

FINANCIAL PERFORMANCE OF FOUR MAJOR CHINESE STATE-OWNED BANKS IN THE CONTEXT OF BEHAVIOURAL FINANCE

Introduction

Thinking may be fast or slow according to the classification presented by Kahneman (2011). Fast thinking is based on the continuous construction of a coherent and complex explanation of ongoing events. In other words, it is connected to unconsciousness, in which action is taken reflexively, before one is even fully aware. But making choices and performing judgments are more about thinking slowly and, therefore, are examples of cognitive functions. Cognitive biases are not inherently unconscious, according to behavioural science. It may be concluded that, in the face of the problem's vast complexity, there is a rooted psychological mechanism that employs heuristic procedures to make a more comprehensible evaluation of the parts¹.

1. Behavioural finance and state-owned banking – theoretical background

An interesting concept frequently used in behavioural finance is the framing effect, a term coined to recognise the cognitive processes underlying decision-making. It intends to set a preference for losses when they are certain, rather than for those that are uncertain. When the outcome of the specific decision is described (framed) as a loss, managers are more willing to take risks to avoid that certain loss outcome. According to Whyte (1993), sunk costs may be irrelevant from a rational economic perspective in decision-making. Still, the presence of a sunk cost in a decision context may incline decision-makers to take risks. When presenting prior investments as potentially recoverable losses, it is common to frame a decision to do nothing as a certain negative loss. In contrast, any decision made results in uncertain, but potentially recoverable, loss. Loss recovery is usually preferred to the extent of the loss already incurred.

1 C. Plummer, *Can Biases and Heuristics Be "Unconscious"?*, Foresight: The International Journal of Applied Forecasting, 2021, issue 63, p.1-3.

Whyte (1993) stated that the idea of sunk costs influenced the possibility of project escalation. Whyte (1993) also demonstrated that personal responsibility for a project significantly increased the likelihood of escalation².

To explore cultural context further, it is necessary to refer to Hofstede's (1980) cultural dimension theory, which describes North American and similar cultures as highly individualistic. On the contrary, Confucian Pacific rim countries, such as Singapore and Hong Kong, China, are considered less individualistic and more collectivist. Agency theory, founded by Stephen Ross and Barry Mitnick, makes it clearer that there is a pattern that self-interest may be attributed to strongly individualistic countries. In a more collectivist environment, which does not grant individual achievement and is characterized by diluted individual responsibility, managers are probably less willing to act in their own self-interest. Moreover, Hofstede established a measure of collective tolerance for uncertainty. It was named "uncertainty avoidance", which may be of great value in the process of decision-making under risk. There is a likelihood that Singapore and Hong Kong, China, are relatively comfortable with life's uncertainties, while the United States is inclined to mitigate uncertainty. The influence of Confucian values, which reflects a tendency to act patiently, should not be overlooked³.

The World Bank's Top 25 rankings for 2020 identify Chinese state-owned commercial banks as leading in the global banking industry. The big four Chinese Banks are:

- Bank of China,
- Agricultural Bank of China,
- China Construction Bank,
- Industrial and Commercial Bank of China⁴.

State-owned commercial banks account for 54% of financial institutions in China⁵. Therefore, it's common for a central bank to intervene and implement reforms in the banking system. Banks with government as a shareholder frequently suffer from operational inefficiencies and poorly established service

2 B. A. Khan, S. B. Salter, D. J. Sharp, *Pouring good money after bad: a comparison of Asian and developed country managerial decision-making in sunk cost situations in financial institutions*, "Asia-Pacific Development Journal", 2000, vol. 7, issue 2, p. 107-108.

3 *Ibidem*.

4 E. Koroleva, S. Jigeer, A. Miao, A. Skhvendiani, *Determinants Affecting Profitability of State-Owned Commercial Banks: Case Study of China*, "Risks", 2021, vol. 150, issue 9, p. 1.

