

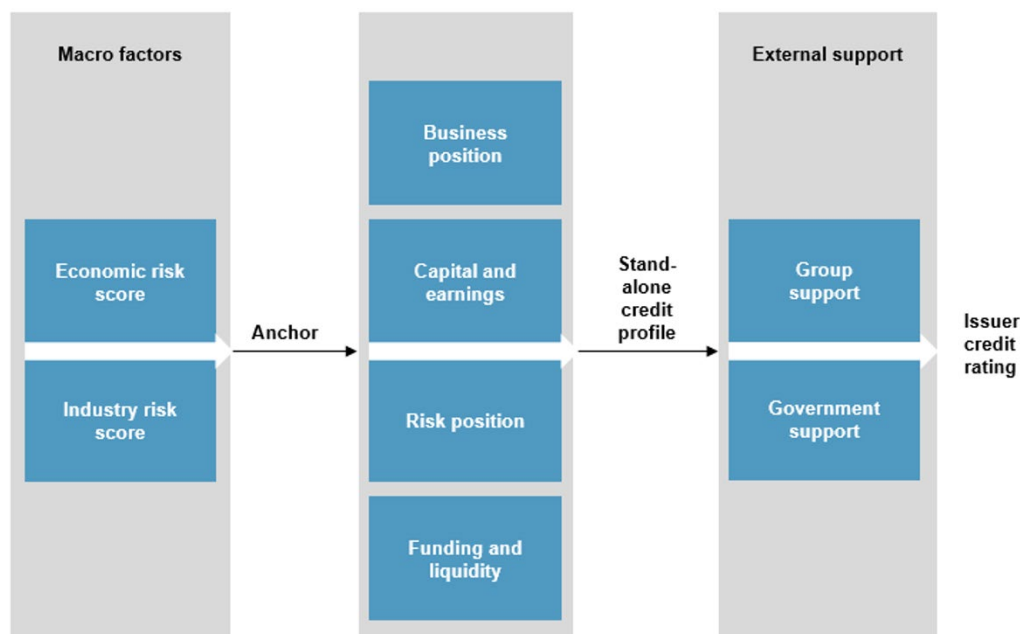
How We Approach Banks' Capital and Earnings

September 23, 2021

According to S&P Global (China) Ratings' Financial Institutions Methodology, we typically determine the stand-alone credit profile ("SACP") of an entity based on our assessment of its anchor, a starting point, before incorporating the entity's own characteristics by making upwards or downwards notching adjustments. The entity-specific factors we usually consider include business position, capital and earnings, risk position, and funding and liquidity. We then determine the issuer credit rating ("ICR") based on its SACP and our assessment of potential group or government influence.

Chart 1

Financial institutions methodology framework



Note: After assessing the issuer's entity-specific factors, a holistic adjustment may be applied to evaluate its credit characteristics in aggregate and versus peers before arriving at SACP.

Source: S&P Global (China) Ratings.

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Capital and earnings is the second factor in our assessment of banks' SACP. It is about an entity's ability to absorb losses under stress. Capital and earnings assessment is measured on a six-point scale corresponding to six different possible notching results. A score of 1 (leading to a 2-notch upward adjustment from the anchor) represents strong capitalization. A score of 3 (no notching adjustment applied) represents adequate capitalization, while a score of 6 (a 3-notch downward adjustment from the anchor) represents very constrained capitalization. Our capital and earnings assessment is forward-looking.

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We usually take a bank's capital adequacy as a starting point of our analysis which forms its initial capital and earnings score. We then consider additional factors like capital quality, earning capacity and earning quality, which help determine whether we need to adjust our initial score.

For capital adequacy, we first look at a bank's compliance with regulatory capital adequacy ratio requirements. If we believe the entity may not meet those regulatory requirements, we may apply a negative adjustment to its capital and earnings score. Only when we think a bank can fully meet capital adequacy requirements do we give a neutral (i.e. no notching adjustment) or favorable (1- or 2-notch upward adjustment) score to its capital and earnings score.

We then look at a bank's Tier 1 capital, applying quantitative adjustments and forecast. Through this we arrive at the initial capital and earnings score. A capital and earnings score of 3 (no notching adjustment applied) generally means a bank has enough capital to support its business growth while fully meeting regulatory capital adequacy requirements. This neutral score suggests that a bank has achieved a reasonable balance between maintaining adequate capital and good profitability. The Tier 1 capital adequacy ratio is usually the core ratio in our assessment of capital adequacy, while we also consider the overall capital adequacy and Common Equity Tier 1 ("CET 1") capital adequacy ratios.

Table 1

Minimum regulatory capital adequacy requirements

Capital Adequacy Requirements (%)	Global Systemically Important Banks (G-SIBs) *	Other Banks
Capital Adequacy Ratio	11.5 – 12.0	10.5
Tier 1 Capital Adequacy Ratio	9.5 – 10.0	8.5
CET 1 capital Adequacy Ratio	8.5 – 9.0	7.5

Note * 1: According to the Financial Stability Board and the Basel Committee on Banking Supervision, G-SIBs should hold additional capital under higher loss absorbency (HLA) requirements, as well as meeting the minimum requirement, the capital conservation and countercyclical buffers. The HLA requirement should be met fully by CET 1. G-SIBs are divided into 5 buckets, with HLA capital requirements of 1.0%, 1.5%, 2.0%, 2.5% and 3.5% respectively. As of November 2020, Bank of China, Industrial and Commercial Bank of China and China Construction Bank were in the second bucket and thus came under HLA requirements of 1.5%. Agricultural Bank of China came under the first bucket and had 1% HLA requirement.

