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Forging ahead on a New Journey

Chinese Banking Sector 2022 Review and 2023 Outlook

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Foreword

2022 has been an unusual year marked by a series of events that profoundly impacted the course of history. The Chinese banking sector has faced highly complex and uncertain domestic and international landscape. Globally, we have seen intensified geopolitical tensions, exacerbated energy and food crises, a rate hike cycle to combat intense inflationary pressure in the US and European economies, and the global capital markets remained volatile alongside with the slowed-down economic growth momentum worldwide. Economic recovery in China has been severely hindered by the COVID-19 resurgences, with a record low GDP growth of 3%, as well as the debt risk exposure in the real estate sector and the growing risks from local governments' financing vehicles (LGFV). Despite of the unexpectedly overwhelming disruptions, China's economy remains highly resilient. We have seen a strong and steady recovery upon the shift in COVID-19 policies announced at the 20th National Congress of the Communist Party of China (NCCPC) at the end of 2022.

Furthermore, China's banking sector's overall performance is highly admirable in the midst of the highly challenging macroeconomic landscape. Banking institutions continue ramping up their credit support for the real economy and playing the unique role of the financial sector as the "growth accelerator" to the economy. At the end of 2022, China's banking sector recorded total assets in Renminbi and foreign currency of nearly RMB380 trillion, with year-over-year growth back up to 10%, surpassing the pre-COVID assets growth in 2018 and 2019. Optimization of the banking loan structure continued. The year-end balance of inclusive loans to SMEs reached RMB23.8 trillion, up 23.8% year-on-year, with more businesses covered and lower financing costs. The year-end balance of green loans reached RMB22.03 trillion, up 38.5% year-on-year. In 2022, commercial banks maintained the upward trend in profitability and achieved a cumulative net profit of RMB2.3 trillion, up 5.4% year-on-year. While the credit business has increased significantly, commercial banks have realized steady improvement in assets quality, continuously reduced the NPL ratio, increased liquidity coverage and capital adequacy ratios, as well as improved their capabilities in risk control. China's banking sector is committed to high quality growth in 2022, and the results are indeed impressive.

Having said that, we are fully aware of the concerning factors from the 2022 performance of China's banking sector, i.e., the significant slowdown in revenue and profit growth among the commercial banks, as well as the dual pressures from a sluggish economy and the transformation of business model within the banks. Commercial banks' net interest margins have been narrowing since 2019; the 2022 net margin decreased 16 basis points to a record low of 1.91% for Q4 of the year. The significantly increased proportion of time deposits in the debt structure of commercial banks also reflects the competition in the deposit-taking business and financing costs are both rising. Following the end of the 3-year transition period of the new asset management regulations, in the midst of a bearish capital market, the asset management market size shrunk in 2022. Especially in the fourth quarter, the bond market turmoil triggered a wave of financial products redemption at banks resulting the decline of both the number and the volume of wealth management products by 4.41 percent and 4.66 percent respectively, and further eroded the source of profits for banks. The asset management business among commercial banks is facing many challenges in an unfavorable market environment. Also, banks' revenue from intermediary business continues to shrink, asset-light business model transformation has become a long-term priority for commercial banks.

In 2023, despite the challenges, China's banking sector is facing great opportunities. It marks the first year of 20th NCCPC policies and guidelines come into play, as well as the new leadership in the government. A strong and stable macroeconomy is the growth driver of banking sector and the real economy together. Green transformation, digital economy and tech innovation will provide new momentum to boost China's economic growth, as well as new opportunities for the financial sector to benefit real economy and maintain sustainable development in banking. The unprecedented reform in financial regulation is coming, and we expect a more organized and effective regulatory landscape in the development of banking sector. Supporting the real economy, increase domestic demands and risks mitigation remain the key priorities for Chinese banks. Hence, banks need to be more precise in credit business management, and more focused on modern industries, green industries and the private sector. Inclusive finance will focus more on poverty alleviation and rural revitalization, while reviving consumption is the key for retail banking. Besides, more targeted risk control measures to help stable growth in real estate sector and mitigate the debt risks in local governments.

In this flagship report, the Deloitte China FSI research team reviews economic and financial developments, analyzes the performance and business operation of Chinese listed banks in 2022, covers a host of hot topics, and provides an outlook of the macroeconomics and banking sector in 2023. Taking 10 representative commercial banks in China as a sample, the report also provides an overview of the Chinese banking sector's achievements in 2022 and identifies key development trends based on a systematic analysis of the profitability, assets, liabilities, and capital positions of listed banks. It also gives an overview of business development, operating models, and regulatory change in the sector. To draw on the best practical experiences of Chinese banks' international peers, the report also analyzes six foreign Global Systemically Important Banks (G-SIBs).

In addition, the report will take you deep dive into a host of industry hot topics, including banking sector strategy for 2023, methodologies and best practices of carbon accounting for banks, smart monitoring of related party transactions, optimizing the annual reports presentation, future of finance transformation, building a high-quality data governance framework, banks' operational resilience in response to the new business landscape, digital transformation in risks reports, and key considerations in commercial banks' M&A and restructuring. We believe this report provides valuable reference for Chinese commercial banks as they embark on a new journey in the 14th Five-year Plan development.

16 domestic and foreign banks:

Table 1: 10 domestic commercial banks (hereinafter referred to as the "domestic banks")
Industrial and Commercial Bank of China (ICBC)
China Construction Bank (CCB)
Agricultural Bank of China (ABC)
Bank of China (BOC)
Postal Savings Bank of China (PSBC)
Bank of Communications (BOCOM)
China Merchants Bank (CMB)
Industrial Bank (IB)
China CITIC Bank (CITIC Bank)
Ping An Bank (PAB)

Table 2: 6 foreign systematically important banks (hereinafter referred to as the "foreign banks")
J.P. Morgan Chase & Co (JPM)
Bank of America (BAC)
Wells Fargo (WFC)
Citigroup (Citi)
HSBC
MUFG Bank

The data in this report, unless otherwise indicated, are from the annual reports published by the above banks. The balance sheet data of the foreign banks are converted at the respective year-end exchange rate, and the income statement data are converted at the average exchange rate of each year. Among them, MUFG bank's first-half reporting period of FY2022 was from April 1, 2022 to September 30, 2022. Since MUFG bank's FY2022 annual report has not been released, the data of MUFG bank's FY2022 semi-annual report were used—the income statement data were annualized and other periods were accordingly calculated. Unless otherwise specified, the average indexes listed in this report are all weighted average indexes of the examples.

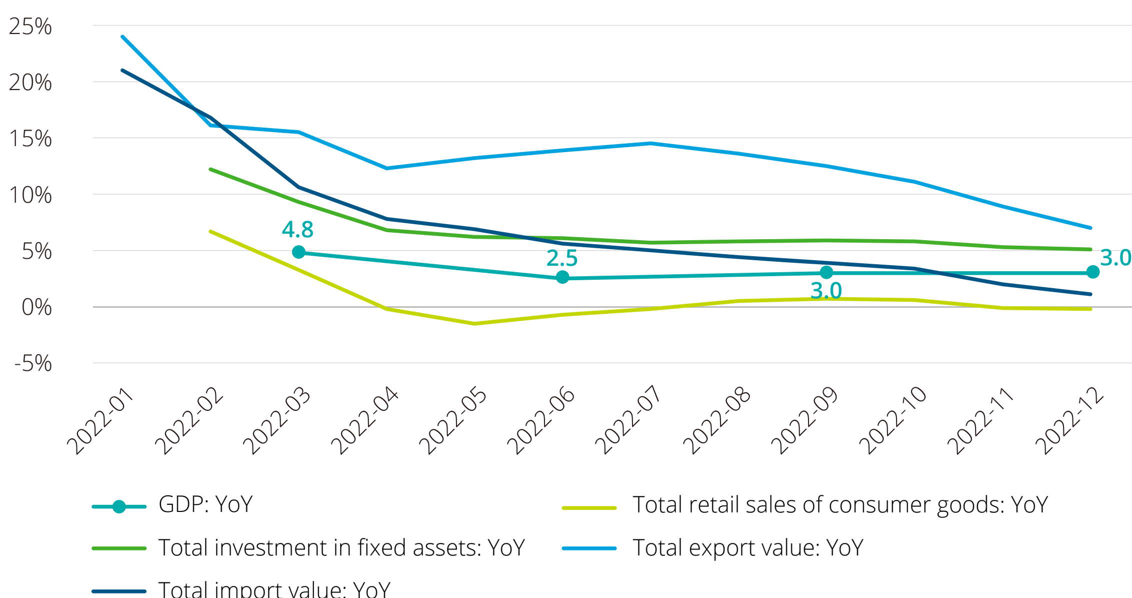
1. 2022 economic and financial sector review

Chinese economic fluctuations under internal and external pressures

In 2022, high global inflation and geopolitical conflicts made the external environment more challenging. The protracted COVID-19 pandemic has caused a series of disturbances to global economic growth. The outbreak of the Russia-Ukraine conflict in February 2022 triggered a geopolitical crisis, disrupted the fragile economic recovery, and pushed up commodity prices, heightening the inflationary pressure on all countries. In 2022, the year-on-year CPI growth climbed to 9.1% in the US in June and 10.6% in the eurozone in October. Against this backdrop, major economies tightened monetary policies to curb inflation. The Federal Reserve raised its benchmark overnight interest rate by 425 basis points in 2022, driving the federal funds rate up from 0.25% to 4.50% at year's end. In the eurozone, the European Central Bank raised the three key interest rates by 250 basis points in 2022, starting the first rate hike cycle in more than a decade. The accelerated monetary policy shift in the US and Europe will lead to a global liquidity decline, affect global stock market valuations and investor sentiment, and impact the world economic recovery momentum, thus growing the stagflation risk.

In China, sporadic resurgences of COVID-19 disrupted consumption and production in the first half of 2022. With the real estate market downturn, China's overall economy experienced fluctuations and recorded a 3% GDP growth rate for the year. The total retail sales of consumer goods decreased 0.2% year-on-year, but the online retail sales of physical goods increased 6.2% year-on-year, showing strong resilience. The total fixed asset investment increased by 4.9%, with the investment in manufacturing and infrastructure up 9.1% and 9.4%, respectively, and the investment in high-tech industries up 18.9%. In contrast, the investment in real estate development trended down, decreasing 10.0% compared with the previous year. In 2022, exports and imports grew by 7.0% and 1.1% (in dollar terms), respectively. However, due to the slow economic growth of developed economies and weak external demand, the export growth turned negative from the fourth quarter, with the export value falling by nearly 10% year-on-year in December.

Figure 1: China's Economic Growth



Source: National Bureau of Statistics

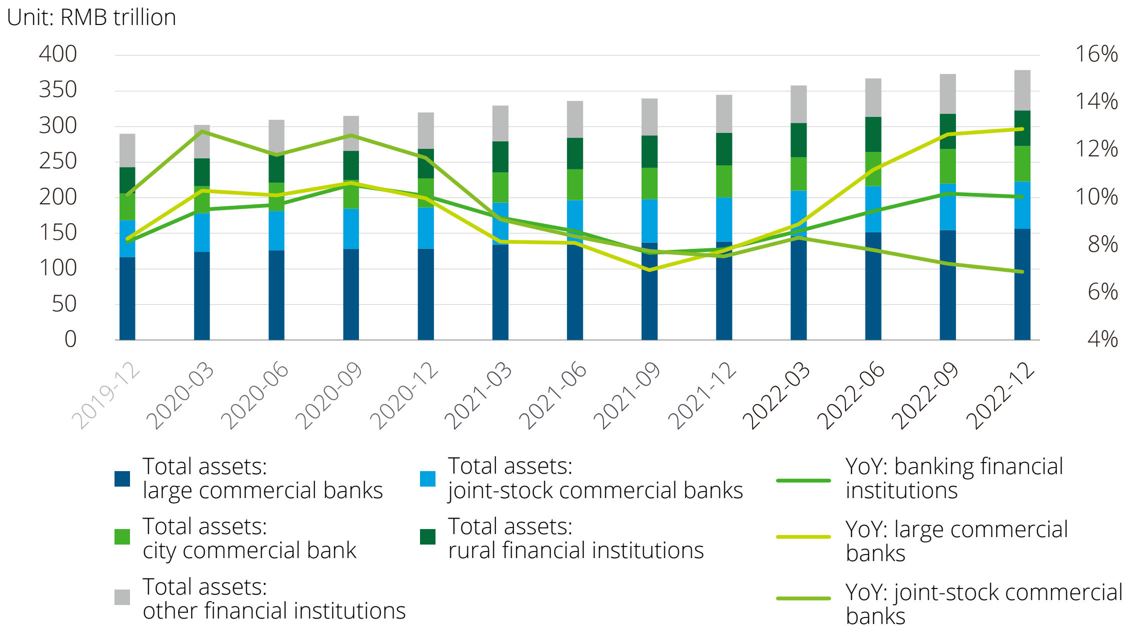
With the major adjustment of China's epidemic prevention measures at the end of 2022 and a series of stimulus packages and follow-up measures to bolster the economy, market confidence improved significantly. Adapting the COVID response in light of the evolving situation highlighted China's ability to balance economic growth and public health, which helped reassure investors about whether the government still prioritized economic development.

Banking asset growth back to 10%, while industry prosperity is still at a low level

In 2022, the banking sector's overall operation was stable, with credit easing throughout the year. Lending continued to expand, and the asset and liability scale increased rapidly. The total domestic and foreign currency assets of banking financial institutions reached RMB379.4 trillion at the end of the year, up 10.0% year-on-year (exceeding the growth rate in 2018 and 2019). Large banks' domestic and foreign currency assets totaled RMB156.3 trillion, accounting for 41.2%, up 12.9% year-on-year. Joint-stock banks' domestic and foreign currency assets totaled RMB66.5 trillion, accounting for 17.5%, up 6.9% year-on-year.

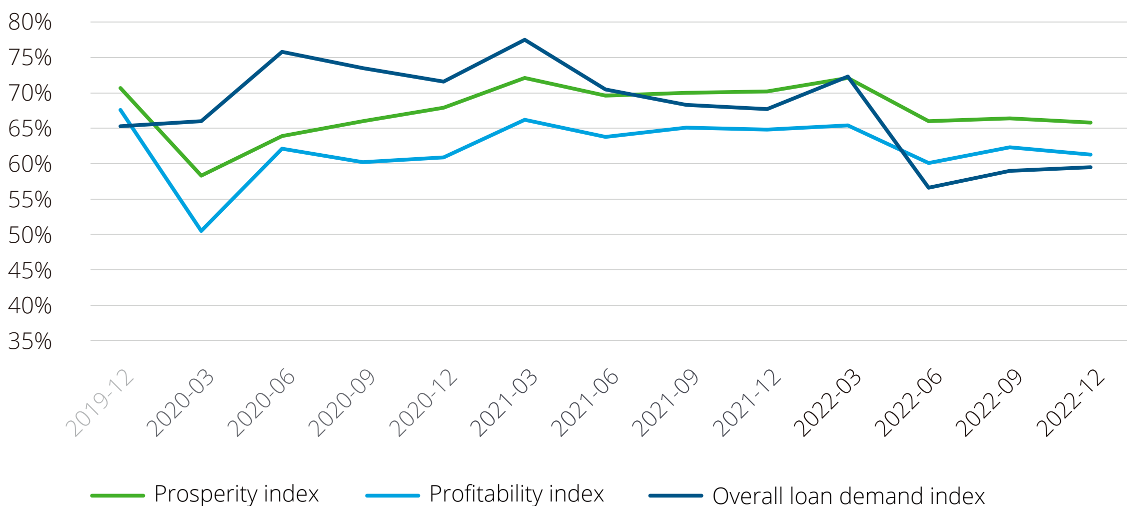
In 2022, the overall loan demand, banking sector prosperity and profitability indexes were all at low levels: the banking sector prosperity index fell to 65.8% at the end of the fourth quarter, the lowest since the second quarter of 2020; the profitability index was 61.3%, down 3.5 percentage points year-on-year.

Figure 2: Banking Asset Growth Back to the 10% Range in 2022



Source: China Banking and Insurance Regulatory Commission (CBIRC)

Figure 3: Banking Prosperity and Profitability Indexes at Low Levels in 2022



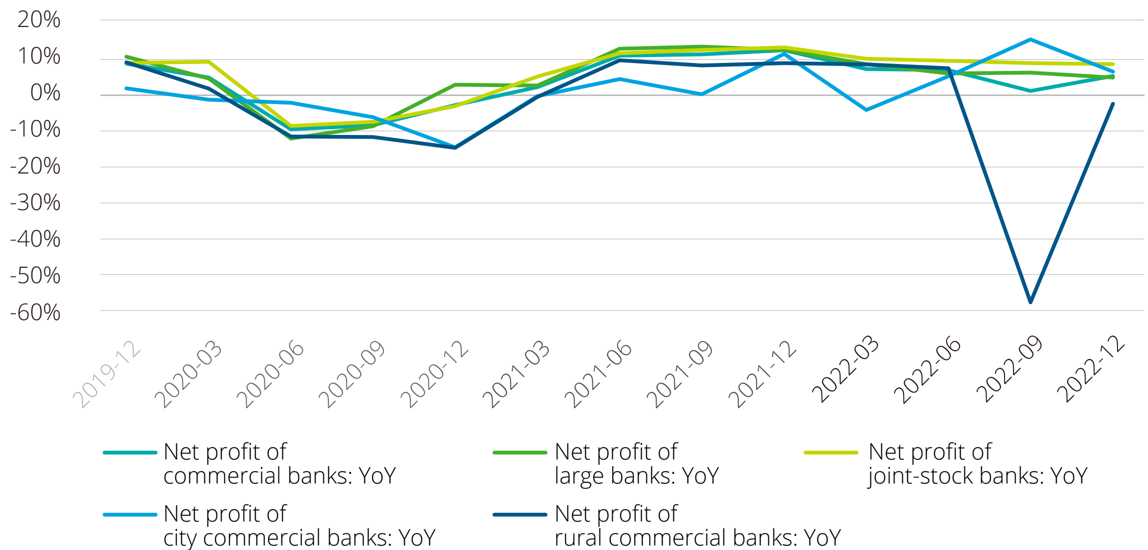
Source: The bankers survey report of People's Bank of China

Banking net profit rose slightly, and net interest margin narrowed to a record low

In 2022, commercial banks' accumulated net profit reached RMB2.3 trillion, a year-on-year increase of 5.4%, decreasing 7.2 percentage points compared with that (12.6%) of 2021. This is partly related to some banks' negative revenue growth and the reduced provision for impairment compared with 2020-2021. In the post-epidemic period, the banking sector's profitability will gradually recover to the expected growth level. In 2022, the net profit of large banks, commercial banks, joint-stock banks, and city commercial banks increased by 5.0%, 5.4%, 8.8% and 6.6%, respectively. The net profit growth of rural commercial banks dropped sharply to -57.7% in the third quarter and recovered to -2.3% in the fourth quarter.

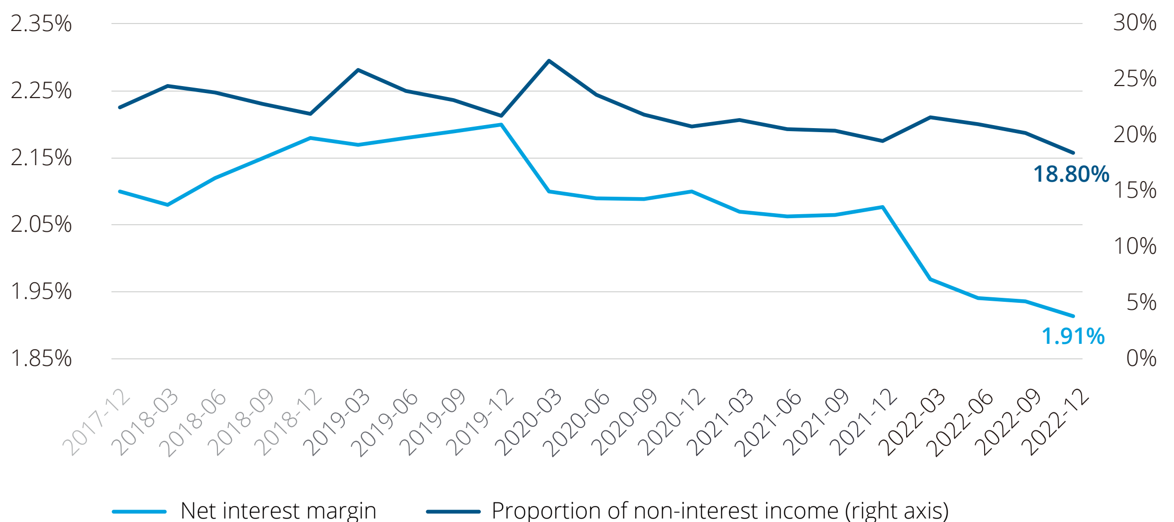
The net interest margin of commercial banks has continued to contract since 2019, and narrowed by 16 basis points in 2022, dropping to a historic low of 1.91% at the end of the year, mainly due to the credit easing and continuously declining lending rates that resulted in ample credit supply but less-than-expected demand.

Figure 4: Banking Net Profit Rose Slightly in 2022



Source: CBIRC

Figure 5: Banking Net Interest Margin Narrowed to a Record Low in 2022



Source: CBIRC

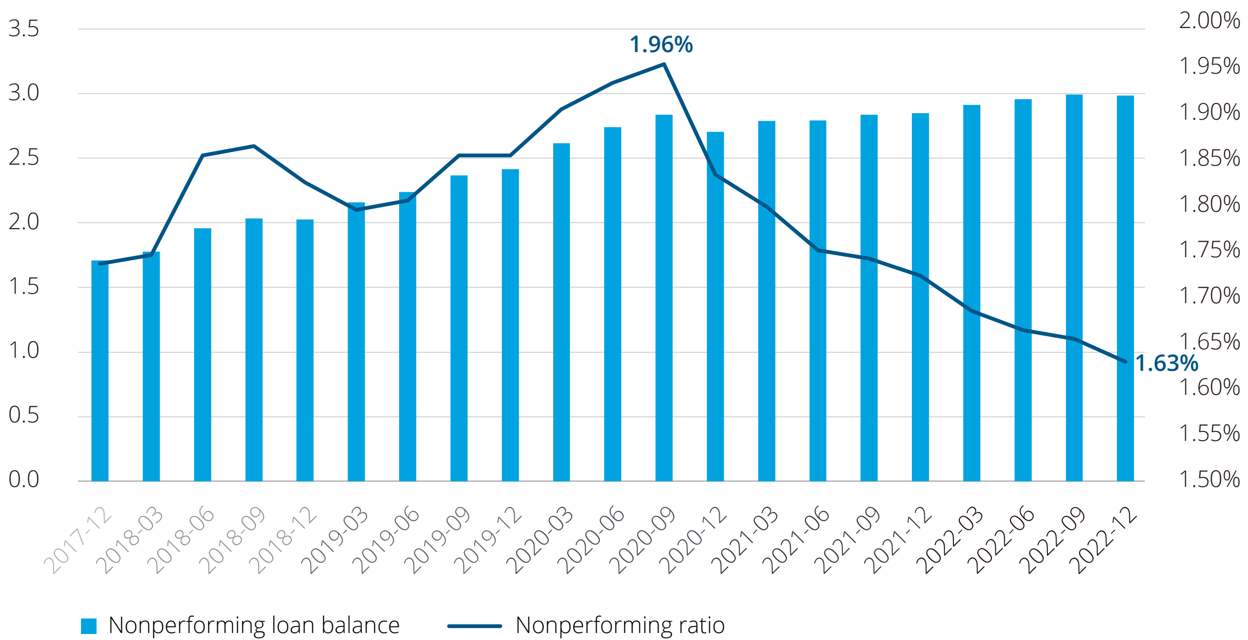
Nonperforming loans increased with a lower nonperforming ratio

In 2022, the balance of banking financial institutions' nonperforming loans increased slightly, with the nonperforming loan ratio continuing to fall. Credit supply in key areas, such as inclusive loans to small and micro enterprises, has continued to increase since the COVID-19 outbreak in 2020, and the scale of nonperforming assets has risen accordingly. Benefiting from credit expansion and intensified disposal of nonperforming assets, the nonperforming loan ratio of the banking sector continued to decline from the 1.96% high at the end of 2020's third quarter to 1.63% at the end of 2022's fourth quarter, lower than pre-pandemic levels. The outstanding nonperforming loans were RMB2.98 trillion, increasing slightly by RMB0.13 trillion from 2021.

Introducing policies to support the financing of high-quality real estate enterprises in November 2022 will increase banks' real estate loan exposures. Some small and medium-sized banks with significant exposures are still under capital erosion pressure.

Figure 6: Nonperforming Loans Increased with Lower Nonperforming Ratio

Unit: RMB trillion



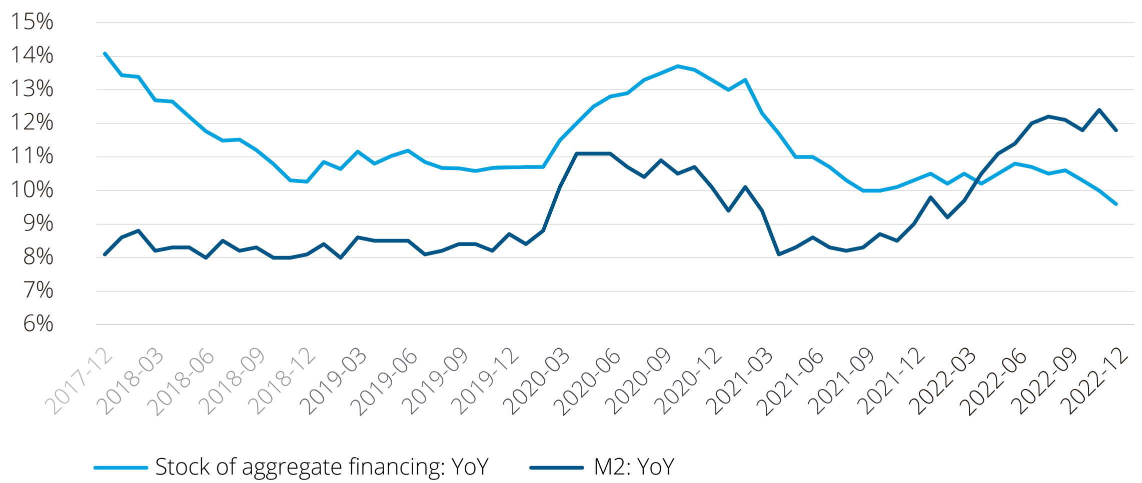
Source: CBIRC

M2 and aggregate financing showed a "scissors difference"

In 2022, the monetary and credit easing contributed to abundant funds. In November, the M2 growth rose to a record high of 12.4%. However, with weak credit demand due to pandemic restrictions and frequent risk events in the real estate sector, the monthly financing data continued to be lower than market expectations and fluctuated significantly. In 2022, the aggregate financing increased by 9.6%, lower than 10% for the first time.

A "scissors difference" existed between the growth rates of M2 and aggregate financing, beginning from April 2022, with the continuously widening gap reaching 2.2 percentage points at the end of the year. Financing continued to recover with the loosening of the pandemic prevention measures at the end of 2022.

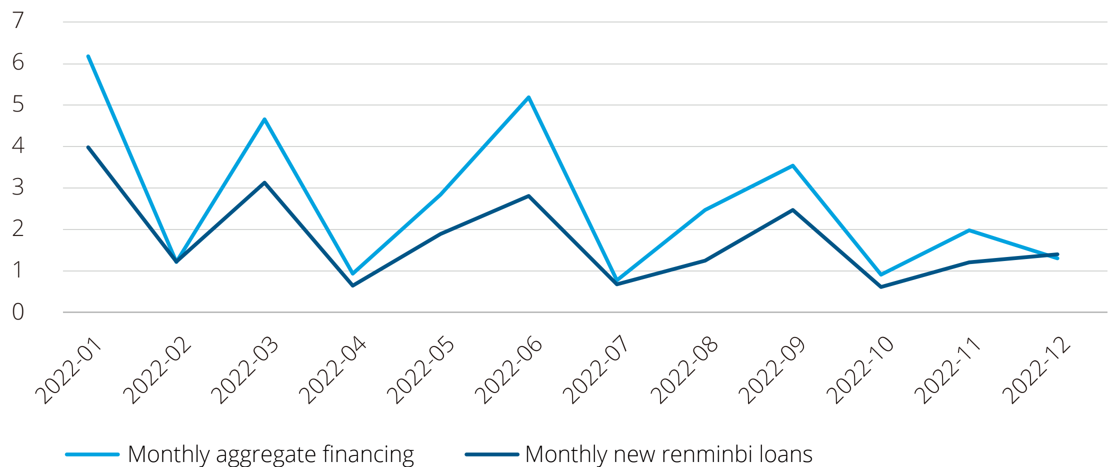
Figure 7: "Scissors Difference" between M2 and Aggregate Financing Growth Rates in 2022



Source: People's Bank of China, Wind

Figure 8: Sharp Fluctuations of Financing Data in 2022

Unit: RMB trillion



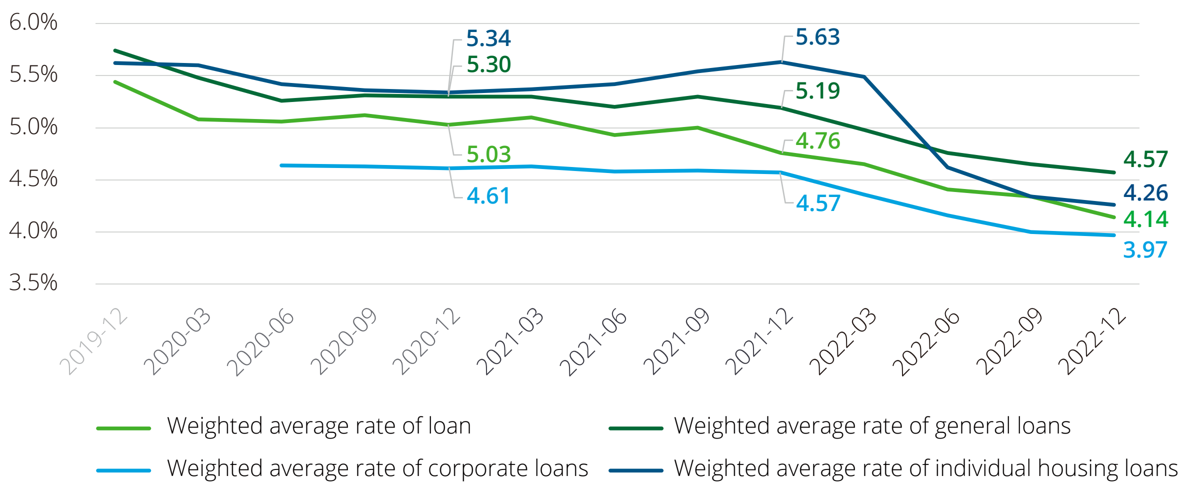
Source: People's Bank of China, Wind

Loan rates remained at record lows

In 2022, the LPR was lowered three times. The one-year/over-five-year LPR declined by 15 basis points/35 basis points cumulatively, to 3.65% and 4.30%, respectively, at the end of 2022. The weighted average interest rate of loans was 4.14%, the lowest in historic statistics, down 0.62 percentage points year-on-year.

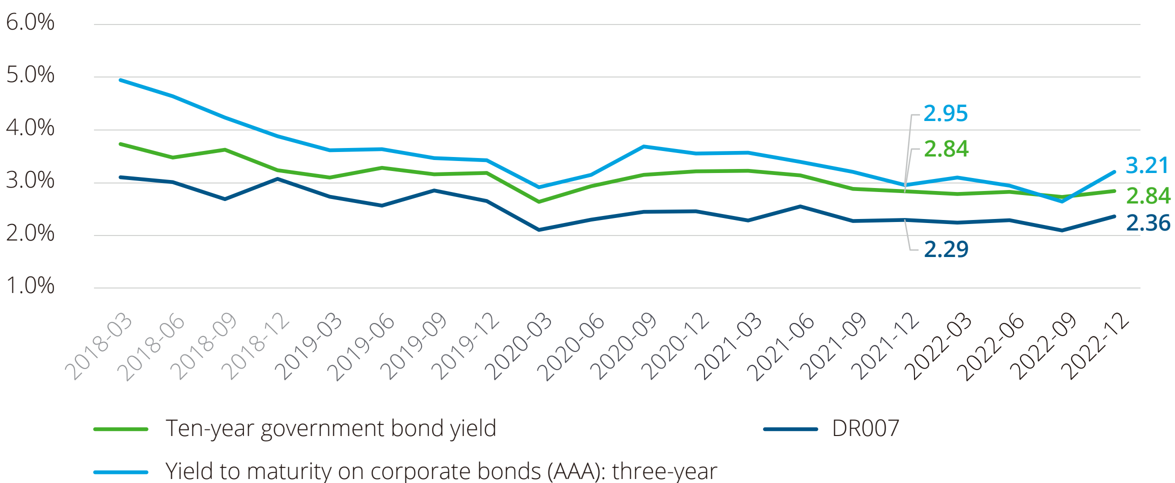
The interest rates of general, corporate and individual housing loans were 4.57%, 3.97% and 4.26%, respectively, down 0.62, 0.60 and 1.37 percentage points year-on-year. Due to the impact of interest rate cuts on the money market rate, the annual average of the seven-day repurchase (repo) rate for depositary institutions (DR007) was 1.76%, down 0.41% from 2021.

Figure 9: Loan Rates Hit Record Lows in 2022



Source: People's Bank of China

Figure 10: Market Interest Rates Continued to Fall



Source: People's Bank of China

In 2022, the international monetary policies tightened, and the two-way fluctuations of the RMB exchange rate intensified. The USD to RMB exchange rate rose from 6.31 in 2022's first quarter to around 7.31. In the meantime, regulators elevated the foreign exchange risk reserve ratio for forward-forex sales to guide the market expectations. The central parity rate of RMB against the US dollar stood at 6.9646 at the end of the year.

Rapid green finance development

In 2022, with China's carbon peaking and carbon neutrality goals, the top-level design of green finance further improved: in April, China Securities Regulatory Commission (CSRC) released the financial industry standard *Carbon Financial Products*; in June, CBIRC issued the *Guidelines for Green Finance in the Banking and Insurance Sectors*; in July, the National Association of Financial Market Institutional Investors led to release the *China Green Bond Principles*. Those regulations have laid a solid institutional foundation for the standardized development of green financial products.

The green finance market size expanded rapidly. The balance of green loans in Renminbi and foreign currencies was RMB22.03 trillion as of the end of 2022, up 38.5% year-on-year, 28.1 percentage points higher than the growth rate of other loans. Among them, the investments in projects with direct and indirect carbon-reduction benefits were RMB8.62 trillion and RMB6.08 trillion, respectively, accounting for 66.7% of the total green loans. Data show that green bond issuance accumulated to RMB2.63 trillion as of the end of 2022, with RMB1.54 trillion outstanding.

Improved legal systems for financial risk prevention

2022 marked a key step forward in China's legal construction for financial stability. On December 30, the Financial Stability Law (Draft) was promulgated to seek public comments. The draft serves as a foundation for building the financial legal system. It sets out the goals and principles for maintaining financial stability, covering financial risk prevention, defusing, handling, and legal liabilities.

A financial stability guarantee fund will be set up and run in coordination with the deposit insurance fund and industry security fund to safeguard financial stability and security jointly. Financial institutions, shareholders and actual controllers, the deposit insurance fund, and the industrial security fund shall invest appropriate resources according to the law and respective responsibilities to dispose of major risks. If a financial risk seriously endangers financial stability, the financial stability guarantee fund may be used in accordance with regulations.

Coordination and regulation of systemically important financial institutions continued to improve. In 2022, three financial holding companies—CITIC Financial Holdings, Beijing Financial Holdings, and China Merchants Financial Holdings—received establishment permits. The 2022 systemically important bank list still seated 19 banks, with minor changes in certain sub-groups—for instance, the ranking of Ping An Bank, Bank of Ningbo, and Bank of Jiangsu improved.

Wealth management scale and income declined, while pension wealth management grew quickly

2022 was the first year of implementing the new asset management regulations after a three-year transition period, also a turbulent year for the wealth management industry. The overall wealth management market size contracted—redeeming wealth management products boomed amid the bond market turmoil in the fourth quarter. According to the data of the Banking Wealth Management Registration and Custody Center, 34,700 wealth management products existed at the end of the year, down 4.41% year-on-year, and the balance stood at RMB27.65 trillion, down 4.66% year-on-year. In 2022, wealth management products generated cumulative returns of RMB880 billion for investors, the least since 2016.

The businesses of wealth management companies were stable, with a market size of more than 80%. Wealth management companies' existing products totaled RMB22.24 trillion, with a year-on-year increase of 29.36%, accounting for 80.44% of the whole market. Large and joint-stock banks pulled down the overall market size, with their existing product balance decreasing 49.26% and 82.99% year-on-year, respectively.

Pilot programs for retirement savings wealth management products were further expanded. In November 2022, the third-pillar personal pension business was officially launched. Wealth management companies accelerated their layout in this field—they utilized such wealth management products' advantage of long maturities to allocate assets of major categories, obtaining income from equity assets in a longer period of time.

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2. Annual Performance Analysis of Listed Banks in 2022

2.1 Profitability

2.2 Assets

2.3 Liabilities

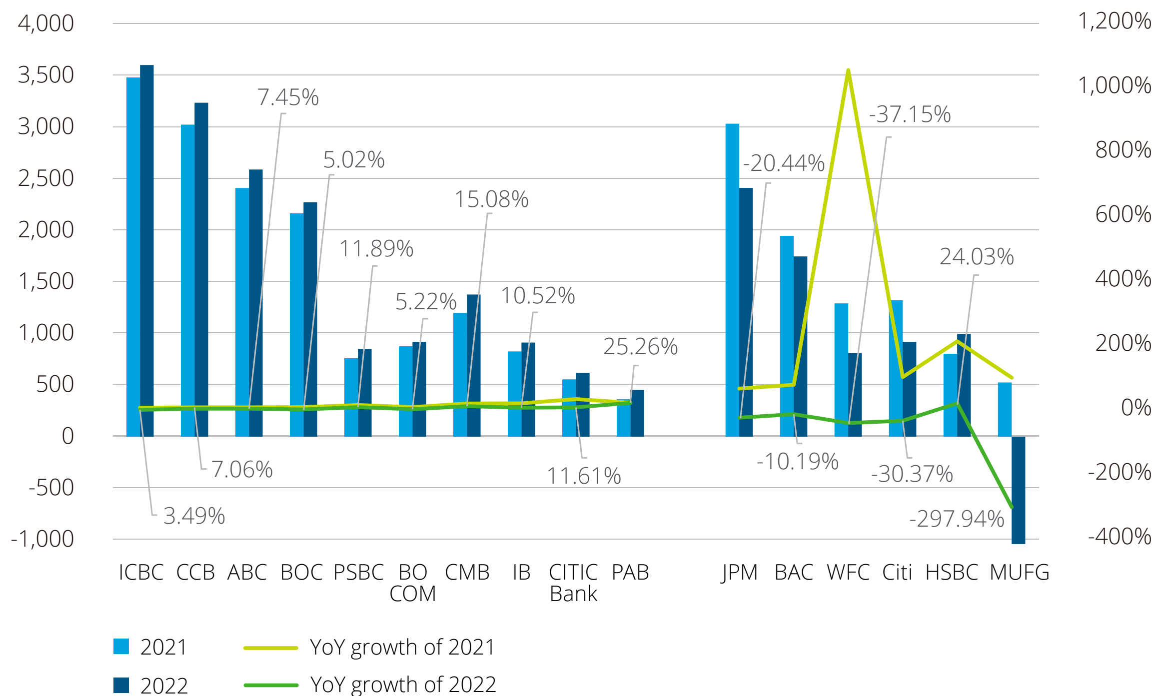
2.4 Capital position

2.1 Profitability

Banking profit growth slowed; pre-provision operating profit (PPOP) trended down

In 2022, domestic banks' net profit attributable to shareholders of the parent company totaled RMB1,685.3 billion, an increase of RMB116.8 billion year-on-year, or an overall growth rate of 7.45%, which was 6.8 percentage points lower than the previous year. Specifically, PSBC, CMB, IB and PAB maintained double-digit growth. Domestic banks' slow growth was due to narrowing net interest margins, a slow increase in commission charges, and fluctuations in the stock and bond markets. Foreign banks' net profit to shareholders of the parent company totaled RMB585.4 billion, down RMB307.2 billion year-on-year, or an overall decrease of 34.42%. Thanks to its robust net interest income, HSBC was the only foreign bank to maintain net profit growth. Foreign banks' net profit decrease was attributed to the slowing world economy, the Russia-Ukraine conflict, increased inflation, and tightened monetary policies that resulted in non-interest income decline and impairment provision increase.

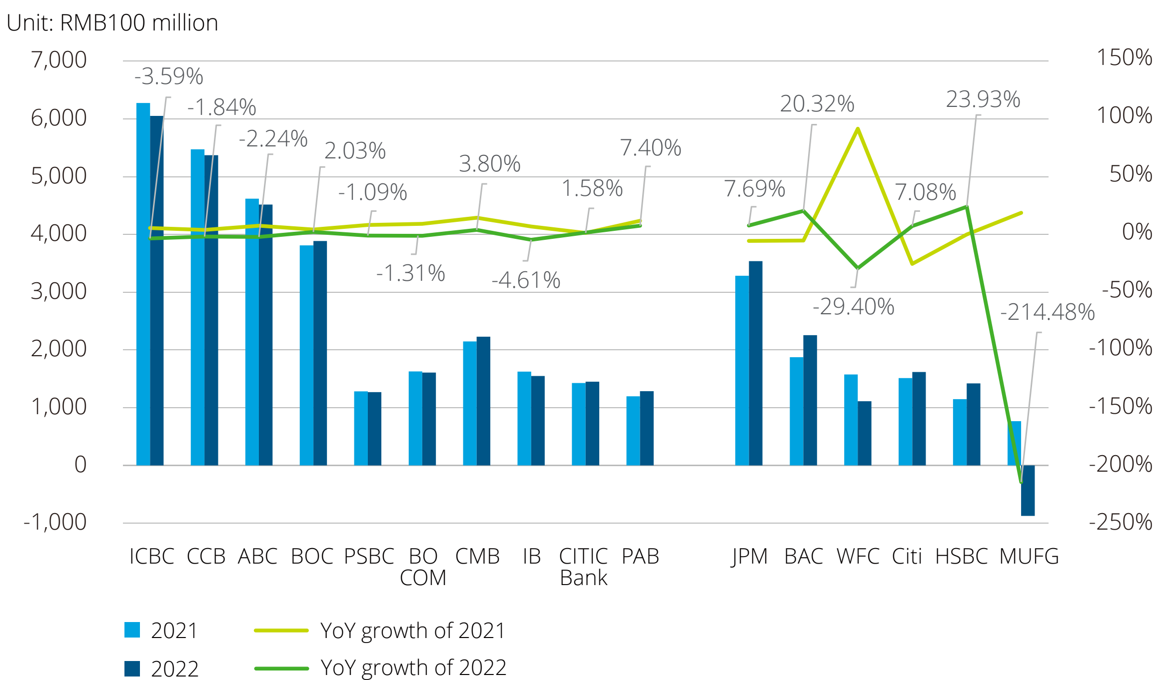
Figure 1: Net Profit Attributable to Shareholders of the Parent Company



In 2022, domestic banks' pre-provision operating profit (PPOP) totaled RMB2,920.3 billion, a year-on-year decrease of RMB26.9 billion or 0.91%. BOC, CMB, CITIC Bank, and PAB saw a slight PPOP increase among them. Foreign banks' PPOP totaled RMB906.2 billion, a year-on-year decrease of RMB108.7 billion or 10.71%, 8.63 percentage points higher than 2021's 2.08% decrease. Due to the net interest income increase caused by rate hikes, JPM, BAC, Citi, and HSBC showed varying degrees of PPOP growth, while WFC's and MUFG's growth rate turned negative affected by the non-interest income.

In addition, in 2022, some domestic and foreign banks' PPOP trended contrary to their net profit. The impairment provisions and reversal of provisions were still the main factors causing drastic profitability fluctuations. Except for BOC, CMB, CITIC Bank, PAB, HSBC and WFC, the remaining banks showed contrary PPOP and net profit trends.

Figure 2: Total PPOP



Note: total PPOP = pretax profits + asset impairment loss + credit impairment loss

Banks' profitability weakened, while per capita profitability enhanced

Banks' profit growth slowed; different banks' profitability varied remarkably

In 2022, domestic and foreign banks' major profitability indicators trended down. Most large state-owned banks recorded a decreased return on total assets ("ROA"), except PSBC, whose ROA remained the same as in 2021. In 2022, the average ROA of large state-owned banks was 0.84%, 0.03 percentage points lower than the previous year's 0.87%. The average ROA of joint-stock banks was 1.03%, 0.06 percentage points higher than the previous year's 0.97%. The foreign banks' average ROA was 0.54%, 0.33 percentage points lower than the previous year's 0.87%. Most foreign banks saw a year-on-year ROA decrease of 0.17 to 0.86 percentage points except HSBC (up 0.01 percentage points). All large state-owned banks recorded decreased return on equity ("ROE"), except PSBC whose ROE was the same as 2021. In 2022, the average ROE of large state-owned banks was 11.34%, 0.36 percentage points lower than the previous year's 11.70%. The average ROE of joint-stock banks was 13.52%, 0.4 percentage points higher than the previous year's 13.12%. The average ROE of foreign banks was 8.56%, 2.83 percentage points lower than the previous year's 11.39%.

Domestic banks' ROA and ROE generally decreased due to narrowed net interest margins and declined non-interest income. Foreign banks saw significant ROA and ROE fluctuations, mainly due to non-interest income fluctuations and impairment provisions.

Figure 3: ROA

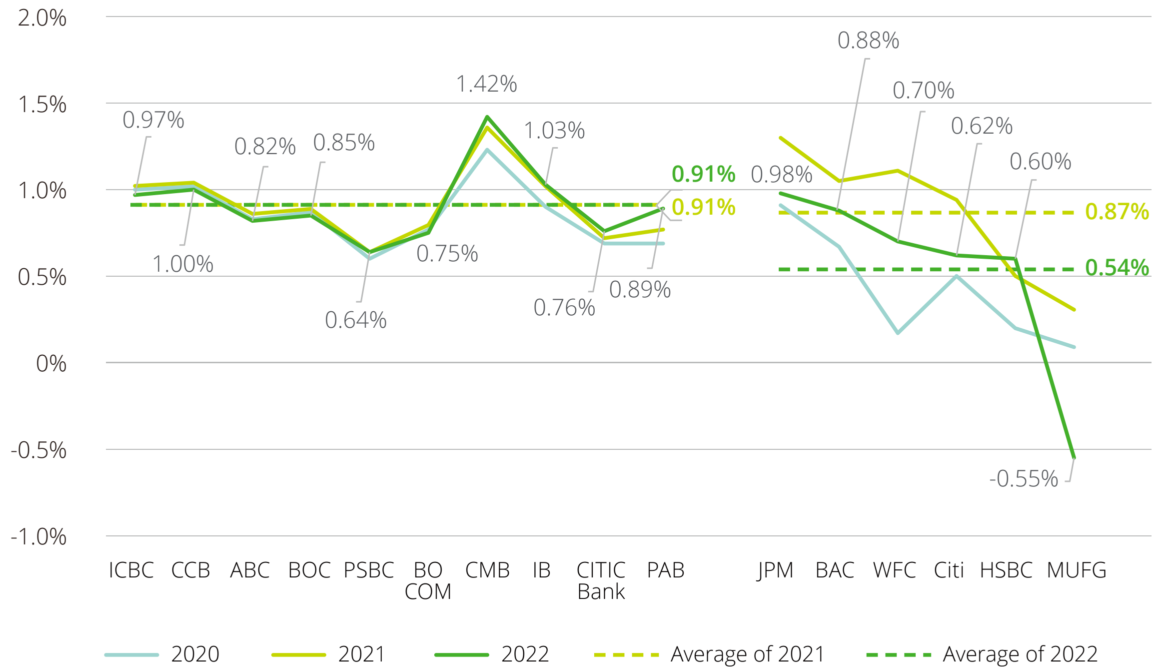
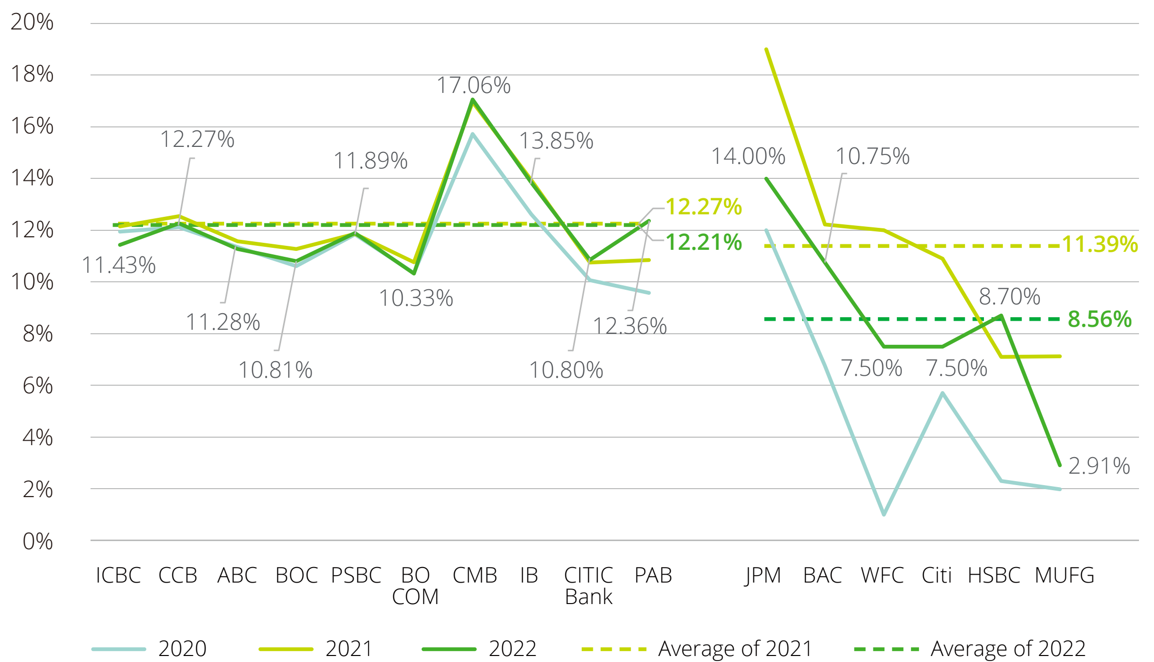


Figure 4: ROE



RORWA rose slightly; RAROC varied

In 2022, domestic banks' average return on risk-weighted assets ("RORWA") was 1.41% due to a slow net profit growth rate, up one basis point from the previous year's average (1.40%). CMB and PAB grew by 21 and 13 basis points, respectively, leading the domestic banks for two consecutive years.

The average risk-adjusted return on capital ("RAROC ") was 10.23%, up nine basis points from the previous year's average. Domestic banks had different RAROC performances. PAB and CMB recorded much higher year-on-year growth than large state-owned banks and other commercial banks—up 116 and 114 basis points, respectively; PSBC's and CITIC Bank's RAROC rose slightly by 41 and 40 basis points, respectively; other banks saw a year-on-year decline mainly because of a higher net capital growth rate than the net profit growth rate.

Figure 5: RORWA

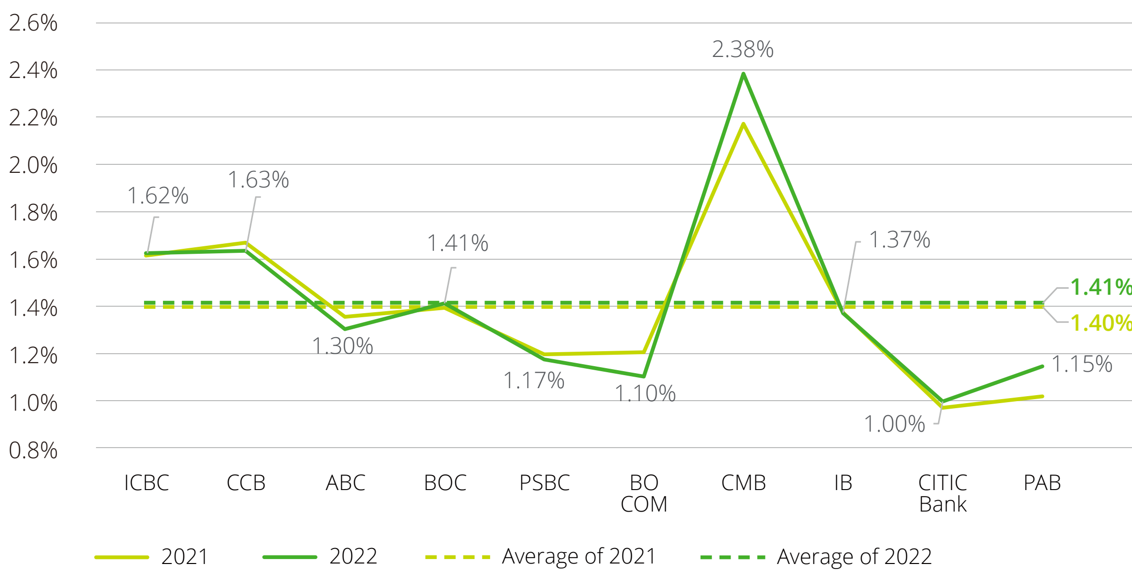
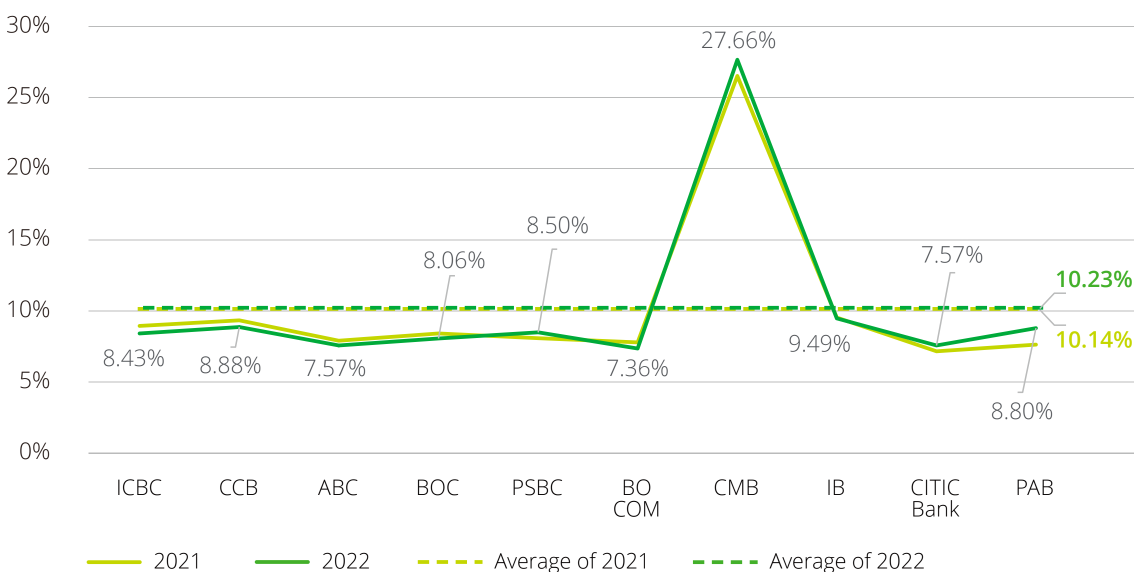


Figure 6: RAROC



Note 1: RAROC = net profit/net capital

Note 2: For CMB, it was the RAROC under the Advanced Measurement Approach

Measures to reduce cost and improve efficiency achieved initial results; per capita, net profit increased

In 2022, domestic banks' average per capita net profit was RMB803,300, a year-on-year increase of 6.2%. Specifically, IB's and CMB's per capita net profit stood at RMB1,323,200 and RMB1,232,700, respectively, much higher than the other banks. CMB's per capita net profit decreased slightly compared with the previous year. With expansive outlets in towns and villages and a large number of employees, PSBC's and ABC's per capita net profits were RMB437,500 and RMB572,000, but the two banks' per capita net profit grew by 10.9% and 7.6%, reflecting the initial results of cost reduction and efficiency improvement measures.

Joint-stock banks' employees increased. Specifically, CMB had 9,300 new employees. CCB's, PSBC's and BOCOM's employees increased slightly, while the rest state-owned banks decreased.

Figure 7: Per Capita Net Profit

Unit: RMB10,000

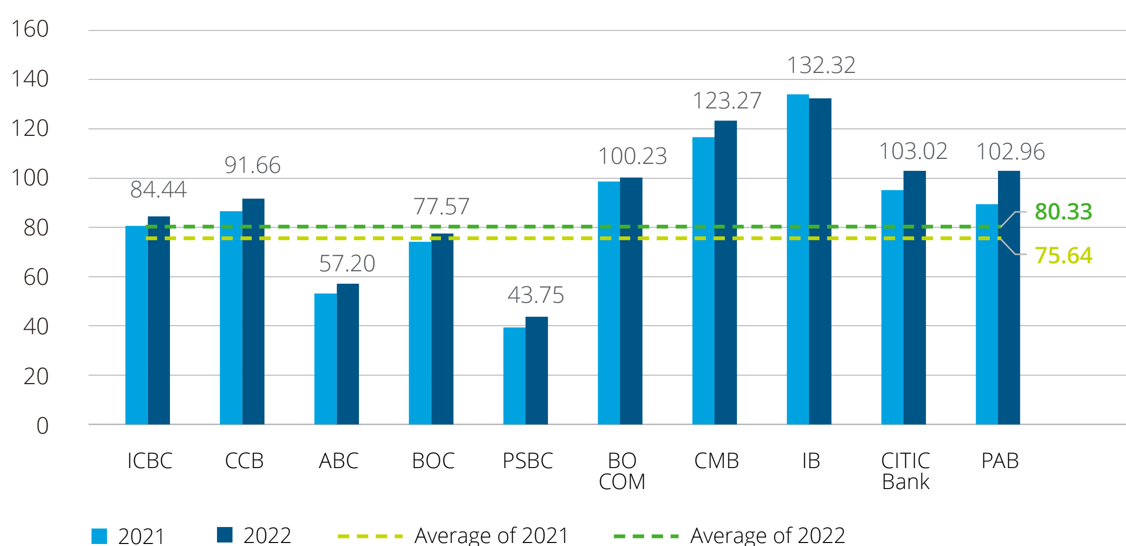


Table 1: Net Profit and Total Employees

Unit: RMB100 million/10,000 people

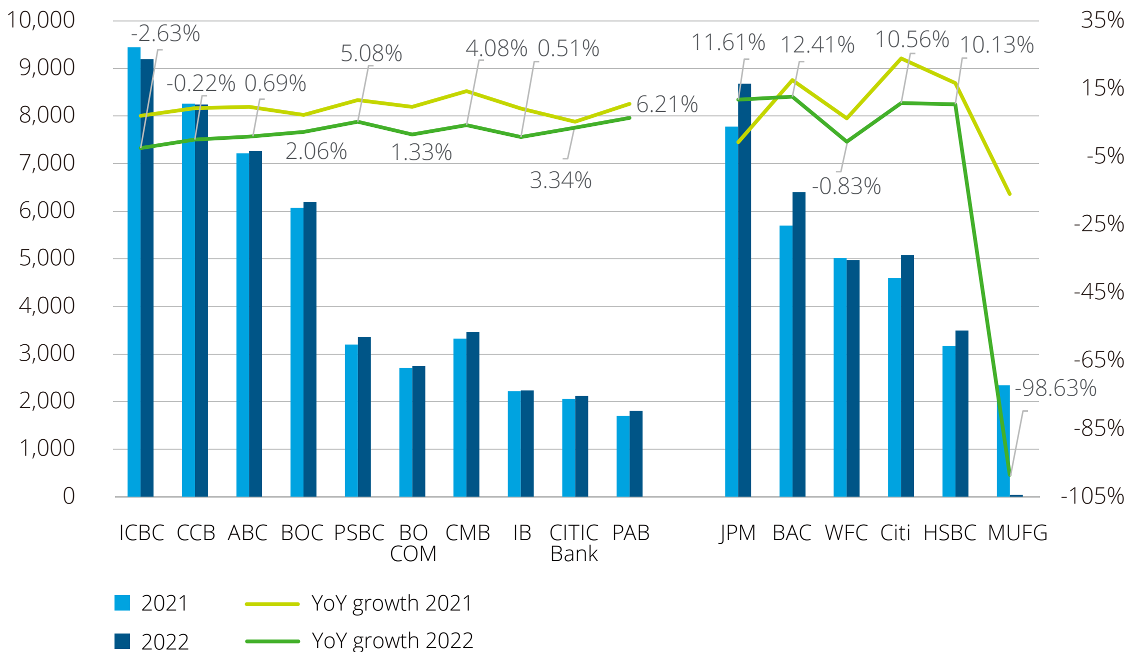
Item	ICBC	CCB	ABC	BOC	PSBC	BOCOM	CMB	IB	CITIC Bank	PAB
Net profit in 2022	3,610	3,232	2,587	2,375	854	920	1,393	924	630	455
Net profit in 2021	3,502	3,039	2,419	2,273	765	889	1,208	838	564	363
YoY increase	108	193	168	102	89	31	185	86	66	92
Employees at the end of 2022	42.76	35.26	45.23	30.62	19.51	9.18	11.30	6.98	6.11	4.42
Employees at the end of 2021	43.41	35.13	45.52	30.63	19.39	9.02	10.37	6.25	5.93	4.07
YoY increase/ decrease	(0.65)	0.13	(0.29)	(0.01)	0.12	0.16	0.93	0.73	0.18	0.35

The banking sector faced operating income challenges, with revenue growth declining under volume and price pressure

In 2022, domestic banks' operating income totaled RMB4,649.7 billion, up RMB42.7 billion year-on-year, an overall growth rate of 0.93%, significantly lower than 2021's 8.75%. Specifically, PSBC's and PAB's operating income grew by more than 5%—PAB recorded the highest year-on-year growth of 6.21%; ICBC's and CCB's operating income decreased due to declined non-interest income. Foreign banks' operating income totaled RMB2,858.4 billion, up RMB7 billion year-on-year, basically the same as the previous year. Specifically, JPM recorded an 11.61% year-on-year increase, reversing a two-consecutive-year decline, while MUFG registered a significant decline. In 2022, multiple policies were introduced in China to guide domestic banks to support the real economy. Meanwhile, the intermediate business income was pressed due to capital market fluctuations and a sluggish economy. Thus, domestic banks' operating income growth slowed. Facing the volatile operating environment, foreign central banks raised interest rates. Thus, foreign banks' net interest income increased slightly and non-interest income declined. Therefore, most foreign banks (except JPM) recorded a lower operating income growth rate than in 2021.

Figure 8: Operating Income

Unit: RMB100 million



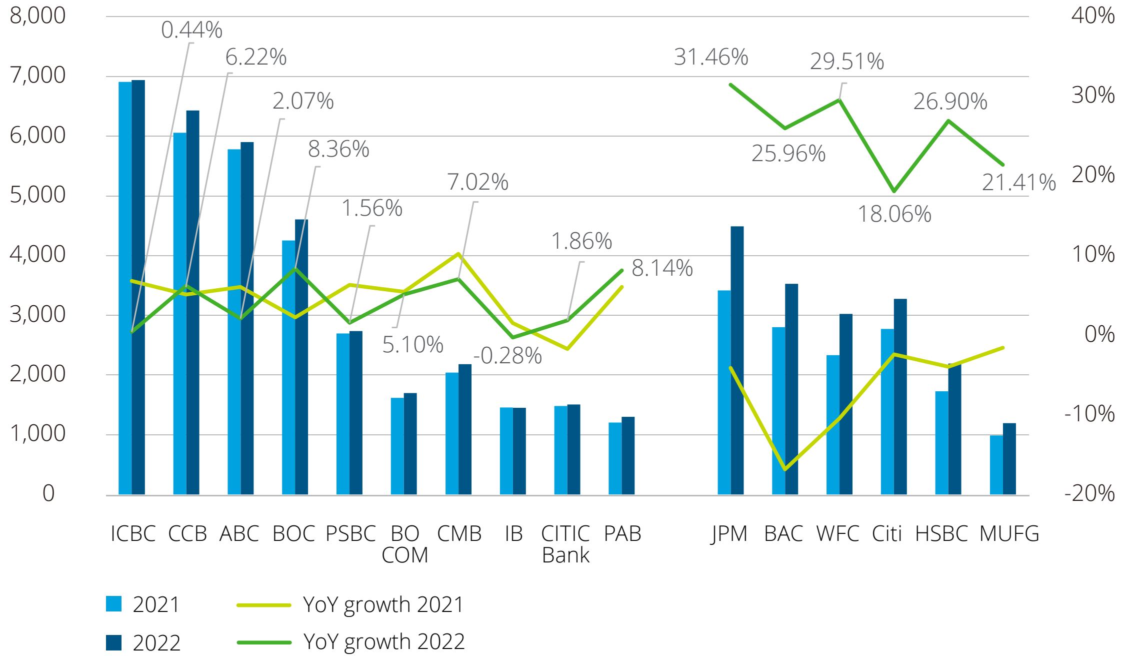
Note: to ensure comparability, the operating income of BAC, WFC, Citi, HSBC and MUFG was the sum of net interest income, net income from commission charges, and other net non-interest income

Continuous LPR cuts drove down interest rates; increased volume supported net interest income growth

In 2022, domestic banks' net interest income totaled RMB3,475.2 billion, up RMB127.1 billion year-on-year, with an average growth rate of 3.80%. Several banks' year-on-year growth slowed. Specifically, IB's net interest income decreased slightly, and that of ICBC, ABC, PSBC and CMB dropped significantly. In contrast, the growth rate of CCB, BOC, CITIB Bank and PAB rose. Foreign banks' net interest income totaled RMB1,770.2 billion, up RMB366.6 billion year-on-year, or an average growth rate of 26.12%. Generally, as an essential link in China's financial system, the domestic banks were tasked with supporting the recovery of the real economy. Massive credit and other interest-bearing assets mainly drove the net interest income increase.

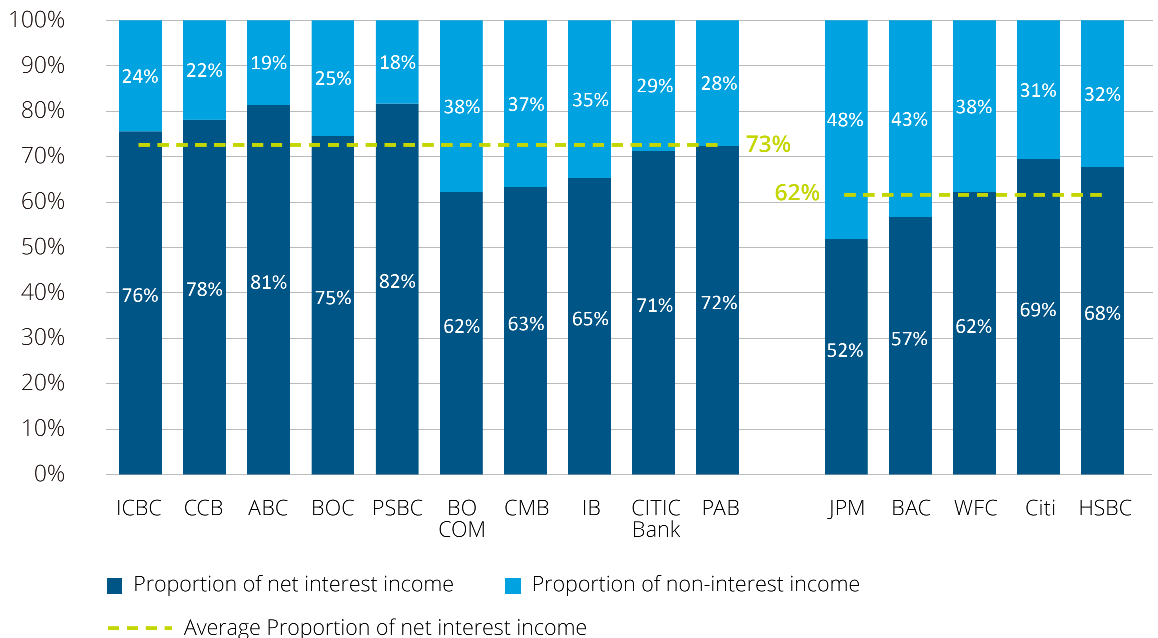
Figure 9: Net Interest Income

Unit: RMB100 million



On average, domestic banks' net interest income accounted for 73% of their operating income. Specifically, PSBC's proportion of net interest income was 82%. Foreign banks' (excl. MUFG) net interest income averagely accounted for 62% of their operating income—indicating that their non-interest businesses were more advantageous than domestic banks.

Figure 10: Proportion of Net Interest Income

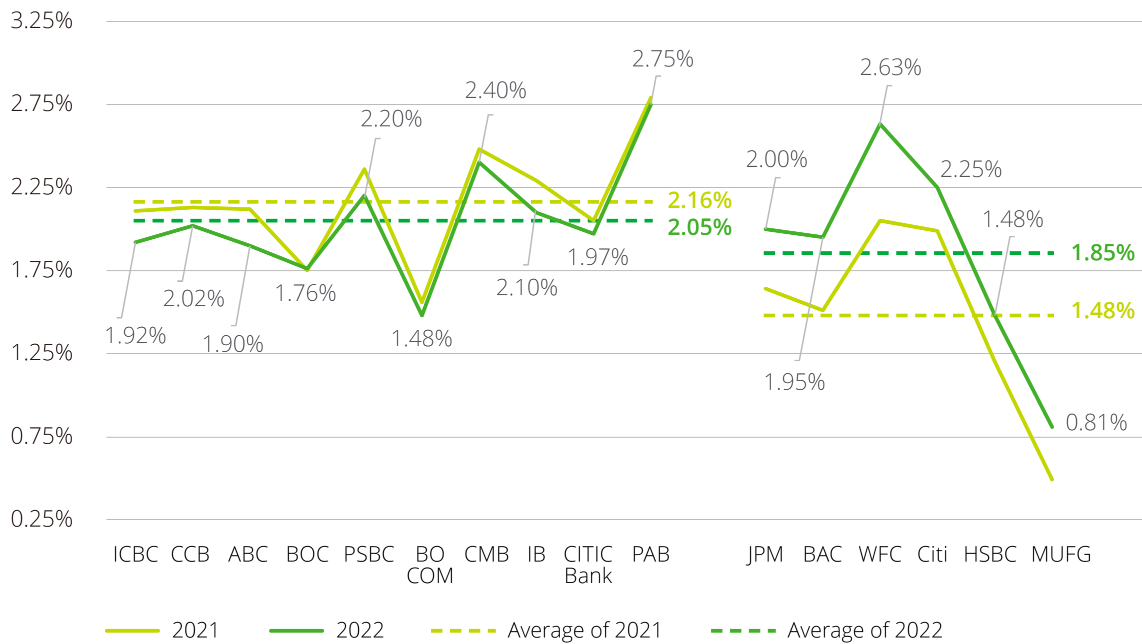


Note: MUFG's negative non-interest income led to a small operating income; its net interest income was nearly 30 times as much as its operating income. Therefore, it was not shown in the above figure.

Loan yields dropped; deposit cost increase resulted in a continuous narrowing of net interest margin

In 2022, domestic and foreign banks' average net interest margins were 2.05% (down 11 basis points year-on-year) and 1.85% (up 37 basis points year-on-year). Overall, PBC's accommodative monetary policies created a low-interest environment. Meanwhile, LPR reductions and loan yield decline drove down the market interest rates. The domestic banking sector was guided by policies to vigorously develop inclusive finance and support the real economy, thus constantly reducing the financing cost of the real economy. In 2022, the interest rates of newly issued loans dropped, and the net interest margins further narrowed. Foreign banks' net interest margins rose remarkably from the previous year, mainly due to increased asset interest rates driven by central banks' rate hikes.

Figure 11: Net Interest Margin



Specifically, domestic banks' average yield of interest-bearing assets fell by seven basis points year-on-year, and the average interest-paying rate of interest-bearing debts increased by four basis points year-on-year, leading to narrowed net interest margins. That was because the LPR cuts, low-interest rate market and banks' support to the real economy drove down asset interest rates, and liabilities were mainly associated with customer deposits. Regarding changes in the overall liability structure, in 2022, due to the economic downturn, resurging COVID-19 cases, residents' precautionary saving willingness and fierce competition, price stickiness on the liability side strengthened, and increasing fixed-term deposits led to domestic banks' higher deposit costs. In the long run, domestic banks will continue to make interest concessions to support the real economy, further pressing the net interest margins. Foreign banks' average yield of interest-bearing assets and average interest-paying rate of interest-bearing debts increased significantly by 67 basis points and 64 basis points, respectively, year-on-year, which was mainly affected by the Fed's aggressive rate hikes. The banking sector's interest-paying costs will face upward pressure due to central banks' rate increases and the developed economies' tightening monetary policies.

Continuous LPR cuts led to loan yield decline, which was the main reason for the interest-bearing asset yields to decrease. In 2022, the one-year LPR and over-five-year LPR were lowered twice and three times, accumulatively by 15 basis points and 35 basis points, respectively. Most of the domestic banks recorded an interest-bearing asset yield decline, except BOC. ICBC's and CCB's interest-bearing asset yields rose slightly in 2022's first half, but still recorded a year-on-year decline at the end of the year. The rest banks' yields showed a continuously declining trend. In this context, the banks optimized asset and liability allocation and adjusted asset structure. All banks' decline (%) of interest-bearing asset yields was lower than the cumulative reduction of the one-year LPR, except IB.

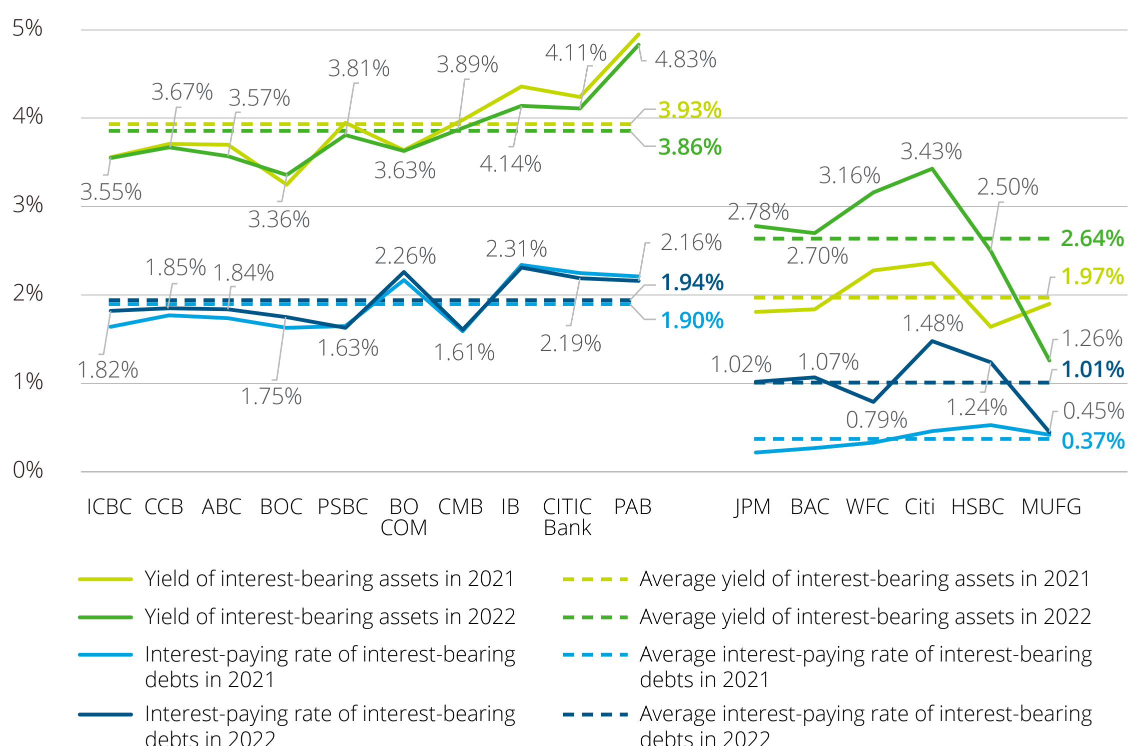
BOC's interest-bearing asset yield steadily increased because it had a higher proportion of international businesses that benefited from the Fed's rate hikes and actively optimized the asset and liability structure to maintain steady interest margin growth. In 2023, the banks' net interest margins are expected to narrow. Therefore, it is vital for them to actively manage assets and liabilities, increase volume, and improve non-interest income.

Table 2: Domestic Banks' Quarterly Interest-bearing Asset Yield and LPR Adjustment

Item	Dec 31, 2022	Sept 30, 2022	Jun 30, 2022	Mar 31, 2022	Dec 31, 2021
One-year LPR	3.65%	3.65%	3.70%	3.70%	3.80%
Basis points dropped	-	5	-	10	5
Over-five-year LPR	4.30%	4.30%	4.45%	4.60%	4.65%
Basis points dropped	-	15	15	5	-

Interest-bearing asset yield	Jan-Dec, 2022	Jan-Sept, 2022	Jan-Jun, 2022	Jan-Mar, 2022	Jan-Dec, 2021
ICBC	3.55%	Undisclosed	3.59%	Undisclosed	3.56%
CCB	3.67%	Undisclosed	3.72%	Undisclosed	3.71%
ABC	3.57%	Undisclosed	3.66%	Undisclosed	3.70%
BOC	3.36%	Undisclosed	3.29%	Undisclosed	3.25%
PSBC	3.81%	Undisclosed	3.89%	Undisclosed	3.95%
BOCOM	3.63%	Undisclosed	3.63%	Undisclosed	3.64%
CMB	3.89%	3.90%	3.92%	3.97%	3.98%
IB	4.14%	Undisclosed	4.20%	Undisclosed	4.36%
CITIC Bank	4.11%	Undisclosed	4.16%	Undisclosed	4.24%
PAB	4.83%	4.85%	4.86%	4.94%	4.95%

Figure 12: Yield of Interest-bearing Assets & Interest-paying Rate of Interest-bearing Debts



In 2022, domestic banks' average customer loan & advance yield and financial investment yield were 4.50% and 3.27%, respectively, down 13 basis points and ten basis points year-on-year. In 2022, the one-year LPR and over-five-year LPR were cut twice and three times. As the interest rates of long-term loans (such as mortgage loans) are generally adjusted on January 1, the over-five-year LPR reduction has no immediate impact. Domestic banks' loan yields will be enormously pressed in the long run. Decreased bond yields due to lower market interest rates mainly caused the financial investment yield decline. IB's financial investment yield stood at 3.66%, significantly higher than its peers, although down by 30 basis points from the previous year.

Figure 13: Customer Loan & Advance Yield

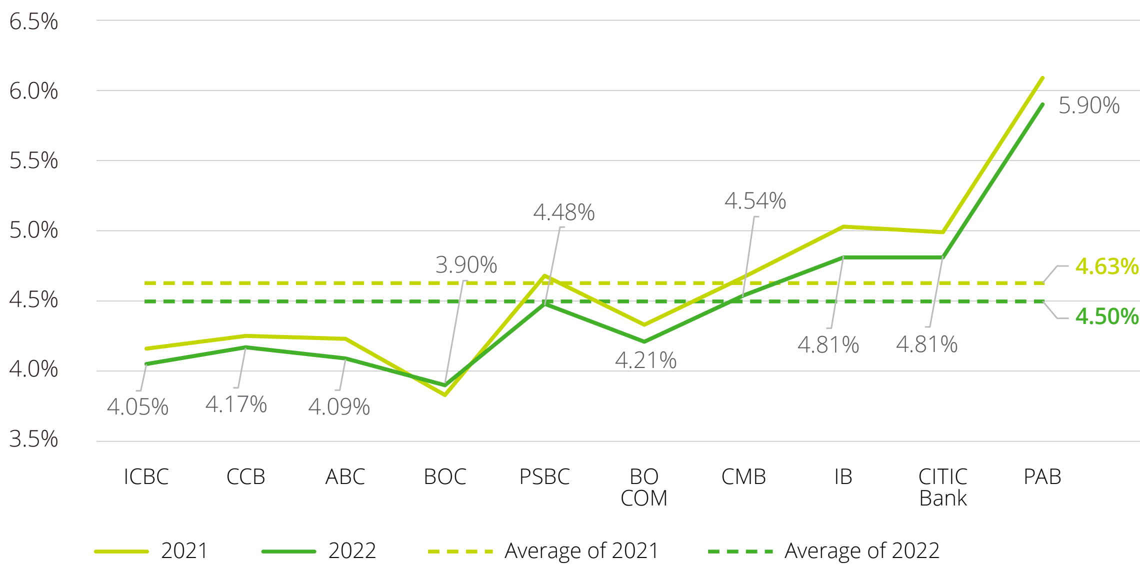
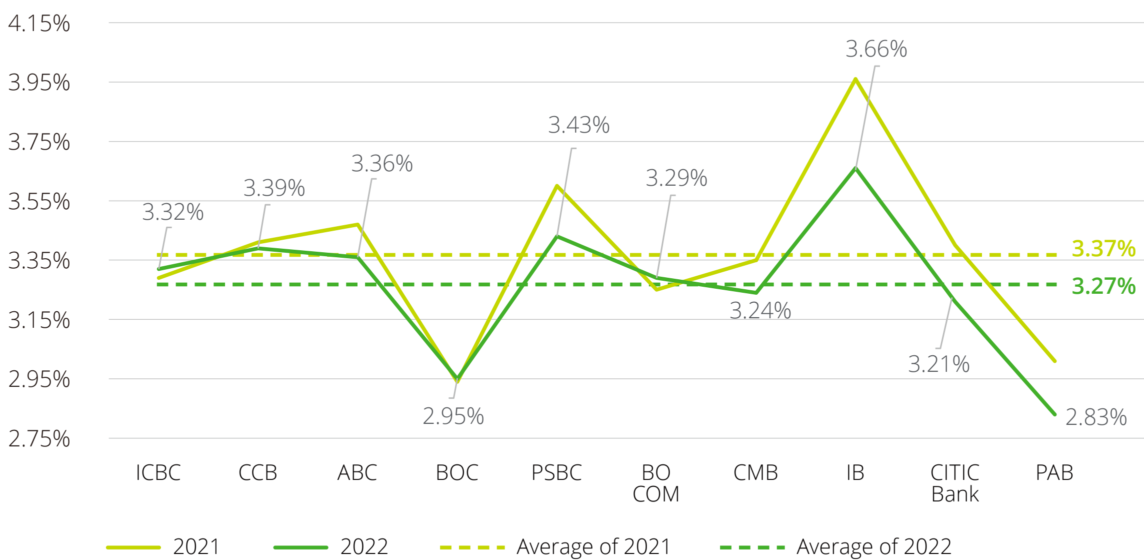


Figure 14: Financial Investment Yield



In 2022, domestic banks' average deposit interest-paying rate was 1.86%, up eight basis points year-on-year. All other banks recorded a deposit interest-paying rate rise, but PSBC had a two-basis-point drop due to its taping the potential of restructuring, vigorously promoting the development of value deposits, and effectively reducing high-interest deposits. Domestic banks' average interest-paying rate of interbank businesses was 1.94%, up five basis points year-on-year, caused by market interest rate fluctuations.

Figure15: Deposit Interest-paying Rate

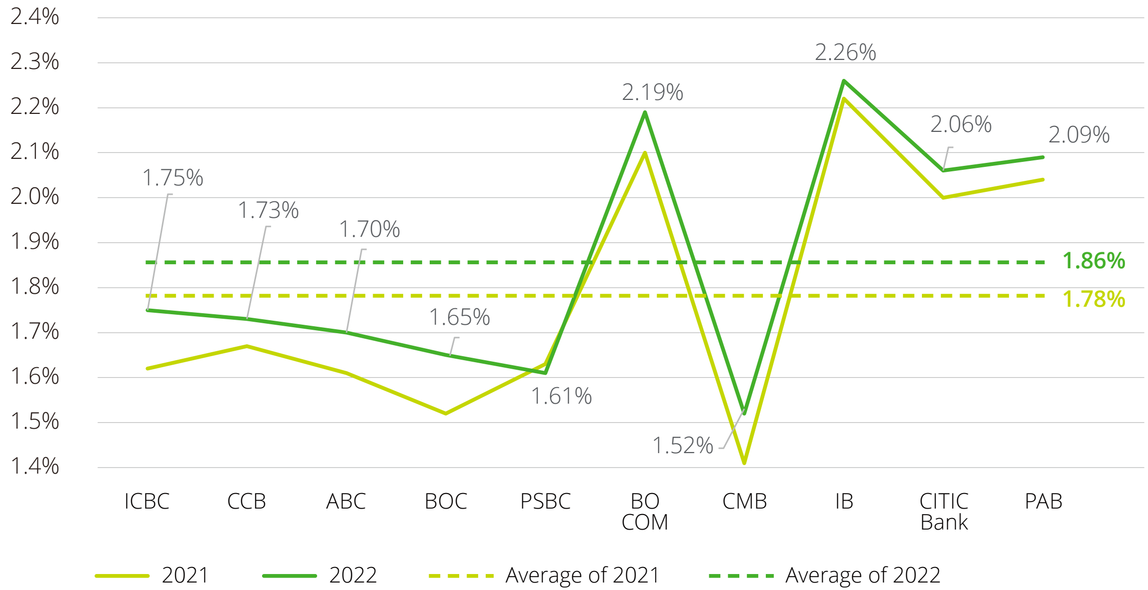
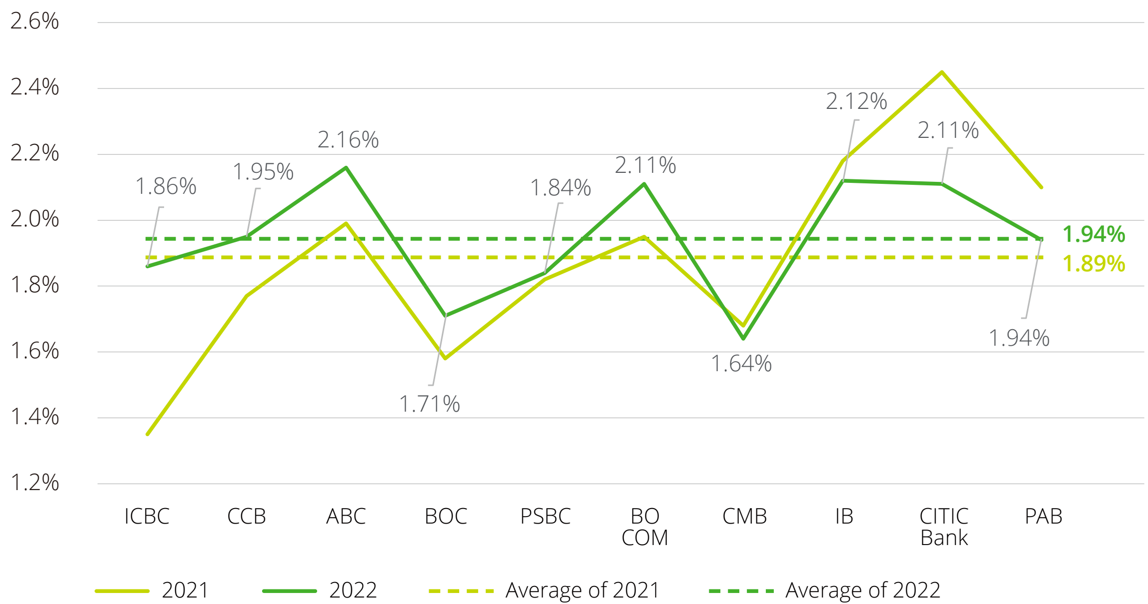


Figure 16: Interest-paying Rate of Interbank Businesses



Note: interbank businesses include interbank deposits and inter-financial institution deposits, loans from other banks and financial institutions, financial assets sold for repurchase, etc. (for BOC, it also includes the liabilities to the People's Bank of China and other interest-bearing liabilities; for PAB it also includes other interest-bearing liabilities.)

Capital-light transformation faced challenges; income from intermediate businesses decreased

In 2022, domestic and foreign banks' net income from commission charges decreased compared with 2021 due to the volatile operating environment. Domestic banks' net income from commission charges totaled RMB678.6 billion, down RMB13.3 billion year-on-year, or an average decline of 1.93%. That was because the income from the traditional intermediate businesses dropped due to domestic banks' interest rate and fee cuts, and the income from wealth management declined due to capital market fluctuations. In addition, affected by multiple macroeconomic factors, the consumption level declined sharply before a slow rise to stabilize. The growth of income from individual bank card settlement (directly related to consumption) and some new payment businesses slowed. Among the large state-owned banks, PSBC accelerated the transformation and upgrading of the wealth management business, improved capabilities in professional and differentiated customer assets allocation, and the income from bancassurance and other businesses achieved rapid growth, leading to an increase of 29.20% in net income from commission charges. Foreign banks' net income from commission charges totaled RMB741.6 billion, down RMB145.7 billion year-on-year, or an average decline of 16.43%.

Regarding the proportion of net income from commission charges in the total operating income, domestic banks' average proportion was 15.79%, down 0.50% from the previous year. The average proportion of foreign banks (excl. MUFG) was 24.27%, down 4.14% compared with the previous year. In 2022, the large state-owned and joint-stock banks' net income from commission charges averagely accounted for 12.66% and 20.48% of their operating income. PSBC's 2021 and 2022 net income from commission charges accounted for 6.90% and 8.49%, respectively, an increase of 1.59%, the highest growth among the domestic banks. Among the joint-stock banks, CMB's and IB's intermediate business income accounted for 27.34% and 20.25% of their total operating income.

