BofA Australian Bank Credit Loss Indicator

Indicator reiterates peak in bad debts in FY24E

Industry Overview

19 January 2024

Equity
Australia
Banks-Multinational/Universal

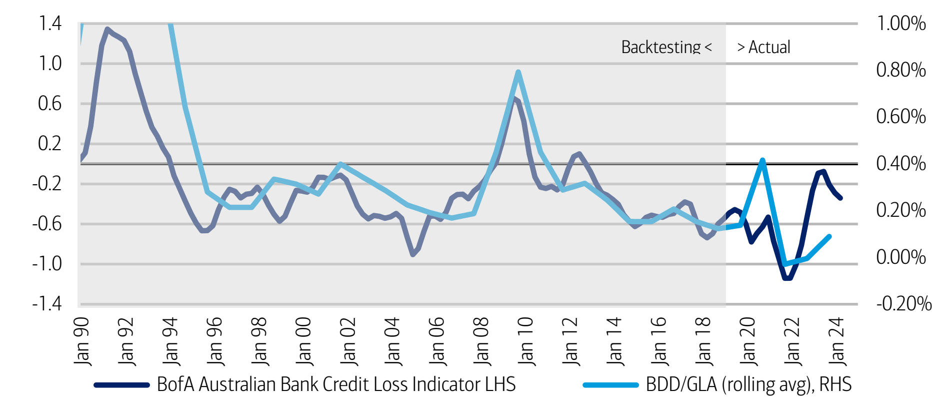
BofA Data Analytics

Indicator falls again, reiterates peak in bad debts in FY24E

The BofA Australian Bank Credit Loss Indicator declined for the third quarter in a row in December, after six consecutive quarters of adverse reads (December 2021 to March 2023). The four-quarter average lead of the Indicator to the Australian banking system credit cycle implies that major bank's bad debt charges are likely to peak in FY24E and fall thereafter. The Indicator implies upside to consensus and BofA FY25E EPS estimates given expectations of rising average major banks' bad debt charges (BofA expectations for FY23A: 9bp; FY24E: 13bp; FY25E: 18bp and FY26E 18bp). Our preferences amongst the majors: **NAB** (Buy), **ANZ** (Buy), **WBC** (U/P), **CBA** (U/P).

Among the input factors, three are returning positive signals, two neutral signals and the other three negative signals. What has changed? **Credit default swaps** have flipped from negative to positive, while **debt / pre-tax operating profit** moved from neutral to negative. What has stayed the same? **High yield bond spreads** and **inflationary expectations** remain positive, **business sector interest burden** and **inflation gauge** stay neutral, while **home value index** and **business interest rate** stay negative.

Exhibit 2: Correlation of 0.88 since 1990 with an average lead of 4 quarters
BofA Australian Bank Credit Loss Indicator vs. the Australian bank bad debt charges



Source: BofA Global Research estimates, RBA, ABS, Melbourne Institute Inflation Gauge, Bloomberg, CoreLogic
Notes: This performance is back-tested and does not represent the actual performance of any account or fund. Back-tested performance depicts the theoretical (not actual) performance of a particular strategy over the time period indicated. No representation is being made that any actual portfolio is likely to have achieved returns similar to those shown herein. The BofA Australian Bank Credit Loss Indicator is intended to be an indicative metric only and may not be used for reference purposes or as a measure of performance for any financial instrument or contract, or otherwise relied upon by third parties for any other purpose, without the prior written consent of BofA Global Research. This BofA Australian Bank Credit Loss Indicator was not created to act as a benchmark. The Australian banking system credit cycle is the aggregate bad debt charge of the four major banks (ANZ Banking Group, Commonwealth Bank, National Australia Bank and Westpac Banking Corporation)

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Exhibit 1: Downwards or neutral pressure from 5 factors
Movement in 8 underlying factors

Bank Credit Loss Indicator - Factors	Dec 23
CDS Index	↓
BBB 3y Spread to AGS	↓
Hedonic Home Value Index (q-o-q)	↑
Business Interest Rate	↑
Business Sector Interest Burden	↔
Melbourne Institute Inflationary Expectations	↓
Melbourne Institute Inflation Gauge (y-o-y)	↔
Debt / Pre-Tax Operating Profit	↑
BofA Australian Bank Credit Loss Indicator	↓

Source: BofA Global Research
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ANZ	ANZ Group
CBA	Commonwealth Bank Austr.
NAB	National Australia Bank
WBC	Westpac Banking
U/P	Underperform

BofA Australian Bank Credit Loss indicator

Overview of our approach

The BofA Australian Bank Credit Loss indicator is a proprietary tool that seeks to identify turning points and directionality in Australia's banking system credit cycle. Since 1990 the indicator exhibits a correlation of 0.88 on a back tested basis with major banks' bad debt charges, as in prior episodes the BofA Australian Bank Credit Loss indicator has troughed before the credit cycle commenced turning adversely; with a lead time varying from three to seven quarters (average of four quarters). It is neither designed to forecast the bad debt charges of individual banks nor produce scored values; but rather it is a directional indicator, constructed on the basis of 8 equally weighted factors. **Refer further in this report for our detailed methodology**.