Note 2: This table does not consider the higher capital adequacy requirements for domestic systemically important banks which haven't been finalized by the regulator when this commentary is published.

Source: CBIRC, FSB, BCBS, collated and adjusted by S&P Global (China) Ratings.

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Table 2

How we assess different capital adequacy ratios

Ratio	Assessment Method
Tier 1 capital adequacy ratio	The Tier 1 capital adequacy ratio adjusted by S&P Global (China) Ratings over the next 12-24 months is the core metrics deriving our initial score of commercial banks' capital and earnings.
Overall capital adequacy ratio	If a bank's Tier 2 capital buffer is much higher than the industry average which leads to a higher-than-industry average protection to a bank's creditors, we may apply a positive nothing adjustment.
CET 1 capital adequacy ratio	If additional Tier 1 capital instruments (e.g. perpetual bonds) account for a high proportion of Tier 1 capital, leading to pressure on CET 1 capital adequacy despite Tier 1 capital adequacy ratio still fully meeting regulatory requirements or our cutoff points, we may apply a negative notching adjustment.

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Table 3

Initial notching guidance for capital and earnings in our bank testing

Notching	Score	Typical features
+2	1	We expect the Tier 1 capital adequacy ratio adjusted by S&P Global (China) Ratings to be much higher than the industry average, typically above 17%, for the following 12-24 months.
+1	2	We expect the Tier 1 capital adequacy ratio adjusted by S&P Global (China) Ratings to be somewhat higher than the industry average, typically in the range of 12% - 17%, for the following 12-24 months.
0	3	We expect the Tier 1 capital adequacy ratio adjusted by S&P Global (China) Ratings to be consistent with the industry average, typically in the range of 8.5% - 12%, for the following 12-24 months; and able to meet the minimum regulatory capital requirements under stress scenario.
-1	4	We expect the Tier 1 capital adequacy ratio adjusted by S&P Global (China) Ratings to be somewhat lower than the industry average, typically in the range of 7% - 8.5%, for the following 12-24 months; and the bank may have difficulty meeting minimum regulatory capital requirements under stress scenario while being able to meet those requirements in normal time.
-2	5	We expect the Tier 1 capital adequacy ratio adjusted by S&P Global (China) Ratings to be lower than the industry average, typically in the range of 5% - 7%, for the following 12-24 months; and the bank may have difficulty meeting minimum regulatory capital requirements even in normal time.
-3	6	We expect the Tier 1 capital adequacy ratio adjusted by S&P Global (China) Ratings to be significantly lower than the industry average, typically below 5%, for the following 12-24 months; and the bank may have a significant risk of breaching the minimum regulatory capital requirements or having already breached them, and we expect that without timely capital injection, the bank's operations may become unsustainable.

Note 1: We may adjust the Tier 1 capital adequacy ratio base on our views on specific banks' asset quality.

Note 2: This table is supposed to be used in a forward-looking manner based on our view on the institution's future capitalization in the next 12 to 24 months or longer period if we see fit.

Note 3: We may make downward notching adjustment if a bank's capital quality is significantly weaker than industry average. If a bank has very strong Tier 2 capital which is not reflected in our assessment to its Tier 1 capitalization, we may make upward notching adjustment.

Note 4: The threshold used in our testing is only the starting point of scoring. We also consider other qualitative and quantitative factors, so our final notching conclusion may differ from the conclusion drawn from the initial threshold analysis.

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We typically make quantitative adjustments to a bank's Tier 1 capital adequacy ratios to better reflect its underlying capitalization and for better comparability with peers. The main adjustments applied for commercial banks are in the below table:

Table 4

Preliminary adjustments for banks' reported regulatory capital adequacy ratios

Typical Adjustment Factors	Reason for Adjustment	Adjustment Method for Testing
Internal Ratings-Based ("IRB") Approach	Six banks in China adopt the IRB approach. In addition to examining reported capital adequacy ratios under the IRB approach, we also look at capital	Adjust the risk weights under the IRB approach to risk weightings under the standardized approach.

Typical Adjustment Factors	Reason for Adjustment	Adjustment Method for Testing
	adequacy ratios under the standardized approach for peer comparison purpose.	
Off-Balance Sheet Wealth Management Products ("OBS WMPs")	Banks are not legally obliged to make payments to investors of their WMPs. However, we believe in some cases, failure to pay on OBS WMPs may cause significant reputation risk, especially to small and medium-sized regional banks. We believe those banks may use their own capital directly or indirectly to protect WMP investors' interests, which may hence have negative impact on their capital.	In the absence of more detailed information, when we adjust banks' risk-weighted assets ("RWA"), we usually add outstanding non-net-value OBS WMPs whose underlying assets are non-standard debt assets to the banks' RWA with a 100% risk weight, which is the same as those for ordinary corporate loans. But we may not make such adjustment for new WMPs issued following the new WMP rules.
Under-Provisioning	We believe that some banks may temporarily hide their bad debts through unjustifiable loan extensions or lax classification criteria for non-performing loans, and thus bad loans may have already eroded actual capital base if existing reserve levels are not sufficient to cover actual credit losses.	If we believe reserves do not cover credit losses in full, we will deduct the uncovered losses from the bank's Tier 1 capital as part of our adjustment.