Figure 17: Net Income from Commission Charges

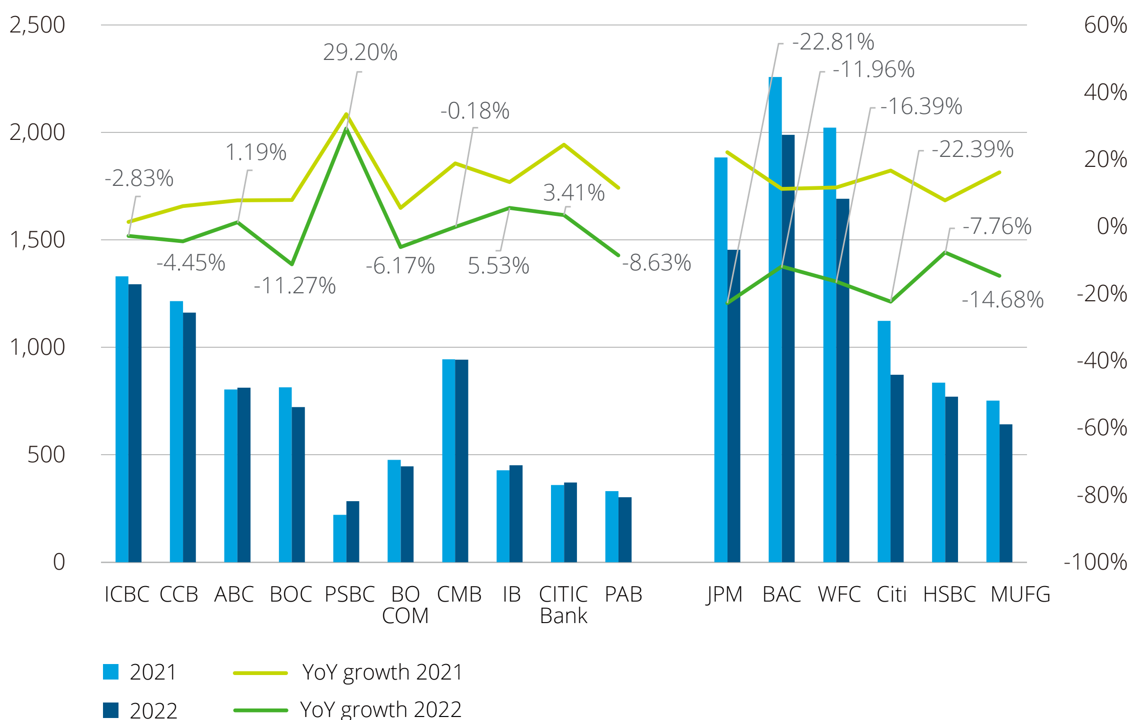
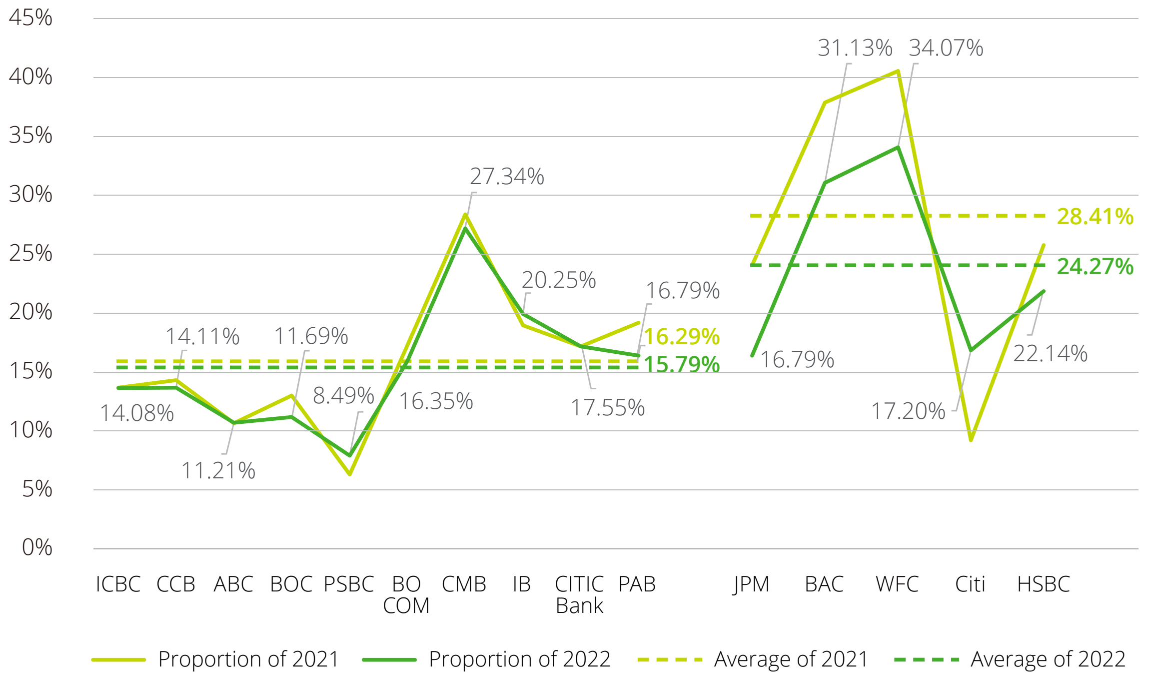


Figure 18: Proportion of Income from Commission Charges



Note: MUFG's negative non-interest income led to a small operating income; its net income from commission charges was nearly 20 times as much as its operating income. Therefore, it is not shown in the above figure.

Residents' saving willingness enhanced amid capital market fluctuations; income from wealth management trended down

In 2022, factors such as the Russia-Ukraine conflict, escalated geopolitical conflicts, the Fed's rate hikes, the "upside down" interest rates of the Chinese and US treasury bonds, and the fluctuating domestic operating environment led to depressed capital and bond markets and declined net value of wealth management and fund businesses. Thus, domestic banks' income from wealth management businesses trended down. In 2022, domestic banks' income from commission charges of wealth management, agency and custody businesses totaled RMB309.6 billion, a year-on-year decrease of RMB11.3 billion or 3.52%.

In addition, in 2022, China's average per-capita disposable income stood at RMB36,883, an increase of 5.0% over the previous year, or 2.9% in real terms (lower than 2021's 8.1% in real terms). With the downward macroeconomy, the net value of wealth management dropped, residents' saving willingness strengthened, and investment demands weakened, thus shrinking the wealth management market and the income from wealth management businesses.

Figure 19: Income from Commission Charges of Wealth Management, Agency and Custody Businesses

Note 1: In PAB's annual report, the income from commission charges of the wealth management businesses was included in "Others", so PAB's relevant data could not be calculated and thus not shown in the figure above.

Note 2: In 2022, CMB optimized the disclosure calibre of the breakdown items of "fees and commissions from wealth management" and "others", and adjusted the comparative data of the previous year in accordance with the same calibre.

The consumer market did not recover as expected, leading to the income decline of traditional intermediate businesses

In 2022, domestic banks generated revenue of RMB332.7 billion from traditional intermediate businesses such as bank card and settlement & clearing businesses, a year-on-year decrease of 1.87%. ICBC, CMB and IB grew by 9.02%, 9.53% and 4.59%, respectively, from the previous year. CCB, ABC and BOCOM fell by 15.23%, 7.33% and 4.33%, respectively, while the rest banks recorded a relatively stable performance. In 2022, the consumer market did not recover as expected due to the downward macro economy, and the offline consumption decline resulted in an income drop in the bank card business. Some banks responded to customers' financial demands and the mobile payment trends, which increased their electronic payment transactions and relevant income.

Figure 20: Income from Commission Charges of Bank Card, Electronic Banking and Settlement & Clearing Businesses

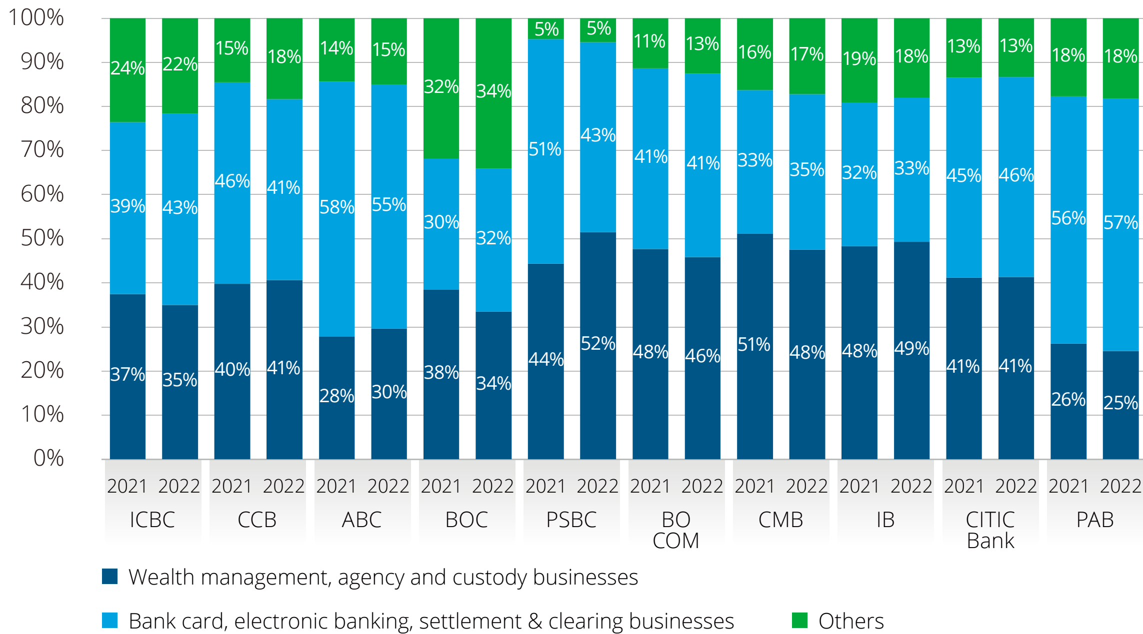
Note: In CCB's 2022 annual report, the income from the electronic banking business was not disclosed, so CCB's data could not be calculated and thus not shown in the figure above.

Income structure of intermediate businesses remained stable, with income mainly from traditional intermediate and agency businesses

Domestic banks' intermediate business income structure remained stable, mainly from the traditional intermediate and agency businesses. In 2021 and 2022, domestic banks' average proportions of income from wealth management, agency and custody businesses in total commission income were 40%. The average proportions of income from bank card, electronic banking, and settlement & clearing businesses were 43%, and the proportions of other categories were 17%.

In addition, in 2022, the impact of wealth management on the intermediate business income structure weakened due to the sluggish capital market. Driven by the agency business, PSBC's proportion of income from wealth management, agency and custody businesses increased by more than eight percentage points. BOC's agency business income dropped, leading to a five-percentage-point decline in the proportion of income from wealth management, agency and custody businesses. The proportions of other banks fell or increased slightly.

Figure 21: Commission Income Structure



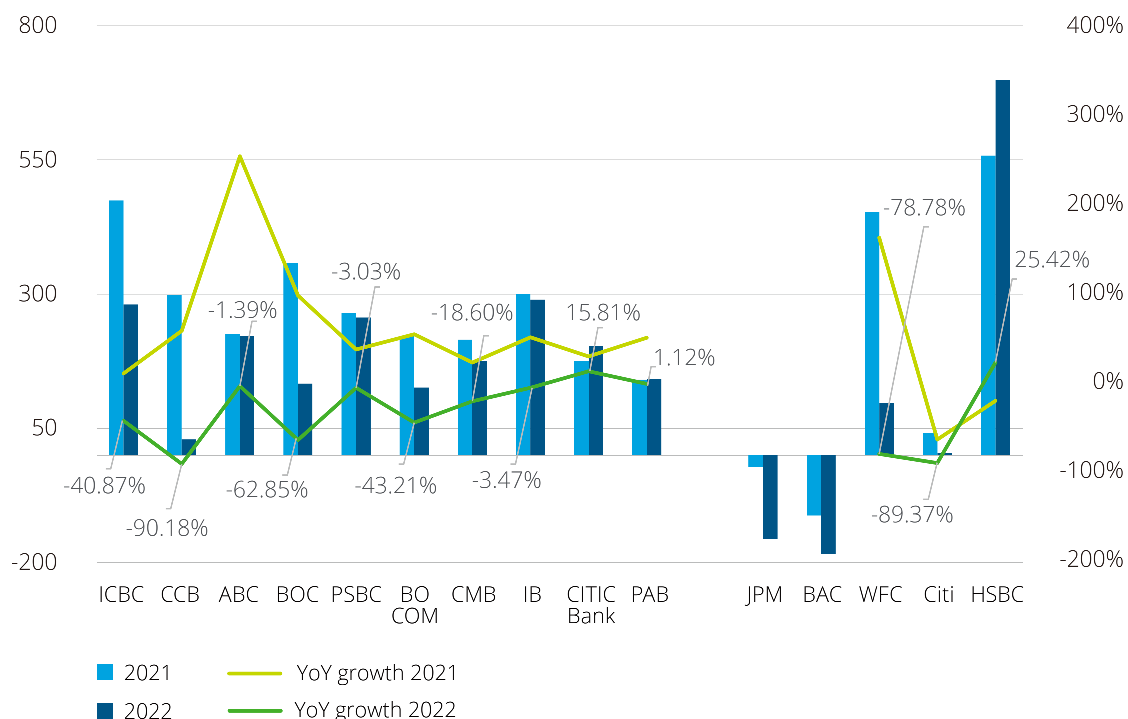
Note: 2021: previous period, 2022: current period.

Domestic banks' investment capacity was highlighted; foreign banks' liquidity risks emerged

In 2022, capital markets fluctuated, and domestic and foreign banks' financial investment income dropped significantly. Domestic banks' financial investment income totaled RMB186.5 billion, a decrease of RMB83.3 billion year-on-year, or an average decrease of 30.53%. Large state-owned banks' financial investment income totaled RMB106.9 billion, down by 43.15%, because they had a higher proportion of standard asset investments such as interest-rate bonds and their bonds generated unrealized losses due to a significant adjustment in the bond market in the fourth quarter. Joint-stock banks' financial investment income totaled RMB82.6 billion, a similar level as 2021, which was because joint-stock banks had a higher proportion of non-standard asset and fund investments, and their differentiated investment strategies lightened the adverse impact of the capital market fluctuations.

Foreign banks' financial investment income totaled RMB46.8 billion, a decrease of RMB46.9 billion year-on-year. The Fed's continuous rate hikes drove up the ten-year treasury yield by about 236 basis points in 2022. The four US banks saw continuous bond value decline, and their financial investment recorded a loss of RMB24.6 billion in 2022 (an RMB36.8 billion profit in 2021). The "upside down" US yield curve amplified the foreign financial institutions' liquidity risks due to mismatching assets and liabilities.

Figure 22: Income from Financial Asset Investment



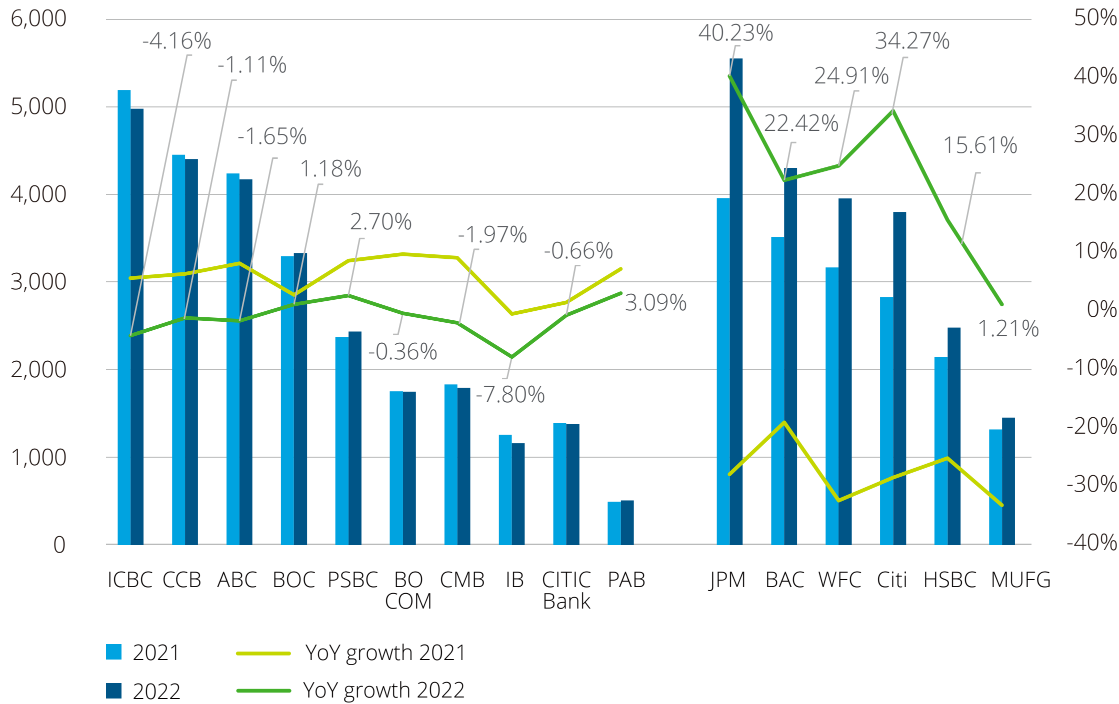
Note 1: JPM and BAC recorded financial asset investment losses in 2021 and 2022. Thus, their data were not shown in the figure above.

Note 2: HSBC's financial asset investment income included the income generated by FX derivatives, thus showing an upward trend. MUFG's financial asset investment recorded a loss of RMB171.6 billion in 2022 (an RMB71.7 billion profit in 2021), thus not shown in the figure above.

Domestic banks' operating expenses decreased, while foreign banks' rebounded rapidly

In 2022, domestic banks' operating expenses totaled RMB2,592.4 billion, down RMB36.6 billion or 1.39% year-on-year, among which impairment losses amounted to RMB933.3 billion, down RMB107.8 billion or 10.36% year-on-year, and business and administration expenses amounted to RMB1,419.1 billion, an increase of RMB57.9 billion or 4.25% year-on-year. Most of the domestic banks' operating expenses decreased. IB and ICBC recorded the highest decline of 7.80% and 4.16%, respectively, because of the decrease in impairment losses. In 2022, foreign banks' operating expenses totaled RMB2,155.3 billion, up RMB461 billion or 27.21% year-on-year, among which asset losses amounted to RMB119.8 billion, up RMB262.6 billion or 183.88% year-on-year, and business and administration expenses amounted to RMB1,957 billion, an increase of RMB204.1 billion or 11.65% year-on-year. Foreign banks' operating expenses rose significantly due to increased impairment provisions and double-digit business and administration expenses growth. Among them, the growth rate of JPM, BAC, WFC and Citi exceeded 20 percentage points.

Figure 23: Operating Expenses



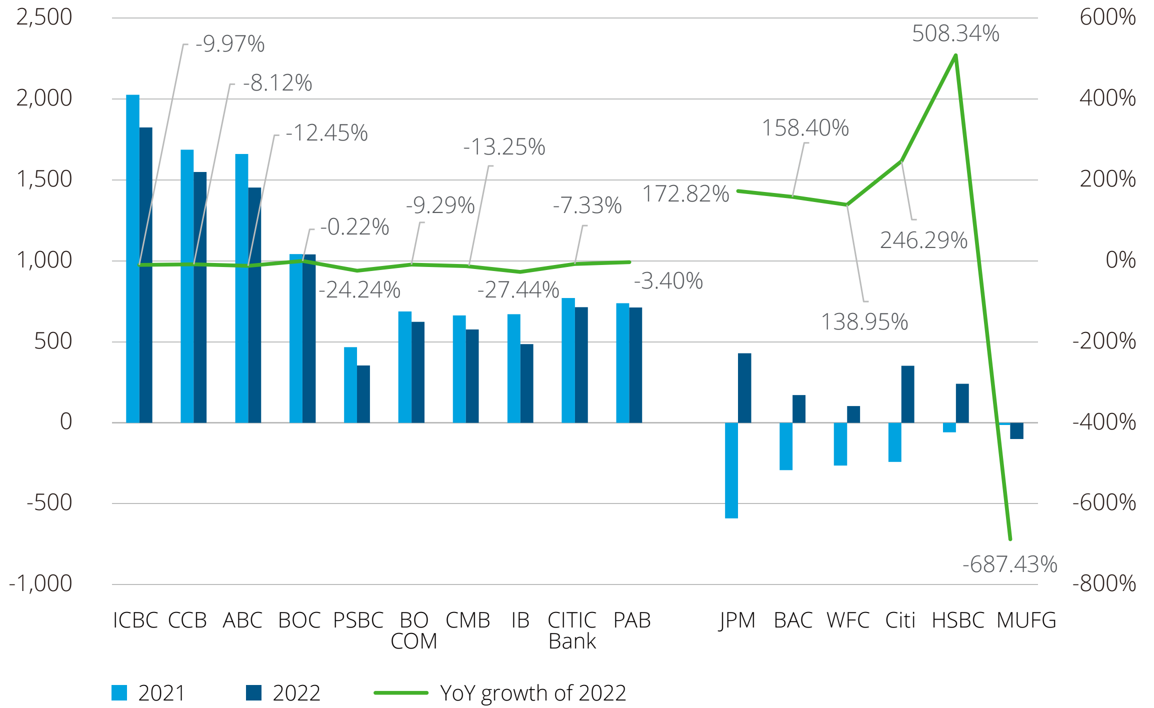
Note: Operating expenses include impairment losses, which include credit impairment losses and other asset impairment losses.

Domestic banks strengthened asset quality management; provisions for credit impairment losses shrunk

In 2022, domestic banks' total provisions for impairment losses reached RMB933.3 billion, a year-on-year decrease of RMB107.8 billion or 10.36% (2021's YoY decrease was 3.90%). Specifically, the decline of ABC, PSBC, CMB and IB exceeded 10%; the rest six banks also recorded different levels of decline. That was because the domestic banks generally had high base-period provisions. Facing macro-environmental uncertainties, domestic banks prudently strengthened disposing of nonperforming assets, asset quality management and risk compensation capacity. Thus, they kept provisions at a reasonable level, and their provisions for credit impairment losses decreased. In 2021, the foreign banks reversed impairment loss provisions totaling RMB142.8 billion. In 2022, under the influence of the economic downturn cycle and macro policies in Europe and the US, the trend will be reversed, MUFG reversed impairment provisions, while all other foreign banks' provisions increased. Foreign banks' total impairment losses reached RMB119.8 billion, a year-on-year increase of RMB262.6 billion or 183.88%, among which HSBC recorded the highest growth rate.

Figure 24: Impairment Losses

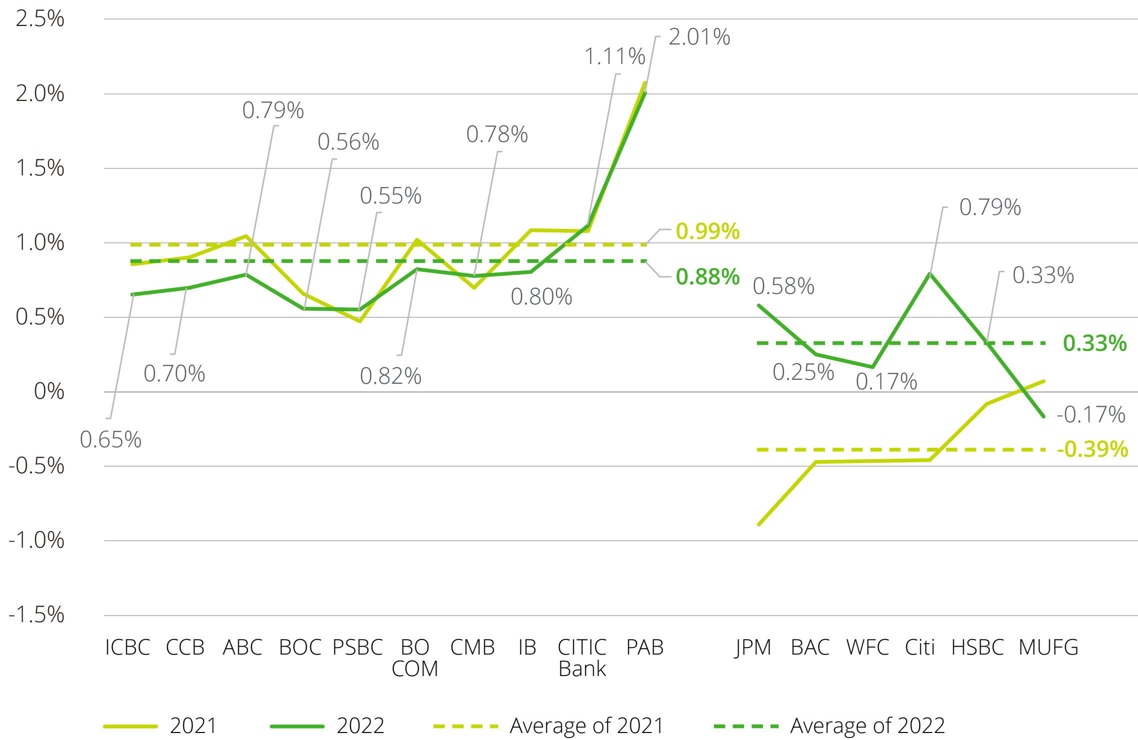
Unit: RMB100 million



Note: negative impairment losses indicate that the expected credit losses have been reversed.

In 2022, due to higher loan balances and lower impairment provisions, domestic banks' average credit cost ratio fell to 0.88%, down 11 basis points from 2021. Among them, ICBC, CCB, ABC, BOCOM and IB saw a larger decline, with an average decrease of 23 basis points. PAB's credit cost ratio was 2.01%, which was related to its risk appetite. Foreign banks' average credit cost ratio stood at -0.39% in 2021, but it increased to 0.33% in 2022 due to increased impairment provisions, up 72 basis points year-on-year. Overall, domestic banks' impairment provisions decreased, but their credit cost ratios were generally higher than that of foreign banks.

Figure 25: Credit Cost Ratio



Note: Credit cost ratio=credit impairment losses on loans/average balance of loans

Banks further improved refined management; business and administration expenses increased slowly

In 2022, domestic banks' business and administration expenses totaled RMB1,419.1 billion, an increase of RMB57.9 billion or 4.25%, significantly lower than in 2021 (14.11%). IB maintained a double-digit growth rate, while the rest of domestic banks' business and administration expense growth slowed due to decelerated employee cost growth. Foreign banks' business and administration expenses totaled RMB1,957 billion, an increase of RMB204.1 billion or 12%. Specifically, MUFG recorded the highest growth rate of 34.14% (an increase of RMB37.1 billion), while HSBC recorded the lowest growth rate of 1.56% (an increase of RMB3.5 billion).

In 2022, domestic banks' employee costs totaled RMB790.7 billion, an increase of RMB43 billion year-on-year, or 5.75%. With the introduction of the "salary caps" on July 20, 2022, domestic banks actively optimized their income distribution structure to build a scientific compensation system and control expenses. Foreign banks' employee costs totaled RMB1,126.6 billion, a year-on-year increase of RMB63.8 billion, or 6.00%.

Figure 26: Business and Administration Expenses

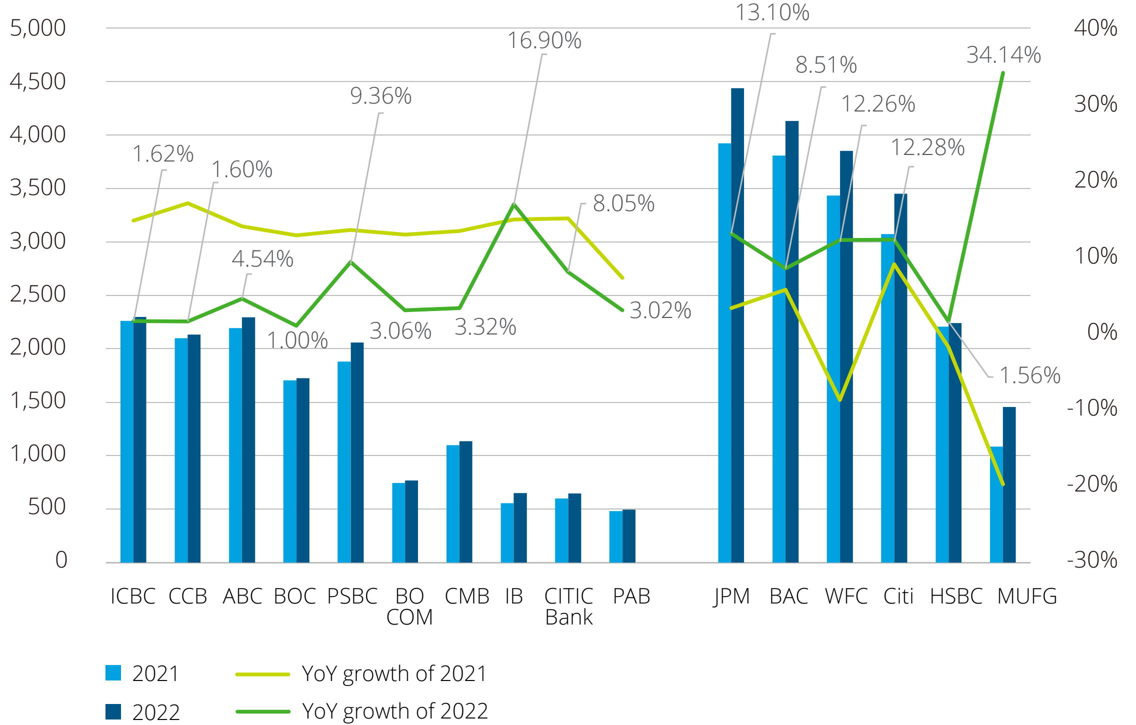
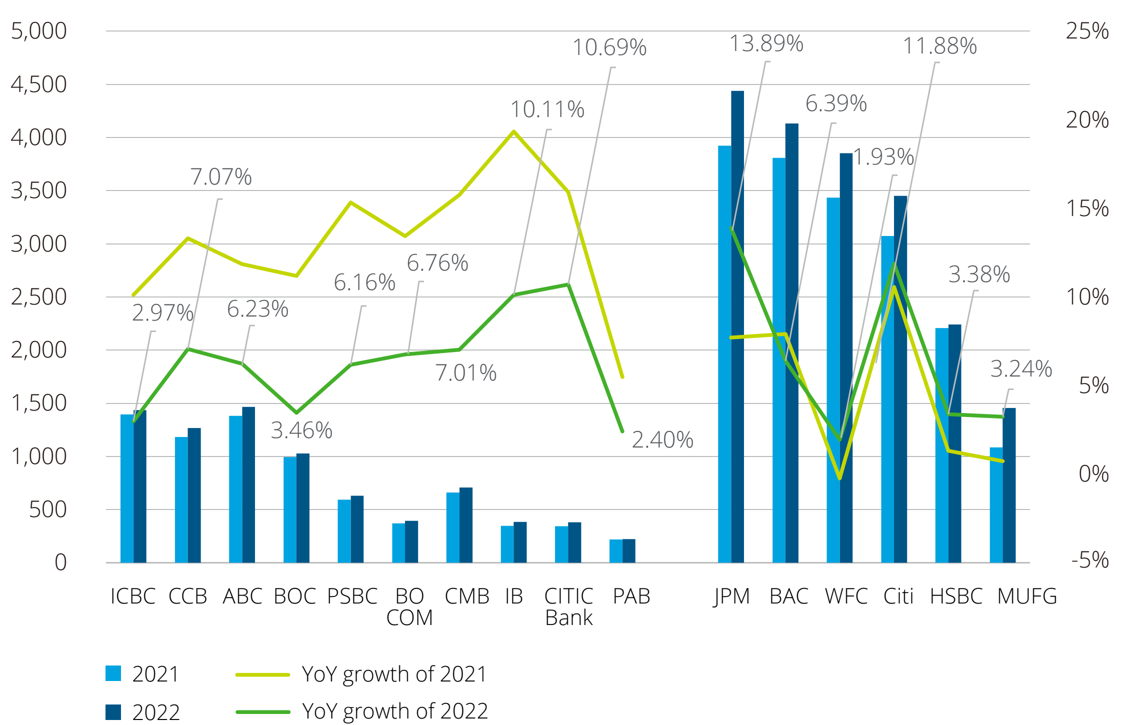


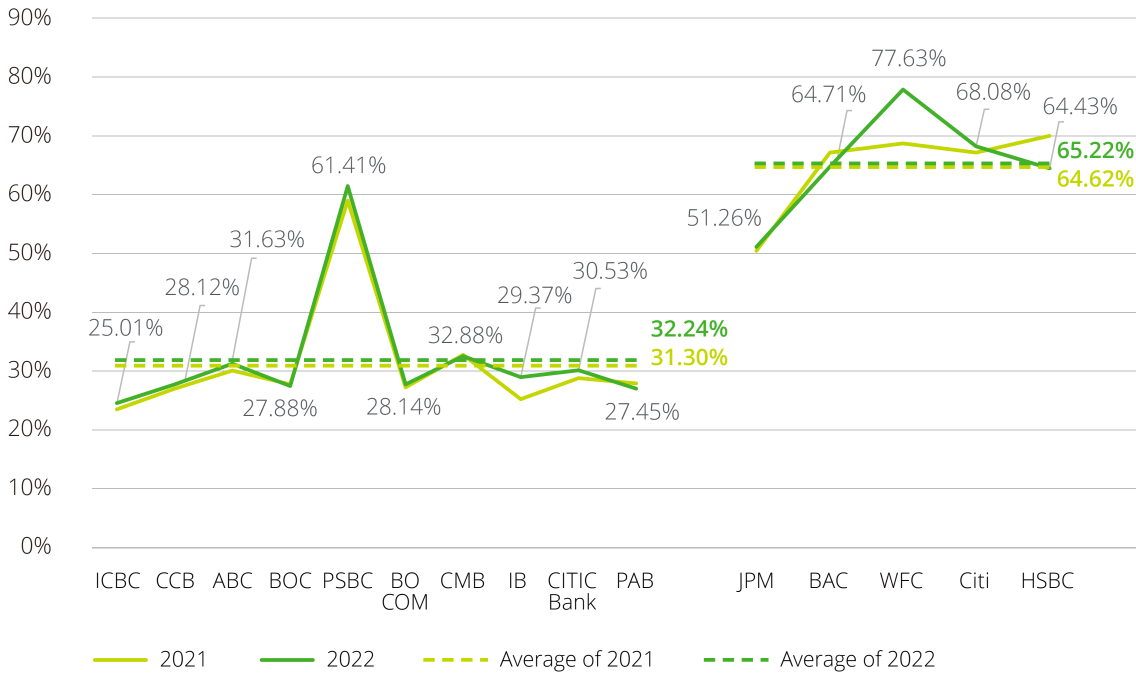
Figure 27: Employee Compensation



Domestic banks' cost-income ratio increased slightly

In 2022, domestic banks' average cost-income ratio was 32.24%, an increase of 0.94% year-on-year. PSBC recorded the highest ratio of 61.41% due to its unique business model, followed by CMB, ABC and CITIC Bank (32.88%, 31.63% and 30.53%, respectively). IB and PSBC recorded a relatively high growth rate of 3.69% and 2.40%, respectively. Centering on the financial resources allocation principle of "steady progress, transformation and innovation", IB increased expenses for critical areas, including digital development, business transformation, and construction of brand and customer bases. PSBC continued to strengthen building a professional workforce and increased investment in information technology construction. The average cost-income ratio of foreign banks (excl. MUFG) was 65.22%, a year-on-year increase of 0.60%. Specifically, WFC recorded the highest ratio of 77.63%, followed by Citi, BAC and HSBC (68.08%, 64.71% and 64.43%, respectively).

Figure 28: Cost-income Ratio



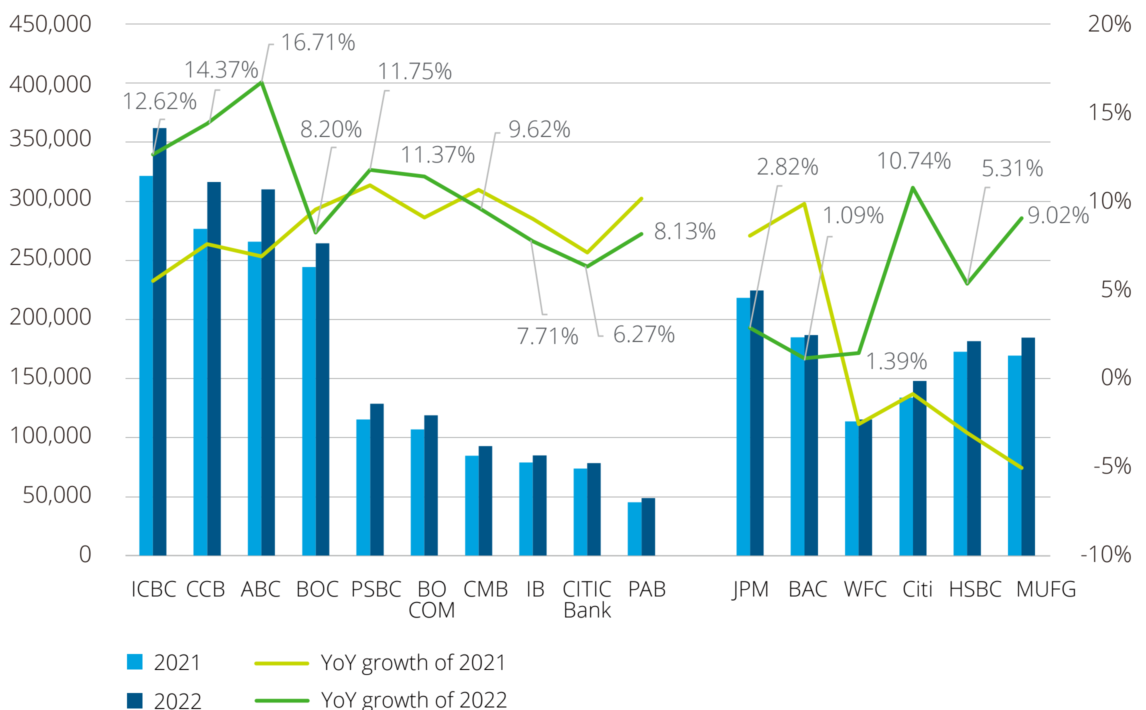
Note: MUFG's negative non-interest income led to a small operating income, resulting in an extremely high cost-income ratio. Therefore, it is not shown in the above figure.

2.2 Assets

Asset scale increased stably; domestic banks' asset allocation focused on loans

At the end of 2022, the six state-owned banks' assets totaled RMB164.11 trillion, an increase of RMB18.64 trillion from the beginning of the year, representing an average growth rate of 12.50%, up 4.85 percentage points compared with the previous year's 7.65%. Among them, ABC's total assets grew by 16.71%, ranking first among the six banks; ICBC, CCB, ABC, PSBC and BOCOM's growth rates were higher than the previous year. The four joint-stock banks' assets totaled RMB33.27 trillion, an increase of RMB2.45 trillion from the beginning of the year, representing an average growth rate of 7.94%, down 1.2 percentage points compared with the previous year's 9.14%. The four banks' growth rates were generally lower than the previous year. The six foreign banks' assets totaled RMB113.80 trillion, an increase of RMB7.36 trillion, representing an average growth rate of 5.06%. Among them, MUFG's and Citi's total assets grew significantly, while the rest foreign banks recorded a stable asset scale. Overall, the four major state-owned banks' asset scale was at a leading position, the asset growth of joint-stock banks slowed, and the growth of the foreign banks varied.

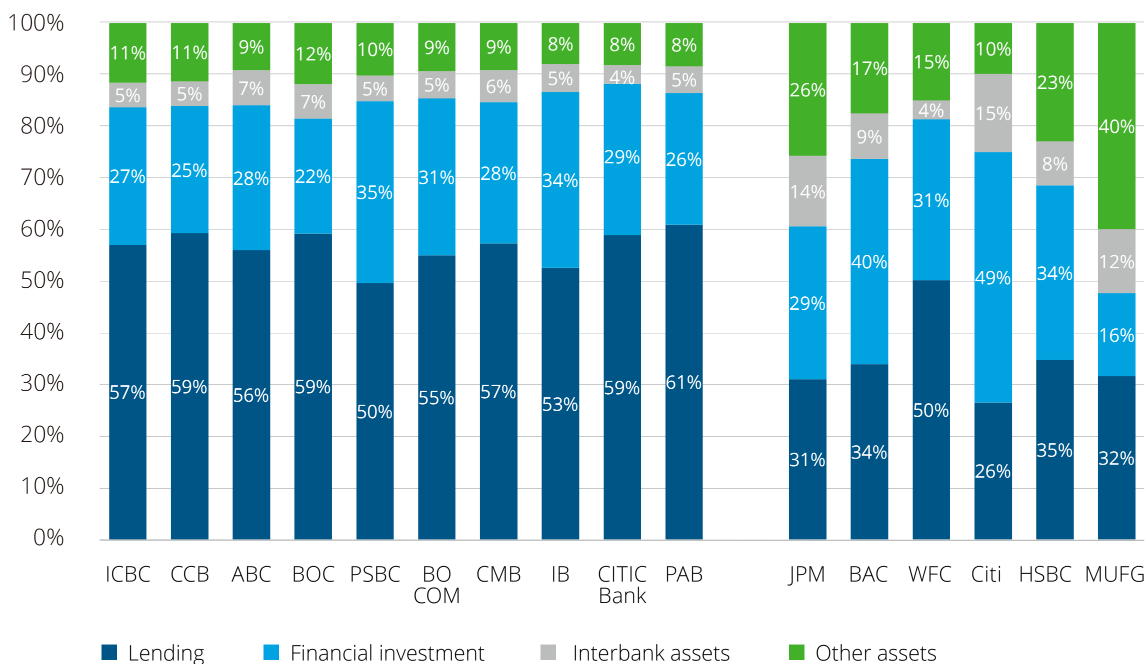
Figure 1: Total Assets



At the end of 2022, the average proportions of domestic banks' lending, financial investment and interbank assets were 56.57% (up 0.25 percentage points from the beginning of the year), 28.35% (up 0.23 percentage points) and 5.37% (up 0.09 percentage points), respectively; the average proportions of foreign banks' lending, financial investment and interbank assets were 34.62% (up 0.26 percentage points), 33.17% (down 1.01 percentage points) and 10.36% (up 1.82 percentage points), respectively.

Lending was still a significant component in domestic banks' asset structure. The large state-owned banks increased their loan supply to support the real economy. Thus, their average lending proportion rose. The lending proportion of foreign banks was generally lower than domestic banks, and they focused on different aspects of asset allocation.

Figure 2: Asset Composition



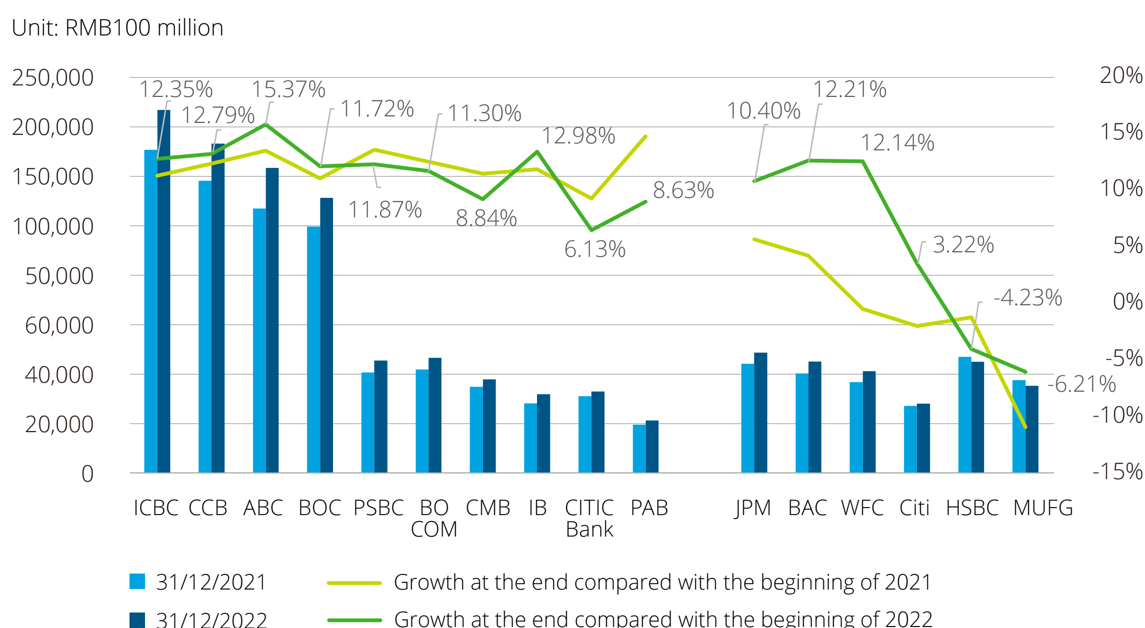
Domestic banks' loans grew steadily; foreign banks' loan supply trends varied

In 2022, facing a complicated domestic and overseas environment as well as unexpected shocks, the People's Bank of China (PBC) strengthened the implementation of prudent monetary policies, and the structural monetary policy toolkit played its role in channeling targeted liquidity. PBC also cut the required reserve ratio (RRR) twice and injected liquidity through multiple channels, including central bank lending and discounts, medium-term lending facility (MLF) operations, and open market operations (OMOs) to maintain reasonable growth in money and credit. PBC brought down the LPR three times to lower the costs for corporate financing; launched special central bank lending facilities for sci-tech innovation, inclusive elderly care services, and other new policy instruments; increased its funding support for the inclusive micro and small business (MSB) lending facilities. In 2022, money, credit, and AFRE (aggregate financing to the real economy) witnessed reasonable growth; the credit structure improved continuously; domestic banks' loan and advance increase reached a new high, maintaining a stable growth rate.

Specifically, the book value of domestic banks' loans and advances at the end of 2022 was RMB112.26 trillion, an increase of RMB12.18 trillion or 12.17% from the beginning of the year. The growth rate of loan supply increased by 0.52 percentage points year-on-year. Large state-owned banks and IB saw a higher loan supply growth rate than in 2021, while the growth rate of all other domestic banks dropped. PAB recorded the most significant decline by 5.69 percentage points. The book value of foreign banks' loans and advances was RMB37.28 trillion, an increase of RMB1.61 trillion or 4.52% from the beginning of the year. The total loans of JPM, BAC, WFC and Citi increased. With the pandemic well controlled, domestic banks intensified their support for the real economy, resulting in a steady loan increase. With slow global economic growth and geopolitical tensions, foreign banks' situations varied significantly, but their loan and advance balances generally increased.

Figure 3: Book Value of Loans and Advances

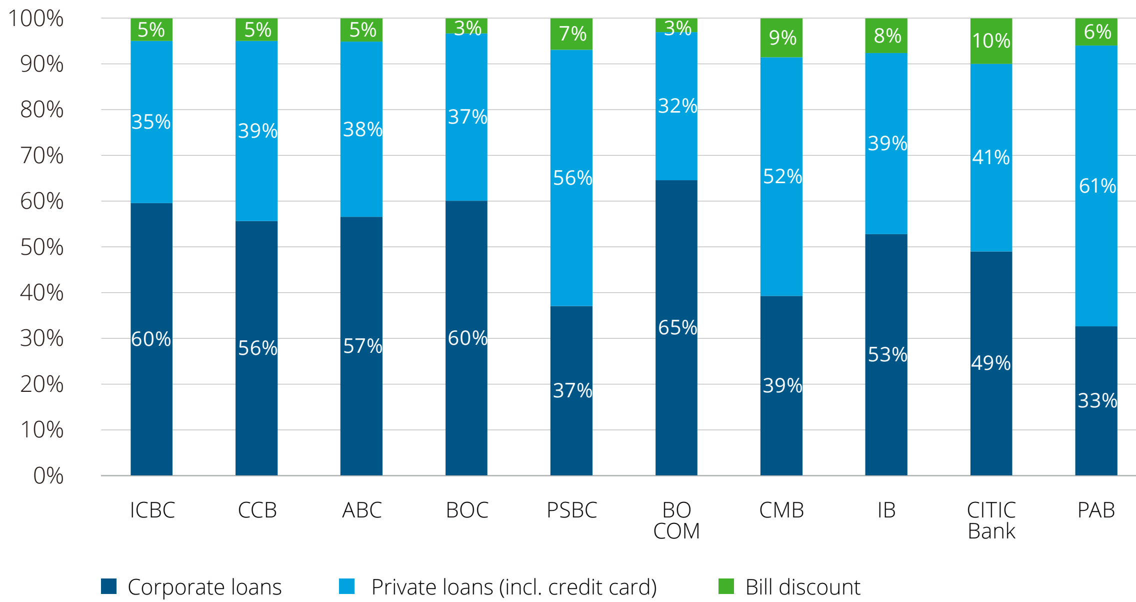
Unit: RMB100 million



Banks enhanced support for the real economy, implemented inclusive finance strategies, and further optimized their loan structure

Regarding credit asset structure, facing the downward economy and insufficient effective credit demand, domestic banks implemented the macroeconomic, financial policies and regulatory requirements, enhanced credit support for the real economy, and continued to increase corporate credit supply. At the end of 2022, domestic banks' corporate loan, retail loan and bill discount balances, on average, accounted for 50.71% (up 1.03 percentage points from the beginning of the year), 43.28% (down 2.24 percentage points) and 6.01% (up 1.21 percentage points), respectively. BOCOM's corporate loans accounted for 64.57%, the highest among the domestic banks; PAB recorded the highest proportion of retail loans at 61.50%, followed by PSBC at 56.11%; CITIC Bank's bill discount business held the highest proportion of 10%.

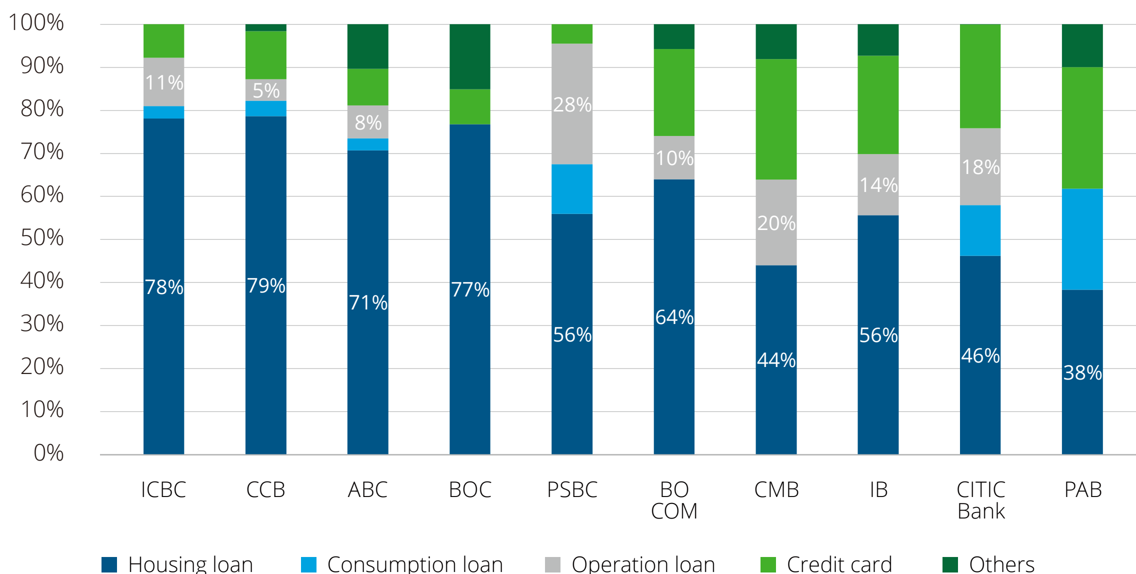
Figure 4: Credit Asset Structure (31/12/2022)



Regarding retail loan structure, at the end of 2022, the average proportion of domestic banks' housing loans was 60.78%, down 1.60 percentage points from the beginning of the year. Credit card loans accounted for 16.36% on average, down 0.93 percentage points. The average proportion of individual operation loans was 11.41%, up 1.84 percentage points. The growth of individual operation loans reflected domestic banks' practical actions in supporting small and micro enterprises, individual businesses, and farmers.

Affected by suspended real estate projects and a wave of advance repayments, domestic banks' individual housing loan balance growth slowed in 2022. However, individual housing loans were still an essential part of domestic banks' retail loan business, accounting for 70.65% on average, down 2.10 percentage points from the beginning of the year. The four joint-stock banks' average proportion of individual housing loans was 45.97%, down 0.86 percentage points from the beginning of the year.

Figure 5: Retail Loan Structure (31/12/2022)

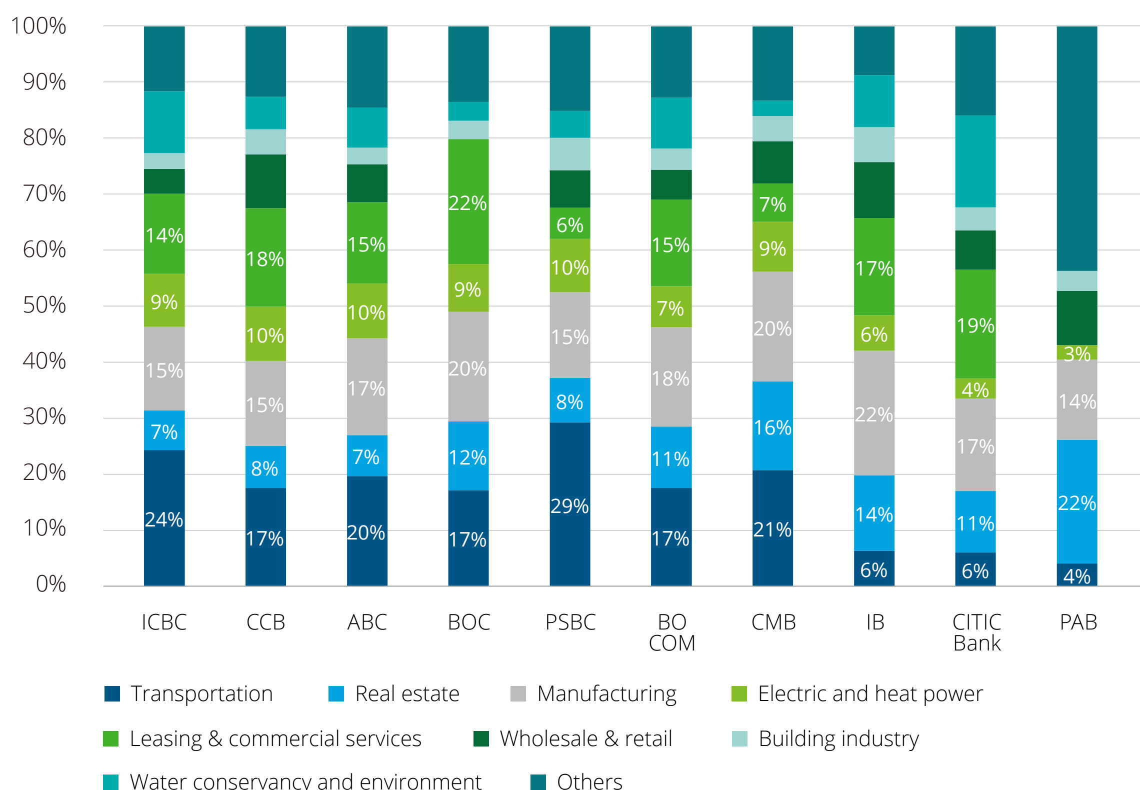


Note: BOC did not disclose the balance of consumption and operation loans separately. BOCOM, CMB, IB and PAB did not separately disclose the balance of consumption loans. PAB's consumption loans mainly included the separately disclosed "Xinyidai" and automobile loans; the individual operation loans, petty consumption loans, and guaranteed and pledged loans were included in "others".

In 2022, domestic banks stepped up efforts to support the real economy, funding the key fields and weak links to advance manufacturing development, equipment renovation and critical infrastructure construction. Their lending to manufacturing, leasing & commercial services and transportation increased by RMB1.76 trillion, RMB1.42 trillion, and RMB1.14 trillion from the beginning of the year.

In 2022, the real estate market remained depressed with shrunk turnover. Due to multiple unexpected factors, the real estate sector saw sales decline, debt defaults of many real estate enterprises, and land bidding failures. Real estate loans grew by RMB410.2 billion from the beginning of the year, an increase of 7.16%, much lower than the 12.06% average growth rate of loans. At the end of 2022, the proportion of real estate loans was 9.44%, down 0.71 percentage points from the beginning of the year. PSBC's and BOCOM's proportion of real estate loans rose, while the rest of the domestic banks dropped.

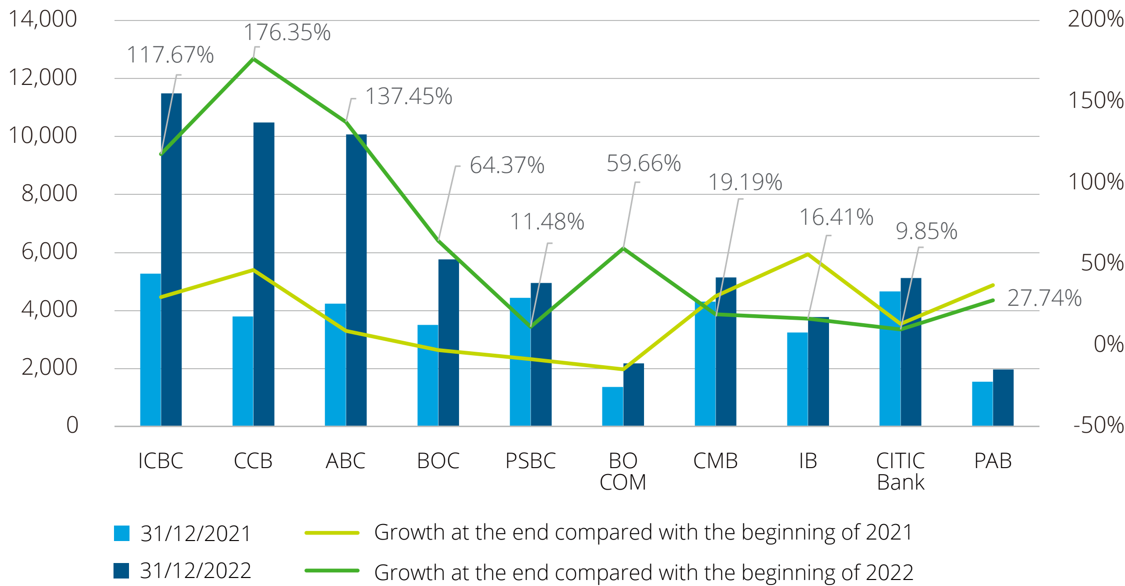
Figure 6: Corporate Loan Structure (31/12/2022)



Note: BOC did not separately disclose loans to the wholesale & retail sector. PAB did not separately disclose loans to the leasing and commercial services, and water conservancy and environment sectors; PAB separately disclosed the loans to the energy sector, i.e., electric and heat power.

At the end of 2022, domestic banks' bill discount balance totaled RMB6,096.2 billion, an increase of RMB2,456.6 billion or 67.50% from the beginning of the year. All the banks' bill discount balances trended up. Large state-owned banks' year-end growth was faster than at the beginning of the year. ICBC's, CCB's and ABC's bill discount balance grew by more than 100%. The four joint-stock banks' year-end growth slowed—IB recorded the largest decline by 39.75 percentage points. At the end of 2022, ICBC ranked first with a bill discount balance of RMB1,148.8 billion, and PAB ranked last with RMB197.5 billion.

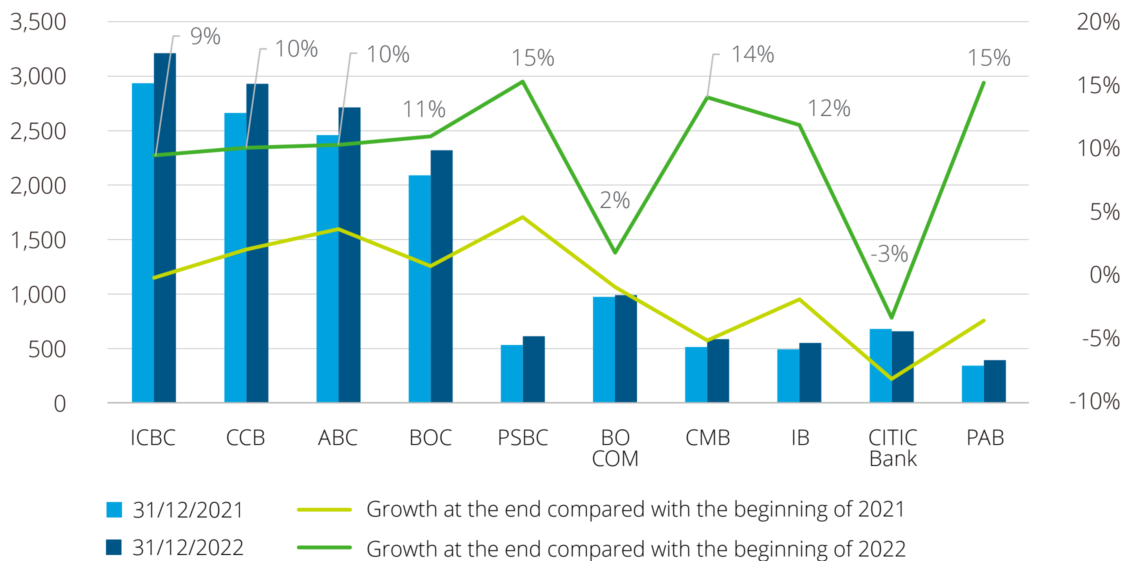
Figure 7: Bill Discount Balance



Overall risks controllable despite credit asset quality challenges

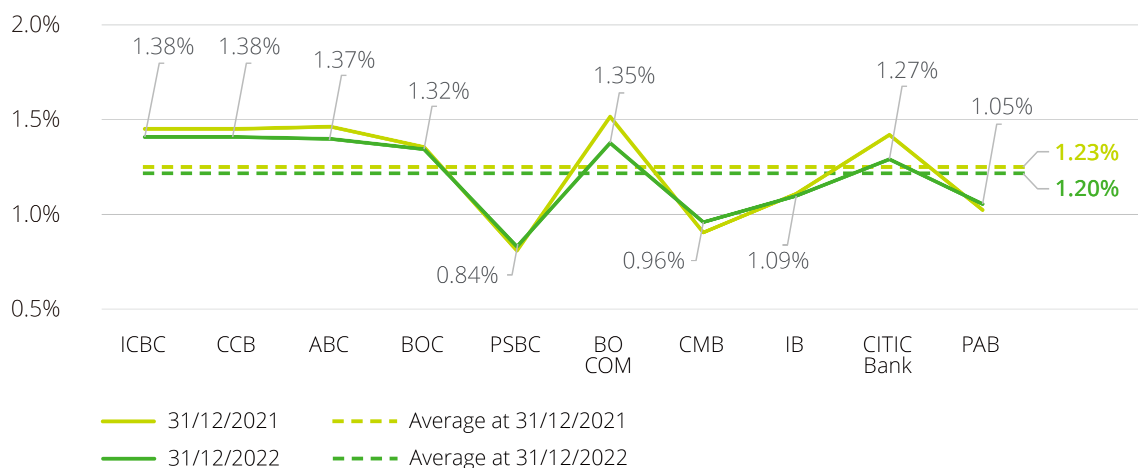
In 2022, COVID-19 impacted China's economy and enterprise operations. Due to the sluggish labor market and lower income, residents' consumption willingness declined. Some enterprises and individuals could not repay their loans, so banks faced pressure and challenges in controlling asset quality. Domestic banks adjusted their risk prevention and control strategies, maintaining high growth of loans and stable asset quality. At the end of 2022, domestic banks' nonperforming loan balance totaled RMB1,492.5 billion, an increase of RMB128.2 billion or 9.40% from the beginning of the year.

Figure 8: Nonperforming Loan Balance



Domestic banks' average nonperforming loan ratio was 1.20%, down 0.03 percentage points from the beginning of the year. Expect PSBC, CMB and PAB to record a nonperforming loan ratio rise, all other domestic banks' nonperforming ratios decreased slightly. Specifically, BOCOM recorded the largest decline by 0.13 percentage points; PSBC's nonperforming ratio rose to 0.84%, but still the lowest; CMB's nonperforming ratio increased by 0.05 percentage points to 0.96%. Domestic banks' balance of nonperforming loans increased, but the nonperforming loan ratio dropped. Domestic banks faced challenges maintaining credit quality, but the risks were controllable.

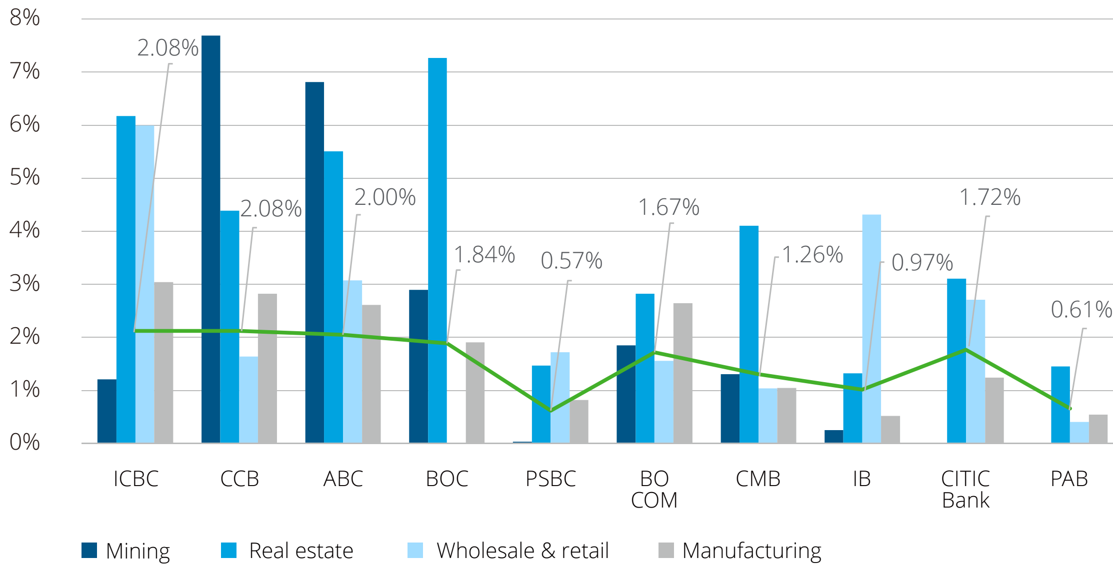
Figure 9: Nonperforming Loan Ratio



Structural risks of the real estate sector exposed; the nonperforming ratio in key sectors dropped

In 2022, China coordinated COVID-19 containment and social and economic development. With more intensified macro adjustments to tackle unexpected shocks, China managed to maintain both economic and social stability, as manifested by the steady rise in its development quality. Meanwhile, domestic banks strengthened risk management, upgraded their risk prevention and control concept, and consolidated the asset quality foundation to drive stable quality improvement. At the end of 2022, domestic banks' average nonperforming ratio of corporate loans was 1.48%, down 0.21 percentage points from the beginning of the year. The nonperforming ratios of the wholesale & retail, mining, and manufacturing sectors were still high due to the impact of the pandemic. However, they dropped by varying degrees compared to the year's beginning. The nonperforming ratio of loans to the real estate sector increased significantly due to frequent risk events. As domestic banks continued to improve their risk management system, the nonperforming loan ratio in key sectors such as transportation dropped.

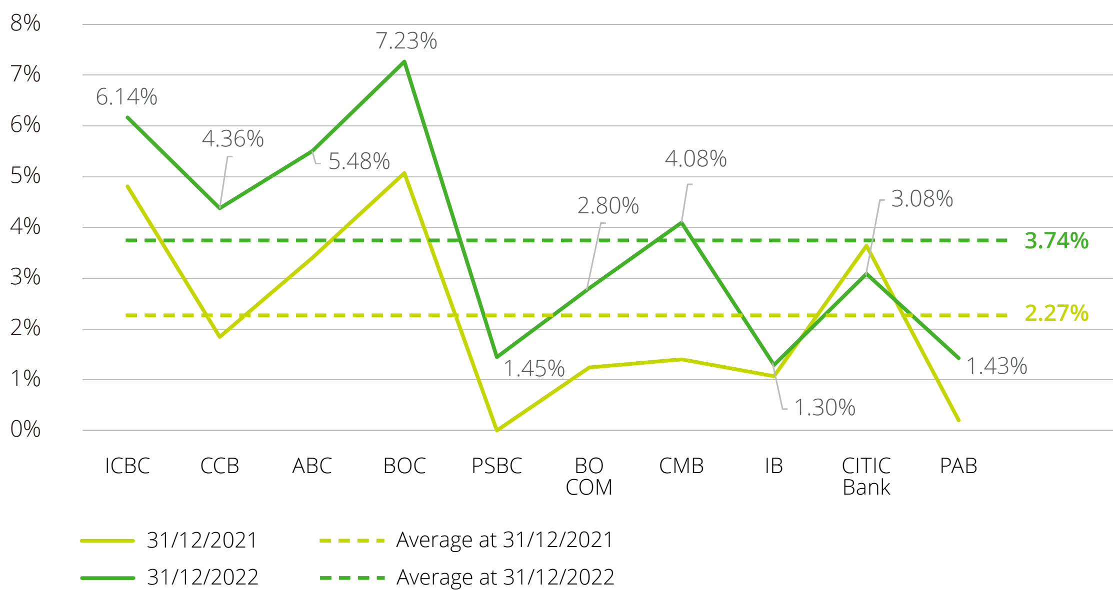
Figure10: Industries with a High Nonperforming Ratio at the End of 2022



Note: BOC did not disclose its nonperforming loan ratio of the wholesale & retail sector; CITIC Bank did not disclose its nonperforming loan ratio of the mining sector.

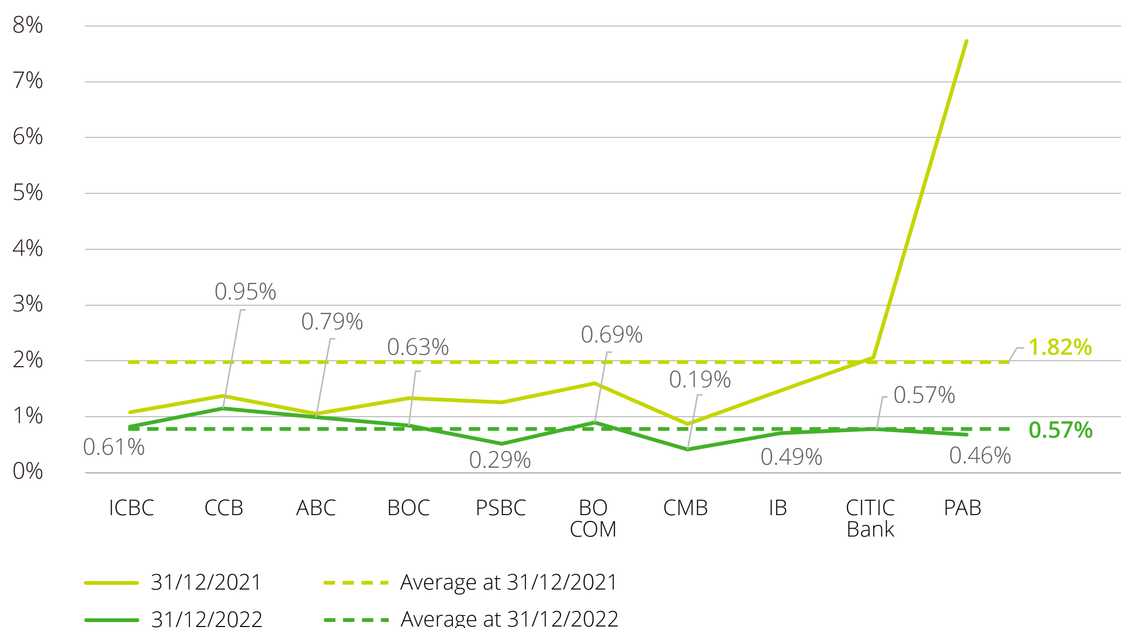
In 2022's second half, risks emerged in the real estate sector. Liquidity risks were exposed in some enterprises. Debt defaults and negative public sentiment appeared in the open market. Domestic banks' quality of credit assets in the real estate business was threatened. At the end of 2022, domestic banks' average nonperforming loan ratio in the real estate sector was 3.74%, up 1.47 percentage points from the beginning of the year—the highest growth among nonperforming loan ratios of all industries. CMB and CCB recorded a faster-growing nonperforming ratio, respectively, by 2.67 percentage points and 2.51 percentage points.

Figure 11: Nonperforming Loan Ratio in the Real Estate Sector



In 2022, domestic banks followed the major national strategic planning, selected the industries with weak periodicity, steady growth and good asset quality, and made appropriate credit arrangements for deferred repayment of principal and interest while safeguarding the bottom line of preventing risks. The nonperforming ratio in some industries (e.g., transportation) dropped compared with the beginning of the year. At the end of 2022, domestic banks' average nonperforming ratio of transportation corporate loans was 0.57%, down 1.25 percentage points from the beginning of the year—the most significant drop among the nonperforming ratios of all industries. Among them, PAB's nonperforming transportation loan ratio dropped by 7.32 percentage points.

Figure 12: Nonperforming Loan Ratio in the Transportation Sector



Slow real estate sales; no impetus for growth of individual housing loans; high nonperforming ratio

The Report to the 20th National Congress of the Communist Party of China adheres to the principle that housing is for living in and not for speculation. China will move faster to build a housing system featuring multiple suppliers and various channels of support that encourages both housing rentals and purchases. Regulators continued to improve the housing market and support system in 2022. In February 2022, PBC and CBIRC jointly issued the *Circular on Excluding Affordable Rental Housing Loans in the Real Estate Loan Concentration Management*, encouraging financial institutions to scale up support for affordable rental housing. The April meeting of the Political Bureau of the Communist Party of China Central Committee encouraged improving the real estate policies according to the actual local conditions of each city, supporting rigid and rational housing demand, and optimizing oversight of funds from preselling commercial housing to promote the stable and healthy development of the real estate market. In November 2022, PBC and CBIRC jointly issued the *Circular on Effectively Carrying out the Existing Work on Providing Financial Support for the Stable and Healthy Development of the Real Estate Sector*, encouraging financial institutions to support real estate enterprises by extending existing loans and adjusting repayment schedules.

In 2022, despite the easing of real estate policies, the real estate market in many cities was almost halted due to unexpected factors such as COVID-19 resurgence and scorching weather. National real estate investment dropped by ten percentage points compared with 2021. The total floor area of sold units decreased by 24.3 percentage points, while residential housing decreased by 26.8 percentage points. Commercial housing sales decreased by 26.7 percentage points, while residential housing decreased by 28.3 percentage points. Residents' house-purchase willingness declined, and housing construction, completion and demand continued to weaken, resulting in a sales slump for real estate enterprises. In December 2022, PBC and CBIRC issued the *Circular on Establishing a Long-term Mechanism for Dynamic Adjustment of the Interest Rate Policy for Newly Issued Personal Housing Loans for First Homes*, by which mortgage rate policies are tied to price movements of new housing, and adjusted dynamically, to help cities better satisfy the rigid housing demand and form a long-term mechanism to support the stable and sound operation of the real estate market.

In 2022, centering on the goals of "stabilizing land price, house price and expectations", domestic banks took concrete steps to help ensure timely deliveries of presold homes, secure people's livelihood and maintain stability. They actively supported people in buying their first home or improving their housing situation and the real estate sector transitioning to new development models. However, impacted by macroeconomic and market factors as well as "foreclosures," domestic banks' housing loan business grew slowly, with a higher nonperforming ratio. At the end of 2022, the total balance of domestic banks' housing loans reached RMB31.20 trillion, up RMB594.4 billion or 1.94% from the beginning of the year—the growth rate dropped by 8.63 percentage points compared with the beginning. All other domestic banks' proportion of individual housing loans decreased except PAB. Some banks still stepped over the regulatory red line. Specifically, none of the state-owned banks exceeded the 32.50% regulatory limit; among the joint-stock banks, CMB, IB and PAB exceeded the 20% regulatory limit—PAB recorded the highest proportion of 23.5%. At the end of 2022, domestic banks' average nonperforming ratio of individual housing loans was 0.45%, up 0.12 percentage points from the beginning of the year. Among them, PSBC recorded the highest ratio of 0.57%, and BOC recorded the highest growth rate—up 0.2 percentage points from the beginning of the year.

Figure 13: Balance and Proportion of Individual Housing Loans

Unit: RMB100 million

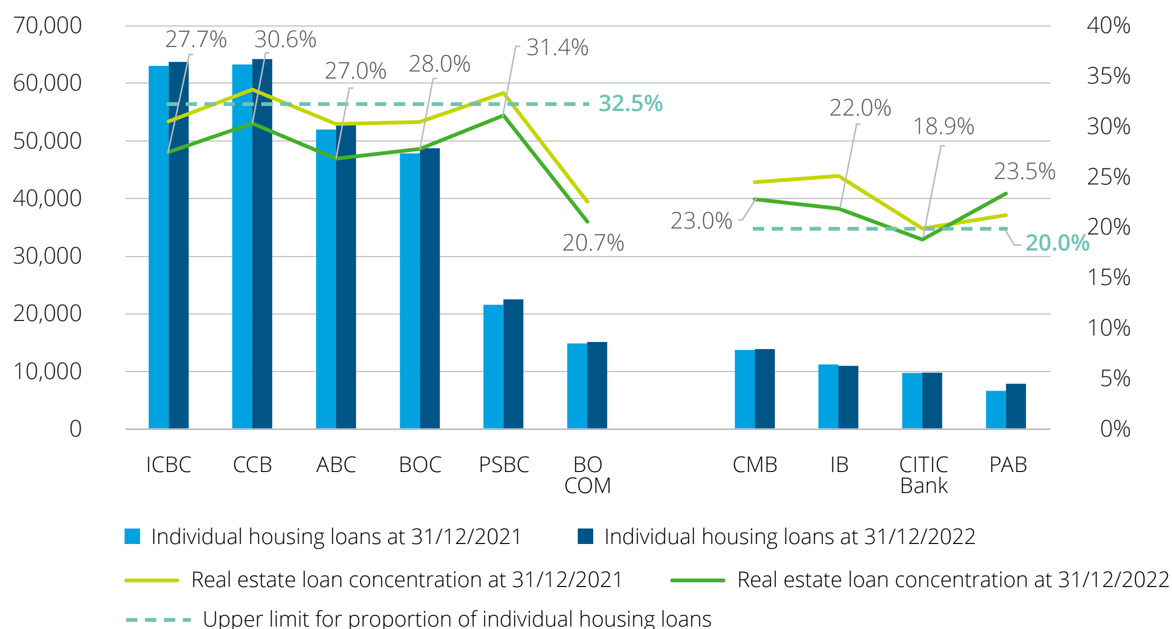
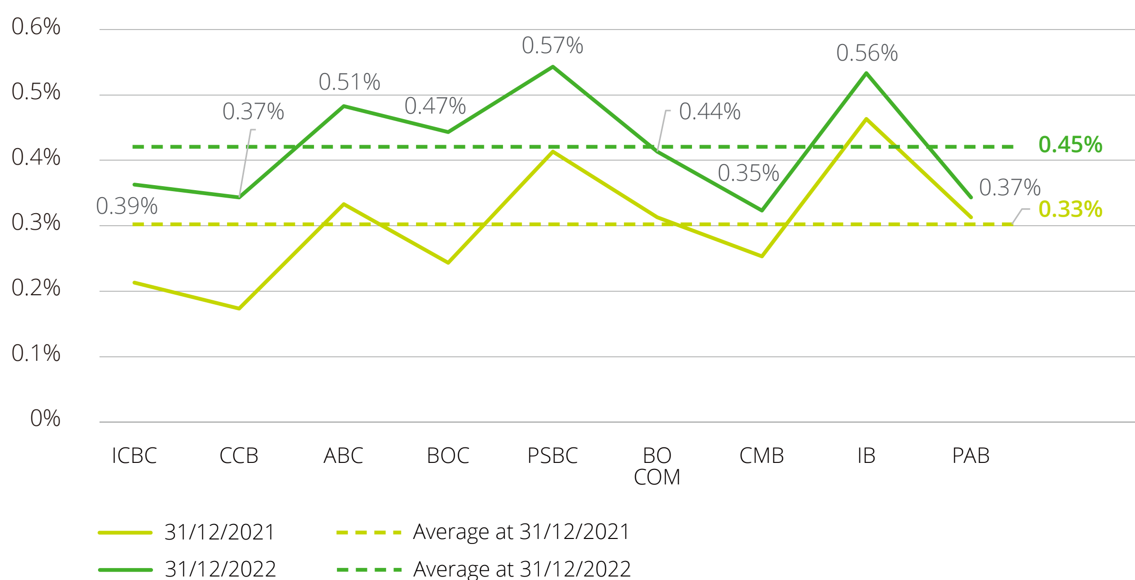


Figure 14: Nonperforming Ratio of Individual Housing Loans



Note: CITIC Bank did not disclose the nonperforming ratio of individual housing loans

Domestic banks' overall credit card business scale was roughly the same as in 2021, with a higher nonperforming ratio

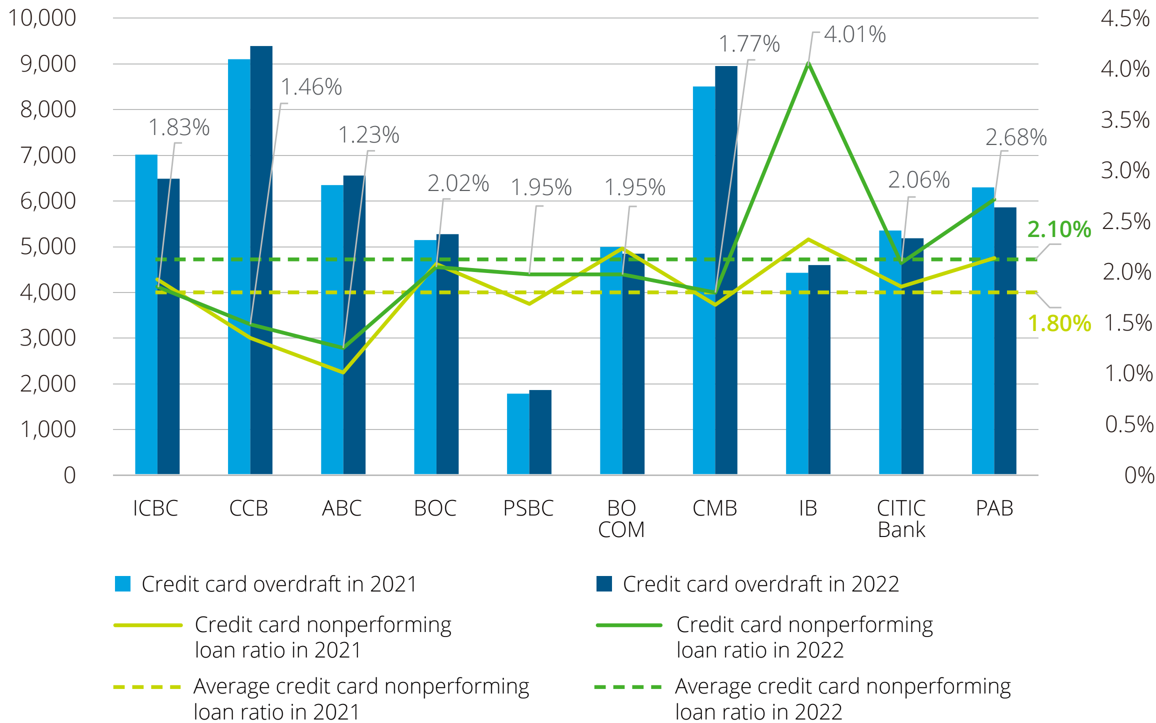
After two decades of rapid development, the credit card market has become increasingly competitive. To regulate banks' credit card business operations, CBIRC and the People's Bank of China ("PBC") jointly released the *Circular on Further Promoting the Standardized and Sound Development of Credit Card Business* (hereinafter referred to as the "Circular") in July 2022, which proposed adjustment of credit card business from the aspects of operation management, card issuance regulation, credit risk control, capital flow control, installment business management, and cooperative institution review. Domestic banks should strengthen the management of the credit card business and focus on improving risk management ability according to the requirements of the Circular, to better play the role of credit cards as the "connector" between the supply and demand sides in the financial sector.

In 2022, the slow recovery of the domestic economy impacted residents' income and consumption. The growth rate of credit cards' outstanding balances declined significantly, and the outstanding credit card loans overdue for half a year showed a rising trend. According to the *Overall Operation of the Payment System in 2022* released by PBC, in 2022, the total outstanding balance of credit cards was RMB8.69 trillion, up 0.85 percentage points year-on-year, the growth rate of which decreased 8.05 percentage points; the outstanding credit card loans that were overdue for half a year totaled RMB86.58 billion, up 0.63 percentage points year-on-year. The total balance of domestic banks' credit card loans reached RMB5.82 trillion at the end of 2022, up 0.4 percentage points from the beginning of the year—the loan scale was roughly the same as at the beginning. Domestic banks' credit card loan scales varied enormously. CMB saw the highest growth rate of 5.25%, while ICBC recorded the most significant decline of 7.54%. CMB's credit card loan base exceeded RMB880 billion, second to CCB, whose balance of credit card loans led all banks at RMB928.1 billion.

Domestic banks' average credit card nonperforming loan ratio was 2.10% at the end of 2022, up 0.3 percentage points from the beginning of the year. Most of the domestic banks' credit card nonperforming loan ratios rose, except for ICBC, BOC and BOCOM. Among them, the nonperforming ratio of IB and PAB was 4.01% and 2.68%, up 1.72 percentage points and 0.57 percentage points, respectively, from the beginning of the year. In addition, BOC's and CITIC Bank's nonperforming ratios exceeded 2% at the end of the year.

Figure 15: Credit Card Overdraft Balance and Nonperforming Loan Ratio

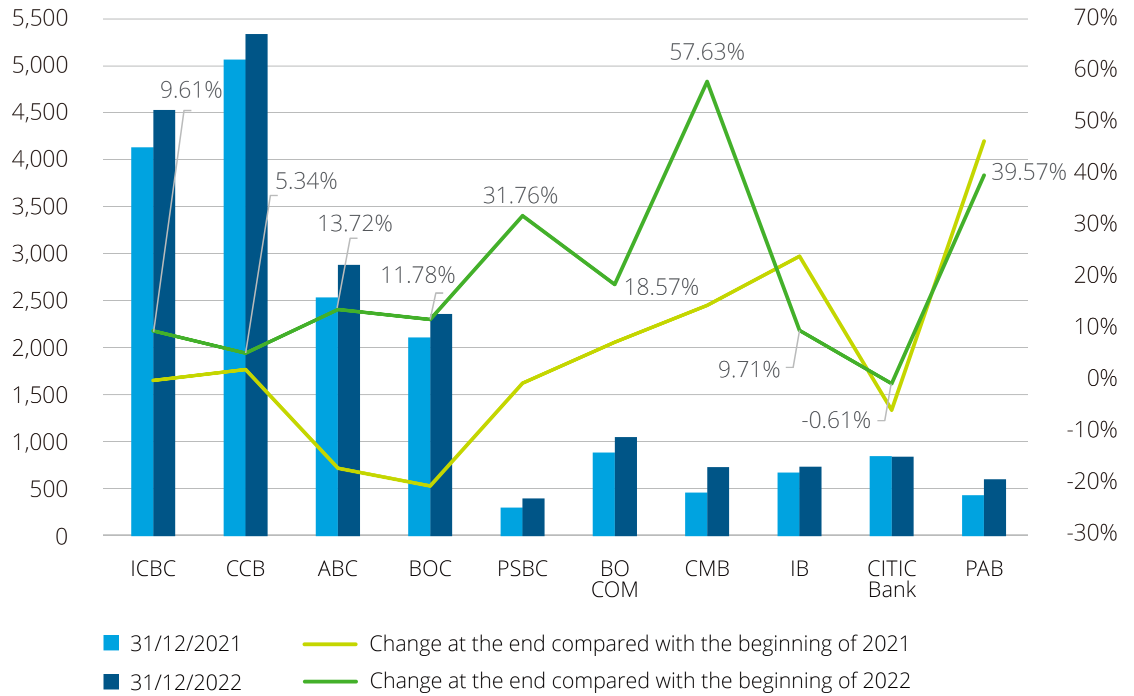
Unit: RMB100 million



Special-mention loan balance and pass loan migration ratio rose, with increasing pressure on potential nonperforming loans

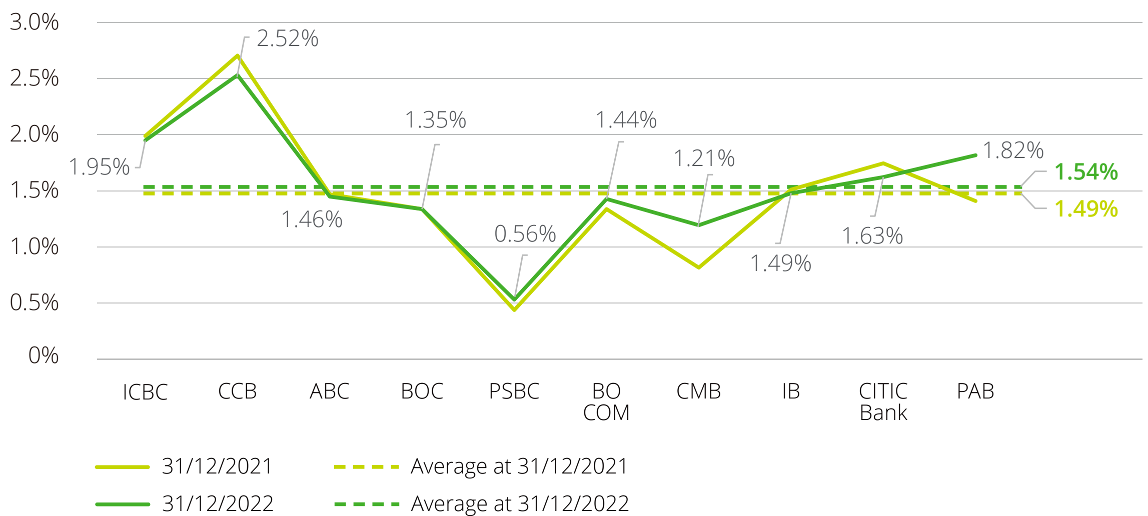
Domestic banks' special-mention loans increased at the end of 2022, with a total balance of RMB1.94 trillion, an increase of RMB202.3 billion from the beginning of the year, representing an average increase of 11.61%. Specifically, large state-owned banks' special-mention loan balance totaled RMB1.65 trillion, an increase of RMB152.2 billion or 10.15% from the beginning of the year. Among them, ICBC recorded the most significant increase of RMB39.6 billion and PSBC registered the highest growth rate of 31.76%. Joint-stock commercial banks' special-mention loan balance totaled RMB292.4 billion, an increase of RMB50 billion or 20.66% from the beginning of the year. Among them, CMB had the most significant increase of 57.63%.

