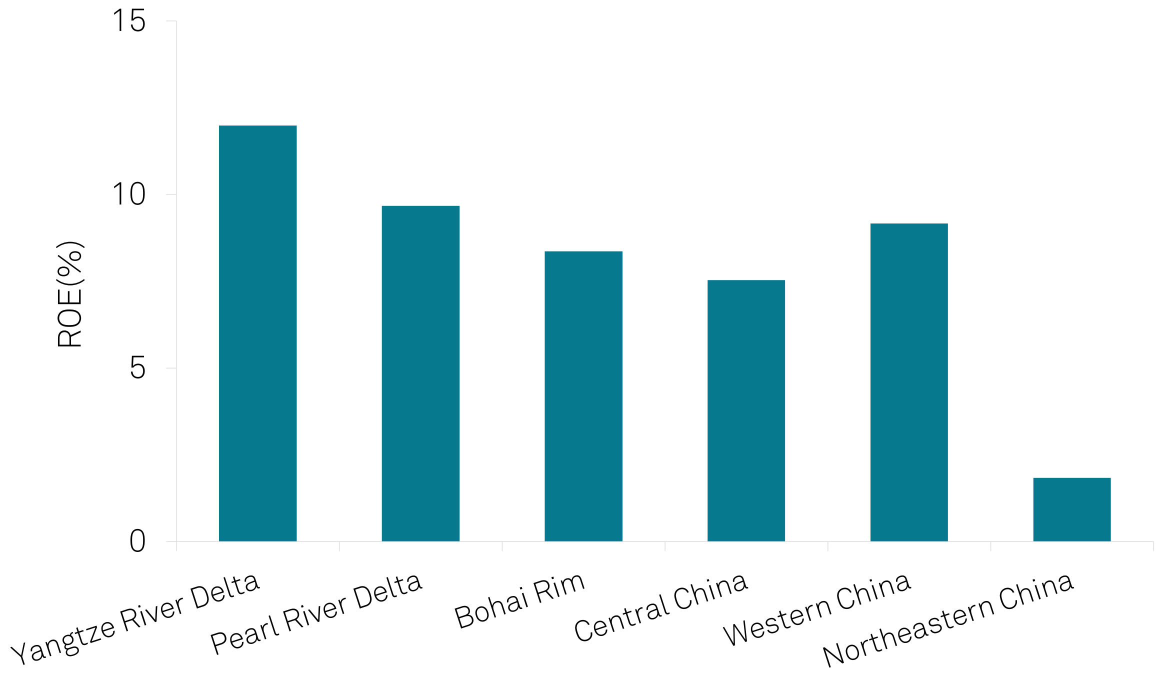
Profitability of many small city banks remains low due to high credit cost and low NIM.

Distribution of Average Return on Equity(ROE) in 2022 of 120 Major Domestic Banks



Source: Wind, public information of banks, collected by S&P Global (China) Ratings.

Distribution of ROE in 2022 of 102 Major Regional Banks (By Region)



Note: Yangtze River Delta includes Shanghai, Jiangsu and Zhejiang; Pearl River Delta includes Guangdong and Fujian; Bohai Rim includes Beijing, Tianjin, Hebei and Shandong; Central China includes Shanxi, Henan, Hubei, Hunan, Anhui, Jiangxi and Hainan; Western China includes Chongqing, Sichuan, Guizhou, Yunnan, Guangxi, Shaanxi, Gansu, Ningxia, Xinjiang, Inner Mongolia and Tibet; and Northeastern China includes Liaoning, Heilongjiang and Jilin.
Source: Wind, public information of banks, collected by S&P Global (China) Ratings.

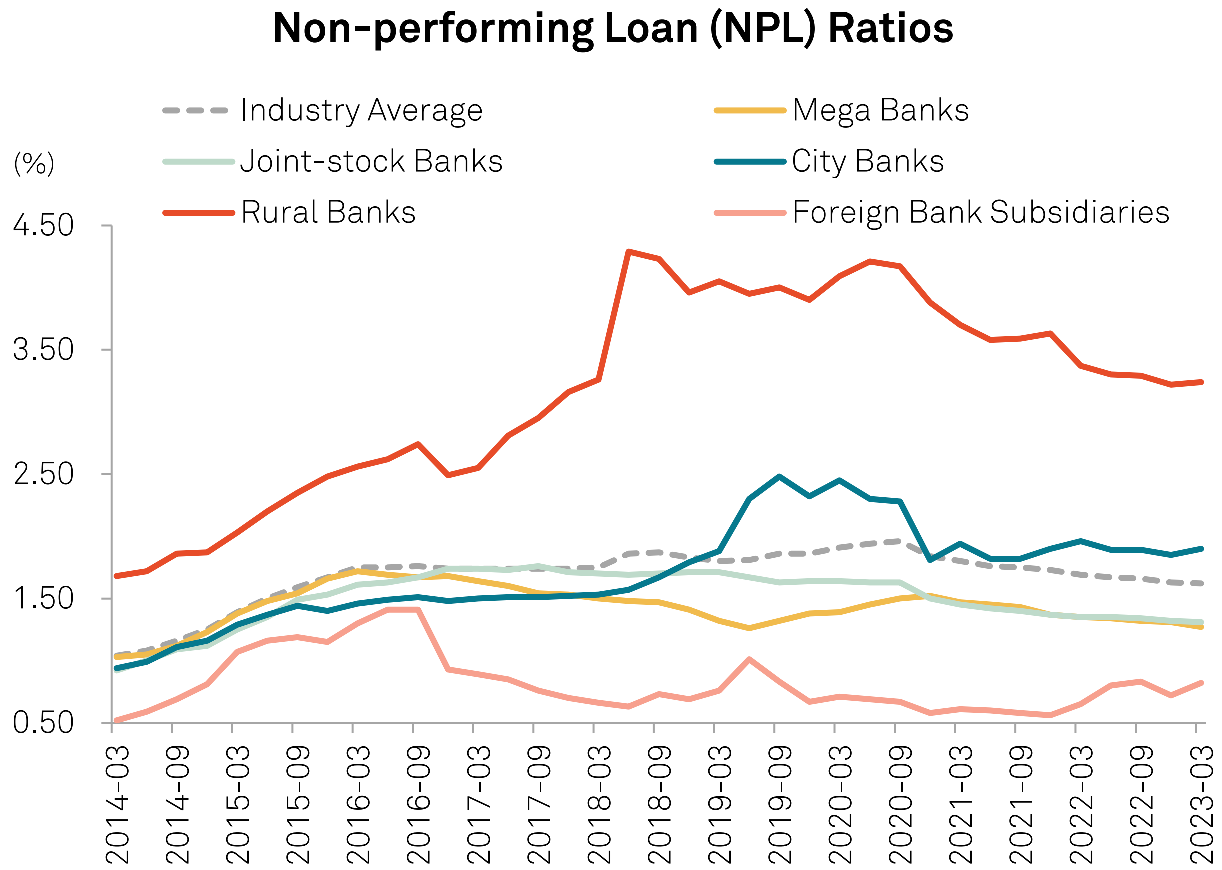
Risk Position

Key takeaways:

- ❑ The reported sector NPL ratio has been stable.
- ❑ The future asset quality is sensitive to three factors, small business forbearance loans, exposure to real estate, and exposure to high-risk LGFVs.

NPL ratio of China's commercial banking industry remains stable

As of March 2023, the average NPL ratio of the industry was 1.62%, 7 bps lower year on year.