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Six Chinese banks use their own internal models to measure RWA when calculating regulatory capital ratios. This makes it harder to compare capital adequacy ratios between banks using IRB approach and standardized approach. The below table shows how each of these banks apply different risk weightings to mortgage loans. These weightings can be significantly different from those applied under standardized approach.

Table 5

Example of average risk weights applied to residential mortgage loans by commercial banks

Average Risk Weight for Residential Mortgage Loans (%)	2018	2019	2020
Industrial and Commercial Bank of China ("ICBC")	22.88	20.14	20.16
China Construction Bank ("CCB")	25.37	24.69	25.26
Agricultural Bank of China ("ABC")	22.3	22.5	22.62
Bank of China ("BOC")	14.24	11.45	11.49
Bank of Communications ("BoCom")	15.66	20.81	22.00
China Merchants Bank ("CMB")	19.85	13.55	12.92
Weighting applied by commercial banks using standardized approach	50.00	50.00	50.00

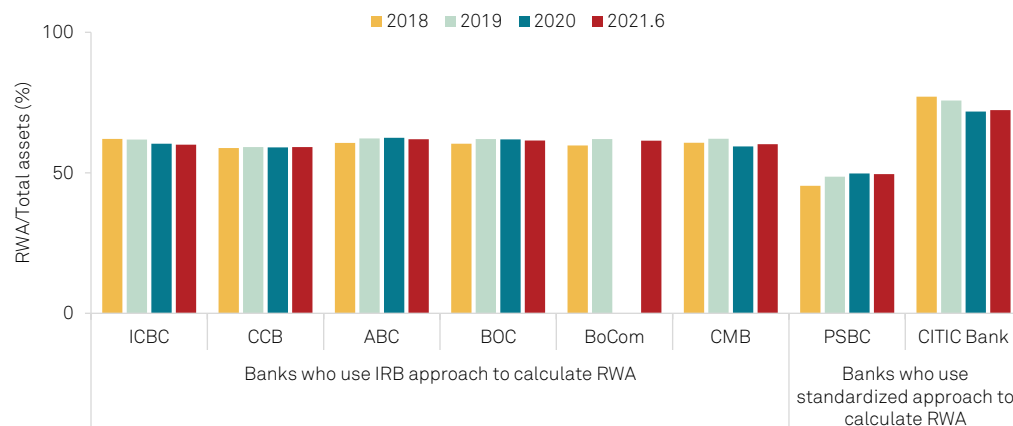
Source: Banks' public information, collected and adjusted by S&P Global (China) Ratings.

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That being said, the output floor applied to banks' capital levels can somewhat limit the gap between capital adequacy ratios measured through IRB approach and standardized approach. In international practices, Basel III adopt a floor of 72.5%, which means RWA measured by internal models should not fall below 72.5% of the results obtained by the standardized approach. In China, CBIRC applies a floor of 80% for its 6 IRB-based banks.

Chart 2

Risk-weighted assets/total assets of some commercial banks



Note: Both PSBC and CITIC Bank use the standardized approach. Their ratios of risk-weighted assets/total assets have significant difference mainly because PSBC holds a large amount of treasury bonds (with a risk weight of 0), while CITIC Bank's asset allocation is dominated by its loan book (commercial banks have a credit risk weight of 100% for general corporate lending).

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

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For banks that use the standardized approach, the adjustments we typically apply to their Tier 1 capital adequacy ratios are generally related to legacy off-balance sheet wealth management products and potential under - provisioning problems (summarized in the table below).

Table 6

Theoretical example of adjustments to commercial bank's Tier 1 capital adequacy ratio

(bil. RMB, %)	No.	Calculation	Amount
Adjustments to RWA			
Non-standard assets within non-net-value OBS WMPs	(1)		8.56
Reported RWA	(2)		369.39
Adjusted RWA	(3)	(1) + (2)	377.96
Adjustments to net Tier 1 capital			
Loan loss reserve of problem loans*	(4)		17.65
Unrecoverable amount of problem loans under stress scenario	(5)		25.04
Under-provisioning under stress scenarios	(6)	Min [0, (4) – (5)]	(7.39)
Reported net Tier 1 capital	(7)		38.82
Adjusted net Tier 1 capital	(8)	(6) + (7)	31.43
Calculation of adjusted Tier 1 capital adequacy ratio			
Reported Tier 1 capital adequacy ratio	(9)	(7) / (2) * 100	10.51

(bil. RMB, %)	No.	Calculation	Amount
Tier 1 capital adequacy ratio adjusted by S&P Global (China) Ratings	(10)	$(8) / (3) * 100$	8.31

Note 1 *: The problem loans take into account NPL loans and SML loans, assets classified as stage 2 or 3 under IFRS 9, overdue loans, and extended and restructured loans, and loans that, despite not being classified as NPLs or SMLs, have incurred serious risks and led to creditors' committees being established. We may also consider bad debts in non-standard product investments and bond investments, and OBSWMPs with implicit guarantee assumption. We may also make adjustments based on the strictness of the asset classification practices of a specific bank.

Note 2: This is only a theoretical example and doesn't represent our assessment of any specific bank.