Figure 16: Special-mention Loan Balance



The average proportion of domestic banks' special-mention loans was 1.54%, up 0.05 percentage points from the beginning of the year. Specifically, the proportion of PAB rose to 1.82% and CMB rose to 1.21%. PSBC and BOCOM also recorded a higher proportion of special-mention loans; BOC's proportion remained the same as at the beginning of the year; other domestic banks' proportion decreased by different degrees—CCB's decreased the most to 2.52%, but still the highest. In general, the special-mention loan proportion varied remarkably.

Figure 17: Proportion of Special-mention Loans



In 2022, the average migration ratio of domestic banks' pass loans was 1.70%, up 0.16 percentage points from 2021. The average migration ratio of special-mention loans was 23.60%, down 2.68 percentage points from 2021. As economic growth continued to slow, the pass loan down-migration increased, and domestic banks still faced the pressure of potential new nonperforming loans. In 2022, all banks stepped up efforts to defuse risks, gradually clearing nonperforming loans and lowering the migration ratio of special-mention loans.

Figure 18: Migration Ratio of Pass Loans

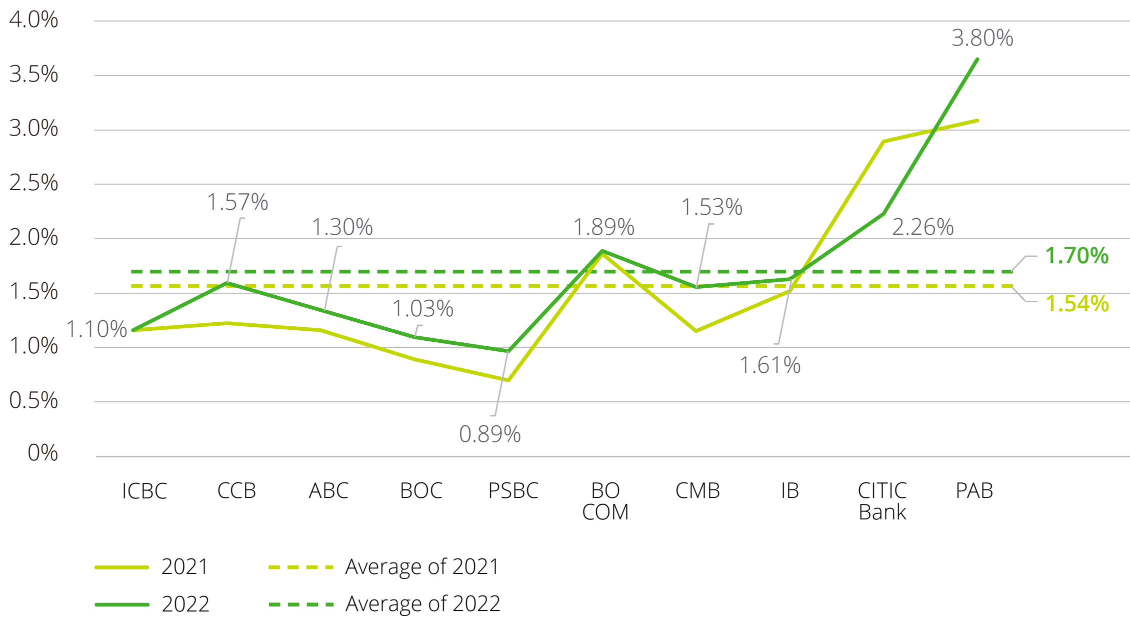
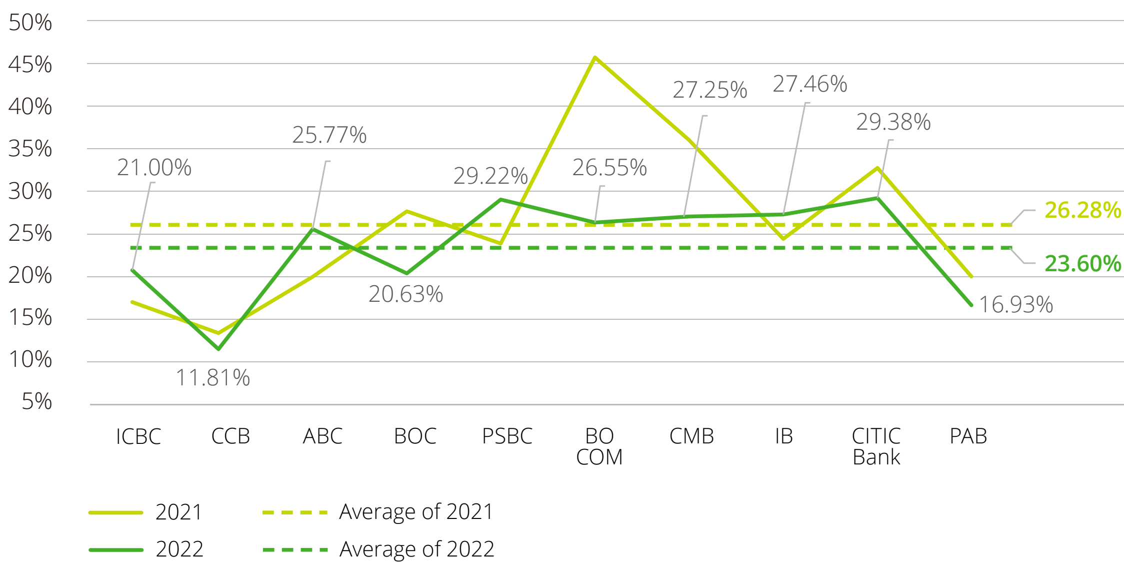


Figure 19: Migration Ratio of Special-mention Loans

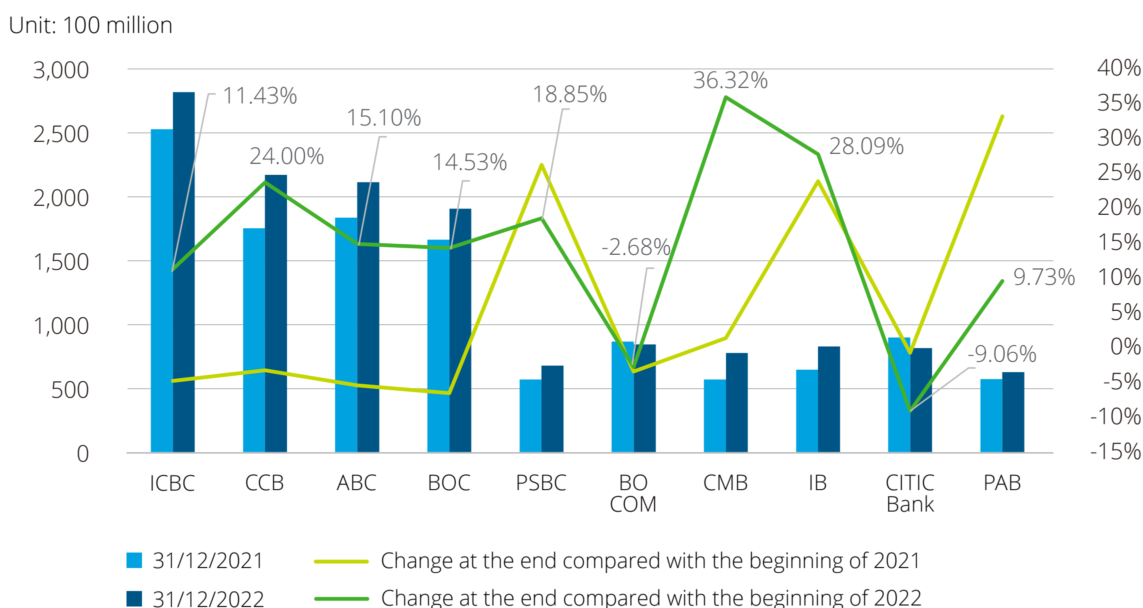


Overdue loans and their ratio increased; the ratio of overdue loans-to-impairment provision continued to rise

Domestic banks' overdue loan balance totaled RMB1.37 trillion at the end of 2021, an increase of RMB168.8 billion or 14.08% from the beginning of the year. BOCOM's and CITIC Bank's overdue loan balances decreased, while the rest banks increased. CMB's overdue loan balance grew RMB20.9 billion or 36.32%. In addition, CCB's and IB's balances increased by more than 20%.

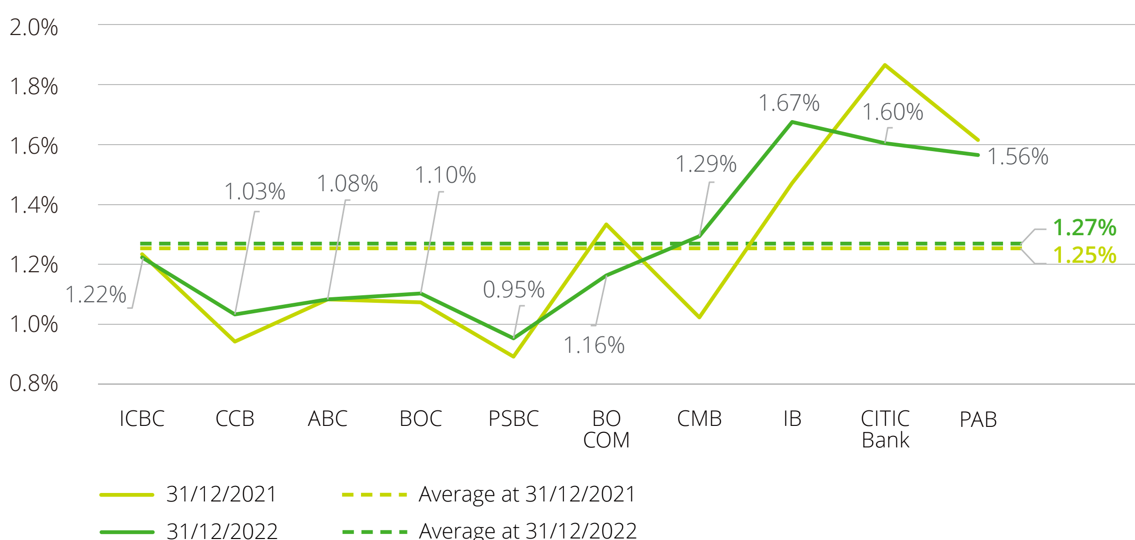
Figure 20: Overdue Loan Balance

Unit: 100 million



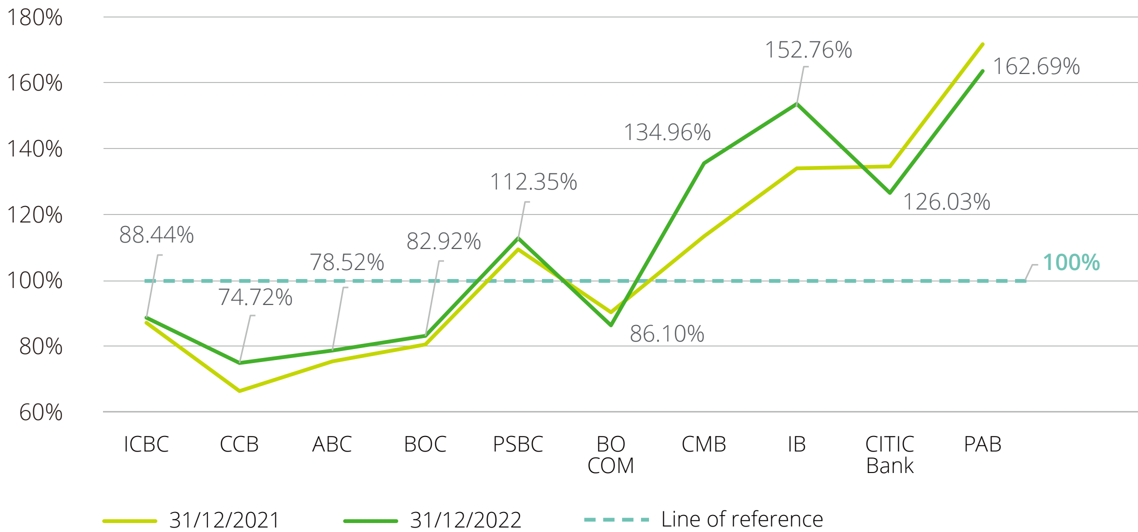
Domestic banks' average overdue loan ratio was 1.27% at the end of 2022, an increase of 0.02 percentage points from the beginning of the year. Specifically, ICBC's and PAB's overdue loan balances increased, but their overdue loan ratio dropped; BOCOM's and CITIC Bank's balance and ratio decreased; ABC's balance increased and its ratio remained the same; Other domestic banks' balance and ratio increased.

Figure 21: Overdue Loan Ratio



Domestic banks' average ratio of overdue loans to nonperforming loans was 109.95% at the end of 2022, up 4.07 percentage points from the beginning of the year. PAB recorded the highest ratio (162.69%), while CCB had the lowest (74.72%). CMB's and IB's ratios grew 22.06 percentage points and 19.37 percentage points, respectively.

Figure 22: Ratio of Overdue Loans to Nonperforming Loans



Strengthen disposing of nonperforming assets and take various approaches to resolving risky assets

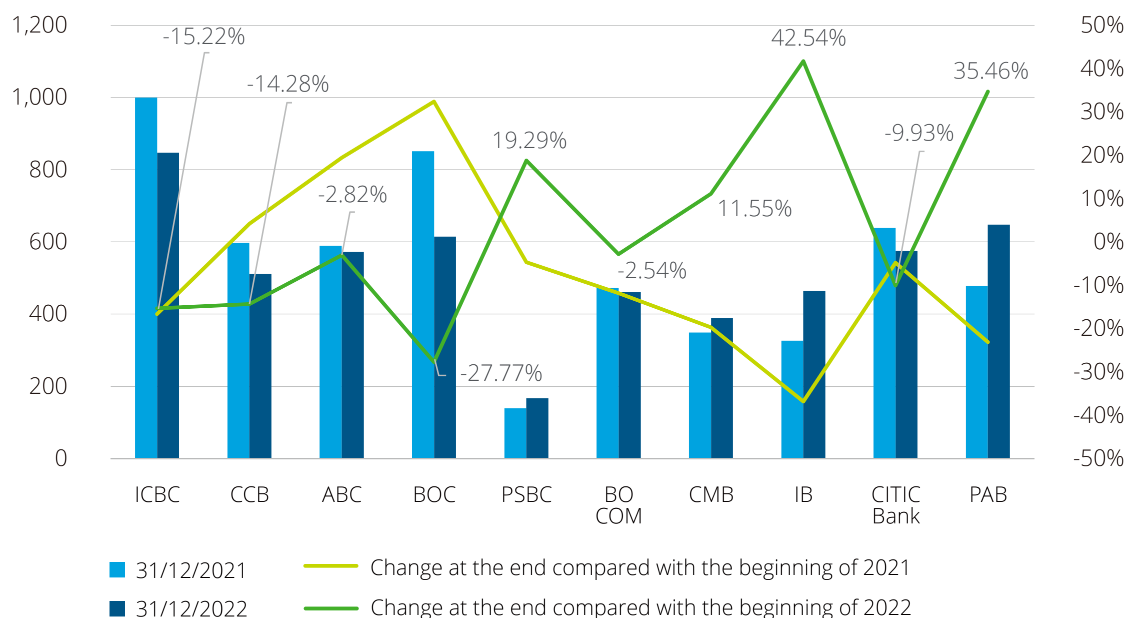
In 2022, facing the difficult macroeconomic situation and the real economy downward pressure, domestic banks strove to improve credit risk management, strengthen risk control in key areas, and enhance the quality and efficiency of disposing of nonperforming assets. They adopted various methods, such as recovery, writing-off, debt offsetting, securitization, transfer and restructuring, to reduce nonperforming loans and optimize the management mechanism for disposing of nonperforming assets. The fluctuations of domestic banks' nonperforming loans were as expected and controllable. Securitization and bad debt write-off have gradually become essential for domestic banks to dispose of nonperforming loans.

According to the *2022 NPL Review and Outlook* released by China Central Depository & Clearing Co., Ltd. (CCDC), in 2022, 69 nonperforming asset securitization products ("NPLs") were issued in the inter-bank public offering market, covering six types of NPLs—credit card, personal consumption loan, auto loan, individual housing loan, small and microloan, and corporate loan, totaling RMB32.012 billion, up 6.73% year-on-year. In 2022, the total principal and interest of nonperforming loans disposed of through asset securitization were RMB192.226 billion, an increase of 17.90% over the previous year. Commercial banks' balance of non-performing loans was RMB2,982.906 billion as of the end of 2022, an increase of 4.77% from the end of 2021. The growth rate of commercial banks' securitized nonperforming loans was higher than that of their nonperforming loan balance. Major state-owned banks were the main issuers of NPLs in the inter-bank public offering market. The top three issuers in 2022 were BOCOM, CCB and ICBC, with a total issuance of RMB15.713 billion, accounting for 49.08% of 2022's total NPL issuance. In 2022, IB and PSBC issued individual housing mortgage nonperforming loan asset-backed securities and personal consumption nonperforming loan asset-backed securities, respectively, for the first time. The issuers' products are becoming increasingly diversified.

According to the latest statistics released by PBC, the written-off nonperforming loans in the banking sector totaled RMB1.03 trillion, accounting for 34%, RMB3 billion less than the amount of 2021, it is basically the same as 2021. In 2022, the loans written-off and transferred out by domestic banks totaled RMB527.9 billion, a year-on-year decrease of RMB19.1 billion, or 3.49%. Specifically, IB and PAB increased RMB14 billion and RMB17.1 billion, with an increase of 42.54% and 35.46% respectively; BOC's written-off and transferred-out loans decreased significantly from 2021, down RMB23.8 billion or 27.77%.

Figure 23: Written-off and Transferred-out Loans

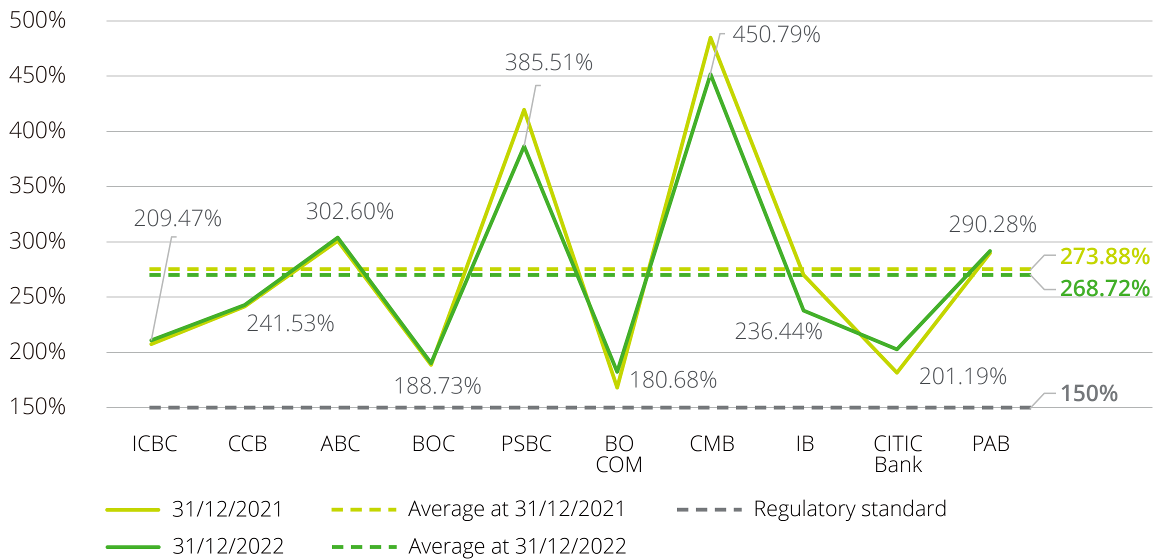
Unit: RMB100 million



Loan provision ratio and provision coverage decreased, with sufficient risk compensation capacity

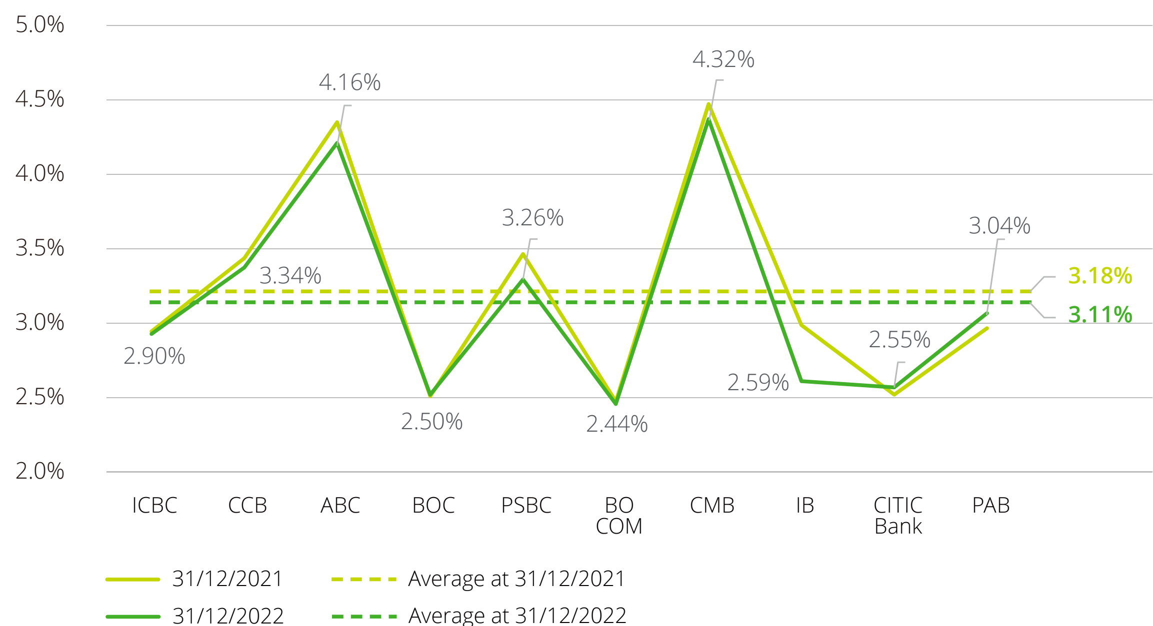
Domestic banks' average loan provision ratio and average provision coverage were 3.11% and 268.72% at the end of 2022, down 0.07 percentage points and 5.16 percentage points, respectively, from the beginning of the year. Most of the domestic banks' provision coverage increased, except for PSBC, CMB and IB. BOCOM's provision coverage was 180.68%, lower than other domestic banks. CMB's provision coverage still exceeded 400% despite a slight decrease. Overall, the domestic banks' provision coverage was relatively stable in 2022, but there are obvious differences in the provision coverage among the banks.

Figure 24: Provision Coverage



At the end of 2022, most domestic banks' loan provision ratio dropped, except BOC, CITIC Bank and PAB. Specifically, IB, PSBC and ABC recorded a significant decrease by 0.37 percentage points, 0.17 percentage points and 0.14 percentage points compared with the beginning of the year.

Figure 25: Loan Provision Ratio



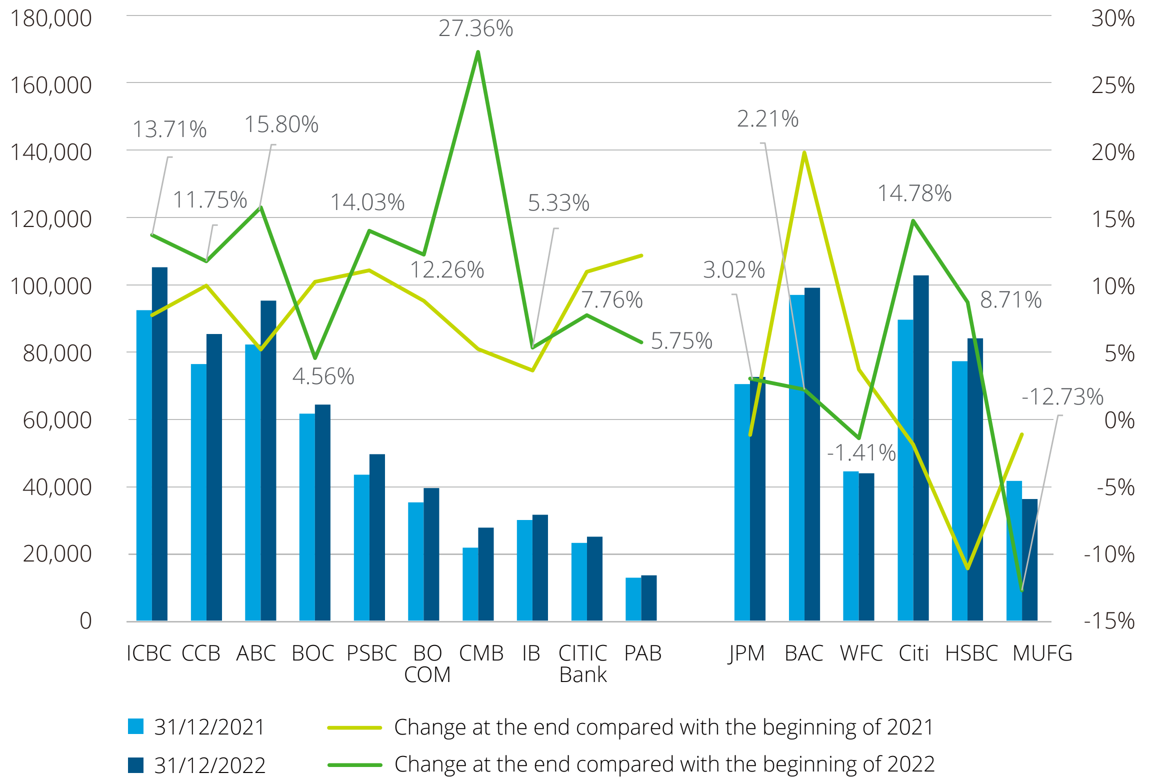
Financial asset investment varied significantly in the changeable and complex external environment

Generally, in 2022, domestic funds remained stable, bond yields fluctuated and dropped, interest rates rebounded slightly at the end of the year, inflation in major overseas economies remained high, and central banks in Europe and the United States started interest rate hike cycles to stress liquidity. At the end of 2022, the book value of domestic banks' financial asset investment totaled RMB53.75 trillion, an increase of RMB5.80 trillion or 12.10% from the beginning of the year. The book value of large state-owned banks' financial asset investment totaled RMB43.96 trillion, an increase of RMB4.79 trillion compared with the beginning of the year, representing an average growth rate of 12.23%.

Other large state-owned banks achieved double-digit growth, except BOC—ICBC's investment scale exceeded RMB10 trillion at the end of the year. The total book value of joint-stock banks' financial asset investment stood at RMB9.79 trillion, an increase of RMB1.01 trillion from the beginning of the year, with an average growth rate of 11.49%. CMB recorded a 27.36% growth rate, significantly higher than other domestic banks, while PAB's growth slowed. The book value of foreign banks' financial asset investment totaled RMB43.91 trillion, an increase of RMB1.83 trillion from the beginning of the year, with a growth rate of 4.36%. Citi had a higher growth rate in 2022, with its investment scale exceeding RMB10 trillion at the year-end. WFC's and MUFG's investment scale shrank—MUFG's investment scale fell for two consecutive years (down 12.73% in 2022).

Figure 26: Financial Asset Investment

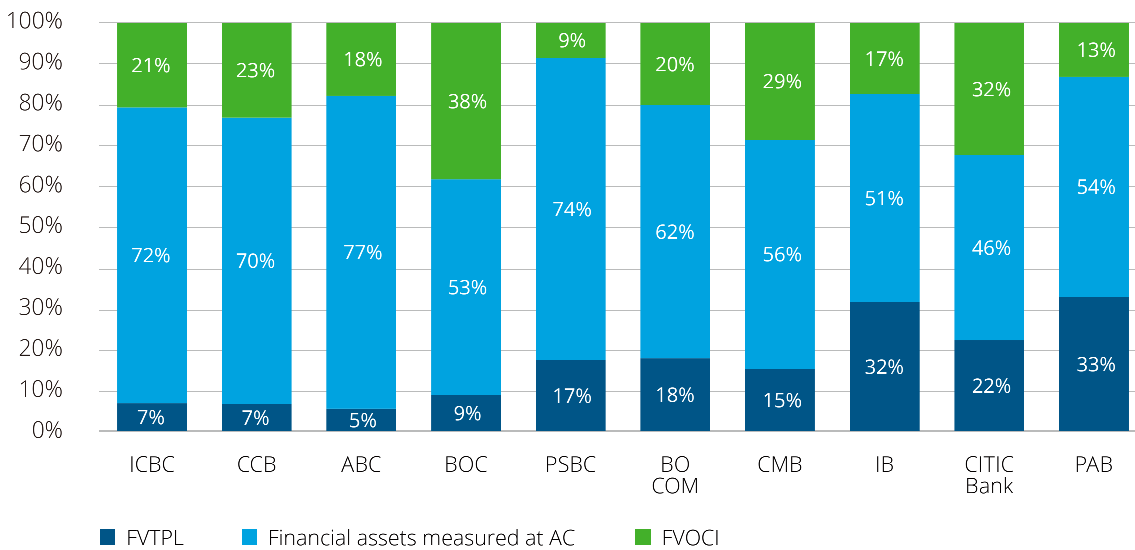
Unit: RMB100 million



Large state-owned banks had a higher proportion of financial assets measured at the amortized cost, while joint-stock banks had more financial assets measured at fair value

In 2022, domestic banks' financial asset investment structure (by measurement method) varied significantly. The four major state-owned banks' proportions of FVTPL (fair value through profit and loss) were lower than 10%—lower than that of PSBC and BOCOM, and significantly lower than joint-stock banks' average proportion (24.79%). Among joint-stock banks, IB's and PAB's FVTPL accounted for more than 30%, and CITIC Bank's accounted for more than 20%. Large state-owned banks (except BOC) had a higher proportion of financial assets measured at the amortized cost (AC). Specifically, the proportion of ICBC, CCB, ABC and PSBC exceeded 70%, and BOCOM's exceeded 60%, while the average proportion of joint-stock banks was about 50%. Regarding the FVOCI (fair value through other comprehensive income) proportion, BOC's was 38%, CITIC Bank's and CMB's were about 30%, PSBC's was 9%, PAB's was 13%, and other domestic banks' proportions were about 20%. Generally, as the leading force in financial services, large state-owned banks continued to support the development of the real economy; thus, they had a higher proportion of held-to-maturity local government bonds and financial assets measured at the amortized cost. Join-stock banks' financial assets were more diversified, with a higher proportion of financial assets measured at fair value.

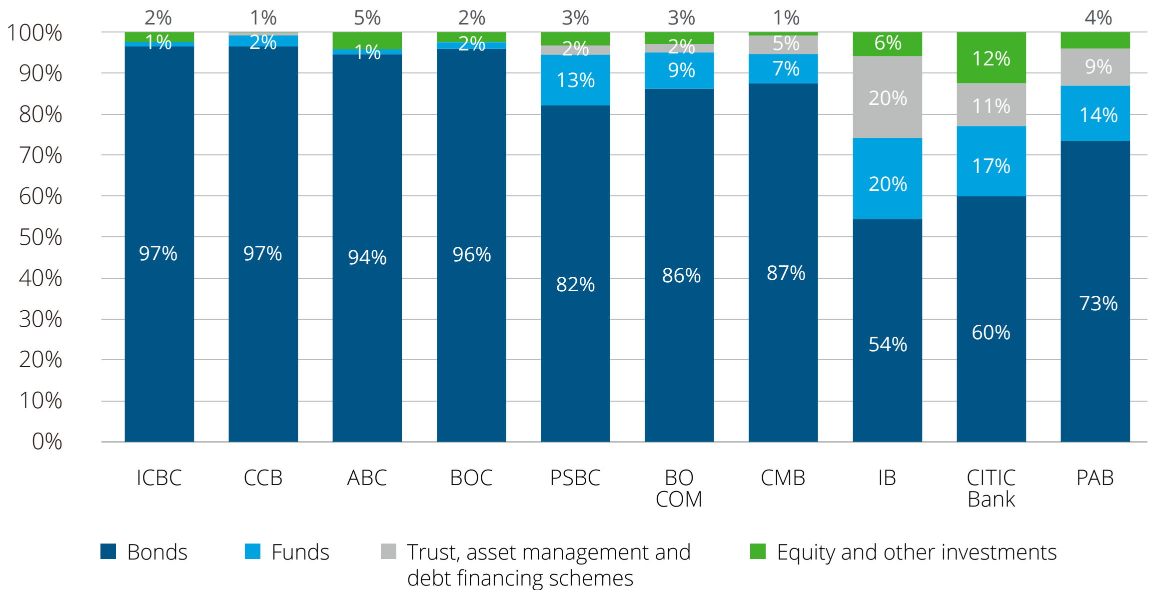
Figure 27: Financial Asset Investment Structure at the End of 2022 (by Method of Measurement)



Large state-owned banks had more self-operated bond investment; joint-stock banks had more investment varieties

At the end of 2022, the four major state-owned banks' self-operated bond investment accounted for more than 95%, and that of PSBC, BOCOM and CMB exceeded 80%. The four major state-owned banks' fund investment was relatively low, with an average investment ratio of only 1.46%; PSBC was the only large state-owned bank whose fund investment accounted for more than 10%; joint-stock banks recorded a significantly higher average fund investment ratio, at 14.70%; among them, IB's and CITIC Bank's ratio exceeded 15%, PAB's was about 14%, and CMB's was about 7%; the underlying assets were primarily standard investments such as financial bonds, credit bonds, and interbank certificates of deposit. Large state-owned banks' proportion of trust, asset management and debt financing schemes was deficient, while that of joint-stock banks was about 10%; the underlying assets included bond investment and non-standard investment; for example, in IB's asset management scheme, bond investment accounted for more than 40%, credit assets accounted for nearly 50%, and equity and other investments accounted for about 5%, mainly including asset-backed securities, equity investment & debt-repaid equity, and interbank wealth management products. Large state-owned banks had a dominant proportion of self-operated bond investment, while joint-stock banks mainly allocated their assets through various structured entities.

Figure 28: Financial Asset Investment at the End of 2022 (by Investment Varieties)



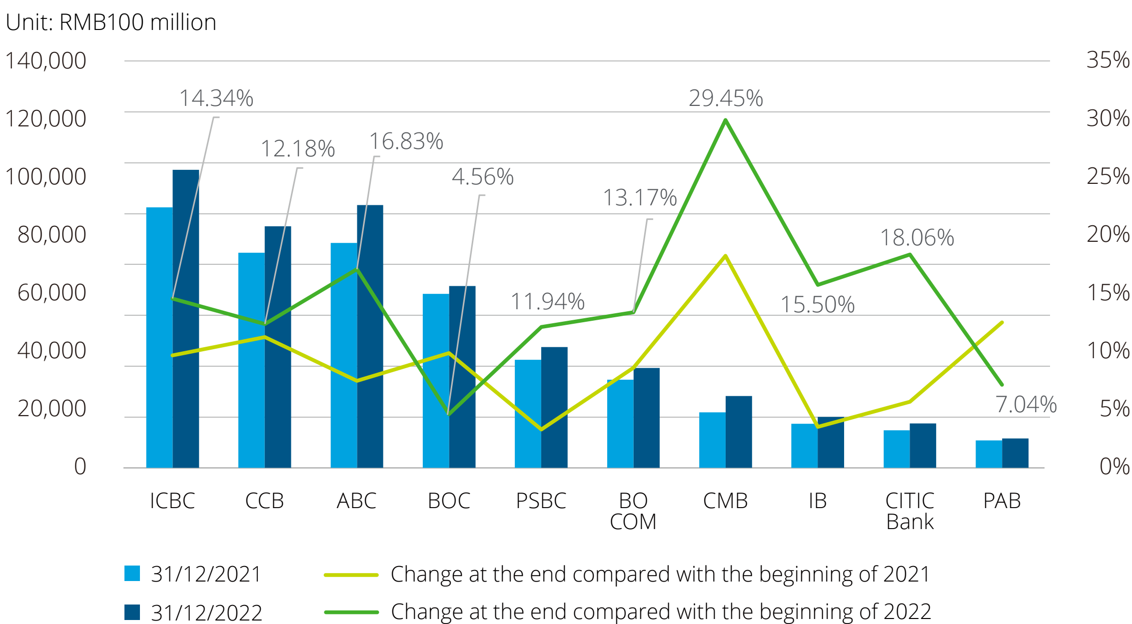
Note: Bond investment included interbank certificates of deposit.

Domestic banks' bond investment proliferated, requiring them to strengthen their investment and risk management ability continuously

In 2022, the bond market yields trended down. The RMB exchange rate against the US dollar first depreciated and then rose due to the impact of the "upside down" interest rate gap between China and the US. At the end of 2022, domestic banks' bond investment balance was RMB47.48 trillion, an increase of RMB5.62 trillion or 13.42% from the beginning of the year. Large state-owned banks' bond investment balance was RMB40.80 trillion, an increase of RMB4.53 trillion or 12.50%. ICBC's balance exceeded RMB10 trillion, but BOC's growth slowed. The balance of joint-stock banks' bond investment was RMB6.68 trillion, an increase of RMB1.08 trillion or 19.37% from the beginning of the year. CMB's growth rate led domestic banks for two consecutive years, which rose to 29.45% in 2022, while PAB's growth dropped. On the whole, as the primary investment institutions in the bond market, domestic banks' bond allocation is related to credit asset supply, deposit reserve ratio changes, policy orientation and regulatory policies. Banks must comprehensively consider the influences of bond market fluctuations, expected credit losses, bonds' tax-saving effect, and potential investment gains and losses (other comprehensive income).

The complex market environment will continue challenging commercial banks' ability to grasp investment opportunities and enhance bond duration management. Some foreign banks' risk events highlight the liquidity risk caused by mismatching assets and liabilities, which will spur domestic banks to pay more attention to managing liquidity risk and adjust their asset structure. Therefore, domestic banks pay more attention to asset liquidity and matching assets with liabilities while allocating their bond assets.

Figure 29: Bond Investment



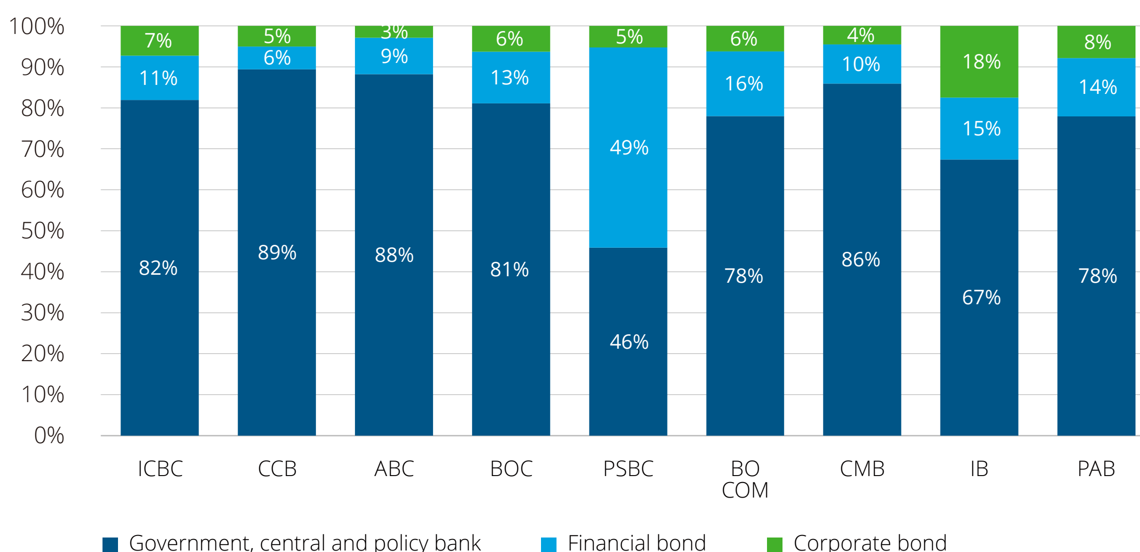
Note: Bond investment included interbank certificates of deposit.

Domestic banks had a higher proportion of rate bonds and needed more attention to debenture bond risks

As of the end of 2022, domestic banks' bond investment was dominated by the government, central bank and policy banks, accounting for about 80%. PSBC's financial bond investment accounted for nearly 50%, much higher than other domestic banks. All other domestic banks' corporate bonds accounted for less than 10%, except IB, with a proportion of 20%. Generally, domestic banks' rate bonds accounted for a high proportion with sound investment strategy, while their financial bonds, corporate bonds and other debentures accounted for about 20%.

As the bond market fluctuations moderated and the *Administrative Measures for the Capital of Commercial Banks (Draft for Comment)* (hereinafter referred to as the "Measures") was released, the market entities' willingness to allocate bond assets improved. Commercial banks should pay continuous attention to bond credit and market risks. They should examine their current investment structure and capital consumption, and dynamically, foresightedly adapt the bond allocation according to the risk weight adjustments for various bonds proposed in the Measures.

Figure 30: Bond Investment by Issuers in 2022



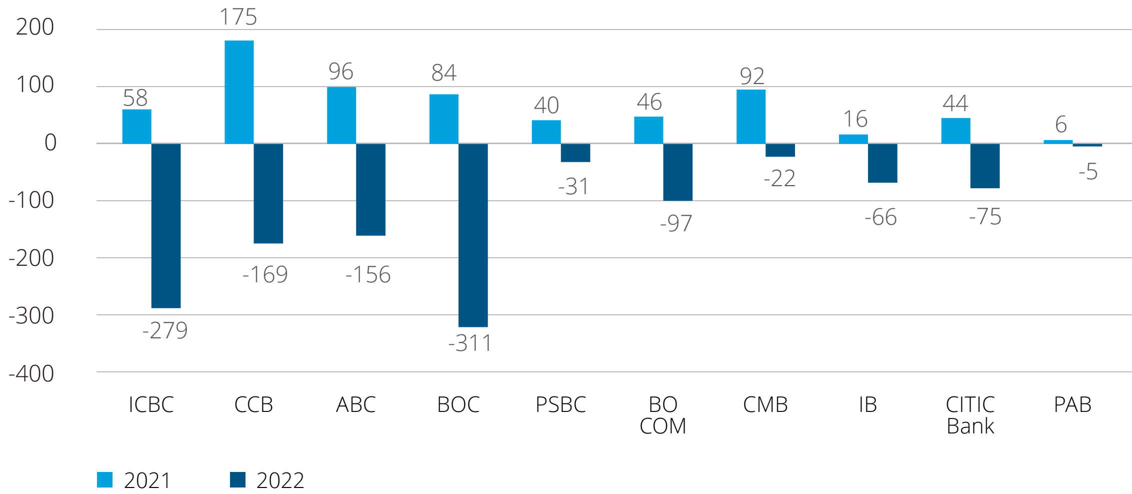
Note: CITIC Bank didn't separately disclose its bond investments by different issuers.

Pay attention to the fair value variation of financial assets not included in current profits and losses; continue to enhance risk management

In 2022, domestic banks' financial assets measured at fair value with the changes included in other comprehensive income recorded floating losses. The total amount included in other comprehensive income of the year but not directly affecting the profits and losses was RMB-121.2 billion, a decrease of RMB186.9 billion or 284.19% compared with the previous year. Among them, ICBC and BOC recorded higher floating losses this year. All other domestic banks' fair value of financial assets measured at the amortized cost decreased, except ICBC, and the total amount not included in the income statement was RMB171 billion, a decrease of RMB416.5 billion or 70.88%. BOC, CMB, IB and CITIC Bank recorded floating losses, while ICBC's increased. Although the interest rate in

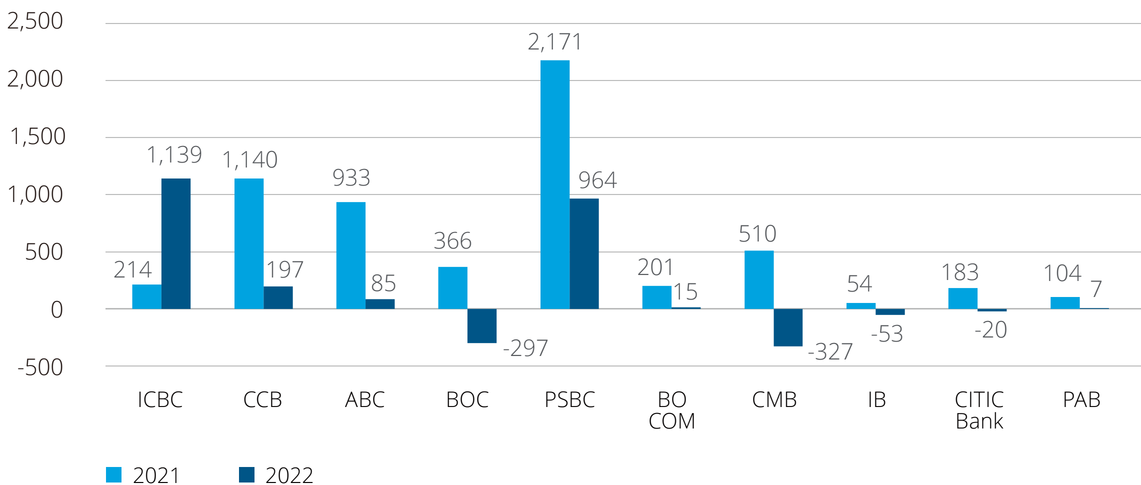
the domestic market trends down and the overall liquidity is relatively ample, domestic banks should draw experience from the European and US banking institutions (such as Silicon Valley Bank) short-term liquidity risks and business failure due to investment term mismatch and interest rate risks. Looking ahead to 2023, there is still room and possibility for lowering the reserve ratio and interest rate. Structural monetary policy tools will likely show an "increase, expand, and lower costs" policy orientation. Commercial banks need to improve bond investment risk management continuously.

Figure 31: Changes in Fair Value of Financial Assets (Changes Included in Other Comprehensive Income)



Note: The current-year pre-tax amount included in other comprehensive income (including loans and financial investments through fair value with the changes included in other comprehensive income)

Figure 32: Changes in Fair Value of Financial Assets Measured at the Amortized Cost

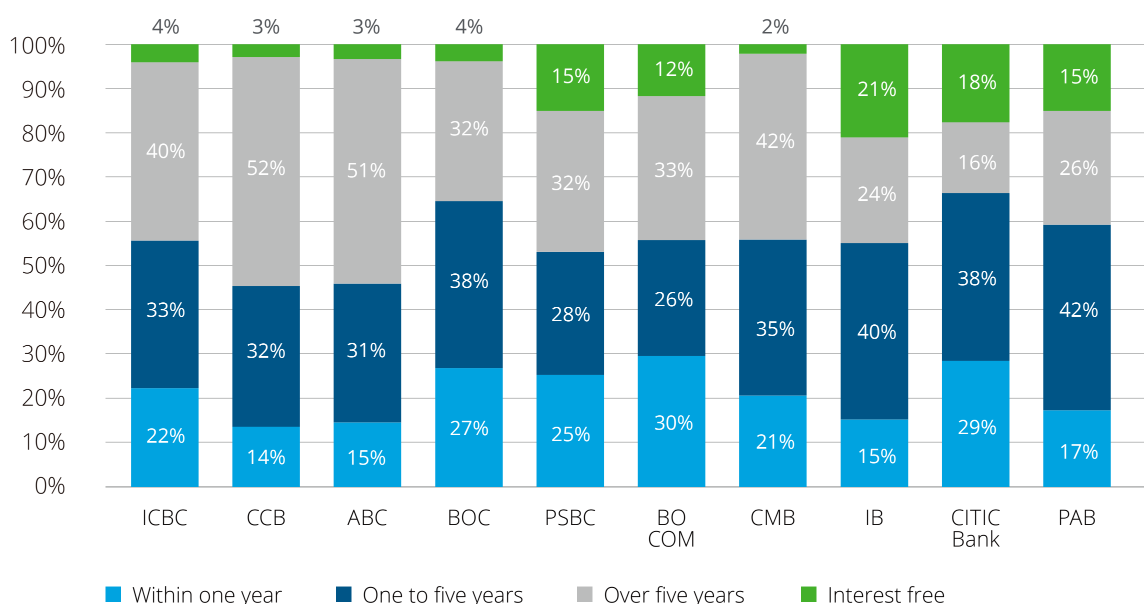


Note: It is based on the two-year changes in the difference between the fair value and carrying value of financial assets measured at the amortized cost.

Pay attention to interest rate risks of financial asset investment and strengthen investment duration management

At the end of 2022, domestic banks' financial asset investment with interest rate risk periods within one year, one-to-five years, and over five years accounted for 21%, 33% and 39%, respectively. Long-term investment accounted for a higher proportion and was mainly held to maturity. Regarding rate-repriced investment within one year, the financial asset investment balance of BOC, PSBC, BOCOM and CITIC Bank accounted for more than 25%, and that of ICBC and CMB accounted for more than 20%. For rate-repriced investments between one and five years, IB and PAB's financial asset investment balance accounted for more than 40%, and that of BOC, CITIC Bank and CMB accounted for more than 35%. For rate-repriced investments over five years, the financial asset investment balance of CCB and ABC accounted for more than 50%, and that of ICBC and CMB accounted for more than 40%. Domestic banks shall pay continuous attention to the interest rate risks of financial asset investment and strengthen investment duration management.

Figure 33: Interest Rate Risk of Financial Asset Investment at the End of 2022



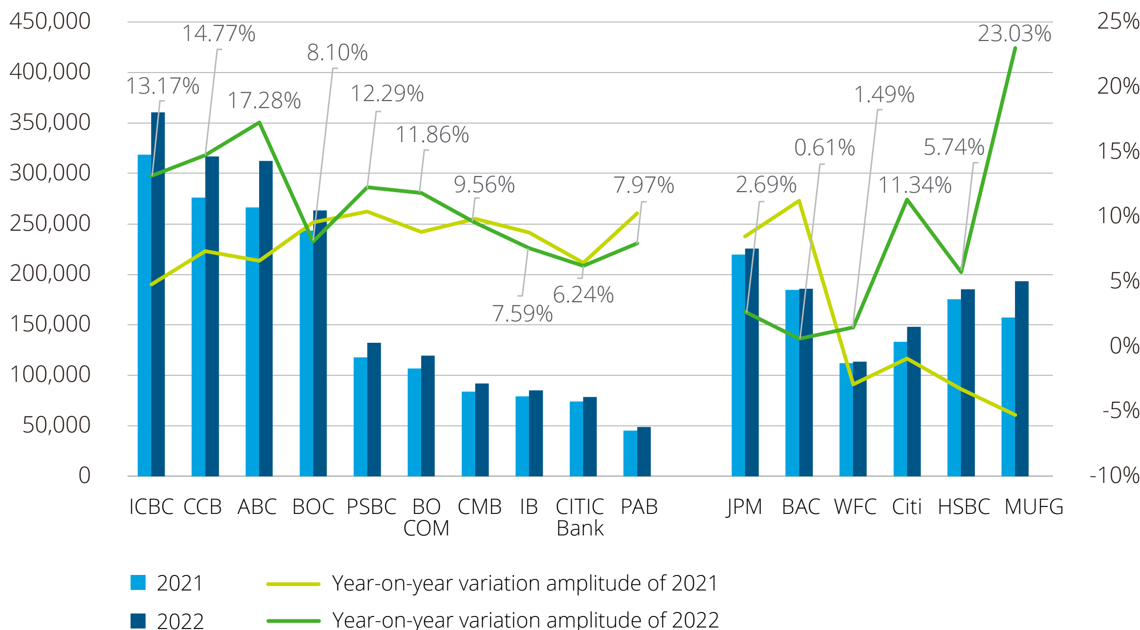
Note: It is the total amount of interest rate risks of: 1) financial assets whose fair value is included in current profit and loss, 2) financial assets measured at the amortized cost, and 3) financial assets whose fair value is included in other comprehensive income

2.3 Liabilities

Domestic banks' total liabilities continued to rise, while foreign banks' liability scales varied

At the end of 2022, domestic banks' total liabilities reached RMB181.06 trillion, an increase of RMB19.81 trillion from the beginning of the year, with an average growth rate of 10.88% (3.28 percentage points higher than 2021's 7.60%). Specifically, ABC, CCB, ICBC, PSBC and BOCOM recorded an increase of more than 10%, while joint-stock banks' growth rates were relatively stable. Foreign banks' liabilities totaled RMB105.28 trillion, an increase of RMB7.01 trillion from the beginning of the year, with an average growth rate of 7.48% (5.76 percentage points higher than the previous year's 1.72%). Foreign banks' liability scales varied—MUFG's, Citi's and HSBC's liabilities grew significantly, while the rest banks' scales remained the same as at the beginning of the year.

Figure 1: Total Liabilities

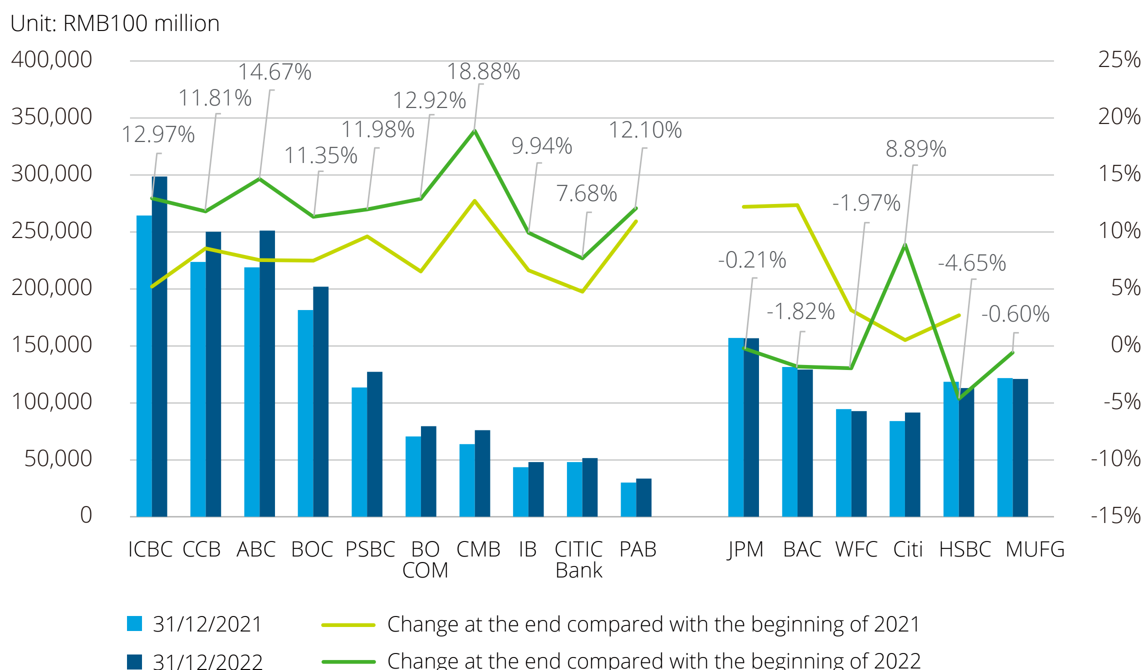


Customer deposits diverged, and deposit-taking pressure sustained

In 2022, domestic banks saw varying degrees of customer deposit growth. At the end of 2022, domestic banks' customer deposit balance totaled RMB141.77 trillion, an increase of RMB15.98 trillion or 12.71% (7.52% in 2021) from the beginning of the year. Large state-owned banks' deposit balance reached RMB120.88 trillion, up 12.69% year-on-year—all the six banks recorded double-digit deposit balance growth year-on-year. All the four major state-owned banks' deposit balances exceeded RMB20 trillion—CCB's and ABC's balances exceeded RMB25 trillion, and ICBC's balance approached RMB30 trillion. Most domestic banks' customer deposit growth rates exceeded 10%, except IB and CITIC Bank. CMB had the highest growth rate of 18.88%. ICBC and ABC record significant growth rates of 7.77% and 7.14%, respectively, leading the domestic banks in the two-year growth gap. Foreign banks' customer deposits generally declined, with a total balance of RMB70.74 trillion, decreasing RMB0.34 trillion or 0.47% compared with the beginning of the year. Citi's deposit balance increased, while all the rest foreign banks registered a slight decline.

Overall, due to the low market interest rate, reduced non-standard assets, and the pressure on wealth management product yields caused by drastic fluctuations in the bond market, investors gradually demanded "preserving and increasing value" for fixed-term deposits. The domestic banks' deposit scale increased, requiring them to pay attention to deposit cost management continuously. The foreign banks' customer deposit outflow was primarily due to the rising financial asset yields triggered by the continuous interest rate hike, but the loan interest rates could not be increased significantly quickly. If the deposit interest rates were raised, the profit margins would be compressed enormously, thus hindering deposit growth.

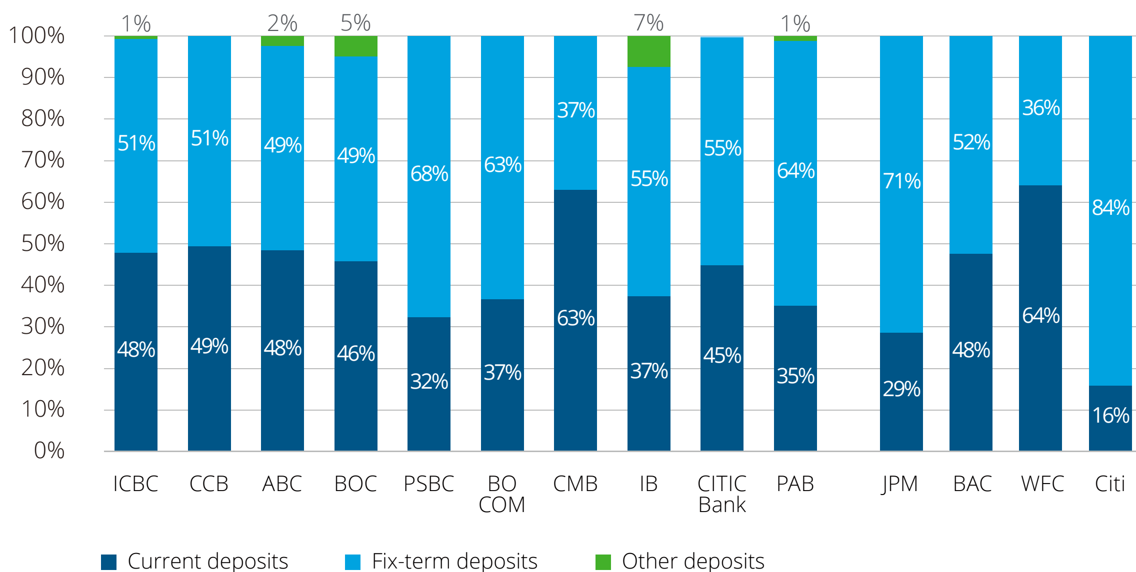
Figure 2: Customer Deposits



Fixed-term deposit increase requires stronger cost management

At the end of 2022, domestic banks' average proportion of current deposits was 46%, slightly lower than the fixed-term deposits (49%). The four state-owned banks' current deposits accounted for nearly 50%, and the proportion of the fixed-term deposits is equal to the current deposits. PSBC recorded the highest proportion of fixed-term deposits, accounting for 68%, an increase of 2.10 percentage points from the beginning of the year. CMB recorded the highest proportion of current deposits, accounting for 63%, but down 3.36 percentage points from the beginning of the year. PSBC and CMB's deposit structures were consistent with their main customer groups and customers' savings habits. The foreign banks' current deposits account for 38%, while their average fixed-term deposit proportion was 62%, and the proportion of current deposits in foreign banks is lower than that in domestic banks. WFC's current deposits reached 64%, decreasing by 2.94 percentage points compared with the beginning of the year. Citi's fixed-term deposits peaked at 84%, up 3.47 percentage points from the beginning of the year. Overall, domestic and foreign banks' fixed-term deposits showed a growing trend. The depressed stock and bond markets and the net value-oriented transformation of wealth management products mainly caused the domestic banks' increase. In contrast, the rising interest rates might cause the foreign banks' increase—risk aversion heightened, and depositors had an apparent demand for preserving and increasing value.

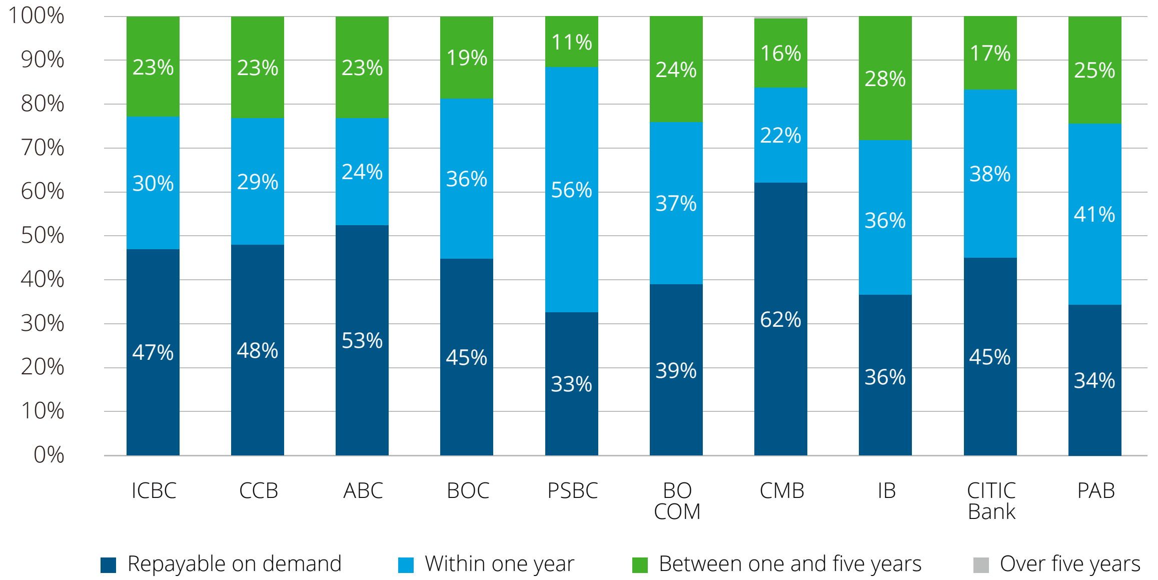
Figure 3: Deposit Composition at the End of 2022



Note: HSBC's and MUFG's deposit composition were not disclosed.

Regarding the remaining maturity of deposits, at the end of 2022, domestic banks' deposits repayable on demand averagely accounted for 44.16% of the total, 4.69 percentage points lower than at the beginning of the year. The average proportion of deposits maturing within one year was 34.99%, up 1.78 percentage points. The average proportion of deposits maturing between one and five years was 20.79%, an increase of 2.57 percentage points. The average proportion of deposits over five years was 0.06%, down 0.02 percentage points. In 2022, several domestic banks adjusted the interest rates of individual deposits, including current and fixed-term deposits. With the continuous decline in commercial banks' asset yields, the interest rate drop on the liability side was an inevitable trend. The cut of deposit interest rates is conducive to easing the interest spread contraction pressure. Domestic banks should strictly control high-cost liabilities and absorb more current deposits or low-cost liabilities by expanding the customer base, enhancing transactions, and increasing settlement.

Figure 4: Proportion of Deposits by Remaining Maturity at the End of 2022

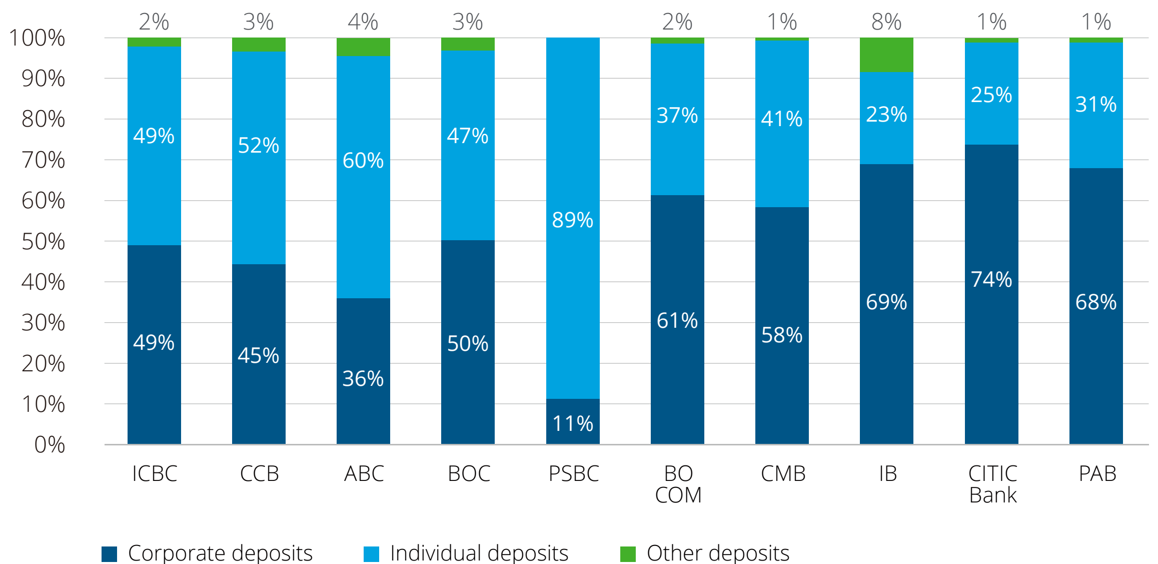


Note: IB's deposits repayable on demand were combined and disclosed with the deposits maturing within one year; To enhance comparability, the current deposits were combined with the deposits repayable on demand for analysis

Varied deposit structure; a higher proportion of individual deposits

Regarding customer types, the four major state-owned banks' deposits of corporate and individual customers averagely accounted for 44.87% and 51.88%—corporate deposits were down 1.57% and individual deposits were up 1.43% compared with the beginning of the year. PSBC continued to expand the source of individual deposit funds through its extensive outlets to grow the retail business. PSBC's deposits of individual customers accounted for the highest proportion, reaching 88.73%. Joint-stock banks' deposits from corporate customers accounted for 66.15% on average, down 5.14 percentage points from the beginning of the year, and their individual deposits accounted for 31.20% on average, up 5.15 percentage points. As residents' willingness to deposit money intensified, the proportion of domestic banks' individual deposits increased. Depositors' risk appetites weakened, and the fixed-term deposit scale expanded.

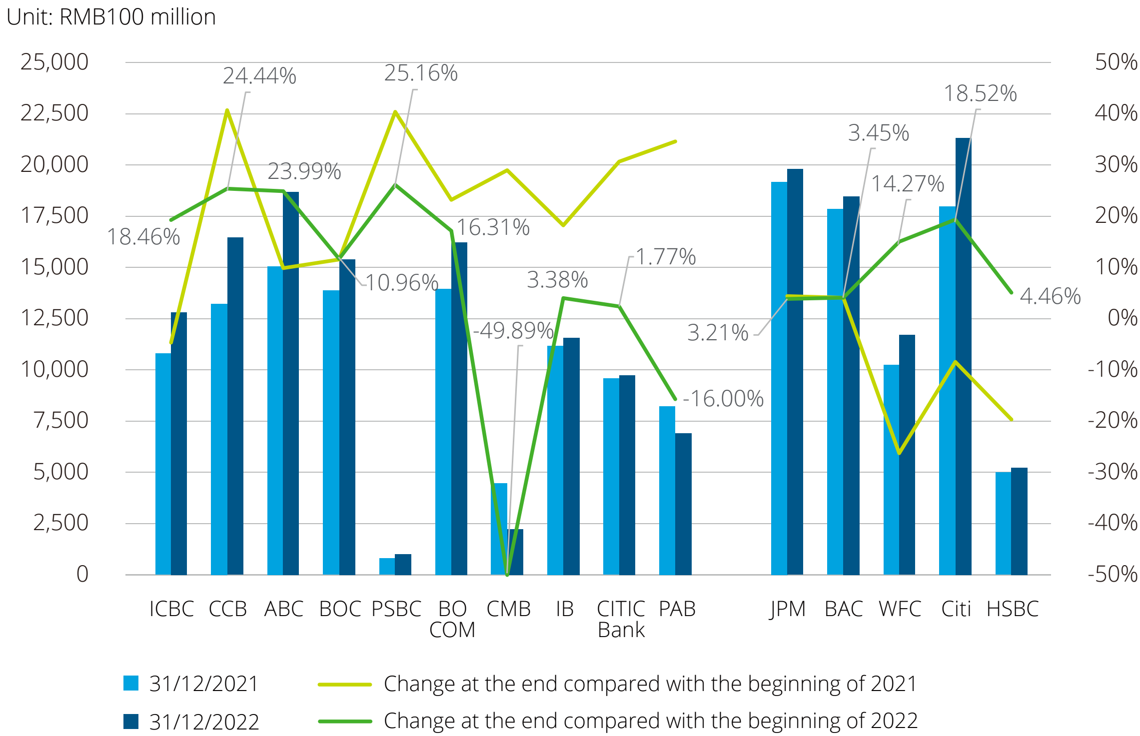
Figure 5: Proportion of Corporate and Individual Customer Deposits at the End of 2022



Issuance of debt instruments increased; domestic banks' external capital was supplemented and their active debt growth slowed

At the end of 2022, domestic banks' balance of bonds payable and certificates of deposit issued totaled RMB11.11 trillion, an increase of RMB0.99 trillion or 9.73% from the beginning of the year. CMB's and PAB's active debt scale contracted compared with the beginning of the year. At the same time, that of the rest domestic banks grew, with the growth rate lower than 2021's average rate (18.88%)—this may be because of less demand for external capital supplement due to deposit increase. Foreign banks' balance of bonds payable and certificates of deposit issued totaled RMB8.47 trillion, an increase of RMB0.73 trillion or 9.43% from the beginning of the year. WFC and Citi recorded a higher growth rate. Overall, the active debts of domestic and foreign banks showed significantly different trends due to the external environment and policy changes. Domestic banks' active debt growth slowed due to the net value-oriented transformation of wealth management and growing fixed-term deposits. In contrast, some foreign banks strengthened external financing due to deposit fall in the context of rising overseas financial investment yields.

Figure 6: Bonds Payable and Certificates of Deposit Issued



Note: MUFG Bank's bonds payable and certificates of deposit were not disclosed.

2.4 Capital position

According to the *Administrative Measures for the Capital of Commercial Banks (for Trial Implementation), Additional Regulatory Provisions on Systemically Important Banks (for Trial Implementation)* and other relevant regulations of G-SIBs, the capital regulation bottom line requirements for the ten domestic banks as of 2022 are shown in the table below. At the end of 2022, the ten banks' core tier 1 capital adequacy ratio, tier 1 capital adequacy ratio and capital adequacy ratio met the regulatory requirements.

Table 1: Capital Regulation Bottom Line

Bank	Core Tier 1 Capital Adequacy Ratio	Tier 1 Capital Adequacy Ratio	Capital Adequacy Ratio	SIB Category
ICBC	9.00%	10.00%	12.00%	G-SIBs, Bucket2 D-SIBs, Bucket4
CCB	8.50%	9.50%	11.50%	G-SIBs, Bucket1 D-SIBs, Bucket4
BOC	9.00%	10.00%	12.00%	G-SIBs, Bucket2 D-SIBs, Bucket4
ABC	8.50%	9.50%	11.50%	G-SIBs, Bucket1 D-SIBs, Bucket4
BOCOM	8.25%	9.25%	11.25%	D-SIBs, Bucket3
CMB	8.25%	9.25%	11.25%	D-SIBs, Bucket3
IB	8.25%	9.25%	11.25%	D-SIBs, Bucket3
PSBC	8.00%	9.00%	11.00%	D-SIBs, Bucket2
CITIC Bank	8.00%	9.00%	11.00%	D-SIBs, Bucket2
PAB	7.75%	8.75%	10.75%	D-SIBs, Bucket1

Domestic banks' capital adequacy ratio rose slightly, while foreign banks were under capital pressure

At the end of 2022, the core tier 1 capital adequacy ratio, tier 1 capital adequacy ratio and capital adequacy ratio of large state-owned and joint-stock banks met the regulatory requirements, showing a steadily rising trend. The three ratios of the ten banks were, on average, 11.10%, 12.89% and 15.96%—the core tier 1 capital adequacy ratio and capital adequacy ratio increased by 0.09 percentage points and 0.11 percentage points, respectively, from the beginning of the year. In contrast, the tier 1 capital adequacy ratio remained unchanged. During the same period, the average core tier 1 capital adequacy ratio, tier 1 capital adequacy ratio and capital adequacy ratio of foreign banks were 12.44%, 14.24% and 16.09%, down 0.71 percentage points, 0.83 percentage points and 0.84 percentage points respectively.

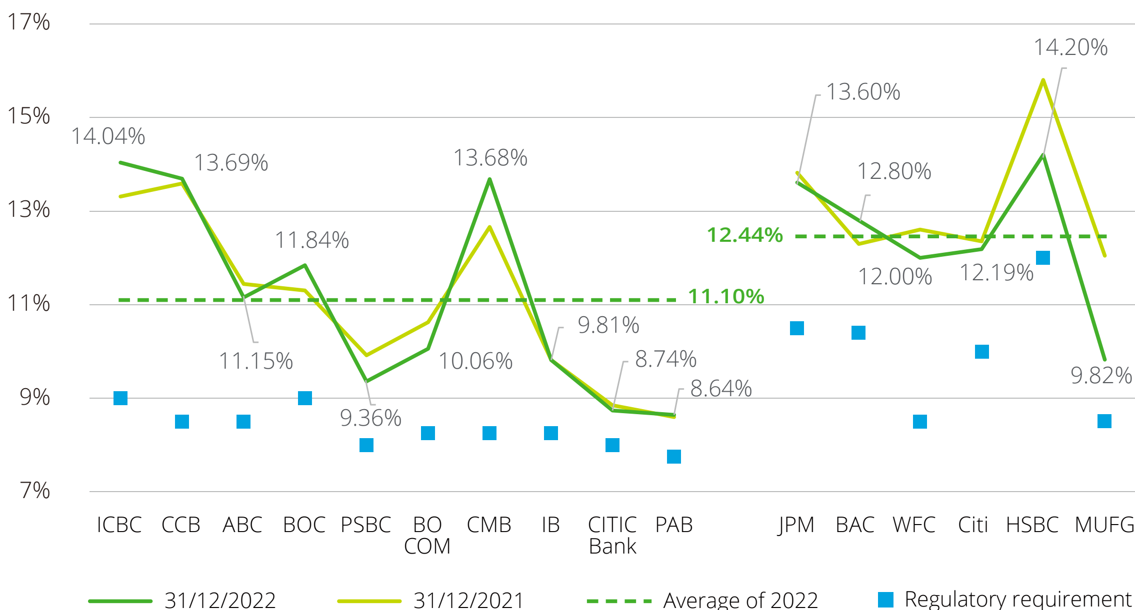
Endogenous capital accumulation trends and core tier 1 capital adequacy ratio changes varied

Domestic and foreign banks' core tier 1 capital adequacy ratios changed divergently due to profit growth, external capital supplement and risk-weighted asset increase. Domestic banks' core tier 1 capital adequacy ratio generally increased slightly, while foreign banks slightly decreased. As the pandemic control measures eased and the economy recovered, the banking sector's profitability improved constantly. The retention of profits drove the increase of net core tier 1 capital.

Among the ten domestic banks, the core tier 1 capital adequacy ratio of ABC, PSBC, BOCOM and CITIC Bank decreased slightly, while the rest banks recorded a small increase from the beginning of the year. Specifically, CMB's core tier 1 capital adequacy ratio increased by 1.02 percentage points, which is the largest increase among domestic banks. CITIC Bank's and PAB's core tier 1 capital adequacy ratios were 8.74% and 8.64%, respectively, narrowing the gap from the minimum domestic regulatory requirements of 8.00% and 7.75%, mainly due to weak endogenous profitability. Overall, in 2022, the ten domestic banks' net profits increased slightly; thus, the growth rate of their net core tier 1 capital was higher than that of their risk-weighted assets, and their core tier 1 capital adequacy ratio rose.

Foreign banks' core tier 1 capital adequacy ratio trended down. Except for BAC, most foreign banks' core tier 1 capital adequacy ratio dropped. MUFG recorded the largest drop, by 2.23 percentage points, narrowing the gap from the 8.51% regulation bottom line to 1.31%. The foreign banks' net profits declined this year, the endogenous capital growth was weak, and the consolidated risk-weighted assets continued to grow, leading to the overall decline of the core tier 1 capital adequacy ratio, thus putting pressure on core tier 1 capital.

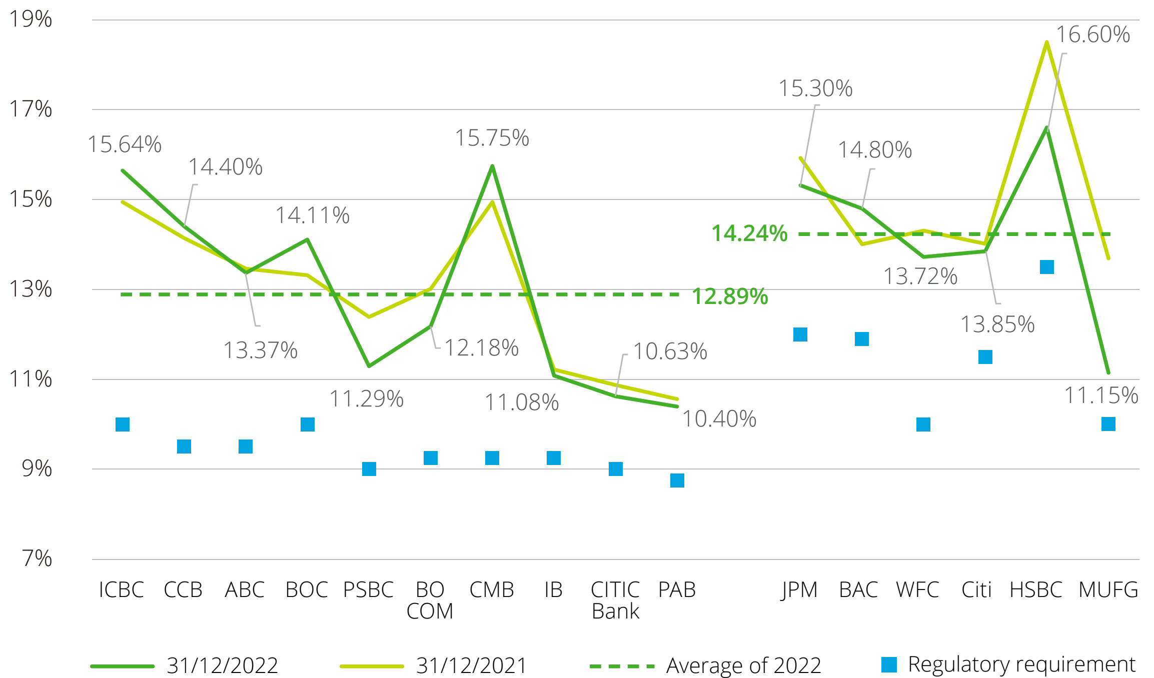
Figure 1: Core Tier 1 Capital Adequacy Ratio



Subject to the supplement of external capital, the tier 1 capital adequacy ratio and capital adequacy ratio fluctuated remarkably

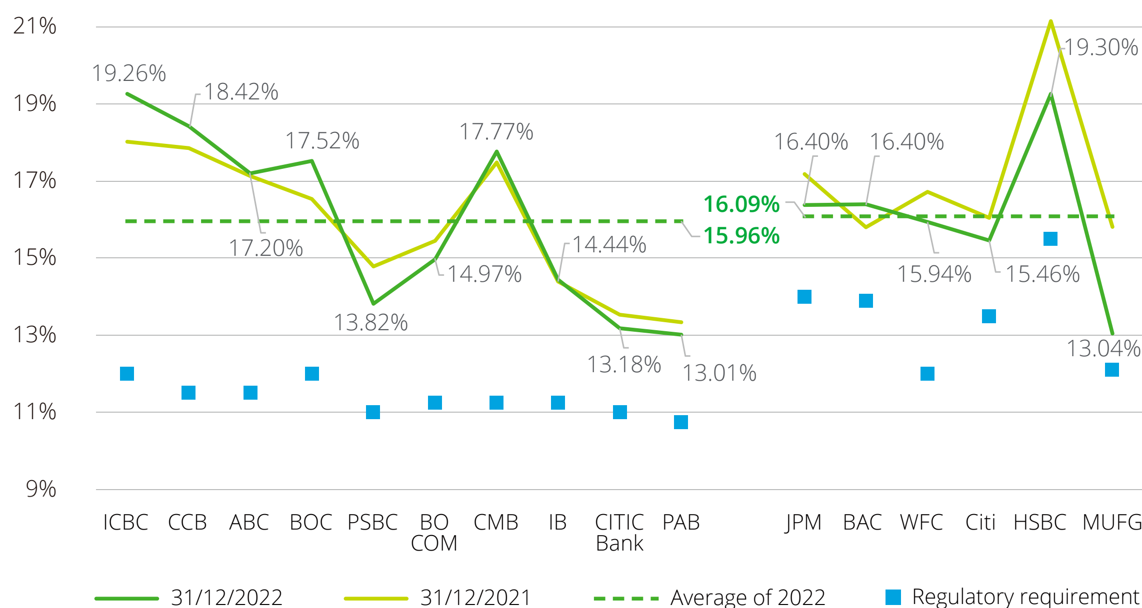
The tier 1 capital adequacy ratio of ICBC, CCB, BOC, CMB and BAC increased year-on-year while the rest of the selected banks declined. CMB's ratio rose 0.81 percentage points to 15.75% and ranked first among the domestic banks. PAB had the lowest ratio of 10.40%. CITIC Bank's ratio stood at 10.63%, compressing the gap from the 9.00% minimum regulatory requirement to 1.63%. CCB, ABC and BOC issued new perpetual bonds in 2022, which supplemented other tier 1 capital. Thus, the three banks' other tier 1 capital adequacy ratio grew faster than their core tier 1 capital adequacy ratio. MUFG's tier 1 capital adequacy ratio decreased by 2.54 percentage points to 11.15%, narrowing the gap from the 10.01% regulatory requirement to 1.14%, mainly due to the decline of the core tier 1 capital adequacy ratio.

Figure 2: Tier 1 Capital Adequacy Ratio



Regarding the capital adequacy ratio, ICBC's ratio was 19.26%, the highest among domestic banks. All other domestic banks' capital adequacy ratio increase was higher than that of their tier 1 capital adequacy ratio, except CMB, CITIC Bank and PAB. That was mainly because those banks issued tier 2 capital instruments in 2022, but CMB, CITIC Bank and PAB didn't. For the foreign banks, BAC's ratio rose, while the rest recorded a year-on-year decline, for the same reason for their core tier 1 capital ratio decline.

Figure 3: Capital Adequacy Ratio



Capital occupation requirements continue to increase, domestic banks supplemented capital through various channels

In 2022, domestic banks continued to adopt exogenous financing facilities to supplement capital, with total capital instruments rising 10.57% year-on-year. Four banks supplemented other tier 1 capital through external financing, reaching a scale of RMB200 billion, and seven added tier 2 capital, amounting to RMB668.8 billion. ICBC and ABC issued large amounts of capital instruments this year, totaling RMB220 billion and RMB210 billion, respectively, which accounted for 15.85% and 18.75% of their total capital instruments.

Table 2: External Capital Supplement

Unit: RMB100 million

Bank	Financing Instrument	Capital	Financing Scale
ICBC	Tier 2 capital bonds	Tier 2 capital	2,200
CCB	Tier 2 capital bonds	Tier 2 capital	1,138
	Perpetual bonds	Other tier 1 capital	400
ABC	Perpetual bonds	Other tier 1 capital	800
	Tier 2 capital bonds	Tier 2 capital	1,300
BOC	Perpetual bonds	Other tier 1 capital	500
	Tier 2 capital bonds	Tier 2 capital	900
PSBC	Perpetual bonds	Other tier 1 capital	300
	Tier 2 capital bonds	Tier 2 capital	400
BOCOM	Tier 2 capital bonds	Tier 2 capital	500
IB	Tier 2 capital bonds	Tier 2 capital	250

Regarding the proportion of external capital instruments, the proportion of financing instruments of domestic banks in total net capital is not the same, CCB's and CMB's capital instruments accounted for less than 25% of their total net capital, BOC's, PSBC's and BOCOM's accounted for more than 40%, and the rest banks' proportions were between 25% and 40%. CMB's total capital instruments decreased by 2.61 percentage points compared with the beginning of the year, mainly due to redeeming all the overseas preferred shares in the year. With the implementation of the regulatory and additional capital requirements for D-SIBs, the banks will continue to strengthen external capital supplements and gradually adjust their business structure to use capital more effectively.

Table 3: Proportion of Capital Instruments

Unit: RMB100 million

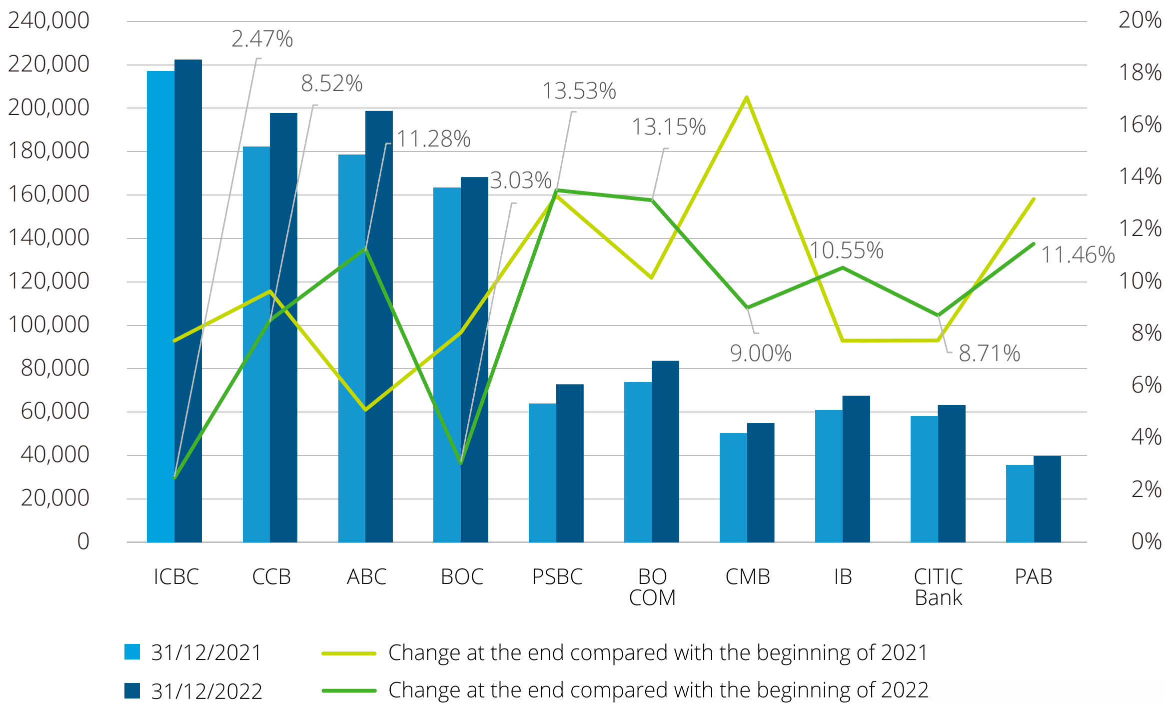
Item		ICBC	CCB	ABC	BOC	PSBC	BOCOM	CMB	IB	CITIC Bank
Total capital instrument	2022	13,876	7,840	11,198	11,958	4,568	5,518	2,424	3,068	2,570
	2021	12,574	6,282	9,498	11,188	4,557	5,018	2,489	2,818	2,570
	Growth rate	10.35%	24.80%	17.90%	6.88%	0.25%	9.97%	(2.61%)	8.87%	0.00%
Total net capital	2022	42,811	36,404	34,160	29,465	10,040	12,503	10,379	9,738	8,321
	2021	39,097	32,523	30,579	26,988	9,460	11,400	9,726	8,782	7,858
	Growth rate	9.50%	11.93%	11.71%	9.18%	6.13%	9.68%	6.71%	10.89%	5.89%
Proportion of capital instrument	2022	32.41%	21.54%	32.78%	40.58%	45.50%	44.13%	23.35%	31.51%	30.64%
	2021	32.16%	19.32%	31.06%	41.46%	48.17%	44.02%	25.59%	32.09%	32.71%
	Growth rate	0.25%	2.22%	1.72%	(0.88%)	(2.67%)	0.11%	(2.24%)	(0.58%)	(2.07%)

Note: Total capital instruments refer to the amount (regulatory standard) of qualified capital instruments disclosed in the commercial banks' annual reports or capital adequacy supplementary reports. PAB did not disclose its total capital instruments.

Risk-weighted assets increased generally; credit risk-weighted assets still held a dominant proportion but the share has fallen

In 2022, the ten domestic banks' risk-weighted assets totaled RMB116.82 trillion, increasing RMB8.44 trillion from the beginning of the year, with an average growth rate of 7.79%--lower than the 12.17% average growth rate of customer loans and advances and the 11.97% average growth rate of total assets. ICBC's total risk-weighted assets reached RMB22.23 trillion, ranking first among the domestic banks. ABC recorded the largest increase of RMB2.01 trillion, accounting for nearly 25% of the ten banks' total increase. PSBC had the highest growth rate, at 13.53%. Overall, the growing risk-weighted assets pressed the banks' capital adequacy ratio.