NPL Ratio (%)	2022 Q1	2022 Q2	2022 Q3	2022 Q4	2023 Q1
Industry Average	1.69	1.67	1.66	1.63	1.62
State-owned Mega Banks	1.35	1.34	1.32	1.31	1.27
Joint-stock Banks	1.35	1.35	1.34	1.32	1.31
City Banks	1.96	1.89	1.89	1.85	1.90
Rural Banks	3.37	3.30	3.29	3.22	3.24
Foreign Bank Subsidiaries	0.65	0.80	0.83	0.72	0.82

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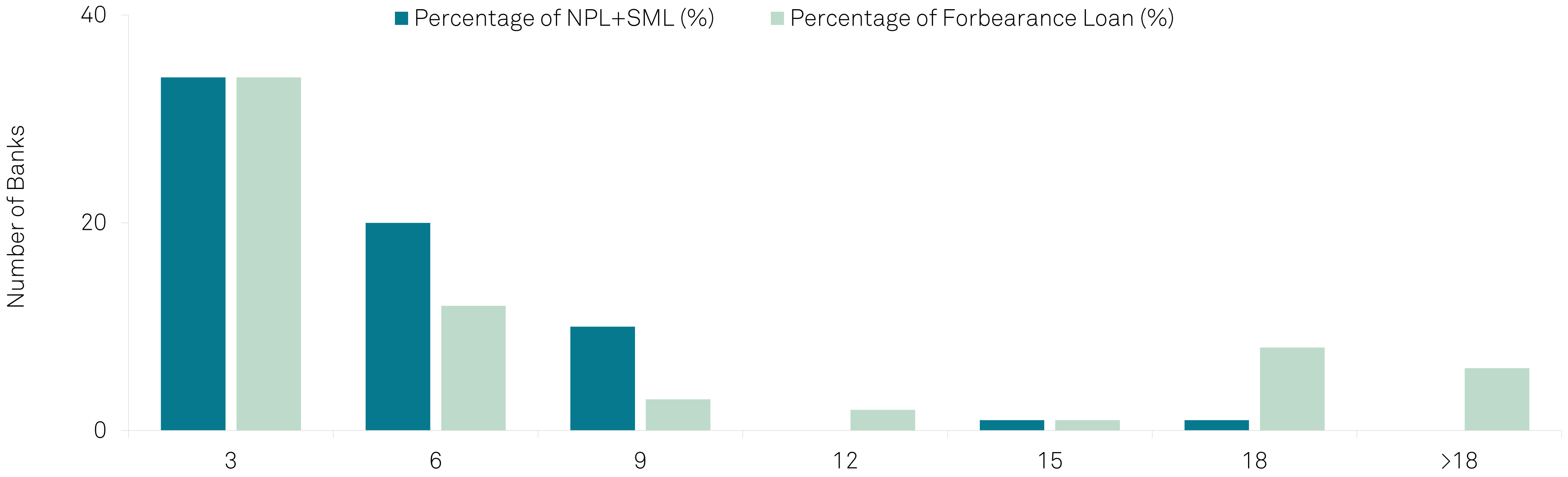
Some regional banks have high forbearance loan ratio despite low NPL ratio

During the pandemic, some regional banks experienced a surge in forbearance loans for small businesses. Most of those loans are not classified as bad debts.

Comparison of NPL+SML Ratio and Forbearance Loan Ratio of Major Domestic Banks, as of end of 2022



Note: The distribution includes 66 major domestic banks which disclose NPL ratio, SML ratio and forbearance loan ratio.
Source: Wind, public information of banks, collected and adjusted by S&P Global (China) Ratings.

Funding & Liquidity

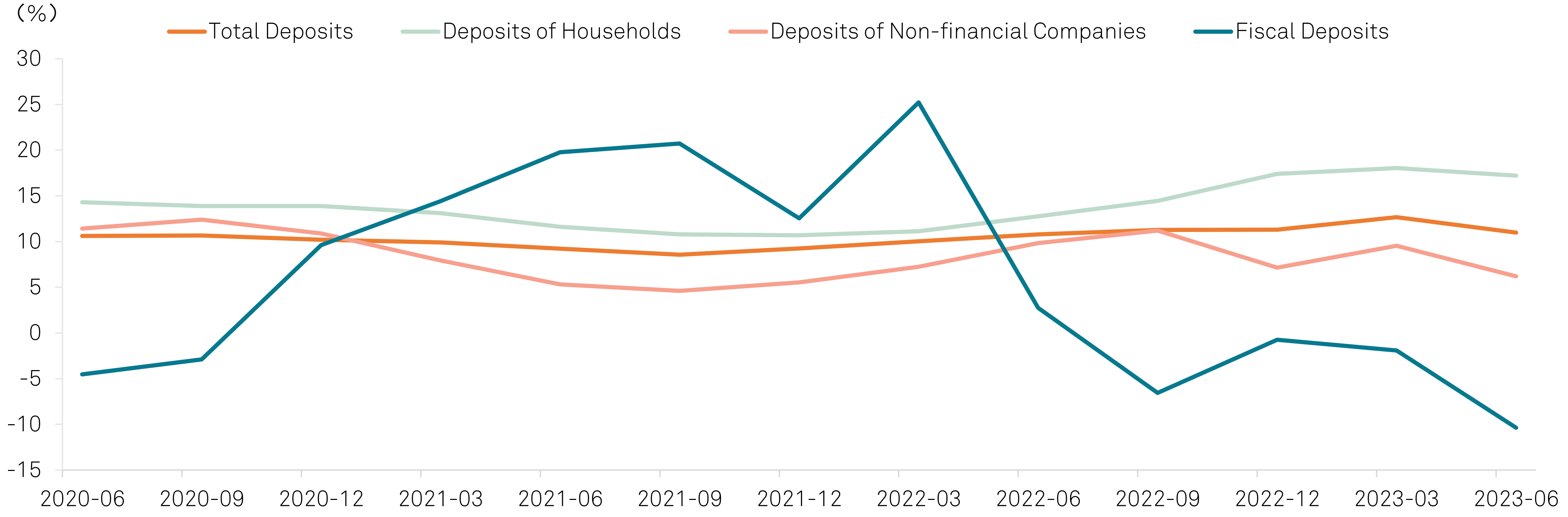
Key takeaways:

- ❑ Monetary policy ensures ample market liquidity.
- ❑ Households have high demand for deposits despite lower deposit interest rate.
- ❑ Although some small and mid-sized banks have challenges in asset quality and capital, their funding and liquidity profiles remain sound.

Chinese banks have a very strong and growing retail deposit base

- As of the end of 2022, retail deposits accounted for 47% of total deposits for the 120 main domestic banks, which was 5 percentage points higher year on year.
- Despite deposit interest rate cuts, depositing remains popular among the population. Retail deposits grew 17% YoY in the first six months of 2023.

YoY Growth Rate of Deposit from Varies Sectors



Source: PBOC, collected by S&P Global (China) Ratings.

Chinese banks don't differentiate much in funding structure

- Depositors' strong belief in the safety of their deposits and prominence of state-owned enterprises in the economy have contributed to a very stable deposit base for China's banking sector.
- Banks' use of wholesale funding remains stable. Among the 120 banks we monitor, the average deposit funding/total liabilities ratio is about 75%.
- We haven't observed obvious weakening of funding basis for banks with asset quality and capital challenges.
- We believe the biggest vulnerability in terms of funding and liquidity is the wholesale funding of the small banks with weak capital and weak government links.

Key Metrics of 120 Major Domestic Banks' Deposit Structure

Median as of End of 2022 (%)	Total Deposits/Total Liabilities	Retail Deposits/Total Deposits	Loan-to-deposits Ratio
[AAA]* Issuer Credit Quality	79.15	53.10	79.73
[AA]* Category Issuer Credit Quality	64.86	28.19	93.10
[A]* Category Issuer Credit Quality	73.84	46.64	79.88
[BBB]* Category Issuer Credit Quality	77.08	49.18	80.81
[BB]* Category Issuer Credit Quality	77.81	52.14	83.45
[B]* Category Issuer Credit Quality	78.81	59.63	82.29

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Source: Wind, public information of banks, S&P Global (China) Ratings.

Ample market liquidity has narrowed credit spread between strong and weak banks

- ❑ Liquidity risk hasn't increased for high-risk banks.
- ❑ Ample liquidity provides time for troubled banks to recapitalize.

Issuance Spread of 120 Major Domestic Banks' 3M NCD			
Median of Spread (bp)	2021	2022	2023H1
[AAA] * Issuer Credit Quality	43.99	23.45	41.85
[AA] * Category Issuer Credit Quality	44.53	31.03	42.91
[A] *Category Issuer Credit Quality	53.27	33.85	48.28
[BBB] * Category Issuer Credit Quality	65.55	42.40	59.47
[BB] *Category Issuer Credit Quality	77.50	49.35	57.43
[B] * Category Issuer Credit Quality	80.61	65.72	65.62

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Note 1: Spread = NCD issuance rate - treasury note spot rate. Due to limited sample size of [B]* category banks, the data may be biased.
Note 2*: The indicative credit quality distributions expressed in this report are only S&P China's indicative views of credit quality derived from a desktop analysis based on public information without interactive review with any particular institution or the full credit rating process such as a rating committee. The opinions expressed herein are not and should not be represented as a credit rating and should not be taken as an indication of a final credit rating of any particular institution.
Source: Wind, S&P Global (China) Ratings.