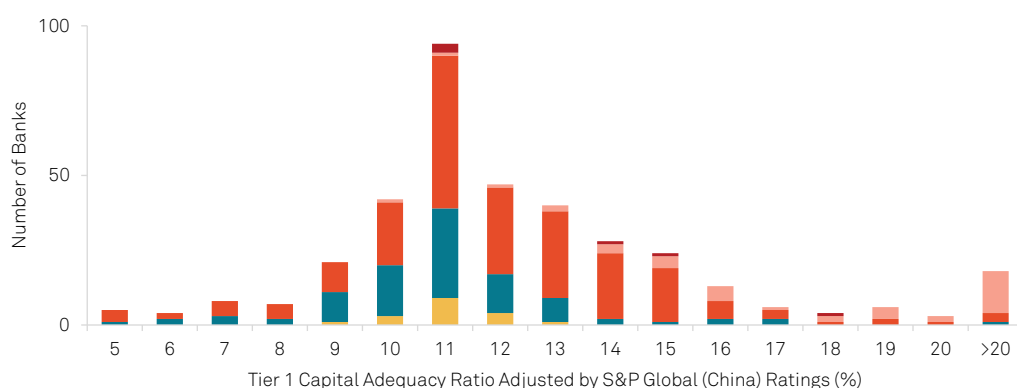
Source: S&P Global (China) Ratings.

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Chart 3

Distribution of Tier 1 capital adequacy ratio adjusted by S&P Global (China) Ratings of major banks in China as of end of 2020

■ Mega Banks and Joint-stock Banks ■ City Banks ■ Rural Banks ■ Foreign Bank Subsidiaries ■ Private Banks



Note: Due to the limited information we have on banks for our testing, our adjustments included a number of assumptions about the problem loans and the recovery rate of problem loans, so the adjustment results in the testing may differ from the adjustment results in the actual ratings in which case we have better access to bank information.

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

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Beyond our adjustments to historical Tier 1 capital adequacy ratio, we also forecast the Tier 1 capital adequacy ratio for the next 12-24 months. This forecast is based on our view of a bank's business development plan, capital injection plan, planned issuance of hybrid bonds, and our forecast on net income and dividends payout. This adjusted Tier 1 capital adequacy ratio forecast is our core indicator that helps us arrive at an initial capital and earnings score.

Table 7

Example of capital adequacy forecast by S&P Global (China) Ratings

(bil. RMB)	2018A	2019A	2020E	2021F
Risk weighted assets	4,316.22	4,969.66	5,918.97	6,527.24
Including: credit risk	3,974.79	4,582.34	5,462.15	6,035.67
Market risk	50.92	52.66	68.62	72.30
Operational risk	290.51	334.67	388.21	419.27
Total Tier 1 capital	469.61	540.16	706.85	776.14

S&P Global (China) Ratings Estimate of Tier 1 Capital Adequacy Ratio (%)	N/A	N/A	11.9	11.9
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Note: we believe that the bank can successfully complete the transition from WMPs as required by the New Asset Management Rules by the extended deadline of end of 2021. We do not expect these outstanding WMPs to have any significant impact on the bank's overall capitalization.

S & P Global (China) Ratings' base case assumptions include: 1. total assets grow at a rate of 7.7% between 2019 and 2021; 2. by the end of 2021, the non-performing loan ("NPL") ratio is about 1% and reserve coverage ratio is about 390%; 3. NIM will be within a range of 2.3% to 2.4%; 4. cost-to-income ratio remains about 55%; 5. annual dividend payout ratio stays about 30%; 6. return on average equity would go down to 8% in 2020 and recover to 12% in 2021.

Meanwhile, we have included issuance of Tier 1 perpetual bonds (maximum 60 billion RMB) in the latter half of 2020 into our forecast. For Tier 2 capital instruments that enter the redemption period, we typically assume that the bank would call the option and issue supplementary instruments with the same amount and the same level of capital contents, as required by hybrid bond regulations.

Note: A-actual; E-estimated; F-forecast.

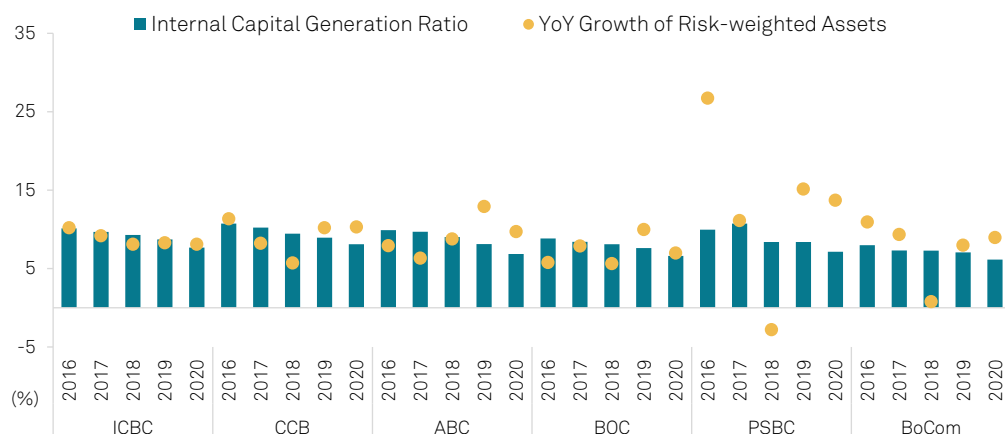
Source: Public information of bank, S&P Global (China) Ratings.