Figure 4: Risk-weighted Assets



Specifically, large state-owned banks' credit risk-weighted assets accounted for more than 91% of their risk-weighted assets, averaging 92.65%, an increase of 0.14 percentage points compared with that (92.51%) at the beginning of the year. BOC's credit risk-weighted assets accounted for the highest proportion of 93.57%. For joint-stock banks, CMB's, IB's, CITIC Bank's and PAB's proportion of credit risk-weighted assets were 87.85%, 90.71%, 93.20% and 89.04%, respectively.

Table 4: Risk-weighted Asset Composition

Item	ICBC	CCB	ABC	BOC	PSBC	BOCOM	CMB	IB	CITIC Bank	PAB
Credit risk-weighted assets	92.19%	92.54%	93.14%	93.57%	93.31%	91.15%	87.85%	90.71%	93.20%	89.04%
Market risk-weighted assets	0.91%	0.59%	0.81%	0.45%	0.73%	3.90%	1.62%	3.49%	0.72%	3.04%
Operational risk-weighted assets	6.90%	6.87%	6.05%	5.98%	5.96%	4.95%	10.53%	5.80%	6.08%	7.92%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Note: CMB calculated the risk-weighted assets without taking into consideration the floor requirements during the parallel run period.

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3. Observation of Listed Banks' Business in 2022

3.1 Multi-approach support to the real economy, and the strategies driving rapid development of green finance development

3.2 China's property policies sent a strong signal for continuous risks mitigation and quality financing in property market

3.3 Inclusive finance benefits the general population – an analysis of the sustainable development of commercial banks' inclusive finance

3.4 Building a new growth engine in retail banking - banks strengthened their capabilities to attract customers via digital channels while the retail banking business has slowed down

3.5 Deepened integration of finance and technology drives cross-sector collaboration to develop a digital financial services ecosystem

3.6 The full implementation of net value-based management marks the beginning of quality growth in wealth management

3.7 Measures for risk classification of the financial assets of commercial banks – interpretation and analysis

Multi-approach support to the real economy, and the strategies driving rapid development of green finance development

In 2022, economic growth faced new downward pressure. The cash flow of troubled enterprises tightened. CBIRC repeatedly proposed in press conferences to guide the banking sector to continuously help ease enterprises' pressure and safeguard macroeconomic stability. As an important role in China's financial market, banks contributed to developing the real economy by implementing loan interest rate cuts and targeted credit supply while maintaining their risk-resistance capacity.

In the meantime, to implement the sustainable development strategy and promote the construction of ecological civilization, in June 2022, CBIRC issued the *Guidelines for Green Finance in the Banking and Insurance Sectors*, requiring banking and insurance institutions to thoroughly implement new development concepts. All banks acted on the idea that lucid waters and lush mountains are invaluable assets. They actively promoted green finance in organizational management, regulations, and product innovation, integrating ESG (Environmental, Social, and Governance) into their day-to-day work.

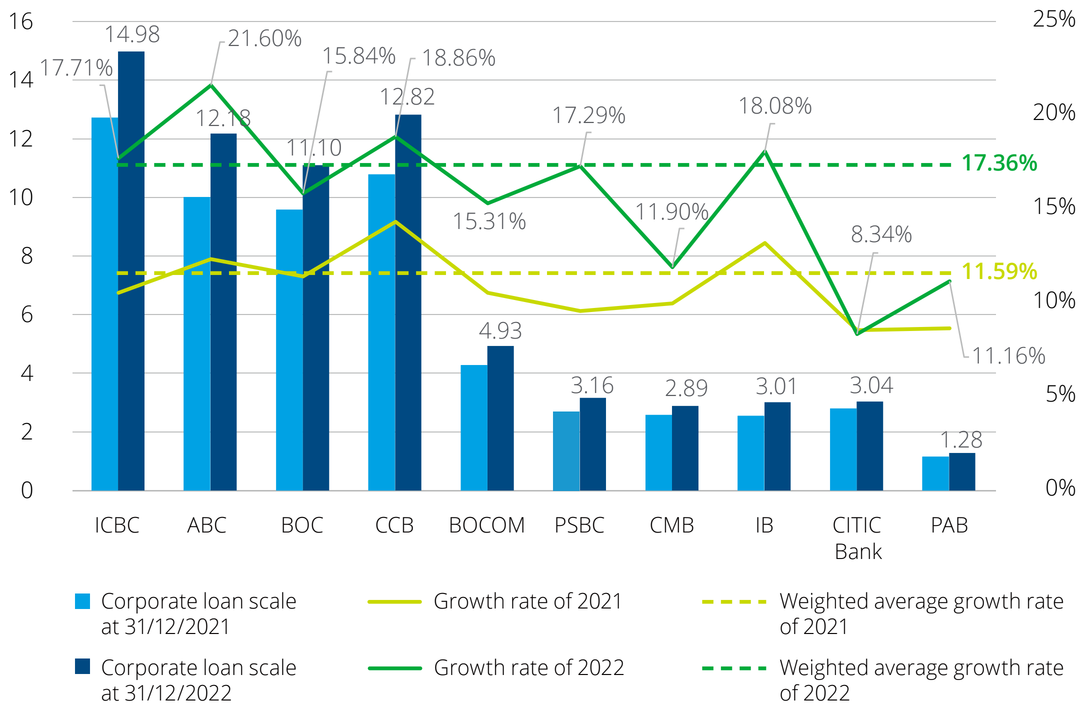
Total credit to real economy proliferated, and financing costs further reduced

All commercial banks implemented the guiding principles of the 20th CPC National Congress, practiced the political and people-oriented nature of financial work, and fulfilled their responsibilities to support the real economy more vigorously and effectively. The total credit supply to the real economy increased steadily. In addition, facing complex and severe domestic and foreign situations and multiple unexpected factors, banks continued to make interest concessions to support the real economy. The average interest rates of new loans issued in 2022 trended down generally, effectively reducing enterprises' operation and financing costs.

In 2022, commercial banks supported the national development strategies and consolidated the foundation for economic recovery. They increased credit supply for the real economy, with corporate loans (including bill discounts)[1] proliferating. In 2022, the weighted average growth rate of the ten commercial banks' corporate loans was 17.36%, an increase of more than five percentage points over 2021's 11.59%. Among them, ICBC's, ABC's, BOC's and CCB's corporate loan balance increase exceeded RMB1 trillion—ABC recorded the highest corporate loan growth rate by 21.60%, an increase of RMB2.16 trillion from the end of 2021; ICBC had the largest increase of RMB2.25 trillion, or 17.71%, with its corporate loan balance approaching RMB15 trillion at the end of 2022; CCB's corporate loan balance increased by RMB2.03 trillion, or 18.86%; BOC's corporate loan balance increased by RMB1.52 trillion, or 15.84%, lower than the average growth rate. Except for CITIC Bank, the rest banks' corporate loan growth rates rose significantly compared with 2021.

Figure 1: Corporate Loan Scale and Growth

Unit: RMB trillion



Note: ABC's, PSBC's, and CMB's total loans included accrued interest, while the rest seven banks' did not.

[1] Caliber of corporate loans: domestic corporate loans and advances, overseas corporate loans and advances (if any) and bill discount disclosed by the banks.

Interest rate cut is the primary measure to make interest concessions to the real economy. In 2022, PBC lowered the LPRs several times. The one-year LPR dropped from 3.80% to 3.65%, down 15 basis points. The over-five-year LPR fell 35 basis points from 4.65% to 4.30%. According to the data disclosed in the 2022 annual reports of the ten commercial banks, except BOC, the average loan yield of the rest banks declined. The central bank effectively guided commercial banks to lower loan interest rates. On average, the ten banks' loan yields decreased by 13 basis points. Among them, IB's average loan yield decreased by 22 basis points compared with 2021, followed by PSBC by 20 basis points; the average loan yield decline of ABC, CMB, CITIC Bank and PAB exceeded 13 basis points. In addition to reducing loan interest rates, extending principal repayment and interest payment and lowering business handling fees are important ways for banks to reduce financing costs for the real economy.

Table 1: Average Loan Yields & Rate and Fee Reduction Measures

Bank	Average loan yield in 2022	Average loan yield in 2021	Basis points up/down	Rate and fee reduction measures and results
ICBC	4.05%	4.16%	-11	Continued to make credit arrangements for deferral in principal repayment and interest payment for the inclusive loans to micro and small-sized businesses; classified credit risks based on the actual situations of the borrowers and the judgment of the substantive business risks for the loans with deferred principal repayment and interest payment. However, the temporary deferral in principal repayment and interest payment was not considered an automatic trigger event for a significant increase in credit risk.
ABC	4.09%	4.23%	-14	The annual interest rate of the newly granted loans in 2022 stood at 3.90%, a decrease of 20 basis points compared with the previous year.
BOC	3.90%	3.83%	7	Lowered the financing costs of the real economy to consolidate the foundation for economic recovery; the newly granted loan interest rate fell by 53 basis points year-on-year.
CCB	4.17%	4.25%	-8	In 2022, the bank cumulatively implemented loan extensions for 324,600 customers and deferred interest payments for 3,188 customers of various types.
BOCOM	4.21%	4.33%	-12	The weighted average interest rate of loans was kept at a historically low level; affected by interest rate and fee reduction and other factors, the Group's net fee and commission income decreased by RMB2.934 billion or 6.17% on a year-on-year basis to RMB44.639 billion.

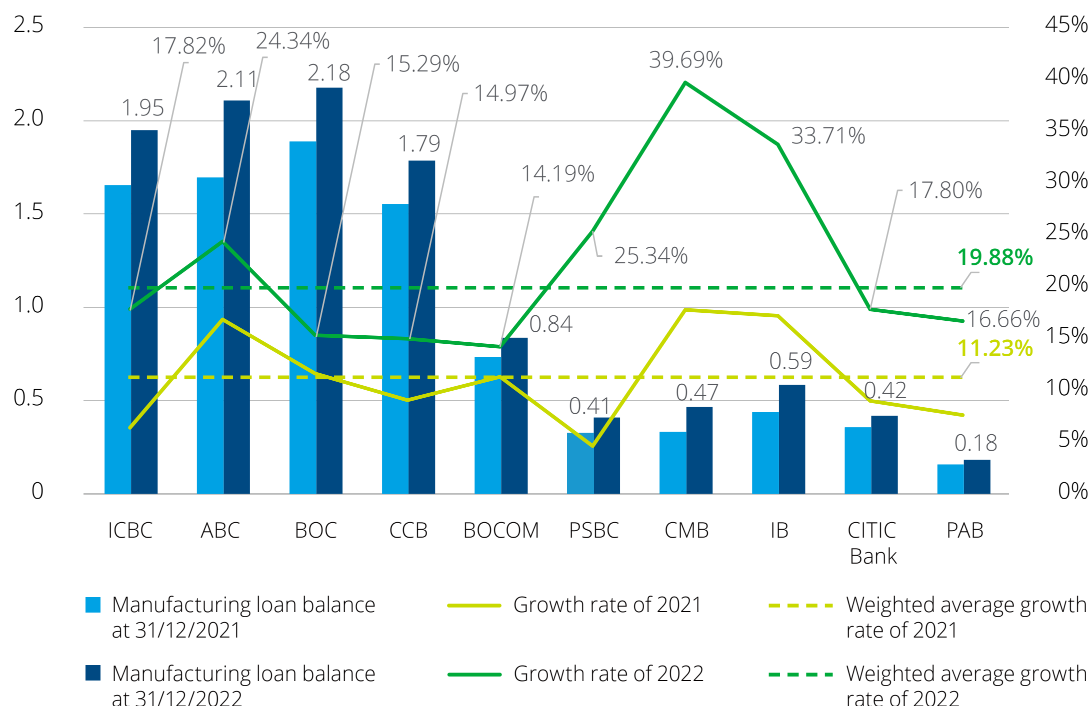
Bank	Average loan yield in 2022	Average loan yield in 2021	Basis points up/down	Rate and fee reduction measures and results
PSBC	4.48%	4.68%	-20	The bank granted inclusive loans to MSEs at an average interest rate of 4.85% in the year, a year-on-year decrease of 34 basis points, and cut or exempted fees for MSEs and self-employed individuals, effectively lowering their business costs.
CMB	4.54%	4.67%	-13	During the Reporting Period, the total loan principal and interest repayment deferred by the bank for medium-, small- and micro-sized enterprises, individual businesses and credit card customers in business difficulties was RMB42.235 billion.
IB	4.81%	5.03%	-22	For customers who applied for loan relief, the Group strictly followed the requirements of policies related to deferred payment of principal and interest and regulated customers' eligibility. For customers eligible for loan relief, the Group provided support measures such as loan extension, deferred interest payment, and adjustment to the repayment plans.
CITIC Bank	4.81%	4.99%	-18	During the Reporting Period, the bank implemented further fee reductions, lowering the interest of inclusive MSE loans for the fourth quarter of 2022 by one percentage point (annualized).
PAB	5.90%	6.09%	-19	Implemented the financial policies for supporting the real economy; the average yield of corporate loans in 2022 was 3.90%, down 12 basis points from 2021.

Targeted allocation of credit resources to enhance support for key industries and areas

To make China strong in manufacturing, all banks will continue to improve financial services for the manufacturing sector. The banks will vigorously support the high-quality development of the manufacturing sector, focusing on advanced manufacturing, high-end equipment manufacturing, traditional industry optimization and upgrading, consumer goods industry quality and efficiency enhancement, and other key areas to strengthen financial supply. Manufacturing loans have grown rapidly. According to the data disclosed by the ten banks, the weighted average growth rate of manufacturing loans reached 19.88% in 2022, more than eight percentage points higher than 2021's 11.23%. Most commercial banks' manufacturing loan balances increased by more than 15%. Among them, CMB's manufacturing loans increased by nearly 40%, IB's increased by more than 30%; the increase of ICBC, ABC, BOC and CCB exceeded RMB200 billion—ABC increased by more than 400 billion, representing a growth rate of 24.34%. Those data fully reflected the banks' active support for stabilizing the economy and intenser efforts in backing major national strategies and key areas of the real economy.

Figure 2: Manufacturing Loan Balance and Growth Rate

Unit: RMB trillion



In the meantime, in response to China's "promoting high-quality development" requirements and to facilitate self-reliance in high-level science and technology, commercial banks strengthened financial services for scientific and technological innovation enterprises and "specialized and sophisticated" enterprises. In addition, the 14th Five-Year Plan outlined "implementing the coordinated regional development strategy". All banks actively responded to China's major regional development, domestic demand expansion and key region development strategies to promote regional coordinated development.

The banks' achievements in supporting the development of "specialized and sophisticated" enterprises and key regions are listed below:

Table 2: Banks' Achievements in Supporting "Specialized and Sophisticated" Enterprises and Key Regions

Bank	"Specialized and sophisticated" achievements	Key region development achievements
ICBC	The bank carried out the campaign of "Chunmiao Action" and launched the "Financial Service for National High-tech Industrial Development Zones and High-tech Enterprises" campaign in conjunction with the Torch High Technology Industry Development Center of the Ministry of Science and Technology. At the end of 2022, the balance of loans to enterprises in the high-tech fields supported by the state and loans to strategic emerging industries reached RMB1.23 trillion and RMB1.75 trillion respectively. Loans to "specialized and sophisticated" enterprises increased by more than 85%.	At the end of 2022, the balance of RMB corporate loans in key regions reached RMB8.81 trillion, accounting for 71.7% of the balance of RMB corporate loans of domestic branches, representing an increase of RMB1.27 trillion over the end of the previous year. The bank boosted its competitiveness in major regional credit markets, leveraging its strengths in comprehensive financial services, and its RMB loans in key regions, such as the Beijing-Tianjin-Hebei Integration, the Yangtze River Economic Belt, the Guangdong-Hong Kong-Macao Greater Bay Area and the Chengdu-Chongqing Economic Circle grew faster than the beginning of the year.

Bank	"Specialized and sophisticated" achievements	Key region development achievements
ABC	The bank actively built a financial service system integrating "investment, loan and service" for science and technology startups. At the end of 2022, the balance of loans to strategic emerging industries reached RMB1.24 trillion, representing an increase of over RMB380 billion compared to the previous year's end.	The bank supported the development of the Hainan Free Trade Port by formulating differentiated policies and holding the forum of "Joint Efforts between Banks and Enterprises to Build the Free Trade Port" (also the promotion conference for cross-border financial services of the bank).
BOC	The bank strengthened financial services for micro and small-sized enterprises engaged in technological innovation and launched exclusive credit products to meet customers' diversified financial demands. It provided credit support to more than 18,000 "specialized and sophisticated" enterprises.	In response to the national strategies on expanding domestic demand and developing key regions, the bank supported the development of Beijing, Shanghai, Tianjin, Chongqing, and Guangzhou as international shopping and consumption destinations; actively provided comprehensive financial support for the construction of the "Northern Metropolis" to contribute to the interconnectivity within the Greater Bay Area.
CCB	As of the end of 2022, the four batches of 2,180 specialized and sophisticated SMEs announced by the Ministry of Industry and Information Technology had conducted credit business with the bank, with a loan balance of RMB68,349 million. Among them, the loan balance of large and medium-sized clients was RMB62,755 million, and that of small and micro clients was RMB5,594 million.	The bank adopted targeted measures to support key areas and regions. The proportion of loans in key regions such as the Beijing-Tianjin-Hebei region, the Yangtze River Delta, the Guangdong-Hong Kong-Macao Greater Bay Area and the Chengdu-Chongqing Economic Circle rose, and loans to Northeast, Central and Western regions achieved year-on-year growth.
BOCOM	The market share of "specialized and sophisticated" SMEs and Sci-tech Innovation Board customers increased by 1.81 percentage points and 1.15 percentage points, respectively. The bank launched supporting policies based on the characteristics of the technological innovation enterprises. It served 3,275 "specialized and sophisticated" SMEs, with a market coverage of 36.30%, and their loan balances increased by 75.52% from the end of 2021.	As of the end of the Reporting Period, the loan balance of the Yangtze River Delta, the Guangdong-Hong Kong-Macau Greater Bay Area and the Beijing-Tianjin-Hebei Region increased by 14.02% from the end of 2021, exceeding the Group's average growth rate of loans by 2.80 percentage points. The loan balance of the three regions accounted for 53.47%, representing an increase of 1.32 percentage points over the end of 2021.
PSBC	The bank set up 30 specialized institutions in key areas of the country to provide sci-tech enterprises with comprehensive, specialized and dedicated services. As of the Reporting Period, the bank served 54,000 specialized and sophisticated and sci-tech enterprises, with the loan growth rate exceeding 40%.	The bank promoted the development of the capital economic circle, the interconnectivity in the Yangtze River Delta, and the coordinated development in the Yangtze Economic Belt. It supported key areas such as the transportation infrastructure in the Greater Bay Area and urban renewal projects. As of the Reporting Period, the balance of loans granted to enterprises of key areas reached RMB1,127,265 billion, an increase of RMB200,851 billion over the prior year-end.

Bank	"Specialized and sophisticated" achievements	Key region development achievements
CMB	The balance of loans to "specialized and sophisticated" enterprises was RMB23.051 billion and to small- and medium-sized "specialized and sophisticated" enterprises was RMB68.847 billion.	During the Reporting Period, the balance of corporate loans of the branches in key regions amounted to RMB687.544 billion, representing an increase of RMB106.183 billion from the prior year-end, accounting for 32.79% of the total corporate loans. The increased loans accounted for 49.40% of the total incremental corporate loans.
IB	As of the Report Period, the growth rate of loans to scientific and technological innovation enterprises and strategic emerging industries was 56.59% and 67.14%, respectively. It established the "technology flow" credit evaluation and application model to accommodate the "asset-light and intelligence-focused" characteristics of the innovative enterprises, which was applied to 7,182 enterprises during the Reporting Period, with a balance of RMB200.492 billion.	Responding to the national regional development strategy, the bank actively supported the credit needs of major national strategic planning regions such as Guangdong, Hong Kong and Macao, Yangtze River Delta, Beijing, Tianjin and Hebei, and Yangtze River Economic Belt, as well as the credit needs in Fujian province.
CITIC Bank	The bank seized the opportunities in sci-tech innovation finance to empower the development of enterprises with specialized, sophisticated techniques and unique, novel products to be well attuned to the new economy. During the Reporting Period, the bank served 15,294 "specialized and sophisticated" enterprises, an increase of 5,905 compared to the prior year-end.	The bank actively implemented national policies to ensure overall economic stability and increased credit support for key regions and industries. It guided branches to grant loans in key regions, fields and industries through credit assessment.

Continued to improve the green financial management system and actively fulfilled social responsibilities

China has actively explored green finance policies and management system construction in recent years. The *Guidelines for Green Finance in the Banking and Insurance Sectors* (hereinafter referred to as the "Guidelines") proposes to establish and continuously improve green finance management policies, systems and processes following the low-carbon development goals and relevant laws, regulations and industrial policies, and build relevant capabilities to prevent ESG risks arising from climate and capital market changes, thus facilitating controlling environmental pollution and advancing carbon peaking and carbon neutrality.

All banks have made continuous efforts to improve organizational structure, policies and regulations, and work arrangements in accordance with the requirements of the Guidelines.

Table 3: Domestic Banks' Green Governance

Bank	Green governance work deployment
ICBC	• Formulated measures to promote green finance work in the next stage, and highlighted seven key tasks to enhance green finance construction, including: strengthening building ESG risk management capacity and incorporating ESG requirements into the comprehensive risk management system; continued to promote the green and low-carbon adjustment of investment and financing structure; • Actively adopted technological means to improve green financial services; strengthened green finance construction for overseas investment and financing businesses; clarified the primary responsibilities at all levels to ensure green finance construction meets regulatory requirements.
ABC	• Established a multi-channel information disclosure mechanism including periodic report, social responsibility report, green finance development report, official website, and omnimedia, and explored to carry out ESG-localized and ABC-specialized information disclosure practices; • Revised credit policies for wind, solar, and biomass power industries, and confirmed industrial management strategies and green development orientation; implemented differentiated policies regarding authorization, rating, industry quota and product innovation for qualified green credit businesses.
BOC	• To contribute to the national goal of "peak carbon emissions and carbon neutrality", the bank continuously improved its "1+1+N" green finance policy system. In 2022, the bank issued more than 20 policies as part of a policy support package covering 13 areas, such as performance assessment and incentive reinforcement, economic capital optimization, differentiated authorization, and personnel cost allocation; • Formulated and revised ten credit policies for green-related industries such as hydrogen energy, wind power generation, pumped-storage hydropower and forestry; introduced the *Guidelines on the Collateral Management of Pollution Discharge, Energy Use and Water Use*.
CCB	• Set up an ESG promotion committee to comprehensively promote the bank's ESG strategic planning, deployment and coordination, with the bank president serving as the chairman of the committee, 34 member departments (institutions), and three working groups specializing in environment, social responsibility, and information disclosure & investor relations; • Continuously optimized environment-related credit management policies and developed 75 industry-specific credit policies, which are regularly reviewed and updated as needed.

Bank	Green governance work deployment
BOCOM	• Formulated the *Green Finance Policy Package of BoCom (2022 version)* to drive the development of green finance business; • Promoted the high-quality development of green credit business, strengthened customer ESG risk management, and formulated the *Green Credit Implementation Measures of BoCom.*
PSBC	• Developed the *Action Plan of PSBC on Fulfilling Carbon Peaking and Carbon Neutrality Goals*, which specified the timetable and roadmap for carbon peaking and carbon neutrality, and proposed ten key actions and 40 concrete measures; • Promoted organizational innovation and set up green finance steering groups for carbon peaking and carbon neutrality at the Head Office and branches to make overall plans and systematically advance the work related to carbon peaking and carbon neutrality; set up 23 green finance institutions, including carbon neutrality sub-branches, green sub-branches, and green finance departments, in a bid to explore green finance innovation and development experience.
CMB	• Established a green finance business development committee under its Financial Business Management Committee and five green finance project teams; • Released the *Green Development Plan of China Merchants Bank (2022 Edition)*, which clarified its overall green development plan; • Further clarified relevant requirements for green finance through the *Green Finance Policies of China Merchants Bank.*
IB	• Formulated the *Opinions of Industrial Bank on Promoting the Group's All-green Transformation*, striving to achieve the Group's "all-green" transformation and creating "a green banking group"; • Continued to strengthen the integration of credit policy with ESG, issued the *2022 Industrial Bank Credit Policies* and the *Circular of Industrial Bank on the Issuing ESG-related Credit Policies*, requiring all industries to comply with relevant national environmental standards and strengthening credit approval management for high-energy consumption and high-emissions industries.
PAB	• Formulated the *2022 Risk Policy Guidelines, Green Finance Business Risk Manual, Green Channel Management Measures for Credit Approval, Green Finance Bond Funds-raising Management Measures, Green Financing Business Certification Label Management Measures,* and *Green Finance Marketing Management Measures*; • The *2022 Risk Policies* covered the investment and financing policies for 90 industries, and differentiated the to-be-assessed ecological and environmental impact risks for certain industries.
CITIC Bank	• The steering group for green finance headed by the president of the bank was established to coordinate the management and advancement of the bank's green finance business, develop green finance business development strategies and objectives, and guide the implementation; • Completed industrial research on green and low-carbon areas such as new energy vehicles, new energy and carbon trading, as well as the areas under high carbon reduction pressure such as coal, steel, cement and thermal power; • Formulated green finance credit policies and clarified its green finance policies and business orientation.

In addition to developing the governance systems, all banks actively built green finance capacity, and held various training to cultivate talent for implementing the corresponding green finance processes and mechanisms.

Some of the banks' green finance talent training is exemplified below:

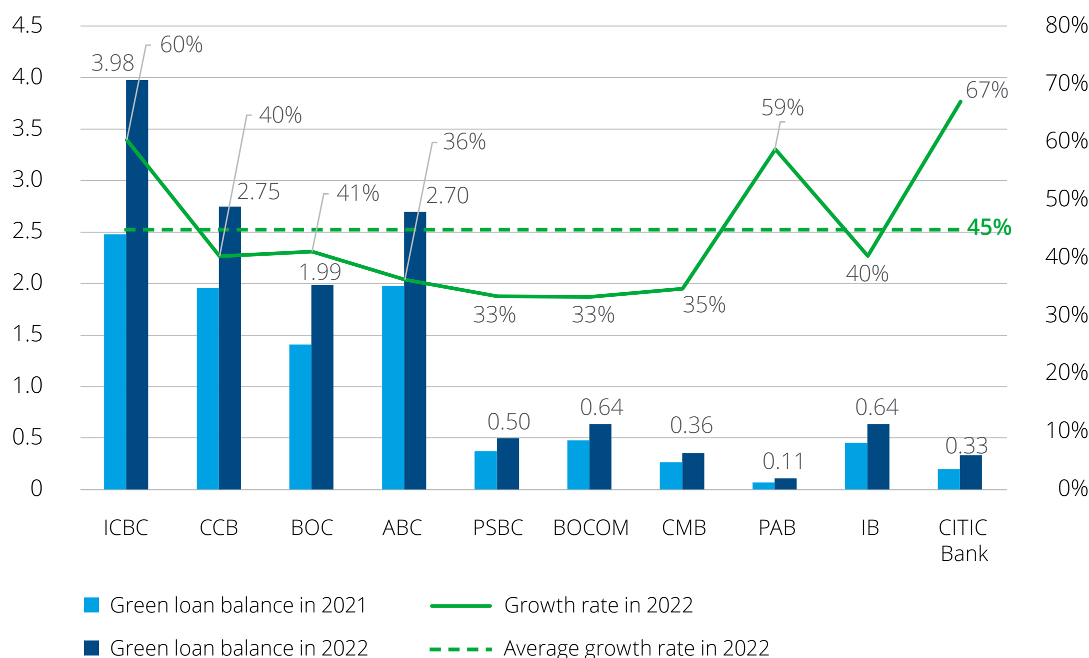
Table 4: Banks' Green Finance Training

Bank	Training
ABC	Green finance was added as a separate topic in 2022's education and training plan; held "dual carbon" and green finance training for branch presidents, special training on green finance and industrial credit management, and special online training on green finance for financial market business.
BOC	The bank issued the *Plan for Green Finance Talents Project* and established a green finance talent training system for the 14th Five-Year period covering 10,000 people across three levels and over six broad themes. A series of themed training courses were held in respect of business development, ESG risk management, and green operation, including green finance policy interpretation, product-specific training, and green finance talent training courses for comprehensive operation companies. An online training system consisting of eight modules and more than 80 courses was established, which attracted more than 750,000 views.
CCB	The bank held regular training on ESG strategy, management and disclosure for all employees, covering consumer rights protection, inclusive finance, green finance, anti-corruption, human resources, rural revitalization, complaint handling, risk management, data security and other fields, to enhance employees' ESG concept, awareness and relevant practice ability.
IB	The bank advanced the 10,000-green finance talent plan, conducted relevant training and certification work, and built stratified and classified green finance talent images.
CITIC Bank	The bank launched green finance training for all employees, including e-learning courses such as *Practice the Green Development Concept in Line with the Principle of the 19th CPC National Congress to Build a Beautiful China, Break the Deadlock through Cooperation to Support Customers' Key Projects—Marketing Case of W Steel Enterprise's Green Relocation Project*, and *Implement Green Credit in Response to the Nation's Call—Marketing Case of Export Bill Purchase after Being Insured*. Participation in the online courses totaled 29,402, with a total learning time of 34,906 hours.

Guided financial resources to flow to green and low-carbon areas, and constantly innovated green finance products

In 2022, all the domestic banks increased the green loan supply to continuously promote green finance. ICBC's green loan balance led the industry, reaching RMB3.98 trillion CCB's and ABC's green loan balances were RMB2.75 trillion and 2.70 trillion, respectively. The ten banks' average growth rate of green loan balance reached 45%. Among the state-owned banks, ICBC recorded the highest growth rate of 60%; Among the joint-stock banks, CITIC Bank ranked first with a growth rate of 67%, followed by PAB's 59%.

Figure 3: Green Loan Balance



In addition to green loans, the banks actively promoted green bonds and other green financial products to advance green and low-carbon development, making continuous innovations to drive the green transformation of the real economy.

Table 5: Green Bonds and Other Green Financial Products

Bank	Green bonds	Other green financial products
ICBC	In 2022, as the lead underwriter, the bank underwrote 67 green bonds of various types in China with a scale of RMB56.338 billion, raising RMB224.84 billion, and issued overseas bonds equivalent to USD2.68 billion.	• The green leasing business achieved a scale of RMB43.603 billion (by the CBRC caliber), accounting for about 40% of its domestic financial leasing business. During the Reporting Period, it launched the green mortgage scheme and green deposits in the Hong Kong market, and participated in HKEX's international carbon market construction as one of the first members of the Hong Kong International Carbon Market Council.
CCB	In 2022, the bank underwrote 87 batches of domestic and overseas green and sustainable development bonds, with an underwriting volume of RMB156,067 million, an increase of 25.79% over 2021. The portfolio of green bonds, denominated in domestic and foreign currencies, increased by over 110% and 10%, respectively, from the previous year-end.	• The bank invested in the National Green Development Fund Co., Ltd., which raised total funds of RMB88.5 billion, and CCB contributed RMB8 billion; • It continued to build the "green finance + consulting" service model. As of the end of 2022, CCB Consulting had provided green building consulting services for four green credit pilot programs and formulated the *Operation Manual for Third-Party Evaluation Services on Green Building*.

Bank	Green bonds	Other green financial products
BOC	The bank issued RMB87.7 billion in green financial bonds in domestic and overseas markets and underwrote domestic and overseas green bonds by RMB259.529 billion and USD28.985 billion, respectively.	• As of the end of 2022, BOCL had conducted RMB65.223 billion of financial leasing business, in which the proportion of green leasing was 37.04%; • As of the end of 2022, BOC Asset Investment had invested RMB28.599 billion in green industries, accounting for over 38.23% of its investment portfolio. BOCG Investment invested in four green equity projects in 2022, with an aggregate amount of HKD3.3 billion.
ABC	As of the end of 2022, the green bonds invested for its own account reached RMB121.64 billion, up 37.8% from the end of the previous year. In 2022, it listed green bonds, with a total value of USD0.9 billion, on the Hong Kong Stock Exchange, and issued RMB20 billion in green financial bonds in the National Interbank Bond Market.	• As of the end of 2022, the balance of green leasing assets was RMB55,132 billion, an increase of 12.9% over the end of the previous year, accounting for 65.4% of its total leasing assets, an increase of 0.7 percentage points as compared to the end of the previous year; • As of the end of 2022, the balance of green investment for its own account was RMB33.56 billion, an increase of 38.1% over the end of the previous year. During the Reporting Period, the green investment for its own account was RMB11.45 billion, a year-on-year increase of 87.7%, and the ESG-themed wealth management products reached a scale of RMB49 billion.
PSBC	The bank underwrote seven green bonds, amounting to RMB11.77 billion, a year-on-year increase of 13.00%. The balance of green bond investment amounted to RMB29.95 billion, up 29.58% over the prior year-end.	• It launched personal carbon accounts and promoted green and low-carbon cards; • It also provided carbon accounting services for corporate customers, and as of the end of the Reporting Period, had conducted carbon accounting for 2,182 enterprises.
BOCOM	During the Reporting Period, the bank issued RMB30 billion in green financial bonds in the interbank market. As the lead underwriter, it underwrote RMB7.165 billion in green bonds (including carbon neutral bonds), with a year-on-year increase of 45.93%.	• The bank invested RMB3.018 billion in green new energy equity; the balance of green bond investment was RMB11.904 billion, representing an increase of RMB7.964 billion, or 202.13% over the end of the previous year. Bank of Communications Financial Leasing Co., Ltd. had a balance of RMB71.184 billion in green leasing assets at the end of the Reporting Period, accounting for 22.47% of its total leasing assets.
CMB	In 2022, the bank issued two green bonds and one green credit asset-backed securities domestically with a total issuance size of RMB16.5 billion, and one green bond abroad with an issuance size of USD400 million. It served as the leading underwriter for 37 green bonds and underwrote RMB39.178 billion in those bonds.	• As of the end of the Reporting Period, there were eight ESG-related products, amounting to RMB3.662 billion, an increase of 150.48% as compared with the end of the previous year; • CMB Wealth Management, a subsidiary of the bank, prioritized supporting green bond investment, with the balance reaching RMB28.063 billion as of the end of the Reporting Period.

Bank	Green bonds	Other green financial products
PAB	The bank successfully issued the first green financial bond of RMB20 billion and raised funds to support the development of green industries.	• Its investment in ESG and green finance assets exceeded RMB45 billion in the year; • It implemented the "equity + debt" integrated business for clean energy capacity expansion, and innovated the pre-financing mode of new energy power station projects.
IB	The scale of green bond underwriting was RMB35.45 billion, up 15.32% year-on-year.	• The total balance of green leasing, green trust, green fund, ESG & green wealth management products, and green private equity investment reached RMB185.07 billion.
CITIC Bank	During the Reporting Period, the bank underwrote RMB5.526 billion in green bonds. Its green bond investment totaled RMB10.676 billion as of the end of the Reporting Period.	• As of the Reporting Period, its green leasing balance reached RMB27.474 billion.

Under the new development pattern of opportunities dueling with risks, the banking sector assumed part of the responsibility to alleviate the operation pressure of market players. Green finance became a breakthrough point for innovatively supporting the real economy's green, low-carbon and sustainable development. Commercial banks strengthened financial support for the real economy—implemented precise "drip irrigation" for key industries and regions, and increased and improved financial supply to guarantee financial services for the real economy. In the meantime, commercial banks continued to improve green finance governance systems and management mechanisms, enhanced capacity building, consolidated green finance infrastructure, and constantly innovated business models, focusing on new energy and other clean industries while guiding the smooth transformation of high-carbon enterprises. The banks conducted multi-dimensional innovation in financial services to contribute to the sustainable development of the real economy, thus continuously enhancing the ability of the banking sector and the real economy to resist environmental and energy risks.

3.2

China's property policies sent a strong signal for continuous risk mitigation and quality financing in the property market

Real estate investment was sluggish; policies focused on "stabilizing supply and boosting demand"

In 2022, domestic real estate investment totaled RMB13.3 trillion, down 10.0% year-on-year. Specifically, residential investment totaled RMB10.06 trillion, down 9.5%. The real estate market entered a period of in-deep adjustment with the introduction of various favorable policies. In 2022's first half, 14 cities eased home buying restrictions, 47 cities relaxed loan restrictions, nine cities eased sales limits, and 69 cities introduced fiscal incentives. However, these supporting policies did not right the ship in the real estate sector due to the lag effect. In the second half of 2022, centering on ensuring deliveries of presold homes, promoting work resumption and supporting real estate enterprises, governmental bodies at all levels continued to improve the supply and demand side policies, and introduced various supportive policies such as the *Notice on Providing Financial Support for the Stable and Healthy Development of the Real Estate Market*, promoted credit, bonds and equity financing to boost the capital market confidence and broaden enterprises' financing channels. Cutting mortgage rates and lowering the down payment ratio for first-time homebuyers further lifted the constraints on the real estate market and boosted demand.

Figure 1: Important Policies and Events in the Real Estate Sector

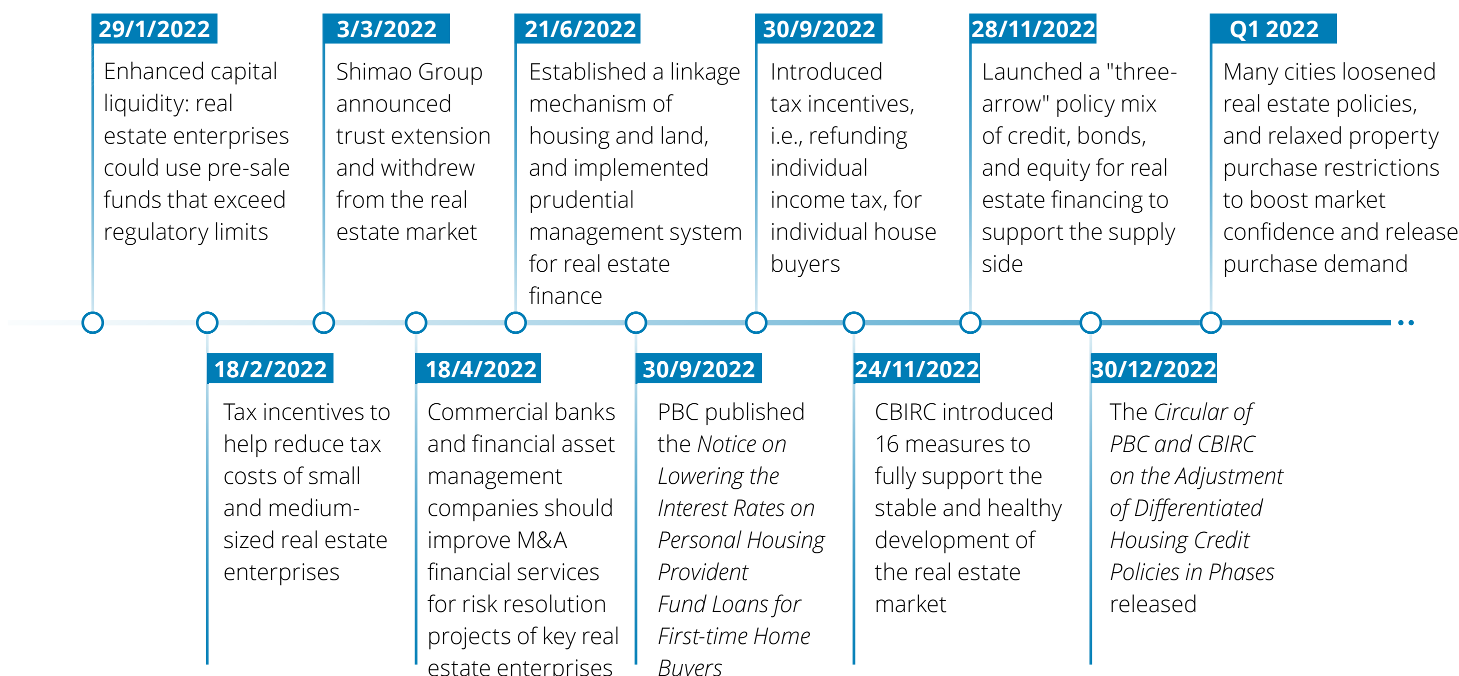


Table 1: Key Real Estate Policies Introduced in 2022 and 2023's First Quarter and Their Impact

Released by	Time and nature	Content and Impact
PBC, SAFE	18/4/2022 Contractionary/ supply side	• The *Notice on Strengthening Financial Services for COVID-19 Containment and Socio-Economic Development*, including 23 economic supporting measures; • Commercial banks and financial asset management companies should improve M&A financial services for the risk resolution projects of key real estate enterprises.
National Development and Reform Commission	21/6/2022 Expansionary/ demand side	• The *Implementation Plan for New Urbanization during the 14th Five-Year Plan Period*; • Establish a housing and land linkage mechanism, implement a prudential management system for real estate finance, support reasonable housing needs for self-living, and curb investment and speculative demands.
PBC, CBIRC	30/9/2022 Expansionary/ demand side	• The *Notice on Lowering the Interest Rates on Personal Housing Provident Fund Loans for First-time Home Buyers*; • Starting from October 1, 2022, the housing provident fund loan interest rate for first home buyers was lowered by 0.15 percentage points, and the interest rates on 5-year-and-below loans and 5-year-above loans were adjusted to 2.6 percent and 3.1 percent, respectively. Meanwhile, the interest rate floors remained unchanged for second-home buyers.

Released by	Time and nature	Content and Impact
PBC, CBIRC	24/11/2022 Expansionary/ supply side	• Introduced 16 measures to fully support the stable and healthy development of the real estate sector; • To support enterprises' financing, the policies covered property development loans, bond financing, financing through trusts and other asset management products, M&A loans, and special loans for deliveries, and proposed extending outstanding property development loans and trust loans.
PBC, China Bond Insurance Co., Ltd., CSRC	28/11/2022 Expansionary/ supply side	• Implemented the "three-arrow" policy mix for real estate financing, increasing commercial banks' credit capital, easing the capital pressure of real estate enterprises through the debt market, and strengthening enterprises' capital liquidity through the equity market.
Local governments	Q1 2023 Expansionary/ demand side	• Many cities loosened real estate policies, further expanded areas without purchase restrictions, eased purchase restrictions for talent, and optimized purchase restriction standards to boost market confidence and unleash demand.

Table 2: Default of Some Risky Real Estate Enterprises in 2022

Enterprise	Risk
Aoyuan Group	In January 2022, Aoyuan Group announced that nearly USD1 billion bills were defaulted; the redemption of financial products was delayed
Yuzhou Group	In March 2022, Yuzhou Group announced rollover of two bonds; USD500 million matured bills could not be redeemed; short-term liquidity pressure piled up; its external rating was downgraded to RD (Restricted Default)
Shimao Group	Shimao Group has announced moratorium of several bonds since March 2022; Moody's cut its rating on Shimao to Caa1
SUNAC	In May 2022, SUNAC announced that it could not pay four US dollar bonds with the interests of USD105 million bonds within the grace period; it announced the overseas bond restructuring framework in December 2022
Greenland	In June 2022, it delayed redemption of USD500 million bills (coupon rate 6.75%)
CIFI Group	In November 2022, CIFI Group announced suspending all principal and interest payments of overseas financing

Commercial banks' loan supply growth rate slowed; nonperforming loans increased significantly

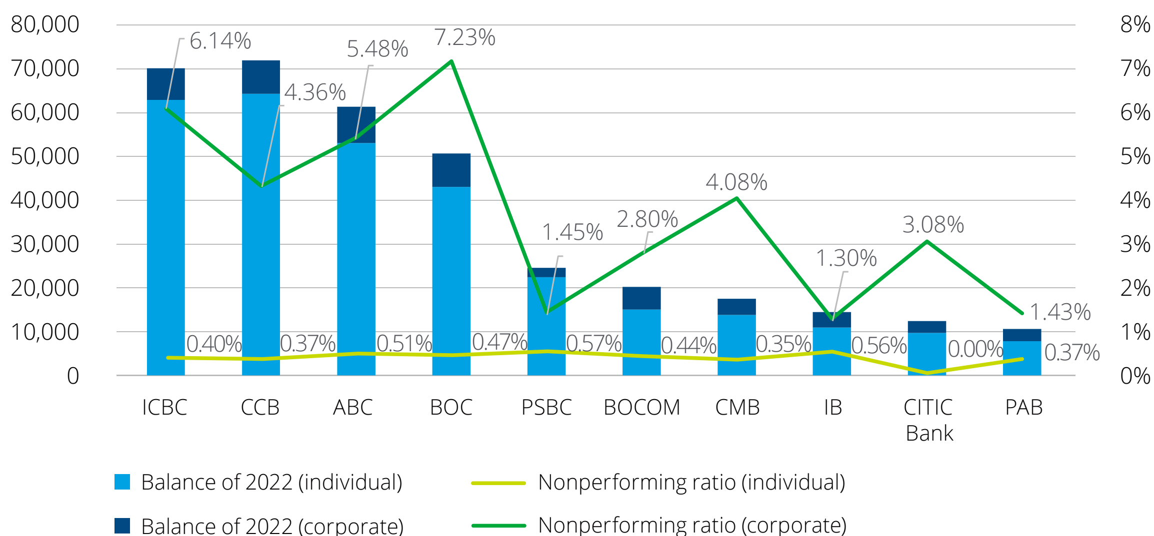
Commercial banks' real estate loans are mainly composed of three parts: loans to real estate enterprises (corporate business), individual housing loans, and off-balance-sheet businesses (including wealth management, entrusted loans, commissioned trusts and funds, and other businesses that invest capital in the real estate sector and do not assume credit risks). Specifically, individual housing loans account for a larger proportion; credit risks mainly exist in the corporate business.

Analysis of real estate loan exposure

Generally, commercial banks voluntarily disclose the real estate corporate and individual housing loans from which they assume credit risks. As of the end of 2022, the ten domestic banks' balance and nonperforming ratios of real estate corporate and individual housing loans are shown in the figure below.

Figure 2: Balance and Nonperforming Ratio of Real Estate Corporate and Individual Housing Loans

Unit: RMB100 million



Note: CITIC Bank did not disclose the nonperforming ratio of individual housing loans.

As of December 31, 2022, the ten commercial banks' individual housing loans accounted for 86% and corporate loans accounted for 14% of their real estate loans.

Individual housing loans are linked to personal credit, with a low collateral rate, stable collateral and a low nonperforming ratio. The ten commercial banks' average nonperforming ratio of individual housing loans was 0.43%, up 0.15 percentage points from the previous year's 0.28%. The average nonperforming ratio of loans to real estate enterprises was 4.49%, up 1.68 percentage points from the previous year's 2.81%.

In addition, CMB, IB, CITIC Bank and PAB disclosed the loan exposure of businesses investing in the real estate sector and bearing no credit risks, such as wealth management, entrusted loans, and commissioned trusts and funds. The scale of such businesses was relatively small, and the relevant risks were controllable.

Table 3: Real Estate Businesses Bearing No Credit Risks

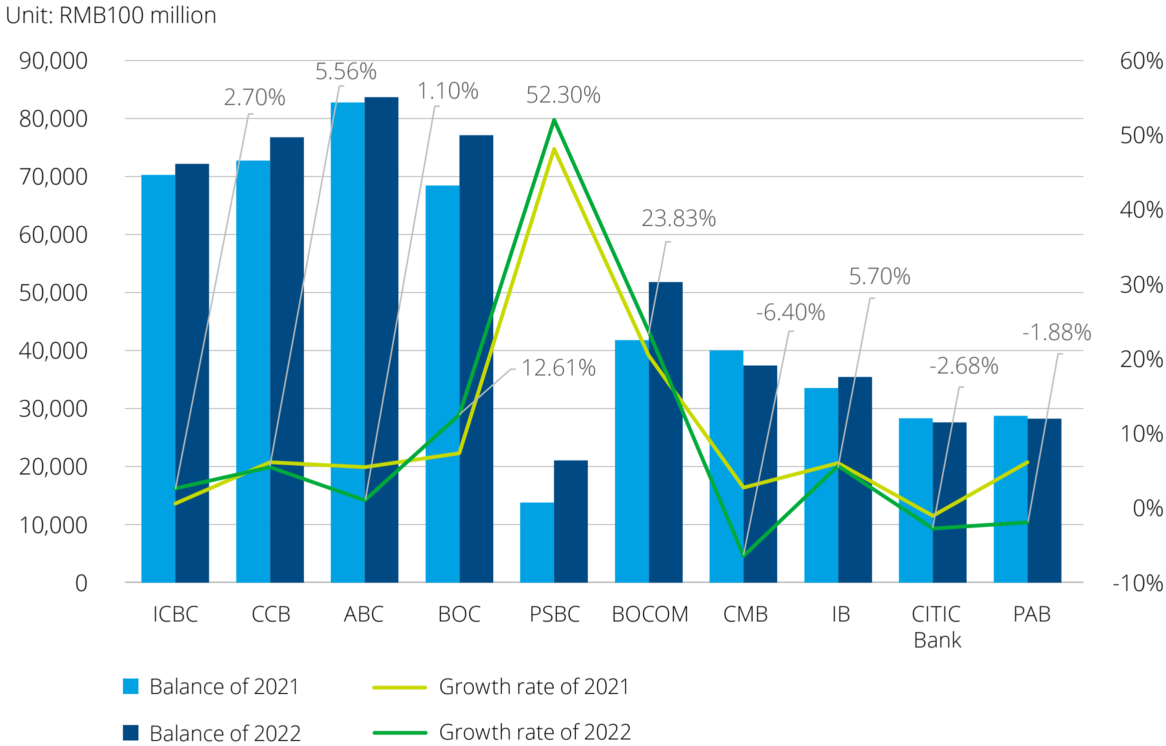
CMB	IB	CITIC Bank	PAB
Real estate businesses (such as wealth management investment and entrusted loans) bearing no credit risks totaled RMB300.4 billion, down 27% from 2021	The balance of real estate financing (such as domestic non-principal guaranteed financial products and bond underwriting) without credit risks totaled RMB124.5 billion	The balance of the Group's corporate real estate financing bearing no credit risks, including entrusted loans and investment with wealth management funds amounted to RMB48.4 billion, a decrease of RMB17.5 billion from the end of last year	Real estate businesses (such as wealth management investment and entrusted loans) bearing no credit risks totaled RMB89.6 billion, down RMB31.1 billion from the end of 2021

Growth rate of loans to real estate enterprises slowed; intentional financing to real estate enterprises boosted market confidence

In 2022, real estate corporate loans increased slightly. The ten commercial banks' average growth rate of real estate corporate loans was 6.40%, a small drop from 2021's 6.62%.

Figure 3: Analysis of Real Estate Corporate Loans

Unit: RMB100 million



As of the end of 2022, most commercial banks' growth rate of real estate corporate loans slowed. ABC's, CMB's, and PAB's growth rates fell sharply. CITIC Bank recorded negative growth for three consecutive years. PSBC registered a relatively higher growth rate due to its small real estate corporate loan base.

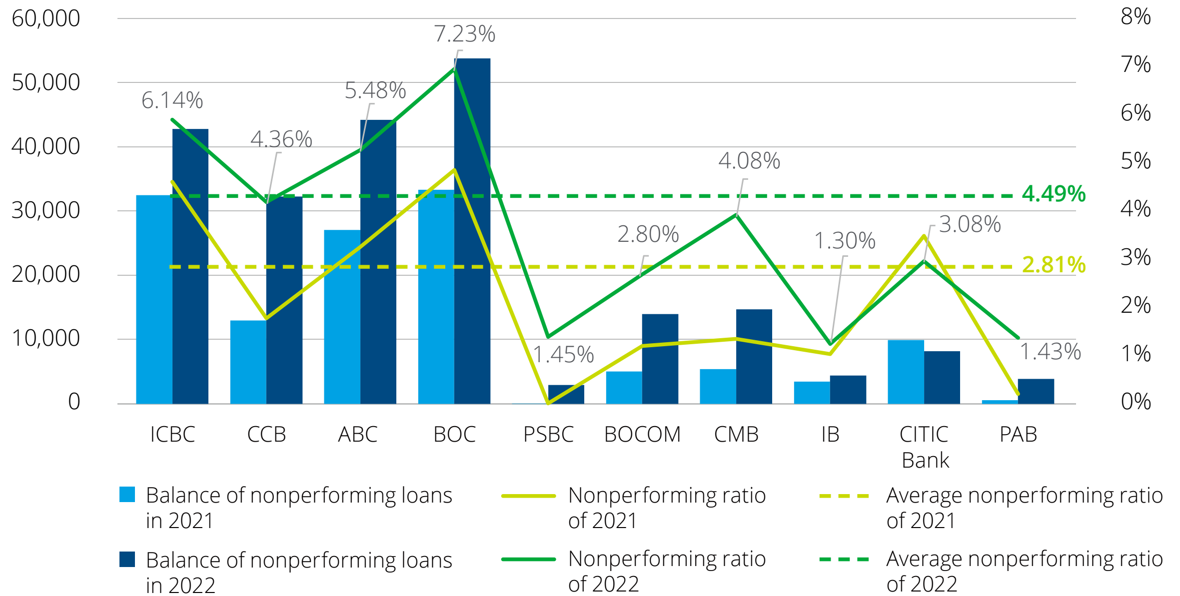
In 2022, banks continued to adjust their real estate corporate loan structure. They enhanced financing high quality real estate enterprises while reducing financing to risky ones. Since November 2022, many banks have signed strategic cooperation agreements with high quality enterprises and provided considerable intentional credit lines. As of the end of 2022, the ten banks' intentional "headquarters-to-headquarters" financing totaled over RMB3 trillion (CCB and ABC did not disclose their intentional financing scale to real estate enterprises).

Nonperforming ratio of real estate corporate loans rose remarkably; efforts to clear risks continued

2022 saw frequent defaults of real estate enterprises due to the depressed market and sales, leading to a significant increase in the nonperforming ratio of real estate corporate loans at the end of 2022. Nine commercial banks' nonperforming loans and nonperforming ratios increased (excluding CITIC Bank), with the average nonperforming ratio rising from 2021's 2.81% to 4.49%.

Figure 4: Nonperforming Loans to Real Estate Enterprises

Unit: RMB million



As of the end of 2022, domestic commercial banks recorded an apparent rise in nonperforming ratios of real estate corporate loans. Specifically, affected by the default of some large private real estate enterprises, the nonperforming ratios of ICBC, CCB, ABC, BOC, and CMB exceeded 4%; the nonperforming ratios of other banks were below 3%; IB recorded the lowest of 1.30%.

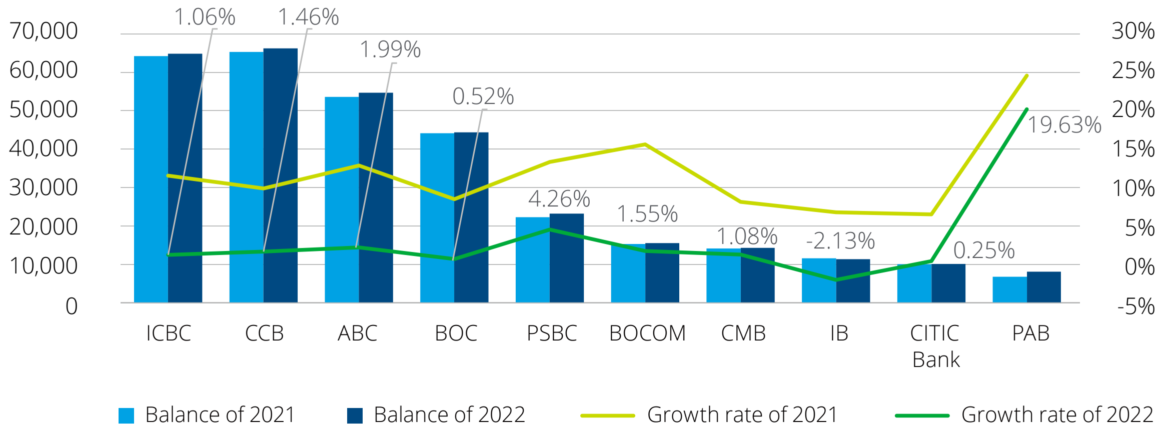
The nonperforming loans of nine commercial banks (except for CITIC Bank) increased. Specifically, CCB's, BOCOM's and CMB's nonperforming loans increased by more than 100%.

Growth of individual housing loans moderated; early repayment of individual housing loans increased

The growth of individual housing loans slowed compared with 2021.

Figure 5: Analysis of Individual Housing Loans

Unit: RMB million



As of the end of 2022, the ten commercial banks' incremental individual housing loans totaled RMB523.7 billion, with the average growth rate dropping from 2021's 10.44% to 1.75%. In 2022, with increased early repayment, the individual housing loan scale expanded slowly despite lower interest rates.

Strengthen risk mitigation, maintain steady loan supply, and develop government-subsidized housing and other home-improving markets

As real estate loan risks exploded, some commercial banks disclosed their risk-resistance results of real estate corporate business, risk control measures, and development principles in their annual reports, and elaborated on such issues in their performance presentations. Commercial banks will continue to follow policy guidance, prevent credit risks, and maintain a stable loan supply to accommodate the development trends in the real estate sector.

Table 4:

Bank	Risk-resistance achievements	Risk control measures	Outlook
ICBC	• The bank executed prudent criteria for determining nonperforming loans, and real estate corporate nonperforming loans were fully and truly reflected; • The bank had sufficient provisions to cover all losses and risks of real estate corporate loans.	• Strictly implemented the real estate macro-control policy, and maintained a stable and orderly supply of real estate loans with the focus on the objectives of "stabilizing land prices, housing prices and expectations"; • To positively respond to the changes in the real estate market, the bank carried out the risk resolution project M&A loan business, targeting key real estate enterprises, in a steady and orderly manner.	• Adhering to the market-oriented and law-based principles, the bank will actively provide financial services for "ensuring housing delivery", thus protecting the legitimate rights and interests of housing finance consumers according to law; • The bank will continue strengthening risk prevention in the real estate sector, reinforcing the defensive line, and guarding the bottom line.
CCB	• The bank continued to optimize regulations for real estate financing business, continuously improved the property development loan strategies based on the market changes, and distinguished the risks of real estate enterprises and projects to avoid a one-size-fits-all approach.	• Set up a pilot CCB Housing Rental Fund to help explore a new model of real estate development; • Continued to monitor and resolve risks and maintained stable asset quality of residential mortgages; • Stabilized supply of real estate corporate loans. The bank strengthened pre-lending, lending in-process and post-lending risk management, enhanced supervision and closed management of pre-sale funds, and increased risk screening of real estate projects as well as upstream and downstream enterprises.	• The bank will increase credit support for high-quality real estate enterprises, and provide supportive financial services to ensure housing project delivery; • Adhering to the principle that "houses are for living in and not for speculation", the bank will actively support fundamental housing demand and demand for housing improvement, meet reasonable fund needs of real estate enterprises, and smoothen the transition of the real estate industry to a new development model.

Bank	Risk-resistance achievements	Risk control measures	Outlook
CMB	• The customer and regional structures of real estate corporate loans remained sound, among which the balance of loans granted to customers of high credit rating accounted for nearly 80%; • Over 85% of the bank's balance of loans for real estate development were distributed in the urban areas of first-tier and second-tier cities.	• Adhered to the overall strategy of "defining positioning, stabilizing scale, improving access, focusing on regions, adjusting structure, and strict management"; • In accordance with the marketisation and commercialization principles, the bank conducted business and managed risks by combining the actual situations of customers and projects.	• Support rigid and upgrading housing demand, enhance financial support for housing leasing, and maintain stable and orderly financing for the real estate sector to support the healthy development of the real estate market; • Strengthen forward-looking prediction of real estate risk situations, identify risks of project subsidiaries and the holding companies, enhance risk monitoring and analysis, and promote marketisation of real estate enterprises' risk mitigation and disposal.
IB	• The balance of real estate corporate loans in the first-tier cities, provincial capitals and cities with more than one trillion GDP and a stable real estate market accounted for more than 80%— each of the projects had a good development prospect and sufficient collateral; • The balance of personal real estate mortgage loans in the first-and second-tier cities, the Pearl River Delta, Yangtze River Delta and the main urban areas of some of central China's economically developed cities accounted for 86%. The LTV value was 44.04%, and the collateral was sufficient.	• Distinguished the risks of real estate enterprises and projects. Combining the "Three Categories" risk mitigation strategy, the bank promoted real estate risk mitigation through driving project development and sales, M&A, and special asset protection; • Revitalized risky real estate projects and promoted mitigation and disposal of some risky projects through M&A, agency building and sales, joint building and management, sales, and other innovative measures.	• Strengthen the linkage between retail finance and corporate finance, promote the completion of risky projects, and accelerate real estate risk mitigation; • Fully implement "encourage both housing purchase and renting", make continuous efforts in the housing rental sector, build a sound housing rental ecosystem, actively expand urban renovation projects, revitalize ineffectively-used land, and promote the real estate business structure transformation; step up efforts in the green and low-carbon construction area to support China’s "dual carbon" strategies.

Commercial banks' real estate business outlook: "stable loan supply and risk prevention" to facilitate stable development of the real estate sector

In 2023, under the guidance of the policies introduced by the central and local governments, the existing projects are expected to get back on track gradually. Meanwhile, rigid and housing situation-improving demands are expected to increase, and sales are expected to stabilize. Some real estate enterprises are still coping with existing risks, and the advantages of the stably-operating real estate enterprises have emerged. In addition, the negative population growth and slowed urbanization slope further changed the supply and demand structure in the real estate market. In the future, real estate enterprises must transform towards new development models, exploring the enormous development and investment potential of the housing situation-improving market such as renovated housing, old neighborhood renovation and community elderly's facilities.

Rea estate business development opportunities and trends:

- As state-owned joint-stock banks have established intentional financing with high-quality enterprises, it is expected that commercial banks will strengthen efforts on the supply side and grant loans to real estate enterprises in a steady and orderly manner;
- Under the constant policy guidance to stimulate demand, commercial banks' housing mortgage loan supply is expected to increase;
- Promote existing project construction. Commercial banks will mitigate existing projects' risks by granting M&A loans and promoting closed operation and debt restructuring;
- Commercial banks will comply with regulatory policies and develop high-quality housing situation-improving businesses. Thus, their financing exposures related to long-term rental and affordable housing may increase.

Challenges facing real estate businesses:

- Before the supply side recovers, the gradual demand recovery may drive up housing prices and spur speculation, thus triggering real estate business risks;
- Some private real estate enterprises with bad operations and management just enjoy the benefits of supporting policies but lack the ability to dissolve debts. Thus, their debt risks will remain;
- The policy support for different regions and real estate enterprises varies, which may cause excessive concentration or decentralization of funds in the real estate market and difficulties monitoring funds flow.

Looking ahead, facing opportunities and challenges, commercial banks will continue to mitigate existing risks, allocate credit resources to high-quality real estate enterprises accurately and steadily, and optimize credit structures to facilitate high-quality development of the real estate sector.

Inclusive finance benefits the general population—an analysis of the sustainable development of commercial banks' inclusive finance

Commercial banks actively promoted the sustainable development of inclusive finance

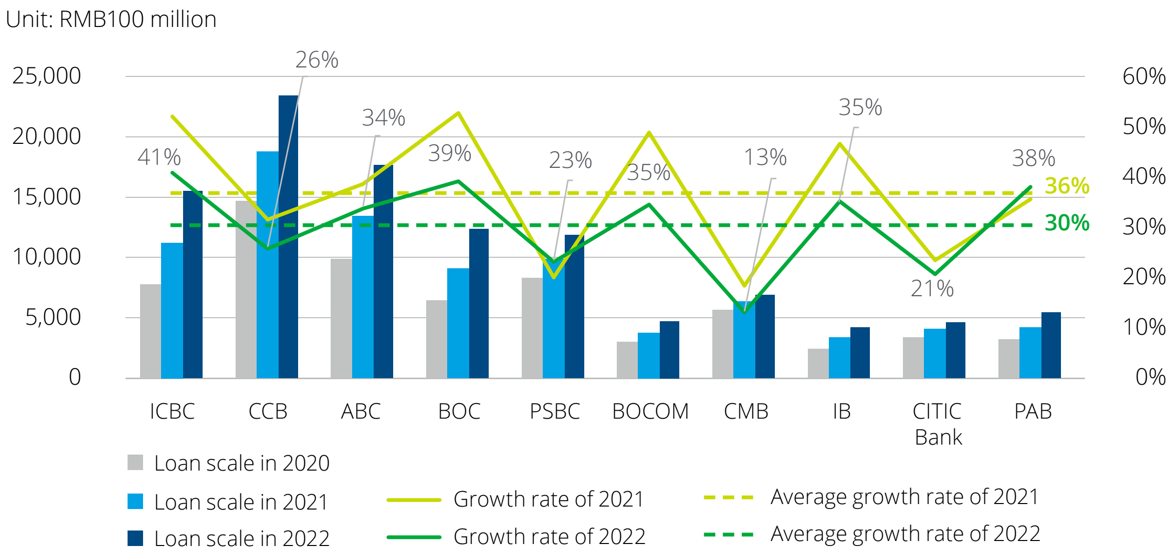
In 2022, China's inclusive finance remarkably supported high-quality economic development. Inclusive loans to small and micro enterprises increased with lower interest rates. According to the 2022 Report on the Work of the Government issued by The State Council, from 2018 to 2022, inclusive loans to micro and small businesses increased at an annual rate of 24%, rising from RMB8.2 trillion to RMB23.8 trillion, with the average interest rate falling by 1.5 percentage points compared to five years ago. Time-limited measures were taken to defer principal and interest repayments on loans to businesses severely affected by Covid-19, such as micro, small, and medium enterprises (MSMEs), self-employed individuals, and enterprises in catering, tourism, and freight transportation, and to lower interest rates on inclusive loans to micro and small businesses. Chinese government injected fresh vitality into the market through reform. Many MSMEs and self-employed individuals in various sectors have benefited as a result.

The statistics of PBC show that the balance of financial institutions' inclusive loans was RMB15.1 trillion, RMB19.23 trillion, and RMB23.6 trillion for the past three years, up 30.3%, 27.3%, and 23.6%, respectively. The six large state-owned banks led the industry, with their proportion of inclusive loans rising from 32% in 2020 to 37% in 2022. Joint-stock and city commercial banks intensified technological empowerment to support the healthy development of MSMEs substantively. Rural financial institutions leveraged their advantages to effectively integrate local capital, resources and talent to vigorously develop digital inclusive finance in the rural areas.

Inclusive loans to small and micro enterprises continued to increase with expanding customer groups; interest rates of newly issued loans trended down

Commercial banks disclosed the information of inclusive finance business separately in their annual reports. The ten commercial banks' scale and customer number of inclusive finance loans, and the interest rates of newly issued loans were as follows:

Figure 1: Scale of Inclusive Loans to Small and Micro Enterprises



Loan supply increased year-on-year to help small and micro enterprises overcome obstacles

In 2022, commercial banks recorded a relatively high growth rate of inclusive loans to small and micro enterprises, with their average growth rate reaching 30%. Eight commercial banks (excl. PSBC and PAB) recorded a lower growth rate than in 2021.

As of the end of 2022, CCB's inclusive loans to small and micro enterprises exceeded RMB2 trillion—with a loan balance of RMB2.35 trillion, up RMB480 billion from the beginning of 2022—ranking first among its peers; ABC ranked second with an inclusive loan balance of RMB1.77 trillion, up RMB447 billion from the beginning of 2022. ICBC recorded the highest growth rate, with a balance of RMB1.55 trillion, up 41% from the end of 2021, followed by BOC, whose balance was RMB1.23 trillion, up 39% from the end of 2021.

Among the joint-stock banks, CMB had the largest inclusive loan balance of RMB678.3 billion; PAB recorded the highest growth rate, with a balance of RMB528.2 billion, up 38% from the end of 2021.

On March 12, 2022, the 2022 Report on the Work of the Government no longer had a specific growth rate requirement for inclusive loans. Instead, it proposed to channel more funds into key areas and weak links and encouraged financial institutions to lower real loan interest rates and cut fees to further help resolve the financing difficulties of small and macro enterprises.

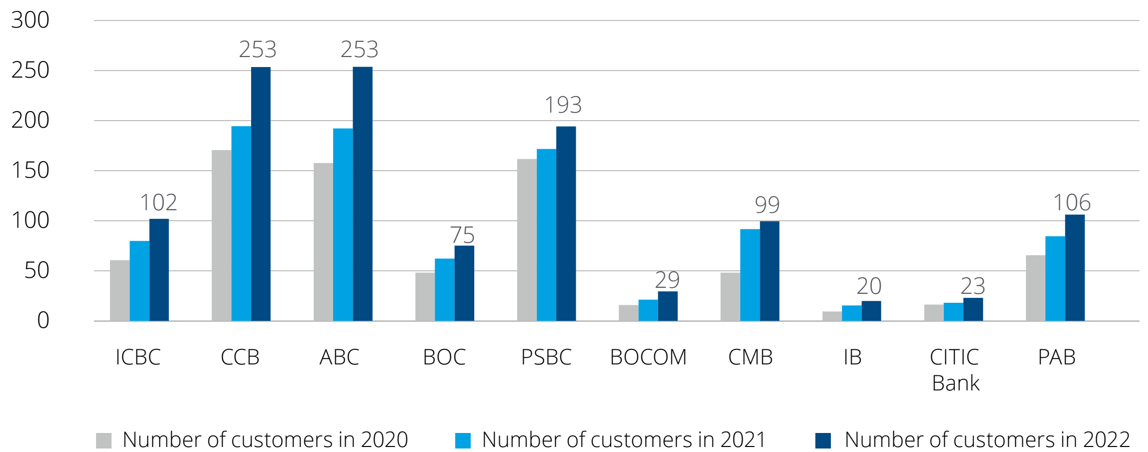
In November 2022, PBC, CBIRC and four other departments issued the *Notice on Further Increasing the Support for Deferred Repayment of Loan Principal and Interest by Micro and Small Business*, encouraging banking institutions to discuss repayment deferral with the borrowers in accordance with market-based principles with regard to the business loans to small and micro businesses that were due in the fourth quarter of 2022 but faced temporary repayment difficulties due to the pandemic. Such deferred loans would accrue interest as usual but be exempt from penalty interest. The repayment of principal and interest may be postponed to June 30, 2023, at the latest.

The six large state-owned banks shouldered their responsibilities and took various measures to ensure deferred repayment of loan principal and interest. Focusing on key areas and weak links, ICBC refined and implemented 19 special measures to strengthen financial services and solve difficulties for small and micro customers; in 2022, CCB cumulatively provided extensions for 324,600 customers and deferred interest payments for 3,188 customers of various types, playing a positive role in improving the enterprises' survival rate, driving the growth of market entities, and spurring the recovery and development of the real economy; PSBC provided targeted assistance to micro and small businesses and alleviated their pressure by deferring principal and interest repayment. PSBC also strengthened the long-effect mechanism of "having the courage, will, ability and means to grant loans" for micro and small enterprises.

Loan coverage continued to expand to reach ordinary families

Figure 2: Number of Inclusive Loan Customers

Unit: 10,000 customers

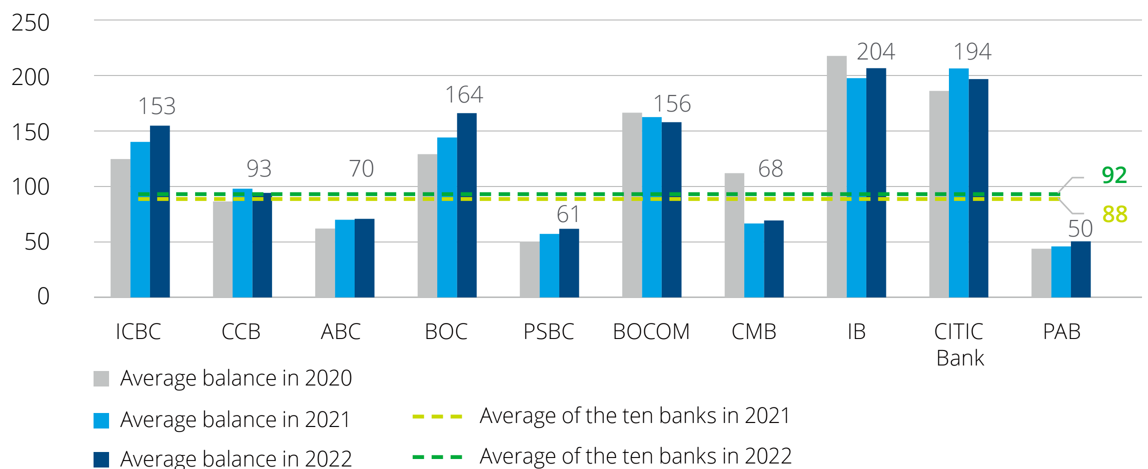


According to the 2022 Financial Statistics Report published by PBC, the number of national inclusive loan customers exceeded 56 million in 2022, up 26.8% year-on-year.

As of the end of 2022, CCB and ABC had more than 2.5 million inclusive loan customers, ranked the top most among the industry with a year-on-year increase of 590,000 and 610,000, or 30% and 32%, respectively; PSBC ranked as the second with a customers reached 1.93 million; ICBC and PAB had 1.02 million and 1.06 million customers, respectively.

Figure 3: Average Inclusive Loan Balance of Small and Micro Customers

Unit: RMB10,000



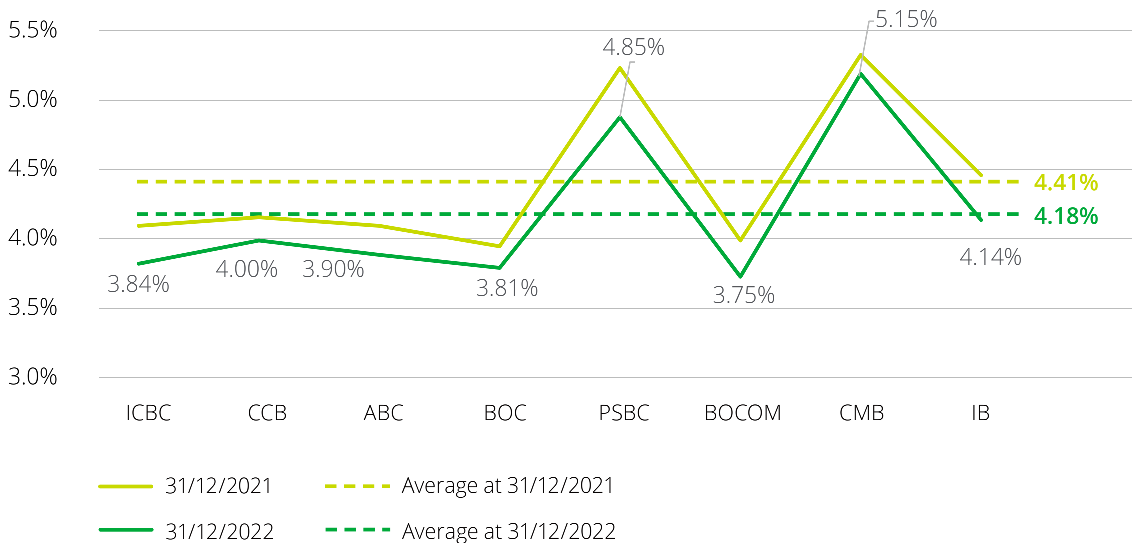
In 2022, the small and micro customers' average inclusive loan balance of the ten commercial banks was RMB920,000, an increase of RMB40,000 or 4.55% from the prior year-end. As of the end of 2022, PAB's inclusive loan customers' average balance was the lowest (about RMB500,000); IB and CITIC Bank recorded the highest average balances, respectively, RMB2.04 million and RMB1.94 million.

Specifically, CCB's, BOCOM's and CITIC Bank's inclusive loan customers' average balances dropped from 2021, with their customers continuing to expand in lower-tier cities and rural areas; ABC's, PSBC's, CMB's and PAB's balances were all below the average.

Financing costs dropped steadily, demonstrating commercial banks' responsibilities in hard times

All commercial banks' interest rates of newly issued loans showed a year-on-year decline trend. In 2022, except for PSBC, CMB and IB, the interest rates of other commercial banks were lower than 4% (including 4%). Specifically, BOCOM's interest rate of newly issued loans was the lowest—at 3.75%; ICBC and IB recorded a large interest rate drop—falling from 4.10% and 4.45% to 3.84% and 4.14%, respectively.

Figure 4: Interest Rates of Newly Issued Inclusive Loans to Small and Micro Enterprises



Note: CITIC Bank and PAB did not disclose the interest rates of newly issued loans in 2021 and 2022.

To further lower small and micro enterprises' financial costs and ease their interest-paying pressure amid the pandemic, on November 9, 2022, PBC introduced the policy to cut interest rates of inclusive loans to small and micro enterprises temporarily, i.e., supporting financial institutions to cut 1 percentage point (annualized rate) from the interest rates specified in the loan contracts for existing, newly-issued and matured (including deferred loans) inclusive loans (accrue interest normally) to small and micro enterprises in the fourth quarter of 2022.

Financial institutions implemented the policy by the principle of "benefiting the widest range of enterprises as soon as possible and requiring no application". They reduced interest rates of existing and newly-issued inclusive loans to small and micro enterprises directly or refunded the enterprises the interest charged, helping them through difficulties.

In December 2022, Shanghai became the first city to receive an interest cut, which amounted to RMB51 million and benefited over 9,200 market entities—their average amount of interest deduction exceeded RMB5,500.[2]

PSBC cumulatively deducted and returned RMB2.7 billion in interests for 1.6 million small and micro enterprises. PSBC took practical actions to lower small and micro enterprises' financial costs, supporting their recovery and growth.

[2] Source: Shanghai Municipal People's Government

Improved development models and enriched product lines to further the high-quality development of inclusive financ

Bank	Strategy	Development model	Major products
ICBC	Driven by innovation and transformation, ICBC further developed the "digital inclusive" model, improved the product system, and innovated the service model to promote the **sustainable and high-quality development** of inclusive finance	• Continued to refine the three major digital inclusive product systems, namely, Online Revolving Loan, Quick Lending for Operation, and Digital Supply Chain; • Strengthened the supply of credit funds and business opportunities, built a comprehensive financial service system of "financing, consulting and commercial services" for small and micro enterprises, and created a sound development ecosystem; • Following the "digital inclusive" development direction, ICBC formed a financing risk management system characterized by "data-driven, intelligent warning, dynamic management and continuous operation"; • By comprehensively integrating internal and external data sources such as financing, settlement, justice, credit reference, taxation and customs, ICBC built a "1+N" intelligent risk control system adapted to the risk characteristics of small and micro enterprises.	• In terms of Online Revolving Loan, ICBC launched e-Mortgage Quick Loan, an innovative online mortgage service that enables whole-process online handling of mortgage businesses. It enriched the online assessment function of e-Enterprise Quick Loan based on nonstandard collateral such as factory buildings and commercial buildings; • In terms of Quick Lending for Operation, ICBC created national scenarios such as settlement, taxation, employment and cross-border business, as well as regional scenarios such as planting, breeding, and specialized markets. It launched "Merchant Loan" based on acquiring information to effectively support inclusive long-tail customers such as self-employed businesses; • In terms of Digital Supply Chain, ICBC actively enhanced cooperation with leading enterprises in key industries, built a financial service system for industrial chain scenarios, and launched customized online financing products to effectively meet the diversified financial needs of production, purchase and sales.
CCB	Inclusive finance opened up new horizon, injecting momentum for people's entrepreneurial efforts	• Continued to develop the model of digitalized inclusive finance featuring "batched customer acquisition, accurate profiling, automated approval, intelligent risk control, and integrated services"; • Continuously upgraded the "digital, whole-process, standardized" intelligent risk control and management system; • Organized the special action of "Benefiting Markets and Enterprises" nationwide, gathering resources from all sides to promote inclusive financial services to benefit more market entities.	• "CCB Huidongni" 3.0 was launched to provide one-stop integrated services for micro, small and medium-sized enterprises and foster an inclusive finance ecosystem "knowing you better"; • The Village Chain Project connected 440,000 Yunongtong service sites with the online app, extending modern financial services to numerous households in rural areas; • Constructed an exclusive credit service system for personal business customers and increased financial support for inclusive finance customers such as individual business owners; • Products of new patterns such as "Quick Loan for Small and Micro Businesses" cumulatively provided credit support totaling RMB8.83 trillion. Specifically, "CCB Startup Station" granted RMB42 billion loans to over 23,000 member enterprises.

Bank	Strategy	Development model	Major products
PSBC	PSBC earnestly upheld the mission of "delivering accessible financial services in both urban and rural areas" to support all-around rural revitalization	• Increased assistance to help MSEs overcome difficulties and restore development; • Built specialized institutions and teams, and set up 30 specialized institutions in key areas of the country to provide sci-tech enterprises with comprehensive, specialized and dedicated services; • Continued to optimize the "5D (Digital) " systems, i.e., digital marketing system, digital product system, digital risk control system, digital operation model and digital service method; • Continuously optimized the long-term mechanism of "having the courage, will, ability and means to grant loans" for MSEs, strengthened forward-looking risk warning, and further intensified the top-level design and institutional guarantee for inclusive finance strategies.	• Tailored products such as the "Science and Technology Credit Loan", "Science and Technology Innovation E-Loan", and guarantee for sci-tech enterprises in batches based on their "asset-light and operation-light" features; • Relying on the national platform of integrated credit services for SME financing (xyd.creditchina.gov.cn), PSBC created several special credit loan products dedicated to vertical areas such as "Credit Loan for Sci-Tech Enterprises" and "Credit Loan for Industries"; • PSBC continuously optimized the "Easy Small and Micro Loan", its signature digital product. Giving attention to the life cycle of MSEs, it is connected to the data of tax, invoices, IPR, enterprise orders, and core enterprises.
PAB	"True inclusive service, true micro/ small enterprises and true credit"; and continued to improve the level of inclusive financial services.	• Took serving inclusive customer groups as the strategic focus, increased technology empowerment, and focused on customer needs to effectively help drive the healthy and sustainable development of micro, small and medium-sized enterprises; • Implemented the new model of retail transformation, deepened digital and online operations constantly, and built 7 × 24 hours loan services; • Built the "Smart Bank 3.0"; constructed a customer-centric and data-driven management system.	• With the help of leading technologies such as big data, AI, Internet of Things and blockchain, PAB looked deep into supply chain scenarios and ecosystems, promoted the "New-Micro-Loan" product for micro/small enterprises to realize digital upgrades; • Continuously optimized the inclusive products such as "Home Equity Loans" and "Mortgage E-Loan", effectively alleviating the financing barriers and lowering financing costs for enterprises; • Accelerated the innovation of agriculture-related inclusive financial products and launched "preferential agricultural loans"; provided development funds for multiple physical industries such as mariculture, crispy grass carp breeding, fishing and fishery.

Continued to improve commercial banks' inclusive finance development quality and efficiency

Inclusive finance has been an essential part of national strategies over the past five years, becoming a milestone in financial development. Under the guidance of national inclusive finance strategies, large, medium, and small-sized banks have been actively engaged in the inclusive finance market, forming a Chinese inclusive finance landscape. Inclusive finance businesses face opportunities and challenges in the medium and long term. Commercial banks should scale up efforts in the following aspects to promote the high-quality development of inclusive finance:

Intensify top-level design and strengthen capability building

In recent years, inclusive finance has cemented its strategic position in China. The State Council has studied and deployed numerous inclusive finance policies and measures, and introduced a series of monetary, credit, and differentiated regulatory and fiscal policies, to constantly strengthen guidance and constraints and stimulate financial institutions and market entities to increase inclusive finance support, building positive systems and mechanisms to enhance commercial banks' courage, willingness, and capacity to grant loans.

Commercial banks should consider inclusive finance in their top-level design and make developing inclusive finance a business strategy. They should establish a dedicated department and introduce special policies to promote inclusive finance from a strategic perspective. In particular, banks should clarify the management scope and responsibilities for businesses overlapping with the traditional credit department to improve management efficiency.

Allocate resources accurately; narrow the gap between regions

According to the *Analysis of China's Inclusive Finance Indicators (2021)* published by PBC, more inclusive finance loans were granted in Eastern than in Western China due to different regional development levels and business costs of inclusive finance. Specifically, the loan scale and customer number in Zhejiang, Guangdong, and Jiangsu provinces far exceed other regions.

Commercial banks should develop digital inclusive finance based on local conditions, break regional and cost limitations to launch innovative credit products that reflect regional characteristics, and promote digital inclusive finance to reach more customers in lower-tier cities and rural areas, to drive employment, and balanced economic development in different regions.

Promote integrated development of inclusive and green finance

The core development philosophy of inclusive finance is to provide different customer groups with equal economic development opportunities by extending financial services to a broader range of customers, thus promoting coordinated economic and social development. Green finance's core is guiding capital and resources to flow to the green sectors to achieve sustainability. Both green finance and inclusive finance contribute to sustainable development and are interconnected.

China's economy has transitioned from a phase of rapid growth to a stage of high-quality development. However, the intensive economic development, deepened financial supply-side structural reform, and the full implementation of the rural revitalization and new urbanization strategies have triggered more considerations on green, inclusive finance. Commercial banks should actively integrate inclusive and green finance, balance the development of green and non-green projects, and inject new impetus into economic restructuring and development mode transformation.

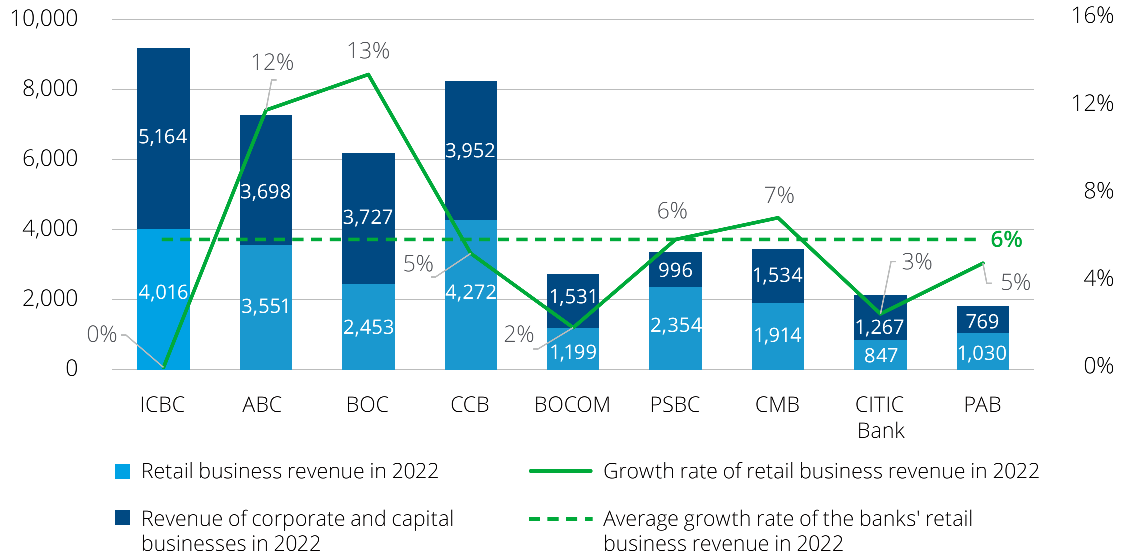
Building a new growth engine in retail banking – banks strengthened their capabilities to attract customers via digital channels while the retail banking business has slowed down

In 2022, the macroeconomy grew slowly, and the recovery of different regions and industries was uneven, affecting employment and residents' income and weakening consumption momentum. Therefore, PBC intensified implementing prudent monetary policy and made the structural monetary policy tools entirely play their roles. Domestic commercial banks upheld the customer-centric principle resolutely, stuck to the original aspiration of developing inclusive finance to benefit people's well-being, and strengthened fine management of retail business and digital operation capacity to promote high-quality development of retail financial business.

Retail revenue growth rate slowed; retail profits declined

According to the revenue disclosed by the ten domestic banks by business segments, in 2022, the ten banks' retail financial business revenue, on average, accounted for 50% of their total revenue. The retail business of five state-owned banks (excl. BOC) contributed more than 40% of their total revenue—PSBC reaching 70%. Among the joint-stock banks, the retail business of CMB and PAB contributed more than 50% of their total revenue, and CITIC Bank's contributed more than 40%. The average growth rate of the ten domestic banks' retail business revenue was 6%, down three percentage points from the previous year. Nine banks' growth rates trended down, except for BOC. Overall, the ten banks' retail business revenue growth slowed, and the revenue proportions remained the same as at the beginning of 2022.

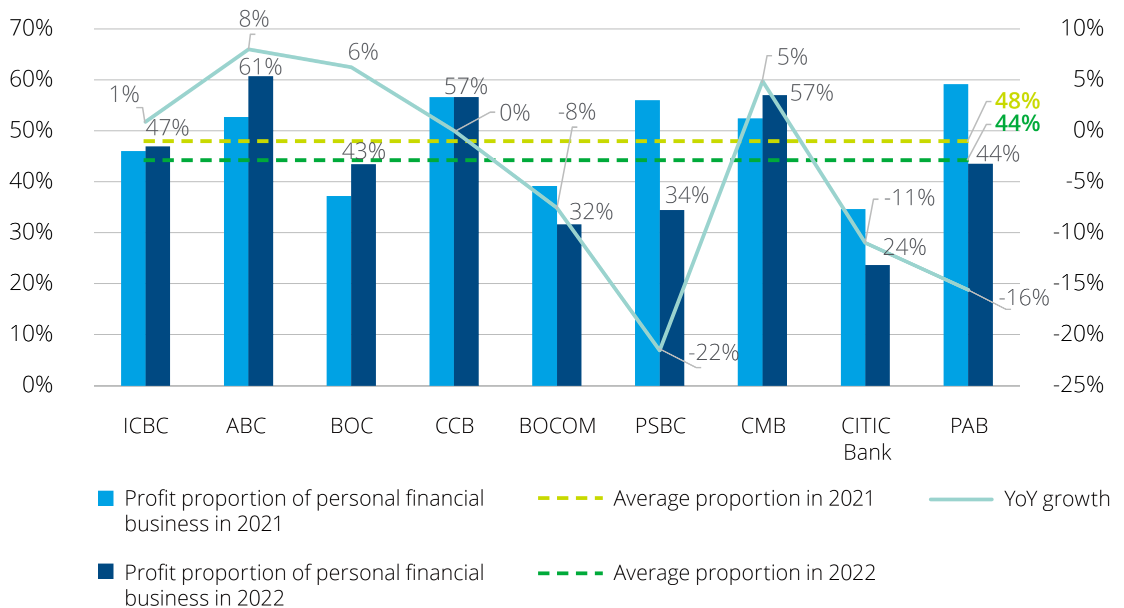
Figure 1: Retail Business Revenue



Note: IB did not disclose the information of personal financial business in its FY2022 annual report.