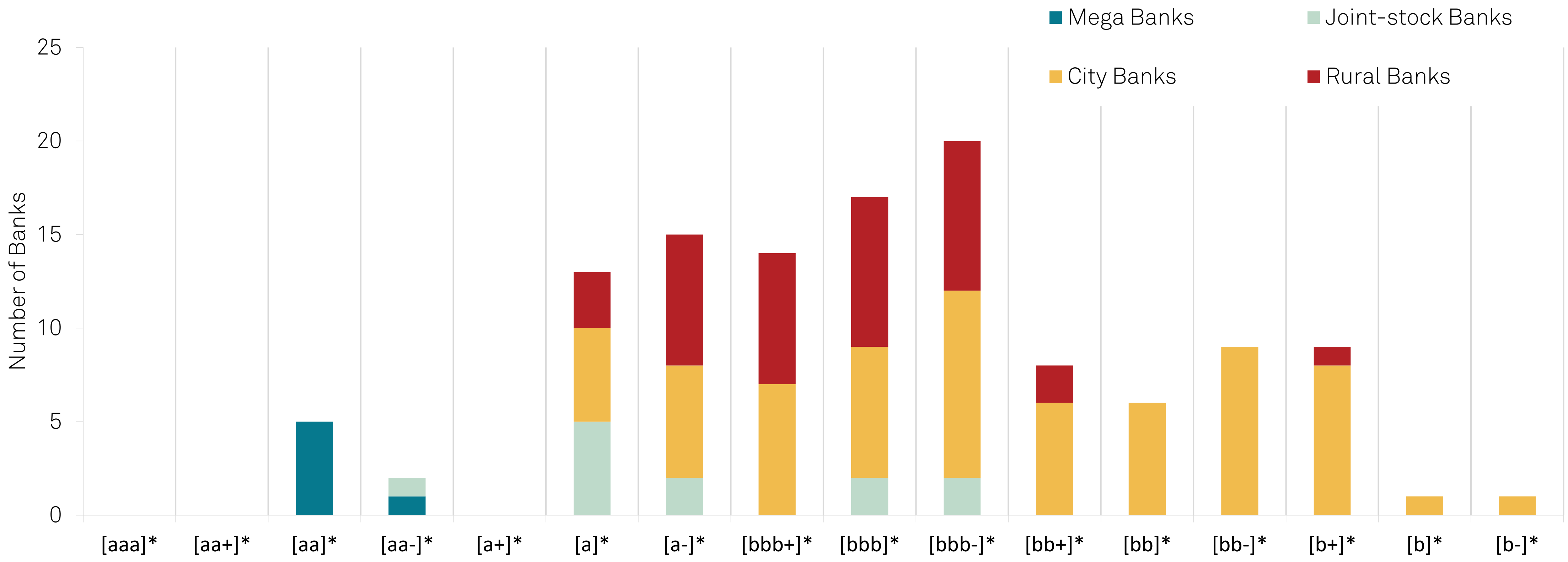
Stand-alone Credit Quality

Key takeaways:

- ❑ In recent years, we have seen widening differentiation of stand-alone credit quality among banks.
- ❑ Weak banks have vulnerabilities in asset quality and capital resilience, but we haven't seen significant deterioration in funding and liquidity.

Mega banks and leading joint-stock banks remain resilient in their stand-alone credit quality

Distribution of Indicative Stand-alone Credit Quality of 120 Major Domestic Banks



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Note 2: Our assessment of indicative stand-alone credit quality doesn't consider the possibility of group or government support in times of stress.

Source: S&P Global (China) Ratings.

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Weak banks have vulnerabilities in asset quality and capital resilience, but we haven't seen significant deterioration in funding and liquidity

Indicative Notching of 120 Major Domestic Banks

Median of Notching	[aa]* Category Stand-alone Credit Quality	[a]* Category Stand-alone Credit Quality	[bbb]* Category Stand-alone Credit Quality	[bb]* Category Stand-alone Credit Quality	[b]* Category Stand-alone Credit Quality
Business Position	+3	+1	-1	-1	-1
Capital and Earnings	0	0	0	-1	-2
Risk Position	0	0	0	-2	-3
Funding and Liquidity	+2	0	0	0	0

Note 1: The notching above is based on the bbb+ anchor of commercial banks.

Note 2*: The indicative notchings expressed in this report are only S&P China's indicative views of credit quality derived from a desktop analysis based on public information without interactive review with any particular institution or the full credit rating process such as a rating committee. The opinions expressed herein are not and should not be represented as a credit rating and should not be taken as an indication of a final credit rating of any particular institution.

Note 3: Stand-alone credit quality does not take into consideration the potential external support when needed.

Source: S&P Global (China) Ratings.

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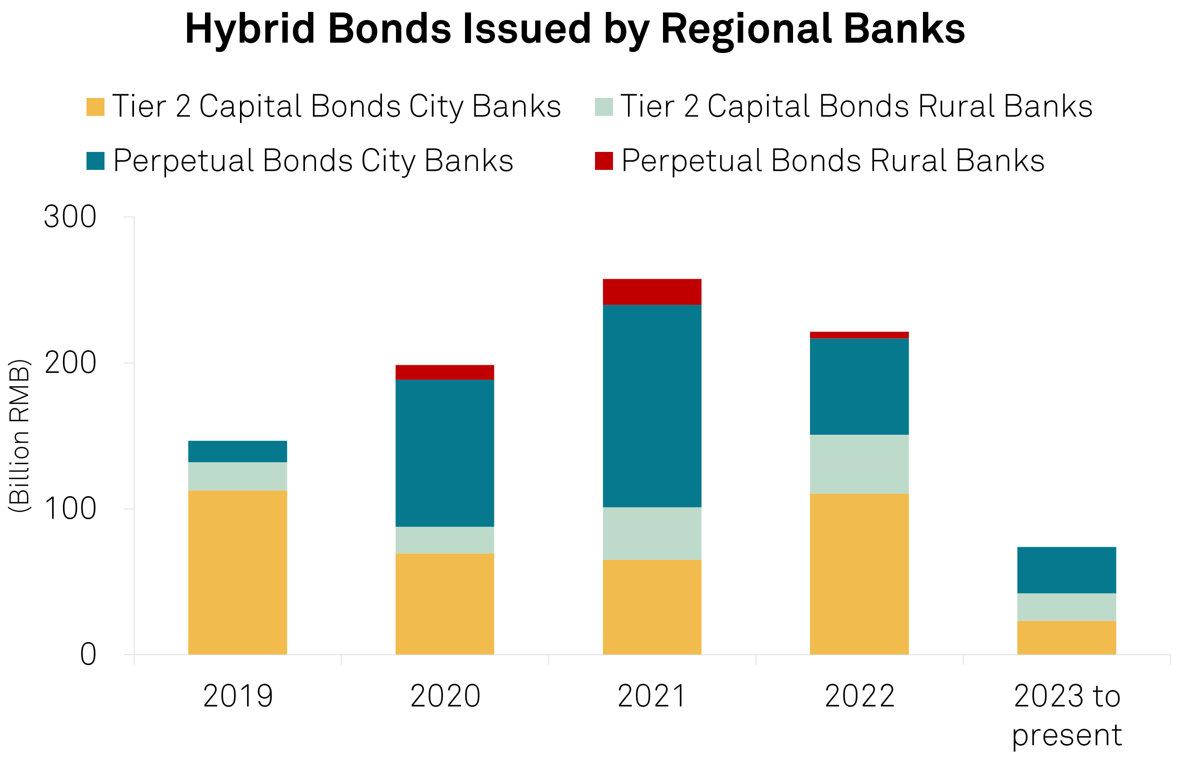
Government Support and its Impact on Capital Structure

Key takeaways:

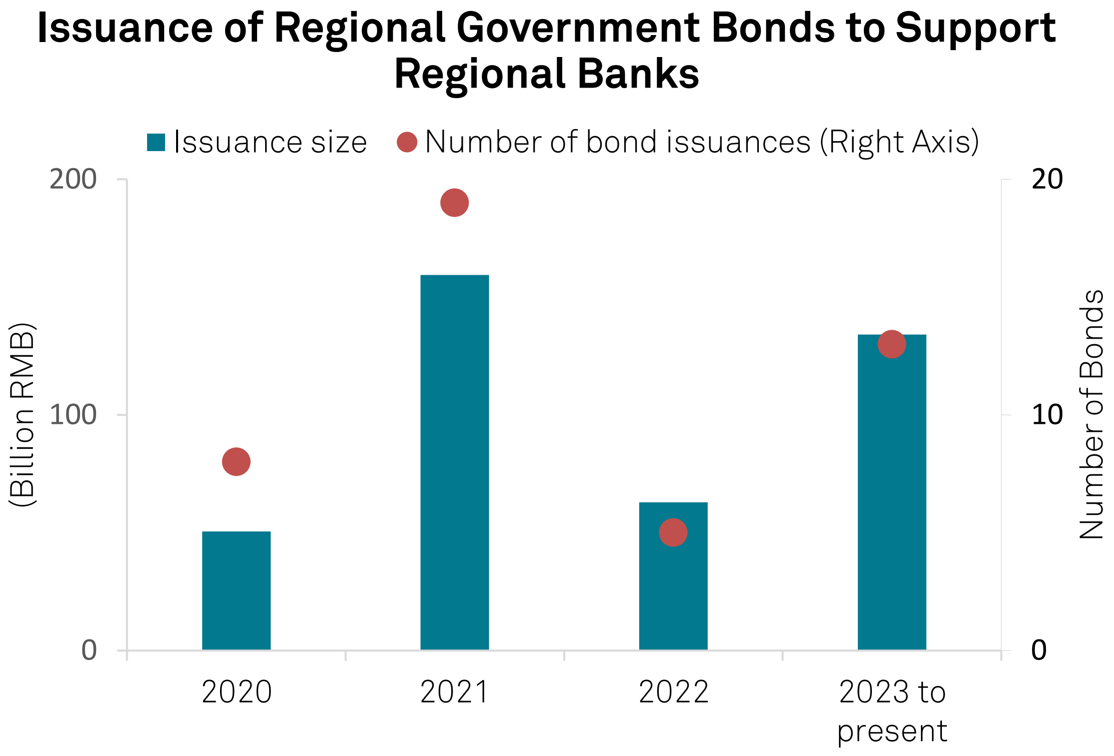
- ❑ Government remains strong backstop for banks.
- ❑ Regional governments are issuing governments bonds to inject capital into local banks.
- ❑ Regional governments have become increasingly important AT1 investors for weak local banks.

Regional government bonds have become important capital source for weak banks

- High-risk banks find it difficult to raise capital or issue hybrid bonds in the capital market.
- Instead, regional governments are issuing government bonds and inject the raised money as capital into local banks.



Source: public information of bonds, collected and adjusted by S&P Global (China) Ratings.



Source: public information of bonds, collected and adjusted by S&P Global (China) Ratings.

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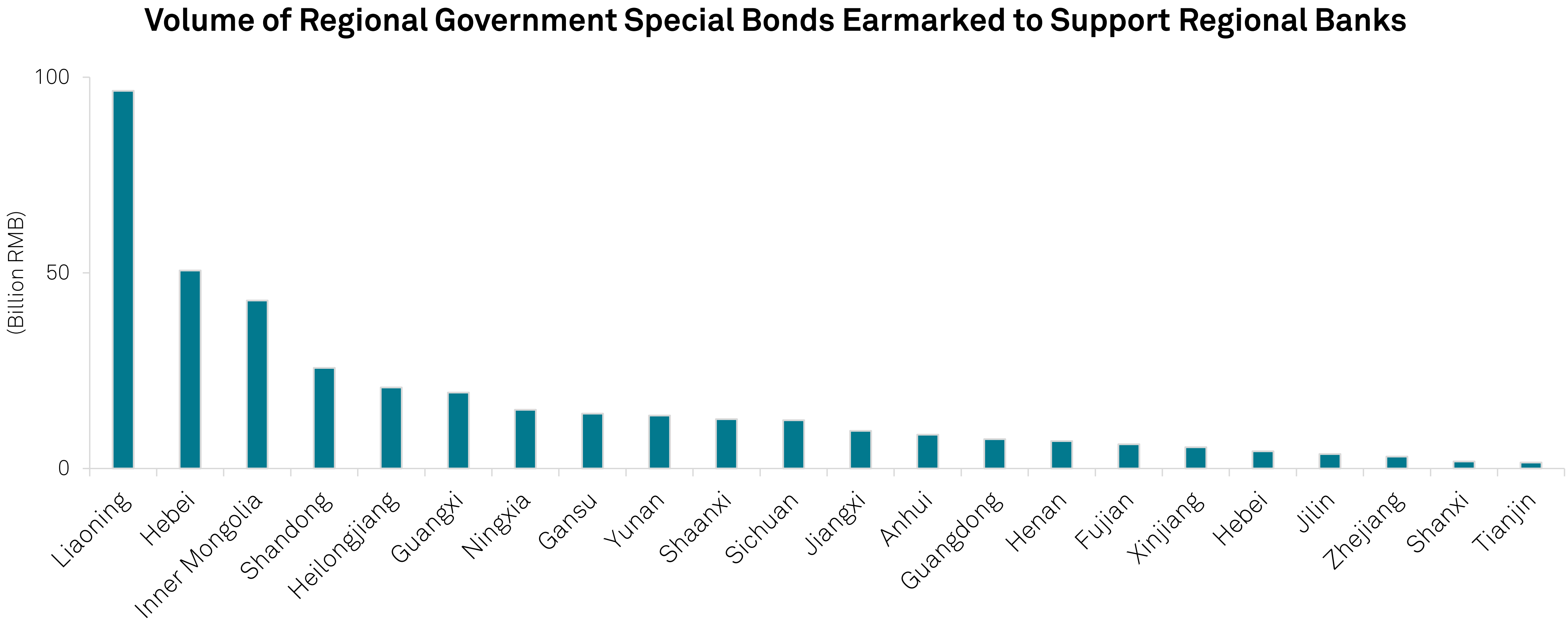
Regional governments bond issuance concentrates in regions with more troubled banks



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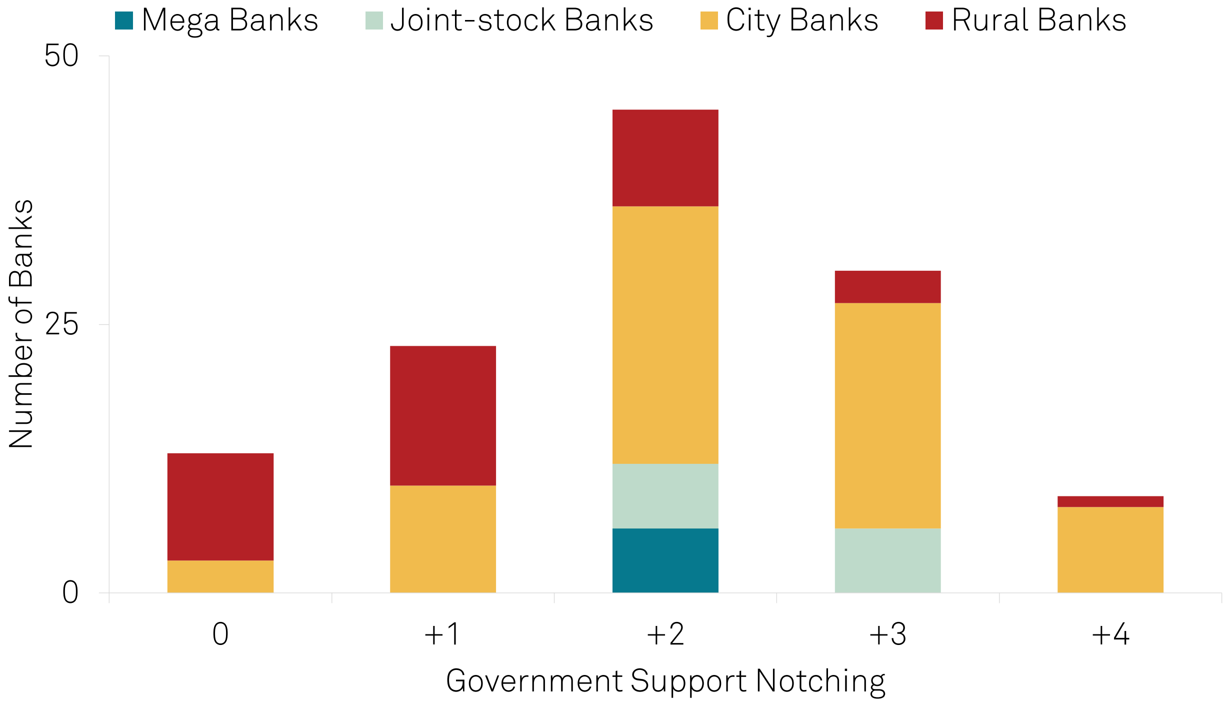
Note: the data is as of July 13, 2023
Source: Public information, collected by S&P Global (China) Ratings.