5 M. Chang, H.B.Jang Y.M. Li, D. Kim, *The Relationship between the Efficiency, Service Quality and Customer Satisfaction for State-Owned Commercial Banks in China*, "Sustainability", 2017, vol. 2163, issue 9, p. 1-2.

systems. There is a correlation between rising quality and efficiency and reduced costs and time waste. In turn, it influences sales and market share. If Chinese banks are eager to perform well in the competitive international environment, it is necessary to examine their operations⁶.

China's state-owned banks are actively responding to government policies that promote inclusive financing for SMEs (small and medium enterprises), agricultural investments, and poverty alleviation. The mentioned conditions provide an intriguing backdrop for in-depth analysis of the banking industry in China⁷.

For example, the Chinese central government implemented fiscal stimulus estimated at RMB 4 trillion (US\$586 billion) in November 2008 to mitigate the global recession triggered by the bankruptcy of Lehman Brothers in September 2008. This package was intended to conduct infrastructure investment. It was followed by expansionary monetary policies, which increased the supply of credit in the real economy. Loan quotas increased rapidly, and the reserve requirement ratio decreased for medium-sized and small banks, as well as large banks. Moreover, the base one-year lending rate decreased. It is said that the Big Four SOBs had significantly higher annual lending growth than 12 other nationwide commercial banks. This pattern illustrates how the Big Four SOBs responded notably to the Chinese government's credit stimulus. The conditions mentioned provide an intriguing backdrop for an in-depth analysis of the banking industry in China⁸.

2. Methodology and analytical framework

Bank of China Ltd (BOC) is a subsidiary of Central Huijin Investment Ltd, a financial institution which provides a range of banking and other financial services. Main activities include corporate financing, personal banking, wealth and asset management. Main products and services include syndicated loans, trade services, and personal loans. The bank deals with a different customer base- personal customers, corporate clients and private banking customers. The bank possesses a global network of branches and subsidiaries. BOC's headquarters is in Beijing⁹.

6 *Ibidem*.

7 *Ibidem*.

8 D. Ouyang, *State-owned banks in credit stimulus: evidence from China*, „Applied Economics”, 2022, vol. 54, issue 35, p. 4087.

9 Marketline A Progressive Digital Media business-Company profile- Bank of China, 04.03.2026.

Agricultural Bank of China Ltd (ABC) is another state-owned commercial bank. It has a broad base of customers, including corporate, retail, and agricultural customers. It offers private banking, cash and wealth management solutions, investment banking, fund management, financial leasing, and life insurance. ABC is involved in projects in the agro-industry, rural infrastructure, and rural area development¹⁰.

China Construction Bank Corp (CCBC) aims to offer both retail and corporate banking services to individuals, enterprises, and institutions. CCBC is also a provider of private and investment banking, asset management, financial leasing, pension, insurance, and trust services. The bank has 14,750 operating entities, comprising 14,201 domestic and 35 overseas. CCBC operates mainly in four segments: Corporate Finance Business, Personal Finance Business, Treasury, and Asset Management Business¹¹.

Industrial and Commercial Bank of China Ltd (ICBC) is a diversified financial group that offers personal and corporate banking, e-banking, and bank cards. Its portfolio comprises a range of deposits, loans, securities services, treasury operations, cards, and other financial solutions. ICBC is present in three main sections: Corporate Banking, Personal Banking, and Treasury Operations¹².

The presented banks are studied over the 2020-2024 period. Chosen indicators include: ROA, NIM, P/E, Annual Dividend, LCR, NPL and Debt/Equity.

This article aims to examine whether changes in selected financial indicators of four major Chinese banks can be interpreted in the context of government-influenced credit decisions and phenomena such as the sunk cost effect and the framing effect. The article studies the following hypothesis and research inquiry.

The research question is formulated as follows: Do changes in the indicators ROA, NIM, NPL, LCR, and debt/equity during 2020-2024 indicate a disconnect between rational risk assessment and the politically motivated continuation of lending activity?

The research question implicates Hypothesis 1: A strong government presence in the Chinese banking sector may favour continuing credit policy despite deteriorating profitability ratios and rising debt.

It may be interpreted as a sign of sunk cost and the framing effect.