Exhibit 3: Correlation of 0.88 since 1990 with an average lead of 4 quarters
BofA Australian Bank Credit Loss Indicator vs. the Australian bank bad debt charges

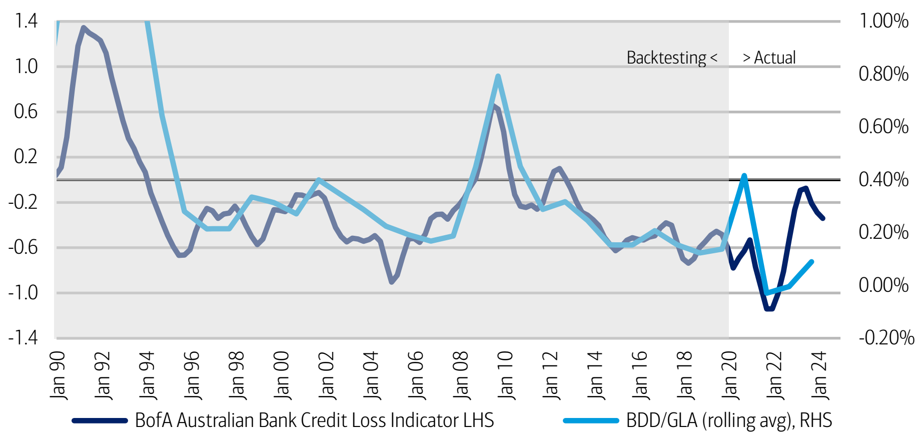

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Exhibit 4: Five factors in the December 2023 quarter providing downwards or flat pressure on bad debt charges
BofA Australian Bank Credit Loss Indicator: factor movements each quarter

Bank Credit Loss Indicator - Factors	Sep 21	Dec 21	Mar 22	Jun 22	Sep 22	Dec 22	Mar 23	Jun 23	Sep 23	Dec 23
CDS Index	↑	↑	↑	↑	↑	↓	↓	↓	↑	↓
BBB 3y Spread to AGS	↑	↑	↑	↑	↓	↓	↓	↓	↓	↓
Hedonic Home Value Index (q-o-q)	↔	↑	↑	↑	↑	↔	↓	↓	↑	↑
Business Interest Rate	↔	↔	↔	↔	↔	↔	↔	↔	↑	↑
Business Sector Interest Burden	↓	↑	↓	↔	↔	↔	↔	↔	↔	↔
Melbourne Institute Inflationary Expectations	↑	↑	↑	↔	↑	↑	↑	↓	↓	↓
Melbourne Institute Inflation Gauge (y-o-y)	↑	↑	↓	↑	↑	↔	↔	↔	↔	↔
Debt / Pre-Tax Operating Profit	↑	↓	↓	↑	↓	↓	↔	↔	↔	↑
BofA Australian Bank Credit Loss Indicator	↓	↑	↑	↑	↑	↑	↑	↓	↓	↓

Source: BofA Global Research

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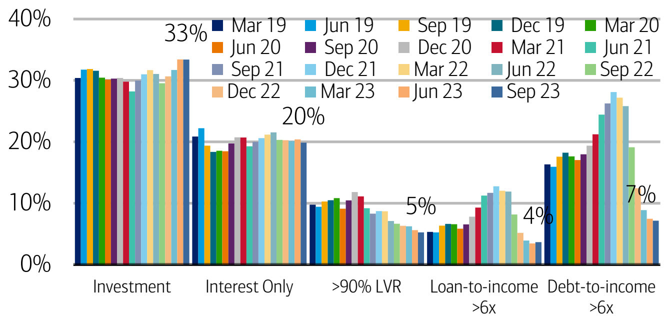
Risky flows low, loan growth decelerating

Risky mortgage flows remain low

As according to quarterly APRA data for September 2023 proportional risky mortgage flows continued to remain low at 7% for high DTI, 5% for >90% LVR (vs. 6% Jun 23) and 4% for high LTI (vs. 3% Jun 23). Additionally new term loans saw a proportionate decrease in loans with LVRS above 80%; down to 31% vs. 32% Jun 23.