Government remains strong backstop for banks in China

- In addition to issuance of regional government bonds, regional and local governments are also injecting equity into local banks directly or through SOEs.
- There have also been several cases of bank mergers where small local banks were merged into bigger ones with meaningful capital injection by regional governments.
- Among the 120 domestic banks we monitored, we believe about 90% of them are likely to have government support in times of stress.

Distribution of Indicative Government Support Notching of 120 Major Domestic Banks



Note 1: Government support notching is based on stand-alone credit quality.

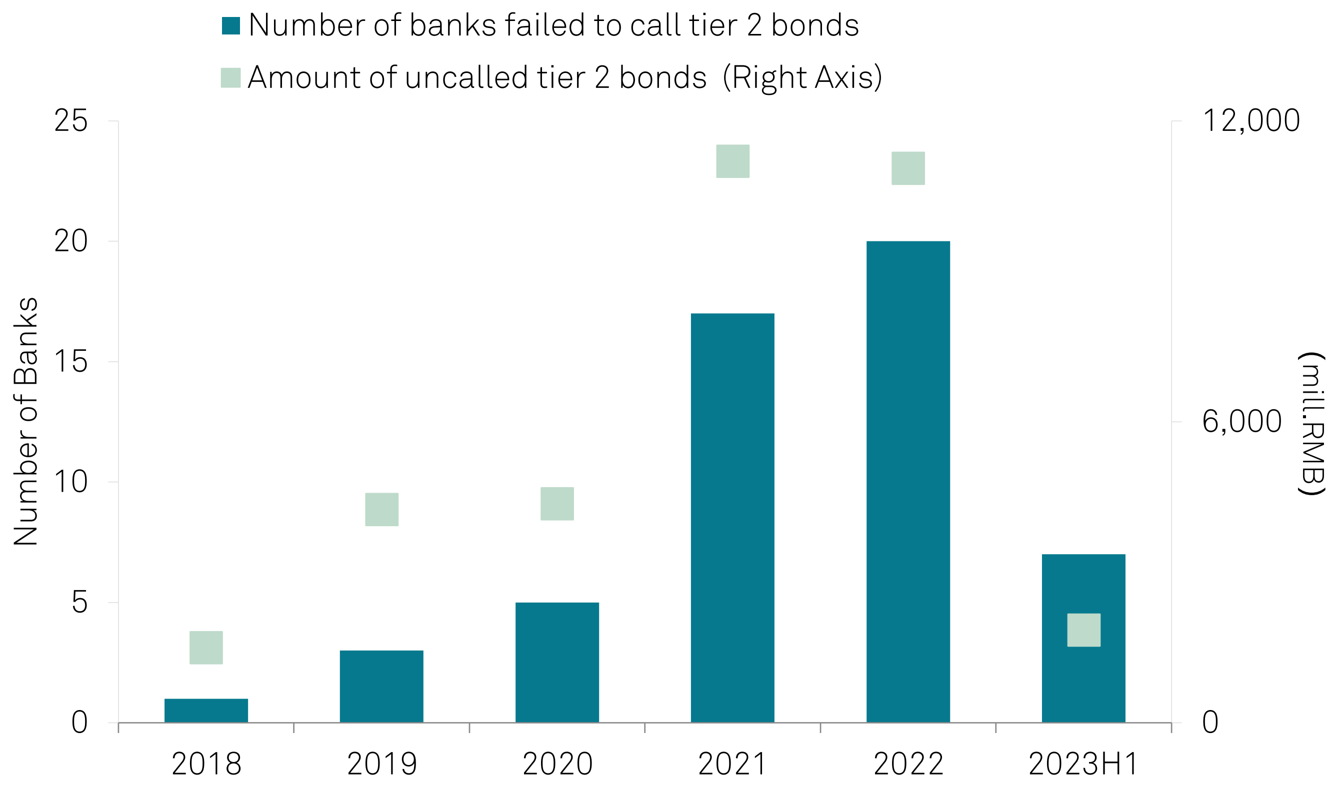
Note 2: The indicative scores expressed in this report are S&P China's indicative views of risk factors derived from a desktop analysis based on public information without interactive review with any particular institution or the full credit rating process such as a rating committee (except for some institutions for which we have assigned ratings on). The opinions expressed herein are not and should not be represented as part of a credit rating.

Source: S&P Global (China) Ratings.

Regional governments have become increasingly important AT1 investors for weak local banks

- When regional governments issue bonds to inject capital into regional banks, in many cases, the money is deposited with the banks as a special form of deposits which can be converted into common equity when the government/regulator regards the bank as seriously undercapitalized.
- Similar to perpetual bonds, those deposits are classified with additional tier 1 capital. Take Tianjin Binhai Rural Bank for example, 50% of its capital is CET 1 capital, 35% AT1 deposits, 15% tier 2 capital bonds.

Number of Banks Failed to Call Tier 2 Capital Bonds



Source: Wind, collected by S&P Global (China) Ratings.

Special Topic 1: Real Estate Exposure

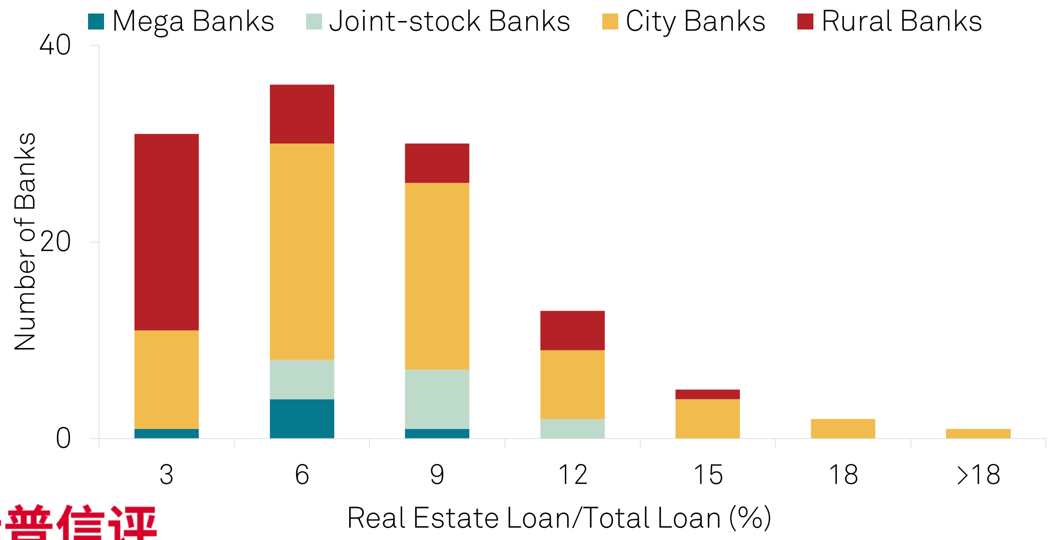
Key takeaways:

- ❑ Banks' credit cost caused by real estate weakness is still too early to tell.
- ❑ City banks are the most vulnerable to real estate woes.