10 Marketline A Progressive Digital Media business - Company profile- Agricultural Bank of China, 01.01.2026.

11 Marketline A Progressive Digital Media business- Company profile- China Construction Bank Corp, 01.01.2026.

12 Marketline A Progressive Digital Media business- Company profile- Industrial and Commercial Bank of China, 01.01.2026.

3. Financial indicators of the four Chinese banks

3.1. Profitability indicators

Profitability is a crucial indicator of performance. A high degree of profitability can signal excessive market power. High profitability can also signal excessive risk taking or even fraudulent behaviour.

Table 1. Return on assets indicator for the banks from 2020 to 2024

ROA	2020	2021	2022	2023	2024
Bank of China	0.87	0.89	0.85	0.8	0.75
Agricultural Bank of China	0.83	0.86	0.82	0.73	0.68
China Construction Bank Corp	1.02	1.04	1	0.91	0.85
Industrial And Commercial Bank of China	1	1.02	0.97	0.87	0.78

Source: Data obtained from the Workspace service based on a cooperation agreement signed by the University of Gdansk and LSE Group.

To begin with, the profitability indicator ROA measures how efficiently a company generates profit from its total assets. It is calculated by dividing net income by total assets based on the presented formula:

$$\text{ROA} = (\text{Net Income} / \text{Total Assets}) \times 100\%$$

Return on assets is commonly based on industry characteristics. The banking sector tends to invest less in heavy assets, for example, equipment, plants, properties, etc., to achieve gains. Assets in the banking sector contain loans, investments (securities), cash, and reserves. Therefore, they are more likely to have higher ROA values. However, the ROA index gradually increased during the COVID-19 period and has since declined (Table 1). ROA at Bank of China decreased at a slightly slower pace than at Agricultural Bank of China. China Construction Bank Corporation achieved the highest performance overall, despite a noticeable decline. The Industrial and Commercial Bank of China shows the sharpest deterioration among the four banks. In general, Chinese banks have moderate to strong performance (between 0,5% and 1,5% ratios), indicating their stable position. The research shows that, despite playing a vital role in financing the economy, FOBs were less profitable relative to their asset bases. In the field of behavioural finance, this may be interpreted as a possible consequence of continuing credit expansion or policy-oriented lending even when profitability deteriorates. Such behaviour may be linked to the sunk

cost effect, as prior commitments to strategic sectors can encourage continued financing rather than withdrawal.

Table 2. Net interest margin indicator for the banks for the period of 2020-2024

NIM	2020	2021	2022	2023	2024
Bank of China	0.0175	0.0161	0.0176	0.0159	0.014
Agricultural Bank of China	0.0212	0.019	0.019	0.016	0.0142
China Construction Bank Corp	0.0219	0.0213	0.0202	0.017	0.0151
Industrial And Commercial Bank of China	0.0211	0.0207	0.0194	0.0161	0.0142

Source: Financial reports of Bank of China, Agricultural Bank of China, China Construction Bank, Industrial and Commercial Bank of China for the years 2020-2024.

Declining profitability over time is strongly connected to the values of NIM (net interest margin), which represents the difference between the interest income a bank earns from loans and investments and the interest it pays on deposits and borrowings, expressed as a percentage of its average interest-earning assets. It can be calculated based on this formula:

$$ROA \approx NIM \times \text{Asset Utilisation} - \text{Costs}$$

Regarding the NIM indicator, there is a similar downward trend across all the analysed banks (Table 2). Bank of China experienced slight fluctuations in the early years, but after 2022, it has seen a clear decline. The same example was with the Agricultural Bank of China and the China Construction Bank. Industrial & Commercial Bank of China (ICBC) had a stable decline each year. It shows that all major Chinese banks are earning less from lending relative to their assets. The reasons behind it can be found in the interest rate cut conducted by the People's Bank of China (PBoC). Moreover, it is related to the decreasing efficiency of mortgage and corporate loans, as well as to policies that stimulate the economy, which tend to lower interest margins. Declining NIM directly contributes to lower ROA and net profits. The decreasing NIM indicates that lending became less profitable. In the context of state-owned banks, this may suggest that credit decisions were driven not only by profit maximisation but also by government expectations and macroeconomic stabilisation goals. It is possible to link it with the framing effect. Then lending may be viewed not as a risky, commercial decision, but as a necessary and unavoidable decision to stimulate the economy.