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We also consider whether a bank can strike a balance between developing its business and accumulating capital. Where a bank can generate capital at a rate consistent with its capital consumption without external capital injection or hybrid bond issuance, its capital adequacy ratio should be able to maintain stable.

Chart 4

Internal capital generation capacity and capital consumption of mega banks



Note: Internal capital generation ratio = (net income – cash dividend)/average total equity.

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

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After we arrive at our initial capital and earnings score, the next step is to analyze capital quality. The “Measures for the Capital Management of Commercial Banks (for Trial Implementation)” issued by the bank regulator has detailed rules on banks’ capital structure composition (see the table below). In our assessment, we look at the proportion of CET 1 capital in total capital. In our view, the higher the proportion of CET 1 capital, the higher the capital quality. If the proportion of CET 1 capital is significantly lower than the industry average, the bank’s capital quality may be lower than the industry average and we may apply a negative notching adjustment.

Table 8

Main Components of Different Levels of Bank Capital

Type	Major Components	Notes
CET 1 capital	• Paid capital or common stock • Capital reserves • Surplus reserves • General and regulatory reserves • Undistributed profits • Eligible portion of minority interests	Capital deductions: • Goodwill • Other intangible assets, excluding land-use rights • Loan loss reserves shortage • CET 1 capital investments in controlled but non-consolidated financial institutions
Additional Tier 1 capital	• Additional Tier 1 capital instruments and related premiums • Eligible portion of minority interests	• Perpetual bonds • Preferred shares • Convertible negotiated deposits
Tier 1 capital	Summation of CET 1 capital and additional Tier 1 capital	
Tier 2 capital	• Tier 2 capital instruments issued and related premium • Excess loan loss reserves • Eligible portion of minority interests	If the Tier 2 capital instrument has a definite maturity date, over the last five years of its term the proportion counted as Tier 2 capital would be 100%, 80%, 60%, 40%, and 20%, respectively. Under the standardized approach, excess loan loss reserves that can be included shall not exceed 1.25% of credit risk-weighted assets. Under the IRB approach, excess loan loss reserves that can be included shall not exceed 0.6% of credit risk-weighted assets.
Total capital	Summation of Tier 1 capital and Tier 2 capital	

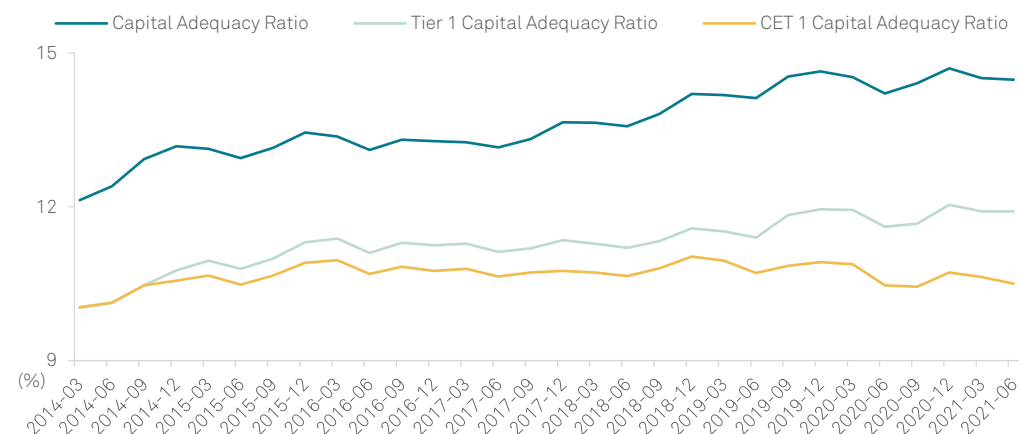
Source: CBIRC, collected by S&P Global (China) Ratings.

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Banks started issuing a large number of perpetual bonds in 2019, leading to an increase in the gap between Tier 1 and CET 1 capital adequacy ratios. As of the end of 2020, the average Tier 1 capital adequacy ratio of major commercial banks that have issued perpetual debt was 11.01% and CET 1 capital adequacy ratio was 9.59%, with a gap of 1.42 percentage points between these two ratios. The gap was only 0.27 percentage points as of the end of 2018 when no perpetual bonds had been issued yet.

Chart 5

Change of Chinese bank sector's capital structure

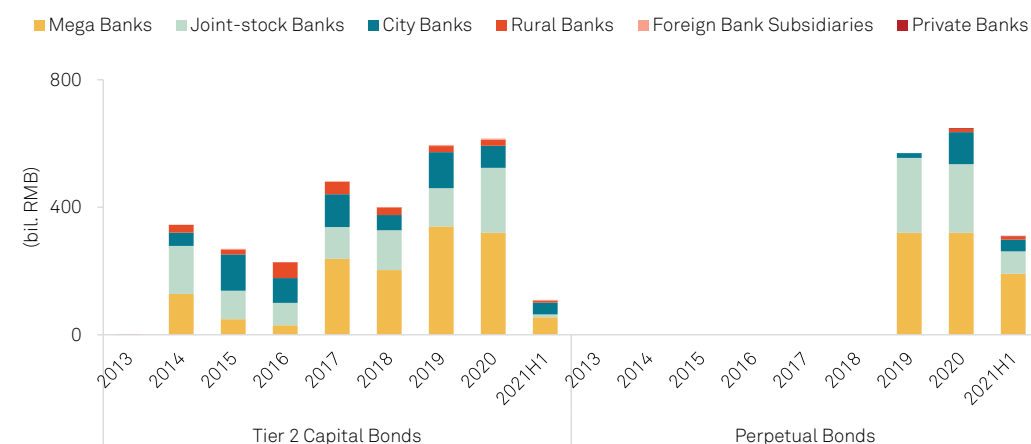


Source: CBIRC, collected and adjusted by S&P Global (China) Ratings.