Bank credit cost caused by real estate weakness is still too early to tell

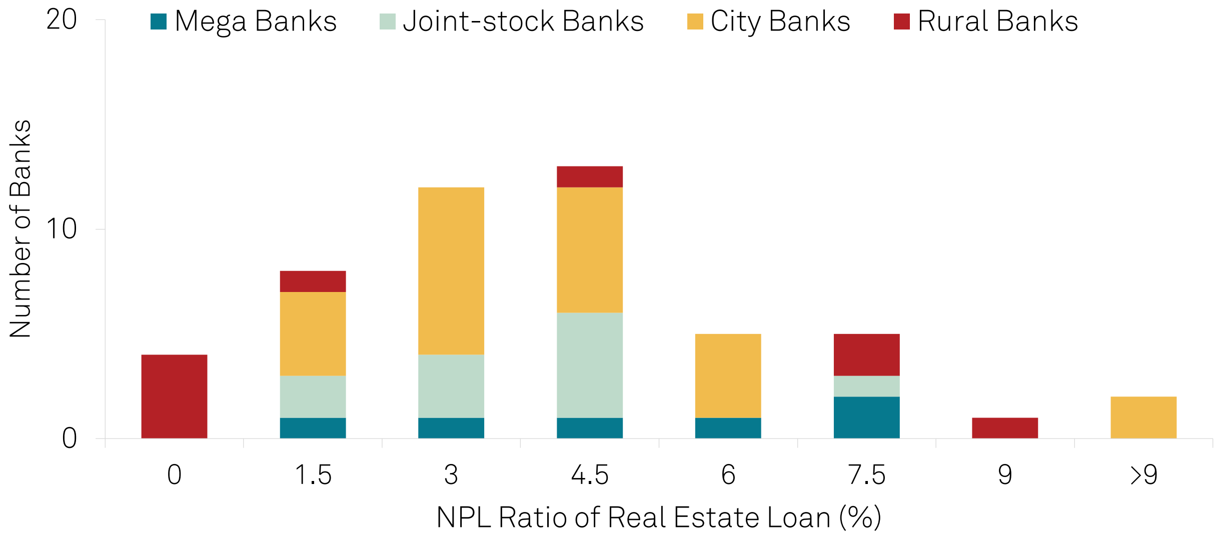
- Chinese banks' direct exposure to real estate sector is moderate, which has prevented real estate challenge from becoming systemic threat to banks.
- Banks reported higher NPL ratio in their real estate loan book. The domestic systemically important banks reported average real estate NPL ratio of 4.3% as of the end of 2022, up by 1.6 percentage points year on year.
- "16 Financial Measures" of the government to support real estate sector will be in place until the end of 2024. This policy allows banks to give extensions to real estate loans without changing their credit classification.

Distribution of Percentage of Real Estate Loan of 120 Major Domestic Banks, as of end of 2022



Source: Wind, public information of banks, collected by S&P Global (China) Ratings.

Distribution of NPL Ratio of Real Estate Loan of 50 Major Domestic Banks, as of end of 2022



Source: Wind, public information of banks, collected by S&P Global (China) Ratings.

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Although it doesn't pose existential threat to banks, real estate sector's final bad debt level still has a meaningful impact on banks' capitalization

Weighted-average Tier 1 CAR of 120 Major Domestic Banks (%)		NPL Ratio of Real Estate and Construction Loans（%）									
		10	20	30	40	50	60	70	80	90	100
Loss Rate of Real Estate and Construction NPLs（%）	10	12.27	12.24	12.20	12.17	12.13	12.09	12.05	12.01	11.97	11.92
	20	12.25	12.18	12.10	12.02	11.94	11.85	11.77	11.67	11.56	11.45
	30	12.22	12.11	11.99	11.87	11.73	11.58	11.40	11.22	11.04	10.84
	40	12.20	12.05	11.88	11.70	11.48	11.24	10.99	10.72	10.45	10.17
	50	12.18	11.97	11.76	11.50	11.20	10.88	10.54	10.20	9.84	9.48
	60	12.15	11.90	11.63	11.28	10.90	10.49	10.08	9.65	9.22	8.79
	70	12.12	11.83	11.48	11.05	10.58	10.10	9.60	9.10	8.59	8.09
	80	12.09	11.75	11.32	10.81	10.26	9.70	9.12	8.55	7.97	7.39
	90	12.07	11.68	11.15	10.56	9.94	9.29	8.64	7.99	7.34	6.70
	100	12.04	11.59	10.99	10.31	9.60	8.88	8.16	7.44	6.72	6.00

Note: other key assumptions of the sensitivity analysis include: 100% of banks' SML migrate to NPL; 100% of banks' stage 2 loans migrate to stage 3; 30%-50% of banks' forbearance loans migrate to NPL; If the problem loan ratio above is less than 6%, we use 6% in our analysis.
Source: S&P Global (China) Ratings.

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City banks are the most vulnerable to the real estate woes

Tier 1 CAR of 6 State-owned Mega Banks (%)		NPL Ratio of Real Estate and Construction Loans（%）				
		10	30	50	70	90
Loss Rate of Real Estate and Construction NPLs（%）	10	13.94	13.90	13.86	13.82	13.78
	30	13.91	13.80	13.68	13.44	13.15
	50	13.89	13.70	13.28	12.71	12.10
	70	13.87	13.52	12.76	11.90	11.04
	90	13.85	13.26	12.19	11.09	9.98

Tier 1 CAR of 12 Joint-stock Banks (%)		NPL Ratio of Real Estate and Construction Loans（%）				
		10	30	50	70	90
Loss Rate of Real estate and Construction NPLs（%）	10	10.80	10.70	10.59	10.46	10.32
	30	10.73	10.36	9.94	9.52	9.10
	50	10.66	9.98	9.28	8.58	7.85
	70	10.57	9.60	8.62	7.58	6.46
	90	10.47	9.22	7.94	6.50	5.07

Tier 1 CAR of 66 Major City Banks (%)		NPL Ratio of Real Estate and Construction Loans（%）				
		10	30	50	70	90
Loss Rate of Real Estate and Construction NPLs（%）	10	9.41	9.30	9.17	9.03	8.90
	30	9.33	8.93	8.51	8.06	7.57
	50	9.23	8.55	7.77	6.94	6.07
	70	9.13	8.14	6.98	5.76	4.51
	90	9.03	7.68	6.16	4.55	2.94

Tier 1 CAR of 36 Major Rural Banks (%)		NPL Ratio of Real Estate and Construction Loans（%）				
		10	30	50	70	90
Loss Rate of Real estate and Construction NPLs（%）	10	11.81	11.75	11.70	11.63	11.54
	30	11.77	11.56	11.24	10.82	10.36
	50	11.73	11.27	10.55	9.75	8.90
	70	11.68	10.88	9.79	8.59	7.37
	90	11.62	10.46	8.96	7.40	5.83

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Note: other key assumptions of the sensitivity analysis include: 100% of banks' SML migrate to NPL; 100% of banks' stage 2 loans migrate to stage 3; 30%-50% of banks' forbearance loans migrate to NPL; If the problem loan ratio above is less than 6%, we use 6% in our analysis.
Source: S&P Global (China) Ratings.

Special Topic 2: High-risk LGFV Exposure

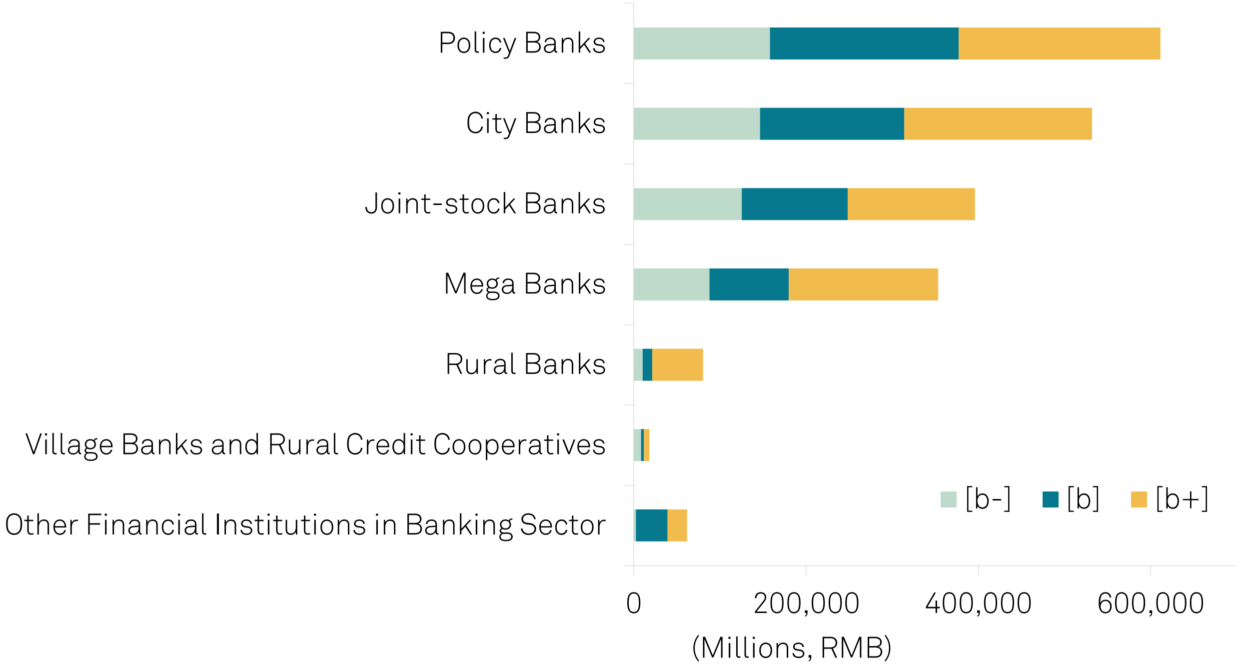
Key takeaways:

- ❑ LGFV risk is so far a regional challenge troubling some local banks, and it doesn't cause systemic concerns.
- ❑ City banks have the highest exposure to high-risk LGFVs among commercial banks.
- ❑ LGFV debt restructuring will be likely to impact bank earnings, but not the reported bad debt ratio.

City banks have the highest exposure to high-risk LGFVs among commercial banks

- Among the 3,000 LGFV we tested, about 7% of them have [B_{spc}] category credit quality. These high-risk LGFVs have about 2 trillion RMB lending from financial institutions.
- Among the 2 trillion RMB exposure to [B_{spc}] category LGFVs, 30% is with policy banks, 67% commercial banks, and 3% non-bank financial institutions.
- Commercial banks have about 1.4 trillion RMB exposure to [B_{spc}] category banks, among them, 26% are with mega banks, 29% joint-stock banks, 39% city banks, and 6% rural banks.

Distribution of Preliminary Estimation of [B_{spc}] Category LGFV Exposure of Various Types of Banks



Note: The indicative credit quality distributions expressed in this report are only our indicative views of credit quality derived from a desktop analysis based on public information without interactive review with any particular institution or the full credit rating process such as a rating committee (except for a few cases where we have already assigned public ratings on a company). The opinions expressed herein are not and should not be represented as a credit rating and should not be taken as an indication of a final credit rating of any particular institution.

Source: S&P Global (China) Ratings.

LGFV risk is so far a regional challenge troubling some local banks, and it doesn't cause systemic concern

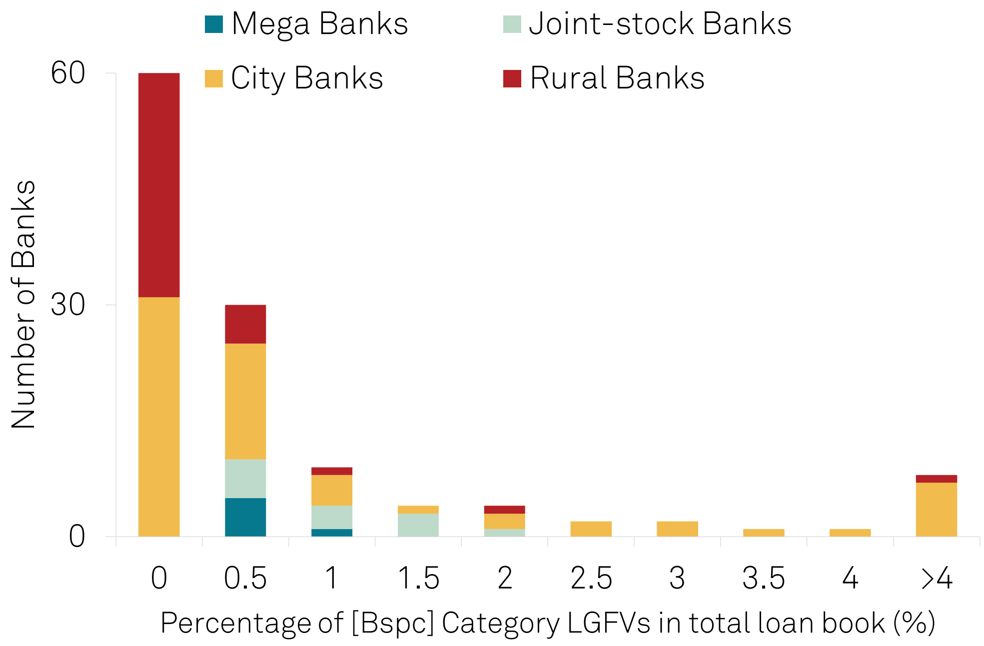
Most banks have controllable exposure to high-risk LGFVs. High concentrations of high-risk LGFVs exist only in several provinces.

Preliminary assessment of bank exposure to [B_{spc}] category LGFVs

Bank type	Average of [B_{spc}] Category LGFV Exposure/Gross Customer Loans	Max of [B_{spc}] Category LGFV Exposure/Gross Customer Loans	Min of [B_{spc}] Category LGFV Exposure/Gross Customer Loans
6 State-owned Mega Banks	0.37%	0.92%	0.12%
12 Joint-stock Banks	1.00%	2.08%	0.13%
62 Major City Banks	2.63%	33.03%	0.004%
16 Major Rural Banks	1.76%	10.50%	0.01%

Source: Public information of LGFVs and banks, collected and adjusted by S&P Global (China) Ratings.

Distribution of Percentage of [B_{spc}] Category LGFVs of 120 Major Domestic Banks



Source: Public information of LGFVs and banks, collected and adjusted by S&P Global (China) Ratings.

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Future LGFV risk likely manifests itself as NIM drop

- For regions with good fiscal strength and strong LGFVs, such as Beijing, Shanghai, and Guangdong, we have no reason to worry about LGFV exposure of their local banks.
- For many regional banks in east China, they have sound corporate governance and prudent underwriting standards, they have managed to keep away from high-risk LGFVs.
- For several regions, some local banks have been deeply involved in LGFV lending. Their credit quality is now highly correlated with the health of their local LGFVs.
- We don't expect banks to classify high-risk LGFVs as bad debts in their books in the near future. We don't expect high provisioning for those LGFV exposures. In many cases, after LGFVs are restructured, they continue to be classified as normal loans going forward. As a result, we don't expect NPL ratio, credit cost, or capital adequacy ratios to be affected by LGFV exposures in the near term.
- LGFV debt restructuring is likely to impact banks' NIM and profitability because of interest rate drop.
- Given the capital and profitability stress of some regional banks, we believe the government is likely to take a balanced approach between LGFV debt restructuring and protecting local banks' business sustainability.

Banking sectors' overall capital is resilient against LGFV exposure

Weighted-average Tier 1 CAR of 120 Major Domestic Banks (%)		NPL Ratio of [B_{spc}] Category LGFVs（%）									
		10	20	30	40	50	60	70	80	90	100
NPL Ratio of [BB_{spc}] Category LGFVs（%）	0	11.48	11.42	11.38	11.35	11.32	11.29	11.26	11.22	11.19	11.16
	5	11.39	11.32	11.29	11.26	11.23	11.20	11.16	11.13	11.10	11.07
	10	11.29	11.23	11.20	11.16	11.13	11.10	11.07	11.04	11.00	10.97
	15	11.19	11.13	11.10	11.07	11.03	11.00	10.97	10.94	10.90	10.87
	20	11.10	11.03	11.00	10.97	10.93	10.90	10.87	10.84	10.81	10.77
	25	11.00	10.93	10.90	10.87	10.83	10.80	10.77	10.74	10.71	10.67
	30	10.90	10.83	10.80	10.77	10.73	10.70	10.67	10.63	10.60	10.56
	35	10.80	10.73	10.69	10.66	10.63	10.59	10.56	10.52	10.49	10.46
	40	10.69	10.62	10.58	10.55	10.52	10.48	10.45	10.41	10.38	10.35
	45	10.58	10.51	10.47	10.44	10.41	10.37	10.34	10.31	10.27	10.24
	50	10.47	10.40	10.37	10.33	10.30	10.26	10.23	10.20	10.16	10.13

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Note: key assumptions of sensitivity analysis include: 100% of banks' SML migrate to NPL; 100% of banks' stage 2 loans migrate to stage 3; 30%-50% of banks' forbearance loans migrate to NPL; If the problematic loan ratio above is less than 6%, we use 6% in our stress testing; loss rate of problem Loans above is between 70% and 90%; NPL ratios of real estate and construction loans are 30% with loss rates of 70%. We assume LGFV bad debt has a loss rate of 50%.
Source: S&P Global (China) Ratings.