Exhibit 5: High LTI and DTI flows moderating sharply
Major banks: risk characteristics of new mortgages



Notes: Investment is % term loans funded; Interest only is % term loans funded; >80% LVR % term loans funded; LTI >6x % owner-occupier and investor loans funded; DTI >6x % owner-occupier and investor loans funded
Source: BofA Global Research estimates, APRA

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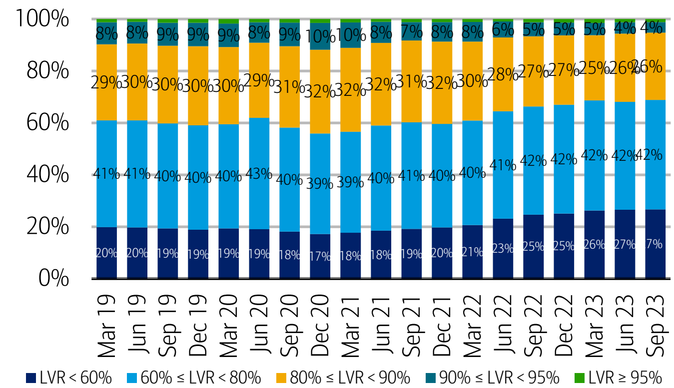
Exhibit 6: New term loans with LVRs >80% proportionately decreasing
Major banks: new term loans funded by LVR



Source: BofA Global Research estimates, APRA

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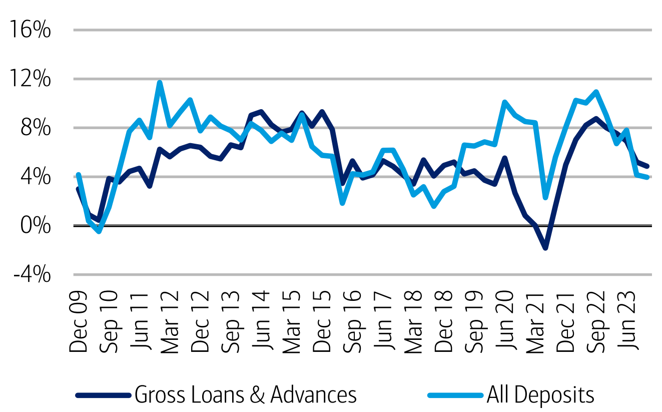
Slowing loan and deposit growth, bad debts low

The pace of loan growth (5% Y/Y) marginally outpaces deposit growth (4% Y/Y); with both growth rates decelerating marginally in the Sep 23 quarter. The banking industry bad debt charge in the Sep 23 quarter was a charge of 0.05%; for context, the GFC peak was a 1.27% charge in the December 2008 quarter and the coronavirus crisis peak was a 0.80% charge in the March 2020 quarter. Major banks non-performing credit exposures increased to 0.96% (vs. 0.92% Jun 23); and the past-due ratio for all banks also increased to 0.54% (vs. 0.51% Jun 23).

Exhibit 7: Both loan and deposit growth decelerating
All banks: Growth in loans and deposits (Y/Y)



Source: BofA Global Research estimates, APRA

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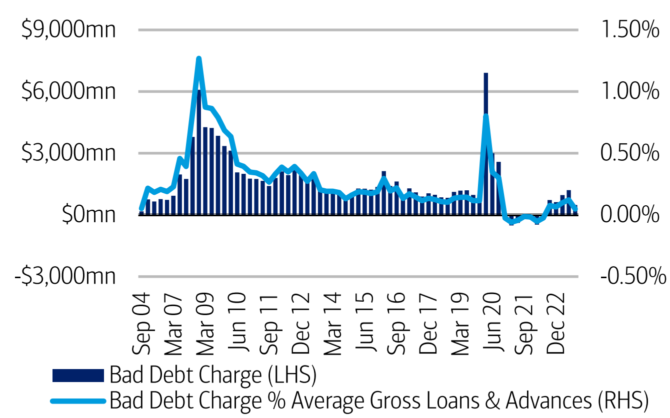
Exhibit 8: Bad debt charge remaining low
All banks: Bad debt charge



Source: BofA Global Research estimates, APRA

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Methodology for the indicator

Since 1990 the indicator exhibits a backtested correlation of 0.88 with the Australian banking system credit cycle. In each of the episodes since 1990, the BofA Australian Bank Credit Loss indicator troughed before the Australian banking system credit cycle started rising; with an average lead time of four months. The indicator also back tests well; that is to say, there has been an absence of "false positive signals" (i.e. when the indicator rises but the Australian banking system credit cycle does not).

Construction of the BofA Australian Bank Credit Loss Indicator

The BofA Australian Bank Credit Loss indicator is a proprietary tool that ultimately seeks to identify turning points in the Australian banking system credit cycles and provide some gauge as to the direction of those cycles at a sector level, which can then inform the bad debt charge assumptions in our individual bank earnings estimate models; the indicator does not have scored values. Readers should keep in mind that the indicator is designed to be **a directional indicator only**, and does not quantify the magnitude of individual bank bad debt charges.

Our indicator incorporates macroeconomic and corporate / household sector data series that have historically acted as early warning signs for the rise in bad and doubtful debts within the Australian banking sector.

Working closely with our APAC & GEMs Equity Strategist Ritesh Samadhiya, we started out with an exhaustive list of macroeconomic variables for Australia including housing, sentiment, interest rates, inflation, labour, spending & borrowing and external balances. In addition to Australia, we also looked at various macro variables in China (Australia's largest trading partner) given the growing interconnectedness between the two countries in the last two decades through trade, capital flows and tourism. For sector-specific data series, we explored business sector interest burden, business credit growth, corporate debt to pre-tax operating profit, personal and commercial bankruptcies amongst other data.