According to the data disclosed by the ten domestic, commercial banks, in 2022, their retail business profits averagely accounted for 44% of their total profits, down four percentage points from the previous year. As the macroeconomy affected the retail asset quality, some banks increased write-offs and provisions for retail assets, resulting in a year-on-year drop in retail profit proportion. In 2022, BOCOM's, PSBC's, CITIC Bank's and PAB's retail profit proportions declined compared with 2021. Specifically, PSBC recorded the largest decline, by 22 percentage points to 34%, followed by PAB, with retail profits accounting for 44% of its total profits, down 16 percentage points from the previous year.

Figure 2: Proportion of Retail Business Profits

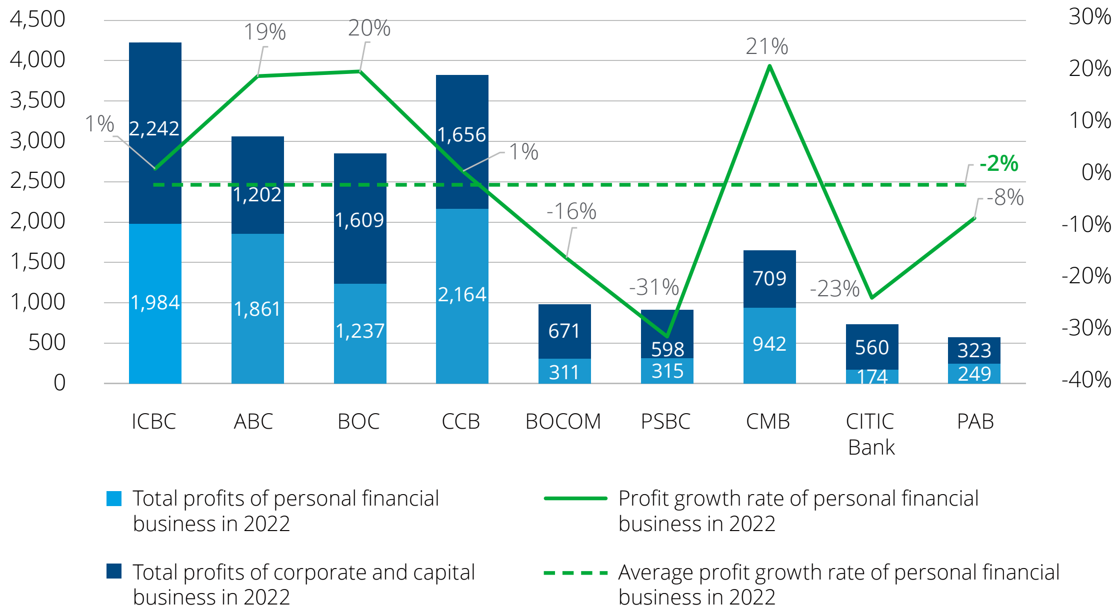


Note: IB did not disclose the information of personal financial business in its FY2022 annual report.

The ten banks' average growth rate of retail profits was -2%. Specifically, CMB recorded the highest growth rate of 21%; the growth rate of BOC was 20%; PSBC and CITIC Bank recorded a significant retail profit decline—by 31% and 23%, respectively. In general, the ten banks' retail profits and the profit proportions trended down.

Figure 3: Retail Business Profits

Unit: RMB100 million



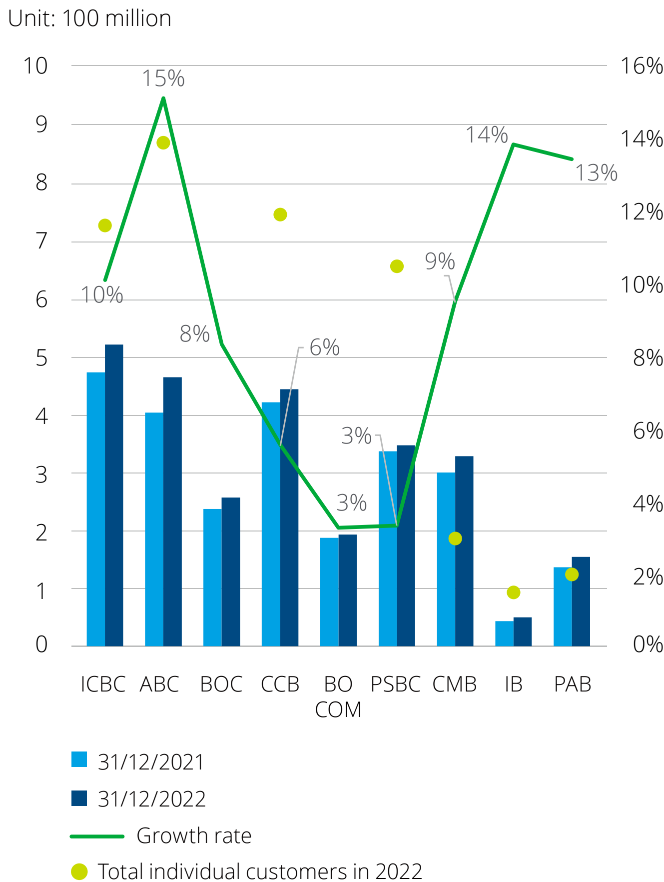
Note: IB did not disclose the information of personal financial business in its FY2022 annual report.

Mobile banking users grew with increasing activity

In 2022, domestic commercial banks focused on supporting people's aspiration for a better life, continued to promote product innovation and fine management, and improved operation efficiency through Fintech. Their retail customer scale and activity increased continuously. As the primary front-end channel of retail business, mobile banking developed continually, driven by the digital economy. Banks actively developed digital customer acquisition models, and strove to create new growth points of customer acquisition through optimizing customer experience, upgrading functions and services, and opening up the scenario ecosystem. According to the banks' FY2022 annual reports, except for CCB, BOCOM, and PSBC, mobile banking users of ICBC, ABC, BOC, CMB, IB, and PAB maintained a growth rate of over 7%, with ABC's and IB's growth rates reaching 15% and 14%. The mobile banking monthly active users (MAU) of ICBC and ABC were 174 million and 172 million, respectively. PSBC's mobile banking users rose to 344 million, with MAU exceeding 49 million. BOC's number of mobile banking users was much smaller than other state-owned banks, but it continued to carry out retail digital transformation in 2022, with users growing by 8%. The MAU of CMB APP reached 67 million, ranking first among joint-stock banks. IB recorded the highest MAU growth rate of 34%, with 21 million MAU in 2022. In addition, some banks disclosed the MAU of card APPs in their annual reports. Specifically, CMB Life APP and BoCom Credit Card Official APP had 43,841,300 and 25,437,300 monthly active users, respectively; the average MAU of IB's "Industrial Living" app exceeded 12 million.

Figure 4: Number of Mobile Banking Users

Unit: 100 million



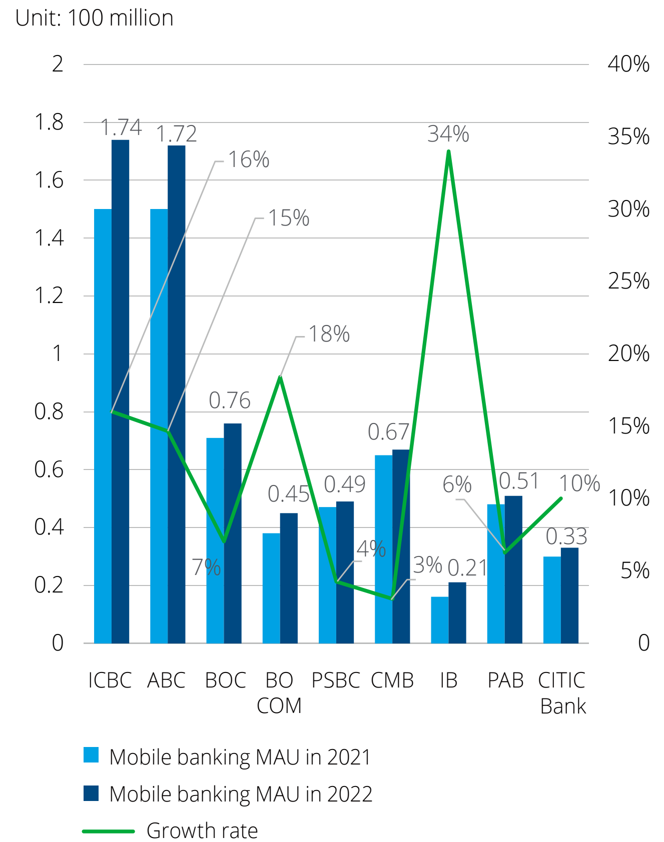
Note: The number of mobile banking users was the total number of mobile banking users and card APP users disclosed by the banks.

Note: BOC and BOCOM did not disclose the number of individual customers in 2022. CITIC Bank did not disclose the number of mobile banking users in 2022.

Note: IB's number of individual customers was the total retail banking customers (including credit card customers). CMB's number of individual customers was the total retail customers.

Figure 5: Mobile Banking MAU

Unit: 100 million



Note: CCB did not disclose its MAU in 2022.

Online and offline channels combined to provide quality financial services

In 2022, with burgeoning Fintech, banks gave full play to the advantages of digital customer acquisition and services, providing efficient and high-quality financial services through multiple channels and scenarios to help better manage customers' financial life while fostering new business growth drivers.

Online scenarios' activity boosted; bank-enterprise cooperation developed steadily

In the Internet era, banks provided customers with more diversified scenarios; they expanded online transaction channels and innovated online financial services by cooperating with payment institutions. Banks' online business showed good momentum.

Table 1: Measures and Achievements in Expanding Online Scenarios and Channels

Bank	Measures and achievements in expanding online scenarios and channels
ICBC	• With "mobile banking + ICBC e Life" as a main platform, ICBC pooled resources to establish an open wealth community, and created new product and service architectures such as a new generation of personal loan system and ICBC Lingtong Account. ICBC had 516 million personal mobile banking customers, with more than 174 million monthly active mobile users; • Strengthened cooperation with payment institutions, cross-border e-commerce platforms and other entities; Launched the pilot project of the cross-border e-commerce collection model in Shanghai, and supported the innovative development of cross-border RMB business in areas such as Shanghai Lingang Special Area, Guangdong-Hong Kong-Macao Greater Bay Area and Hainan Free Trade Port; In 2022, the cross-border RMB business exceeded RMB9 trillion.
CMB	• The MAU of the CMB APP and the CMB Life APP reached 111 million; • With respect to the retail credit business, CMB optimized the digitalized experience for customers; The total number of registered users of the CMB Zhao Dai APP, an exclusive service platform for small- and micro-sized customers, reached 2.6843 million; During the Reporting Period, the credit facility of micro-finance loans applied and granted through the CMB Zhao Dai APP reached RMB204.830 billion.
CCB	• Corporate online banking launched a single operator mode for small and micro business owners; Promoted the SaaS direct linkage mode of corporate online banking, and, by the end of 2022, captured 228 users with 8,066 transactions amounting to RMB1,933 million; • The number of fast payment card users reached 419 million. The number of "super users" with more than 200,000 transactions per year reached 192 million; • The volume of online payment transactions was 52,894 billion, up 4.16% over 2021, amounting to RMB20.68 trillion, and the share of customers with leading payment enterprises such as Alipay, Tik Tok, Meituan, Pinduoduo, and JD.COM ranked first among banking peers.
ABC	• The balance of Huinong E-loan (an online loan to rural households) amounted to RMB747.7 billion, representing an increase of 37.3%; The balance of "ABC E-loan" exceeded RMB3 trillion, representing an increase of 42.3% as compared with the previous year; • The balance of online loans supported by big data and financial technology increased by RMB905.4 billion as compared with the prior year-end; The conversion rate of potential small and micro-enterprise customers through accurate identification and discovery exceeded 30%; The intelligent anti-fraud platform monitored more than 300 million transactions on average per day.

Bank	Measures and achievements in expanding online scenarios and channels
BOC	• In 2022, BOC's mobile banking transactions reached RMB46.73 trillion, up 18.67% compared with the same period of the prior year. The number of non-financial mobile banking scenarios totalled 870, and the number of monthly active mobile banking customers stood at 76.2 million; • Built online channels with more robust scenario integration capabilities. In 2022, BOC's e-channel transaction volume reached RMB339.62 trillion, an increase of 4.51% compared with the prior year.
BOCOM	• The BoCom Credit Card Official APP added a series of livelihood scenarios, such as rural revitalization, facilitating online consumption for users, and customized a barrier-free version for elderly users. In 2022, it served more than 910,000 elderly customers, the cumulative number of registered customers amounted to 75.007 million and the number of MAU was 25.4373 million. The frequencies of BoCom Credit Card Official APP used in financial and non-financial scenarios were 82.79% and 66.23%, respectively.
PSBC	• Upgraded the mobile banking app for MSEs, and created several products such as "Credit Loan for Sci-Tech Enterprises". The outstanding online loans to MSEs stood at RMB1.12 trillion, an increase of 56.53% from the prior year-end; • The PSBC Credit Card APP 4.0 went live, strengthening user experience and precisely empowering the marketing activities of branches through online channels. The number of PSBC Credit Card App users reached 16,609.2 thousand, a year-on-year increase of 117.62%.
IB	• The number of mobile banking active customers was 49.2039 million, representing an increase of 5.9436 million over the prior year-end; The number of registered users of the "CIB Inclusive" was 68.3 thousand, representing an increase of 714.44% as compared with the prior year-end; The counter replacement rate of online finance reached 96.25%; • The "Industrial Living" app was connected to mobile banking; Launched the specialized area of "Car Living" and built a one-stop car service scenario.
PAB	• Deeply advanced the construction of "Smart Bank 3.0"; Activated existing customers in multiple ways with the help of the "AI + T + Offline" portable banking; • In 2022, the intelligent channels covered the full range of business scenarios, and the proportion of non-manual services exceeded 90%.
CITIC Bank	• Upgraded the China CITIC Bank APP 9.0 to support the refined, stratified and classified management of retail customers. As of the end of 2022, the bank's mobile banking app transactions amounted to RMB12.74 trillion, an increase of 6.99% year-on-year; • Promoted the application of the WeChat Account to strengthen long-term and effective customer relationships. At the end of 2022, the number of WeChat Account followers reached 5.2845 million, up 74.07% year-on-year.

In recent years, banks applied big data to tap user demands to provide more accurate personalized services. They innovated financial products in various product segments and integrated featured financial services into users' daily lives. Several banks' channel transaction volume surged to new highs repeatedly.

Offline channels were further optimized; online and offline synergy enhanced

While online scenarios flourished, banks actively transformed their physical outlets. They shifted to intelligent outlet operation and optimized outlet layout to improve efficiency. They also intensified the online and offline synergy to enhance their comprehensive service capabilities.

Table 2: Optimizing Outlet Layout and Building Intelligent Channels

Bank	Outlet layout optimization	Intelligent channel building
ICBC	• At the end of 2022, ICBC had 15,639 outlets, 22,636 self-service banks, 75,889 intelligent devices and 60,204 automatic teller machines ("ATMs"); • Built and relocated 587 outlets in 2022; upgraded the outlet construction standards adapted to the elderly and increased the service facilities suitable for the elderly; advanced the construction of rural inclusive financial service points as scheduled—setting up a total of 3,756 service points in 1,470 counties and 2,543 towns.	• Promoted the bank-government interconnection services such as smart medical insurance, credit report, and e-CNY at the smart ATMs of outlets, and added 1,603 one-stop government service outlets in 2022; • Further implemented the intelligent processing of complex businesses such as remote authorization, cross-border payment and account opening, and created 46 intelligent scenarios in total, with an annual processing volume of 280 million intelligent transactions; • Promoted the intelligent transformation of self-service equipment, and enabled 11 types of transactions with one submission, one signature and one review for customers to apply for new debit cards, significantly improving the efficiency and experience of customer services at outlets.
CCB	• Continued to optimize its outlet layout, with 56,943 ATMs, including 18,400 ATMs at county-level outlets; • Expanded service channels and networks, with 942 outlets in state-level impoverished counties, and 134 outlets and 1,159 self-service facilities in 80 of the 160 key counties that needed national assistance in rural revitalization.	• CCB had 48,595 smart teller machines, with 14,083 at county-level outlets; • CCB's outlets were equipped with 20,000 "Longyixing" mobile intelligent terminals, including 5,246 in county areas, providing clients with 154 mobile financial services, such as account opening, credit card application, and mobile banking sign-up. As of the end of 2022, CCB had conducted approximately 500,000 external expansion services, with transaction amount exceeding RMB2.1 billion, up 40.43% year-on-year.
ABC	• Served rural revitalization; Created 21 thousand outlets of the "Caring and Considerate Services" brand. Promoted smart devices, self-service cash terminal and other services, and provided door-to-door services for elderly customers over 0.28 million times.	• Provided comprehensive and three-dimensional financial services through the service channel system of "foundation-level branch outlets + self-service outlets + Huinongtong service stations + Internet financial services + remote banking + movable services"; • Pushed forward the construction of a unified platform for intelligent terminals; Operated 58,000 cash-type self-service devices and 5,200 self-service terminals.
BOC	• As of the end of 2022, BOC had 10,312 domestic outlets, and established outlets in 1,178 counties, realizing a county coverage rate of 63.13%; Built more than 550 featured outlets.	• Pushed forward the digital transformation of its outlets, launched innovative services such as e-CNY exchange and carried out business with foreign customers using passports as verification; • Built the "outlet + government affairs" smart service ecosystem and promoted smart counters; Delivered more than 900 government affairs services at smart counters in over half of its outlets, providing convenient access for the public.

Bank	Outlet layout optimization	Intelligent channel building
BOCOM	• Provided comprehensive financial services for 190 million retail customers through 2,800 domestic outlets and 23 overseas branches (subsidiaries) and representative offices.	• Cloud BoCom realized integrated online and offline services; Built a "cloud outlet, cloud teller, and cloud butler" system; Met diverse service needs through new models of online services such as screen-to-screen service; • Launched the "Jiaozhengtong" service at outlets; Launched the local government affairs services at 1,826 outlets with a coverage ratio of 64.3%, and achieved full coverage at branches located in Yangtze River Delta region and Guangdong Province.
PSBC	• PSBC had 39,533 outlets, serving over 650 million individual customers; Set up 1,784 outlets in key counties receiving government assistance for rural revitalization.	• Continued to introduce new modes of intelligent operation at outlets; Piloted the "cloud counter" operation mode and explored the mode that combines onsite self-services with remote video-based authorization; • PSBC had 139,341 self-service terminals, including 51,044 intelligent teller machines (ITMs), which accounted for 95.55% of self-service terminals for non-cash services.
CMB	• Continued to promote the construction of domestic branches, with 45 new branches opened in 2022; • CMB had 143 branches and 1,756 sub-branches in China, 2,695 self-service banks, 5,855 cash self-service devices and 12,511 visual counters.	• For the disabled and the elderly, CMB's domestic outlets supported barrier-free services and deployed convenient service facilities. CMB APP "Elder Version" provided one-stop exclusive manual services for elderly customers, which served 49,000 elderly customers with a customer satisfaction rate of 97.84%.
IB	• IB had 2,058 outlets, including 1,063 traditional sub-branches and 830 community sub-branches, all providing financial services for small and micro enterprises.	• Built and operated the "CIB Inclusive" platform, and connected with 725 external ecological scenarios to provide comprehensive "finance + non-finance" services for small and medium-sized enterprises, individual industrial and commercial households, and small and micro business owners.
PAB	• PAB continued to promote the AI-enabled upgrade of its outlets and optimize its branch distribution and physical presence. PAB had 1,191 outlets, with a potential customer coverage rate of 92%.	• Continued to strengthen scenario-based, socialized and ecological operation for outlets; Built a "portable banking" by integrating Pocket Bank APP, professional remote teams, and new retail outlets, which served 49 million customers, representing a year-on-year increase of about 50%.
CITIC Bank	• CITIC Bank had 1,428 outlets in 153 medium-sized and large cities in the Chinese mainland; • CITIC Bank had 1,542 self-service banks (including onsite and offsite self-service banks), 4,967 self-service terminals and 9,197 smart teller machines.	• Realized stratified customer management relying on the all-channel advantages of "offline outlets + online mobile App". As of the end of 2022, CITIC Bank recorded 127 million accounts of retail customers, an increase of 6.31% over the end of the previous year.

Consumption scenarios upgraded; more attention needed to manage retail risks

Consumer loans targeted quality consumer groups and scenarios

In 2022, ICBC, ABC, CCB, PSBC, CMB and CITIC Bank released the data on consumer loans separately. Their consumer loans totaled RMB1,643.487 billion, an increase of RMB155.228 billion over 2021, or a year-on-year growth rate of 10%.

With optimized consumer loan development strategies, CMB's, CCB's and ICBC's consumer loan balance grew faster, with a year-on-year growth rate of 30%, 27%, and 25%, respectively. CMB strengthened digital customer acquisition and product innovation by leveraging the favorable situations of economic recovery and rode on the consumption restoration to promote consumer loan growth. CCB adhered to innovation-driven business development and expanded its leading edge in the personal consumer loan market. It continued to optimize functions of personal consumer loan products, and innovatively promoted the "Jianyidai" products, which, as of the end of 2022, recorded a balance of RMB51,509 billion, driving continuous development of personal consumer loans. Focusing on customers, ICBC strengthened the overall planning of the personal loan business, stepped up market expansion of consumption and business loan products through multiple channels, and continuously optimized the digital inclusive product system, to satisfy customers' diversified financing needs and promote sustainable consumption recovery.

Table 3: Balance of Consumer Loans

Unit: RMB million

Bank	Balance of consumer loans in 2022	Balance of consumer loans in 2021	Growth rate
ICBC	234,378	187,316	25%
ABC	193,746	175,770	10%
CCB	295,443	232,979	27%
PSBC	466,882	496,621	-6%
CMB	202,225	155,984	30%
CITIC Bank	250,813	239,589	5%

Note: PSBC's balance of consumer loans was disclosed under "Other consumer loans" in the annual report.

Enhanced risk management of consumer loans

As China loosened pandemic prevention and control measures and shifted focus on economic development, banks strengthened the overall planning of personal loan business with customer-focused, promoting consumer finance as a key growth driver for retail business. They accelerated optimizing and innovating consumer loan products and upgraded consumer loan services to meet customers' comprehensive financing needs and promote sustainable consumption recovery.

Banks' asset quality of personal consumer loan business changed variedly. PSBC's, CMB's and ICBC's nonperforming ratio of personal consumer loans increased by 0.59 percentage points, 0.06 percentage points and 0.05 percentage points from the end of 2021, respectively; CCB's and ABC's nonperforming ratios dropped by 0.09 percentage points and 0.08 percentage points, respectively. Meanwhile, banks strengthened consumer loan risk control and monitoring. They refined risk management systems and strengthened post-lending risk monitoring and early warning measures to know the risk changes in time and ensure the healthy development of the consumer loan business.

Table 4: Asset Quality of Consumer Loans and Risk Control Measures

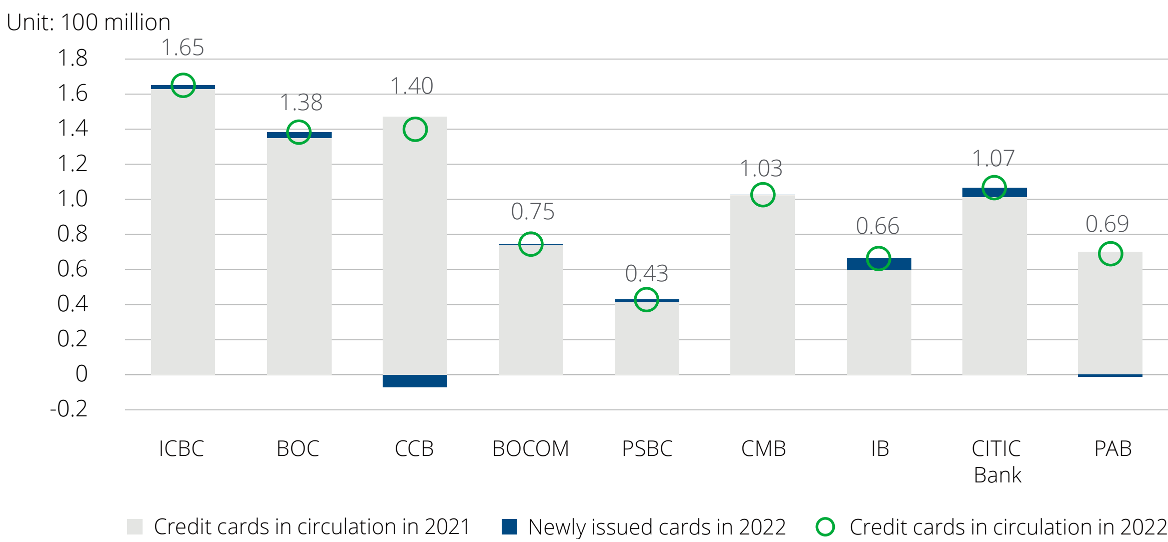
Bank	Risk control	Asset quality	
ICBC	Constantly promoted credit risk management of personal loans, strengthened the construction of "Intelligent Brain", improved the comprehensive risk monitoring system of personal loans, and built a unified risk view for personal customers to enhance the capabilities of early warning, in-process intervention and ex post verification of risks	Nonperforming ratio of personal consumer loans was 1.70%	Up 0.05 percentage points from the end of 2021
ABC	Strove to achieve more intelligent and refined personal loan risk management; Stabilized the structure of the centralized operation center for personal loans and provided corresponding rating; Enriched and optimized various risk warning models, carried out post-loan visits in a centralized manner, and tightened supervision over risk disposal	Nonperforming ratio of personal consumer loans was 1.25%	Down 0.08 percentage points from the end of 2021
CCB	Paid great attention to post-lending monitoring of personal loans, and focused on borrowers' repayment ability, the status of collateral and pledges and their value changes	Nonperforming ratio of personal consumer loans was 0.89%	Down 0.09 percentage points from the end of 2021
PSB	Put in place an intelligent risk monitoring and early warning system; Leveraged big data, cloud computing and other technologies to integrate internal and external data, implemented 360-degree multidimensional life-cycle intelligent monitoring, and continued to enrich and optimize the risk warning models to improve the timeliness and accuracy of risk warning	Nonperforming ratio of other personal consumer loans was 2.14%	Up 0.59 percentage points from the end of 2021
CMB	Consistently focused on high-quality customers to deeply explore the upgrading consumption scenarios and the real comprehensive consumption scenarios of individuals and families encouraged by national policies, to promote the steady development of consumer financing business	Nonperforming ratio of personal consumer loans was 1.08%	Up 0.06 percentage points from the end of 2021

Online platforms and consumption scenarios improved to advance the credit card business

Credit card business is a main growth driver of retail credit and a key development field of banks' credit business in recent years. The improvement of online platforms and expansion of consumption scenarios significantly drove the credit card business's development. However, the growth of credit card consumption slowed due to the difficulties in customer acquisition and the impact of Covid-19.

As of December 31, 2022, the domestic banks' (except for CCB) number of credit cards in circulation increased steadily compared with 2021. Specifically, IB issued 6.6041 million new cards, an increase of 11.06%. As of 2022, ICBC, CCB, BOC, CITIC Bank, and CMB had all issued more than 100 million credit cards cumulatively—ICBC ranking first with 165 million cards.

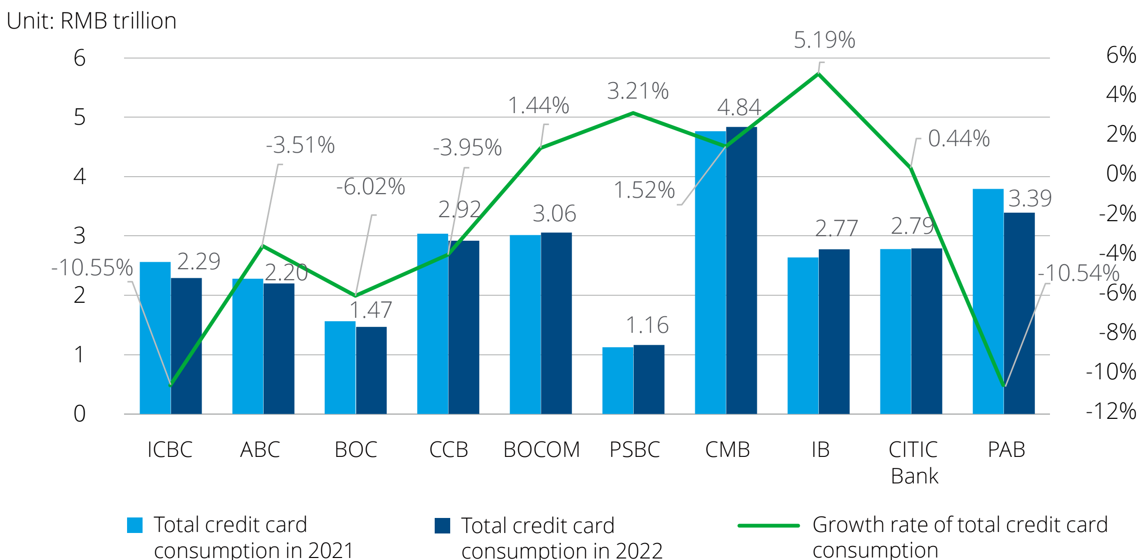
Figure 6: Number of Credit Cards



Note: ABC did not disclose the number of credit cards.

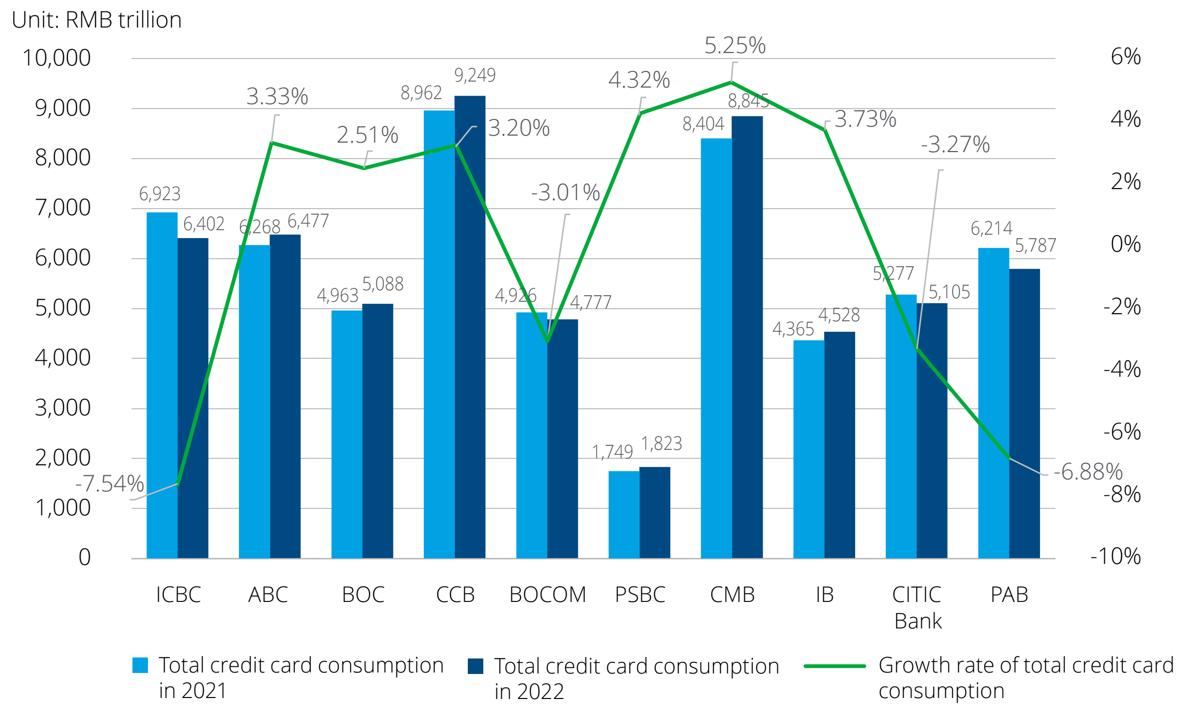
CMB continued to rank first in terms of total credit card consumption, reaching RMB4.84 trillion in 2022, up 1.52% year-on-year. Among the six state-owned banks, BOCOM ranked first with credit card consumption of RMB3.06 trillion, up 1.44% year-on-year; CCB ranked second with RMB2.92 trillion, down 3.95% year-on-year. ICBC and PAB recorded a sharp decrease in credit card consumption, by 10.55% and 10.54%, respectively.

Figure 7: Total Credit Card Consumption



In terms of credit card overdraft balance, as of 2022, CCB's overdraft balance stood at RMB924.9 billion, up 3.20% from the end of 2021, ranking first among state-owned banks; CMB recorded a significant increase, with its overdraft balance reaching RMB884.5 billion, up 5.25%, ranking first among joint-stock banks. PSBC's overdraft balance growth stood at 4.23%. ICBC, PAB, CITIC Bank, and BOCOM recorded an overdraft balance decline. As of 2022, ICBC's and PAB's overdraft balances were RMB640.2 billion and RMB578.7 billion, down 7.54% and 6.88% from the end of 2021, respectively.

Figure 8: Credit Card Overdraft Balance



Wealth management scale expanded rapidly; private banking business gained more attention

Common prosperity is a major national vision, creating significant opportunities for banks. With the continuous improvement of residents' financial literacy and the gradual implementation of policies such as the new asset management regulations, wealth management has become an important direction for commercial banks' business development and upgrading. Banks actively intensified the layout of wealth management businesses, including personal banking. With the gradually transforming private banking business, banks enhanced business collaboration with subsidiaries and third-party partners, fortified asset allocation capabilities, and promoted integrated acquisition of private and corporate customers to build a new growth curve of private banking customers.

Large state-owned banks are in a leading position in terms of asset management scale of retail customers, and have maintained a relatively high AUM growth rate. As of 2022, ICBC's retail customer AUM totaled RMB18.66 trillion, ranking fist among its peers; CCB's retail customer AUM exceeded RMB17 trillion; PSBC's retail customer AUM reached RMB13.89 trillion. Large state-owned banks (except for BOCOM) recorded a retail AUM increase of over 10%. Specifically, BOC's AUM increased by 18.18% year-on-year, the highest among its peers, followed by CCB's 13.33%.

While seeking new drivers for business development, joint-stock commercial banks strove to release momentum for growing the wealth management-centered retail business. In 2022, the wealth management businesses of the four joint-stock banks proliferated, with their retail AUM growth rate averaging 14.02%. Specifically, CMB's AUM exceeded RMB12 trillion, ranking first among the joint-stock banks, with a year-on-year growth rate of 12.68%. CITIC Bank ranked second with RMB3.91 trillion retail AUM, an increase of 12.36%. PAB's and IB's retail AUM reached RMB3.59 trillion and RMB3.37 trillion—IB's YoY growth rate was 18.33%.

The private banking data disclosed in the banks' annual reports all showed a growing trend. Specifically, CMB's total AUM for private banking customers amounted to RMB3.79 trillion (the only bank to exceed RMB3 trillion), representing a year-on-year growth rate of 11.74%. CMB's private banking customers referred to the retail customers with minimum total daily average assets of RMB10 million per month, and the total assets per account increased by RMB329,500 to RMB28.1338 million, much higher than that of other banks. ICBC, ABC, BOC and CCB were also in a leading position in terms of AUM for private banking customers. Specifically, ABC recorded private banking AUM and customer growth rates of 19.57% and 17.65%, respectively, much higher than other banks. In 2022, ABC accelerated the construction of private banking centers at the Head Office level and wealth management centers at the branch level, expanded the scale of the family trust business by RMB30.1 billion compared to the prior year-end, and implemented several charitable trusts with strong social influence such as Yuan Longping Charitable Trust, improving its private banking marketing and service capabilities. PAB's private banking also developed rapidly, which played a vital role in its retail business, and in 2022, its private banking AUM recorded a year-on-year growth rate of 15.30%.

Table 5: Retail Customers and Private Banking Customers

Unit: RMB trillion, 10,000 customers

Bank	Retail customer AUM	Retail customer AUM growth	Personal financial AUM (private banking)	YoY growth	Number of Private banking customers	YoY growth
ICBC	18.66	11.80%	2.63	13.00%	22.60	13.30%
ABC	Undisclosed	11.70%	2.20	19.57%	20.00	17.65%
BOC	About13.00	18.18%	2.42	12.04%	15.96	8.35%
CCB	Over17.00	13.33%	2.25	11.26%	19.37	9.31%
BOCOM	4.62	8.57%	1.08	8.97%	7.70	9.33%
PSBC	13.89	10.83%	Undisclosed[Note1]	Undisclosed	Undisclosed[Note1]	Undisclosed
CMB	Over12.00	12.68%	3.79	11.74%	13.48[Note2]	10.43%
IB	3.37	18.33%	0.80	8.20%	6.30	8.16%
CITIC Bank	3.91	12.36%	0.95	13.04%	6.68	10.81%
PAB	3.59	12.70%	1.62	15.27%	8.05	15.49%

Note 1: PSBC did not disclose the AUM for private banking customers and the number of private banking customers; its retail customers with assets reaching RMB100,000 totaled 47.35 million.

Note 2: CMB's private banking customers referred to retail customers with minimum total daily average assets of RMB10 million per month.

Besides the asset scale of retail customers, the changes in the number of retail customers also reflect the banks' retail finance advantage and potential, which plays a "cornerstone" role in developing the wealth management businesses.

Table 6: Number of Retail Customers in 2022 and 2021

Unit: 10,000 customers

Bank	Number of retail customers in 2022	Number of retail customers in 2021	Growth rate
ICBC	72,000	70,371	2.38%
ABC	86,200	87,783	-1.80%
BOC	Undisclosed	34,786	Undisclosed
CCB	73,900	72,638	1.74%
BOCOM	19,100	18,500	3.29%
PSBC	65,200	63,700	2.35%
CMB	18,400	17,300	6.36%
IB	9,175	7,922	15.82%
CITIC Bank	12,700	12,000	6.31%
PAB	12,308	11,821	4.12%

The state-owned banks had a solid customer base, and their number of retail customers remained stable in 2022. Specifically, ABC's retail customers reached 862 million, ranking first among its peers; BOCOM recorded the highest YoY growth rate of 3.29%. Joint-stock commercial banks' YoY growth rates were higher than state-owned banks, although their retail customer scales were smaller. Specifically, IB recorded a YoY growth rate of 15.82%; CMB, CITIC Bank, and PAB recorded stable growth rates of 6.36%, 6.31%, and 4.12%, respectively; CMB's retail customers exceeded 180 million, and CITIC Bank's and PAB's exceeded 120 million, the scale of retail customers continues to increase.

In 2022, the real economy was not out of the woods fundamentally due to the domestic and overseas economic downward pressure. The development of "Big Retail" slowed. Banks' 2022 annual reports indicated that retail business was still a prioritized development field despite that its contribution to the banks' total revenue shrank. Wealth management bucked the trend in the demanding market environment. Banks focused on digital transformation and adhered to the customer-centric service concept to improve the product layout system. Against the backdrop of slow consumption growth, they gradually developed wealth management into an important growth engine for retail businesses. As the policies to stabilize the economy and expand consumption take effect, banks will continue to foster retail business vigorously, further exploring the development path of retail banking.

Deepened integration of finance and technology drives cross-sector collaboration to develop a digital financial services ecosystem

The PBC released the second round of the *Fintech Development Plan (2022 to 2025)* (hereinafter referred to as "the Plan") at the beginning of 2022. After a year China's Fintech "new infrastructure" was established. China's Fintech has advanced from the initial stage of laying foundations to a new phase of full development. 2023 is the first year to fully implement the guiding principles of the 20th CPC National Congress. The internal and external economic and trade situations are still discouraging. Commercial banks will intensify strategic deployment from a long-term perspective, promote digital and intelligent transformation, and effectively use talent and capital. Capitalizing on Fintech as a new engine for high-quality development will improve financial services' quality and efficiency. They will strive to ensure Fintech's healthy and orderly development and integrate digital elements into the whole process of financial services.

Continued investment and resources support to Fintech

Commercial banks have continuously scaled up digital construction efforts in recent years, especially in Fintech investment and talent reserve. According to the data disclosed in the ten domestic commercial banks' 2022 annual reports, on average, Fintech investment accounted for more than 3.5% of their operating income, with a growth rate of about 11%. State-owned banks were the backbone of FinTech investment. The four major state-owned banks' Fintech investments all exceeded RMB20 billion. BOCOM's, PSBC's and CMB's investments exceeded RMB10 billion. Specifically, BOCOM's Fintech investment increased by 32.93% on a year-on-year basis, which accounted for 5.26% of the operating income, ranking first among its peers. To ensure Fintech's sustainable development, banks stressed the reserve of talent. ICBC had 36,000 Fintech personnel, the largest reserve among the commercial banks. The technical personnel of ICBC, CMB, IB and CITIC Bank exceeded 8% of their total employees.

Table 1: Fintech Input

Unit: RMB100 million

Bank	Fintech investment	Growth rate	% in operating income	Fintech personnel
ICBC	262.24	0.91%	2.86%	36,000 Fintech personnel, accounting for 8.3% of the bank's total employees
ABC	232.11	13.05%	3.20%	10,021 technical personnel, accounting for 2.2% of the bank's total employees
BOC	215.41	15.70%	3.49%	13,318 employees in the IT line in 2022, accounting for 4.35% of the total employees
CCB	232.90	-1.21%	2.83%	15,811 Fintech personnel, accounting for 4.20% of the bank's total employees
BOCOM	116.31	32.93%	5.26%	5,862 Fintech employees, up 29.15% YoY, accounting for 6.38% of the bank's total employees, up 1.35 percentage points
PSBC	106.52	6.20%	3.18%	IT headcount of the Head Office increased to 4,294, and that number exceeded 6,300 across the bank
CMB	141.68	6.60%	4.51%	10,846 R&D personnel, up 8.0% YoY, accounting for 9.60% of the bank's total employees
IB	82.51	29.65%	3.71%	6,699 technical personnel, up 102.82% YoY, accounting for 11.87% of the bank's total employees, up 5.41 percentage points
CITIC Bank	87.49	16.08%	4.14%	4,762 technical personnel (excluding subsidiaries), up 11.11% YoY, accounting for 8.40% of the bank's total employees
PAB	69.29	-6.15%	3.85%	Undisclosed

Fintech empowered banks to improve operation and management efficiency

Embracing the global Fintech development trends, banks have improved Fintech infrastructure construction and innovated financial businesses over the past few years. By integrating Fintech into intelligent services, operations and risk control, banks have built more flexible operation and management capabilities, injecting vitality into their front-office businesses and middle and back-office operations.

Intelligent services

Commercial banks further integrated Fintech into various business lines and products, comprehensively applying Fintech means in common banking scenarios such as payment & settlement, credit application, and investment & wealth management, to enhance their capabilities to provide online, intelligent and continuously-evolving services.

Common channels included banks' independently developed mobile banking app and WeChat mini programs as well as various service channels built in cooperation with other institutions or enterprises. Banks actively upgraded their apps. For example, ICBC, BOC and PSBC released the latest version of their mobile banking apps in 2022.

Through "remote intelligent banking", banks provided customers with more secure, convenient, timely, efficient and comprehensive financial services. In the meantime, they improved operation efficiency, saved outlets' operating costs, and broke outlets' geographical limitations, thus expanding service coverage and gaining more potential customers. In 2022, all banks' remote intelligent financial service capabilities continued to improve. ICBC provided remote banking services for more than 1.1 billion customers. The intelligent self-service of CCB and CMB accounted for more than 80%.

Table 2: Cases—Fintech Empowering Remote Customer Services

Bank	Intelligent service (remote customer service)
ICBC	• The bank released Mobile Banking 8.0 and ICBC e Life 5.0 in 2022, providing over 500 million customers with a personalized service experience; • ICBC's remote banking center became the first institution in the industry to integrate online omnichannel access and operation and remote intelligent services. In 2022, the bank provided remote banking services for more than 1.1 billion customers, with nearly 2 billion transactions.
ABC	• ABC drove the provision of more remote financial services to rural and county areas, launched the online special customer service page of the "Rural Version" mobile banking, and expanded the scope of remote "cloud expert" video service; • ABC optimized telephone service accessibility for elderly customers, serving 4.43 million elderly customers.
BOC	• BOC launched the mobile banking 8.0 version in 2022, with MAU increasing continuously; • BOC upgraded the corporate online banking, and the corporate customers conducting transactions online via mobile banking continued to take a larger share of the total; • The volume of the bank's mobile banking transactions reached RMB46.73 trillion, up 18.67% compared with the prior year. The number of non-financial mobile banking scenarios totaled 870.

Bank	Intelligent service (remote customer service)
CCB	• CCB introduced "Intelligent Bank" online assistance and intelligent Q&A to facilitate customers' remote operations in real-time. In 2022, the bank served a total of 1,077 million customers through all channels of remote intelligent banking, among which intelligent and self-service accounted for more than 80%; • It also launched the "CCB Customer Service" Channel on WeChat and the "CCB Customer Service" TikTok account. The WeChat official account had over 22.5 million followers.
BOCOM	• Customers served by "BoCom" WeChat Mini Program increased by 90.08% over the prior year-end to 23.6623 million; • BOCOM continuously enriched Cloud BoCom service capabilities, serving 5.5031 million users, an increase of 132.35% over the prior year-end.
PSBC	• The Bank launched PSBC mobile banking App 8.0 in 2022, with the number of mobile banking users reaching 344 million, including over 49 million MAU, and the amount of transactions reached RMB14.65 trillion, up 12.35%; • During the Reporting Period, the call completion rate by manual response exceeded 92%, the credit card's call completion rate of manual response exceeded 94%, and customer satisfaction with manual service was 99.75%.
CMB	• In 2022, the remote online omnichannel manual service connection rate was 98.00%, the remote online omnichannel manual service 20-second response rate was 94.89%, the remote online omnichannel customer satisfaction rate was 98.53%, and the proportion of intelligent self-service in remote response consulting services was 81.38%.
IB	• The bank launched the Mobile Banking 6.0 project, the number of monthly active users of mobile banking increased by 34.03% year-on-year to 20.9502 million, and the counter replacement rate of online finance reached 96.25%.
PAB	• At the end of 2022, the intelligent voice middle platform had embedded into 1,425 business scenarios and its outgoing calls reached 593 million, representing a year-on-year increase of 118.0%; • The intelligent channels covered the full range of business scenarios, and the proportion of non-manual services exceeded 90%.
CITIC Bank	• In 2022, the bank had 32.7473 million mobile banking APP MAU, realizing a transaction amount of RMB12.74 trillion, an increase of 6.99% year-on-year.

Intelligent operations and risk control

In addition to empowering front-office businesses, Fintech realized automatic collection and data processing to reduce manual work and shorten work cycles, significantly enhancing the efficiency of banks' middle and back-office operations while ensuring data timeliness and accuracy to facilitate the banks' operations and risk control.

ICBC advanced the building of the "ICBC e" series of risk control systems. Based on "ICBC e Security", the first financial risk information service product in the banking industry, ICBC served nearly 100,000 domestic enterprises and over 300 customers in the banking industry. The bank built an enterprise-level anti-fraud platform—"ICBC e Shield," to enhance the capabilities of managing and monitoring enterprise-wide, market and personal customer risks. It supports round-the-clock real-time blocking of transaction risks. The bank established the "ICBC e Control" brand to back the Group's internal control and compliance management.

PAB iterated and upgraded its smart risk control platform for corporate risk control, which improved its post-loan work efficiency by about 50%. With respect to retail risk control, the bank fully launched the online and centralized retail model full-process management platform with 107 centrally managed risk models, which improved the effectiveness and accuracy of risk control models enormously, demonstrating remarkable results in optimizing risk control processes.

Table 3: Achievements in Intelligent Operations and Risk Control

Bank	Intelligent operations	Intelligent risk control
ICBC	• The middle-office data empowerment was enhanced. The bank promoted the data entry and sharing of the data lake, with a total of 45,000 tables entered into the data lake; • It established a hierarchical data center system that supported the construction of more than 300 key scenarios, such as bank-wide digital operation, joint risk prevention and control, and outlet connect; • The bank prepared 11 industry standards for the fields such as data security management and federal learning.	• The bank enhanced digital risk control and advanced the building of the "ICBC e" series of risk control systems; • The bank achieved intelligent post-lending monitoring of infrastructure, green energy and other fields relying on big data and industrial remote sensing identification technology; • The bank built an enterprise-level anti-fraud platform – "ICBC e Shield," to support round-the-clock real-time blocking of transaction risks.
ABC	• The bank promoted and deployed the enterprise-level network Security Operation Center (SOC) platform in the Head Office and 37 tier-1 branches and achieved access to security log sources covering 28 categories, effectively improving the efficiency of business process execution.	• The bank launched the block chain service framework 2.0, which provided diversified on-chain certificates and distributed digital identity authentication services, and innovated the application in on-chain payment, credit risk control and other fields.
BOC	• The bank established the Digital Asset Operation Centre, and built the national operation center; • The bank advanced the OASIS project. It's business middle-office system came into play; • The bank accelerated the Group-wide promotion of the "Three Horizontals, Two Verticals" data governance framework, sorted out 2.8 million data items, and formed 220 thousand data dictionary items.	• The bank further enhanced the digital risk control capacity of its online channels. In 2022, its "Cyber Defense" smart risk control and prevention system monitored 7.962 billion transactions through online channels, up by 3.54% year-on-year; • It monitored anti-phishing, with 1,044 phishing websites and application download links monitored and shut down.
CCB	• The bank developed financial image recognition and video recognition products, with an element-level accuracy of above 90% for general bills' image recognition; • The bank researched and developed the voice recognition ability, which was widely used in audio inspection scenarios such as installment consumption loans, with a 100% replacement rate of the original manual sampling; • The bank realized the "stream and batch" integrated data processing mode, significantly shortening the processing time of digitalized operation indicators and processing more than 55 billion pieces of real-time data per day.	• The bank upgraded the "digital, whole-process, standardized" intelligent risk control and management system for inclusive finance continuously to ensure stable credit asset quality; • "AI Traders" connected inquiry and quotation with internal risk control modules to check credit approval, credit limit, AML, blacklists and whitelists on a real-time basis; • The bank reduced operational risks by using the letter of intent (LOI) on iDeal and upstream and downstream ports of CFETS.

Bank	Intelligent operations	Intelligent risk control
BOCOM	• The bank launched two enterprise architecture pilot projects for retail credit and B2B payment successfully; • The distributed credit card core system was launched successfully; • The bank automated business operations, reduced the manual links, improved business processing quality and efficiency, and simplified tasks—for instance, the time for image verification of account opening is reduced from 3 months to 1 week.	• The bank completed docking with the unified registration and publicity system for movable property financing of PBC's Credit Information Center and promoted online real estate mortgage registration throughout China. With these efforts, system tools were upgraded continuously, which enriched post-loan/ investment management and risk monitoring means; • Interception rules for telecommunication fraud accounts were optimized to improve the accuracy of risk alerts, and over 1,600 fraudulent accounts were controlled during the year.
PSBC	• The bank piloted the "cloud counter" operation mode and explored the mode that combines onsite self-services with remote video-based authorization to strengthen intensive processing and customer service capabilities.	• The bank launched the auxiliary tool for consumer protection review. The tool leveraged technologies like OCR identification to process materials into texts and then conducted intelligent auxiliary review, to identify potential risks and improve review quality and efficiency; • The bank put in place an intelligent risk monitoring and early warning system. It integrated internal and external data by leveraging big data, cloud computing and other technologies and implemented 360-degree multidimensional, life-cycle intelligent monitoring; • PSBC had over 1,000 data analysis models for risk control and over 300 rating, scoring, and anti-fraud models, improving risk control efficiency and quality through the collaboration of AI and risk control experts.
CMB	• With intelligent applications in scenarios such as intelligent customer service, intelligent process, voice quality inspection, and the Conch RPA (Robot Process Automation), employees were relieved from repetitive, time-consuming work equivalent to a workload of over 12,000 individuals.	• The "Libra" intelligent risk control platform enhanced transaction risk control and management capabilities, and lowered the percentage of amount of accounts misappropriated by non-cardholders to 0.57 in ten millionths; • During the reporting period, corporate loans newly granted through the "online risk control platform" amounted to RMB197.65 billion.
IB	• The cloud-native technology system has been primarily established, with more than 60% of the systems launched onto the cloud • The bank promoted RPA technology to improve process automation. 180 million manual operations were replaced, saving 1.6 million hours of labor.	• The bank has officially launched the Group's intelligent risk control system, realizing one-stop inquiry and display of risk information, risk early warning, credit supervision, intelligent financial analysis, risk labeling, risk policy and other functions.

Bank	Intelligent operations	Intelligent risk control
PAB	• Smart reimbursement has upgraded the expense dashboard analysis function. In 2022, 64 expense scenario dashboards were built based on 16 analysis models; • Smart tax integrated the low-code technology, supported online configuration and generation of tax returns, and upgraded the tax modules of value-added tax, enterprise income tax prepayment and stamp duty; • the bank's smart compliance system platform (i-Comp) was put into operation in 2022 with one portal, four smart scenarios and 11 systems, and gradually exported its value in business support, risk management and cultural development, driving the bank's digital transformation of compliance management.	• With respect to corporate risk control, the bank iterated and upgraded its smart risk control platform towards version 2.0 and focused on seven smart scenarios. The bank improved the online, automation and intelligence level of businesses such as complex investment/financing and supply chain finance. At the end of 2022, the platform had achieved credit approval in seconds for 70% of its standardized businesses. It increased the efficiency of post-loan work by about 50% by leveraging digital means, and kept early warning highly foresighted; • With respect to retail risk control, the bank fully launched the online and centralized retail model full-process management platform, and at the end of 2022, the platform had centrally managed 107 risk models.

Promoted industry-wide Fintech applications to create a sound ecosystem

In 2022, CBIRC stressed encouraging large banks to accelerate exporting risk control tools and technologies to small and medium-sized banks. Compared with small and medium-sized banks, large commercial banks have adequate resources, higher technology investment, and industry-leading technology and talent reserves. After years of Fintech exploration and layout, large commercial banks have gradually evolved from participants in the wave of Fintech development into the leading force in building a good Fintech ecosystem in the industry.

Examples of large commercial banks' sharing Fintech achievements are listed below:

Table 4: Examples of Large Commercial Banks' Sharing Fintech Achievements

Bank	Example
ICBC	• Responding to CBIRC's policies, the bank actively shared risk control technologies and tools with over 300 peers, thereby helping them maintain financial stability; • The bank provided 54 interbank customers with anti-money laundering, risk management, and other Fintech service solutions. It won the "Outstanding Contribution Award for Financial Risk Control" at the 2022 China Fintech Research Conference.
BOC	• BOC Financial Technology was the unified platform for BOC Group to share Fintech technologies. The intelligent risk control services were based on its credit risk management achievements over the past decade. The integrated intelligent analysis and application platform for credit risk data covers all the pre-lending, lending in-process and post-lending links, providing solid support for identifying, preventing and resolving risks comprehensively and facilitating small and medium-sized banks' development effectively.

Bank	Example
CCB	• CCB launched the CCB Cloud platform to export its strong "cloud computing" capacity. It has provided technological services for more than 200 financial institutions and government agencies. The bank has provided the "Intelligent Series" risk tools to 1,027 small and medium-sized financial institutions, sharing its intelligent and digital risk control technologies; • In 2022, CCB FinTech's income from core products & solutions sold to various types of banks, such as policy banks, national joint-stock banks and local commercial banks, reached RMB1,639 million, an increase of 20% over 2021.
IB	• It promoted constructing the "1+N" financial technology ecosystem and relied on the "Industrial Cloud" to cover "N" scenario-based ecological services such as payment and settlement, sales of wealth management products, investment and financing, and digital RMB, and actively provided digital transformation solutions for peers. Regarding the technological export results, 318 small and medium-sized financial institutions and 188 custodian banks have been launched.

Future opportunities and challenges for Fintech

The 14th Five-Year Plan period is a critical time as Chinese people embark on a new journey to build China into a modern socialist country in all respects after finishing building a moderately prosperous society in all respects and completing the First Centenary Goal. Data have become a new production element. Digital technology is a crucial engine propelling transformative changes in economic development's quality, efficiency, and impetus. In this context, commercial banks will encounter enormous opportunities and challenges.

In the context of digital transformation of financial institutions, digital transformation has become a new growth driver for banks. They introduced cutting-edge technologies, integrated internal and external resources, and intensified digital construction to promote digital upgrading of the entire business process. In addition, banks expanded financial service scope, accessible customer groups, and geographical areas. Adhering to the digital management concept, they enhanced the intelligent risk control and management system, strengthened risk identification and monitoring capabilities, and enriched digital online services, thus releasing digital productivity and improving their financial serviceability to achieve sustainable and high-quality financial development.

With digital technologies' in-depth innovation and application, commercial banks must actively deal with the challenges such as "data security" and "algorithm bias" arising from Fintech innovation. The *Fintech Development Plan (2022 to 2025)* emphasized strengthening digital regulation capacity, implementing look-through supervision over Fintech innovation, and building a firewall for finance and technology to fend off risks. While relying on technologies to enhance financial service capabilities, commercial banks should be alert to the potential hazards and drawbacks, and actively prevent the potential risks during Fintech's rapid development. They should deploy and improve the relevant prevention and control mechanisms in advance, and in the meantime, seek further technological innovation to promote financial services' safe and orderly development and form a virtuous cycle of finance and technology.

3.6

The full implementation of net value-based management marks the beginning of quality growth in wealth management

2022 marked the first year of implementing the new asset management regulations. Commercial banks transformed their wealth management businesses following the regulatory requirements and began fully implementing net value-based wealth management. 2022 saw three primary changes in the wealth management market. First, wealth management business development was more standardized, with more net value-based wealth management products. Second, yield volatility intensified and the wealth management product scale shrank. Third, wealth management was innovated orderly—banks' wealth management businesses were more specialized and comprehensive; wealth management companies promoted product innovation vigorously to provide differentiated products.

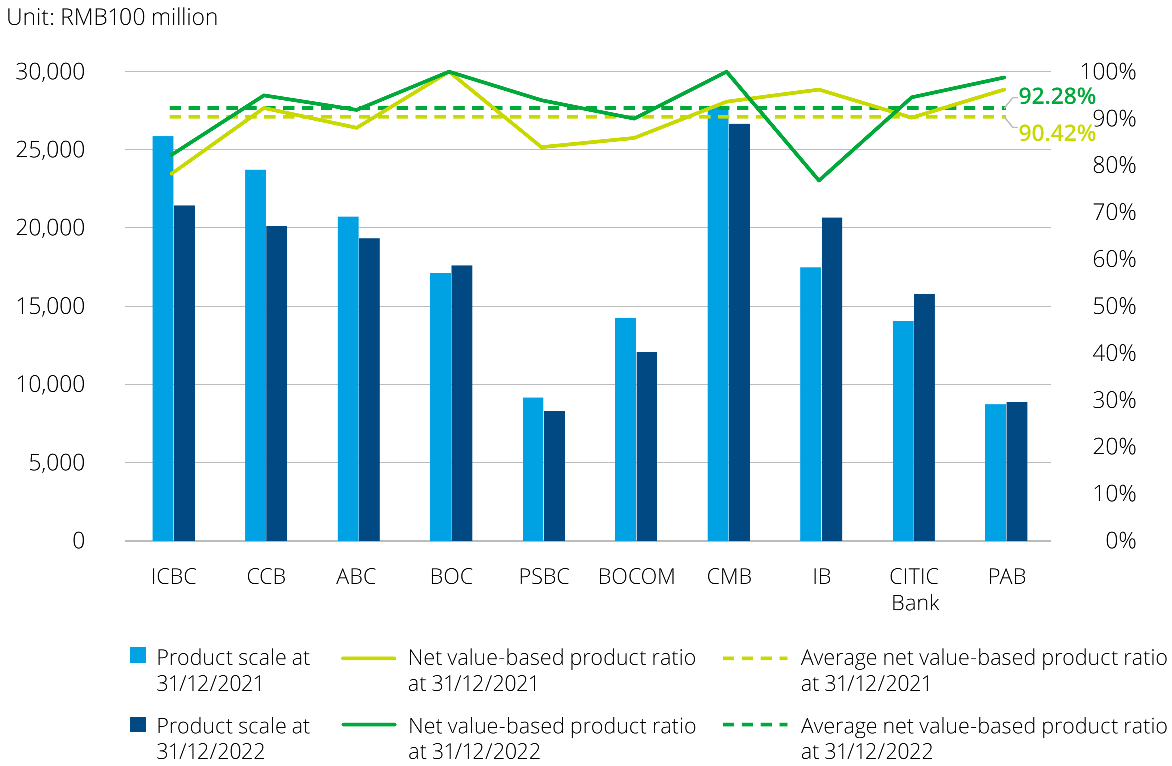
Net value-based products proliferated; wealth management scale and yield were pressed; innovative products gained momentum

Affected by wealth management products' net value-based transformation and the bond market's drastic fluctuation, some products' net value fell at the end of 2022, triggering investors' redemptions and downscaling of wealth management products. According to the Annual Report on China Banking Wealth Management Market (2022), by the end of 2022, the banking wealth management market scale was RMB27.65 trillion, down 4.66% year-on-year. The ten domestic commercial banks' total weal management product scale stood at RMB17.09 trillion, down 4.46% year-on-year.

The net value-based wealth management products, on average, accounted for 92.28% at the end of 2022, a slight increase from 2021's 90.42%. CMB and BOC had 100% net value-based asset management products.

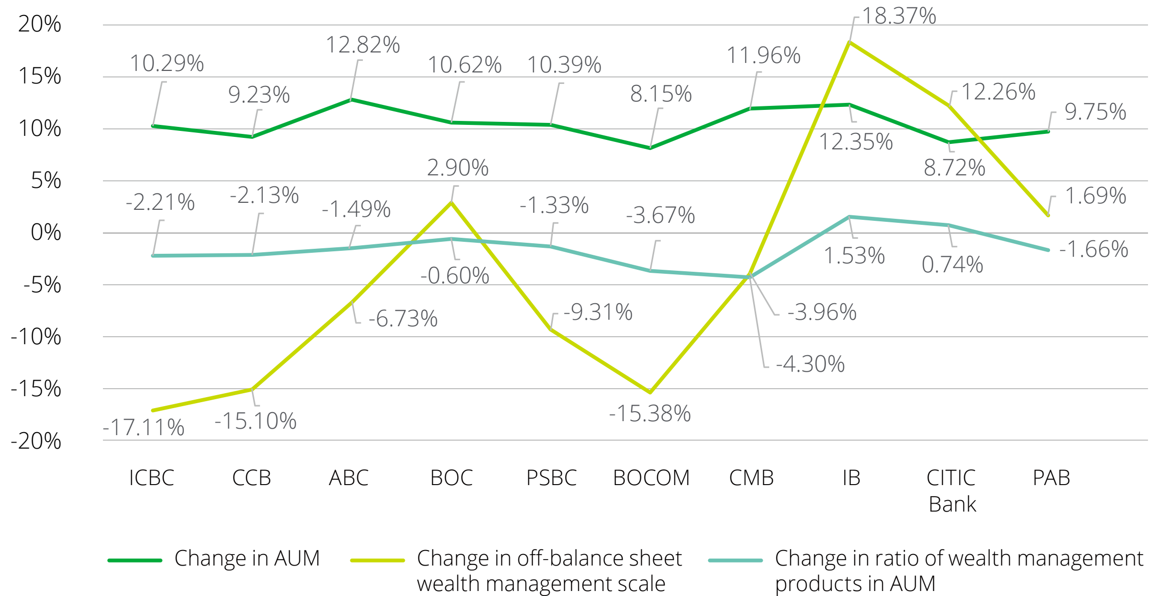
Figure 1: Wealth Management Product Scale and Net Value-based Product Ratio at the End of 2022 and 2021

Unit: RMB100 million



The changes in the scale of wealth management business of the ten domestic banks vary greatly, BOC's wealth management product scale rose slightly among the six large state-owned banks, but the others fell remarkably. Specifically, ICBC's wealth management scale fell by 17.11%; CCB's and BOCOM's wealth management scale fell by more than 15%. Some joint-stock banks' wealth management scale trended up. IB's wealth management scale grew significantly by 18.37%, followed by CITIC Bank with a 12.26% increase. Joint-stock banks seized the opportunity to expand new businesses actively despite market volatility and waning investor appetites. They stepped up efforts in developing specialized products. For instance, during the Reporting Period, CIB Wealth Management's scale of ESG products exceeded RMB90 billion, up 167.95% year-on-year; it also issued the first-phase pension wealth management products, with a scale of RMB2.99 billion. At the end of 2022, CITIC Wealth Management had 12 green wealth management products with a total scale of RMB2.996 billion.

Figure 2: Changes in AUM, Off-Balance Sheet Wealth Management Scale, and Wealth Management Product Ratio in AUM, Compared with the Beginning of the year



Note: The financial data were sourced from the banks' 2022 and 2021 annual reports; AUM = deposit balance + wealth management product scale

The ten domestic banks' AUM growth remained stable. At the end of 2022, their average AUM growth rate was 10.43%. Their customer deposits grew faster than the AUM, with an average increase of 12.43%. Regarding the AUM structure, the state-owned banks' average deposits and wealth management proportions were 91.90% and 8.10%, respectively, deposits occupy an dominant position. The state-owned commercial banks' wealth management business scale was small. On average, the joint-stock banks' wealth management business accounted for 25.13% of their AUM; IB had the highest wealth management business proportion of 30.15%. With the popularization of the wealth management concept, the wealth management business will be the key driver for banks' AUM growth. Therefore, banks are actively increasing the proportion of wealth management business in AUM.

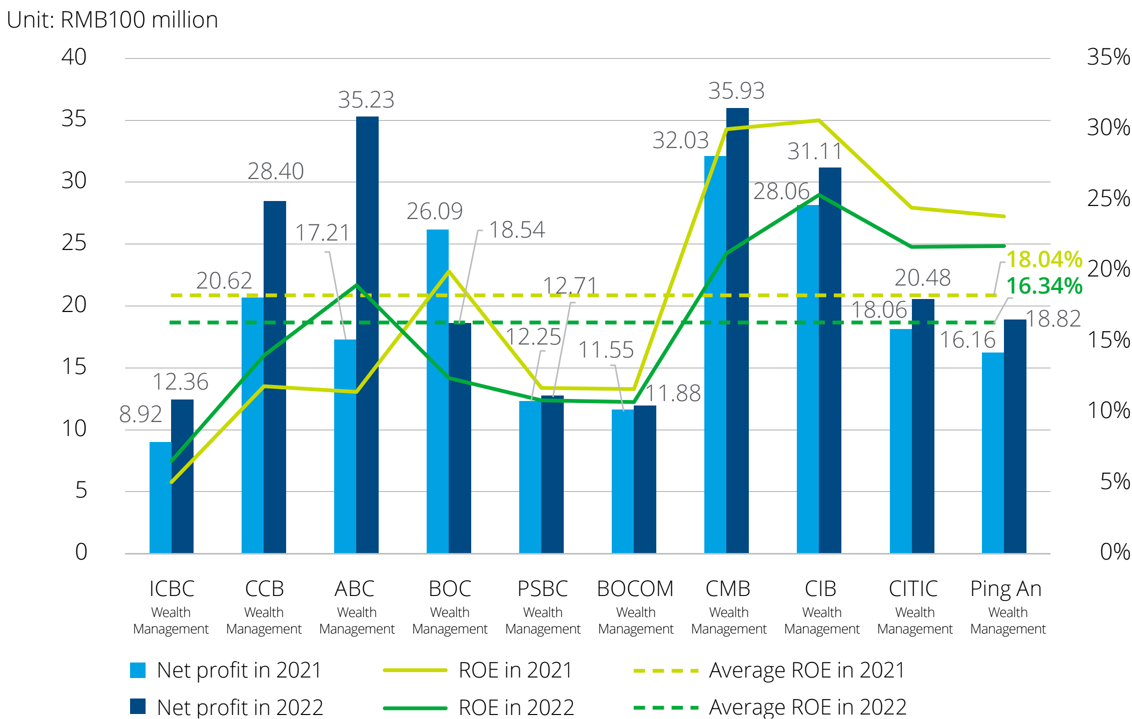
Wealth management entered a new stage of competition; investment and research capacity will be the core competitiveness

By the end of 2022, 31 wealth management subsidiaries have been approved for establishment preparation, of which 30 have been approved for opening. Most of the 30 wealth management companies were established by joint-stock and city commercial banks—11 by joint-stock banks and eight by city commercial banks; Six of them were opened by state-owned banks and four of them were Sino-foreign joint ventures; Only one wealth management subsidiary—CQRC Wealth Management—was founded by rural financial institutions. Wealth management companies' market share has increased gradually. By the end of 2022, wealth management companies' product scale reached RMB22.24 trillion, accounting for 80.44% of the total wealth management market scale.

In 2022, due to the stock and bond market shocks, wealth management product prices fell below their net asset values, significantly challenging the wealth management companies' investment management ability. Generally, most of the wealth management companies maintained net profit growth. Specifically, ABC Wealth Management recorded the largest net profit increase—by RMB1.802 billion or 104.71%, followed by ICBC Wealth Management's net profit growth of RMB344 million or 38.57%. After the rapid expansion of wealth management companies in the early years, after 2022, some wealth management companies have entered a stable development stage. The volatile investment environment led to wealth management

products' yield fluctuations. Thus, the net profit growth slowed generally. In 2022, the overall net profit increase of the ten domestic banks' wealth management companies was 18.07% (2021's overall growth was 122.06%). Most of the wealth management companies' ROE declined compared with 2021. The ten domestic banks' wealth management companies had an average ROE of 16.34%, down 1.70% from 2021. CMB Wealth Management recorded the largest ROE decline of 8.78%, followed by BOC Wealth Management's decrease of 7.53%. Although the wealth management companies showed a relatively stable operating performance, their ability to generate income for investors was unsatisfactory in 2022. According to the *Annual Report on China Banking Wealth Management Market (2022)* released by the China Banking Wealth Management Registration & Depository Center, the wealth management products' average yield of each month was 2.09%, a significant drop compared to 2021's average yield of around 4%.

Figure 3: Wealth Management Subsidiaries' Net Profit and ROE Ratio in 2022 and 2021

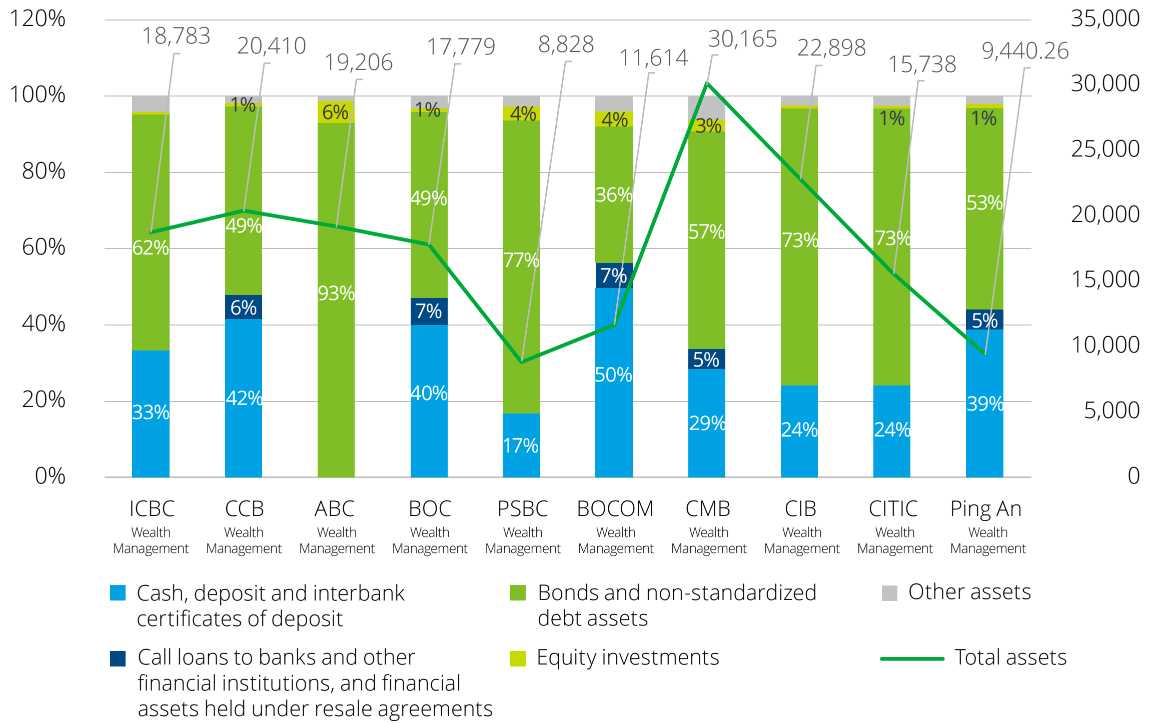


Note: The financial data were sourced from the banks' 2022 annual reports.

As wealth management companies were actively engaged in net value-based wealth management, market competition entered a new stage. Improving investment management capabilities to satisfy investors of different preferences will be the key to maintaining sustainable profitability and ROE growth. Impacted by the traditional banking asset management culture and weakened investors' risk appetites, banking wealth management investments are generally prudent. According to the ten wealth management companies' business performance reports, the investments still focused on low-risk cash and debt assets, with debt assets accounting for the highest proportion. Except for CCB Wealth Management, BOC Wealth Management and BOCOM Wealth Management, the remaining seven wealth management companies' debt investments accounted for more than 50%, and their average proportion of cash asset investments was more than 30%. The ten companies' equity investments accounted for less than 10%.

Figure 4: Balance of Wealth Management Products by Investment Categories (under the Penetrating Principle)

Unit: RMB100 million



Note: In the above chart, ABC Wealth Management's fixed-income investment was included in the "bonds and non-standardized debt assets".

Equity investment is an irresistible trend for wealth management products. Banks will guide more funds to flow into the equity market. Wealth management companies should coordinate efforts in investment & research, systems & mechanisms, products, and channels to enhance investment and research capacity and build a long-term equity investment and research system, thereby increasing equity investment scale and proportion. In addition, wealth management companies shall improve stratified investor services and enhance investor education to guide investors to look at market changes comprehensively, treat net value fluctuations of wealth management products rationally, and cultivate long-term investment habits.

Regulatory guidelines increasingly clarified and compliance management rapidly developed to drive the sustainable development of wealth management regulations

Wealth management companies have moved forward from the net value-based transformation 1.0—which was characterized by Net Value-Based Issuance—to the 2.0 era of Net Value-Based Management, featuring more varied asset forms, more flexible product demands, more diversified investment strategies, more complicated fund investment operations, and more perplexing product management risk maps. Therefore, improving corporate governance and risk management was the priority for regulators and wealth management companies to drive sustainable development. In August 2022, the *Administrative Measures for the Internal Control of Wealth Management Companies* was released, guiding wealth management companies to construct a comprehensive and effective internal control management system to enhance their governance over internal control further.

According to the *Annual Report on China Banking Wealth Management Market (2022)*, CBIRC established a rapid handling mechanism for wealth management businesses, covering daily supervision, on-site inspection, investigation, and administrative punishment, which enhanced error-correcting timeliness and regulatory deterrence. Quick and strict regulation indicates that the compliance management of banks' wealth management has developed rapidly, which is conducive to solidifying the concept of "putting internal controls first and adhering to compliance orientation" in the wealth management industry, thus generating an excellent industrial ecosystem to achieve healthy competition and high-quality development. The continuously improving regulations, mechanisms, and guidelines will facilitate the sustainable development of the wealth management industry.

Wealth management regulations issued between 2018 and 2022 are listed as follows:

Table 1: Wealth Management Regulations Issued between 2018 and 2022

Time	Issued by	Policy
April 2018	PBC, CBIRC, CSRC, SAFE	*Guiding Opinions on Regulating the Asset Management Business of Financial Institutions*
July 2018	PBC, CBIRC, CSRC	*Circular on Further Clarifying Matters Concerning the Guiding Opinions on Regulating the Asset Management Business of Financial Institutions*
September 2018	CBIRC	*Measures for the Supervision and Administration of Wealth Management Business of Commercial Banks*
December 2018	CBIRC	*Administrative Measures for the Wealth Management Subsidiaries of Commercial Banks*
October 2019	CBIRC	*Circular on Further Regulating the Structured Deposit Business of Commercial Banks*
November 2019	CBIRC	*Measures for Net Capital Management of Wealth Management Subsidiaries of Commercial Banks (for Trial Implementation)*
June 2020	PBC, CBIRC, CSRC, SAFE	*Rules for Identification of Standardized Debt Assets*
December 2020	CBIRC	*Measures for the Evaluation of Systemically Important Banks*
December 2020	Ministry of Finance, CBIRC	*Circular on Further Implementation of the Accounting Standards Relating to New Financial Instruments*
May 2021	CBIRC	*Interim Measures for the Management of the Sale of Wealth Management Products by Wealth Management Companies*
June 2021	PBC, CBIRC	*Circular of the People's Bank of China on Matters Concerning Regulating the Management of the Cash Management Category of Wealth Management Products*
September 2021	CBIRC	*Circular on Launching the Pilot Program of Old-age Wealth Management Products*
September 2021	Ministry of Finance	*Provisions on Accounting Treatment Concerning Asset Management Products (Draft for Comment)*
December 2021	CBIRC	*Administrative Measures for Liquidity Risks of the Wealth Management Products of Wealth Management Companies*
May 2022	Ministry of Finance	*Provisions on Accounting Treatment Concerning Asset Management Products*
August 2022	CBIRC	*Administrative Measures for the Internal Control of Wealth Management Companies*

Scale of assets under custody expanded rapidly to release the value of custody service platforms

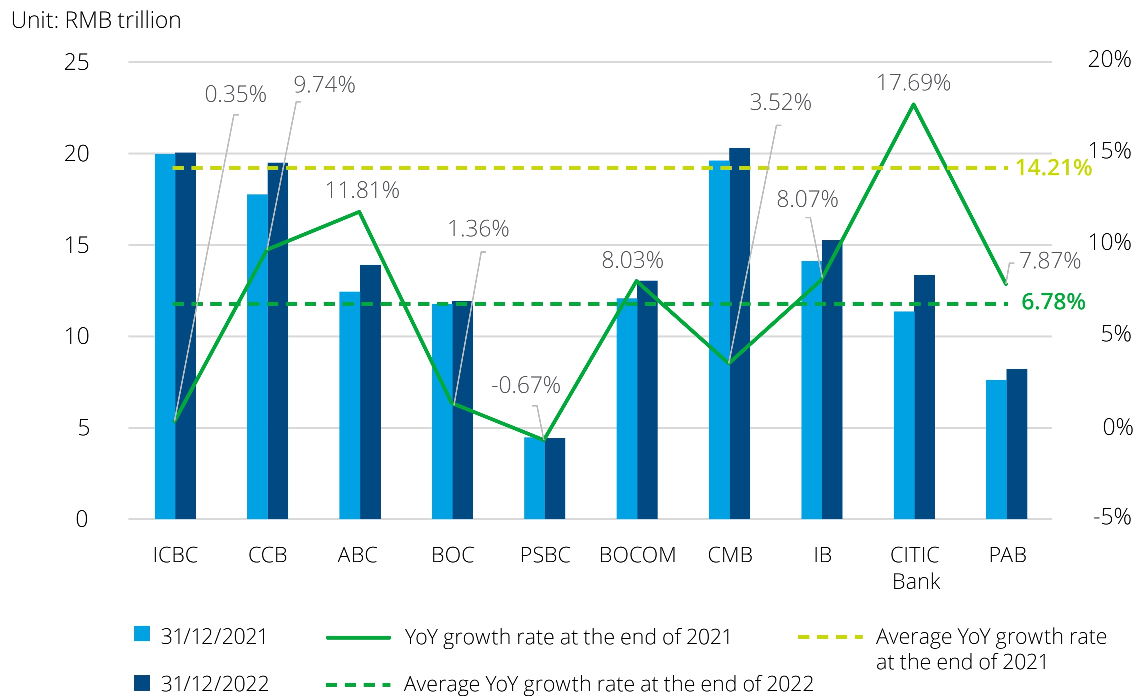
Benefiting from the rapid development of asset management businesses, banks' custody assets maintained rapid growth. As part of the wealth management value chain, custody services have become vital to commercial banks' light banking-oriented transformation.

At the end of December 2022, the ten domestic banks' assets under custody totaled RMB140.06 trillion, with an increase of RMB8.81 trillion, representing an average growth rate of 6.78%.

Among them, the six state-owned banks' total assets under custody were RMB82.90 trillion, accounting for 59.19% and representing a growth rate of 5.56%; the four joint-stock banks' assets under custody totaled RMB57.16 trillion, accounting for 40.81% and representing a growth rate of 8.42%.

The top three domestic banks in the custody asset scale were CMB, ICBC and CCB. Regarding the development speed of custody services, the top three banks were CITIC Bank, ABC and CCB, with growth rates of 17.69%, 11.81% and 9.74%, respectively.

Figure 5: Scale of Assets under Custody at the End of 2022 and 2021



Note: The data were sourced from the banks' 2022 and 2021 reports.

High-quality development of wealth management enhanced the effectiveness of supporting social development

Under the proactive and net value-based regulatory guidance of the new asset management regulations, banks stuck to the high-quality development path of wealth management, implemented the requirements of "enhancing the political and people-oriented nature of financial services", applied the concept of people-centered development, adhered to integrity and innovation, took active actions to continuously enhance the effectiveness of wealth management supporting economic and social development, and deepened business transformation, thus maintaining overall stable and healthy development. As of the end of 2022, the banking wealth management market scale reached RMB27.65 trillion, with 29,400 new wealth management products issued in the year, raising total funds of RMB89.62 trillion and generating a total income of RMB880 billion for investors (the data were from the *Annual Report on China Banking Wealth Management Market (2022)*).

All ten banks disclosed their viewpoints on asset and wealth management businesses in their 2022 annual reports. They focused on customers' diversified needs, product innovation, technological empowerment, and risk control to maintain sustainable development against challenges in the new landscape.

Table 2: Asset Management and Wealth Management Viewpoints

Bank	Viewpoint
ICBC	The bank strictly implemented regulatory requirements, actively seized development opportunities, and enhanced investment management and research capabilities. A customer-centered "ICBC Asset Management" brand was launched to improve the professionalism of financial services such as wealth management, fund, insurance, pension, etc.
CCB	The Group focused on connecting the value chain of "Wealth Management–Asset Management-Investment Banking", promoted the "two-wheel drive" of mega wealth and mega asset management, and accelerated the transformation of the asset management business. It continuously enhanced the competitiveness and diversity of asset management products, monitored products to analyze and evaluate their competitiveness, and enhanced the adequate supply of asset management products.
ABC	The bank promoted "mega wealth management", digital transformation, continued to strengthen financial supply for rural revitalization, and further enriched the featured products library.
BOC	The bank seized market opportunities arising from the new development stage, such as continuous growth in residents' wealth and the construction of the third pillar of elderly care, and took various measures such as accelerating digital transformation, improving the investment and research capacity, strengthening investor education, improving the inclusiveness of business development, promoting the construction of multi-level capital markets, and strengthening risk prevention and control, to build a high-quality asset management development system.
PSBC	The bank adhered to the business policy of "ensuring stable growth, boosting transformation, and proactively and steadily promoting reform". It applied a systematic concept to promote product transformation, business reshaping and system reengineering, created the comprehensive "inclusive + wealth + pension" product layout, developed an industry-leading investment and research system with a focus on public offering funds, promoted the development of a high-standard internal risk management system, and provided all-round asset value-added services to investors.
BOCOM	The Group strove to explore the latest basic technology architectures, apply the mid-to-high-end service model, provide innovative and sophisticated products, and establish a "Great Wealth-Great Asset Management-Great Investment Bank" business service chain. In this way, the Group could better understand customers and respond to their balance sheet needs to create an excellent customer experience.
CMB	CMB adhered to the development concept of "safeguarding customers' wealth with loyalty, securing steady and sustainable growth with integrity and innovation" and explored a high-quality growth model from the long-term development perspective. It focused on meeting customers' diversified financial needs and strengthened the sales of scenario-based products, thus enhancing customer loyalty.
IB	IB deepened the combination of investment research and empowerment and improved the multi-asset and multi-strategy layout. It expanded the asset coverage of the "new track" and promoted the transformation and reconstruction of the wealth management business. The cash products were rectified completely, and the investment and payment scenarios were integrated and upgraded. It accelerated the process of system construction and comprehensively improved technology empowerment. It also improved the whole-process management of wealth management products and deployed an agile risk monitoring system.
CITIC Bank	Asset management business was the bridge and pivotal link in the bank's "wealth management – asset management — comprehensive financing" value chain. It built an all-round asset management bank with core competitiveness, a full range of products, wide customer coverage and leading comprehensive strength. While creating value for customers, the bank also facilitated the transformation toward capital-light development, which contributed significantly to building a "bank of value".
PAB	The bank pursued a market-oriented, specialized and refined business strategy. It rolled out more net value-based products that met the requirements of the new asset management regulations, and built an industry-leading product system. It made constant efforts in technical innovation and intensified applying Fintech innovation achievements.

Measures for risk classification of the financial assets of commercial banks—interpretation and analysis

New regulations introduced in response to the newdevelopment period

Credit risk was the main risk facing the banking sector. A scientific risk classification system helps prevent credit risks effectively. In 1998, PBC issued the *Guideline of Loan Risk Classification*, which proposed classifying loans into five categories based on the risks. In 2007, the former Banking Regulatory Commission issued the *Guidelines for Risk-based Loan Classification* (hereinafter referred to as the "Guidelines"), further clarifying the five categories' regulatory requirements. In 2017, the Basel Committee on Banking Supervision issued the *Prudential Treatment of Problem Assets*, specifying the identification criteria and classification requirements for nonperforming and restructured assets, aiming to establish unified asset risk classification standards and enhance results comparability in the global banking industries. With the development of China's economy and banking businesses, commercial banks' financial asset structure and risk characteristics have changed remarkably, imposing higher requirements for the regulatory system for risk classification. To help commercial banks identify risk levels accurately, implement asset risk classification, and prevent and resolve credit risks effectively, the *Measures for the Risk Classification for the Financial Assets of Commercial Banks* (hereinafter referred to as the "Measures") was officially announced on February 11, 2023, after seeking public comments in 2019, and being deliberated and adopted in 2020.

Major changes of eight aspects in the new policies

Table 1: Comparison of Old and New Policies

Key aspects	The Guidelines	The Measures	Comparison and analysis
Banks' internal governance and management	Senior management of commercial banks shall bear responsibility for implementing the loan classification system and the results of loan classification.	Commercial banks shall clarify the risk classification responsibilities of the board of directors, senior management and relevant departments.	The Measures specified the corresponding management responsibilities of the board of directors and senior management, strengthening banks' **internal management requirements**.
Asset classification scope	The term "loan classification," as used in these guidelines, refers to dividing loans into different classes according to the degree of risks by commercial banks.	Commercial banks shall classify the risks of **on-balance sheet financial assets associated with credit risks,** including but not limited to loans, bonds and other investments, interbank assets and receivables. Commercial banks shall classify the risks of **off-balance sheet items** associated with credit risks pursuant to the relevant requirements for on-balance sheet assets. Financial assets under the trading books of commercial banks and the related assets generated from derivatives transactions are not included in the Measures.	The Measures **expanded the asset scope for risk classification**. Non-credit assets and off-balance sheet assets shall be classified into five categories. Financial assets under the trading books and related assets generated from derivatives transactions are not required to be classified.
Nonperforming asset classification cross-impact	If part of the debts owed by the same borrower to this bank or other banks have become bad, the assets shall at least be included in the "special mention" category.	If a commercial bank classifies more than **10%** of the debt owed by a non-retail debtor to the bank as a non-performing asset, all the debt shall be classified as a nonperforming asset. If more than **20%** of the debts owed by the same non-retail debtor to all banks are overdue for more than **90 days**, the assets shall be at least classified into the **substandard category**.	The Measures emphasize **debtor-centered** risk classification, and nonperforming assets are classified by a "tie-in" method: when over 20% of a debtor's assets in all banks are nonperforming assets, all banks shall classify the debtor's debt as a nonperforming asset.
Quantitative classification	Number of overdue days: The Guidelines only stated that the number of overdue days shall be an important reference index, with no details specified. Asset impairment: not mentioned	Number of overdue days: Financial assets shall be at least classified into the "special mention" category when they are overdue, except for short-term delinquency **(less than seven days)** due to operational or technical reasons; Financial assets that are overdue for more than **90 days** shall be at least classified into the substandard category (even with reliable collateral security), for more than **270 days** shall be at least classified into the doubtful category, and for more than **360 days** shall be at least classified into the loss category. Asset impairment: Assets with credit impairment shall be classified as nonperforming assets. Specifically, if the expected credit loss accounts for more than **50%** of the book balance thereof, the assets shall be at least classified into the **doubtful category**; if the expected credit loss accounts for more than **90%** of the book balance thereof, the assets shall be at least classified into the **loss category**.	Number of overdue days: The Measures **specified the relationship between days overdue and risk classification**. Asset impairment: The Measures required **the financial asset risk classification to be linked to asset impairment**.