City banks' capital are the most sensitive to LGFV bad debts

Tier 1 CAR of 6 State-owned Mega Banks (%)		NPL Ratio of [B_{spc}] Category LGFVs（%）				
		10	30	50	70	90
NPL Ratio of [BB_{spc}] Category LGFVs（%）	0	13.50	13.47	13.44	13.41	13.38
	5	13.45	13.41	13.38	13.35	13.32
	10	13.39	13.36	13.33	13.30	13.27
	15	13.34	13.30	13.27	13.24	13.21
	20	13.28	13.25	13.22	13.19	13.16

Tier 1 CAR of 12 Joint-stock Banks (%)		NPL Ratio of [B_{spc}] Category LGFVs（%）				
		10	30	50	70	90
NPL Ratio of [BB_{spc}] Category LGFVs（%）	0	9.56	9.48	9.40	9.31	9.23
	5	9.43	9.35	9.27	9.19	9.11
	10	9.30	9.22	9.14	9.06	8.98
	15	9.18	9.10	9.01	8.93	8.85
	20	9.05	8.97	8.89	8.81	8.73

Tier 1 CAR of 66 Major City Banks (%)		NPL Ratio of [B_{spc}] Category LGFVs（%）				
		10	30	50	70	90
NPL Ratio of [BB_{spc}] Category LGFVs（%）	0	8.06	7.90	7.74	7.59	7.43
	5	7.90	7.74	7.58	7.42	7.26
	10	7.72	7.56	7.39	7.23	7.07
	15	7.51	7.35	7.19	7.03	6.87
	20	7.31	7.15	6.99	6.83	6.67

Tier 1 CAR of 36 Major Rural Banks (%)		NPL Ratio of [B_{spc}] Category LGFVs（%）				
		10	30	50	70	90
NPL Ratio of [BB_{spc}] Category LGFVs（%）	0	10.88	10.86	10.85	10.83	10.82
	5	10.82	10.81	10.79	10.78	10.76
	10	10.76	10.75	10.73	10.72	10.71
	15	10.70	10.69	10.68	10.66	10.65
	20	10.62	10.61	10.60	10.58	10.57

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Note: key assumptions of sensitivity analysis include: 100% of banks' SML migrate to NPL; 100% of banks' stage 2 loans migrate to stage 3; 30%-50% of banks' forbearance loans migrate to NPL; If the problematic loan ratio above is less than 6%, we use 6% in our stress testing; loss rate of problem Loans above is between 70% and 90%; NPL ratios of real estate and construction loans are 30% with loss rates of 70%. We assume LGFV bad debt has a loss rate of 50%.
Source: S&P Global (China) Ratings.

LGFV debt restructuring is likely to impact banks' profitability because of interest rate cuts

LGFV debt restructuring is unlikely to manifest itself as higher NPL ratio or credit cost.

Weighted-average change of Pre-tax Earnings of 120 Major Domestic Banks (%)		Decrease of Interest Income from [B_{spc}] Category LGFVs（%）									
		10	20	30	40	50	60	70	80	90	100
Decrease of Interest Income from [BB_{spc}] Category LGFVs（%）	10	1.30	0.98	0.66	0.35	0.03	(0.28)	(0.60)	(0.91)	(1.23)	(1.54)
	20	(0.47)	(0.78)	(1.10)	(1.41)	(1.73)	(2.04)	(2.36)	(2.67)	(2.99)	(3.30)
	30	(2.23)	(2.55)	(2.86)	(3.18)	(3.49)	(3.81)	(4.12)	(4.44)	(4.75)	(5.07)
	40	(4.00)	(4.31)	(4.63)	(4.94)	(5.26)	(5.57)	(5.89)	(6.20)	(6.52)	(6.83)
	50	(5.76)	(6.08)	(6.39)	(6.71)	(7.02)	(7.34)	(7.65)	(7.97)	(8.28)	(8.60)
	60	(7.52)	(7.84)	(8.15)	(8.47)	(8.78)	(9.10)	(9.41)	(9.73)	(10.05)	(10.36)
	70	(9.29)	(9.60)	(9.92)	(10.23)	(10.55)	(10.86)	(11.18)	(11.49)	(11.81)	(12.12)
	80	(11.05)	(11.37)	(11.68)	(12.00)	(12.31)	(12.63)	(12.94)	(13.26)	(13.57)	(13.89)
	90	(12.82)	(13.13)	(13.45)	(13.76)	(14.08)	(14.39)	(14.71)	(15.02)	(15.34)	(15.65)
	100	(14.58)	(14.90)	(15.21)	(15.53)	(15.84)	(16.16)	(16.47)	(16.79)	(17.10)	(17.42)

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Note 1: we assume current borrowing cost of sub-investment grade LGFVs is about 6%.
Note 2: We include deposit interest rate drop in the analysis, therefore, their pre-tax earnings may increase under mild scenarios.
Source: S&P Global (China) Ratings.

Mega banks have good resilience against LGFV debt restructuring

City banks' profitability is sensitive to LGFV debt restructuring due to their high credit cost, high operating cost, and high concentration in sub-investment grade LGFVs.

Change of Pre-tax Earnings of 6 State-owned Mega Banks (%)		Decrease of Interest Income from [B$_{spc}$] Category LGFVs（%）				
		10	30	50	70	90
Decrease of Interest Income from [BB$_{spc}$] Category LGFVs（%）	10	2.42	2.12	1.82	1.52	1.22
	30	0.46	0.16	(0.14)	(0.44)	(0.74)
	50	(1.50)	(1.80)	(2.10)	(2.40)	(2.71)
	70	(3.46)	(3.76)	(4.06)	(4.37)	(4.67)
	90	(5.42)	(5.72)	(6.03)	(6.33)	(6.63)

Change of Pre-tax Earnings of 12 Joint-stock Banks (%)		Decrease of Interest Income from [B$_{spc}$] Category LGFVs（%）				
		10	30	50	70	90
Decrease of Interest Income from [BB$_{spc}$] Category LGFVs（%）	10	0.16	(0.69)	(1.53)	(2.38)	(3.23)
	30	(4.48)	(5.32)	(6.17)	(7.02)	(7.87)
	50	(9.11)	(9.96)	(10.81)	(11.66)	(12.51)
	70	(13.75)	(14.60)	(15.45)	(16.30)	(17.15)
	90	(18.39)	(19.24)	(20.09)	(20.94)	(21.79)

Change of Pre-tax Earnings of 66 Major City Banks (%)		Decrease of Interest Income from [B$_{spc}$] Category LGFVs（%）				
		10	30	50	70	90
Decrease of Interest Income from [BB$_{spc}$] Category LGFVs（%）	10	(2.21)	(4.24)	(6.27)	(8.30)	(10.33)
	30	(11.50)	(13.53)	(15.56)	(17.59)	(19.62)
	50	(20.79)	(22.82)	(24.85)	(26.88)	(28.91)
	70	(30.09)	(32.12)	(34.14)	(36.17)	(38.20)
	90	(39.38)	(41.41)	(43.44)	(45.47)	(47.49)

Change of Pre-tax Earnings of 36 Major Rural Banks (%)		Decrease of Interest Income from [B$_{spc}$] Category LGFVs（%）				
		10	30	50	70	90
Decrease in Interest Income from [BB$_{spc}$] Category LGFVs（%）	10	1.48	1.35	1.21	1.07	0.94
	30	(1.87)	(2.01)	(2.15)	(2.28)	(2.42)
	50	(5.23)	(5.37)	(5.50)	(5.64)	(5.78)
	70	(8.59)	(8.72)	(8.86)	(9.00)	(9.13)
	90	(11.94)	(12.08)	(12.22)	(12.35)	(12.49)

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China Ratings

Note 1: we assume current borrowing cost of sub-investment grade LGFVs is about 6%.
Note 2: We include deposit interest rate drop in the analysis, therefore, their pre-tax earnings may increase under mild scenarios.
Source: S&P Global (China) Ratings.

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