CFA Institute Research Challenge

hosted by

CFA Society Sydney

University of Sydney

The CFA Institute Research Challenge is a global competition that tests the equity research and valuation, investment report writing, and presentation skills of university students. The following report was prepared in compliance with the Official Rules of the CFA Institute Research Challenge, is submitted by a team of university students as part of this annual educational initiative and should not be considered a professional report.

Disclosures:

Ownership and material conflicts of interest

The author(s), or a member of their household, of this report holds a financial interest in the securities of this company.

The author(s), or a member of their household, of this report does not know of the existence of any conflicts of interest that might bias the content or publication of this report.

Receipt of compensation

Compensation of the author(s) of this report is not based on investment banking revenue.

Position as an officer or a director

The author(s), or a member of their household, does not serve as an officer, director, or advisory board member of the subject company.

Market making

The author(s) does not act as a market maker in the subject company's securities.

Disclaimer

The information set forth herein has been obtained or derived from sources generally available to the public and believed by the author(s) to be reliable, but the author(s) does not make any representation or warranty, express or implied, as to its accuracy or completeness. The information is not intended to be used as the basis of any investment decisions by any person or entity. This information does not constitute investment advice, nor is it an offer or a solicitation of an offer to buy or sell any security. This report should not be considered to be a recommendation by any individual affiliated with CFA Society of Sydney, CFA Institute, or the CFA Institute Research Challenge with regard to this company's stock.

SYDNEY UNIVERSITY RESEARCH GROUP

Commonwealth Bank of Australia (CBA.ASX)

Don't bank on it

9th September 2019

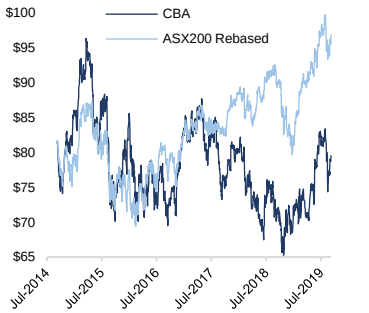
CommonwealthBank

GICS Sector: Financials
Industry: Banks
Australia | Australian Securities Exchange (ASX)

Recommendation: **SELL**

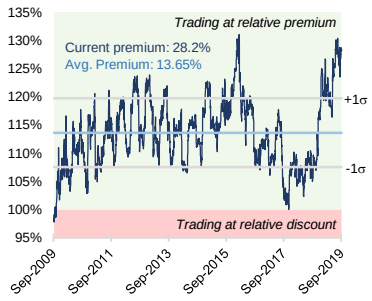
CBA.ASX Overview	
Target Price	$70.08
Last close	$79.81
Downside	-12.19%
Market Cap	$141,283m
Shares Out.	1,770m
52-Week High	$83.99
52-Week Low	$65.23
P / E (LTM)	16.19x
P / BV (LTM)	2.03x

Price History Rebased



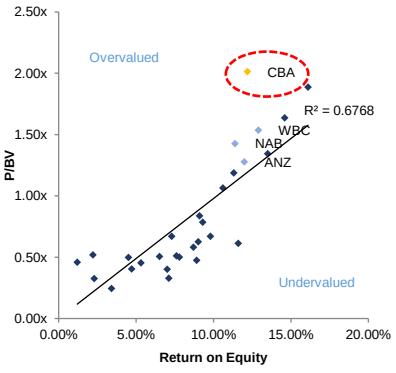
Source: Capital IQ

CBA's P/E premium to Majors (ex. CBA)



Source: Capital IQ, CIQ estimates

Global Banks P/BV vs ROE Regression



Source: Capital IQ, SURG analysis

Catalysts

Expected Date	Catalyst	Impact
5-Nov-19	RBA rate cut to 0.75%	NIM squeezes further
Nov-19	RBNZ review of capital adequacy framework	Management intention to meet capital requirement upfront
12-Feb-20	1H20 earnings announcement	NPAT, NIM and mortgage volumes land below consensus
31-Mar-20	No special dividend announced with interim dividend	Shareholder forego expectations of capital management

EXECUTIVE SUMMARY

We initiate coverage on Commonwealth Bank of Australia (CBA.ASX) with a **SELL** recommendation based on a 12-month price target of **$70.08** triangulated between our residual income model (RIM), dividend discount model (DDM) and relative valuation. Our target price represents a 12.19% downside from the last close of $79.81 on 9 September 2019.