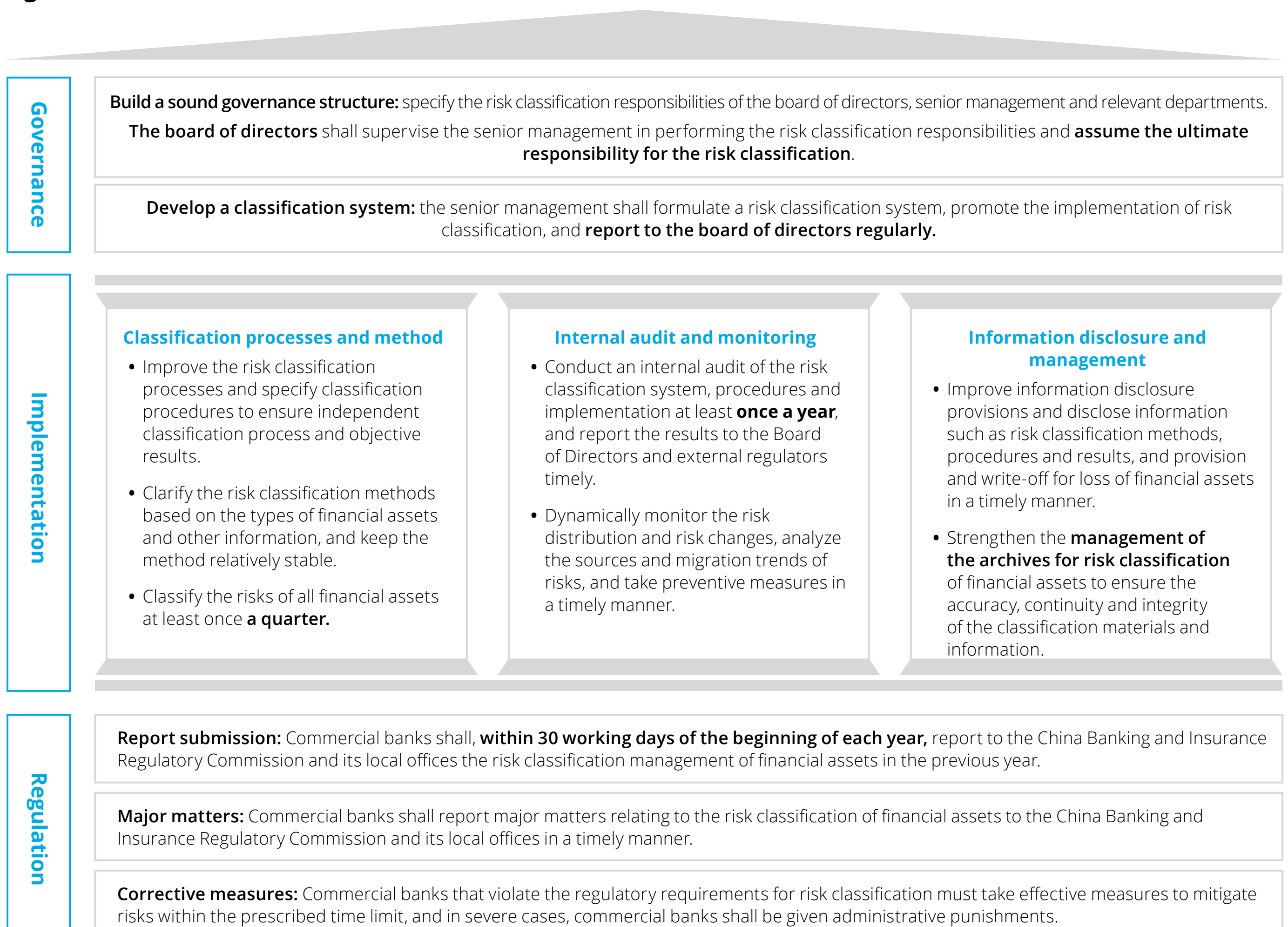
Key aspects	The Guidelines	The Measures	Comparison and analysis
Asset penetration classification	Not mentioned	When classifying the risks of invested asset management products or asset securitization products, a commercial bank shall apply the **penetrating approach to identify the underlying assets** and classify the risks based on the risk status of the underlying assets. For products whose underlying assets **cannot** be completely identified by applying the penetrating approach, the product risk classification shall be determined based on the assets with the **worst** risk class among the underlying assets, which can be identified by applying the penetrating approach. For **credit asset securitization** products with retail assets and nonperforming assets as underlying assets, and the **layered credit asset securitization products**, a commercial bank shall, based on the comprehensive assessment of the risk status of the final debtor and the characteristics of structured products, classify the risks of the products based on the **expected profit and loss of the investment**.	According to the Measures, **retail assets, nonperforming assets and layered credit ABS** can be **exempted from penetration** and classified based on the expected investment loss. A commercial bank shall apply the **penetrating approach to identify the underlying assets** to classify the **asset management products, non-credit ABS and credit ABS (except for the layered credit ABS that are exempted from penetration)**. For products whose underlying assets cannot be completely identified by applying the penetrating approach, the product risk classification shall be determined based on the assets with the **worst** risk class among the underlying assets.
Risk classification of restructured assets	Loans that need to be reorganized shall be included in the substandard category. Where the loan payment after reorganization (shortened as the reorganized loan) is still overdue, or the borrower is still unable to pay the loan, the loan shall at least be included in the doubtful category.	The assets in the "pass" or "special mention" category before reorganization and the refinancing of existing debts shall **be at least classified into the "special mention" category** after reorganization. During the reorganization observation period, if the debtor fails to make timely and full repayment as agreed in the contract, or makes timely and full repayment but its financial situation has not improved, the **reorganized assets** shall at least be classified as **substandard**.	According to the Measures, the restructured assets are **no longer required to be classified as non-performing assets uniformly**. When a debtor fails to make timely and full payment as agreed in the contract, or makes timely and full repayment but its financial situation has not improved, the class of the reorganized assets has been raised compared with the Guidelines.
Upgrades of restructured assets during the observation period	The class of reorganized loans shall not be raised within the observation period which lasts for at least six months. After the end of the observation period, the reorganized loans shall be classified in strict accordance with the provisions of these Guidelines.	The observation period shall include at least **two consecutive repayment periods**, not less than **one year**. Those that meet the standards for recognizing nonperforming assets during the observation period shall be downgraded to nonperforming assets, and the observation period shall be recalculated. Those that meet the relevant requirements after being identified as nonperforming assets during the observation period may be upgraded to the "special mention" category. Those that are substandard, doubtful or suffer a loss before the reorganization and meet the relevant requirements during the observation period may be upgraded to the "special mention" category; If the asset quality continues to deteriorate during the observation period, the class shall be further lowered and the observation period shall be recalculated.	The Measures required that the reorganization observation period shall be extended from at least six months to at least **one** year. During the observation period, the class of nonperforming assets may be upgraded if they meet the relevant requirements, there is no need to wait till the end of the observation period.

Key aspects	The Guidelines	The Measures	Comparison and analysis
Regulatory reporting and supervision	The China Banking Regulatory Commission or its dispatched offices shall supervise and administer the loan classification and quality through spot inspection or non-spot supervision and administration. A commercial bank shall submit its results of credit asset inspection to the China Banking Regulatory Commission or its dispatched offices. The inspection frequency shall be no less than once per year.	Commercial banks shall, **within 30 working days of the beginning of each year**, report to the China Banking and Insurance Regulatory Commission and its local offices the risk classification management of financial assets in the previous year. The Measures specified a series of detailed regulatory procedures.	The Measures stipulated the **content and frequency** of regulatory reporting and specified various **regulatory procedures**.

Implemented governance framework and optimized classification processes

The Measures covered the critical areas of risk classification governance, implementation and supervision, including governance responsibilities, systems and processes, internal and external audits, and information disclosure and management. The Measures require the board of directors to assume the ultimate responsibility for the risk classification results of financial assets, imposing higher requirements for the governance structure, management system, internal classification processes, and information system of commercial banks' risk classification management.

Figure 1: The Measures' Overall Structure



Deep understanding of the industry status: centerpieces

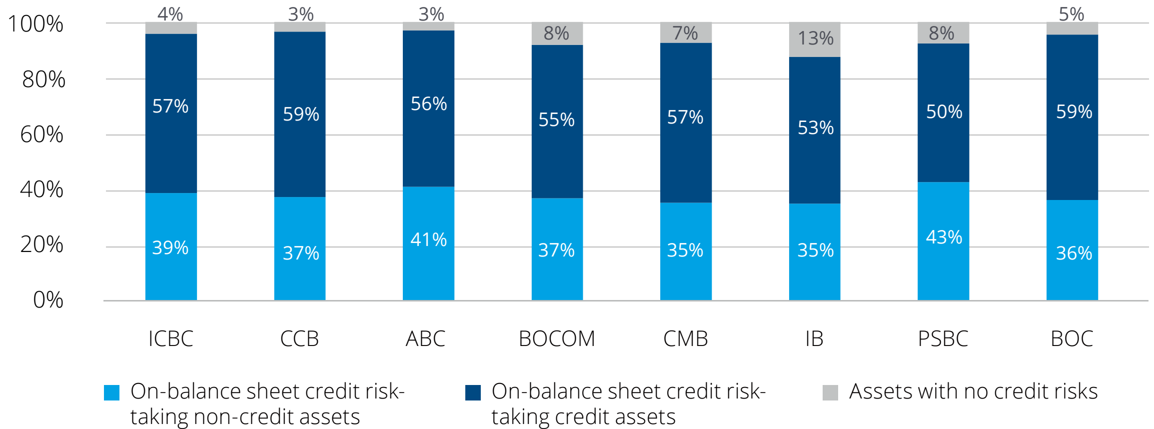
Clarify asset scope for risk classification

The Guidelines primarily proposed five-category classification requirements for commercial banks' loan businesses. With the Chinese financial market's continuous development, commercial banks' financial asset scope has expanded beyond the general loan businesses. Various investment businesses have become important to Chinese commercial banks' balance sheets.

The Measures stipulated that commercial banks should classify the on-balance sheet credit risk-taking financial assets, including loans, bonds and other investments, interbank assets, and accounts receivable, as well as the off-balance sheet credit risk-taking items. In addition, considering that the financial assets under commercial banks' trading book and related assets formed through derivative transactions mainly assume market risks, they do not need to be classified and their bookkeeping will be based on the market value. The scope of such assets is consistent with the scope of credit risk exposures under the Expected Credit Loss Method specified in the *Circular of the China Banking and Insurance Regulatory Commission on Issuing the Administrative Measures for the Implementation of the Expected Credit Loss Method by Commercial Banks* (Yin Bao Jian Gui [2022] No.10). However, there are exceptions. For instance, the loans measured at fair value with changes included in current profit or loss shall be classified in accordance with the Measures, although they are not within the scope of the Expected Credit Loss Method.

Intensified regulation on non-standard and interbank businesses has reversed the disorderly expansion of banks' off-balance sheet assets. The asset scope expansion after implementing the Measures may affect banks with a high proportion of credit risk-taking non-credit assets. According to the data in the ten banks' 2022 annual reports, their average proportion of on-balance sheet credit risk-taking non-credit assets was about 38%, mainly bond investments and interbank financing.

Figure 2: Proportion of On-Balance Sheet Credit Risk-Taking Assets



Note: The data were sourced from the banks' 2022 annual reports—the amount of items indicating credit risks in the balance sheet.

Specify risk classification criteria

Debtor-centered risk classification

Under the Guidelines, risk classification is based on a single loan. The classes of multiple loans of the same debtor may be inconsistent, i.e., the loans may be classified into the pass, special mention, substandard, doubtful and loss categories divergently. The Basel Committee stated in the *Prudential Treatment of Problem Assets* that in the case of exposures to a non-retail counterparty where the bank has more than one exposure to that counterparty, the bank must consider all exposures to that counterparty as nonperforming when any one of the material exposures is non-performing. Therefore, considering the relatively reliable corporate governance and financial data of corporate customers, the Measures require commercial banks to focus on assessing the debtors' repayment capacity to classify the non-retail financial assets.

The Measures clarified that when classifying the risks of non-retail assets, a commercial bank shall strengthen the analysis of the debtor's primary source of repayment, focus on assessing the debtor's ability to perform the contract, lay stress on examining the debtor's financial status, willingness to pay and record of payment, and take into account factors such as the number of overdue days and guarantee of the financial assets. Where more than 10% of the creditors' rights of a non-retail debtor in a commercial bank are classified as nonperforming ones, the commercial bank shall classify all the creditors' rights of the debtor in the bank as nonperforming ones. Where the debts overdue for over 90 days account for over 20% of the debts of the same non-retail debtor in all banks, all banks shall classify the debtor's debts as nonperforming ones.

Risk classification management may involve specific considerations, such as creditors' committees requesting banks not to downgrade loan risks and withdraw loans. Thus, the credit information does not fully and accurately reflect some credit assets managed as nonperforming loans by banks. Commercial banks with more varied ratings will face the pressure of rising nonperforming ratios.

The debtor-oriented financial asset classification standards are highly consistent with the regulatory requirements of the expected credit loss and capital measurement methods, driving China's banking sector to completely change to debtor-centered credit risk management for non-retail risk exposures.

Quantitative criteria for identifying the five categories

The number of overdue days and credit impairment can reflect the degree of deterioration of banks' asset quality. Compared to the 2007 Guidelines, the Measures provided quantitative criteria for identifying nonperforming assets.

Table 2: Quantitative Criteria

Criteria	Special mention	Substandard	Doubtful	Loss
Overdue days	0+	90+	270+	360+
External rating	/	Significant external rating downgrade	/	/
Debts with all banks	Nonperforming debt emerged	More than 20% of debts overdue for over 90 days	/	/
Credit impairment	/	Occurred	Occurred	Occurred
Impairment ratio	/	/	The expected credit loss accounted for more than 50% of the book balance	The expected credit loss accounted for over 90% of the book balance
Fund usage	Change fund usage	/	/	/
Repay the debt by obtaining a new debt	Repay the debt by obtaining a new debt or through other financing methods	/	/	/

The Measures stipulated that short-term (less than seven days) overdue assets due to operational or technical reasons may not be classified into the "special mention" category temporarily, but the identification of the operational or technical reasons shall be further confirmed in practice. In addition, the Measures specify that if the external rating of a debtor or financial assets has been lowered significantly, the financial assets shall be at least classified into the substandard category, which will trigger subsequent thinking for the criteria for a significant downgrade and whether it includes the impact of group customers' downgrade on subsidiaries.

According to the ten domestic banks' 2022 annual reports, their nonperforming loans were highly consistent with the third-stage loans. The four major banks' loans overdue for more than 360 days were more than their loans in the loss category. The "loss" loans were expected to increase with the implementation of the Measures. The Measures will also affect the stage classification results and provisions. With some financial asset classes lowered, provisions may increase if the expected credit loss model parameters are related to the risk classification results.

The Measures frequently indicate that risk classification will rely on the stage division results of the expected credit loss method and the results of provisions. For example, the Measures followed the requirements of the new accounting standards and stipulated that financial assets with credit impairment shall be classified as nonperforming assets, and the assets where the expected credit loss accounts for more than 50% of the book balance thereof shall be at least classified into the doubtful category and for more than 90% shall be at least classified into the loss category.

In addition, risk classification has been used as an important basis for dividing the financial asset stages in practice. For example, one of ABC's criteria for a significant increase in credit risk was "the asset class has been changed from the 'pass' category to the 'special mention' category". Therefore, the five-category classification and the three impairment stages were highly correlated.

With the introduction of the *Administrative Measures for the Capital of Commercial Banks (Draft for Comment)* (hereinafter referred to as the "New Capital Regulations"), banks must sort out the New Capital Regulations' possible impacts on risk classification and stage division and their interrelationships. The New Capital Regulations involve a division of trading and banking books, which can provide a reference for the asset scope of the trading book covered by the Measures.

According to the New Capital Regulations' Appendix 13—Book Division and Definitions, the basic principles for dividing trading and banking books are as follows:

Table 3: Principles for Dividing Trading and Banking Books

	Banking book	Trading book
Orientation	The following financial instruments, foreign exchanges and commodity positions, their derivatives, funds and hedging instruments **must be included in the banking book:** • Unlisted equity • Instruments intended to be allocated to the securitized underlying asset pool • Real estate investments • Credit granted to individuals and MSMEs • Asset management products that are not on the trading book' presumptive list • Hedge funds	Financial instruments, foreign exchanges and commodity positions held for the **purpose of transactions** or **hedging** the risks of other items on **the trading book,** as well as other financial instruments determined by the CBIRC: • Financial instruments held for sale in the short term • Financial instruments obtaining profits from actual or expected short-term price fluctuations • Arbitrage-targeted positions, including self-operated business and market-making business • Businesses on behalf of customers to implement customers' transaction commission • Positions held to hedge risks

	Banking book	Trading book
Specified list	• Banks can **apply the penetrating approach to identify the underlying assets** of **the asset management products**, and obtain sufficient and timely underlying assets information of the asset management products verified and provided by an independent third party, which can meet the capital measurement frequency requirements. • "An independent third party" shall be **independent institutions other than commercial banks and asset management product managers**, such as depositary institutions, custodian banks, and, where appropriate, asset management product managers. • Banks can **access daily quotations of asset management products** and obtain asset management product transaction specifications or information required to be disclosed by regulators for such asset management products.	The following financial instruments or positions held for the purpose of transactions were considered to be held for transaction purposes and **presumed to be trading book instruments**, unless otherwise specified by CBIRC: • Financial assets or liabilities held for transaction purposes under the accounting standards • Instruments held for market-making business • Listed equity instruments • Repurchase transactions for market making, arbitrage profits, and creating credit or equity short positions, excluding the repurchase transactions conducted for liquidity management purposes and suitable for the accrual-basis accounting • Options, including the splittable embedded derivatives in the credit/equity risk-related banking book instruments issued by banks

In addition, Article 43 of the Measures states that "A commercial bank which has implemented advanced capital measurement methods shall specify the stable correspondence between the risk classification standards and the definitions of default in its internal assessment system." Therefore, while implementing the Measures and the New Capital Regulations, banks must clarify default definitions and ensure a stable correspondence between the definitions and the risk classification standards.

Classification management by applying the penetrating approach to identify the underlying assets of asset management products

The structure of asset management products commercial banks invested in was complex, so the risk classification of asset management products or asset securitization products should adopt the penetrating approach. The Measures put forward requirements for the risk classification of asset management products and asset securitization products for the first time, covering the following three aspects:

Table 4: Specific Requirements for Applying the Penetrating Approach

Implementation orientation	Content
Penetrating management	When a commercial bank classifies the risks of invested asset management products or asset securitization products, it shall examine the underlying assets by the penetrating approach, and classify the risks according to the risk conditions of the underlying assets.
The "worst" principle	For products whose underlying assets cannot be completely identified by applying the penetrating approach, the product risk classification shall be determined based on the assets with the worst risk class among the underlying assets, which can be identified by applying the penetrating approach.
Exemption From penetration	For credit asset securitization products with retail assets and nonperforming assets as underlying assets, the layered credit asset securitization products, and other products approved by the China Banking and Insurance Regulatory Commission, a commercial bank shall, based on the comprehensive assessment of the risk status of the final debtor and the characteristics of structured products, classify the risks of the products based on the expected profit and loss of the investment.

Penetrating management poses new challenges to commercial banks' building of information system capacity. Some domestic banks can ultimately identify the underlying assets of certain asset management products and asset securitization products and classify such products based on the underlying assets. However, for products whose underlying assets cannot be entirely identified by applying the penetrating approach, such as some wealth management products and publicly offered funds that can only be penetrated to the major assets but not to the actual underlying financiers, they are not classified by the "worst" principle completely. Therefore, commercial banks shall further assess the penetration of such assets and the impact of the corresponding product scale.

For assets whose risks are classified based on the expected profit and loss of the investment, the classification ratings corresponding to the specific loss ratios will remain to be determined. Some credit asset ABS are exempted from penetration for ABS products according to the Measures, but the situations of the non-credit asset ABS vary. For example, the final payment ABS creditor's rights are highly decentralized and challenging to fully penetrate; the reverse factoring ABS creditor's rights are single and concentrated, but the ultimate debtors are usually the parties responsible for credit enhancement or making up the differences. Considering that the ABS has already been stratified structurally, we expect the Measures' impacts on ABS products will be limited in practice.

Establish restructured asset classification system

New regulations and policies analysis

The Guidelines did not clearly define restructured loans and stipulated that all restructured loans shall be classified as nonperforming assets. Therefore, commercial banks' recognition of restructured loans varied, and some banks did not fully recognize the loans that had been extended or repaid through obtaining new loans as restructured loans. Consequently, the nonperforming indexes were underestimated. The Measures have a separate chapter specifying regulations for the risk classification of restructured assets, indicating that regulators take the risks of restructured assets seriously. To prevent regulatory arbitrage through restructured assets, the Measures clarified the concept of restructuring from the following five aspects:

Table 5: New Requirements for Restructured Loans

No.	Content
1	Learned from the Basel Committee's experience to define restructured assets clearly, and specified regulations for the key concepts of "financial difficulty" and "contractual adjustment." • Financial difficulties include overdue principals and interests, solvency decline and possible overdue debts. Debts have been classified as nonperforming debts. Inability to obtain financing at fair market prices from other banks, publicly-issued securities face delisting risks, and other circumstances determined by commercial banks; • Contractual adjustments include extending the loan contract period, extending principal and interest repayments, extending the grace periods, converting interest into principal, lowering the interest rates, reducing the payment of principal, interest or relevant expenses, releasing part of the collateral, replacement, and other measures to relax the contract terms.
2	A commercial bank shall set a reorganization observation period for reorganized assets. The observation period shall commence on the date of the first repayment agreed upon after the adjustment of the contract and shall include at least **two consecutive repayment periods** and not be less than **one year.**

No.	Content
3	According to **the Substance Over Form Principle**, restructured assets are no longer required to be classified as nonperforming assets uniformly, but shall be at least classified into the "special mention" category. The restructured assets that have been classified as nonperforming assets may be upgraded into the "special mention" category if they meet the upgrading requirements during the observation period.
4	During the observation period, if the debtor fails to make timely and full repayment as agreed in the contract, or makes timely and full repayment but its financial situation has not improved, the reorganized assets shall at least be classified as **substandard**, and the **observation period shall be recalculated**.
5	When the debtor **has no financial difficulties**, the financial assets for which a commercial bank has adjusted the debt contract or the refinancing are **not reorganized assets**.

The Measures' reorganized asset classification requirements were based on the prerequisites of Cai Jin [2022] No. 87 Document: financial enterprises should strengthen asset quality management, implement asset risk classification, and re-examine the classifications of all asset risks regularly to honestly and accurately reflect asset quality; they must not conceal the actual risk status of assets through invalid reorganization. Invalid reorganization refers to the debt agreement restructuring of unqualified debtors* (excluding judicial reorganizations such as bankruptcy restructuring directed by courts), or the debt reorganizations that cannot help the debtors improve efficiency and quality and mitigate risks substantially. The Measures no longer require reorganized assets to be classified as nonperforming assets, which is conducive to defusing the risks of reorganized assets. Especially for city investment SOEs, the city investment platforms will have time for internal adjustments, and local governments will have time and space for financial support.

Note*: Unqualified debtors refer to those that: (1) have been determined onto the "zombie enterprises" list by the State-owned Assets Supervision and Administration Commission of the State Council or provincial people's governments; (2) mainly rely on the government's or the headquarters' subsidies and perpetual bank loans to maintain operation, have a debt-to-asset ratio of over 85%, have recorded consecutive losses in the recent three fiscal years, have recorded negative net operating cash flow, and have been assessed by the creditor financial enterprises as having substantial operating risks; (3) have completely suspended production for more than half a year or partially suspended production for more than one year due to production and operation difficulties and have been assessed by the creditor financial enterprises as having no chance of resuming production.

Reorganization case analysis and current status assessment

The following table showed the restructured loan definitions in banks' annual reports:

Table 6: Restructured Loan Definitions in the 2022 Annual Reports

No.	Bank	Definition
1	CCB	Restructured loans are those loans to customers for which the Group has modified the contract terms due to the **deterioration in the borrowers' financial position or the borrowers' inability to make payments** when due.
2	ABC	Restructured loans refer to those loans for which the Group has modified the repayment terms of the borrowers' contracts due to the borrowers' **financial position deterioration** or inability to repay the loans.

No.	Bank	Definition
3	IB	Rescheduled loans refer to the loan projects generated by the Group to **re-determine the loan terms** at the discretion of the borrowers who cannot **repay the loans** according to the original loan terms.
4	CMBC (China Minsheng Banking Corp)	Restructured loans are loans that the bank has adjusted the terms of repayment under the loan agreement due to the borrowers' deteriorated financial status or inability to repay.
5	PSBC	To minimize the credit loss, the Group may **renegotiate the terms of the contract** with borrowers that have **deteriorated in financial position**, or are unable to meet their original repayment schedule, which include concessions given by the Group to these borrowers for economic or legal reasons relating to their financial difficulties.
6	BOC	Rescheduled loans refer to the loans for which the Group has adjusted the repayment terms of the loan contract because the borrower is in **financial difficulty** or unable to repay. The Group reschedules a nonperforming loan only if the borrower has good prospects.

Most banks' definition of restructured loans covered the conditions of "financial difficulty" and "contractual adjustment", but the Measures provided a clearer definition scope. With stricter identification rules, more assets with extended contract periods and extended repayment of principal and interest may be recognized as reorganized assets.

Figure 3: Restructured Loan Scale

Unit: RMB million

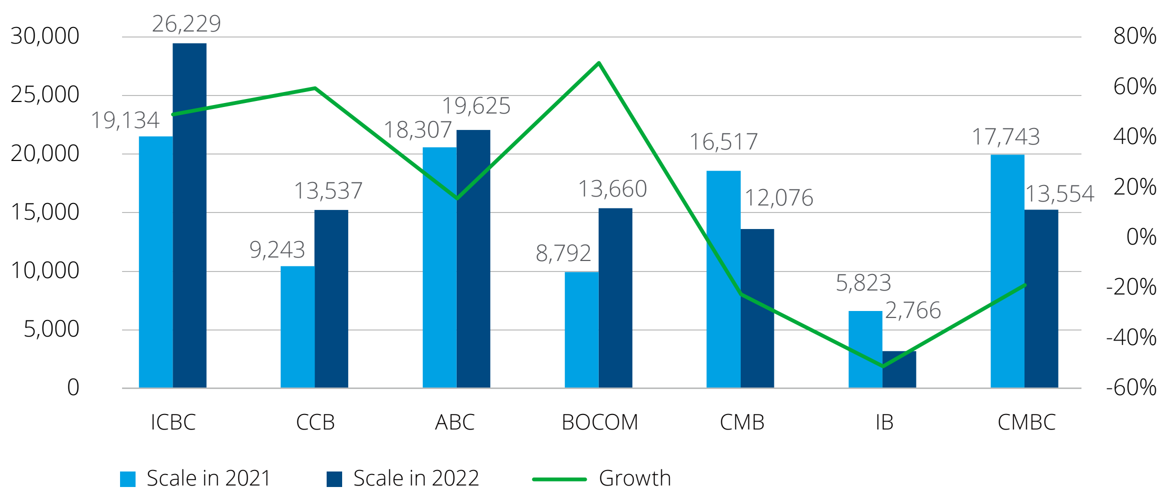


Table 7: Restructured Loan Proportion

Bank	Restructured loan proportion in 2022	Restructured loan proportion in 2021	Growth rate
ICBC	0.12%	0.10%	22%
CCB	0.07%	0.05%	30%
ABC	0.10%	0.11%	-7%
BOCOM	0.19%	0.14%	40%
CMB	0.21%	0.31%	-33%
IB	0.06%	0.14%	-58%
CMBC	0.33%	0.44%	-25%

As shown in the table above, large state-owned banks' restructured loan scale and proportion trended up, while large joint-stock commercial banks' scale and proportion decreased. With the gradual implementation of the Measures, the reorganized asset scale and proportion are expected to expand, and banks' "special mention" loans may grow, thereby increasing the provision and capital replenishment pressures.

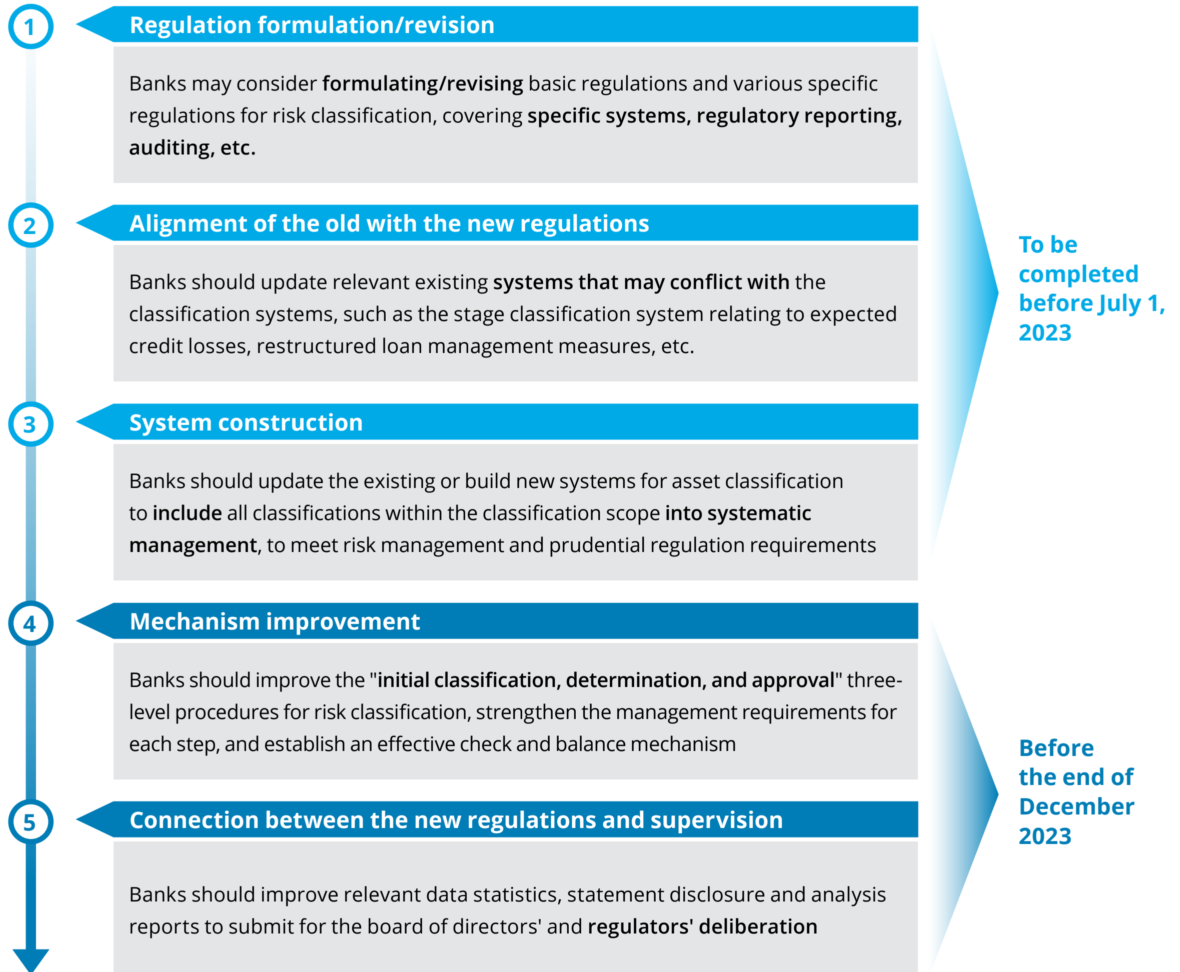
The Guidelines require restructured loans to be classified as nonperforming loans, but in practice, banks are usually required not to downgrade the restructured loans under the Creditors' Committees' unified management during the reorganization period. The Measures stipulate that restructured loans shall be at least classified into the "special mention" category, narrowing the gap between regulatory requirements and banks' difficulties during practical management. However, there are still challenges in classifying the risks of the restructured "pass" and "special mention" loans under the Creditors' Committees' management.

Reasonable planning for the transition period

Recommended schedule for the transition period

The Measures proposed a reasonable transition period and differentiated implementation arrangements. It stipulates that new businesses of commercial banks after July 1, 2023 (including July 1) shall be classified according to the Measures. For businesses that occur before July 1, 2023, commercial banks shall formulate a reclassification plan, and before December 31, 2025, reclassify all existing businesses in accordance with the Measures in a planned and step-by-step manner on a quarterly basis. Qualified commercial banks are encouraged to reclassify existing businesses ahead of schedule. During the transition period, existing businesses that have not been reclassified in accordance with the Measures shall be classified in accordance with the relevant provisions of the *Guidelines for Risk-based Loan Classification* (Yin Jian Fa [2007] No.54).

The Measures are expected to impact the banking sector's financial asset risk classification practices and some regulatory indicators in the short term. Although the new regulations have considered the impact on institutions and the market and proposed a reasonable transition period, banks should pay attention to the following issues while accelerating effective policy implementation:



Key challenges during the transition period

Banks need to deal with two major difficulties during the transition period. First, adjusting risk classification according to the new regulations may expose more potential risks. Second, commercial banks must overcome various practical challenges during adapting to the new regulations.

From the perspective of corporate governance and internal control, the Measures require the board of directors to assume the ultimate responsibility for the financial assets' risk classification results, which imposes higher requirements for the governance structure, management system, internal classification processes and information system of commercial banks' classification management. It will be a new challenge for some small and medium-sized banks with relatively weak corporate governance, internal control, and information system capacity.

The Measures put forward a debtor's ability performance centered classification concept, clarifying that assets overdue for more than 90 days shall be classified as nonperforming assets even with reliable collateral security. In addition, the Measures require that for risk classification of non-retail assets, where more than 10% of the creditors' rights of a non-retail debtor in a commercial bank are classified as nonperforming ones, the commercial bank shall classify all the creditors' rights of the debtor in the bank as nonperforming ones; where the debts overdue

for over 90 days account for over 20% of the debts of the same non-retail debtor in all banks, all banks shall classify the debtor's debts as nonperforming ones. Therefore, banks did not included all debts overdue for more than 90 days into nonperforming assets on the grounds of reliable collateral security—especially banks that were not prudent enough in determining nonperforming assets, did not fully expose risks, and had more varied ratings among debtors—may face certain pressure, and their nonperforming ratios are expected to rise during the rectification period, with risks gradually exposed. In addition, the Measures' definitions and requirements for reorganized assets will prevent regulatory arbitrage effectively, which may also challenge banks' loan reorganization.

During the transition period, commercial banks may face various challenges in practice. For example, after the reorganization observation period, whether it should be considered as another reorganization if the loan is restructured again upon maturity; what are the specific measurements for a "significant downgrade" of the debtors' or financial assets' external rating; how to determine the short-term late payments that are caused by operational or technical reasons; and whether the FVTPL bonds and unlisted equity (such as subordinated debts and perpetual debts) that have been included in banking book management should be included in the asset risk classification scope.

The promulgation of the new regulations is expected to impact the banking sector's financial asset risk classification practices and some regulatory indicators over the short term. However, in the long run, the Measures primarily reflect more scientific and prudent objectives and directions for classifying and managing nonperforming assets. It has refined and quantified the classification requirements of nonperforming assets, which will significantly improve the consistency and comparability of asset risk classification standards and results in the banking sector, and spur commercial banks to strengthen credit risk management and enhance their overall risk management capabilities, thus boosting banks' capabilities to defuse credit risks and serve the real economy.

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4. Hot Topics

4.1 Banking sector strategy for 2023

4.2 Methodologies and best practices of carbon accounting for banks

4.3 Smart monitoring of related party transactions

4.4 "Integration of business and finance, exquisite and informative" – the new practice of presenting competitiveness and resilience in banks' annual reports

4.5 Implementations of ChatGPT for the future of financial transformation

4.6 Reimagine data management: building a high-quality regulatory data governance framework

4.7 Playing to the score: banks' operational resilience in response to the new business landscape

4.8 Pursuing excellence: Chinese banks' digital transformation in risk reporting

4.9 Beyond the cycle: key considerations in commercial banks' M&A and restructuring

4.1

Banking sector strategy for 2023

Macro-environmental changes and implications

In 2022, unexpected factors home and abroad led to a complex and severe economic environment. China's GDP grew by 3.0%, down 5.4 percentage points year-on-year. In the second half of 2022, the 20th CPC National Congress was successfully held, and the macroeconomy recovered steadily. Centering on "supporting the innovation and transformation of industries of the real economy" and "developing inclusive finance", China's banking sector optimized financial supply and effectively allocated resources with the focus on Sci-Tech innovation finance, green finance, pension finance, and "new citizens" finance.

Sci-Tech innovation finance

In April 2022, the Central Committee for Deepening Overall Reform approved the *Work Plan for Improving Financial Support System for Innovation during the 14th Five-Year Plan Period*. In November, PBC and seven departments issued the *Overall Plan for the Construction of Pilot Zones for Sci-Tech Innovation Finance Reform in Shanghai, Nanjing, Hangzhou, Hefei and Jiaxing*, demonstrating the determination to improve financial support system for innovation and promote self-reliance and strength in science and technology. As of the end of 2022, the balance of loans to the "specialized and sophisticated" enterprises increased by 24% year-on-year—the growth rate was 12.9 percentage points higher than other loans[1]. Banking institutions established Sci-Tech branches and other specialized financial innovation institutions, and innovated the evaluation and risk management mechanisms for Sci-Tech innovation finance through the combined investment-loan investment mode ("equity + creditor's rights") to provide products and services covering enterprises' entire lifecycle.

Green finance

In 2022, regulators continued to deepen green finance policies and industrial standard systems to promote vigorous development of the industry. As of the end of 2022, the balance of China's green loans in renminbi and foreign currencies stood at RMB22.03 trillion, up 38.5% year-on-year, an increase of 5.5 percentage points. The aggregate green loans came top in the world, with an increase of RMB6.13 trillion for the whole year[1]. In November 2022, G20 leaders approved the *2022 G20 Sustainable Finance Report* with the "Framework for Transition Finance" at the top of the agenda, guiding the banking sector to strengthen efforts in transition finance. The comprehensive green finance development changed to focusing on making breakthroughs in key areas such as the electricity industry.

1. Source: PBC, Ministry of Human Resources and Social Security of the People's Republic of China

Pension finance

2022 was regarded as the "first year of private pension" in China as the Chinese government released various relevant policies covering top-level design, planning and implementation. In November, the Ministry of Human Resources and Social Security, Ministry of Finance, and State Taxation Administration issued the *Notice on Submitting Private Pension Pilot Cities*, marking the official launch of the private pension system. The approved banks in the pilot cities relied on their old-age scenario ecosystem to scale up efforts in expanding accounts, products, services, and channels. As of the end of 2022, 19.54 million Chinese had opened private pension accounts, among them, 6.13 million had deposited funds in their accounts, with the total amount reaching RMB14.2 billion[1]. The four major state-owned banks have launched longer-term old-age savings products, and several qualified commercial banks are launching short-term higher-interest rate old-age products. The private pension account system has brought new opportunities for the retail business, enriching the income sources of custody and other services and attracting more capital for banks.

"New citizens" finance

In March 2022, CBIRC and PBC issued the *Circular on Strengthening Financial Services for New Citizens*. In October, CBIRC's chairman Guo Shuqing restated enhancing financial services for new citizens in a conference to study the guiding principles of the 20th CPC National Congress. "New citizens" finance became a key topic in China's financial sector after inclusive finance. Since new citizens are the primary consumption group of new urbanization, banking institutions have tailored financial service plans according to the actual local situations to enhance the accessibility and convenience of basic financial services, intensifying financial guarantee for people's housing, entrepreneurship, employment, and other issues. As of the end of 2022, banks and insurance institutions had launched 2,244 special credit products for new citizens, with the credit balance reaching RMB1.35 trillion[2].

Regulatory environment changes and implications

In 2022, focusing on stabilizing the economy and promoting the sustainable and healthy development of the banking sector, China introduced a series of regulatory policies to further guide the banking sector to support the key areas of the economy, and to continuously improve the regulatory systems to promote the banking sector's long-term sustainable development.

Continuously improved the quality and efficiency of serving the real economy	
	Promoted establishing a long-term mechanism of "having the courage, will, ability and means to grant loans" for MSEs, strengthened financial support for small and micro businesses to help them reduce burdens, overcome difficulties, and resume development, and deepened financial services for small and micro businesses.
	Issued the *Guidelines on Green Finance for the Banking and Insurance Industries*, emphasizing green finance at the strategic level.
	Promoted social credit system construction, supported credit financing service and product innovation, and improved inclusiveness and convenience of financial services.
	Introduced a series of policies to encourage the financial sector to better facilitate manufacturing, technological innovation, real estate, and other areas of the real economy.

1. Source: PBC, Ministry of Human Resources and Social Security of the People's Republic of China
2. Source: CBIRC

Strengthened capabilities to serve people's livelihood	Actively developed financial services for new citizens, and issued the *Circular on Strengthening Financial Services for New Citizens*, requiring banks to improve the service coverage and convenience. Launched the private pension system, and issued the *Circular on Regulating and Promoting the Development of Commercial Pension Financial Business and the Interim Administrative Measures for the Private Pension Business of Commercial Banks and Wealth Management Companies*; Banks accelerated deploying pension financial businesses to meet diverse customer needs.
Deepened digital transformation	The *Fintech Development Plan (2022-2025)* stressed the significance of "data" in developing Fintech, underscored data-driven Fintech development, and developed guidelines for fully realizing the potential of data elements.
	The *Guiding Opinions on the Digital Transformation of Banking and Insurance Industries* regulated mechanisms and methods and provided relevant guidance to drive the high-quality development of banking and insurance sectors through digital transformation and build a new digital finance pattern to suit the development of modern economy.
Incorporated regulation into financial activities	Furthered building financial regulation capabilities and formulated the *Interim Measures for the Administration of Commercial Banks' Internet Loan Business*, the *Administrative Measures for the Country Risks of Banking Financial Institutions (Draft for Comment)*, the *Measures for the Risk Management of Off-Balance Sheet Business of Commercial Banks*, and the *Measures for Supervision and Management of the Custody Business of Commercial Banks*, gradually incorporating regulation into all links of financial activities.

Banks' strategy adjustment

In the new era, banks will leverage their advantages, develop featured businesses, and implement diversified strategies in digital economy, wealth management, industrial finance, and consumer finance based on their positioning and development stages.

Large state-owned banks shoulder the responsibilities of stabilizing the economy, supporting the healthy development of the real economy, promoting inclusive finance, and supporting rural revitalization. Meanwhile, large state-owned banks play a leading role in technology-driven capability building. In 2022, state-owned banks supported improving the investment and financing aggregate and structure for manufacturing, sci-tech innovation, and agriculture-related areas; they also promoted convenient digital payment modes, recommended e-CNY application scenarios to PBC, and developed payment solutions for enterprises to advance the construction of an e-CNY ecosystem.

Joint-stock banks continued to explore development potential and innovative paths, and increased investment in upgrading products and building innovation capabilities. They vigorously advanced wealth management transformation to vary the business layouts for different customer groups, products, and industries, establishing their distinctive brand advantages. Leading institutions fully exploited their digital advantages to accelerate innovating and promoting industrial digital finance models and explore cooperation with technology enterprises to innovate industrial finance applications.

Regional small and medium-sized banks explored local resources profoundly. City commercial banks laid emphasis on enhancing characteristic operation and fine management capabilities, and rural commercial banks focused on serving extensive small businesses and the agriculture sector. With the expansion of the consumer credit business and the demand for breaking the limits on cross-region businesses, regional small and medium-sized banks still consider buying shares or applying for consumer

finance licenses to scramble for market shares, striving to make breakthroughs through differentiated operations.

Regarding reform and innovation, small and medium-sized banks' reform and risk defusing is an issue of general social concern. Since 2022, as CBIRC encourages quality banks and insurance institutions to take part in small and medium-sized banks' M&A and integration, the small and medium-sized banks and rural credit cooperatives have accelerated M&A and restructuring to defuse existing risks, improve their systems, and thoroughly enhance their operation and management capabilities. 2022 was the first year to implement the new asset management regulations. However, banks' wealth management scale bottomed out due to the economic slump and securities market adjustment. In the future, commercial banks and their wealth management subsidiaries should focus on asset allocation capabilities, use derivatives as hedging tools to enhance risk control, and accelerate deploying old-age wealth management businesses to attract long-term funds to the capital market.

Transformation in key business areas

Wealth management

Under the new normal of economic development, the significance of wealth management businesses was highlighted. While better meeting customers' diverse needs, enhancing customer stickiness, and improving profitability, wealth management businesses helped optimize the financing structure and resource allocation effectively. Commercial banks continued to innovate their wealth management businesses, strengthen their investment & research and asset allocation capabilities, and enrich their product lines. Thus, the wealth management subsidiaries increased their market shares and deepened cooperation with various asset management institutions, displaying a professional, comprehensive, and ecological development trend. Banks' wealth management businesses also faced new opportunities and challenges with the implementation of the new asset management regulations.

Opportunities amid the demand-side market expansion and asset structure adjustment	Residents' demand for maintaining and increasing asset value rose, the government introduced policies to promote the private pension system that would benefit mutually with the capital market, and the number of individual investors in the capital market trended down, all driving the wealth management businesses to expand continuously.
	The wealth management market competition intensified, regulators encouraged banks to innovate and diversify wealth management products to increase residents' property income, and the opportunities to explore the value of equity and alternative assets amid economic fluctuations emerged, driving the constant optimization of asset structure.
Challenges from regulation, customers, and capabilities	With increasingly strict regulation, how do banks accommodate customers' investment enthusiasm while properly manage products, risks, valuation, and sales to maintain compliant operations?
	How can banks establish a collaborative mechanism to attract more quality partners to the ecological chain?
	How can banks retain existing and acquire new customers through precise insight and stratified operations?
	How can banks adjust the product systems to adapt to the transformation of the profit model from interest margin to management fees, and to meet customer needs?
	How can banks better apply new technologies to empower internal management and operations as well as customer experiences?
	How can banks build a professional talent team amid the fierce market competition?

With the wealth management businesses' "Co-opetition" development, banks actively sought to transform the businesses and enhance their core competence systems. First, banks must determine their wealth management transformation strategies, including establishing bank-wide strategies, optimizing internal and external collaboration and the wealth management ecosystem, and designing transformation paths. Second, banks should strengthen building capacity in essential areas such as investment & research, product management, customer insight & marketing, wealth planning, service management, performance evaluation, and operation & management, which will be a most important consideration for banks to further development through wealth management.

Customer operation

Key points in refined operations of retail banking

Most banks' retail banking business changed the traditional mode of customer grouping that was based merely on the AUM. Instead, they continued to optimize customer grouping based on their data capabilities and application platforms, formulated corresponding service strategies, and developed suitable products and customer operation models to enhance the ability to serve customers.

1. **Refined customer operation.** Relying on mature data systems, banks considered advantageous product coverage and customer group contributions to classify retail banking customers and adjust it dynamically based on accurate customer demand insights. They broke the traditional segmented customer operation model, and paid attention to all lifecycle links covering customer interaction, product activities, across-channel collaboration, brand promotion, and customer satisfaction insights, to achieve more suitable financial supply and more intelligent operations.

2. **Strategy-based product supply.** Banks evaluated and labelled financial products based on the quantitative data such as risk levels, expected returns, and holding periods, as well as qualitative management such as product positioning, investment nature, and sales channels. Leading domestic banks also generated product marketing trajectories based on pro-, in-and post-sale tracking and analysis, and dynamically designed product management and portfolio strategies.
   In addition, banks adopted component and module-based product design, with customer groups as the unique identifier for distinguishing product configurations. Banks achieved mass marketing and improved operation efficiency through intelligent and automatic product supply.

3. **Unified customer growth system.** Banks transformed from the traditional KYC to the KYCV (Know Your Customer Value) concept. They strove to build a unified user growth system covering user credits, path planning, incentive system, and tasks & benefits. Therefore, they created people-oriented interaction experiences and drove effective customers to grow from potential users to high-net worth customers, thus stimulating customer potential and expanding online MAU.

Key points in refined operations of corporate banking

Leading domestic banks mainly adopted two methods to transform to refined operations for the corporate banking business: relying on their corporate business advantages and experience to strengthen their refined operation capabilities; or applying their successful experience and platform capacity of retail transformation to the corporate business. During the transformation, banks primarily focused on:

1. **Diversifying product supplies.** Banks comprehensively improved wealth management, transaction, and investment capabilities, and helped corporates better manage assets to maintain and increase the value. They differentiated product supplies—for example, they targeted small and micro enterprises for agile and convenient products and services.

2. **Diversifying channels.** Banks used different channels to reach and serve customers, for example, using industry-finance/supply chain finance platforms to provide supply chain services, and enriching corporate internet banking services.

3. **Making breakthroughs in key areas**. Banks selected industries, customers and products carefully. They achieved interconnection between customer managers, corporate internet banking, and mobile banking, and intensified the asset-light and capital-light businesses by leveraging their comprehensive, open and intelligent corporate service capabilities.

4. **Applying cutting-edge technologies.** Banks applied AI, blockchain, and Internet of Things to innovate the corporate internet banking businesses, providing integrated "internet platform + B-end (corporate users)/C-end (individual users)" services for industrial internet, consumer internet and other internet customers of various segmented business scenarios.

Channel transformation

Following the next transformation trends of "Bank 4.0" and "financial ecosystem construction", in addition to merely emphasizing channels and scale, some forward-looking banks shifted to omni-channel integrated development. They scaled up efforts in traffic acquisition, user operation, scenario operation, and special financial product innovation, exploring new paths for future channel transformation.

1. **Customer operation.** Leading domestic banks aimed to improve brand awareness, attract new and activate existing customers, promote sales and business performance, effectively reduce customer churn, identify potential demands, and increase repurchase frequency. They guided customers to online channels and optimized customer experiences. They operated customers through the user growth systems to enhance user activity and stickiness and transform customer synthetic value. In addition, banks enhanced their digital operation capabilities, and collected, analyzed, and applied more extensive data to enhance accessibility, convenience and effectiveness of data application.

2. **Product supply.** Leading domestic banks created a one-stop internet financial product and service shelf, focusing on configurability to enable dynamic adjustments according to customer demand and market environment changes. Banks leveraged their financial license advantages to cooperate with funds and wealth management companies, and expanded the "Group-wide + Market-wide" open shelves to further enhance their brand influence. In the meantime, they refined mobile banking's display interfaces, business functions, and system performance to establish an intelligent platform covering all functions and products.

3. **Ecological scenario construction**. Leading domestic banks built their ecosystems, expanded the "TO G/B/C" ecological cooperation, and promoted implementing the "finance + scenario" business model online and offline. They innovated the "centralized + decentralized" outlet ecosystem model, expanding businesses in communities near the outlets. They leveraged internet services' traffic flow, extensive channels, and data collection and sharing features to innovate scenarios, improve platform ecosystems, acquire and activate customers online, realize cross-selling, and gain data insights.

4. **Multi-channel construction.** Leading domestic banks changed from the single-channel to the omni-channel perspective. They formed an integrated interaction matrix to achieve seamless connection and consistency of all business processes and accessible, insensible customer contact. Leading banks optimized the outlet functions, accelerated fine management, and actively explored intelligent transformation of outlets. They strove to promote whole-process digitalization, focused on the open, mobile, distinctive and frequently-used scenarios, and used new technologies to create a comprehensive financial mobile portal.

Internal risk control

With increasingly complex and unforeseeable domestic and overseas economic, financial, and trading environments, the banking sector faced rising risks. Systemic financial risks drew wide attention. Under the prudential regulation framework, commercial banks accelerated upgrading the comprehensive risk management system and intensified digital transformation, enhancing the initiative and foresight of risk management.

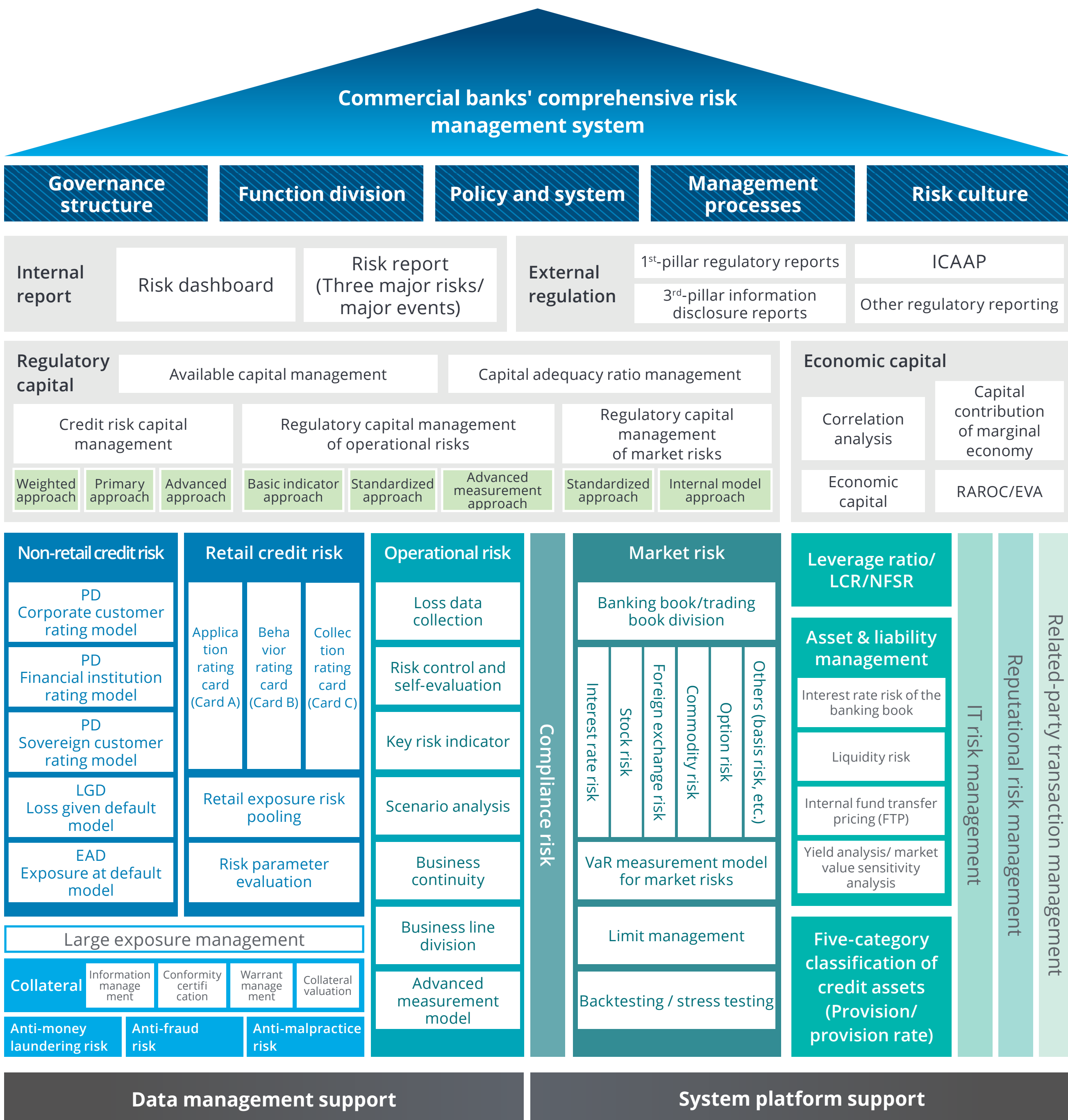
1. Strengthen the comprehensive risk management system construction:

(1) Regulate the legal persons' governance structure. Banks strengthened the Party leadership, regulate shareholders' behavior, enhanced the governance bodies' duty-performing quality and efficiency, and improved the incentive and constraint mechanism to advance their governance reform.

(2) Improve policy and system management. Banks improved systems and relevant frameworks, clarified management responsibilities, optimized management processes, and strengthened execution supervision.

(3) Optimize the risk appetite system. Banks made operating decisions, expanded businesses, and controlled risks based on their risk characteristics, business development needs, and risk appetites to maintain continuing operations.

Figure 1: Elements for Commercial Banks' Comprehensive Risk Management System Construction



2. Strengthen internal control management for business processes:

(1) Emphasize risk control for business processes. Banks integrated risk management into key business processes to build the first line of defense against risks, and strengthened risk control for various business scenarios;

(2) Emphasize the independence of internal supervision systems. Banks implemented vertical management throughout their systems and established effective internal control reporting and correction mechanisms, to ensure that there are clear reporting channels and effective corrective measures for internal control issues that are discovered.

3. Improve risk management tools. With frequent unexpected incidents in the external environment, commercial banks have attached great importance to applying stress testing in risk management in recent years. They applied Fintech to develop risk measurement techniques, adopted prudent capital measurement methods to manage asset securitization risks, and improved market risk capital measurement methods under the internal model approach.

4. Prevent cross-business risks. Commercial banks determined the risk capital measurement methods for off-balance sheet businesses and strengthened risk management for such businesses and trading accounts in accordance with the new asset management regulations and the new wealth management regulations; In addition, banks developed information-based risk control platforms to identify and monitor overlapping financial risks from multiple dimensions, and built whole-process risk management systems to effectively prevent risk transmission across businesses.

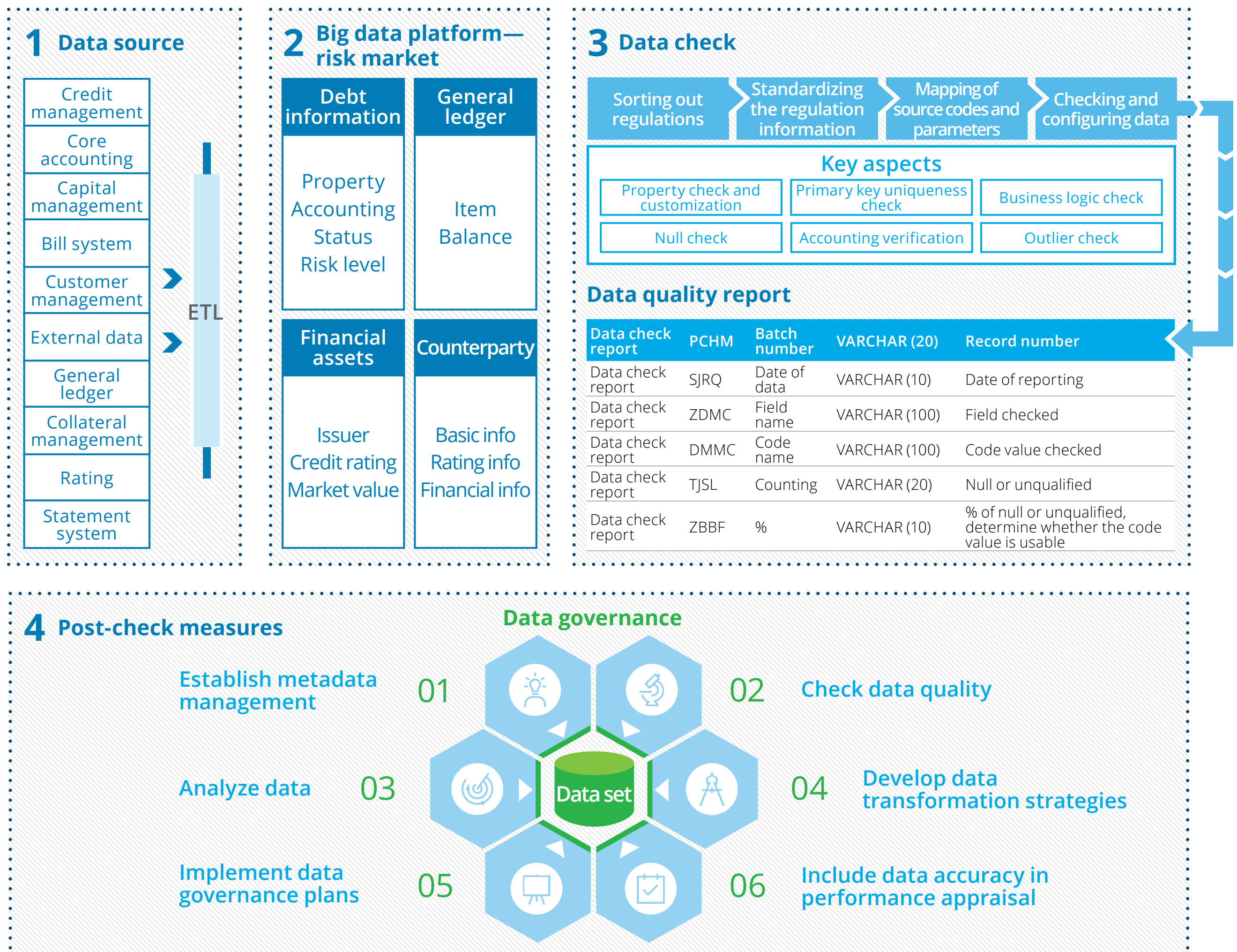
5. Increase investment in risk control information platforms. Large banks and joint-stock banks focused more on integrating information-based risk platforms. They integrated and reconstructed the data, processes, and functions of risk control systems, and consolidated homogeneous management elements to minimize the system complexity and achieve lightweight management. City commercial banks and others paid more attention to optimizing the credit risk and other single risk management systems under the comprehensive risk management framework in accordance with their actual business development needs; they preferred constructing a "specialized and refined" digital risk control system.

6. Enhance risk data management:

(1) Banks actively improved data governance systems. They applied technologies to implement systematic, automatic and intelligent risk data governance, and strengthened inspection, supervision, and accountability of risk data governance;

(2) Banks continued to enhance risk data management capabilities and constructed a data asset management system covering the entire life cycle to strengthen data quality control.

Figure 2: Risk Data Quality Management



Focus of the banking sector in 2023

In 2023, China's banking sector's core goal is still supporting the real economy, focusing on facilitating expanding domestic demand and forestalling and defusing risks.

Support national strategic development

- The banking sector will increase financial services and optimize financial resource allocation to support the real economy, and scale up support for areas such as manufacturing, sci-tech innovation, inclusive finance, rural revitalization, and green finance.

- Banks will improve financial services to benefit people's livelihoods. They will improve the wealth management and consumer finance development quality, rely on their experience to innovate products and services, and seize the pension and "new citizens" finance opportunities to create new profit growth points.

- Banks should be based on domestic development foundation, and will actively explore the international markets and support Chinese enterprises to go global and international enterprises to come to China to enhance their international competitiveness.

Risk management and regulation

- Chinese financial regulators announced reform plans to improve the modern financial regulatory system and forestall systematic risks.

- The new asset management regulations are expected to come into effect in 2024. Banking institutions should take earlier responsive actions, such as developing an overall plan for implementing the new regulations and building relevant capabilities.

- With the introduction of the five-category classification regulation, banks' nonperforming assets may be exposed faster. Banking institutions need to thoroughly investigate the deficiencies in their risk classification management and rectify them as early as possible.

Talent & technology

- The more extensive application of technologies in banks' businesses and management will continuingly drive business model restructuring and affect the competitive landscape. Banks should consider their actual situations, focus on the areas of core values, and strengthen technology application and capacity reserves to cement their competitiveness and stability in the changing environment.

- Versatile talent can effectively integrate businesses and technologies. Banking institutions will further building digital talent teams, enhance digital concepts and capabilities, and improve innovation incubation mechanisms to nurture digital and innovation DNA.

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4.2

Methodologies and best practices of carbon accounting for banks

Regulators pay increasingly more attention to the banking sector's responsibilities in dealing with climate changes. Carbon accounting is crucial to assessing banks' climate risks and facilitating the "dual carbon" goal. Banks' carbon emission indicators provide the carbon intensity information of relevant investments and financing portfolios, as well as the risk exposure information of counterparties that are highly dependent on the emission-intensive business models, which helps evaluate banks' role and related risks in financing those industries' transformation to a "net zero" economy. These indicators are crucial for assessing the transition risks relating to monetary policies, financial stability, and banking regulation.

Domestic and overseas regulatory requirements

In 2021, the Governing Council of the European Central Bank (ECB) planned to incorporate climate change considerations in its monetary policy strategy, and entrusted the Statistics Committee of the European System of Central Banks (ESCB) to develop statistical indicators on climate change, which would be under the supervision of experts from the ECB and the national central banks. According to the Towards Climate-related Statistical Indicators published by the ESCB in January 2023, the four greenhouse gas emissions-related indicators used for analyzing transition risks are Financed emissions (FE), Carbon intensity (CI), Weighted average carbon intensity (WACI), and Carbon footprint (CFP).

Table 1: Descriptions of the Four Indicators

Indicator	Description
Financed emissions (FE)	Total greenhouse gas (GHG) emissions of a debtor/issuer weighted by the investment as a share of the company's total value
Carbon intensity (CI)	FE divided by the production value of the company weighted by the investment in the company's activities as a share of the company's total value
Weighted average carbon intensity (WACI)	Total GHG emissions of a debtor/issuer standardized by a measure of company production value, weighted by the investment in these activities as a share of the total investment portfolio value
Carbon footprint (CFP)	FE standardized by the total investment portfolio value

The EU has launched a series of regulatory initiatives concerning the *sustainability and climate information disclosure requirements, including the Sustainable Financial Disclosure Regulation* (SFDR), *EU Taxonomy, Corporate Sustainability Reporting Directive* (CSRD), and the upcoming *European Sustainability Reporting Standards* (ESRS). Those initiatives are likely to substantially increase the availability of granular, externally verified, corporate-level, climate-related information and should allow a better assessment of the exposures of financial institutions' counterparties to transition and physical risks.

HKMA's *Supervisory Policy Manual*—GS-1 (Green and Sustainable Banking: Climate Risk Management) suggests disclosing Scope 1, Scope 2 and, if appropriate, Scope 3[1] greenhouse gas emissions, and the related risks in accordance with the TCFD's (Task Force on Climate-related Financial Disclosures) recommendations. The *Climate Disclosures Guidance* issued by the Hong Kong Exchanges and Clearing Limited (HKEX) guides companies to disclose climate-related financial information, significantly improving the availability of the Scope 3 emission indicators for banks.

On July 22, 2021, PBC officially released the *Guidelines on Environmental Information Disclosure for Financia Institutions* (JR/T 0227-2021), suggesting commercial banks disclosing the environmental implications of their investment and financing activities. In February 2022, PBC and other three departments issued the *Development Plan for Financial Standardization During the 14th Five-Year Plan Period*, requiring developing and publicizing financial institutions' carbon emissions accounting standards, formulating loan statistical standards to measure emissions reduction effectiveness, and improving loan statistical standards for green and low-carbon industries to build a comprehensive and effective green finance statistical system.

1. "Scope 1"refers to direct GHG emissions, which occur from sources that are controlled or owned by an organization. "Scope 2" refers to indirect GHG emissions associated with the purchase of electricity, steam, heat, or cooling. "Scope 3 emissions come from sources that are not controlled or owned by a company, but which occur across its value chain.

Carbon accounting methodology

ECB staff encourage[2] financial institutions to consider the GHG Accounting and Reporting Standard for the Financial Industry from the Partnership for Carbon Accounting Financial (PCAF). The PCAF methodology, initiated by global financial institutions[3], has been reviewed by the *GHG Protocol* and is in conformance with the requirements set forth in the *Corporate Value Chain (Scope 3) Accounting and Reporting Standard* for Category 15 investment activities. PCAF has continuingly upgraded the standards for financed emissions since 2022, expanding asset scope to seven classes, i.e., listed equity and corporate bonds, business loans and unlisted equity, project finance, commercial real estate, mortgages, motor vehicle loans, and sovereign debt (added in the second edition).

According to the PCAF methodology, financed emissions are calculated by multiplying financial assets' attribution factors (which are determined based on different business types) by the financed companies' or projects' carbon emissions. Since carbon accounting involves different methods and collecting data of different qualities, the results should reflect data quality scores, as per the PCAF requirements.

$$\textbf{Financed emissions} = \sum_i \textbf{Attribution factor}_i \times \textbf{Financed company/project emissions}_i$$

Table 2: PCAF Data Quality Score Table and Options to Estimate the Financed Emissions

Data quality	Options		When to use each option
Score 1	Options 1: Reported emissions	1a	Outstanding amount in the company and enterprise value including cash (EVIC) are known. **Verified emissions** of the company are available.
Score 2		1b	Outstanding amount in the company and EVIC are known. **Unverified emissions** calculated by the company are available.
	Options 2: Physical activity-based emissions	2a	Outstanding amount in the company and EVIC are known. Emissions are calculated using the company's **energy consumption** data and emission factors. Relevant process emissions are added.
Score 3		2b	Outstanding amount in the company and EVIC are known. Emissions are calculated using the **company's production** data and emission factors (product's specific energy consumption).
Score 4	Options 3: Economic activity-based emissions	3a	Outstanding amount in the company, EVIC, and the company's revenue are known. Emissions are calculated using emissions **per unit of revenue for the sector**.
Score 5		3b	Outstanding amount in the company is known. Emissions are calculated using emissions **per unit of asset for the sector**.
		3c	Outstanding amount in the company is known. Emissions are calculated using emissions **per unit of revenue and asset turnover ratio for the sector**.

Source: PCAF Standards (2022)

Note: Score 1 = highest data quality; score 5 = lowest data quality

2. ECB staff opinion on the first set of European Sustainability Reporting Standards (europa.eu)

3. The Global GHG Accounting and Reporting Standard for the Financial Industry (carbonaccountingfinancials.com)

The PCAF methodology aims to help financial institutions understand their portfolios' impacts on climate changes and prompt them to fulfil their social responsibilities through detailed information disclosure. As of March 2023, according to the PCAF official website information, 373 financial institutions globally have adopted the PCAF methodology, and 107 institutions have disclosed the GHG emissions associated with their portfolios, including HSBC, Deutsche Bank AG, and MUFG.

Specifically, calculating financial institutions' carbon emissions of portfolios consists of the following steps:

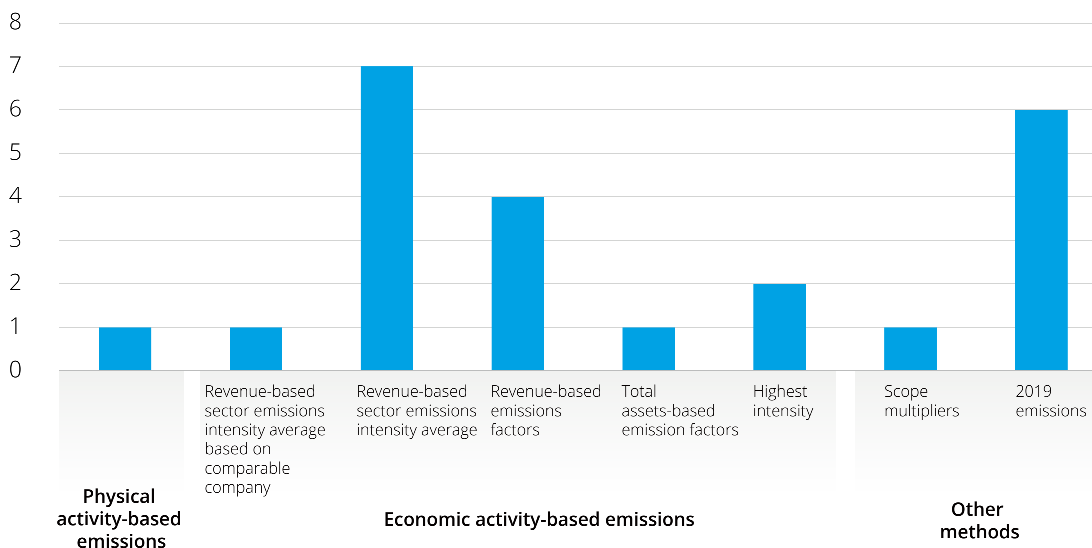
- **Determining GHG scope:** financial institutions should determine the scope of their GHG emissions, including direct and indirect emissions, as well as breakdowns of emissions by company, sector, and geography;
- **Data collection:** financial institutions should collect the GHG emission data of each company in their investment portfolios, including emissions from the companies and their supply chains;
- **Calculation:** financial institutions should calculate the GHG emissions of each company in their investment portfolios, including carbon dioxide, methane, and nitric oxide, using internationally recognized calculation methods;
- **Reporting:** financial institutions should report the GHG emissions of each company in their investment portfolios, as well as the total emissions of the investment portfolio. The report must comply with internationally recognized reporting standards.

International banks' practices

International banks' practices

The ECB's climate stress testing[4] has identified eight different approaches across the samples of banks assessed (as shown in the figure below) based on the main categories identified in the PCAF methodology. More than half of the banks chose the approach of economic activity-based emissions.

Figure 1: Main Methodologies Used by Selected Banks for In-house Proxies



Source: ECB Report on good practices for climate stress testing, 2022

Note: Other methods generate significant errors and are not within the PCAF guidance. Scope multiplier refers to that an average ratio of Scope 2 to Scope 1 emissions from reference counterparties with disclosed data is multiplied by Scope 1 intensities in order to determine Scope 2 intensities for each counterparty with missing emissions data.

4. https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.202212_ECBreport_on_good_practices_for_CST~539227e0c1.en.pdf

Some banks went a step further with more sophisticated approaches. These encompass a detailed waterfall to estimate Scope 1, 2 and 3 emissions, tailored to the specificities of the sector/sub-sector and counterparty and factoring in not only economic activity-based factors (revenues) but whenever possible also physical activity-based ones (production data). These banks combined several methodologies and tried to determine the best proxy depending on the context and the available data.

An EEIO (environmentally extended input-output) database is critical to estimating economic activity-based emissions. The UK, US, and China have developed EEIO databases. The UK's Department for Environment, Food & Rural Affairs was the first to launch an EEIO database, providing emission factors of 106 different products, covering raw material extraction, processing, construction, transportation, packaging, etc. The United States Environmental Protection Agency (EPA) launched the USEEIO (version 1) in 2017 and the second version in March 2023, providing emission factors by sector and product (approximately 70 sectors and 400 sub-sectors). In 2022, Deloitte China launched the economic value-based EEIO database applicable to China's GHG emission status, based on the input-output, energy consumption and other authoritative data released by the National Bureau of Statistics; It covers the three primary sectors of the national economy and 153 sub-sectors, providing emissions factor data of all industries and products.

International bank cases

Case 1

Bank A calculated and published the emissions from its portfolios over the past one to two years. The bank calculated the Scope 1, 2, and 3 emissions from the oil and gas sector and the Scope 1 and 2 emissions from the power and utilities sector, obtaining the absolute emissions and emissions intensities. When calculating the portfolio-level emissions intensities, Bank A aggregated counterparties' financed emissions using the portfolio-weighted approach.

Bank A calculated and classified the Scope 3 emissions from the oil and gas sector based on the PCAF methodology and data quality. When the bank had production data, it calculated Scope 3 emissions in the following ways which yielded a PCAF data quality score of 3.

- If production data was available, and the bank had emissions factors that were reported from clients as Scope 1, 2 and 3 combined, it multiplied production by an average share Scope 3 emissions factor to determine the total Scope 3 emissions.

- If production data was available but the bank didn't have any reported emission factors from third-party data vendors, it calculated emissions using publicly available emissions factors.

When the banks did not have production data from external sources, Scope 3 emissions were calculated by applying a scaling factor to known Scope 1 and 2 emissions. This yielded a PCAF data quality score of 5.

Bank A calculated the emissions of the portfolio and combined the selected reference benchmark to determine the emissions baseline. First, Bank A used the Net Zero Emissions by 2050 (NZE) scenario provided by the International Energy Agency (IEA) as a single-scenario reference benchmark, which complied with the 1.5 °C scenario set out by the Net Zero Banking Alliance (NZBA). Second, Bank A assessed the oil and gas portfolio alignment by comparing the reduction of on-balance sheet financed emissions relative to the benchmark scenarios' reduction, and the power and utilities portfolio alignment by comparing on-balance sheet financed emissions intensity relative to the benchmark scenario at 2030. Next, Bank A gradually improved the standardized reporting process, required customers to provide information about their transition plans, and released further emissions reduction goals for different sectors, with the focus on the tough emission-intensive sectors.

Table 3: Banks A's Emission Reduction Targets for Two Sectors

Sector	Scope	2030 Target
Oil and Gas	Scope 1, 2, and 3	Absolute on-balance sheet financed emissions: A reduction from 35.8 million tonnes of carbon dioxide equivalent (Mt CO2e) to 23.5 million tonnes by 2030 (-34%).
Power and utilities	Scope 1 and 2	On-balance sheet financed emissions intensity: A reduction from 0.55 million tonnes of carbon dioxide equivalent per terawatt hour (Mt CO2e/TWh) to 0.14 million tonnes by 2030 (-75%).

Source: Disclosed information of Bank A

Case 2

Bank B developed the "Carbon Compass" methodology to be aligned with the two goals of the Paris Agreement. In 2021, the bank chose carbon intensity as the metric for measuring the emissions from the three selected sectors, i.e., Oil & Gas, Electric Power, and Auto Manufacturing. To evaluate Paris alignment of its global financing portfolio in each of the included sectors, Bank B computed a portfolio-weighted average of emissions performance for all clients in the sector portfolio.

Bank B's calculation was primarily based on clients' disclosures and information from professional data providers. The bank used data from IEA, Wood Mackenzie, SNL Financial, and company disclosures for the oil & gas sector. For the electric power sector, it used the power generation data sourced from Trucost and applied emissions factors by fuel type and region that were derived from IEA. When generation data were unavailable, Bank B used installed capacity from SNL Financial and estimated carbon intensity by applying average utilization rates, based on fuel type and region. For the auto manufacturing sector, Bank B used the Transition Pathway Initiative's (TPI) approach to estimate the carbon intensity and corrected it by region.

Bank B adopted the IEA's Sustainable Development Scenario (SDS) as the benchmark for analysis, and set the 2030 emission reduction targets. This methodology established a strong foundation for implementing Bank B's Paris-aligned financing commitment, including clear frameworks for it to measure progress and engage with clients in key sectors. Bank B intended to align its lending and underwriting decisions in chosen sectors to work towards the portfolio targets. That means it will increasingly support those companies that are helping advance the goals of the Paris Agreement, such as by expanding their investment in low- and zero-carbon energy sources and technologies and reducing their GHG emissions.

Table 4: Bank B's Emission Reduction Targets for Three Sectors

Sector	Scope	2019 Baseline	2030 Target
Oil & Gas	Operational (Scope 1 and 2)	6.1g CO2e/MJ	-35%
	End use (Scope 3)	66.5g CO2/MJ	-15%
Electric Power	Scope 1	375.6kg CO2/MWh	-69%
Auto Manufacturing	Scope 1, 2, and 3	157.8g CO2e/km	-41%

Source: Disclosed by Bank B

Suggestions for domestic banks

Strengthen carbon accounting methodology development

Domestic banks are still in the early stage of exploring carbon accounting methodologies, facing various technical difficulties. We suggest that banks strengthen methodology development gradually. They should take into account their business characteristics, asset distribution by sector, and the impact of climate risks and select key sectors to pilot methodologies, thus accumulating experience and data and gradually applying matured methodologies to all their assets' carbon accounting. In addition, banks should establish long-term carbon accounting management mechanisms and guarantee systems.

Establish carbon accounting data management systems

Banks should enhance carbon emissions data collection and management to ensure reliable data sources and accounting methodologies. Banks should refer to the waterfall management model of the five-category classification to uniformly collect the emissions data, production data and economic data disclosed by enterprises and combine the auxiliary calculation indicators such as enterprises' emissions data, energy consumption factors, and EEIO factors purchased from external providers to classify the data based on the actual availability and computing logic, to dynamically manage data and obtain traceable results.

Apply carbon accounting results reasonably

Banks should intensify assessing and managing their investment portfolios' climate risks and quantify the climate-related transformation risks they face based on the carbon accounting results, to minimize climate risks' impact on their investment portfolios. They should also establish corresponding emissions reduction targets and plans and take practical actions to contribute to net-zero emissions. Meanwhile, banks should strengthen climate risk disclosure and disclosure transparency.

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4.3

Smart monitoring of related party transactions

In January 2022, CBIRC released the *Rules on Related-Party Transactions of Banking and Insurance Institutions* (Order of the China Banking and Insurance Regulatory Commission [2022] No.1, hereinafter referred to as the "Order No.1") to further enhance related-party transaction management, drive rectification of transactions chaos, and prevent interest transfer risks. It is an important initiative of CBIRC to improve management of the banking and insurance sectors' related-party transactions. The Order No.1 put forward higher requirements for related-party transaction management regarding management mechanism, system construction, and data governance. How to promote compliant, refined, systematic and intelligent related-party transaction management has become an essential and pressing issue of financial institutions.

Due to related-party transactions' diversity, complexity and various regulatory requirements, commercial banks must analyze, evaluate and manage related-party transactions at the legal person level, and also guide and supervise related-party transactions and their risks at the group's consolidated statements level from the cross-industry and cross-institution perspectives, adding to the difficulties of managing related-party transactions.

Commercial banks should promote information-based and intelligent management of related parties and related-party transactions and strengthen big data management capabilities during their digital transformation, which is not only a regulatory requirement but also a necessary choice for achieving better management.

Digital transformation pain points and challenges from the related-party transaction perspective

Incomplete information system functions: some commercial banks' related-party transaction information systems can only solve the problem of offline management online, and only provide the functions of automatic regulatory reporting and daily management statistics, which do not fully cover the management processes. As the related-party system components are not directly connected with the business system components and the control link has not been embedded in the business processes, they cannot achieve real-time interactions to timely predict related-party transaction risks.

Undeveloped data governance systems: unclear data governance responsibility division, inconsistent data standards, indefinite data collection rules, and unavailable data quality monitoring mechanisms affect regulatory reporting quality and also effective transaction data monitoring and analysis.

Insufficient data analysis and application capabilities: commercial banks' ability to apply and analyze related-party transaction data is insufficient, and they lack a solid foundation for mining data value and building data application scenarios. They are incapable of making good use of data rules to analyze and evaluate risks, giving timely risks alerts, shifting forward the risk control gateway, and establishing a panoramic view of related-party transactions through the data rules to objectively, clearly and dynamically reflect the actual transaction situations.

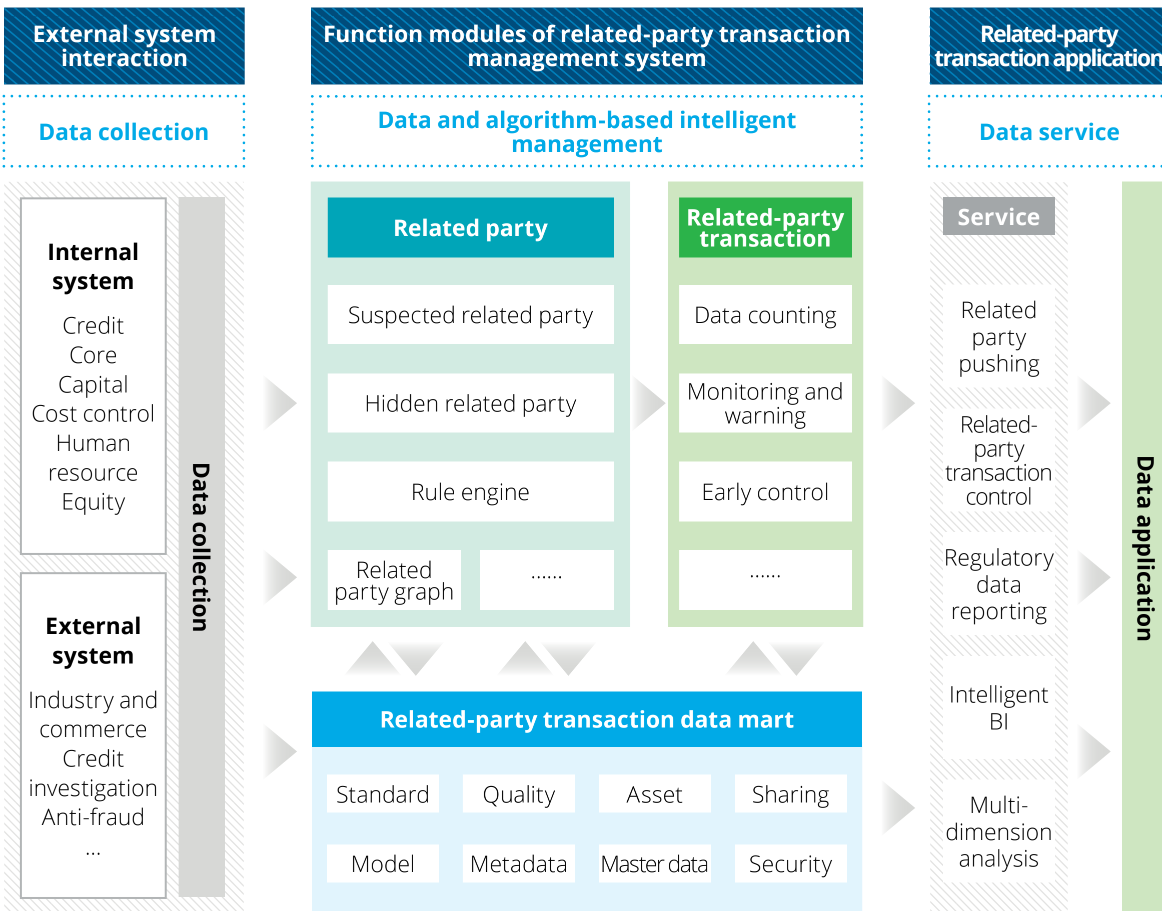
Inadequate application of intelligent tools: commercial banks should apply intelligent approaches to search for hidden relationships and dismantle complex transaction structures according to the Substance over Form principle and the penetrating principle. Commercial banks lack effective management tools to identify related parties, analyze the nature of related-party transactions, objectively assess the fairness of considerations, and dynamically monitor the capital source and flow.

Related-party transaction process reengineering and management digitalization through digital platforms

Related-party transaction management involves an extensive range of issues and cross-departmental coordination. Therefore, implementation deviations and compliance risks often rise due to business departments' weak management awareness and insufficient understanding of rules.

Commercial banks should attach importance to whole-process management of related-party transactions, identify main risks, sort out key transaction links, and establish a "regime + process + data + system" integrated management system to ensure compliance, reduce costs, and improve efficiency. In addition, they should leverage digital platforms and data to achieve whole-process control, including early alerts, in-process warning, and ex post analysis, to enhance operation compliance and management quality and efficiency.

Figure 1: Suggested Digital Platform Architecture for Related-party Transactions



The requirements of CBIRC, Shanghai Stock Exchange, CSRC, and HKEX include sorting out and analyzing product names, data standards, business rules, and data acquisition logic to determine data scopes, rules and standards, build product architecture, and perform parametric management; automatically identifying related parties through big data and identifying related-party transactions and the relationship essence based on dynamic regulatory rules.

Ex ante: Before business approval, the related-party transaction system pushes the related party list to the business systems; the business systems will decide the transaction type and estimate the transaction amount to determine whether it meets the prohibition, concentration and limit management requirements; then the system will trigger the approval procedures of a general or substantial related-party transaction.

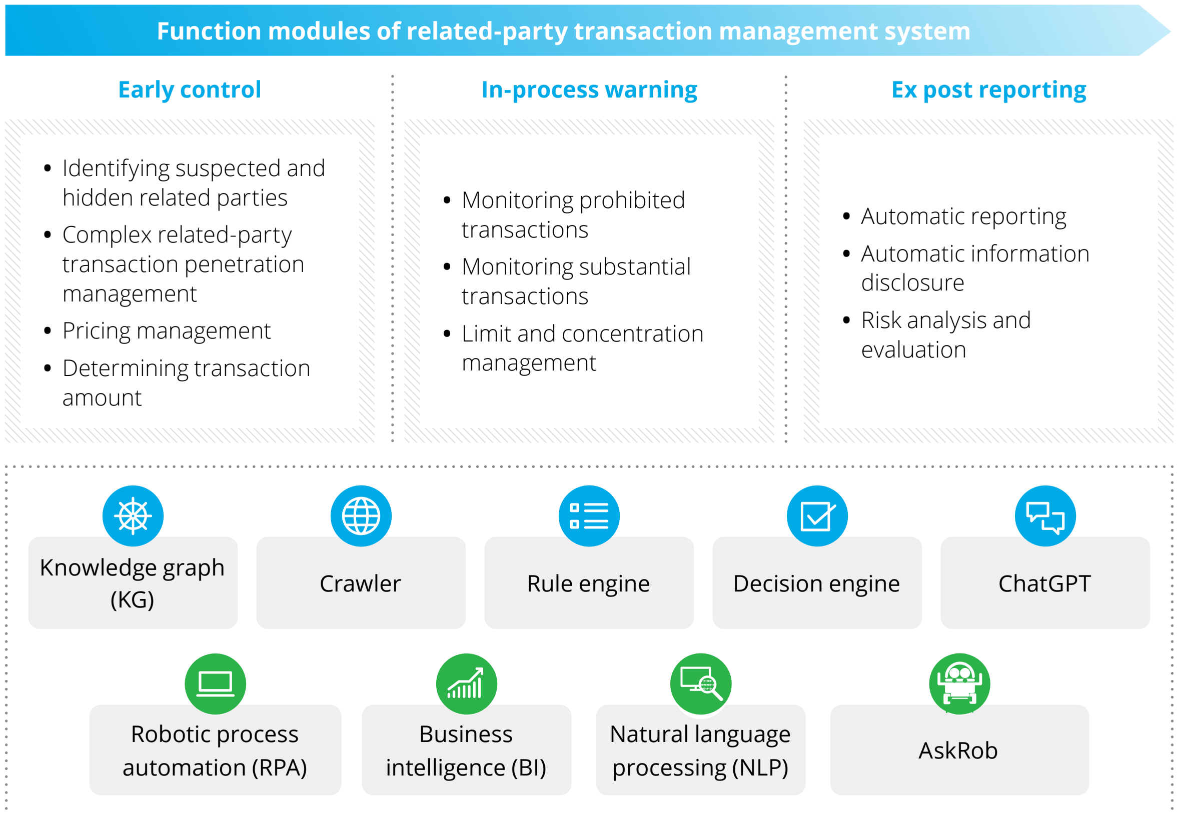
In-process: During the business approval, the embedded pricing model empowers the middle-office management department to issue review opinions, generating fair value pricing reference benchmark through verifying the related-party transaction pricing policy, comparing historic transaction information, two-way lending and cost inversion prompts, and evaluating external benchmark rules.