First, we normalized (via z-scores) all the macroeconomic and sector-specific data series for the sake of comparability. We then calculated the correlation between the individual data series and our target variable, the Australian banking system credit cycle.

As our aim was to create a predictive indicator, we were interested in only those data series that were leading in nature, taking into account their release times – for example, if a data series leads the target variable by 1 month but is released with a delay with of 2 months, it will not be considered as a leading indicator. Unsurprisingly, most of the data turned out to be coincident / lagging and / or not related to the dependent variable (namely, bad and doubtful debts). Since data for bank bad debt charges are only available on a quarterly basis, we ran our backtested correlation analysis on a quarterly frequency. We found seven variables that lead the Australian banking system credit cycle, namely:

1. BBB 3 year corporate bond yield spread to Australian Government Securities;
2. Business interest rate;
3. CDS Index;
4. Business sector interest burden;
5. Melbourne Institute Survey of Consumer Inflationary Expectations;
6. Melbourne Institute Monthly Inflation Gauge;
7. Debt / Pre-tax Operating Profit; and

The eighth variable – the Hedonic Home Value Index – has also been included notwithstanding its low backtested correlation of -0.11, owing to the increasingly high Australian mortgage exposure of the Australian major banks (rising from 21% in 1990 to 55% in 2018). All eight variables are equally weighted in the indicator:

Exhibit 9: Descriptions of the factors used for the BofA Australian Bank Credit Loss Indicator

A range of factors covering areas that include market-based indicators of risk, business interest rates levels / gearing / profitability, inflation, and house prices

Factor	Source	Description
BBB 3y Spread to AGS	RBA	The difference between 3-year BBB rated corporate bond yields and the yield on Australian Government Securities. A market based indicator of corporate credit risk
Business Interest Rate	RBA	Variable lending rates to large business (weighted average rate on credit outstanding)
CDS Index	Bloomberg	A credit default swap index is a credit derivative used to hedge credit risk, used to protect investors owing bonds against default and by traders to speculate on changes in credit quality. A market-based indicator of credit risk
Business Sector Interest Burden	ABS, APRA, RBA	A measure of business sector conditions, in terms of their ability to service debts. Calculated as: (Average intermediated business credit outstanding x average large business interest rate) / business profits, average over the year
Melbourne Institute Survey of Consumer Inflationary Expectations	Bloomberg	A measure of inflationary expectations, with consumers asked whether and by how much they believe the prices of goods will change over the next 12 months
Melbourne Institute Monthly Inflation Gauge (y-o-y)	Bloomberg	Estimates month-to-month price movements for a wide-ranging basket of goods and services purchased by consumers across the capital cities of Australia; based on the ABS-released quarterly CPI (consumer price index) data
Debt / Pre-Tax Operating Profit	ABS, RBA	The ratio of corporate debt to pre-tax operating profits
Hedonic Home Value Index (q-o-q)	CoreLogic	Measures movements in the value of Australian housing markets using both transacted sale prices and the attributes of properties that are transacting (factors such as the number of bedrooms and bathrooms, the land area, and the geographic context of the property). A measure of house prices and therefore housing collateral value

Source: BofA Global Research

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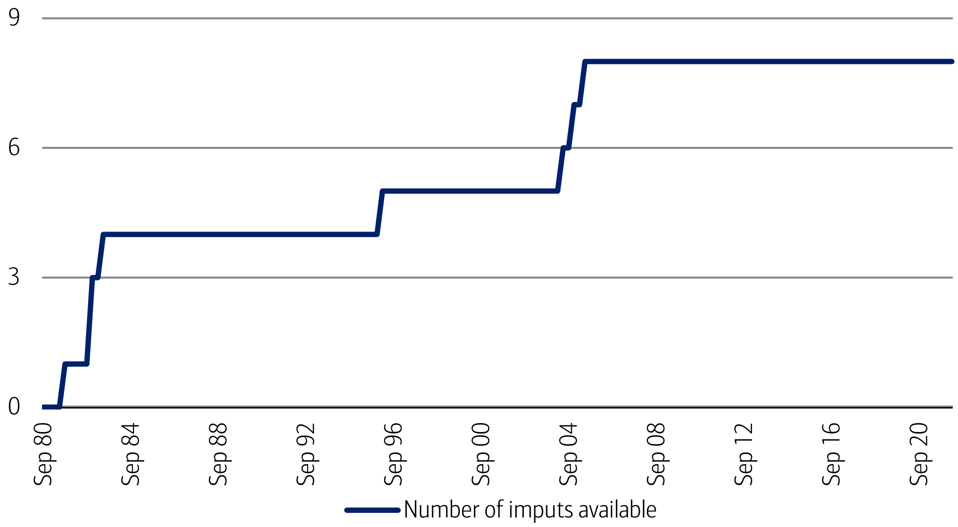
The backtested correlations (over the entire range of available data) of the above variables with bad debt charges range from 0.28 to 0.72, with Melbourne Institute Monthly Inflation Gauge having the lowest backtested correlation and the BBB 3-year corporate bond yield spread to Australian Government Securities the highest. To avoid over-fitting the indicator, we restricted the input variables to only those factors that have historically been able to identify most of the inflection points in the Australian banking system credit cycle. (Over fitting occurs when "noise" rather than underlying trends become the focus, to the point where there is no longer a clear relationship between the dependent and independent variables.) The indicator also back-tests well as there is an absence of "false positive signals" (when the indicator rises but bad debt charges do not).