Table 3. Earnings per share indicator for the banks for the period of 2020-2024

P/E	2020	2021	2022	2023	2024
Bank of China	5.802475	4.876275	4.49975	5.5489	7.02
Agricultural Bank of China	5.73	5.0525	4.495	4.96	6.8275
China Construction Bank Corp	7.01085	6.195	5.8675	4.8225	4.835
Industrial And Commercial Bank of China	n.d.	n.d.	n.d.	n.d.	n.d.

n.d. - no data available

Source: Data obtained from the Workspace service based on a cooperation agreement signed by the University of Gdansk and LSE Group.

The price-to-earnings ratio shows how much investors are willing to pay per unit of earnings. It can be computed based on the following pattern:

$$P/E = \text{Market Price per Share} / \text{Earnings per Share}$$

Chinese large state-owned banks typically trade at lower P/E ratios than global peers due to slower growth expectations stemming from government influence (Table 3). Margin compression and property market risks are other key factors. The Bank of China experienced a decline from 2020 to 2022 due to market pessimism. Nevertheless, there was a strong rebound in 2023–2024, and 2024 saw the highest valuation in the past 5 years. It may suggest that investors regain confidence in an improved earnings outlook. P/E's of the Agricultural Bank of China were shrinking until 2022. The years 2023–2024 saw a gradual recovery, followed by a strong jump in 2024. It may imply sector-wide sentiment improvement. China Construction Bank went through continuous decline until 2023. That year, P/E stabilised slightly. It shows that investors are more cautious due to possibly weaker growth expectations relative to peers. In general, the decline in P/E ratios across banks is likely due to the impact of COVID-19 and slower economic growth. However, from the investor's perspective, it may also be seen as evidence of risk aversion. Data are, in most cases, unavailable and non-transparent. Therefore, investors are most likely to show a sceptical attitude. In their own calculations, there is a mismatch between the government's guaranteed gains and the political risk of the Chinese economy. On the other hand, A-shares, which local investors may obtain on the Shanghai SE, usually have a higher P/E ratio than H-shares available to foreign capital. It is due to information asymmetry. In general, local investors are less concerned about political risk and may favour a strong government presence in the economy.

Table 4. Annual dividend indicator for the banks for the period of 2020-2024

Annual Dividend (USD)	2020	2021	2022	2023	2024
Bank of China	5.635	6.0964	6.5530775	6.03975	4.828175
Agricultural Bank of China	7.2075	8.03	8.56	8.125	8.6475
China Construction Bank Corp	6.17	6.625	8.045	8.8275	9.61875
Industrial And Commercial Bank of China	n.d.	n.d.	n.d.	n.d.	n.d.

n.d. - no data available

Source: Data obtained from the Workspace service based on a cooperation agreement signed by the University of Gdansk and LSE Group.

In terms of annual dividends, Bank of China's rose steadily until 2022. However, in 2023, the dividend began to decline, with a drop in the most recent year. The Agricultural Bank of China generally shows a consistent increase across all 5 years. China Construction Bank has the strongest growth. That is also the highest recent dividend in 2024. Therefore, the bank is experiencing a clear, accelerating year-over-year increase from 2020 to 2024. Bank of China's dividend has weakened recently, suggesting lower profit retention relative to peers and possibly internal challenges. Agricultural Bank of China shows the most consistent dividend growth, making it attractive for a dividend-income strategy. China Construction Bank stands out for its largest absolute increases, suggesting a strong focus on profitability and shareholder returns. Chinese megabanks maintain relatively high dividend payout ratios, and banks have been emphasising cash dividends and regular payouts to support investor confidence (Table 4). The observed tendencies may align with the framing effect. It ought to serve as proof for investors that banks are well-managed and may offer participation in the profits they generate.