Ex post: The related-party transaction system interacts with the business systems every day, automatically collecting and accumulating data and giving risk warning by presetting management limits and early warning rules. In addition, the system automatically collects and analyzes data, and periodically generates internal management and regulatory reports, information disclosures and transaction management boards.

Expand Fintech application scenarios to drive management upgrading

Commercial banks should embed big data and AI technologies into the whole management process of related-party transactions to continuingly strengthen risk prevention capabilities.

Figure 2: Digital Application Scenarios of Related-party Transactions



Knowledge graph—effectively identify related-party relationships and facilitating penetration management

Introduce external big data to screen suspected and hidden related parties

The correlation relationship often has a certain degree of concealment. Related-party relationships might not be identified through the information such as equity relationships and actual controllers. Therefore, how to effectively identify hidden related parties became a critical issue for financial institutions. Commercial banks have leveraged internal and external data, AI and big data technologies to develop intelligent digital tools to identify their and customers' possible related parties. They used fuzzy matching and knowledge graph technologies to establish a network of legal persons, natural person customers, and employees, and looked for possible hidden relationships by analyzing entities' node degree, splitting the network, and examining the target entities' network features and scores.

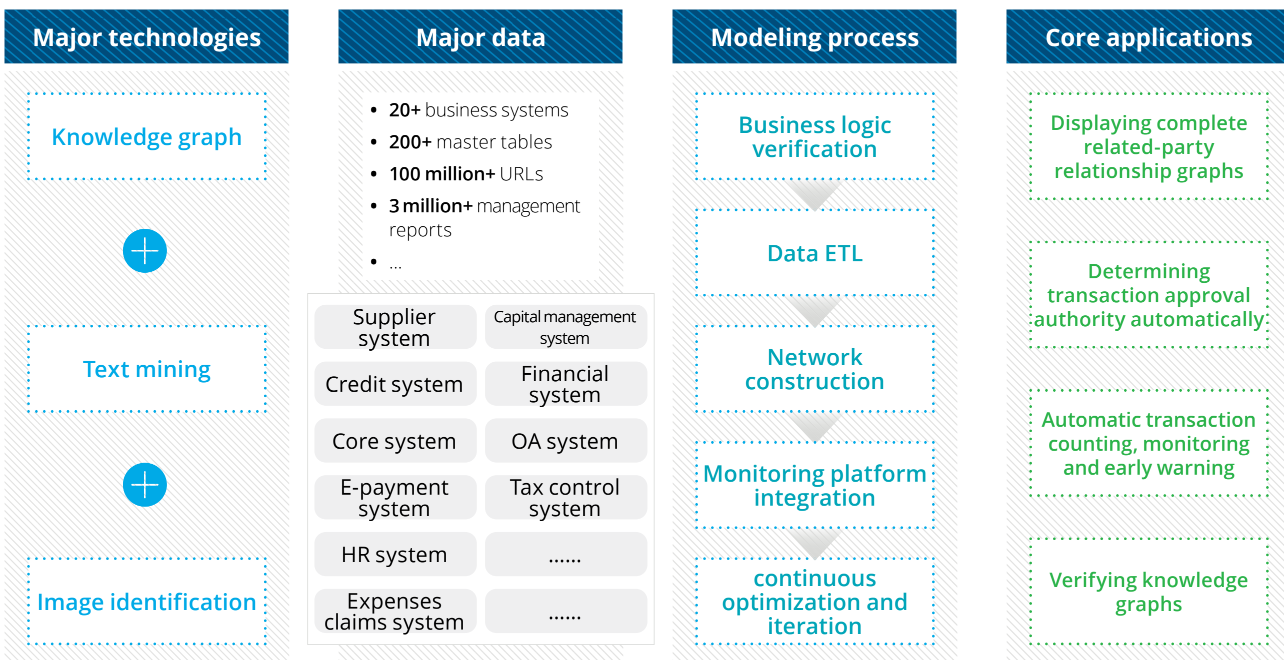
Integrate internal data to improve transaction identification accuracy

Commercial banks have diverse, innovative and complex financial products. For instance, banks cannot connect the fund sources, intermediate links, and final investments of asset management products, trust schemes, and public offering funds due to their complex equity structure, transaction structure, and fund utilization modes; therefore, they cannot effectively distinguish between financial businesses and operations and accurately identify related parties, relationships, and underlying assets.

Commercial banks can address information asymmetry and other difficulties through technical means. Knowledge graphs can be applied to thoroughly penetrate and identify the relationships between the asset-side counterparties and commercial banks and shareholders and comprehensively assess the underlying assets of corporates and individuals to prevent hidden transactions.

Penetration management of related-party transactions should thoroughly examine the capital flow to identify the underlying assets and final investments. Therefore, banks should establish penetration management rules and standards based on risk nature and strengthen data governance, information sharing, and risk monitoring to achieve efficient and reasonable penetration management and improve business management transparency.

Figure 3: Digital Technology Application of Related-party Transactions



RPA technology—automatically obtain internal and external data to facilitate analysis

Banks are suggested applying the RPA technology to automatically obtain necessary external and internal data and conduct data comparison and subsequent operations, to facilitate the functioning of related-party transaction risk management platforms.

Figure 4: Digital Application Scenarios of Related-party Transactions

Obtain internal information

Obtain transaction information by searching internal target data sources; automatically sort out and enter the data into the transaction management platform

Compare data

Automatically compare the matched data items of the external data sources, transaction management platform, and internal business systems based on the preset logic to identify data differences

Obtain counterparty information

Collect counterparty information by searching target data source accounts (e.g., www.qcc.com); automatically sort out and enter the data into the transaction management platform

Assist with early warning

Generate comparison results based on the preset early warning rules and give early warning through the transaction management platform

Chatbot—prompt interpretation of management requirements to promote compliance

Employees often have questions about the regulatory and internal management requirements for related-party transactions and need to check relevant rules in their daily work. A chatbot can help answer their questions and popularize compliance knowledge.

A chatbot can answer questions by leveraging the information retrieval technology to search for similar questions to the users' questions in the corpus, or by searching and filtering out the question-related paragraphs from the candidate documents and texts and providing answers depending on the text comprehension ability of the large-scale language model.

Intelligent decision engine—rules-driven automatic risk identification, transaction monitoring and early warning

A decision engine, combined with professionals' knowledge and rule strategies, can identify the risk characteristics of related-party transactions. A decision engine integrates rules, instructions, models, decision-making processes and internal and external data to connect business and management systems, thus identifying, monitoring, warning against and preventing prohibited, substantial and suspicious transactions.

Deloitte's suggestions:

Related-party transaction management is an important part of commercial banks' corporate governance and internal control compliance management and requires cooperation of multiple departments. Commercial banks must establish a related-party transaction management system aligned with their equity structure and business management, clarifying departmental responsibilities, specifying internal transaction processes and decision-making procedures, and laying down a feasible accountability mechanism. In addition, commercial banks should exploit digital and intelligent means and establish related-party transaction system platforms to transform the business and functional departments from passive to active management, implementing the Fintech concept and enhancing fine management efficiency. Empowered by technologies, commercial banks will be able to achieve professional, intensive and refined related-party transaction management and improve operation and development quality and efficiency.

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4.4

"Integration of business and finance, exquisite and informative" – the new practice of presenting competitiveness and resilience in banks' annual reports

The capital market is an important engine driving economic growth. Direct financing is the core function of the capital market. China is committed to increasing the proportion of direct financing and cultivating the long-term value-based investment concept. Therefore, the role of listed companies' annual reports as a bridge connecting the companies and investors is increasingly highlighted. Banks' annual reports have gone through three development stages driven by varied policies and market demands in different times, which have changed from focusing on disclosing financial information to increasingly valuing transmitting reform strategies and operation concepts.

Centering on leading domestic banks, this chapter analyzed how banks' annual reports are related to different social backgrounds, delved into annual reports' characteristics and roles at each development stage, and provided suggestions for banks to optimize their reports.

Trends insights: evolvement and innovation of annual report thoughts

The beginning of modern annual reports

The United States Steel Corporation issued its first annual report (40 pages) in 1903, becoming the forerunner of modern annual reports.

Figure 1: The First Modern Annual Report—the 1903 Annual Report of United States Steel Corporation

FIRST ANNUAL REPORT

UNITED STATES STEEL CORPORATION

YEAR ENDING DECEMBER 31, 1902.

ASSETS.

LIABILITIES.

INCOME ACCOUNT FOR THE YEAR.

GENERAL PROFIT AND LOSS ACCOUNT.

OTHER INCOME.

GENERAL EXPENSES.

INTEREST CHARGES, ETC.

ROLLED AND OTHER FINISHED PRODUCTS FOR SALE.

ORDERS ON HAND.

EMPLOYES AND PAYROLLS.

NUMBER OF STOCKHOLDERS.

Complete copies of the detailed Annual Report in pamphlet form will be mailed stockholders on and after April 13th. Copies may also be obtained after that date at the office of the Secretary, 71 Broadway, New York.

After the stock market crash in 1929, the US government spotted extensive frauds in listed companies, thereby establishing laws to force listed companies to provide periodic reports up to specific standards. The annual report supervision was entrusted to different organizations and finally to the Financial Accounting Standards Board. Thus, the US annual report system was solidified and gradually introduced to China.

In 1992, Shenzhen Development Bank issued the first domestic listed banks' annual report after the initiation of China's reform and opening-up. The report, primarily consisting of financial data, marked the beginning of domestic listed banks' annual report development.

Figure 2: An Excerpt from Shenzhen Development Bank's 1992 Annual Report

Shenzhen Development Bank 1992 Annual Report

I. Annual Performance Summary

The board of directors of Shenzhen Development Bank (hereinafter referred to as the "Bank") hereby presents the audited FY1992 annual performance as follows (unit: RMB10,000)

Item	1992	1991
Operating income	47551	33468
Profit before tax	24373	15018
Taxes	7162	3753
Profit after tax	17211	11265
Profit after tax per share	1.278 yuan	1.255 yuan

Note: 1. To calculate the profit per share, the total share capital of 1992 and 1991 were respectively 134696625 and 89751643 shares of ordinary share capital at the end of the year.
2. "Tax" included the required income tax, RMB53.82 million budget regulation and energy & transportation funds, as well as RMB17.88 million exempted from the "two funds" and used as reserve funds. The profit after tax and profit after tax per share were calculated based on "Taxes" caliber.
3. The above performance included the performance of the Bank's real estate company; the "Profit before tax" included the real estate company’s profit before tax of RMB17.99 million.

II. Annual Dividend

The board of directors recommended providing 8.5 bonus for every 10 ordinary shares (including 3.5 shares for current-year profit distribution and 5 shares for reserve converted into paid-in capital), and a cash interest of RMB0.3 for every ordinary share.
In addition, 1 new share will be sold for every 10 ordinary shares; total new shares sold to employees will be 5% of the total existing ordinary shares, which will be collectively held by the labor union.
This scheme has been reviewed and approved by the general meeting of shareholders, and will be implemented after being approved by competent authorities.

Annual report 1.0 era—disclosing accurate and authentic financial information

Policy background

The *Measures for the Annual Inspection of Enterprises* issued by the State Administration for Industry and Commerce (SAIC) in 1996 prescribed the objects, scope, time limit, content, procedures, and punishment rules of annual inspection for the first time. Annual reports have become a prerequisite for annual inspection since then.

In 2004, the *Administrative License Law of the People's Republic of China* came into effect. SAIC revised the *Measures for the Annual Inspection of Enterprises* accordingly and reissued it in 2006. As a result, annual reports were under regular supervision.

Trend interpretation

The annual report positioning change indicated regulators' increasing concerns about enterprises' daily operations. Regulators hoped to supervise enterprises regularly through their annual reports to better protect consumers' and investors' interests. Therefore, in the 1.0 era, banks' annual reports **mainly targeted supervisors and focused on meeting compliant operation requirements and disclosing accurate and authentic financial information.**

Annual report 1.0 era—case study: CMB's 2008 annual report

1

CMB's 2008 annual report disclosed financial information, major events, and operational risks, reflecting the compliant operations of CMB as a joint-stock commercial bank. This report has 197 pages, with over 170 pages answering four basic questions:

- Who are we?
- What businesses are we engaged in?
- How is our operation?
- Are there any future operational risks?

Figure 3: Contents of CMB's 2008 Annual Report

	Important Notice	2	VII	Directors, Supervisors, Senior Management, Employees and Organizational Structure	99
I	Corporate Information	3	VIII	Corporate Governance	112
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These questions involved shareholder structure, organizational structure, strategic goals, financial status, and risk management, and such report framework is still used today.

2

This report primarily listed business indicators and briefly described the businesses in the "Management's Analysis and Discussion" section, without in-depth analysis of the bank's business development and related measures.

Figure 4: An Excerpt from CMB's 2008 Annual Report

5.8 Business operations

5.8.1 Retail Banking Segment

The Company provides retail customers with diversified retail banking products and services, including retail loans, deposits, debit card, credit card, wealth management services, investment services, agency sale of insurance products and fund products, forex trading, and foreign exchange service, of which "All-in-one Card", "credit card", "Sunflower Wealth Management" and personal online banking have won wide spread recognition. The Company provides the above-mentioned services and products via varied channels, including branches and sub-branches, self-service centers, ATM, CDM, online banking and phone banking.

Retail loans

The Company provides retail customers with various loan products. In 2008, faced with distressed real estate market, intensified macroeconomic control on the property market and fierce competition in retail loans which comprised mainly of residential mortgage loans, the Company continued to deploy more resources into innovating and promoting new retail loan products, and further sharpened its competitive edge in retail banking. The Company reshuffled the personal loan processing work flows so that mid and back office operations were assigned to branches. The Company also introduced new series of retail loan products, including the innovative product known as "Easy Consumption", which utilizes the All-in-one Card as the platform to merge residential mortgage loans and consumer loans repayment, thereby further enhancing personal wealth management capability of customers taken on residential mortgage loans. The project of on-line residential mortgage loan application evaluation card was completed which raised the processing efficiency on application approval. A marketing campaign known as "Breakthrough 2008" ("突围2008") was organized to boost the underwriting of personal loans and promote the steady development of personal operational loan business. Moreover, credit card business was vigorously promoted, thereby speeding up the growth of credit card loans business. As at 31 December 2008, the total retail loans amounted to RMB219.342 billion, increasing by 25.32% as compared to that at the beginning of the year, of which the total residential mortgage loans increased by 13.20% as compared to that at the beginning of the year, while the total credit card receivables increased by 48.21% as compared to that at the beginning of the year. Affected by the tightening of residential mortgage loan market in China, the total retail loans accounted for 26.31% of total loans, decreasing by a slight 0.31 percentage points from that of the end of the previous year.

Retail customer deposits

The retail deposit products of the Company mainly consist of demand deposits, time deposits and call deposits. Retail customer deposits provided substantial low-cost funding for the Company. As at 31 December 2008, total retail customer deposits amounted to RMB476,943 million, increasing by RMB150,410 million or 46.06% from the end of the previous year. Total retail customer deposits accounted for 40.48% of total deposits, increasing by 5.90 percentage points from the end of the previous year.

Conclusion

In the 1.0 era, financial information accounted for a substantial part of banks' annual report content. Banks intensively described their financial status and major events as required by regulators such as the income statement, cash flow statement and balance sheet, with a brief introduction to the company and their businesses. **At this stage, the stylistic rules and layouts of banks' annual reports were almost the same, with differences only in the specific financial data; readers could not know banks' operation philosophy and strategic thinking from the reports.**

1.0

Annual report 2.0 era—financial report as the core and business explanation as a supplement

Policy background

In 2014, the State Administration for Market Regulation announced official ceasing of enterprises' annual inspections. The *Scheme for the Reform to the Registered Capital Registration System* issued by the State Council decided to substitute annual report disclosure for enterprises' annual inspection. The *Standards for the Content and Format of Information Disclosure by Companies Publicly Offering Securities No.2—Content and Format of Annual Reports* issued by CSRC stipulates that the financial information section of enterprises' annual reports shall comply with the requirements of the *Securities Law*. CSRC also requires the non-financial parts to be concise, clear and easy to understand.

Trend interpretation

As regulatory resources could not fully cover the sharply increasing listed companies, the regular supervision system for enterprises changed from annual inspection to annual information disclosure. Therefore, the target readers of annual reports shifted from regulators to the public. Information and annual report disclosures significantly improved the transparency of enterprise information, enabling the public and market to help the government supervise enterprises. Therefore, annual reports must be eminently readable.

In addition, investors paid increasing attention to enterprises' operations and wanted to comprehensively understand enterprises' development status and philosophy and predict future development trends through the annual reports. Meanwhile, enterprises gradually realized that annual reports were an important window for demonstrating their business philosophies and development strategies. Therefore, the introduction of the annual report disclosure system drove annual reports into the 2.0 era.

Annual report 2.0 era—case study: CMB's 2012 annual report

1. Besides financial information, major events, and operational risks, CMB's 2012 annual report added the content of **operation thinking and strategic deployment**. This content highlighted business development strategies & core competitive edges, operating environment, policy factors, and operation focus and took up approximately 70 pages of the 320-page report. This annual report met the regulatory requirements while fully demonstrating CMB's competitive edges, innovative achievements, and deep understanding of the future market environment and development trends, enhancing information disclosure quality as well as investors' understanding, recognition and trust for the bank.

Figure 5: Contents of CMB's 2012 Annual Report

China Merchants Bank
Annual Report 2012

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2. This report reflected changes in two aspects:

- **Improving readability.** CMB first briefly introduced the development of major businesses, then detailed each business' achievements with data support, effectively communicating its business advantages to readers.
- **Enhancing transparency of operations.** CMB listed the specific measures for attaining each KPI and elaborated on how such measures affected operation achievements, enhancing investors' trust and recognition of the bank.

Figure 6: An Excerpt from CMB's 2012 Annual Report

5.11 Business Operations

5.11.1 Retail banking

Business overview

In 2012, the Company enhanced product and service innovation, promoted refined management and process optimisation, enhanced channel coordination and resources integration, accelerated the development of the customer groups management system and formulated the management strategies for different groups of customers. In addition, the Company continuously fostered the core competitive edge of its major businesses such as wealth management, private banking, credit cards and pension finance, vigorously developed the small and micro enterprise loan business, and launched a full range of products and a comprehensive service platform for small and micro enterprise loan business. As a result, the Company achieved a rapid growth in its retail banking business, further improved its market competitiveness and made substantial progress in the Second Transformation of retail banking business.

Wealth management

In order to better meet domestic investors' increasingly diversified demand for wealth management, the Company endeavored to improve the wealth management experience of customers and sharpen its brand image as a wealth management bank through creating professional wealth management research and support system, developing a professional customer asset management system, improving its customer management and asset allocation capabilities and establishing a comprehensive wealth management product line.

In 2012, the Company recorded RMB3,056.697 billion in accumulated sales of personal wealth management products, representing a year-on-year increase of 48.13%, and distributed RMB341.5 billion open-ended mutual funds, representing a substantial year-on-year increase of 138.15%. Standard premiums from distribution of third-party insurance policies reached RMB44.3 billion, representing a year-on-year increase of 11.58%. Fees from distribution of third-party trust plans reached RMB148.6 billion, representing a year-on-year decrease of 4.99%. Fee and commission income from retail wealth management business was RMB5,322 million, representing a year-on-year increase of 38.96%. Among which, fees from distribution of third-party trust plans was RMB1,797 million, increasing by 115.21% year-on-year; fees from distribution of third-party insurance policies was RMB1,421 million, increasing by 37.96% year-on-year; fees from sales and issuance of wealth management products were RMB963 million, increasing by 22.21% year-on-year. Volatile capital market brought about a change in customers' demand for mutual fund products. Sales of fixed-yield mutual funds with lower income contribution posted a substantial year-on-year increase while that of equity funds with higher income contribution decreased accordingly. Income from funds for the year amounted to RMB1,141 million, representing a year-on-year decrease of 3.06%.

Conclusion

Leading banks' annual reports truthfully **disclosed their financial status and conveyed their operation thinking, strategies, and specific measures**, significantly improving the readability. Banks communicated their aspirations to readers through business analysis and development idea elaboration, enhancing mutual trust and recognition with investors. **The stylistic rules and layout of banks' annual reports gradually changed to "financial report as the core and business explanation as a supplement".**

Annual report 3.0 era—integration of business and finance

Policy background

In 2023, the threshold for listed companies has been lowered remarkably due to the extensive implementation of the registration-based IPO system. As a result, the regulatory focus will shift from administrative examination and approval to risk prevention and mitigation. Hence the Chinese market will be aligned with the international market. Individual investors will decrease, and the market ecosystem will be reshaped faster.

Trend interpretation

With the full implementation of the registration-based IPO system, the stock market has higher requirements for investors' professional literacy, which will increase the proportion of professional investors. Therefore, annual reports have become increasingly important as they are the primary way for professional investors to learn about enterprises. In particular, the banking sector is experiencing digital transformation with changing industrial landscape, so banks' financial results, insight to grasp the pulse of the times, ability to find the right development direction, determination to reform, and perseverance to implement strategies gain equal attention. **Therefore, banks' annual reports emphasized interpreting business transformation and strategic ideas to enhance the communicating effect and acceptance and promote banks' market recognition amid the increasingly fierce competition.**

Annual report 3.0 era—case study: CMB's 2022 annual report

1. Compared with the 2012 annual report, CMB's 2022 annual report altered the structure of Chapter III Management Discussion and Analysis, and **presented the "Social Responsibility" in a separate section.**

Figure 7: Contents of CMB's 2022 Annual Report

China Merchants Bank
Annual Report 2022 (H share) Contents 1

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2 CMB's 2022 annual report features:

- **Good continuity in business strategy**
  CMB's 2021 annual report analyzed the business environment, the bank's development status, and improvement direction centering around the financial indicators, and indicated 2022's development direction. The 2022 annual report communicated the bank's implementation of the 2022 strategies and achievements backed by quantitative data, demonstrating the bank's determination and ability to execute strategies.
- **In-depth business analysis**
  CMB introduced each business' development status in the "Business Operation" section and detailed KPIs by business, measures, and achievements in the year, do as detailed as possible, and show investors the efforts made by the bank in this regard with sincerity.
- **Deep integration of business and finance**
  CMB interpreted the financial indicators of investors' primary concern in the 2022 annual report, such as net interest margin, net non-interest income, loan-to-deposit ratio, and disposal of nonperforming assets. It also combined the specific business measures to examine the financial indicators, enhancing the report's readability and investors' trust for the bank's stable operation.

Figure 8: An Excerpt from CMB's 2022 Annual Report

3.9 Key Business Concerns in Operation

3.9.1 Net interest margin

In 2022, the Group's net interest margin was 2.40%, representing a decrease of 8 basis points year-on-year; the Company's net interest margin was 2.44%, representing a decrease of 9 basis points year-on-year. Such decrease in net interest margin was mainly due to the reasons below. On the asset side, in terms of pricing, firstly, due to the re-pricing of existing floating-rate loans and insufficient financing demand, loan yields have declined; secondly, market interest rates have been running at low levels for a long time, resulting in declined investment yields. In terms of structure, due to the weakened consumer sentiment, the growth of loans which had relatively high yields, such as credit card loans and residential mortgage loans, slowed down. On the liability side, corporate funds were insufficiently activated, and the growth of low-cost corporate demand deposits such as corporate settlement funds was restricted, coupled with shift of residents' investment to time deposits due to the disturbance in the capital market, leading to declined proportion of demand deposits.

Looking forward to 2023, the Group's net interest margin faces both opportunities and challenges. In terms of opportunities, the current economy continues to recover, effects of policies to stabilise growth are showing, market confidence and domestic demand are gradually picking up, and positive factors supporting the stable operation of net interest margin are increasing. In terms of challenges, the global economic growth has further slowed down, and the pressure of external demand has increased. The domestic economy still needs some time to recover, and the pricing of new assets investment is expected to remain under pressure. At the same time, the assets yield in 2023 still faces the pressure of existing loans' re-pricing. The Group will actively take measures to maintain the net interest margin at a relatively outstanding level in the industry. On the asset side, the Group will continue to prioritise assets allocation to promote the stable growth of credit scale and increase retail loans, while reinforcing the loan pricing management and constantly improving the comprehensive customer return. At the same time, the Group will strengthen its capability in forward-looking prediction of market interest rates, improve the capital utilisation efficiency, and moderately increase the allocation of bonds and interbank assets with high yields. On the liability side, the Group will insist on focusing on the growth of low-cost core deposits, strengthen the volume and price control of high-cost deposits and implement market-based adjustment mechanism for interest rates. Meanwhile, the Group will flexibly arrange market-oriented financing and reduce the overall cost of liabilities according to the trend of market interest rates.

3.9.2 Net non-interest income

During the reporting period, when faced with multiple shocks such as severe volatility in the financial markets, sluggish consumption and the continued weakening of external demands, the Group continued to consolidate its customer base, upgrade customer services, actively explore new growth in segments on the premise of improving its existing advantages, and strive to maintain the stability of net non-interest income. During the reporting period, the Group realised net non-interest income of RMB126.505 billion, representing a decrease of 0.77% year-on-year, accounting for 36.70% of net operating income, representing a decrease of 1.77 percentage points year-on-year. Among the Group's net non-interest income, net fee and commission income was RMB94.275 billion, representing a decrease of 0.18% year-on-year, accounting for 74.52% of the net non-interest income; other net non-interest income was RMB32.230 billion, representing a decrease of 2.45% year-on-year. During the reporting period, the Group's revenue contributed by extensive wealth management was RMB49.151 billion[10], representing a decrease of 6.10% on the same calibre as compared with the previous year.

The major items under the Group's net fee and commission income during the reporting period are analysed as follows. **Fee and commission income from wealth management** amounted to RMB30.903 billion, representing a year-on-year decrease of 14.28%, of which income from agency distribution of insurance policies amounted to RMB12.426 billion, representing a year-on-year increase of 51.26%, which was mainly due to the increase in customers' protective demand, leading to the Company's year-on-year increase in sales volume and premium rate of regular insurance business. Income from agency sales of wealth management products was RMB6.645 billion, representing a year-on-year increase of 5.61%, the growth rate of which has slowed down compared with the previous year, which was mainly due to the slowing down of the daily average balance growth of wealth management products and a decline in sales fee rate of wealth management products. Income from agency distribution of funds amounted to RMB6.599 billion, representing a year-on-year decrease of 46.41%, which was mainly due to the downward trend amid volatility of the capital market, resulting in the decline in sales scale of agency distribution of funds and the decrease in the proportion of high-fee equity funds. Income from agency distribution of trust schemes amounted to RMB3.979 billion, representing a year-on-year decrease of 47.24%, which was mainly due to the Company's suppression of financing trust product, resulting in the decreased sales volume and agency sales fee rate of agency trust. Agency securities transaction income was RMB903 million, representing a year-on-year decrease of 29.51%, which was mainly affected by the market conditions and trading activity of Hong Kong's capital market. **Fee and commission income from asset management** amounted to RMB12.457 billion, representing a year-on-year increase of 14.75%, which was mainly driven by the growth in the asset management business scale of subsidiaries of the Group. **Commission income from custody business** was RMB5.791 billion, representing a year-on-year increase of 6.59%, mainly due to the growth of custody business size and the continuous structural optimisation. **Income from bank card fees** amounted to RMB21.399 billion, representing a year-on-year increase of 10.44%, mainly driven by the increase in income from credit card transaction. **Income from settlement and clearing fees** amounted to RMB15.051 billion, representing a year-on-year increase of 8.26%, mainly due to the increase in e-payment income.

Conclusion

Leading banks have taken annual reports as a primary means to present their future strategies and goals. They rely on the annual reports to communicate their examination of businesses and financial status and fully demonstrate their operation capabilities. Banks have diversified the annual reports, focusing more on disclosing information investors need. **Banks' annual reports will speedily transform towards the "business-finance integration" model.**

3.0

Transformation and upgrading: challenges for improving annual reports

To keep up with the leading banks, others should follow the leading banks' ideas in preparing annual reports to accelerate transformation, but face major challenges:

Inadequate business-finance integration

Annual reports require integrating financial indicators and business performance, thus cross-department collaboration. However, most banks lack a coordinating department and working mechanism to symmetrise information, align data, and smoothen the processes of annual reports to enhance quality and efficiency.

Difficulties in controlling resource consumption

Preparing annual reports requires a large quantity of data and information, which means more layout and disclosure issues. This increases banks' internal resource consumption. Therefore, preparing annual reports may cause enormous internal resource pressure if it is not properly planned.

Difficulties in balancing professionalism and readability

It is extremely challenging to write an annual report that is professional and easy to read since its target readers have changed to investors. It is easy to disclose authentic financial status and business performance but demanding to use concise, affecting, and lucid language to convey the operation ideas and development strategies and attract investors. In practice, some banks overemphasize professionalism and use complex terms and numbers, which undermines readability, while others pursue readability, with unduly simple and cursory language and charts that sacrifice professionalism.

Embracing the new era: change ideas and promote business-finance integration

Today, banks' annual reports are added with new elements. They not only report financial status and business performance to shareholders and investors, but also display banks' image, reputation, and values. Therefore, it is crucial for banks to prepare high-quality annual reports. Thus, banks should keep pace with the times to satisfy market demands and customers' expectations.

New requirements for banks to prepare annual reports:

Idea upgrading—shift from providing data to analyzing businesses

Banks' annual reports are no longer prepared just for regulators, rather, they will be reviewed by the public and investors. Traditional annual reports cannot satisfy investors and shareholders. While proceeding with digital transformation, banks must change their ideas in writing annual reports to generate comprehensive business reports that include their strategic planning and implementation analysis, business analysis, advancement of major events, and outlook.

Banks should adhere to the customer-centric concept and describe the reform and measures in each business area in an effective and detailed manner. In addition, banks should combine customers, channels, and products to reflect an integrated operation philosophy and fully demonstrate their core competitiveness and development potential.

Such annual reports enable investors to better understand banks' intrinsic quality and values, helping establish and maintain long-term and steady relationships between banks and investors.

Extensive participation of business departments

Preparing annual reports becomes increasingly demanding due to higher readability requirements, which cannot be completed by a single department. Banks must coordinate the strategy, finance, business and technology departments to prepare comprehensive and accurate annual reports. It especially requires the participation of business departments. Business departments can help with business model introduction, market analysis, product introduction, and business development plan summary. This will improve the reports' quality and readability and drive a consensus and introspection among different departments.

Formulating report management mechanisms based on banks' characteristics

Banks must establish a scientific mechanism and plan in advance to write a high-quality "business and finance integrated" annual report in an orderly and efficient manner.

First, banks should no longer designate certain people to write annual reports. Instead, they should establish a task force covering all relevant departments and instill the "business-finance integration" concept into the team. In the meantime, they should analyze and learn from the leading banks' annual reports and establish scientific working mechanisms and processes.

Second, banks should emphasize and carefully consider the preparatory work.
In the past, banks used what they had in hand to write annual reports. But now they need to spend more time on the non-financial part under the " business-finance integration" requirement. Therefore, banks should allow ample time to prepare for annual reports, make plans as early as possible, and accumulate data using unified data collection templates and standards.

Meanwhile, banks should discover and reserve talent for writing annual reports. Banks emphasized financial data and business information in previous annual reports, but they should value logic and continuity in the "business-finance integration" reports. Therefore, annual report writers must have a good knowledge of businesses and deep understanding of strategies to ensure consistent logic of various business strategies, continuity of different years' reports, and interpretability between financial indicators and business measures. In addition, it is critical for writers to use attractive and easy-to-understand language to convey banks' voices and tell a good story of the banks. Such talent is rare in banks, so they should discover and reserve them in their daily operations.

The banking sector increasingly valued annual reports over the past decades. Annual reports' importance grows as China's capital market matures. Banks' annual reports mainly disclosed financial statements in the early stage with complete financial disclosure systems in place, then gradually shifted to the "business + finance" model, trending towards: 1) readable content, lucid language, clear strategy interpretation, and exhaustive materials; 2) deep integration of business and finance, intertwined financial and business content, and disclosure of the underlying operation logic of each business.

The financial sector is standing at a special juncture where overseas financial industries are facing enormous challenges, the international environment is constantly turbulent, and the global financial system is confronted by a serious trust crisis. The banking sector should be the ballast stone for China's financial system. Listed banks must strengthen connection and communication with the capital market. Banks' annual reports, as one of the core mediums connecting the capital market, will be surely upgraded. For listed banks, preparing a clear and concise annual report to communicate their prospective operation thinking and strategies is as critical as business operations. Therefore, banks' senior management should attach great importance to writing annual reports, and allocate sufficient internal resources to generate excellent reports reassuring to regulators, informative to the public, and dependable to investors.

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4.5

Implications of ChatGPT for the future of financial transformation

Human society has seen AI products' outstanding performance in many scenarios in recent years. ChatGPT has taken the world by storm with its powerful capabilities. It is foreseeable that various applications like ChatGPT will surface in the near future, which will significantly impact the traditional financial management models and lead a new way of thinking for modern financial management transformation. This section focuses on the craze of ChatGPT and other AI products to examine how to promote the digital transformation of financial management to embrace the opportunities and challenges brought by AI.

ChatGPT's impacts on the banking sector

On December 1, 2022, OpenAI, an AI lab invested by Microsoft, released the chatbot model ChatGPT, and a week later the number of users exceeded 1 million, causing quite a stir in the industry.

This conversation model was not new—Microsoft launched Microsoft Xiaoice in 2014—but the difference was that ChatGPT brought a disruptive experience to users. Unlike the previous AI products, ChatGPT was powerful in two aspects. First, it could interact with users fluidly. ChatGPT learns and understands human languages to conduct a conversation, and also comprehends the context to truly interact like a human. Second, it has remarkable practical functions. We were amazed that ChatGPT had the ability to program and correct errors (debug), even draft emails, design ads, compose music, and create poetry and essays ... It seemed to have the ability to think. Therefore, insiders believed that ChatGPT would be the AI model most likely to pass the Turing test.

AI is disrupting people's imagination as it rapidly evolves. A generative AI-triggered industrial revolution is on the way.

There is a more crucial reason why ChatGPT has become a hit, apart from its capabilities. In the gloomy economic environment, many industries face growth pressure, and the primary concern

of many senior executives is how to reduce costs and increase efficiency. As many domestic banks' revenue growth slowed, "reducing/controlling costs and improving efficiency" became a crucial means to stabilize profits. What impacts will new technologies such as ChatGPT bring?

Front-office customer acquisition:
ChatGPT can interact with users more extensively to extend their stay on the platforms, increase stickiness, and enhance satisfaction. The intelligent customer services represented by ChatGPT will provide more service scenarios and reduce customer service costs.

Middle- and back-office operations:
The RPA technology could replace labor by 1:10, even 1:20 under the premise of smooth processes and saturated workload, which meant that RPA could help with mature and repetitive work to greatly reduce labor costs. A typical case was that a small foreign bank had applied tens of thousands of RPA robots to improve automation efficiency. With increasing ChatGPT and similar applications, their deep integration with RPA products is expected to function more effectively in scenarios such as routine analysis, report processing, petty loan approval, employee training, system management, and internal knowledge system construction.

Pain points of financial management

Informatization and digitalization have intensified the competition in the banking sector, and the main battlefield has expanded from the front office (customer acquisition) to front- and back-office joint operations, which means banks must acquire and serve customers, in the meantime implement fine management to obtain benefits from management. Therefore, the senior management expects more quantitative reports that are closely related to businesses and detail customers, products, channels, and scenarios.

In this context, the banking sector has intensified efforts in financial management, but still faces difficulties:

- Functions and positioning: how to decide financial management's positioning in new circumstances? how to distinguish finance's functions of supporting strategies, serving businesses, controlling risks, and daily operations? How will the traditional way of dividing financial offices adapt to the new roles?

- Way of implementation: how to attain goals? How to achieve quality analysis when there are massive data quality issues? How to build a blueprint covering a large amount of complicated work?

In addition to strategic planning, banks must transform immediately due to the problems in financial management tools and methods:

- **Accounting and expense management:** According to international best practices, the perfect state is less than 30% of the finance staff handling traditional accounting, general ledger and daily expenses. To achieve this goal, banks must use many IT technologies, sort out processes, clarify and verify accounting and expense management rules. In the future, more than 30% of the financial accounting positions may be assumed by colleagues of IT background.

- **Financial analysis cannot facilitate businesses:** Financial analysis is limited to financial indicators and financial data, lacking deep, extensive and detailed investigations into businesses, thus generating no business-finance integration insights and suggestions to empower business operations.

- **Comprehensive budget cannot back up forecasting:** Comprehensive budget management requires understanding the difference between reality and ideal and foreseeing the future. Inefficient and unpunctual forecasting directly affects the function of budget as a baton.

- **Management accounting:** Management accounting cannot keep up with business changes, and traditional customer, product and channel analysis cannot meet the needs of complex business scenarios such as diversified customer acquisition, cross-selling and digital transformation evaluation.

- **Lacking effective performance management tools:** There is no customer managers' performance evaluation system in place, so some customer managers in branches are not very conscientious in implementing the head office's strategies and policies, resulting in unsatisfactory progress towards the head office's strategic indicators and disintegrated performance management of the branch teams.

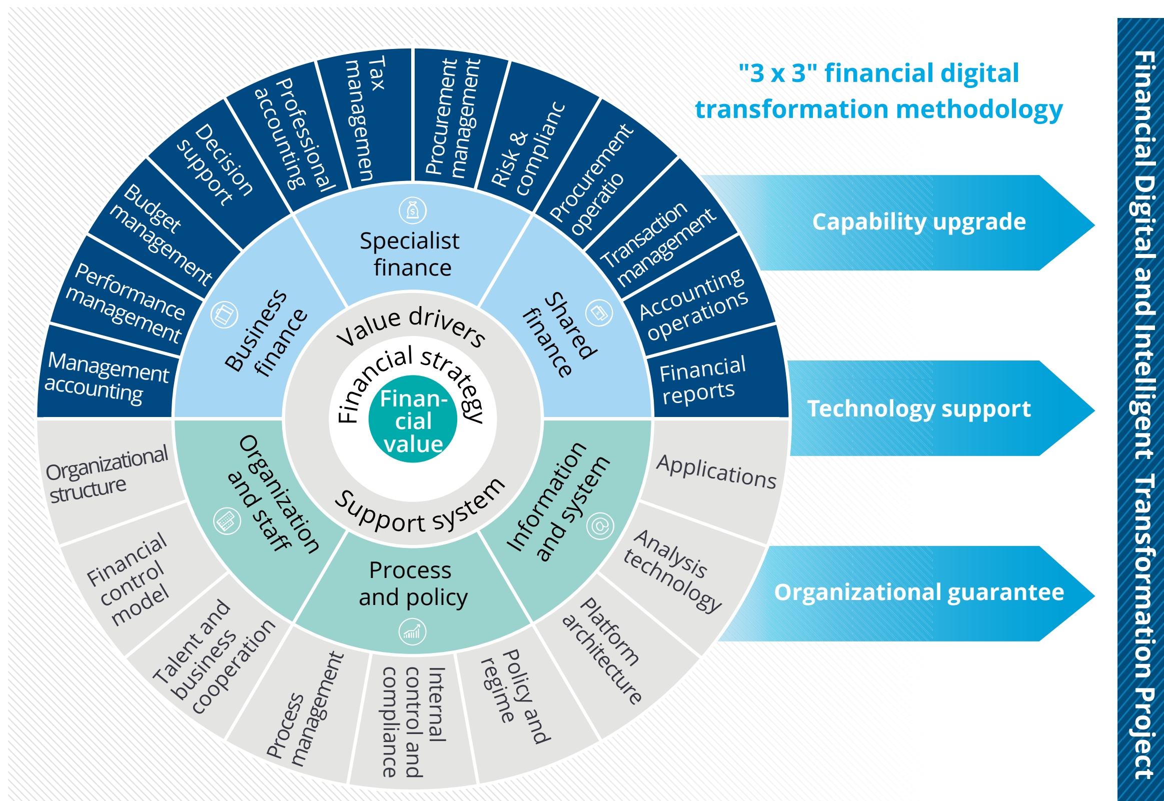
Banks' financial management transformation direction

In the era of digital economy, banks' expectations for financial management have changed and the finance department has been entrusted with more management functions. Therefore, financial management's positioning in bank management has altered. To achieve good AI applications in finance, banks must give right instructions first, then explain, inspect, identify, and correct the results, all requiring financial personnel's active learning and transformation.

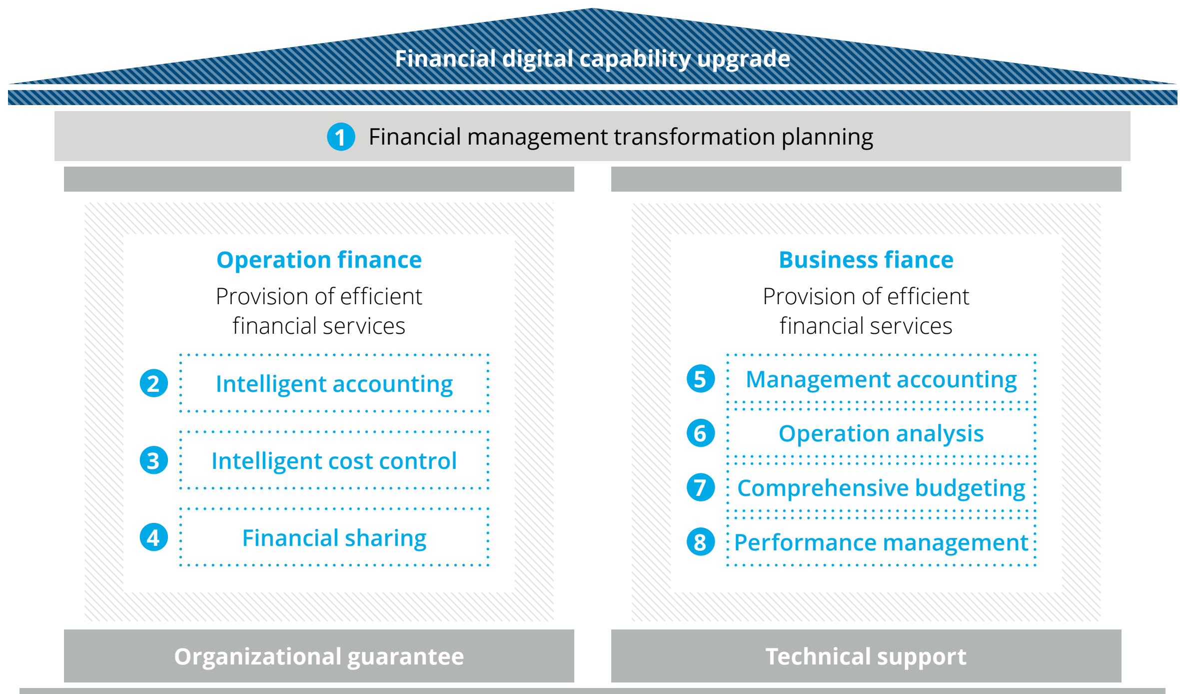
Seeing from the Golden Tax Project (Phase IV) system, electronic invoices, the 14th Five-Year Plan, and the first-class financial management system, China has been promoting digital infrastructure construction in recent years, providing strong support for the banking sector's financial digital transformation. Regulators also continued to guide the banking sector's digital transformation of financial management through regulations, policy guidance and pilot areas.

Digital transformation is an inevitable path for banks to improve their management systems. In the foreseeable future, China will intensify policy guidance, such a vigorous promotion is not likely to last forever, banks must implement relevant systems, upgrade relevant regimes, and adjust relevant organizations and personnel within the narrowing time window. Transformation is the top priority for large banks, and there is not much time for "wait-and-see" small and medium-sized banks. Under the clear trend, banks must be determined and take proactive actions to maintain the initiative.

Banks' financial digital transformation should focus on improving their financial digital transformation capabilities, upgrading relevant technologies, and consolidating the organizational guarantee.



Financial digital transformation capability upgrade



- **Financial management transformation planning**: Leading domestic banks have learned from overseas peers' best practices to make overall strategic planning. They determine finance management strategies, reexamine and decide the financial organizations' positioning and responsibilities, and specify a 3-5 years medium- and long-term financial management system construction planning based on the status of their businesses, systems, and data, to truly work out a blueprint covering goals, paths, and supporting conditions.

- **Intelligent accounting:** In the new business environment, accounting is no longer confined to ex post records and simple supervision but connects to all links of transactions and management. Leading domestic banks' intelligent accounting has realized life-cycle management of contracts, assets and orders. More than 90% of the accounting vouchers are automatically generated by the front-end business systems or accounting engines, significantly reducing the manual workload.

- **Intelligent cost control:** The new generation of intelligent cost control achieved end-to-end and point-to-point cyclic empowerment by connecting all links of expense management. Leading domestic banks have already transitioned from "online processes" to "all digital and intelligent links", with more than 2,000 preset compliance rules, performing automatic checking to reduce compliance risks and work loopholes.

- **Financial sharing:** Leading domestic banks have achieved compliant, friendly, efficient, and large-scale service support for basic financial activities through the Financial Sharing Center, a globally leading management model, with an average cost saving of more than 20% in three years.

- **Management accounting:** Leading domestic banks can deal with hundreds of millions of accounts by establishing a big data model for multi-dimensional revenue and cost analysis, and measure the expenses, marketing costs, financing costs, risk costs and interest income, intermediate business income, and FTP income of each account, thus providing a quantitative basis for multi-perspective analysis and evaluation of branches, outlets, customer managers, product managers, customer groups, customers, products, and channels.

- **Operation analysis:** Leading banks' operation analysis covers strategy implementation and progress, core business measures and results, customer insights, industry hot topics, and input-output analysis of digital transformation. It goes beyond the finance and corporate boundaries to expand to the industry and ecosystems, with direct quantitative analysis of banks' strategies, customer acquisition efficiency and other core topics. A leading bank identified a saving space of hundreds of millions of marketing expenses by conducting business and financial analysis of online retail customers, applying the AB test method commonly adopted by internet companies, and building a statistical model to compare the customer acquisition efficiency of different channels.

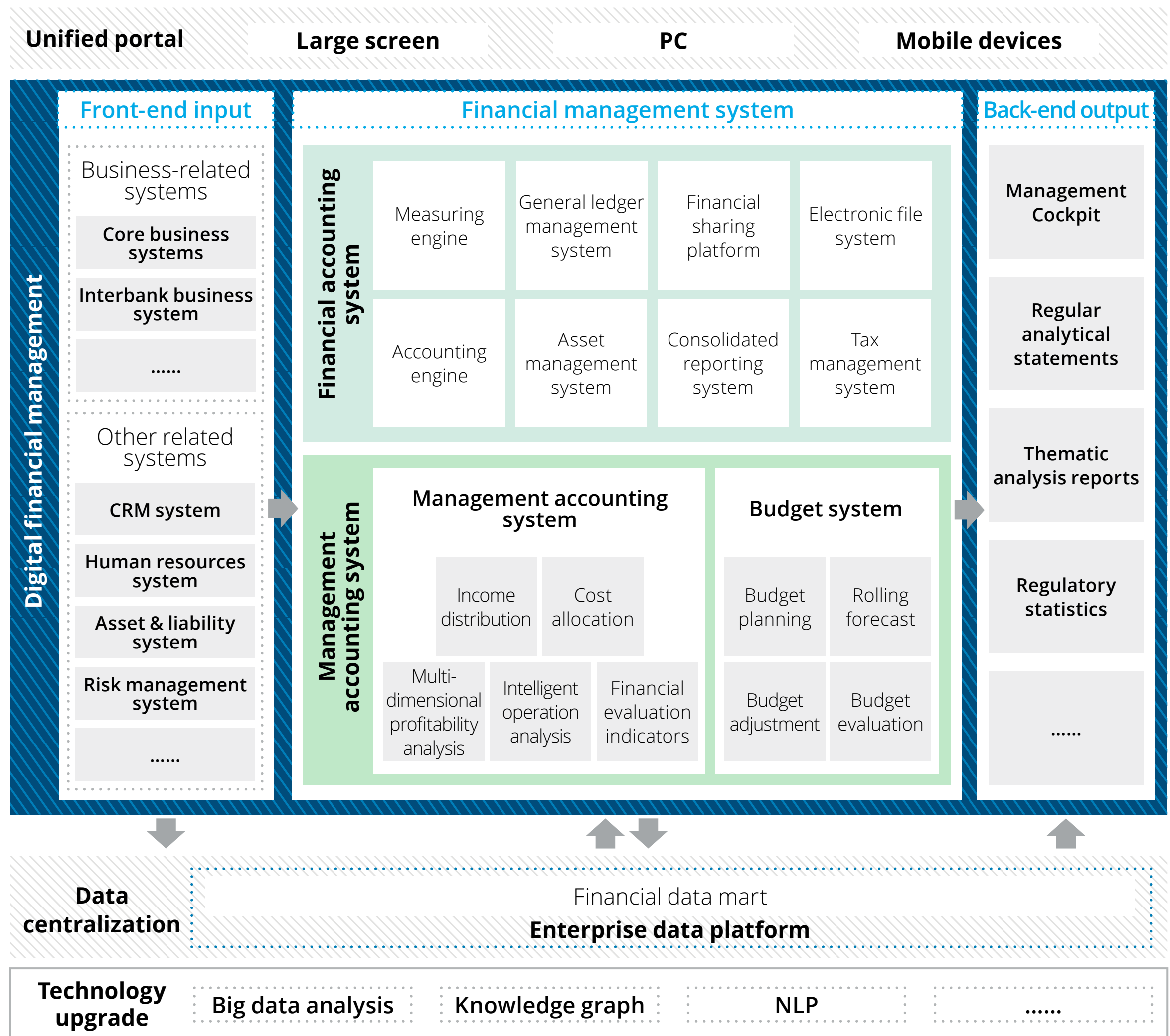
- **Comprehensive budget:** Leading domestic banks have applied digital tools to establish a long-term management mechanism covering budget planning, announcement, adjustment and evaluation, achieving a top-down closed loop of financial management. They estimate the financial market, intermediary business income, and other business scales and revenue through the business and finance-integrated big data prediction model, facilitating business departments' forward-looking decisions.

- **Performance management:** Leading banks have promoted the requirements for unified customer manager performance appraisal from the aspects of account attribution, performance trace, compliance accountability, grading, and salary determination norms. In addition, they realized "unified rules, data, configuration, management, and maintenance" through the one-stop customer manager appraisal system.

Financial digital transformation technology support

Deloitte China FSI's financial management team designed a financial management information system architecture diagram by integrating management tools and information technologies.

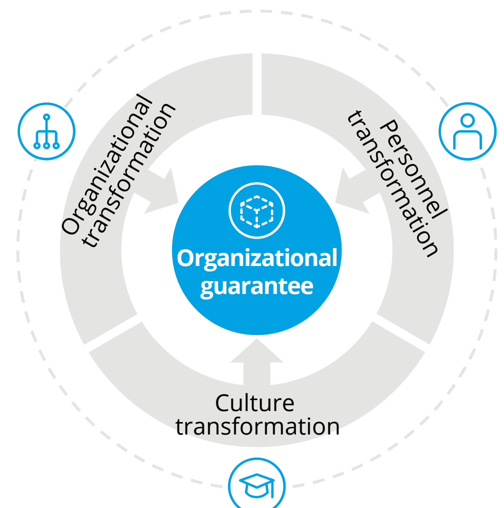
The ideal financial management system should include financial data mart, accounting engine, measuring engine, financial sharing platform, general ledger system, tax management system, management accounting system, comprehensive budget management system, and operation analysis system.



- **System empowerment:** Establish a specialized financial management system to free labor, clarify management rules, and optimize processes, to realize the first step—from manual work to systems;

- **Technical empowerment:** Apply OCR, RPA, big data modeling, intelligent risk control model and other technologies in financial forecasting, accounting, analysis, auditing and other processes to enhance the timeliness of financial services, achieving a remarkable breakthrough in quality and efficiency and the second step—from systems to intelligent systems;

- **Data empowerment:** Keep pace with business development following the result-oriented concept, and combine financial and business data to generate business-finance integration insights, realizing the third step—from intelligent systems to decision-making insights.



Organizational guarantee for financial digital transformation

Financial digital transformation requires upgrading capabilities and technologies and transforming the supporting management regime and function division to provide transformation directions and guarantees. Deloitte assists clients in reshaping financial functions to enable finance better serving, supporting and empowering businesses, to facilitate digital transformation.

- **Organizational transformation:** Taking digitization and financial sharing as an opportunity, leading banks are promoting the financial organizations transforming from "accounting control" to "value creation", driving the traditional finance to shift to be "partner of businesses". Centering on the "three-center financial management" organizational pattern, leading banks reshaped financial functions from the roles of expert finance, business finance and operation finance, to enable finance to better service, support, and empower businesses.
- **Personnel transformation:** In the digital future, outstanding financial personnel must be inter-disciplinary talent mastering digital technologies and business skills. Companies must combine internal training and external recruitment to gradually optimize the financial talent structure. Financial personnel shall have leadership skills, understand strategies, and have management and communication ability. Such capabilities will no longer be unattainable goals but a requirement for daily work. Deloitte financial management transformation team provides a suite of financial personnel transformation training services. With Deloitte's innovation workshops, the training covers industry best practices, MBA case courses, communication skills, and hot topic analysis, broadening financial personnel's horizons and enriching their insights from multiple perspectives. In addition, we offer financial personnel a four-month transformation journey with a series of innovative measures such as reading together, group discussion, meditation, and games, helping them change their thinking, gain empathy, and improve communication skills to thoroughly be financial personnel of good management skills.

In the era of digital economy where new technologies keep emerging, financial personnel should be sensitive to new technologies, have the vision and courage to apply new technologies in financial digital transformation, and boldly leverage new technologies to empower businesses to enhance banks' management level and competitiveness. With the ChatGPT boom, we are at the forefront of this era, so we must embrace changes to find new opportunities and create a new future.

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4.6

Reimagine data management: building a high-quality regulatory data governance framework

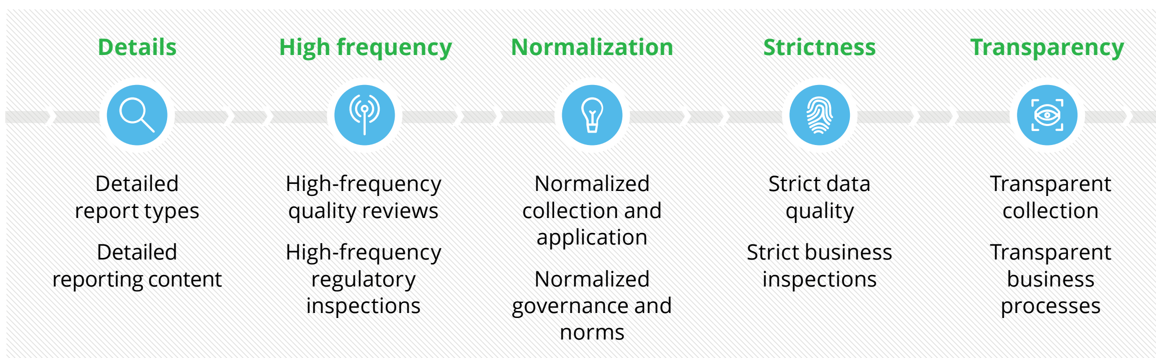
Regulators have attached great importance to financial institutions' regulatory data quality since 2022, and integrated business, technology and data regulation to promote the benign development of the industry. Regulators implement serious punishment and accountability system. Regulatory data quality problems will be traced to institutions and individuals. Data quality tickets hit record highs repeatedly, leading to financial institutions' increasing data quality compliance pressure. In addition, with technology upgrades and data accumulation, new transformation momentum and demands for financial institutions' data governance have emerged. Therefore, financial institutions must actively abide by regulatory requirements and seize opportunities to accelerate revamping data management.

Strict regulation became normal, with regulatory rules for financial data governance established

In recent years, international and domestic regulatory reforms and regulatory rulemaking have intensified enormously. With wide applications of big data, cloud computing, AI and other technologies, Fintech has become a key driver for regulatory digital transformation. On August 17, 2021, the tenth meeting of the Central Committee for Financial and Economic Affairs proposed "enhancing the regulatory capabilities of cadres within the financial system and improving regulation digitalization and intelligence..." Data regulation is playing an increasingly important role along with the traditional business and technology regulation. Regulators are practicing the data-business two-way regulatory model. The future three-dimensional regulatory technologies will be embodied by the business-technology-data integrated regulation.

Detailed data collection, high-frequency statistics, normalized management, and comprehensive transparency

Seeing from the CBIRC's, PBC's and SAFE's regulatory requirements, banks' regulatory data reporting scope has been gradually expanded and the requirements for various reports have been constantly upgraded. The increasingly strict regulatory requirements feature detailed data, high-frequency statistics, normalized management, and comprehensive transparency.



In 2022, CBIRC launched the EAST 5.0. EAST is a universal data collection standard model used to collect banks' all on- and off-balance sheet business, management, accounting, organization and employee data. EAST data can be used by regulators to analyze regulatory compliance risk points through data modeling, which is CBIRC's most complex reporting system. In 2012, EAST1.0 was piloted in five Zhejiang banks' system data structures to assist with on-site inspections. With ten years of development, it has become a core regulatory technology capability to prevent financial risks and promote banks' data governance and compliance. In 2022, CBIRC launched the EAST 5.0 to fully collect banks' detailed customer data, on- and off-balance sheet business data, and accounting data. It collects 70 tables, 1,838 data items and 3,283 check rules every month.

Figure 1: EAST 5.0 Panorama

Public information
- Organization information
- Employees
- Tellers
- Job information
- Organization relationships
- Shareholder and related party information

Wealth management business
- Wealth management product information
- Wealth management product status
- Underlying position information
- Non-standard assets details
- Other non-standard assets details
- Asset transaction information of wealth management products
- Sales details of wealth management products
- Wealth management product holding information of customers

Funds transaction information
- Financial instrument information
- Exchange rate information
- Balance of self-operated funds business
- Self-operated funds transaction information
- Spot and derivative transactions information

Credit card
- Credit card information
- Credit card transaction details
- Credit granting information
- Credit card installment business information

Card information
- Debit card information
- Passbook information
- Acquiring merchant information

Various loans
- Credit contracts
- Individual credit IOUs
- Corporate credit IOUs
- Entrusted payment information
- Project loan information
- Syndicated loan information
- Bill discounting
- Bills rediscount
- Trade financing business
- Financing leasing business
- Advance registration information
- Attached tables of internet loan contracts
- Internet loan cooperation agreements

Accounting information
- General ledger accounts
- Internal accounts cross-reference
- Individual deposit ledgers
- Individual deposit ledger details
- Corporate deposit ledgers
- Corporate deposit ledger details
- Corporate credit ledger details
- Internal ledgers
- Internal ledger details
- Individual credit ledgers
- Individual credit ledger details
- Corporate credit ledgers

On- and off-balance sheet guarantee information
- On- and off-balance sheet business guarantee contracts
- On- and off-balance sheet business guarantors
- On- and off-balance sheet business collateral

Client information
- Personal basic information
- Individual customer relationships
- Corporate customer information
- Corporate customers' financial information
- Group customers
- Association relationships

Off-balance sheet credit granting business
- Billing information
- L/G and L/C information
- Transaction background information
- Entrusted loan information
- Agency transaction information

Credit management information
- Credit granting information
- Asset write-off information
- Credit asset transfer information
- Asset transfer relationships
- Changes in classes (five-category classification) of loans

EAST 5.0 changes

New fields

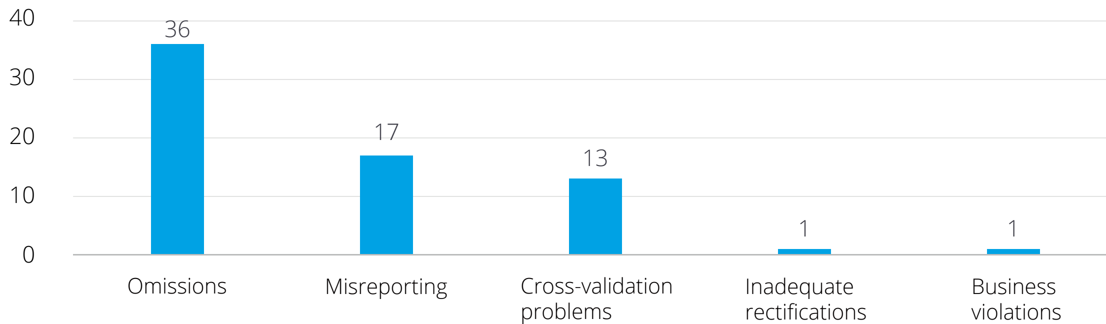
Source: Deloitte Analysis

With the establishment of the National Financial Regulatory Administration and further implementation of the measures to deepen the reform of financial regulators, we expect that regulators' collection of financial institutions' data will be increasingly clear, more frequent, and gradually unified.

Data regulatory penalties continue to increase

On March 25, 2022, CBIRC disclosed its recent punishments involving 21 banking institutions' regulatory data quality violations, including policy banks, large state-owned banks and joint-stock banks. The total penalties amounted to RMB87.6 million, averaging about RMB4 million for each financial institution. 68-type problems of five categories were identified, including data misreporting, data omissions, EAST and 1104 statements cross-checking problems, unsatisfactory rectifications, and business violations.

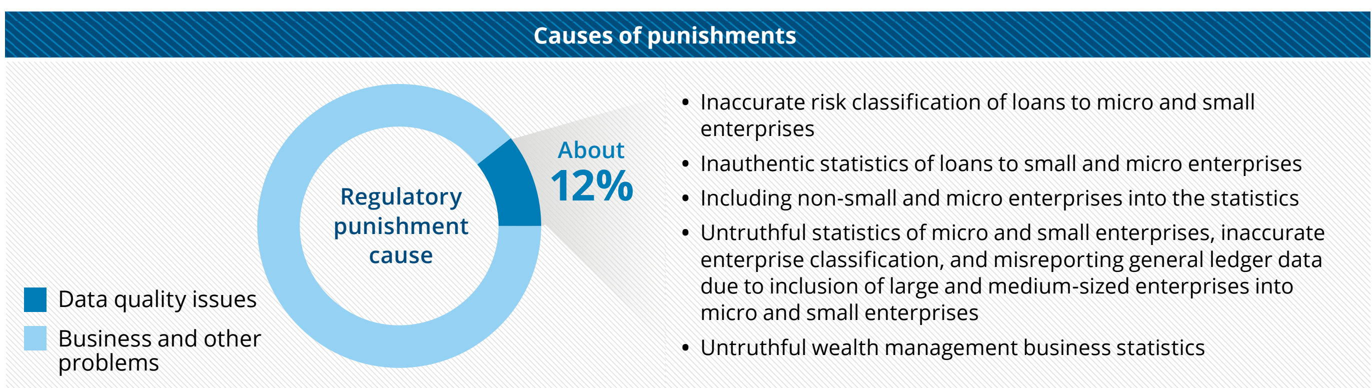
Figure 2: 21 Banking Institutions' Regulatory Data Quality Problems in 2022



Source: CBIRC, Deloitte's summary and collation

In February 2023, CBIRC announced the investigations and administrative punishments on BOC, CMBC, Bohai Bank, CCB, and Standard Chartered Bank (China) and the relevant personnel for their illegal acts, including statistical data-related issues, with a total fine of RMB380 million.

Figure 3: Causes of Regulatory Punishments in February 2023



Source: CBIRC, Deloitte's summary and collation

Strict regulation on financial institutions will be normal. In addition, the routine data quality audit authority of EAST and 1104 statements has been gradually delegated to local regulators since 2023. Local CBIRC offices have been solidifying data quality ranking, problem reporting and accountability to be routine regulatory matters. Financial institutions will face increasing data quality pressure and compliance risks.

Regulatory rules for financial data governance established

On December 25, 2022, CBIRC officially issued the *Administrative Measures for Regulatory Statistics of Banking and Insurance Sectors* (hereinafter referred to as the "Measures"), which came into effect on February 1, 2023; in the meantime, the *Measures for the Administration of the Banking Supervisory Statistics* (Order of CBRC [2004] No. 6) and the *Administrative Provisions on Insurance Statistics* (Order of CIRC [2013] No.1) were abolished; Thus, unified regulatory statistics management requirements were established. The Measures contain six chapters and 33 articles, including the General Provisions, Administrative Institutions of Regulatory Statistics, Management of Regulatory Statistics Survey, Regulatory Statistics Management of Banking and Insurance Institutions, Supervision and Administration of Regulatory Statistics, and Supplementary Provisions.

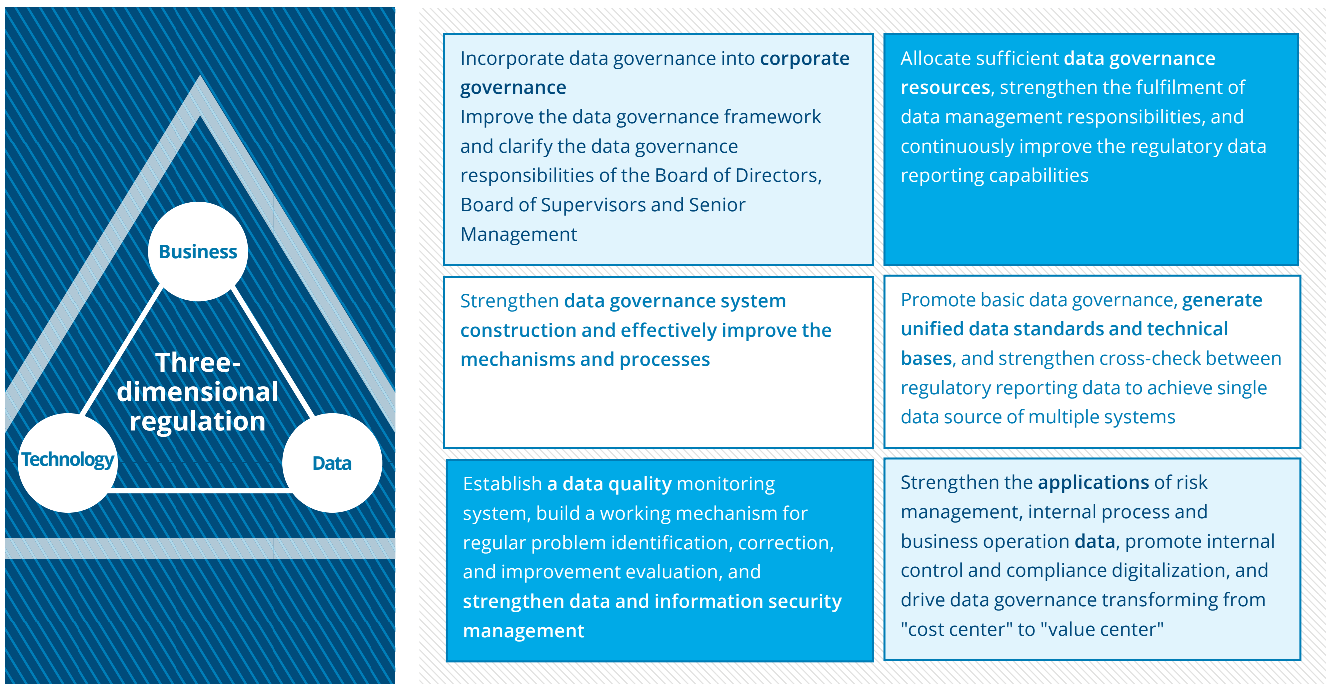
Figure 4: Regulatory Statistics Definition: Comprehensive Management Activities Conducted by Banks and Insurance Institutions to Implement Regulatory Requirements.

- According to the Measures, regulatory statistical materials refer to the data, statements, and reports collected in obedience to the statistical requirements of CBIRC and its agencies that reflect the operation and risk status of banks and insurance institutions.
- Banks and insurance institutions shall not regard regulatory statistics as simple data computation and reporting but comprehensive management activities aiming to **"ensure high-quality and efficient data reporting"**.

1. According to the Measures, regulatory statistical materials refer to the **data, statements, and reports** collected in obedience to the statistical requirements of CBIRC and its agencies that **reflect the operation and risk status of banks and insurance institutions.**
2. For banks and insurance institutions, **regulatory reporting quality is a reflection of the regulatory statistics management results**, which means quality problems can provide clues about the shortcomings of regulatory statistics management.
3. The regulatory reporting results are also an **external manifestation** of banks and insurance institutions' operation & management and compliance & risk control; **good enterprise-level data governance** is a solid **internal guarantee** for regulatory statistics management.
4. The regulatory statistics work is an important part of banking financial institutions' internal control.

Combining the requirements of the *Guidelines for the Data Governance of Banking Financial Institutions* issued in 2018 and the various problems and circulars released by regulators since 2023, we see that regulators have established unified regulatory statistics management requirements, and hope to promote financial institutions' data governance and business compliance advancement through high data quality requirements and drive data governance's transforming from "cost center" to "value center".

Figure 5: Main Regulatory Requirements for Financial Data Governance in 2023



Source: CBIRC, Deloitte's summary and collation

Regulatory data governance framework

Regulatory data governance is a fundamental and systematic task, and a well-designed and smoothly-running governance framework is a prerequisite for ensuring long-term effective regulatory data governance. Before elaborating on the regulatory data governance difficulties and solutions, it is necessary to clarify what constitute those charged with governance.

The Perspective of the *Guidelines for the Data Governance of Banking Financial Institutions*

On May 21, 2018, CBIRC officially released the *Guidelines for the Data Governance of Banking Financial Institutions* (Yin Bao Jian Fa [2018] No.22), putting forward comprehensive requirements for banking financial institutions' data governance, of which Chapter II emphasized the composition of data governance framework. **Henceforth, data governance was no longer just the responsibility of the regulatory reporting department or IT department, but a bank-wide task involving the board of directors, senior management and personnel in charge of data collection and entry. Banks must cultivate a good data culture to promote the professional integrity of utilizing data in a compliant and scientific manner.**

Figure 6: Guidelines for Data Governance of Banking Financial Institutions

The Guidelines for the Data Governance of Banking Financial Institutions

Data governance framework	Data management	Data quality control	Data value realization
1. General requirements	1. Data strategy making	1. Quality control requirements	1. Data value realization requirements
2. Duties of the Board of Directors	2. Data management regime	2. Business regime - quality control methods	2. Risk management effectiveness
3. Duties of the Board of Supervisors	3. Regulatory statistics regime	3. Technical tools - quality control methods	3. Risk monitoring
4. Duties of the senior management	4. Data standards	4. Daily monitoring	4. Data aggregation capabilities
5. Centralized management department	5. Information statistics	5. Inspection regime	5. Risk reporting
6. Business department	6. Regulatory statistics system	6. Assessment	6. Risk pricing
7. Post setting	7. Data sharing	7. Rectification regime	7. Major acquisitions and divestitures
8. Team building	8. Data security	8. Regulatory data reporting	8. New product evaluation
9. Data culture construction	9. Data storage	9. Regulatory data quality monitoring	9. Customer marketing
	10. Contingency plans		10. Business process optimization
	11. Self-assessment mechanism		11. Business innovation
	12. Data governance accountability mechanism		12. Internal control evaluation regime

The perspective of regulatory statistics quality governance

In 2020, CBIRC issued the *Circular on Special Governance of Regulatory Data Quality (Yin Bao Jian Ban Fa [2020] No. 45)* to carry out special governance of regulatory data quality. The supporting document Regulatory Statistics Quality Assessment Template issued by local CBIRC offices contained five major assessment elements, i.e., 1) organizational structure; 2) regime construction; 3) system support and data standards; 4) data reporting, storage, sharing and application; and 5) data quality control. The primary elements—**organizational structure and regime construction** are "governance"-related elements. The detailed assessment rules under each element provided a clearer basis for banking financial institutions to implement CBIRC's regulatory data governance requirements.

Figure 7: Assessment Elements of the Regulatory Statistics Quality Assessment Template

Assessment elements		Assessment principles
A. Organizational structure	1	Organizational leadership
	2	Department responsibilities
	3	Post setting
	4	Team building
B. Regime construction	5	Regulatory data management regime
	6	Regulatory data Business regime
	7	Source data Regime requirements
C. System support and data standards	8	Underlying system
	9	Regulatory data system
	10	Data standards
D. Data reporting, storage, sharing and application	11	Data reporting
	12	Data storage
	13	Sharing & applications
E. Data quality control	14	Regulatory data Quality control
	15	Source data Quality control
	16	Supervision & inspection
	17	Organizational rectification
	18	Examination & evaluation

Deloitte's perspective

Regulatory data governance is a bank-wide task, and an effective organizational structure is a solid guarantee. To attain strategic data goals, it is essential to build a systematic organizational structure, clarify responsibilities, and foster a good cultural atmosphere.

Deloitte has been long focusing on financial sector data and regulatory data governance services, accumulated rich experience in banking financial institutions' regulatory data governance, and generated an effective regulatory data governance framework and methodology. Combining regulatory requirements, industry practices, and Deloitte's methodology, we suggest those charged with regulatory data governance consisting of:

Figure 8: Deloitte's Value-oriented Regulatory Data Governance Framework

Regulatory data governance

Top-level design

- Data strategy: Strategic positioning; Strategic planning
- Organizational structure: Organizational leadership; Department responsibilities; Post setting; Team building
- Data liability: Data authority; Data responsibility
- Examination & evaluation: Examination & evaluation; Incentive & accountability; Supervision & rectification
- Data culture: Data culture; Team building

Regulatory data applications

- Regulatory policy interpretation & forecast
- Early warning of business compliance risk indicators
- Forward-looking guidance on operation and development

Regulatory statistics management

- Regime construction: Regulatory data management regime; Regulatory data business regime; Source data regime requirements
- Data standards: Source system standards; Reporting data standards; Bid-losing management
- Data quality: Regulatory data quality; Source data quality; Closed-loop quality management
- Reporting & storage: Data reporting; Data storage; Statistics filing
- Data security: Data classification; Data masking

Enterprise-level data governance

- Data architecture and sharing management
- Data asset management
- Data model management
- Data standards management
- Data quality management
- Master data management
- Data security management
- Metadata management
- Data application

System support

- Source system construction
- Unified regulatory data mart
- Unified regulatory reporting management portal

Recommendations for building high-quality regulatory data governance systems

Financial institutions can follow the regulatory trends and the principle of application-oriented data governance to start from regulatory statistical data and expand to all data domains, to achieve the goal of two-way empowerment of data governance and regulatory statistics management.

Top-level design: improve regulatory data governance decision-making and build unified collaborative governance architecture for the head office and branches

Regulatory data governance is a bank-wide task, and an effective organizational structure is a solid guarantee. To achieve the strategic goals, it is fundamental to build a systematic organizational structure and clarify responsibilities.

However, banks face practical challenges in building a good regulatory data governance structure and establishing a centralized management department to avoid cross-system statements governance difficulties, buck-passing among departments, and uneven resources investments and optimize workflow and efficiency.

Improve regulatory data governance decision-making

According to regulatory requirements, legal representatives assume the ultimate responsibility for regulatory statistics. Regulatory data governance is related to business compliance and development, which requires systematic decision-making. The four major state-owned banks, joint-stock banks and some city commercial banks have established data management (governance) committees or Fintech and digital construction committees to review data governance work, with the banks' presidents serving as the committee chairmen. We believe it is essential to build a systematic decision-making mechanism and improve the senior management' hierarchical decision-making considering the complex regulatory reporting and other complicated data application scenarios and issues as well as the correlation between regulatory data governance and business compliance.

Increase resources investment in the centralized management department and build a team of regulatory statistics professionals

Regulatory statistics work is defined as the various statistical activities conducted by banks and insurance institutions to implement relevant regulatory requirements. Thus, the regulatory statistics centralized management department is entrusted with comprehensive management responsibilities. The centralized management department should investigate, collect, organize and analyze the institution's operation and management data and provide statistical information, consulting and supervision opinions, which is a great challenge to its comprehensive abilities and staffing. To meet the regulatory statistics requirements, all banks and insurance institutions should consider investing more resources in the centralized management department and the regulatory statistics team.

Ensuring the centralized management department's right to know, investigate, inspect and analyze statistical data and giving it the responsibilities to evaluate, inspect, participate in performance assessment, and find out who to hold to account and give incentives help it play a high-quality supporting role in regulatory statistics management.

More and more banks chose to set up a separate data department to conduct centralized management of data-related work. Another common practice is designating a business department or the technical department to be the "centralized management department". Different centralized management department practices have varied advantages and disadvantages, and banks should find the optimal solution according to their actual situations. The common ways of setting up a centralized management department and the relevant advantages and disadvantages are as follows:

Figure 9: Different Modes of Centralized Management Departments

Modes of banks and insurance institutions' centralized management departments of regulatory statistics

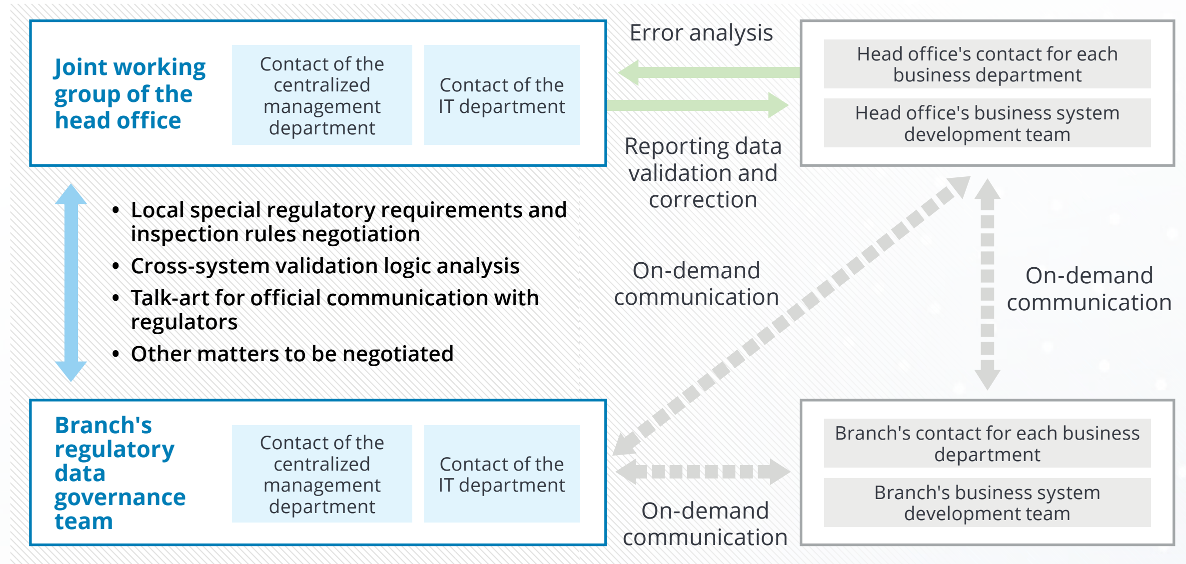
	Finance and accounting department	Technical department	Separate data department
Advantages	• Understand businesses and be more familiar with the traditional regulatory statistics work • Efficiently advance its and business departments' regulatory data reporting	• Easy to promote technology-demanding management work such as regulatory reporting system construction • More likely to embrace new technologies and management methods	• Have data governance and regulatory data-related functions to meet the requirements of regulatory guidelines and enhance the bank's data effectiveness, thus avoiding repeated construction work • An independent data department reflects the institution attaching importance to data application, regulatory reporting, and data management in the data era
Disadvantages	• Difficult to advance technology-demanding management work • Insufficient understanding of data applications—limited to report preparation	• Difficult to understand and address the business logic and business pain points of regulatory reports	• More cross-departmental coordination • Require stronger awareness of data culture within the bank

Generally speaking, how long it takes to establish a centralized management department dependeds largely on the decision makers' determinedness to regulatory data governance, indicating that decision makers should attach importance and allocate adequate resources to it. In addition, an effective and well-functioning centralized management department takes time to experiment, review, reflect and adjust, requiring concerted efforts of the entire bank.

Unify the organizational structure and normative responsibilities of supervision data management at the general branch level, establish a collaborative mechanism of the head office, branches and sub-branches

Another governance challenge lies in the collaboration of the headquarters, branches and sub-branches. In the past, regulatory data governance was generally undertaken by the head office, thus branches and sub-branches were inexperienced. There was no bank-wide unified governance architecture. As regulatory inspections become more frequent and involve branches, all branches must **establish an organizational structure and clarify responsibilities for regulatory data management in accordance with the regulatory requirements** to **form a collaborative mechanism of the head office, branches and sub-branches. Branches should actively strengthen communication with local regulators, develop the ability to independently analyze and detect regulatory data quality problems, seek timely assistance and support from the head office, promote a collaborative work mechanism with the head office, and solidify the closed-loop management processes of data quality monitoring and rectification.**

Figure 10: Head Office and Branches' Collaboration Mapping

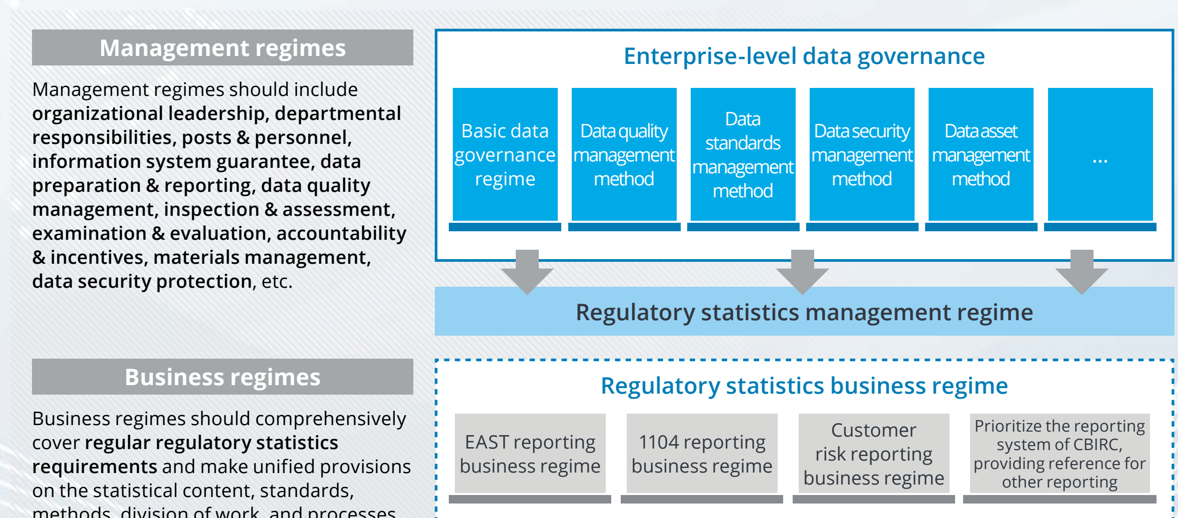


Regulatory data management: unified regimes, processes and examination & evaluation; high-quality closed-loop regulatory reporting management

Unified regimes and processes

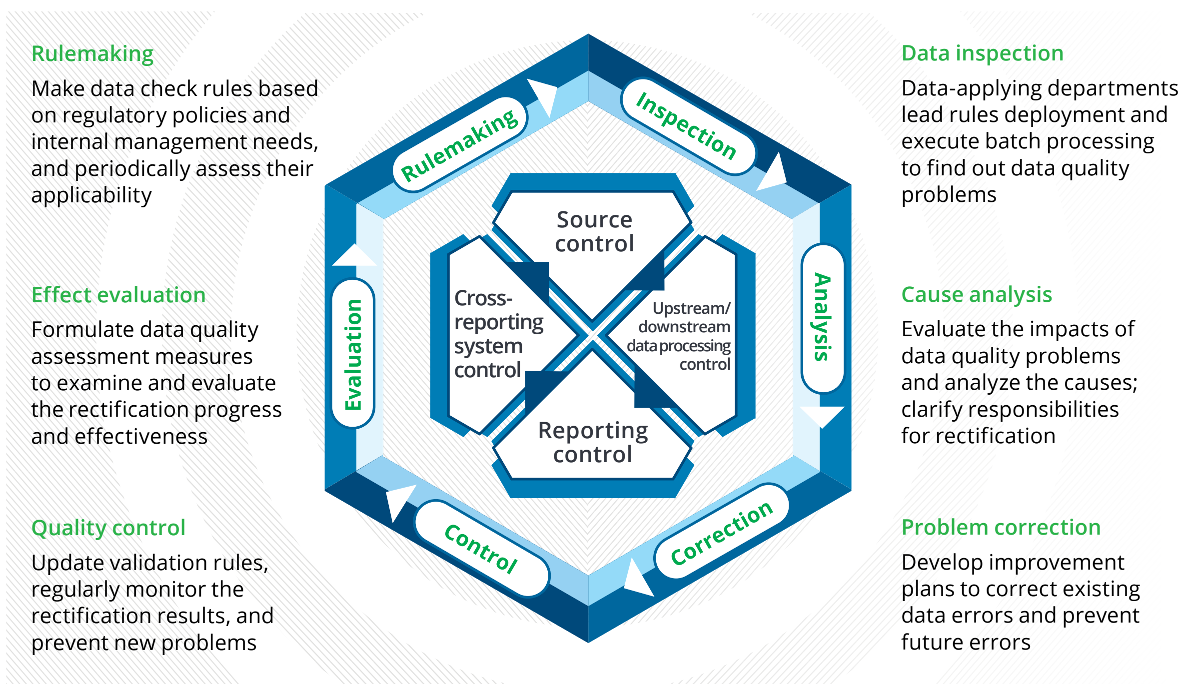
Financial institutions should timely sum up the experience and requirements of regulatory data governance and statistics reporting management, and gradually accumulate and solidify internal management regimes of regulatory statistics as well as business regimes and management processes for all regulatory reporting systems to meet the regulatory requirements.

Figure 11: Regime Development: Internal Management and Business Regimes Meeting Regulatory Requirements



Solidify the high-quality closed-loop regulatory reporting management
Financial institutions should establish a whole-process regulatory data quality management mechanism, covering data source management, daily monitoring, supervision & inspection, problem rectification, and examination & evaluation and clarifying the data quality responsibilities of all relevant departments at each link, to achieve closed-loop management of regulatory data quality. Banks and insurance institutions should conduct data quality control throughout the data generation links, and establish compound quality checkpoints to cover internal and external key indicators. At present, many institutions take ex post inspection as the primary data quality control means—such passive management makes it difficult to enhance data quality. They should place equal emphasis on regulatory statistical data and source data to continuously improve the overall quality.

Figure 12: Closed-loop Control of Regulatory Data Quality



Unify examination and evaluation criteria
Banks and insurance institutions should consider their management status and needs to lay down a regulatory statistics assessment, accountability and incentive mechanism. It is recommended to use the weighted average of qualitative, quantitative and bonus-point indicators and assess the head office, branches as well as their leaders and employees. The assessment indicators should contain bonus-point and deduction items to incentivize and press relevant departments and people. An incentive mechanism should be applied to the business departments that actively add check rules, make data quality improvement suggestions, and have satisfactory rectification results.

Enterprise-level data governance: solidify enterprise-level data asset management and enhance data element flow efficiency within the enterprise

Solidify the data asset management system

The data standards, data security, data quality, master data, and data lifecycle management system should be continuously improved for enterprise-level data asset items to provide a good foundation and guarantee for regulatory data governance. In addition, the upstream and downstream links of regulatory reporting data should be clear to maintain credible company-wide regulatory data assets.

Determine the rights for underlying data assets

The underlying data items of data assets have relatively clear definition, authoritative sources, management, and technical attributes; thus, it is easier to confirm accountability for these data items compared with indicator data. Financial institutions may start from the underlying data to confirm accountability. The primary responsible department is usually "the business department most capable of managing the data", which is often the underlying data-generating department that has absolute power to interpret business standard definitions, system input, daily monitoring, and problem governance and can provide the most authoritative explanations for underlying data problems.

Stick to source data governance

According to the regulatory requirements, internal basic business and management systems and other information systems should contain all business and management data necessary for regulatory statistics. The source systems are the key to thoroughly solve data quality problems. Financial institutions should persistently enhance the automation capabilities of the source systems, advance implementing the regulatory data check standards in business systems, intensify applying the regulatory data standards to the source systems, improve their data element standards and quality, and continuously enhance the data element flow efficiency within the enterprise.

Technical support: consolidate a unified regulatory data and technology base and maintain intensive daily operations of regulatory data

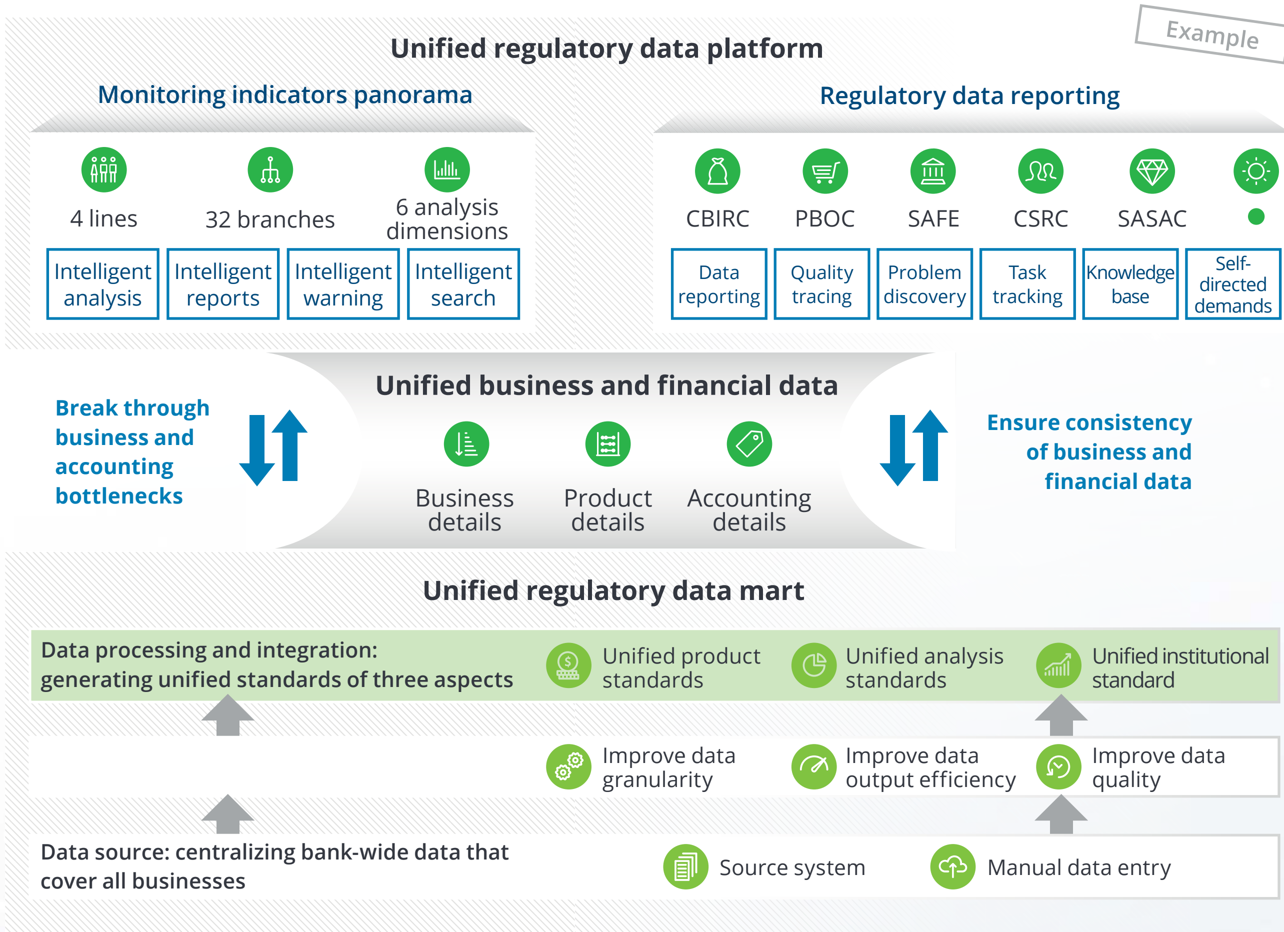
Consolidate a unified regulatory data and technology base

According to the regulatory requirements, financial institutions should establish an information system that meets the regulatory statistics needs and improve digitization. In actual management, some financial institutions still have stove-piped reporting systems with the drawbacks of unconnected underlying data and varied system management functions.