Readers should note that not all variables are available from the starting date of the analysis. We start our analysis in 1990 as we have at least 4 variables (50% of the total 8 variables) from then on; the time period also captures the relevant post financial deregulation period in which credit cycles have occurred in Australia. From June 2004 we have data for all the eight input variables. We believe the period since 1990 is comprehensive enough to support the robustness of the indicator as it spans several business cycles / bad debt cycles:

Exhibit 10: All 8 factors have been available since 2004
Availability of the factors used in the BofA Australian Bank Credit Loss Indicator



Source: BofA Global Research

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After deciding on the set of input data series to be used in our predictive indicator, we explored multiple ways to aggregate them to create an indicator for our target dependent variable. However, we finally decided to equally weight the above eight series to form the aggregate indicator, as the increase in complexity of the other approaches did not justify the marginal increase in accuracy. Plus, this approach also helped to avoid the abovementioned over fitting issues.

What didn't we include as factors?

For completeness, we list factors in the table below that are commonly associated with bank bad debt cycles that we tested but concluded were of either limited or no value for our predictive indicator:

Exhibit 13: Many intuitive data sets associate with bad debts merely coincident and/or lacking backtested correlation
Factors that were tested in the BofA Australian Bank Credit Loss Indicator but not included

Factor Examined	Comment as to why this wasn't included in the indicator
Business profits growth (q-o-q)	No backtested correlation found, plus the data series was too volatile for our purpose
Business credit growth (q-o-q)	Coincident factor, with a backtested correlation of only -0.4
Unemployment rate (Australia)	Coincident factor, with a backtested correlation of only 0.6
GDP growth (q-o-q)	Leading by 1 quarter, but with a weak backtested correlation of 0.2
Construction % GDP	Coincident factor, with a backtested correlation of only -0.4
Personal bankruptcies	Coincident factor, with a backtested correlation of only -0.25
Corporate Insolvencies	Coincident factor, with a backtested correlation of only 0.6
Commercial real estate prices	Coincident factor, but with a high backtested correlation of -0.8 (data sets also lacking)

Source: BofA Global Research

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Back-testing disclaimer

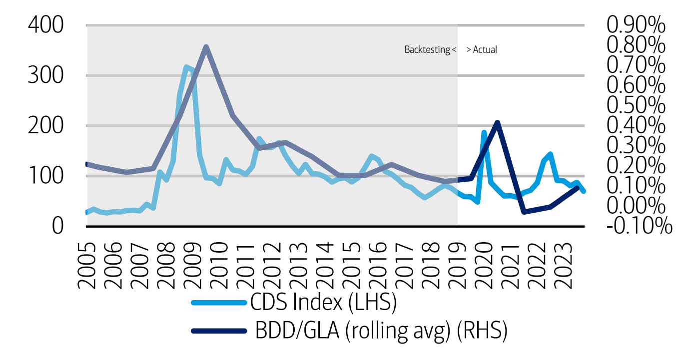
The analysis of our indicator in this report is backtested and does not represent the actual performance of any account or fund. Backtested performance depicts the hypothetical backtested performance of a particular strategy over the time period indicated. In future periods, market and economic conditions will differ and the same strategy will not necessarily produce the same results. No representation is being made that any actual portfolio is likely to have achieved returns similar to those shown herein. In fact, there are frequently sharp differences between backtested returns and the actual results realized in the actual management of a portfolio. Backtested performance results are created by applying an investment strategy or methodology to historical data and attempts to give an indication as to how a strategy might have performed during a certain period in the past if the product had been in existence during such time. Backtested results have inherent limitations including the fact that they are calculated with the full benefit of hindsight, which allows the security selection methodology to be adjusted to maximize the returns. Further, the results shown do not reflect actual trading or the impact that material economic and market factors might have had on a portfolio manager's decision-making under actual circumstances. Backtested returns do not reflect advisory fees, trading costs, or other fees or expenses.

Other risks & limitations

The indicator also may become less predictive or may perform less well than expected in the event (for example) that future Australian banking system credit cycles are shaped by factors that we have not contemplated in the indicator and / or factors that have not been influential in shaping the Australian banking system credit cycle in the past.