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Chart 6

Issuance of hybrid bonds in the domestic bond market



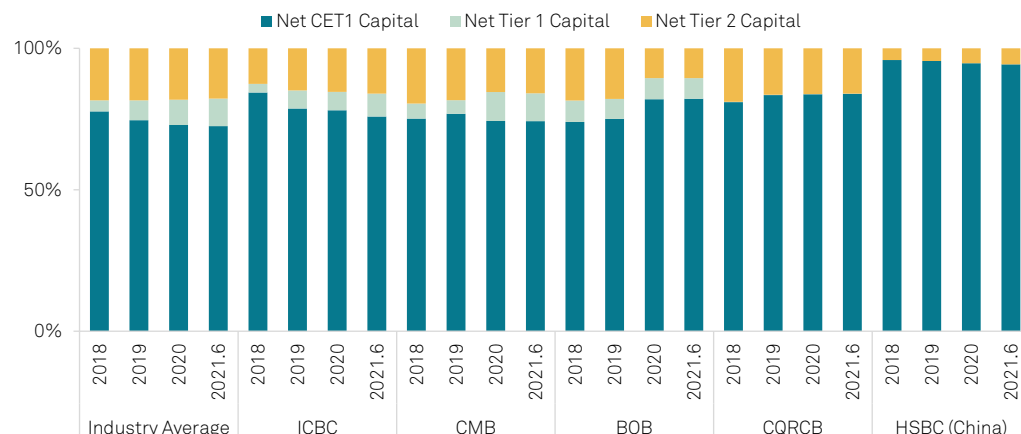
Source: Public information of bank, collected and adjusted by S&P Global (China) Ratings.

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Due to the strict approval process for banks' hybrid bond issuance, Chinese banks' capital structure are relatively consistent, with few banks having capital quality far worse than the industry average. CBIRC is responsible for the qualification review of banks' Tier 2 capital bonds and perpetual bonds issuance, with the People's Bank of China responsible for approving their issuance. Issuance of preferred shares requires the approval of CBIRC and CSRC.

Chart 7

Capital structure change of some banks



Note: BOB – Bank of Beijing; CQRCB – Chongqing Rural Commercial Bank.

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

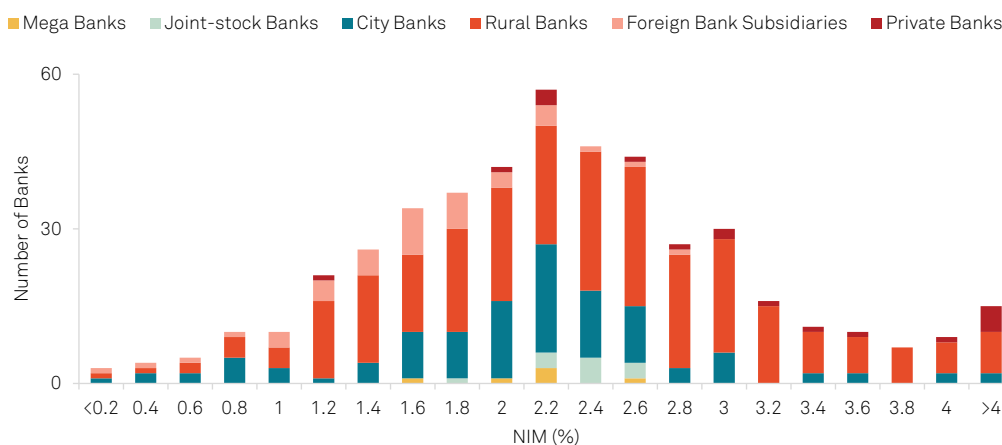
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We also consider group's on-going capital support for its banking subsidiary when assessing capital adequacy. On-going capital support can improve the stability of bank's capital, which may in turn improve a bank's final capital and earnings score. We usually consider extraordinary group/government support for capital in times of crisis in our assessment of external support (which is not part of SACP analysis). However, where the group/government provides on-going capital support for a bank's day-to-day operations, we incorporate this into our assessment of capital and earnings, and thus eventually into our view on a bank's SACP.

We usually make a quantitative forecast of a bank's earnings and dividends for the next 12-24 months and use these as our key input for Tier 1 capital adequacy ratio forecast over the next 1-2 years. In addition, we assess a bank's net interest margin ("NIM"), credit cost, cost-to-income ratio, return on equity and other related metrics, and compare its earning capacity against its peers and the industry average.