We suggest financial institutions connecting the underlying detailed data and indicator data on the technical base and building a unified regulatory data mart or platform to realize one source for multiple systems and unify the business and accounting data, thereby providing the basis for ensuring business and finance consistency.

Regarding management functions, financial institutions should create a unified regulatory data portal for the head office and branches' regulatory reporting and data management personnel to include functions such as regulatory data rights determination, data reporting, data quality management, data tracing, problem management, filing management, and regulatory indicators monitoring.

Figure 13: Unified and Highly Reliable Regulatory Data and Technical Base



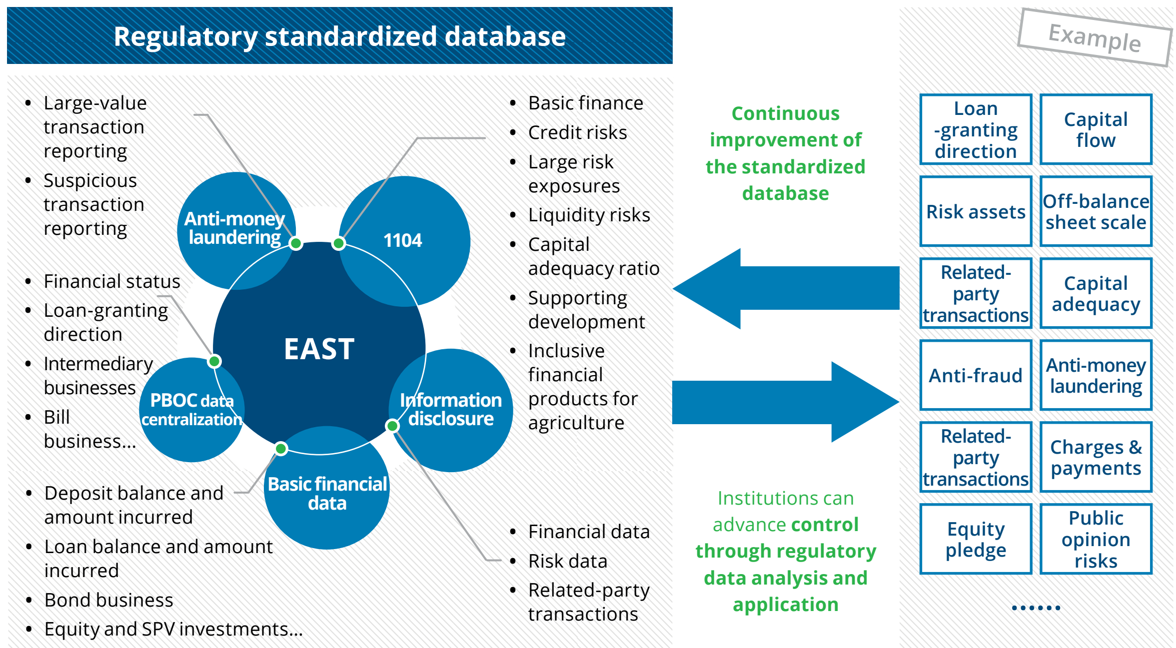
Intensive daily operations of regulatory data

We also suggest applying AI and other technologies in regulatory data development, daily operations, quality management, and reporting management, to integrate decentralized technical resources and achieve intensive daily operations of regulatory data.

Regulatory data value realization: integrated regulatory data analysis and application capabilities to realize regulatory data value

The requirement of fully realizing the value of regulatory statistical data will drive regulatory statistics to transform from "cost center" to "value center". As the data used for regulatory statistics feature good control, high reusability and analyzability, and favorable conditions for transforming data into knowledge and laws, they can provide an objective and scientific basis for banks and insurance institutions' operation and management, daily management of assets and liabilities, and compliance risk control and forecasting, contributing to optimized decisions. Realizing the value of regulatory statistics will also lead to a virtuous cycle of regulatory statistics management to support continuous improvement of data quality.

Figure 14: Integrated Regulatory Data Analysis, Application and Modeling



Deloitte has accompanied many well-known domestic and foreign banks and insurance institutions through the evolutionary journey where regulatory data shifted from "poor traceability and disorderly management" to "clear source, high quality, and systematic management", witnessing the introduction of good standards, banking financial institutions' regulatory data regulations, data governance guidelines, and regulatory statistics management measures. By leveraging our years of service experience and professional, forward-looking industry insights, we customize solutions for clients, helping them lay a solid foundation for regulatory data governance, construct systems and regulatory statistics management and operation models, implement regulatory data standards, design multi-level data quality check rules, build unified regulatory data marts and platforms, and develop intelligent regulatory data applications, thereby facilitating their regulatory statistics value transformation.

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4.7

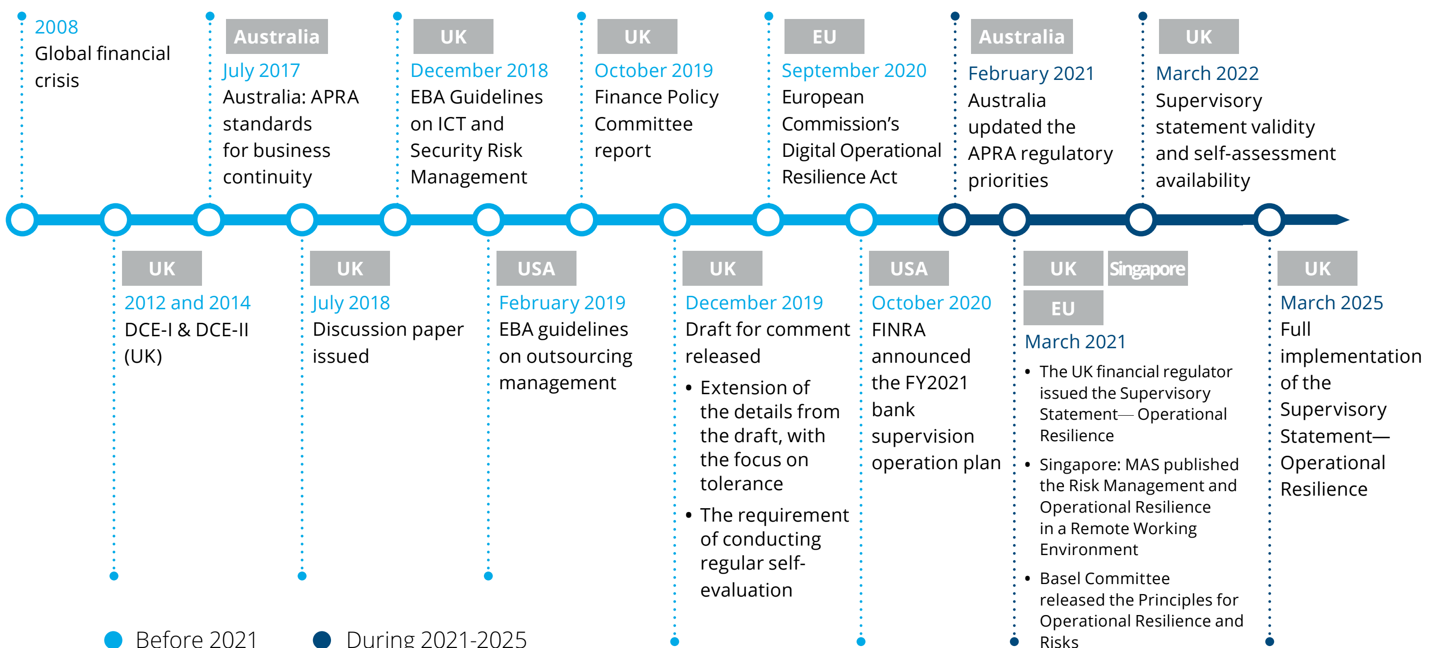
Playing to the score: banks' operational resilience in response to the new landscape

Regulatory background

After the global financial crisis, regulators paid attention to how financial institutions' operation models deliver stable services amid emergencies. The significance of operational resilience was highlighted during the COVID-19 epidemic, prompting global regulators to put forward clearer requirements and guidance on operational resilience. Compared with financial issues, regulators are more vigilant about the risk that operation disruptions may pose a serious threat to the financial service sector's stability and robustness. Therefore, financial institutions must deal with the increasingly strict regulatory review of operational resilience and adapt their financial service operation models to this situation.

Regulators have continuously introduced new requirements and principles for operational resilience since 2020, aiming to help financial institutions better understand the impact of "severe and likely" disruptions on their business operations, and spur financial institutions to take actions to enhance the primary or key services' resilience in the face of such threats, to better adapt to the constantly changing risk situations.

Figure 1: Global Operational Resilience Landscape Evolution Since the 2008 Financial Crisis and Key Future Time Nodes



In September 2020, the European Commission (EC) published the Digital Operational Resilience Act, which regulated the digital operational resilience management of credit institutions, payment institutions, e-money institutions, investment firms, investment fund managers and management companies, insurance and reinsurance companies, insurance intermediaries, and credit rating agencies, with requirements for governance, ICT risk management, ICT incidents reporting, digital operational resilience testing, ICT third-party risks, and information sharing.

In November 2020, the Fed, OCC, and FDIC jointly issued an interagency paper on *Sound Practices to Strengthen Operational Resilience*, which sought to provide firms with ways to strengthen their operational resilience in the face of internal and external operational risks. This paper brings together the existing regulations and guidance in one place to assist in the development of comprehensive approaches to operational resilience. It also highlights the importance of operational resilience with respect to firms' critical operations and core business lines, and provides specific guidance on governance, operational risk management, business continuity management, third-party risk management, scenario analysis, secure and resilient information system management, and monitoring & reporting.

In February 2021, APRA mentioned in the article *COVID-19: A Real-world Test of Operational Resilience* that operational resilience is typically facilitated by shock management mechanisms, oversight, decision-making and planning for maintaining the effectiveness of these operational controls, and key disciplines for ensuring the design and operating effectiveness of operational controls.

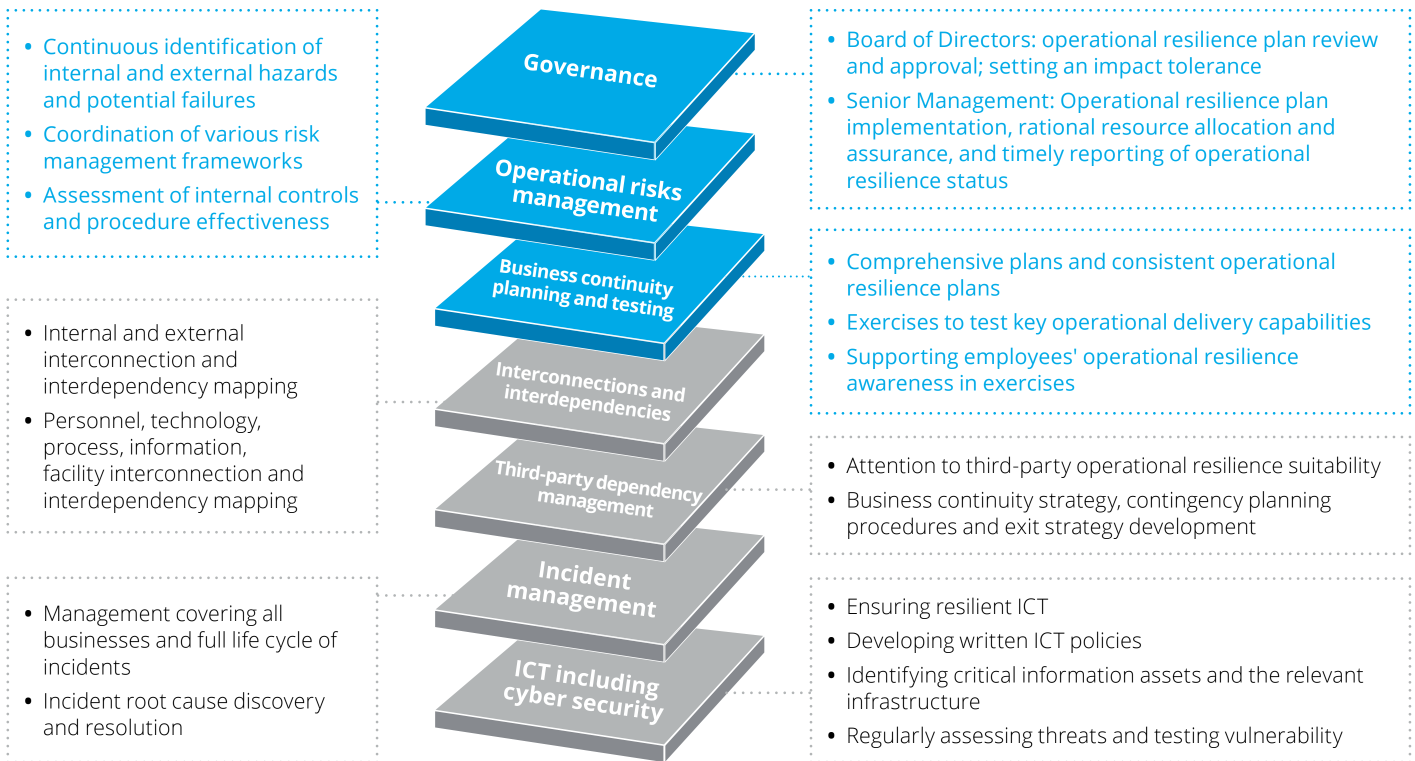
In March 2021, PRA focused on the operational resilience banking institutions and financial market infrastructure institutions needed to deliver important business services to external stakeholders (e.g., customers, counterparties, or the entire financial market), and published the Supervisory Statement—Operational Resilience, specifying five key steps to enhance operational resilience, i.e., identifying important business services, mapping internal and external resources, setting an impact tolerance, executing scenario-based stress testing, and conducting self-assessments. Institutions were demanded to meet corresponding requirements before March 2025.

In March 2021, MAS published the *Risk Management and Operational Resilience in a Remote Working Environment,* which elaborated on the risks brought by remote working and operational resilience management requirements from the following aspects: changes in control environment, outsourcing and other third-party arrangements, business continuity management, information governance, cybersecurity, IT assets management, fraud, staff misconduct, compliance & regulation, and impact of remote working on people and culture.

In March 2021, BCBS issued the Principles for Operational Resilience. The Committee's principles are organised across the following seven categories: governance; operational risk management; business continuity planning and testing; mapping of interconnections and interdependencies of critical operations; third party dependency management; incident management; and resilient ICT, including cyber security.

In October 2021, IOSCO updated the Principles on Outsourcing, elaborating on financial institutions' greater reliance on outsourcing and seeking to address the impacts of COVID-19 on outsourcing and operational resilience.

Figure 2: BCBS' Principles for *Operational Resilience*



Source: Deloitte's summary and collation

In December 2021, HKMA developed the regulatory policy on operational resilience management based on the operational risk management framework. The *Supervisory Policy Manual: OR-2 Operational Resilience* clarified the board and senior management's responsibilities, specified operational resilience parameters, and plotted the interconnections and interdependencies of critical operations; it also elaborates on preparing for and managing the various risks to critical operations delivery, testing the ability to maintain critical operations under severe but plausible scenarios, and the ability to respond to and recover from incidents. Financial institutions must meet those compliance requirements before May 31, 2026.

Generally, we should pay attention to the following international and Hong Kong regulatory environment evolution trends:

- Regulators pay more attention to **financial resilience** with the focus on capital adequacy and liquidity, in the meantime begin to emphasize operational resilience that must be guaranteed by operational risk management systems;

- The emphasis was on **prudent operation** after the financial crisis, but is on **operational resilience** in the current environment—this shift reflected the requirement of **continuous delivery** under **continuing operation**;

- Under the impact of the crisis, in addition to capital and liquidity recovery, responses have expanded to technology and third-party relationship support. Next, more attention will be paid to **new forms of risks**.

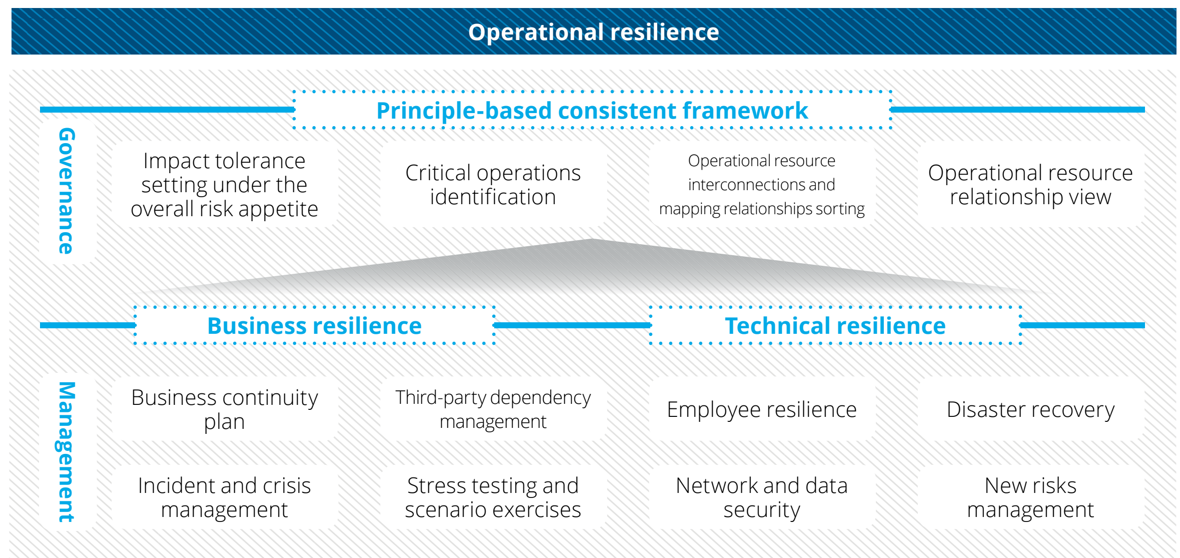
Over the past ten years, domestic regulators have introduced various regulatory guidelines and industry standards, including the *Guidelines for Operational Risk Management of Commercial Banks*, the *Guidelines for Commercial Banks on Management of Information Technology Risks*, the *Guidelines on the Supervision over Business Continuity of Commercial Banks*, the *Regulatory Measures for Risks in the Outsourcing of Information Technology by Banking and Insurance Institutions*, and the *Administration Regulations for Information System Disaster Recovery of the Banking Sector*, to guide banking financial institutions to gradually build a sound risk management system to enhance their ability to address risks. The recently released *Measures for Operational Risk Management of Banking and Insurance Institutions (Second Draft for Comment)* clarified the business continuity and operational resilience requirements in Article 29 and 30, aiming to help the institutions maintain the ability to continuously provide critical services for customers.

Deloitte's operational resilience framework

It can be seen from domestic and international regulatory requirements that operational resilience is not a new and separate management system, but a capability built based on effective operational risk management. In particular, business continuity management, third-party service management, technical infrastructure management, incident management, and cybersecurity are critical considerations for enhancing operational resilience.

Deloitte suggests enhancing the overall operational resilience from an institution-wide unified perspective and building an operational resilience system with consistent governance cores, clear management process, and synergistic business and technical resilience, to ensure consistent implementation of the existing risk management framework, business continuity plans, and third-party dependency relationship management.

Figure 3: Operational Resilience and Correlation with Other Management Areas

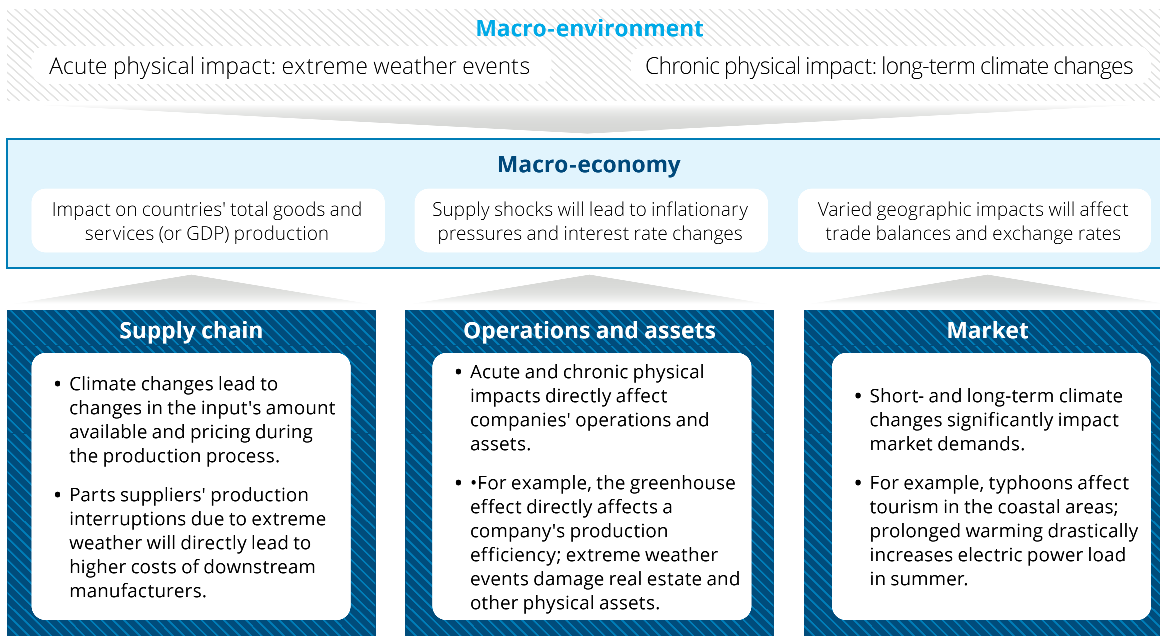


In addition, the consistent design at the governance level and the specific elements implementation at the management level must consider new scenarios' impacts on the operational resilience system and countermeasures when the internal and external environments change, so as to form a management closed-loop adaptable to changing times and circumstances. We will examine the methods for updating the operational resilience system through the typical scenarios of climate risks and IT application innovation in the following section.

Climate risks

According to the estimation in the World Economic Forum's Global Risks Perception Survey 2022-2023, the top four of the most severe ten global risks over the next decade are climate action failure, climate adaptation failure, natural disasters and extreme weather events, and biodiversity loss and ecosystem collapse. Obviously, climate risks will have enormous and far-reaching impacts on the macro-environment.

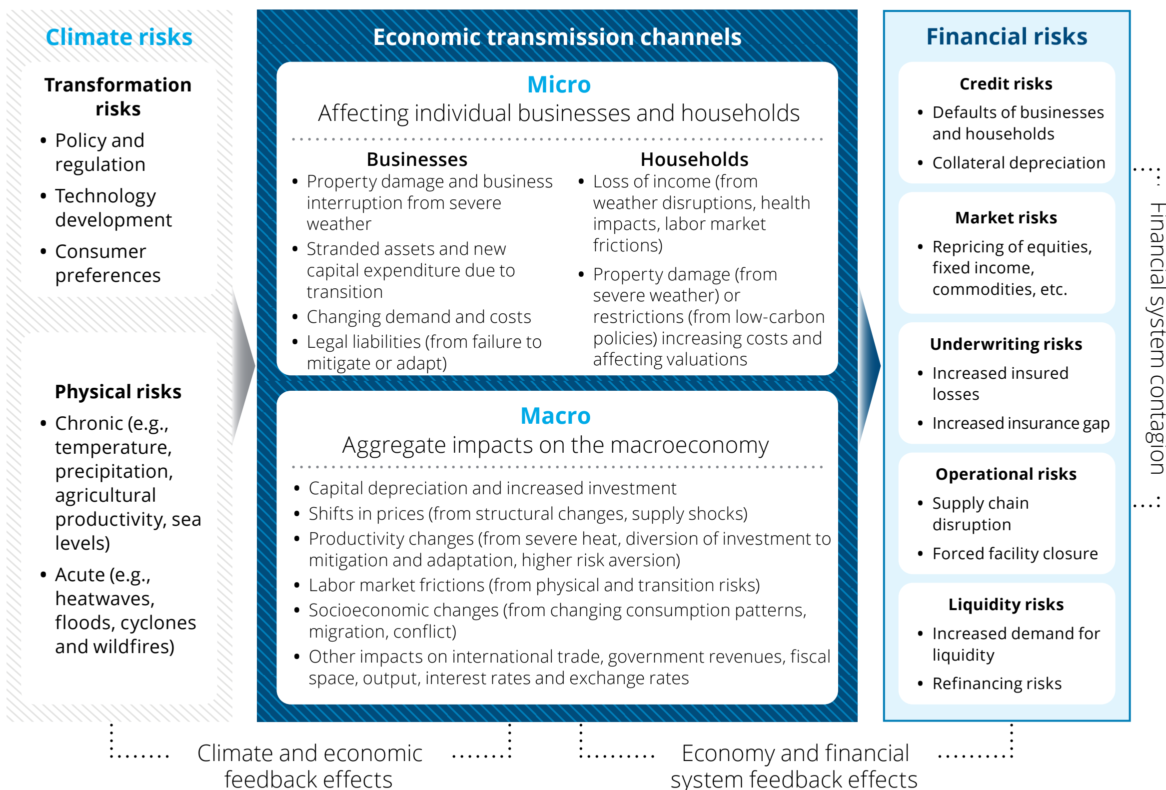
Figure 4: Climate Risk Impacts



Source: Deloitte's summary and collation

Operational resilience management against climate risks may focus on stress testing—a good entry point for financial institutions to exploit their macroeconomic stress testing capabilities.

Figure 5: Climate Risk Transmission Channels



Source: NGFS2020

Deloitte explored thoroughly to generate a full suite of climate risk stress testing solutions based on the UNEP FI's climate stress testing framework. The key links of climate stress testing include:

- **Portfolio analysis**: Deloitte relies on the climate risk analysis tool ClimWise to conduct heat map analysis of banks' business lines and assess the impacts of specific climate scenarios on industries, regions and durations to show the portfolio's climate risk concentration, thereby deciding the business scope and types for climate risk stress testing.

- **Scenario expansion**: Regulators (especially in the developed economies) may provide some scenarios and data for enterprises. For example, following the Paris Agreement, NGFS has designed six climate scenarios with the scenario assumptions based on varying degrees of temperature rises, providing the data output results of the integrated assessment models (IAMS) and macroeconomic models in each scenario. Deloitte has integrated, analyzed and pre-processed the scenarios and data provided by NGFS to help financial institutions deploy data applications.

- **Financial impact assessment**: Build risk transmission models based on the decided climate stress testing scope and climate scenarios. Deloitte applies the demand-supply equilibrium theory of microeconomics and examines the supply and demand elasticity to assess the impacts of carbon price rises (and energy investments) on profits. The extra costs caused by carbon prices and taxes are incorporated to build a carbon elasticity model; The extra carbon costs are incorporated in the market equilibrium equation to obtain scenario impacts on costs and revenue, further transmitting the risk impacts to the key financial indexes of banks' internal rating models.

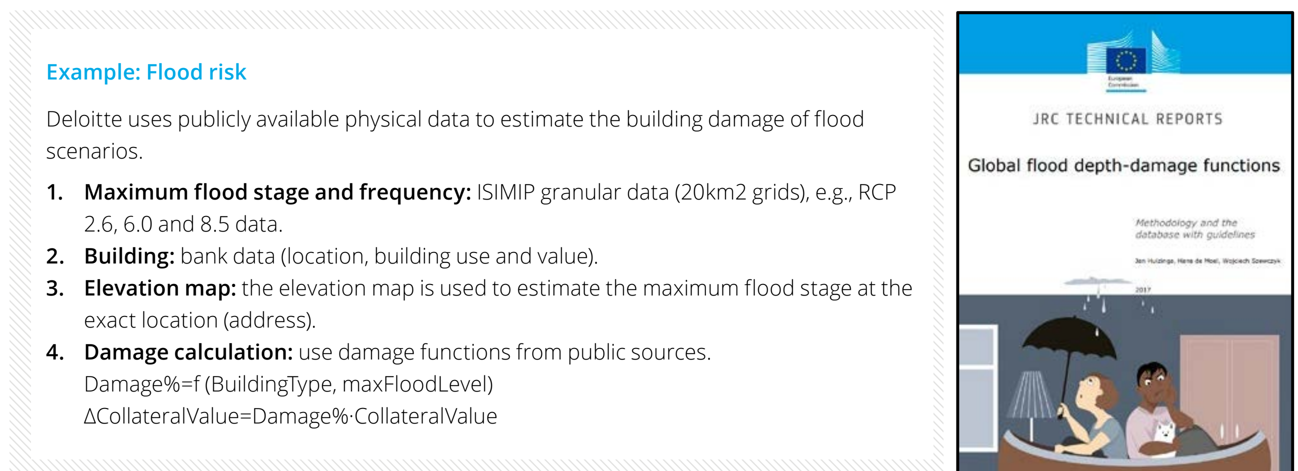
- **Risk indicator measurement**: The Vasicek model is a lifecycle ECL model widely applied in the financial sector under the IFRS 9. We calibrate the Vasicek model to augmented climate scenarios using the climate stress testing methods and consider carbon shock elements. We achieve stable portfolio level calibration of the model based on the sensitivity of portfolio level to carbon costs and portfolio-level carbon intensity, thus outputting the final risk measurement indicators (such as default rate, loss from default, expected loss, and valuation changes) under carbon shocks.

- **Implementation stress testing and calibration**: Collect testing data, conduct stress testing based on the established risk transmission models, and output the testing results. To avoid overlap of top-down and bottom-up analyses and ensure consistency of the assumptions, the basic methods and final results of climate risk stress testing should be calibrated.

Example: flood risk stress testing

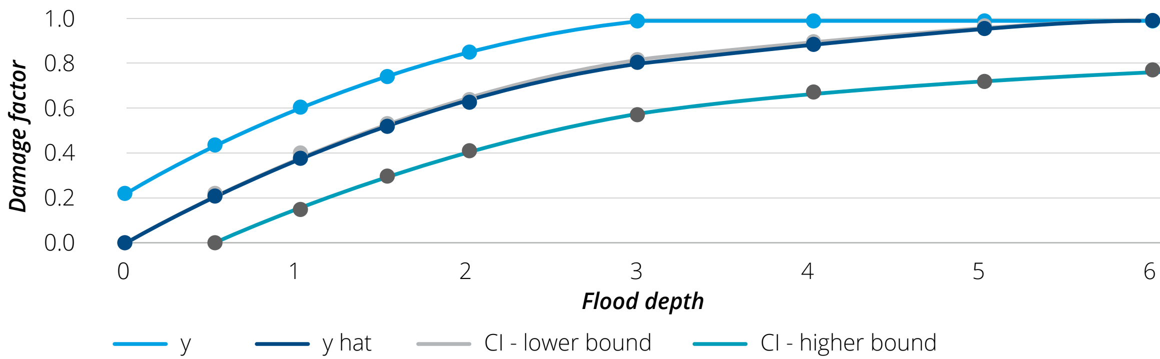
Buildings are an important part of a bank's operational resilience resources. Deloitte has recently implemented the climate stress testing methodology for physical risks, utilizing the public data provided by ISIMIP (Inter-Sectral Impact Model Intercomparison Project) and CIE (the Climate Impact Explorer) and the CLIMADA framework (an open-source climate risk assessment model developed by the University of Zurich) to calculate impacts. Detailed public data can be used to estimate building losses on 20 sq.km. grids in the flood scenario.

Figure 6: An Example of Flood Risk Stress Testing


Example: Flood risk

Deloitte uses publicly available physical data to estimate the building damage of flood scenarios.

1. **Maximum flood stage and frequency:** ISIMIP granular data (20km2 grids), e.g., RCP 2.6, 6.0 and 8.5 data.
2. **Building:** bank data (location, building use and value).
3. **Elevation map:** the elevation map is used to estimate the maximum flood stage at the exact location (address).
4. **Damage calculation:** use damage functions from public sources.
   Damage%=f (BuildingType, maxFloodLevel)
   ΔCollateralValue=Damage%·CollateralValue



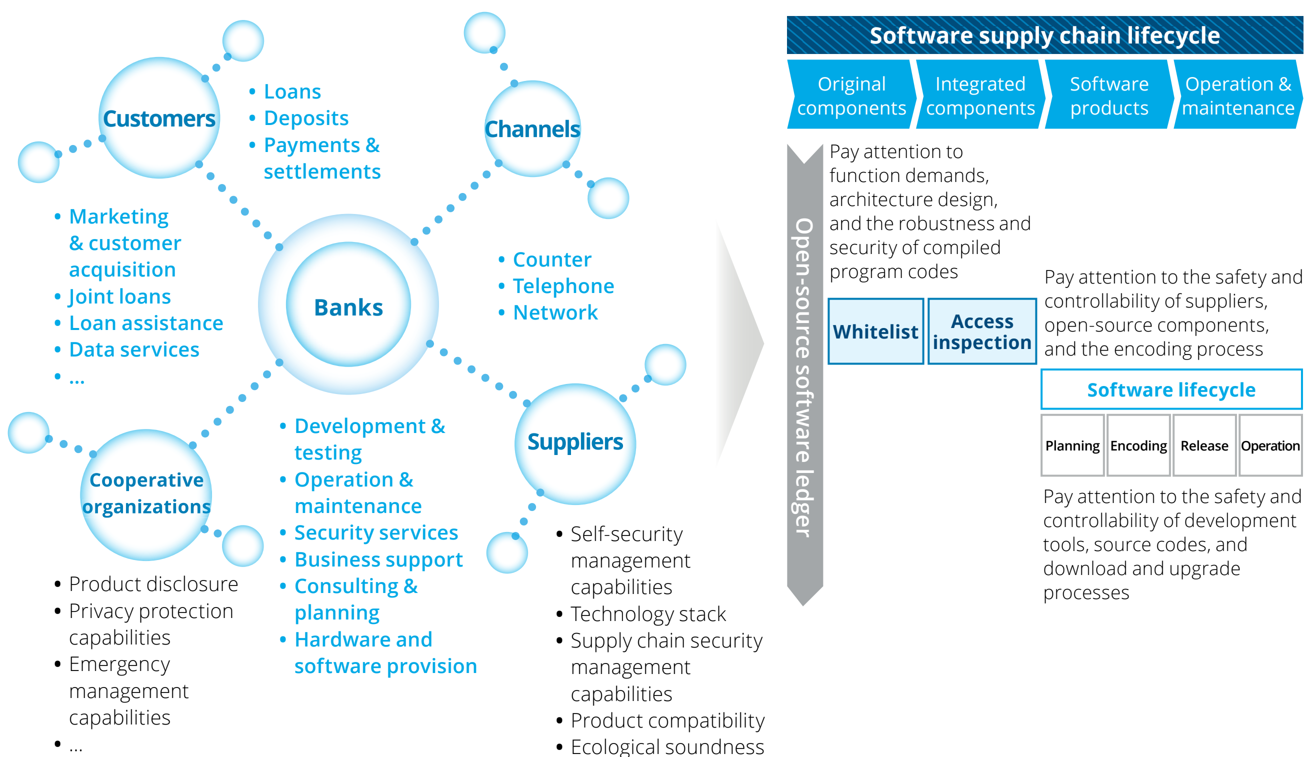
Information technology application innovation

In 2014, regulators issued the *Guiding Opinions on Applying Safe and Controllable Information Technology to Strengthen Cybersecurity and Information Technology Application of the Banking Sector*, embarking on the innovative application of information technology in the banking sector. With the introduction of *the "14th Five-Year" Plan for the Development of the Digital Economy, Financial Technology (Fintech) Development Plan*, and *Guiding Opinions on the Digital Transformation in Banking and Insurance Sectors*, information technology application innovation in the financial sector has gradually expanded from pilot projects to large-scale implementation.

IT application innovation in the banking sector has been progressively implemented in the integrated office system, operation management system, IT infrastructure, and production operation system, covering various types of basic hardware and software and application software. During this process, the interconnections and mapping relationships between operation resources must be clarified regularly to ensure rapid detection and response to disruptions.

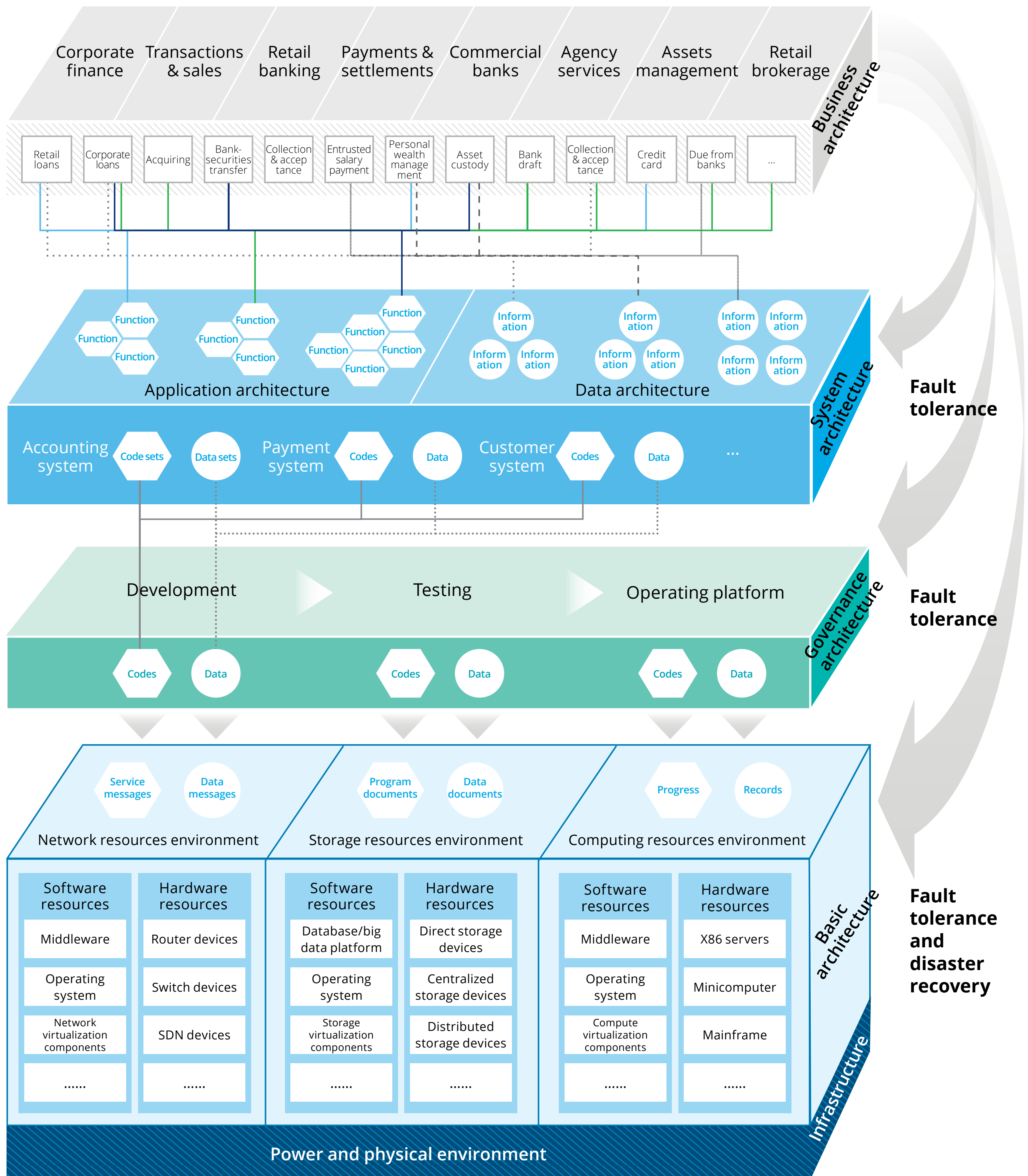
External association relationships: as an important part of the supply chain ecosystem, banks determine the demand-side services and channels, and in the meantime scrutinize suppliers' and cooperative organizations' service types, security management capabilities, emergency management capabilities, technology stacks, and ecological maturity, paying special attention to the elements and nodes in the software supply chain life cycle that may cause business disruptions.

Figure 7: External Association Relationships—Supply Chain Nodes



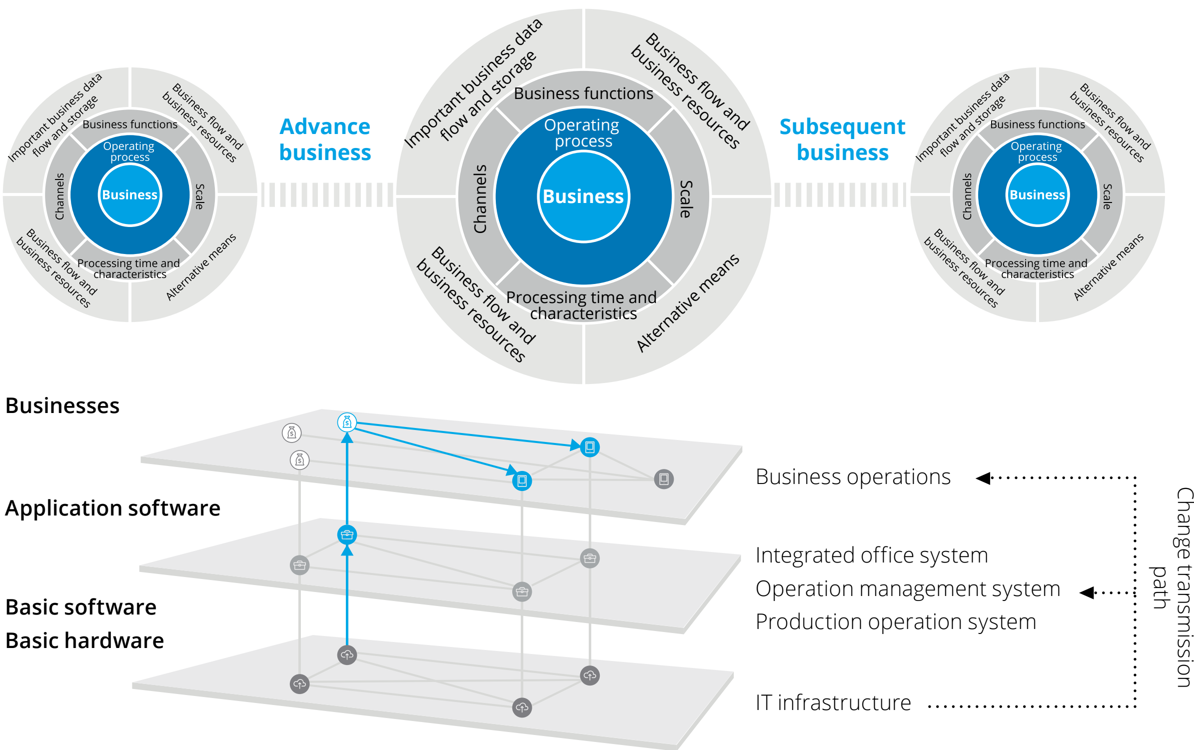
Internal association relationships: Banks' own resources are interconnected to support their operations. An association relationship graph can be developed by deconstructing the application architecture, data architecture, infrastructure, security architecture and governance architecture and analyzing businesses' preorder and postorder relationships and the relationships between businesses and resource nodes.

Figure 8: Internal Association Relationships—Internal Resource Nodes



Businesses as the key points to connect internal and external relationships: businesses' preorder and postorder relationships and the relationships between businesses and resource nodes string internal resources and external financial services to form an end-to-end operational resource relationship graph. Therefore, banks can timely assess the impacts on critical operations and take countermeasures when any resource node changes.

Figure 9: Banking Sector's IT Application Innovation and Change Transmission Path



How to enhance institutions' operational resilience in VUCA (volatility, uncertainty, complexity and ambiguity) scenarios is a critical issue of concern for enterprises, especially banks. Enterprises should accumulate highly available operational resources of strong disaster recovery capacity, and regularly update and stage exercises on the resources to maintain operational resilience.

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4.8

Pursuing excellence: Chinese banks' digital transformation in risk reporting

The 2008 financial crisis exposed major issues in banking management information systems. For example, it took several days or longer for many global banks to aggregate a single counterparty's risk position; banks lacked accurate data to understand their investment portfolios and risk exposure. However, in practice, especially in a crisis, banks must conduct multiple times of risk aggregation for several counterparties or portfolios in one day. Such risk aggregation information is crucial for senior management to make appropriate risk decisions in daily operations, which is also essential for maintaining a stable financial system. The financial crisis urged banks to comprehensively examine and strengthen their effective risk data aggregation and risk reporting (hereinafter referred to as "Risk Data Aggregation" or RDA) capabilities.

The Basel Committee on Banking Supervision (BCBS) has put forward a complete set of improvement suggestions and principles under the Financial Stability Board's framework to improve banks' RDA capabilities. As a member of BCBS, China's regulators also attached great importance to implementing these principles. China's G-SIBs and D-SIBs were required to carry out relevant work over the past few years and achieved remarkable results.

It is worth noting that RDA is a mandatory requirement for SIBs, a capacity that regulators hope large banks to build, and an inherent requirement for banks to make accurate, effective, and foresightful risk management decisions. Banks are expected to improve in the **following aspects** through developing RDA capabilities.

This chapter shares the RDA capability-building requirements and practices and the significance of building such capabilities to banks' risk management and decision-makers. We suggest banks leverage RDA methods and tools to intensify the digital transformation of risk reporting.

Drivers for digital transformation of risk reporting

With complex geopolitical situations and increasing pressure on the global economy and financial sector, the banking sector faces meticulous regulatory requirements and banks' business forms are diversified, resulting in new types of risks with different natures. The complex internal and external environments require banks to strengthen forward-looking analysis of their businesses and risks, give warnings based on the latest risk reports, and prepare well for potential risks to minimize negative impacts. Therefore, **enhancing the timeliness and foresight of risk management through digital and intelligent risk reporting is an urgent issue for many banks.**

In addition, the financial crisis highlighted the importance of banks' data and IT systems in risk management and decision-making. Many global banks suffered massive losses during the financial crisis due to:

- Insufficient risk assessment and inaccurate risk data;
- Lacking comprehensive risk management strategies and effective risk warning mechanisms.

We found that the banks lacked sufficient risk data and IT systems to monitor and assess risks during the financial crisis. They had no accurate data to understand their investment portfolios and risk exposures, did not integrate risk data of different departments, and lacked data analysis technologies to predict market fluctuations and trends. These factors led to banks underestimating potential risk loss and failing to make timely and effective risk decisions. Therefore, **banks urgently need digital management and relevant infrastructure to achieve risk reporting digitalization**, which requires them to strengthen efforts in data governance, IT infrastructure, risk data aggregation, and risk reporting.

According to Deloitte's experience in digitalizing risk reporting for many large commercial banks, **the digital transformation of risk reporting requires high-quality, consistent, and reliable data support**, and one of the key measures to achieve this goal is effective risk data aggregation:

- First, effective risk data aggregation can integrate a large amount of risk data to enable banks to more comprehensively and accurately assess and manage risks. Automatic risk report generation and distribution improves banks' risk management efficiency and realizes intelligent risk management.
- Second, banks' risk management needs a mass of data. Risk data aggregation can significantly reduce data collection costs to facilitate banks' risk monitoring through massive data;
- Finally, PBC, CBIRC and other regulators are introducing relevant regulatory requirements to clarify the significance of risk data aggregation.

Significance of risk reporting digitalization to banks' board of directors

The complex business environment brings numerous risks and increasing uncertainties to banks' daily operations. Meanwhile, regulators require banks' shareholders to perform their responsibilities. Therefore, **a comprehensive, timely, accurate, and forward-looking risk report** is essential for the board and senior management to understand the bank's risk management status and make timely and accurate management decisions. In conclusion, RDA promotes banks' standardized and intelligent risk reporting and helps the board and senior management promptly and accurately identify, grasp, and prevent risks, improving the timeliness and accuracy of risk management decisions.

According to Deloitte's experience helping many large commercial banks digitalize risk reporting, an excellent digital risk report should be **"comprehensive, timely, accurate, and foresightful"**.

Comprehensive

We can conclude from domestic banks' experience that: First, the different responsibilities of various departments result in different management needs and focus areas as well as inconsistent understanding of risk data statistical standards. Second, diversified businesses often generate multiple business and management information systems, resulting in ineffective connections between different data and incomplete risk data statistics, which hinders data asset value realization and risk management improvement. For instance, the diverse groupings of the loan business have varied statistical dimensions under different regulatory and business management standards; thus, it is difficult to achieve comprehensive and accurate statistics of the loan business, data errors arise in calculating the loan business risk indicators, and banks cannot reasonably analyze the different dimensions of relevant data. Third, most domestic banks have numerous branches, including subsidiaries and overseas branches/subbranches. The subsidiaries'/branches' systems are often not connected to the head office, and the subsidiaries/branches must process and submit relevant information. Therefore, the group-wide risk data and branches' relevant data cannot be directly accessed from the head office—consequently, there is no comprehensive data support for risk management.

Promoting risk reporting digitization in banks' branches/subsidiaries and all businesses will drive the RDA transition from decentralized to centralized management. Consequently, banks' risk data summary and analysis will comprehensively cover all risk reports and data that matter to the board.

Timely

The complex global economic situations and changing macroenvironments pose higher requirements for banks to rapidly generate comprehensive risk data. Aggregating risk information in a short time (e.g., two days in crises) helps the board quickly obtain, analyze, and assess risk information to provide a timely and reliable decision basis. For instance, banks often use manual ledgers to manage small-scale emerging businesses with distinctive characteristics; the risk management statements are manually calculated and verified, which is time-consuming, thus affecting the group's RDA and risk report generation, particularly the board's strategic decision-making in crises.

Risk reporting digitalization facilitates banks' automatic risk report generation during daily management, risk indicator digitalization, and online risk monitoring, which helps the board timely identify and learn about new business opportunities to make quick decisions and drive business development. In addition, banks can quickly generate accurate and comprehensive risk reporting data in crises, timely identify the difficulties and potential losses they face, and make accurate management decisions, thus improving their risk-resistance capacity and finding opportunities amid crises. Risk reporting digitalization also meets regulators' reporting requirements, enhancing regulators' confidence in banks' risk-resistance ability.

Accurate

"Accuracy" has always been the board's core risk reporting requirement. Banks should be able to provide accurate and reliable risk data in crises to facilitate the board's strategic decision-making. However, banks often encounter various problems in daily work, such as inconsistent data calibers, unclear data standards, decentralized data management, and untimely data processing. These factors will result in incomplete risk data and statistical analysis, affecting risk reporting accuracy. In addition, as some business risk data are managed through manual ledgers, it is difficult for banks to quickly verify data in crises and guarantee accuracy.

Implementing effective RDA enables banks to clarify risk reporting's different statistical standards, eliminate data ambiguity, improve risk data accuracy and fineness, and enhance risk reporting quality, to drive the board's strategic decision-making.

Foresightful

Risk reporting digitalization is a long process of constant optimization and iteration. Banks should continuously strengthen data application in risk management to promote comprehensive digital and data-driven management, and realize data value. Many domestic joint-stock banks are at the early stage of RDA digitalization. They will carefully examine regulators' "risk data aggregation and risk reporting" requirements and learn from the large commercial banks' experience in implementing risk reporting digitalization in a phased way.

RDA helps banks promptly spot risk management issues and data management weak links and take effective countermeasures, enhancing banks' forward-looking risk warning capabilities. Some large domestic commercial banks are building risk warning models based on the initial achievements of risk reporting digitalization—they are using big data, AI and other Fintech means to improve the utilization rate of historical data and predict future risk trends, thereby improving data foresight.

Domestic leading banks' digital transformation of risk reporting

To implement effective RDA digitalization, leading domestic banks should first sort out the weak links in risk data integration, management, and application through in-depth self-analysis and alignment with industrial and regulatory standards, propose specific rectification and optimization plans, and clarify transformation goals, gaps, and paths.

Second, the banks should follow the implementation paths and rectification plans in a strategic, planned and clear division of labor way decided by the senior management to execute optimization:

- Focus on use cases—Focus on the critical decision-making content and risk indicators in the risk reports to implement digital transformation, summarize the essential indicators for decision-making, and clarify relevant definitions, criteria, processing rules, and data standards;

- Step by step—Start transformation from key decision-making indicators, then gradually expand to other indicators, data and processing procedures to cover all subjects and dimensions, to achieve all comprehensive, timely, accurate, complete requirements, and gradually promote;

- From end to end—Trace back from the report users' demands to the sources;

- Platform support—Establish effective management information system platforms to accommodate the transformation results.

Specifically, for each risk indicator, banks should clarify the indicator criteria and application scenario, dismantle the calculation processes, and confirm the calculation rules, processing time, responsible departments, and automation situations of all steps (including source data acquisition). They should clarify the risk tracing links, optimize source data management, strengthen basic data standards, and improve all-link data quality. They will automate some manual and semi-automatic links through indicator sorting and iteration, thereby improving the accuracy and timeliness of risk indicator calculation. In the meantime, digitalization lays a foundation for a flexible Kanban board—it can present the results of analysis from multiple dimensions (by industry, product, region, counterparty, institution) based on the actual needs of different risks, in addition to the traditional risk preference indicators, providing a solid analysis basis and data support for operational, management and strategic decision-making.

The core of the implementation plans is to analyze the lineage and trace the risks of the key risk indicators in the risk reports, and improve the risk indicators' automation level, including automatic processing, integration, and verification. Therefore, risk reporting digitalization will be gradually achieved during the "self-evaluation—rectification and optimization" circulation.

Deloitte Risk Advisory has assisted multiple large commercial banks in their risk reporting digital transformation

Deloitte Risk Advisory has assisted multiple large commercial banks worldwide in implementing effective RDA and digitalizing risk reporting.

Internationally, Deloitte Risk Advisory has provided overall planning and implementation services regarding effective RDA for three G-SIBs in the United States, and two note-issuing banks and one SIB in Hong Kong.

In China, Deloitte Risk Advisory has provided effective RDA assessment, overall planning, and implementation services for three G-SIBs, one G-SIB's Hong Kong branch, and four D-SIBs, and helped the three G-SIBs realize digital risk reporting.

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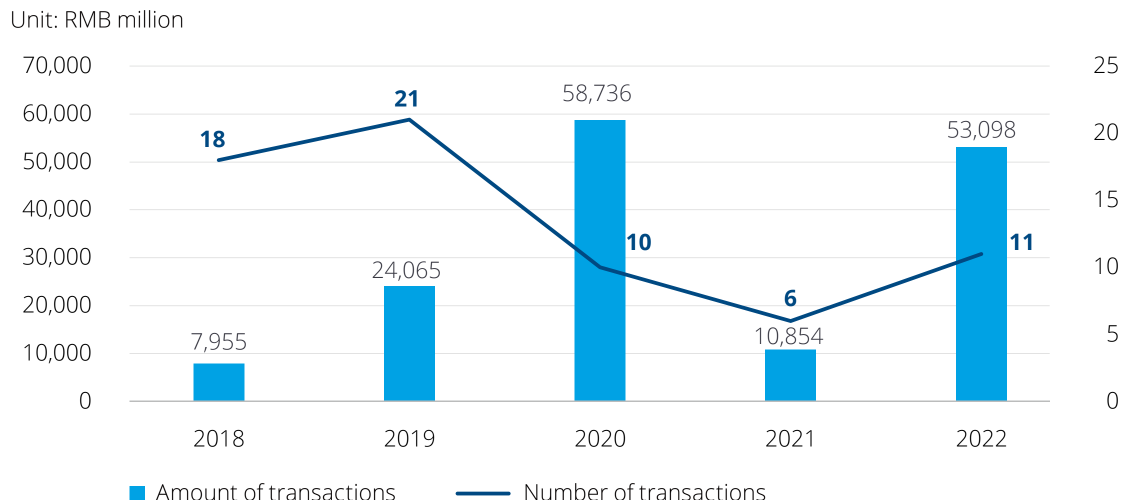
Beyond the cycle: key considerations in commercial banks' M&A and restructuring

As the financial supply-side structural reform advances, the domestic banking system, dominated by large and joint-stock banks, with city commercial, rural commercial and village banks serving the local economy, is facing a new round of resource integration. Commercial banks' M&A and restructuring in nature is to optimize financial resource allocation, resolve financial risks, and promote banks' diversified business development.

Drivers for commercial banks' M&A and restructuring

Figure 1: Summary of the Chinese Commercial Banking Sector's Transactions over the Past Five Years

Unit: RMB million



Source: Wind, Deloitte Analysis

Scale effect

Banks' scale effect facilitates intensive cost management. As Fintech disrupts the banking ecosystem, large and joint-stock commercial banks expand businesses to more rural areas, intensifying competition with small and medium-sized banks. Small and medium-sized commercial banks cannot transform independently, so they must generate synergy through mergers to break through the constraints of physical outlets and quickly increase their market shares.

Risk mitigation

Due to the economic downturn and COVID-19 impact, small and medium-sized commercial banks' interest spread income from traditional businesses shrank, with rising credit risks and nonperforming asset ratios. Meanwhile, small and medium-sized commercial banks' equity structure, corporate governance, risk management, and regulatory compliance problems were exposed due to the defects in their existing asset quality and management capabilities. Therefore, collaboration has become the mainstream of small and medium-sized commercial banks in resolving risks.

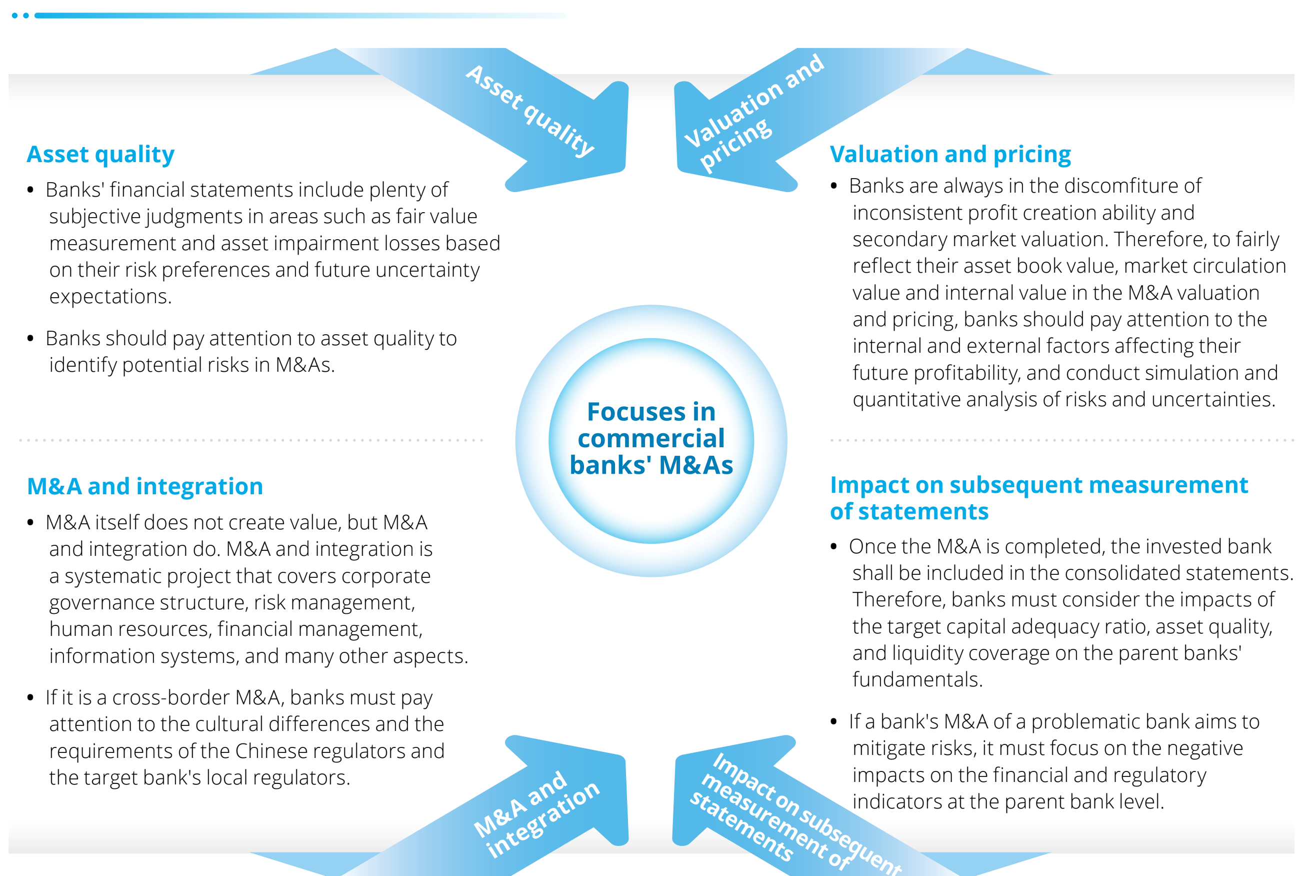
Regulatory impetus

As banks involve public interest, the government and regulators often play the "visible hand" role in banks' M&As and restructurings. Regulators will actively promote financial resource reallocation when cyclical factors bring significant impacts. In 2022, CBIRC stressed deepening financial supply-side structural reform, implemented supporting policies for small and medium-sized banks' M&As and restructurings, and encouraged high-quality banks and non-bank financial institutions to partake in M&As and regional integration.

International layout

After the financial crisis in 2008, under the strategic guidance of "going global" and the Belt and Road Initiative, commercial banks have expanded their overseas operations and improved the organizational layout to establish a global service network to better allocate overseas funds and serve the "going global" enterprises.

Focuses in commercial banks' M&As



Asset quality

- Banks' financial statements include plenty of subjective judgments in areas such as fair value measurement and asset impairment losses based on their risk preferences and future uncertainty expectations.
- Banks should pay attention to asset quality to identify potential risks in M&As.

Valuation and pricing

- Banks are always in the discomfiture of inconsistent profit creation ability and secondary market valuation. Therefore, to fairly reflect their asset book value, market circulation value and internal value in the M&A valuation and pricing, banks should pay attention to the internal and external factors affecting their future profitability, and conduct simulation and quantitative analysis of risks and uncertainties.

M&A and integration

- M&A itself does not create value, but M&A and integration do. M&A and integration is a systematic project that covers corporate governance structure, risk management, human resources, financial management, information systems, and many other aspects.
- If it is a cross-border M&A, banks must pay attention to the cultural differences and the requirements of the Chinese regulators and the target bank's local regulators.

Impact on subsequent measurement of statements

- Once the M&A is completed, the invested bank shall be included in the consolidated statements. Therefore, banks must consider the impacts of the target capital adequacy ratio, asset quality, and liquidity coverage on the parent banks' fundamentals.
- If a bank's M&A of a problematic bank aims to mitigate risks, it must focus on the negative impacts on the financial and regulatory indicators at the parent bank level.

Due diligence guarantees success

Financial and tax due diligence is a decisive link for a successful M&A. In-depth investigations into the target banks' operation status, financial condition, corporate governance structure, and regulatory compliance help mitigate risks in credit quality, investment quality, profitability, and regulatory indicators, laying a solid foundation for subsequent M&A planning, valuation and pricing, and post-investment integration.

Table 1: Focuses of Financial and Tax Due Diligence

<table>
<tr><th>Common issues</th><th>Focuses</th></tr>
<tr><td rowspan="4">Asset quality</td><td>Credit assets
Credit assets are commercial banks' primary assets. Review the credit assets, including loans, discounts, trade financing and other credit balances, and learn about the credit assets' five-category classification, three stages, and provision policies. Comprehensively analyze the asset recoverability, and make appropriate impairment provisions.
• In practice, common phenomena are loose grading and unreasonable appraisal of the recoverability of the credit assets, which may lead to underprepared provisions;
• Whether the banks have transferred the on-balance sheet risky assets through the interbank assets to hide the real asset quality.</td></tr>
<tr><td>Non-standard investments and mortgage assets
Penetrate the non-standard investments to identify the underlying assets and conduct a sampling review. Provisions for non-standard investments and mortgage assets may be underestimated, mainly because of:
• Insufficient consideration of the impacts of defective title and disposal difficulty on asset realization;
• Over-optimistic estimation of the future cash flow, which is not reflected in selecting the discount rate;
• The impairment provisions for such assets are underestimated due to performance evaluation or risk capital considerations.</td></tr>
<tr><td>Equity investment
When a commercial bank holds an equity interest in a rural bank, the financial due diligence should consider whether impairment provisions are needed for the equity investment, including but not limited to:
• Decide whether the equity investment should be reflected in the consolidated statements and whether the target bank can actually control the invested bank and significantly affect the invested bank's business decisions;
• Examine whether the invested bank's nonperforming assets should be offered a minimum guarantee and whether its risks can be resolved.</td></tr>
<tr><td>Application of new financial instrument standards
• Banks should classify the financial assets they hold based on the "business models" and "contractual cash flow characteristics" of the financial assets, as required by the new financial instrument standards;
• Whether the valuation of financial assets and liabilities measured at fair value fully reflects market risks.</td></tr>
<tr><td>Off-balance sheet businesses</td><td>Hiding the real asset quality through the off-balance sheet businesses may cause rigid redemption risks (illegal use of off-balance sheet wealth management funds) and liquidity risks. Thus, special attention must be paid to:
• Whether there is illegal use of the target banks' funds through off-balance sheet businesses;
• Whether nonperforming loans are concealed through off-balance sheet businesses (removal from the balance sheet);
• Whether there is "idle" circulation of bills.</td></tr>
</table>

Common issues	Focuses
Profitability	**Profit indicator analysis** • Pay attention to the profit structure and analyze the banks' historical profitability trends; • Calculate the key profitability indicators and analyze the profitability sustainability from the perspectives of net interest margin, ROE, operating profit margin, etc.; • Pay attention to the occupied funds and borrowed funds of controlling shareholders, actual controllers, and related parties.
	Revenue recognition approach • According to the Accounting Standards for Business Enterprises, the non-accrued interest received should not be immediately recognized as interest income. Instead, it should offset the loan principal first. Improper accounting treatment of non-accrued interest will result in overestimated interest income; • In practice, we understand that banks may increase the proportion of commission charges and reduce interest income to adjust the income structure, which results in false intermediary business income; • Some banks recognize investment returns by the Cash Basis, especially banks with relatively simple investment varieties and no strict performance evaluation of the investment department.
	Corporate governance and internal control • Review the meeting minutes of the Board of Directors and the specialized committees under the Board of Directors; • Review the target banks' communication with regulators and their regulatory reports during the review period; • Examine whether serious deficiencies exist in the target banks' corporate governance and whether the internal control loopholes will lead to the risk of management overriding internal control to further cause the risk of misstatements.
Tax issues	• Corporate income tax: proper application of tax exemption policies concerning treasury bond interest income and dividend income from investment funds, and extra tax deductions for R&D expenses • VAT: tax reduction and exemption for MSMEs' businesses, tax exemption for interbank businesses, tax exemption for treasury bond and financial bond businesses, tax preferences for particular businesses, etc.; • Utilization of product tax incentives and tax treatment of investment losses; • Tax compliance under the new financial instrument standards and new leasing standards.

Valuation – the art of quantitative and qualitative analysis

Based on due diligence results, bank valuation is a crucial value measure in the price game among trading parties. To ensure the stable operation of the financial industry and prevent large-scale financial risks, global financial regulators often develop financial regulatory indicators applicable to various sub-sectors according to the financial enterprises' business and risk characteristics. Banks' M&A transaction valuation requires a deep understanding of banking regulatory compliance and combining quantitative and qualitative analysis to decide on an appropriate method.

Valuation requires special attention to the following key factors:

Regulatory restrictions

- Examine the hypothesis of banks' business growth and reinvestment. When adopting the income approach for valuation, cash flow forecasts should be logically consistent with the expected growth rates, dividend distribution forecasts, and risk-control regulatory indicators to avoid contradictions with regulatory restrictions;
- Pay attention to the capital adequacy ratio, nonperforming ratio, provision coverage rate, risk indicator trends, and impact of the target banks' risk preference on their equity value when analyzing banks' market value.

Indicator category	Liquidity indicators	Risk-control regulatory indicators	Profitability indicators
Reference indicators	• Liquidity ratio • Liquidity coverage rate	• Nonperforming asset ratio • Provision coverage rate • Capital adequacy ratio	• Net interest margin • Net profit margin • Cost-income ratio
Focuses	• Adjust asset allocation when forecasting cash flow in the case of low regulatory liquidity indicators, and increase assets of low risk and strong liquidity. • Consider additional risk premiums for commercial banks with insufficient liquidity when selecting the discount rate to reflect the risks they face during operation.	• Analyze the nonperforming asset ratio in combination with the historical trends, future market trends, and business strategies, and examine whether the provisions match the loan quality. • Examine whether the capital adequacy ratio meets the regulatory requirement, and form a capital replenishment mechanism by apply issued capital instruments or lowering dividend levels.	• Net interest income is affected by interest rate policies, banks' operation models, and other investment channels. Banks' costs of attracting deposits will increase under the impact of internet finance, thus affecting their income levels.

Banks' liquidity indicators, risk-control regulatory indicators, and profitability indicators are interrelated. An operational change may affect multiple indicators. The impacts of a change should be reflected in the relevant financial hypothetical data, thereby reflected in the banks' equity value.

Synergy

The scale effect is the primary driver of banks' M&A transactions, which is often achieved through operational synergy and management synergy:

- From the perspective of operational synergy, the essence of banks' operational risks leads to a positive correlation between banks' scale and risk-resistance ability;
- From the perspective of management synergy, the advantageous banks can pass on their management experience to the banks of weak management ability through M&As to optimize processes, thereby improving operation efficiency and reducing management costs;

Therefore, valuation requires in-depth qualitative analysis of potential synergies and quantifying the M&As' scale effect.

Control and liquidity

Banks' M&A valuation should distinguish the applicable conditions for controlling and minority interest transactions. Taking the income approach as an example, controlling interest transactions often adopt the Free Cash Flow to Equity model (FCFE), while minority interest transactions mainly apply the Dividend Discount Model (DDM).

Commercial banks usually pay higher premiums in controlling interest transactions to obtain financial licenses, control operation and management directions, and make major strategic decisions. When adopting the market comparison approach, bank valuation and pricing should make premium or discount adjustments based on the controlling interest differences between the comparable transactions and M&A transactions.

Acquiring non-listed commercial banks should consider the liquidity differences between the comparable listed banks and the targets and make proper liquidity discount adjustments in valuation.

Deloitte has gathered professionals with transaction thinking and financial industry experience to provide one-stop M&A transaction services, covering transaction strategy, target evaluation, transaction execution, and post-M&A integration. We pay attention to the underlying factors affecting commercial banks' M&A transactions and leverage our professional and market-oriented capabilities to facilitate commercial banks' M&As, restructurings, transformation, and development.

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5. 2023 Macroeconomic and Banking Outlook

Stimulate final demand to boost economic rebound

In 2023, China's economic recovery momentum continued to heighten, and most Chinese have gotten over the pandemic, heralding a consumption rebound. The busy traffic and restaurants since the Spring Festival also imply a positive consumption momentum. In addition, the growing number of passport and visa applications highlight residents' enthusiasm for overseas travel.

The 2023 Report on the Work of the Government set the GDP growth target at around 5%. It is a pragmatic goal considering the longer period the domestic real estate market needs to recover and the Fed's out-of-expectation tightening cycles. More importantly, a prudent economic goal will leave more policy space for the new government to "effectively pursue higher-quality growth", which is conducive to implementing the domestic demand expansion strategies to realize a virtuous cycle of social reproduction.

Considering that the export performance is unlikely to be as good as in 2020-2022 due to the increasing challenges from the external economic environment (economic recession in the United States and Europe), China is focusing on implementing strategies to expand domestic demand this year. The government prioritizes recovering and expanding consumption, strives to enhance the middle-and low-income groups' consumption capabilities and boost residents' income through multiple channels, and supports high-quality consumption supply and scenario innovation in areas such as new-energy vehicles, elderly care, education, health care, culture, and sports services. These initiatives will drive unleashing consumption potential from both the supply and demand sides, stimulating the final demand to advance economic recovery.

As house property accounts for a large portion of Chinese residents' wealth, the primary risk facing Chinese consumers still arises from the uncertainties in the real estate market. In the short term, a stable real estate market is the key to boosting consumer confidence; in the long term, local governments should gradually end their reliance on land revenue and prevent real estate bubbles while meeting residents' housing improvement demands. The 2023 Report on the Work of the Government stressed "promoting stable development of the real estate sector" and encouraged "supporting people in buying their first homes or improving their housing situation". This is also an essential part of expanding consumption. We also expect the government to introduce more supportive measures (including credit measures) for improving residents' housing situation.

In addition, boosting the confidence of private investors is another foothold for the government to implement demand expansion strategies. Recently, the government has repeatedly emphasized the private enterprises' role, restated the principle of "unswervingly consolidating and developing the public sector and unswervingly encouraging, supporting, and guiding the development of the non-public sector", and stressed supporting platform businesses in driving development, creating jobs and competing in the global market. Moreover, according to the 2023 Report on the Work of the Government, the target of "around 12 million new urban jobs" hit a record high. This also demands a more important role of the platform economy in offering jobs.

In general, as economic recovery is smoother than expected after easing of the COVID-19 restrictions, China's growth momentum may exceed expectations in 2023. However, we should not overestimate the pulling effect of investment. In the benchmark scenario, the expected GDP growth in 2023 was raised from 4.5%-4.8% to 5.0%.

Neutral monetary policy

At the end of 2022, the Central Conference on Economic Work stressed "implementing a prudent monetary policy in a targeted way", upholding the principles of "housing is for living in, not speculation," and "preventing and defusing local government debt risks", and refraining from adopting a deluge of strong stimulus policies, and emphasized finance supporting the real economy. The 2023 Report on the Work of the Government continued this tone—it is more neutral compared with the 2022 Two Session's "maintaining a prudent monetary policy in a more flexible and appropriate way", and monetary easing diminished; In particular, the importance of credit growth waned, with no goal set for the growth of overall credit and inclusive loans for small and micro-loans.

The loose monetary policy will return to a neutral state amid the mild economic recovery. The real interest rates on enterprise loans fell to all-time lows in 2022, which may not be further cut in 2023. PBC President Yi Gang said at a news briefing in March that PBC will maintain the current real interest rates and may consider cutting the reserve requirement ratio to promote long-term liquidity and support the real economy.

Looking ahead to 2023, China will continue to restore domestic demand and boost consumption confidence. The credit demand of the fund-intensive fields such as real estate has weakened, and loan supply now mainly targets the green, inclusive, manufacturing, and new infrastructure areas. Credit growth may slow, but the increases in M2 money supply and aggregate financing will be in keeping with nominal GDP growth. In 2023, aggregate financing will be slightly higher than in 2022, and an increase of over 10% may become the norm.

Table 1: Monetary Policy Descriptions in the 2022 and 2023 Reports on the Work of the Government

<table>
<tr><th colspan="2"></th><th>2023</th><th>2022</th></tr>
<tr><td colspan="2">Policy orientation</td><td>Implement a prudent monetary policy in a targeted way</td><td>Maintain a prudent monetary policy in a more flexible and appropriate way</td></tr>
<tr><td colspan="2">Credit growth</td><td>/</td><td>Expand the scale of new loans</td></tr>
<tr><td colspan="2">M2 and aggregate financing increases</td><td colspan="2">The increases in M2 money supply and aggregate financing should be in keeping with nominal GDP growth</td></tr>
<tr><td rowspan="4">Credit supply target areas</td><td>Infrastructure</td><td>Speed up implementation of major projects set out in the 14th Five-Year Plan</td><td>Make proactive investments in infrastructure as appropriate</td></tr>
<tr><td>Inclusive loans to micro and small businesses</td><td>Encourage and support the private sector and private businesses in growing and expanding and support MSMEs and self-employed individuals in business development</td><td>Promote a marked increase in inclusive loans to micro and small businesses</td></tr>
<tr><td>Manufacturing</td><td>With a focus on key industrial chains in the manufacturing sector, pool quality resources and make concerted efforts to achieve breakthroughs in core technologies in key fields</td><td>Increase medium- and long-term lending to the manufacturing sector</td></tr>
<tr><td>Green</td><td>Upgrade urban-rural environmental infrastructure</td><td>/</td></tr>
<tr><td colspan="2">Interest rates</td><td>/</td><td>Encourage financial institutions to lower real loan interest rates and cut fees</td></tr>
<tr><td colspan="2">Preventing and defusing major risks</td><td>Ensure effective risk prevention and mitigation in high-quality leading real estate enterprises, and help them improve debt-to-asset ratios
Prevent and defuse local government debt risks</td><td>Set up a guarantee fund for financial stability; keep land prices, housing prices and market expectations stable</td></tr>
</table>

Source: Report on the Work of the Government, Deloitte's financial research

Finance supporting the real economy focuses on consumption and investment

The financial sector's top priority is still supporting domestic demand expansion, focusing on infrastructure, manufacturing, and green finance.

The 2023 Report on the Work of the Government highlighted "expanding domestic demand" and pointed out that consumption and investment are the mainstay of economic recovery. In 2023, with a stably recovering economy and consumption, interest rates are expected to stabilize, banks' costs of debts will decrease, and the banking interest rate spreads may end the 2019-2022 consecutive decline in the second half. Consumption credit is expected to grow remarkably.

The government will steadfastly implement the principle of "unswervingly consolidating and developing the public sector and unswervingly encouraging, supporting, and guiding the development of the non-public sector", and support the private sector and private businesses in growing and expanding. As there is no quantitative target, large banks' inclusive loans to small and micro enterprises may show a marginal decrease and small and medium-sized banks may have an incremental market space.

The government encourages private capital to more intensively invest in infrastructure and manufacturing. The Report on the Work of the Government stressed major projects set out in the 14th Five-Year Plan, launching urban renewal projects, achieving breakthroughs in core manufacturing technologies, and encouraging and attracting more private capital into major state projects. Private investment is expected to rebound this year, with more capital flowing to infrastructure and publicly offered REITs.

Effectively preventing and defusing major financial risks

As the foundation of the financial legislation, the *Financial Stability Law* established the duties of deposit insurance funds and industry protection funds in monitoring and disposal of relevant industrial risks. Based on the Financial Stability Law's top-level design framework, regulators have issued a series of measures in respect of the risk-prone areas, such as asset risk classification and related-party transaction management since February 2023, to prompt financial institutions to strengthen risk prevention and enhance risk control quality and efficiency.

The *Measures for the Risk Classification of the Financial Assets of Commercial Banks* will spur banks to establish a sound risk classification governance framework to reduce credit risks. The Measures expanded the risk classification scope from loans to all financial assets bearing credit risks and stressed the concept of debtor-centered, overdue days and credit impairment-based risk classification.

The *Administrative Measures for Affiliate Transactions of Financial Holding Companies* are enacted to regulate the related-party transactions of financial holding companies, prevent improper transfer of interest, risk concentration, risk contagion and regulatory arbitrage, and improve the macro-prudential policy framework.

The Report on the Work of the Government emphasized mitigating risks in "high-quality, leading real estate enterprises", helping them improve debt-to-asset ratios, and preventing unregulated expansion. Therefore, high-quality state-owned real estate enterprises will be able to control their risks, but small and medium-sized real estate enterprises with severe risks may be merged or acquired gradually.

Properly manage capital and learn from overseas banks' crises

The Silicon Valley Bank bankruptcy and Credit Suisse collapse in March 2023 increased pressure on the overseas financial markets, exposing many problems during the process of the monetary policy shifting from quantitative easing to tightening in Europe and the US, such as drastic interest rate changes, companies' faulty operations, and rising risk aversion among investors, which led to highly vulnerable banking systems.

Silicon Valley Bank mainly absorbed deposits from venture capital tech companies and related venture capital funds as small and middle-sized non-SIB. When the US monetary policy tightened, The bank's aggressive venture capital investment, with severe maturity mismatch and very high industry concentration, as U.S. monetary policy went from loose to tight which incurred huge losses and a liquidity crisis. Credit Suisse suffered a credit collapse after continuous internal control loopholes and two consecutive years of financial losses, then a low-price takeover by UBS. In particular, the wipeout of its USD17.2 billion AT1 bonds triggered a market panic.

The Silicon Valley Bank and Credit Suisse crises indicated incompetent regulation, especially the US' loose supervision of small and medium-sized banks. The overseas banks' incidents had no substantial spillover impact on the Chinese banking system. China's financial system is remarkably different from that of Europe and the US. PBC adopted a prudent monetary policy and refrained from adopting a deluge of strong stimulus policies and slamming on the brakes over the past three years, ensuring reasonably sufficient liquidity, in particular, with the establishment of the National Administration of Financial Regulation to coordinate market behavior supervision, China is paying more attention to the capital market development and enhancing protection for investors and consumers.

However, the common problems with Chinese small and medium-sized banks in recent years were capital erosion and poor risk management (such as with Baoshang Bank and Bank of Jinzhou that are of the same scale as Silicon Valley Bank). The high-risk areas such as real estate financing, shareholders' related-party transactions, and shadow banking drew most regulatory attention. Banks should learn from the risk events they experienced and strictly follow the *Administrative Measures for the Capital of Commercial Banks*. They must attach great importance to capital and liability management and improve the second-pillar supervision and inspection provisions and the third-pillar information disclosure.

The capital market is a higher priority

The multi-tier capital market system has been improved continuously with the establishment of the Science and Technology Innovation Board, the reform of the ChiNext board, the merger of the main board and SME board in the Shenzhen Stock Exchange, the establishment of the Beijing Stock Exchange, and launch of the registration-based IPO system. On February 1, 2023, CSRC sought public comments on fully implementing the registration-based IPO system. Hence, the A-shares market entering the registration-based IPO system era. The registration-based IPO system is critical in capital market reform and serving the real economy. First, the IPO launch efficiency is improved with CSRC's coordinating role and the review and approval power delegated to the exchanges—the review and approval period is shortened due to sufficient information disclosure. Second, it expanded the scope of admittable enterprises and raised the share of direct financing, enabling the capital market to better serve the real economy. Third, it helps in giving full play to the decisive role of the market in resource allocation—enterprises' value is judged by the A-share market, and only those fittest will survive.

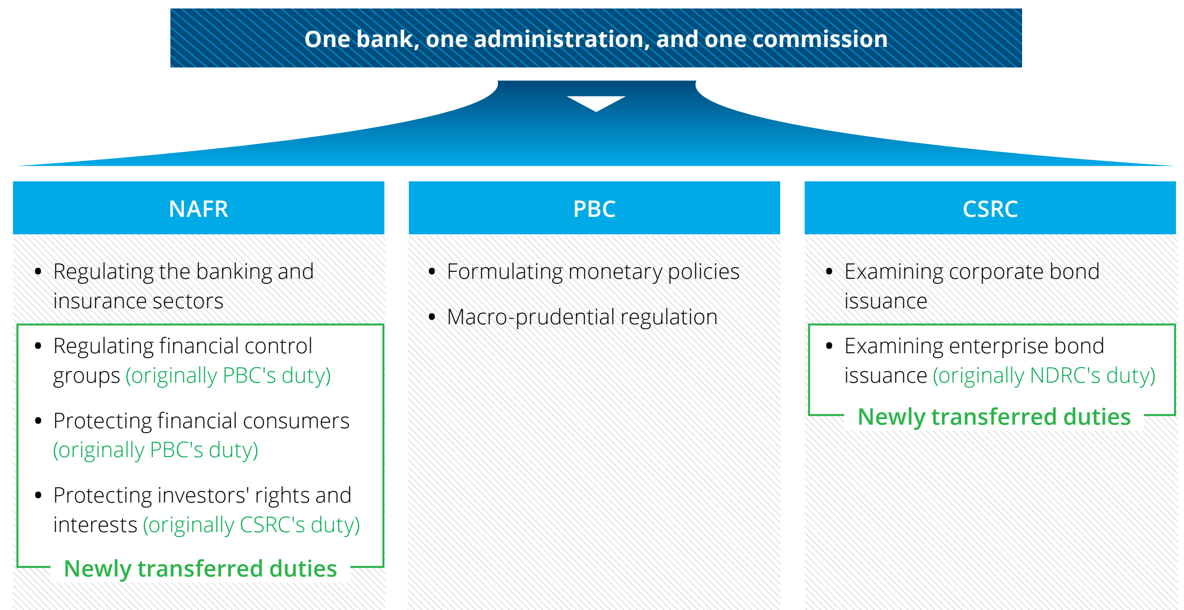
The position of CSRC is promoted, and the importance of the capital market is highlighted. On March 9, 2023, the *Plan for Institutional Reform of the State Council* adjusted CSRC from a public institution to a department directly under the State Council, and decided CSRC to be responsible for reviewing corporate bond issuance, which was initially the duty of the National Development and Reform Commission. The institutional reform indicates China highly values securities regulation and capital market development. Thus, the proportion of direct financing will steadily increase, and the capital market will operate more standardized.

Establishment of the National Administration of Financial Regulation to coordinate micro-prudential and conduct supervision

According to the *Plan for Institutional Reform of the State Council*, China set up the National Administration of Financial Regulation ("NAFR") directly under the State Council to take charge of regulating the financial sector (excluding the securities industry). Some of other institutions' duties were transferred to NAFR, including PBC's daily regulation on financial holding companies and other financial groups and, protection of financial consumers, and CSRC's duty of investor protection.

The financial regulator reform focused on functional and behavioral regulation, with consideration of macro policies and micro regulatory functions. Hence, PBC is responsible for macro-prudential regulation, and NAFR coordinates the financial sector's (excluding the securities industry) behavioral and functional regulation. This "quasi-Twin Peaks Regulation" model (prudential regulation and market behavior regulation) is conducive to preventing financial risks, improving penetrating regulation efficiency, controlling regulatory arbitrage, and effectively protecting financial consumers' and investors' rights and interests. Meanwhile, the functions of central and local offices are clarified, which is conducive to the healthy, stable, and sustainable development of the financial system.

Figure 1: Reform of Financial Regulators in 2023



Source: the Plan for Institutional Reform of the State Council, Deloitte's financial research

Quick development of private pension

The private pension plan was officially implemented in November 2022 to supplement the country's old-age insurance mechanism. It is expected to cope with pressure of supporting difficulties and getting old before getting rich and address the relevant issues brought by population aging. China is gradually improving its three-pillar old-age insurance mechanism.

Private pensions will embrace a "window period" of growth in 5-10 years. In the mid-and-long term, the private pension system is expected to drive residents' asset allocation to shift from real estate and savings to equity and fixed-income financial products, contributing long-term stable incremental funds to the capital market, benefiting the development of direct financing and the financing of real economy-based enterprises, and improving fund allocation efficiency.

The money in the private pension accounts can be deposited in banks, used to buy wealth management products and commercial pension insurance, and invested in publicly offered funds. Financial institutions can leverage their resources to seize private pension-related wealth and asset management opportunities. Meanwhile, China can learn from the experience of foreign countries to improve its commercial pension operations. The asset management sector should actively embrace the private pension era, enhance commercial pension management capabilities, and educate investors to strengthen their pension awareness and help them develop regular saving and investment habits to build reserve funds for aging.

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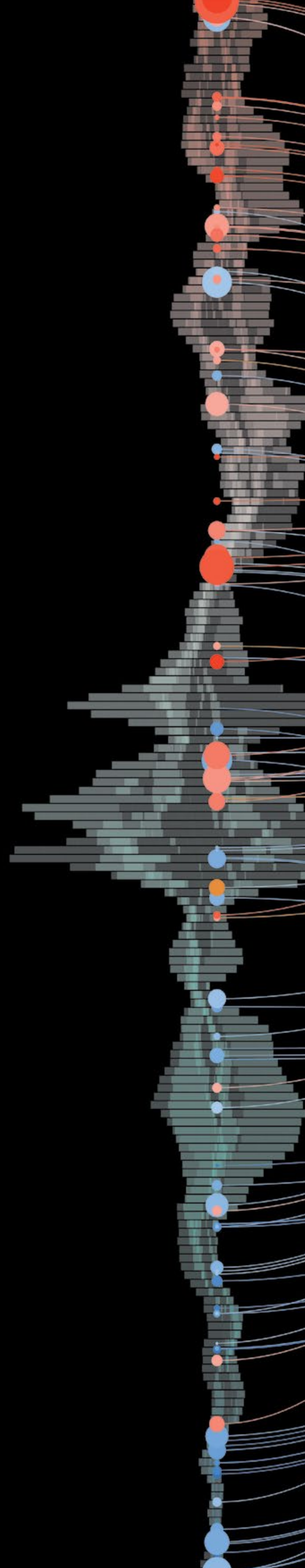

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