BofA Australian Bank Credit Loss indicator factor charts

Exhibit 14: The credit default swap index spikes ahead of bad debts increasing...
Australian bank bad debt charge vs. CDS Index...



Notes: Bad debt charge % gross lending is used as a proxy for the Australian banking system credit cycle. This performance is back-tested and does not represent the actual performance of any account or fund. Back-tested performance depicts the theoretical (not actual) performance of a particular strategy over the time period indicated. No representation is being made that any actual portfolio is likely to have achieved returns similar to those shown herein.
Source: BofA Global Research, Bloomberg

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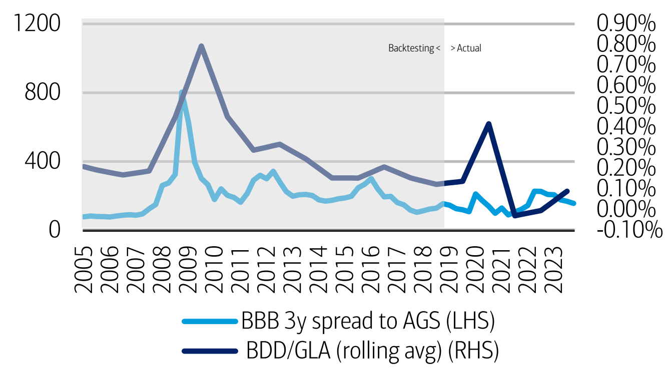
Exhibit 15: ...as does the BBB-corporate bond yield spreads
Australian bank bad debt charge vs. BBB bond yield spread



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Source: BofA Global Research, RBA

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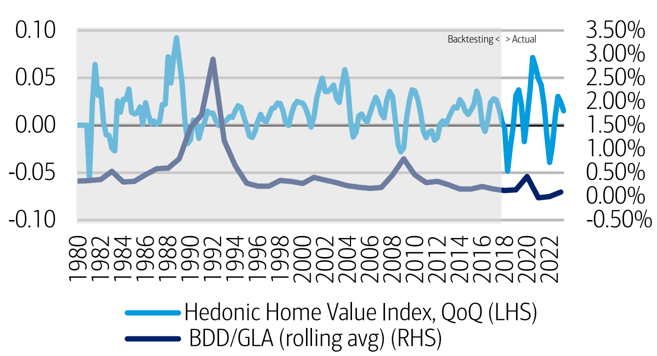
Exhibit 11: House price declines precede higher bad debt charges
Australian bank bad debt charge vs. Home Value Index



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Source: BofA Global Research, CoreLogic

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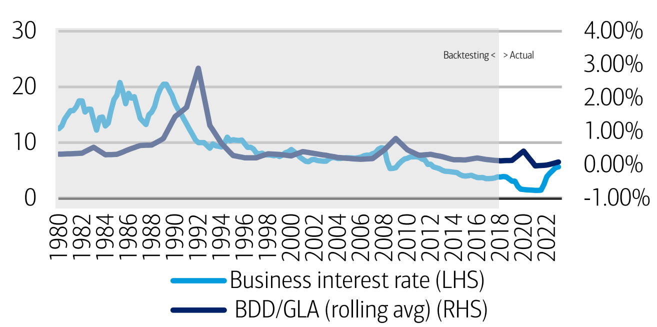
Exhibit 12: Higher business interest rates precede higher bad debt charges
Australian bank bad debt charge vs. business interest rates



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Source: BofA Global Research, RBA

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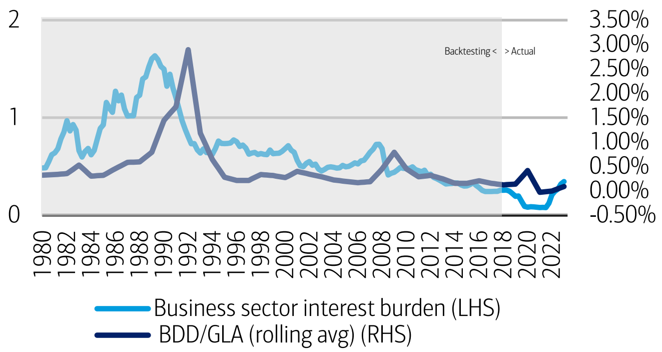
Exhibit 13: A rising business sector interest burden is followed by higher bad debts

Australian bank bad debt charge vs. the business sector interest burden



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Source: BofA Global Research, ABS, APRA, RBA

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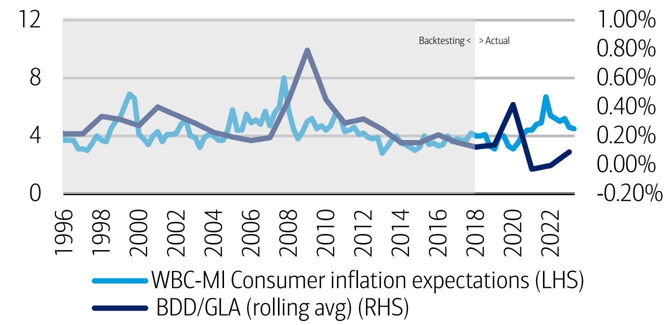
Exhibit 14: Rising inflationary expectations are followed by higher bad debt charges