3.2. Liquidity and credit risk indicators

Liquidity coverage ratio (LCR) is the minimum amount of highly liquid assets that financial institutions are required to hold by international regulations. All major Chinese banks hold reserves above the level established by banking supervision, providing resilience in the event of rapid capital outflows (Table 5). Primarily, China Construction Bank reports the highest ratios in the group presented, frequently approaching 150%. Monetary policy has a significant impact on liquidity. Fluctuations in 2022–2024 result from interference by the People's Bank of China (PBoC) aimed at stimulating the economy, which affected the structure of assets and liabilities. These data are directly influenced

by the fact that Chinese banks ought to strike a balance between maintaining high liquidity and government pressure to increase lending to the mortgage sector and small enterprises. Banks in China frequently use the LCR indicator, consistent with the framing effect. It should serve as proof that credit deposits are safe and mitigate the phenomenon known as bank runs. However, it is plausible that extremely high LCR is attained due to government intervention.

Table 5. Liquidity coverage ratio for the banks for the period of 2020-2024

LCR	2020	2021	2022	2023	2024
Bank of China	1.378	1.391	1.437	1.416	1.405
Agricultural Bank of China	1.297	1.286	1.271	1.263	1.28
China Construction Bank Corp	1.509	1.488	1.554	1.477	1.455
Industrial and Commercial Bank of China	1.268	1.241	1.265	1.215	n.d.

n.d. - no data available

Source: Financial reports of Bank of China, Agricultural Bank of China, China Construction Bank, Industrial and Commercial Bank of China for the years 2020-2024.

Table 6. Non-performing loans indicator for the banks for the period of 2020-2024

NPL ratio	2020	2021	2022	2023	2024
Bank of China	n.d.	n.d.	1.32%	1.27%	1.25%
Agricultural Bank of China	1.57 %	1.43 %	1.37%	1.33%	1.30%
China Construction Bank Corp	n.d.	n.d.	1.38%	1.37%	1.34%
Industrial and Commercial Bank of China	1.5%	1.54%	1.38%	1.36%	1.34%

n.d. - no data available

Source: Financial reports of Bank of China, Agricultural Bank of China, China Construction Bank, Industrial and Commercial Bank of China for the years 2020-2024.

A non-performing loan (NPL) is a loan classified as in default because the borrower has missed scheduled payments. Bank of China's improvement is steady but modest. It suggests a debt structure requiring fewer amendments. It may also come with greater international diversification, which can help stabilise risk. Agricultural Bank of China started with the highest NPL ratio but has shown great continuous improvement every year. It may be explained by heavy exposure to rural and SME lending (higher risk), significant policy-driven clean-up effort and possibly more loan restructuring or write-offs.

Rapid improvement could be reflected in regulatory intervention, reclassification, or restructuring. China Construction Bank remains largely stable, with slow improvement. CCB may already manage its credit portfolio well and be less exposed to volatility across lending segments. Therefore, it likely has the most conservative risk policies of the four. The deterioration in Industrial and Commercial Bank of China (ICBC) in the first place reflects the impact of COVID-19, with a strong recovery afterwards. ICBC, being the largest bank globally, is more exposed to systemic shocks, but also retains a stronger capacity for balance sheet repair. Ας μεντιονεδ ιν πρεπιουσ σεχτιονς, α λωωερ Π/Ε ρατιο μαυ βε σεεν ας επιδενχε τηατ τηε μαρκετ τρεατσ οφφιχιαλ ΝΠΛ παλυεσ ας χονφιρματιον βιασ ον τηε παρτ οφ Χηινεσε clerks. Government tends to seek and achieve economic stability; therefore, FOBs may be susceptible to political influences aimed at changing the definition of NPL to make it attainable in the reports.