Chart 8

Distribution of NIM of major banks in China in 2020

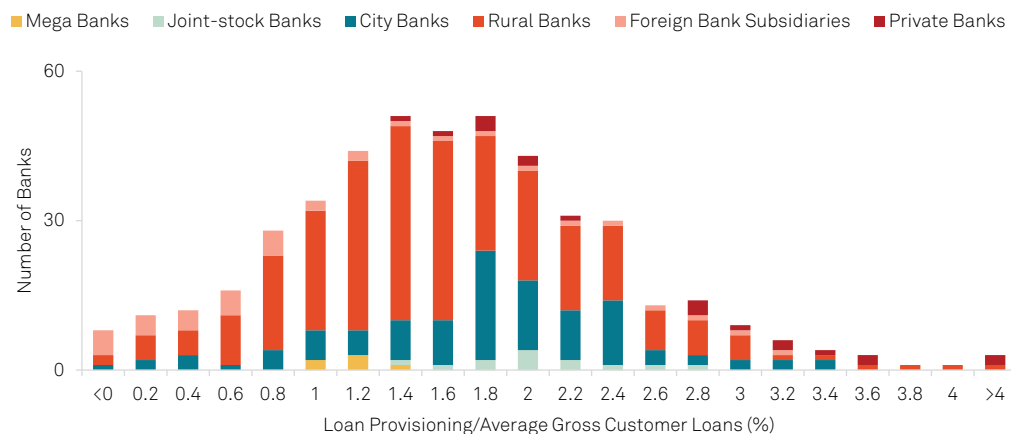


Source: Public information of banks, collected and adjusted by S&P Global (China) Ratings.

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Chart 9

Distribution of loan provisioning/average gross customer loans of major banks in China in 2020

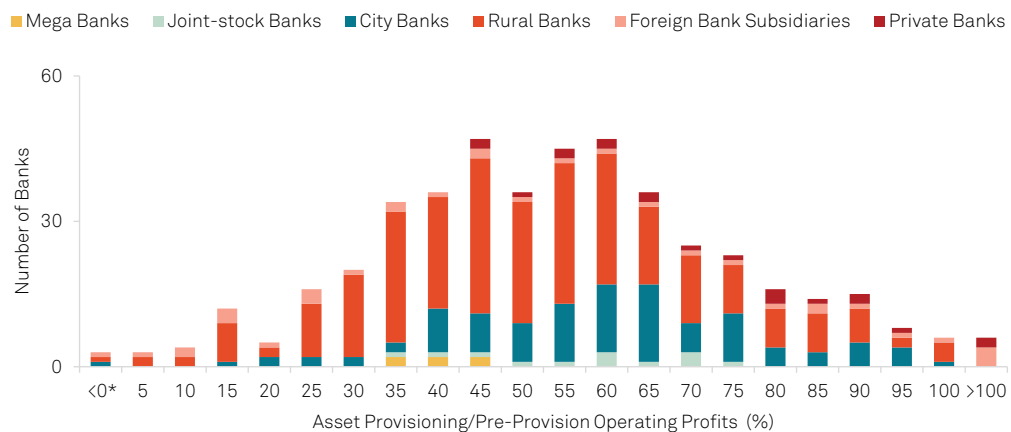


Source: Public information of banks, collected and adjusted by S&P Global (China) Ratings.

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Chart 10

Distribution of asset provisioning/pre-provision operating profits of major banks in China in 2020



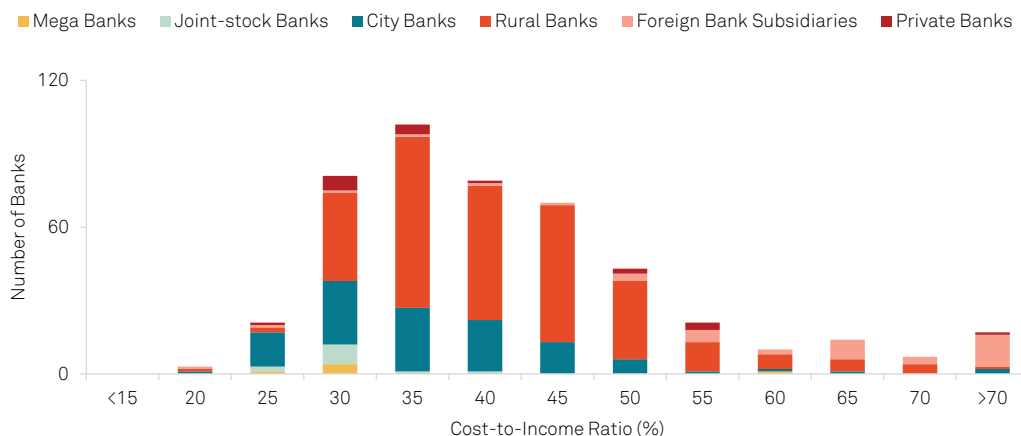
Note *: Negative ratio in this chart means a bank has negative pre-provision operating profits; this chart doesn't include cases where pre-provision operating profits is greater than zero but the ratio is negative due to the reversal of provisions in 2020.