Australian bank bad debt charge vs. Survey of Consumer Inflationary Expectations



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Source: BofA Global Research, Bloomberg

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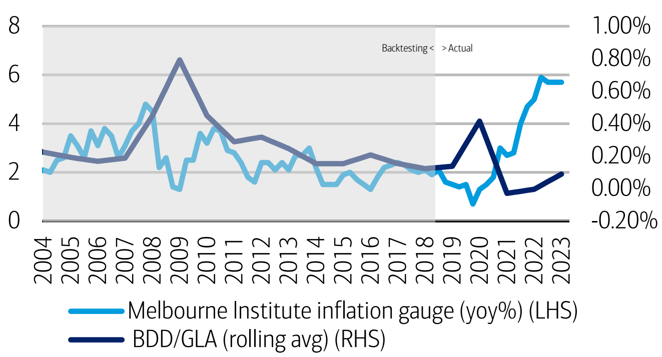
Exhibit 15: Spike in inflation gauge precedes bad debt charges

Australian bank bad debt charge vs. Melbourne Institute Inflation Gauge



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Source: BofA Global Research, Bloomberg

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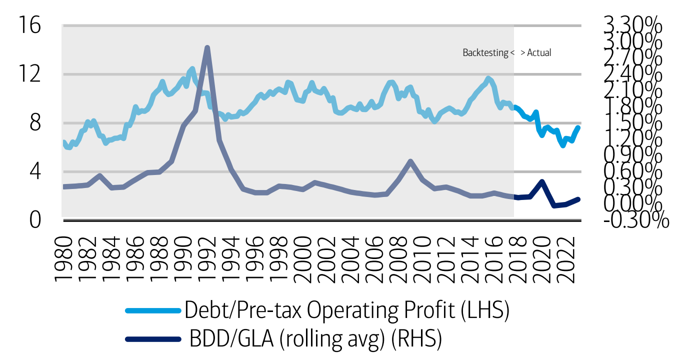
Exhibit 16: Higher corporate indebtedness precedes higher bad debt charges

Australian bank bad debt charge vs. debt % pre-tax op profit



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Source: BofA Global Research, ABS, RBA

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Exhibit 22: Backtested correlation of 0.88 since 1990 with a lead of 4 quarters

Components of the BofA Australian Bank Credit Loss Indicator: backtested correlations, leads and data starting dates

	CDS Index	BBB 3y spread to AGS	Hedonic Home Value Index	Business interest rate	Business sector interest burden	Melbourne Institute survey of consumer inflationary expectations	Melbourne Institute monthly inflation gauge	Debt/Pre-tax Operating Profit	Proprietary Indicator
Backtested correlation	0.66	0.72	-0.11	0.68	0.41	0.39	0.28	0.2	0.88
Sign	1	1	-1	1	1	1	1	1	(na)
Lead (quarters)	1	1	1	6	9	4	3	3	4
Start Date	Dec 04	Jun 05	Jun 83	Dec 82	Dec 82	Mar 96	Jun 04	Sep 81	Sep 90

Source: BofA Global Research, RBA, ABS, Melbourne Institute Inflation Gauge, Bloomberg, CoreLogic

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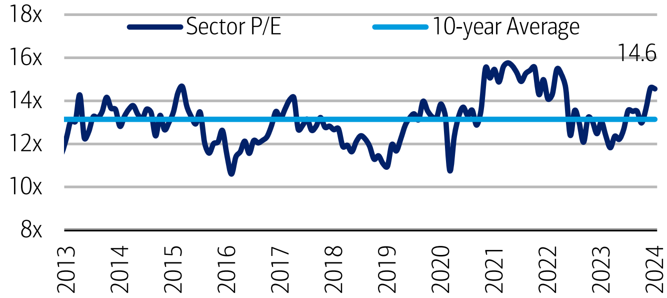
Bank sector valuation screens

Banks expensive on P/E vs history

Exhibit 23: P/E multiple of 14.6x above average 13.1x
Major Banks simple average P/E multiple, 1-year forward consensus



Source: BofA Global Research, Bloomberg

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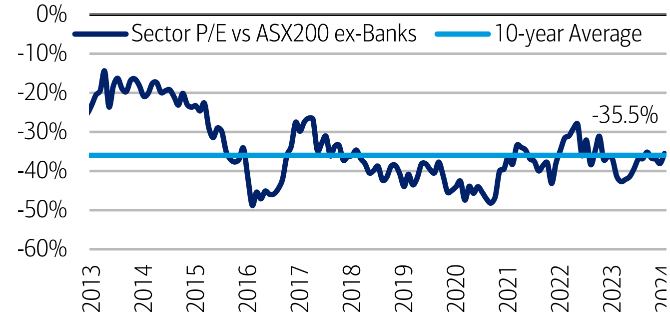
Exhibit 24: Sector trading in-line with 10-year average discount
Banks sector consensus P/E vs. the ASX200 index ex Banks