Table 7. Debt indicator for the banks for the period of 2020-2024

Total debt/equity	2020	2021	2022	2023	2024
Bank of China	113.19	111.79	117	128.64	128.12
Agricultural Bank of China	101.05	94.95	105.88	122.33	134.33
China Construction Bank Corp	90.92	91.34	106.87	117.89	137.46
Industrial and Commercial Bank of China	40.66	37.61	47.34	70.38	94.28

Source: Data obtained from the Workspace service based on a cooperation agreement signed by the University of Gdansk and LSE Group.

The debt/equity ratio is utilised to measure the degree to which an enterprise can finance operations with debt rather than its own resources. Generally, it assesses the reliance on debt. It is calculated by dividing the company's liabilities by shareholders' equity. Although a higher ratio is associated with a higher risk, banks often operate with substantial debt, which can be attributed to liabilities tied to deposits. According to the table above (Table 7), Bank of China is the most leveraged bank. However, the increase was steady throughout the period. The D/E ratio of Agricultural Bank of China decreased between 2021 and 2020, but afterwards it rose significantly for China Construction Bank Corp. The increase was about 50% of its initial value. The highest growth was in the Industrial and Commercial Bank of China. In the first place, the ratio was at its lowest point. During this period, it increased to above 100% of its initial value. It is likely that the rising D/E indicator reflects a tendency toward sunk costs. Management of the banks will be more willing to foster non-profitable projects and support them financially to avoid losses on previously invested capital.

Discussion and behavioural interpretation of the results

The results show a decline in profitability indicators, especially ROA and NIM, while liquidity ratios remain relatively strong and NPL ratios do not increase significantly. This combination may suggest that Chinese state-owned banks continued to support credit policy despite weaker profitability. From a behavioural perspective, such tendencies can be interpreted through the lens of the sunk cost effect and the framing effect. Government-supported lending may be framed as a strategic necessity rather than a purely commercial risk. At the same time, prior involvement in strategic sectors may encourage continued financing, even when profitability indicators deteriorate.

Conclusions

As far as China's banks are concerned, the issue with conducting precise analysis might be the accessibility and transparency of publicly available data. It's possible that, for example, NPL ratios are understated, which aligns with the risk-aversion concept, especially when the Chinese government is a shareholder. Declining profitability may be attributed to government policies aimed at stimulating the economy and supporting specific sectors. On the other hand, SOB's tend to attract investors by relatively high and stable dividends, which may be seen as an incentive. Therefore, government influence on banks' performance is one factor investors should consider when making investment decisions. When management decisions in banks are driven by policies announced by an authoritarian, bureaucratic government, it implies greater involvement of human factors and the possibility that cognitive biases will affect economic performance. The hypothesis set at the beginning can be partially supported. The decline in ROA and NIM, combined with continued policy-oriented lending and relatively stable liquidity indicators, suggests that the decisions of Chinese state-owned banks cannot be explained only by profitability criteria. However, the study does not directly measure cognitive biases. Therefore, the behavioural interpretation should be treated as an analytical perspective rather than definitive evidence of individual decision-making biases.

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Summary

This paper analyses four Chinese state-owned banks. The research was conducted using available statistical data from 2020 to 2024 and field literature. The paper emphasises the importance of incorporating behavioural finance into the analysis. Nevertheless, in this article, cognitive biases are not precisely measured.

Keywords: China, state-owned banks, behavioural finance, credit policy, financial ratios, cognitive biases

BEHAVIORALNE DETERMINANTY DECYZJI KREDYTOWYCH: ANALIZA CZTERECH WIELKICH BANKÓW CHIŃSKICH W KONTEKŚCIE HEURYSTYK I BŁĘDÓW POZNAWCZYCH

Streszczenie

Niniejszy artykuł przedstawia analizę czterech największych chińskich banków. Badanie zostało przeprowadzone w oparciu o dane statystyczne z lat 2020–2024 oraz literaturę dziedzinową. W pracy podkreślono rolę włączenia zjawisk z zakresu finansów behawioralnych do analizy.

Słowa kluczowe: Chiny, banki państwowe, finanse behawioralne, polityka kredytowa, wskaźniki finansowe, procesy poznawcze