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

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Chart 11

Distribution of cost-to-income ratios of major banks in China in 2020

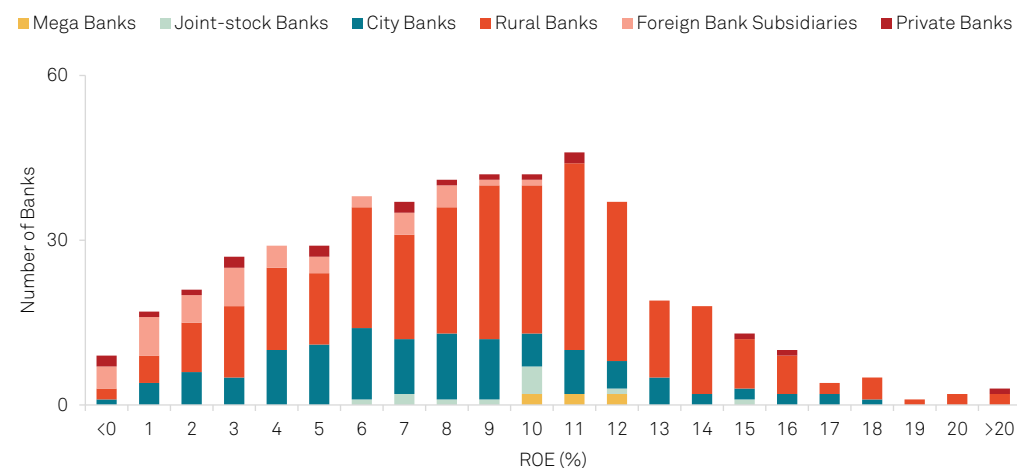


Source: Public information of banks, collected and adjusted by S&P Global (China) Ratings.

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Chart 12

Distribution of ROE of major banks in China in 2020



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

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Another factor we consider for earnings quality is whether core sources of revenue are diversified and stable. Where revenue is highly dependent on non-recurring income or one-off revenue, or if a bank has insufficient provisions and reported inflated earnings, we may apply a negative notching adjustment.

The following table summarizes our approach for assessing capital and earnings. Any risks that are not fully reflected in capital and earnings assessment are covered in our assessment of the entity's "risk position," the third factor in our assessment of SACP. For non-bank financial institutions under regulations similar to banks (e.g. regulated financial leasing companies and auto finance companies), we apply the same methods as banks when assessing their capital and earnings.

Table 9

Summary of Our Assessment Steps of Commercial Banks' Capital and earnings

Step	Description	Key Takeaways
Step 1	Assess the compliance with regulatory capital adequacy requirements	Regulatory requirements include the CBIRC's capital adequacy requirements for commercial banks and the additional capital buffer requirements for systemically important banks. If we expect a bank to fail to meet minimum regulatory capital requirements in the future, its capital and earnings notching would likely be negative. We apply either a neutral (i.e. no notching adjustment) or favorable (upward adjustment of 1-2 notches) capital and earnings score Only if we expect a bank to fully meet the minimum capital requirements.
Step 2	Adjust and forecast Tier 1 capital adequacy ratio	Adjustments made to Tier 1 capital adequacy ratio are made based on: (1) whether the bank uses an internal ratings-based approach; (2) whether there is under-provisioning; (3) potential capital consumption from OBS WMPs. The main driving factors for our Tier 1 capital adequacy ratio forecast include (1) capital consumption for future business development; (2) future net profits; (3) future dividends; (4) future capital injections and/or plans to issue hybrid instruments, etc. Our forecast of the Tier 1 capital adequacy ratio is the core metric based on which we arrive at our initial capital and earnings score.
Step 3	Assess the bank's capital quality, earnings capacity and earnings quality	We make adjustments to the initial capital and earnings scores (step 2) based on our assessment of the bank's capital quality, earnings capacity and earnings quality.
3.1	Assess capital quality and capital structure	We compare the bank's capital structure with the industry average. Main considerations include CET 1 capital/total capital; Tier 1 capital/total capital, etc. as we assess whether capital quality is below the industry average. If capital quality is far below average, we may apply a negative adjustment. If a significant proportion of capital is made up of additional Tier 1 capital such as perpetual bonds, leading to pressure on the CET 1 capital adequacy ratio despite the Tier 1 capital adequacy ratio still being sufficient, we may apply a negative adjustment. If Tier 2 capital buffer is much higher than the industry average and provides above-industry-average protection, we may consider a positive adjustment.
3.2	Assess the bank's earnings capacity	We assess the bank's main earnings metrics, including but not limited to operating revenue growth, NIM, credit cost, cost-to-income ratio, ROA, ROE, and other indicators. If we believe the bank's earnings will not support its business development-related capital needs, we may apply a negative adjustment.

Step	Description	Key Takeaways
3.3	Assess the bank's earnings quality	We assess the diversity and stability of the bank's core revenue sources to determine the quality of earnings. If revenue is highly dependent on non-recurring or one-off income, or provisioning is insufficient and reported earnings numbers are inflated, we may apply a negative adjustment.
3.4 (if applicable)	The bank's capital adequacy over the next 12-24 months under a stressed scenario	Typically, our step 2 assessment is to assess bank's capital adequacy in baseline scenario. To account for significant and unexpected fluctuations in the financial market or the real economy that may affect our view capital adequacy in stress scenario, we may conduct additional stress tests to better determine the resilience and robustness of a bank's capital adequacy under a stress scenario.
3.5 (if applicable)	Assess other additional factors, such as ongoing group/government support	Ongoing capital support from the parent/government can help stabilize a bank's capital base, which may lead to an improved final capital and earnings score compared to our initial score.
3.6	Combine the assessment results from the previous steps to arrive at the final capital and earnings score	Make adjustments to the initial capital and earnings score derived in step 2 with the results of each assessment in step 3.

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Appendix: Related Methodologies and Research

- [S&P Global \(China\) Ratings Financial Institutions Methodology](#)
- [Commentary: Understanding S&P Global \(China\) Ratings Financial Institutions Methodology](#)

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