Source: BofA Global Research, Bloomberg

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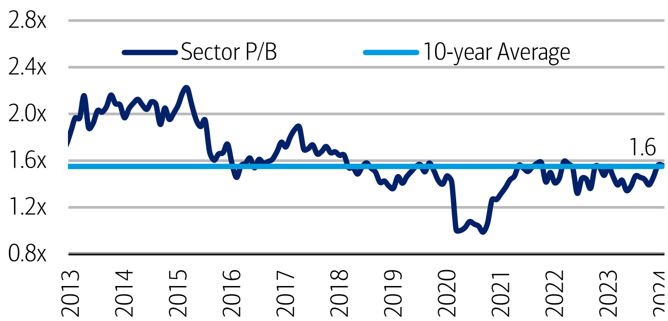
Exhibit 25: Some recovery (1.6x) in-line with the 10-year average
Major Banks simple average consensus P/B multiple



Source: BofA Global Research, Bloomberg

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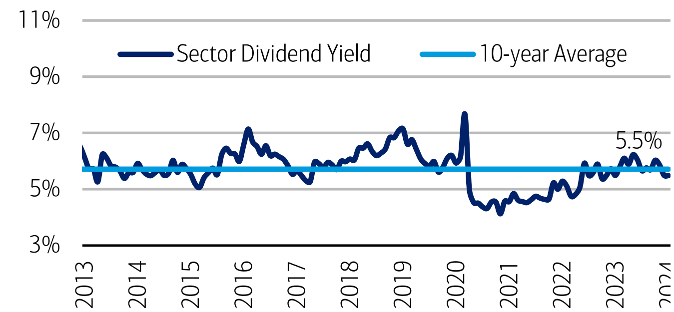
Exhibit 26: Some recovery (5.5%) slightly below average (5.7%)
Major Banks simple average consensus dividend yield, 1-year forward



Source: BofA Global Research, Bloomberg

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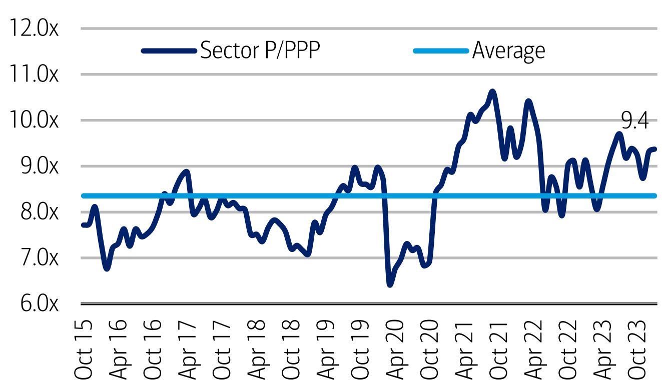
Exhibit 27: Down (8.5x) from recent series high; above average (8.4x)
Major Banks simple average consensus underlying profit multiple



Source: BofA Global Research, Bloomberg

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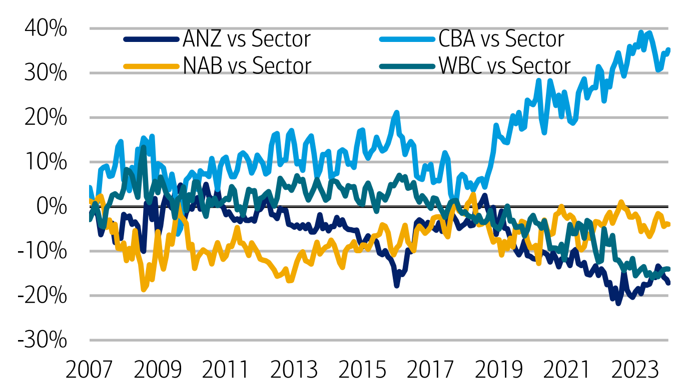
Exhibit 28: CBA's premium is elevated (35%); ANZ cheapest (-17%)
Major banks: P/E Premium /discount to the major bank average



Source: BofA Global Research, Bloomberg

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Exhibit 17: Stocks mentioned
Prices and ratings for stocks mentioned in this report

BofA Ticker	Bloomberg ticker	Company name	Price	Rating
ANEWF	ANZ AU	ANZ Group	A$ 25.79	A-1-8
CBAUF	CBA AU	Commonw Bk Austr	A$ 112.48	A-3-7
NAUBF	NAB AU	Natl Aust Bank	A$ 30.89	A-1-7
WEBNF	WBC AU	Westpac Banking	A$ 22.85	A-3-8

Source: BofA Global Research

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Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster[R1]
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

[R1]Ratings dispersions may vary from time to time where BofA Global Research believes it better reflects the investment prospects of stocks in a Coverage Cluster.

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