CBA has historically outperformed its Australian banking peers, delivering a consistent dividend yield and a 24.3% ROE premium (vs. Australian majors ex. CBA since 2009) to earn its status as a market darling. Following a surprise Coalition victory and a Royal Commission Final Report that left the banks largely unscathed, a sentiment-driven rally has lifted CBA's share price to near historic highs. Despite intensifying headwinds, the bank currently trades at ~2x book value for just a 12.5% ROE while its forward P/E of 16.7x represents a 28.2% trading premium to other majors, more than double the historical premium of 13.7%. We see the market underappreciating: **1)** CBA's overweight exposure to a deteriorating mortgage market, **2)** the Net Interest Margin (NIM) flow-through of ultra-low rates; and **3)** the impact of the RBNZ's new capital proposal on expected capital management programs. CBA's share price has likely overshot its fundamental value as investors chase the bank's attractive 5.4% dividend yield (vs. All Ords dividend yield of 3.92%) and the prospect of shareholder returns following the completion of a slate of announced divestments.

1. CBA's overexposure to mortgages will bite

With national house prices well below 2017 peaks (-5.2% YoY) and 2Q19 GDP growth figures coming in at their weakest level since 2009, we see CBA as the most exposed of the majors to headwinds facing a deteriorating housing market due to its overweight exposure to home lending. We forecast:

- Front-book pricing pressures to continue in the mortgage space as CBA turns to aggressive discounting to maintain its dominant position in a hyper-competitive environment
- A volume-margin trade off to occur as growth in the broker channel continues to drive loan book growth, a strategy which marks a departure from CBA's core focus on propriety lending. Given the weak housing market, we do not believe now is the right time to be chasing balance sheet growth
- CBA's exposure to deteriorating asset quality to rise as the cycle turns, with increasing nonperforming loans and mortgages with negative equity to outpace system growth. This is exacerbated by **1)** the high level of Australian household gearing (200% of disposable income); and **2)** CBA's overweight exposure to WA, and QLD (states which have recorded the highest negative equity driven by stagnating wages and cost of living pressures)

2. NIM squeeze to put pressure on inflated valuation

Following the Jun-19/Jul-19 rate cuts to 1%, Australian banks have entered into uncharted territory; interest rates have fallen to historic lows and represent a challenging NIM environment for banks. We see greater downside risk to CBA's NIM due to:

- CBA's lower-cost deposit base relative to peers, meaning it has less scope to pass on cash rate cuts as deposit rates reach their natural zero bound
- Political and regulatory scrutiny post-Royal Commission, placing pressure on banks to pass on rate cuts to borrowers. CBA has limited scope to reprice its loan book to offset the NIM pressure from its increasingly large pool of rate-inert deposits, and;
- The market has not yet seen the full effect of previous on CBA's cash earnings as hedging benefits of the replicating portfolio run-off within the next 12 months. We estimate a 15% impact on FY20 NPAT

We then look to various idiosyncratic features of the Australian macro economy to demonstrate why lower rates in Australia are disproportionately worse for banks. These include: **1)** a higher estimate of the effective lower bound (ELB), **2)** a higher share of variable rate mortgages, **3)** a higher market share of credit provided by the banking sector; and **4)** the lack of a tiered reserve system.

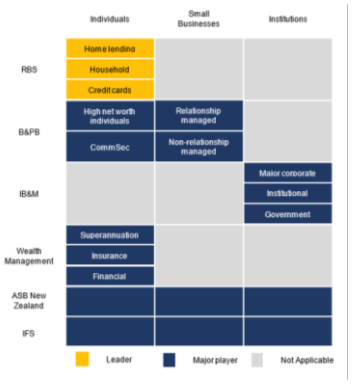
3. The RBNZ proposal will have a negative impact on capital management initiatives

We acknowledge that CBA's divestment pipeline will allow the bank to achieve a superior excess capital position relative to the other Australian majors, which is contributing to its current valuation premium. The market is pricing in $3-5bn in capital management initiatives in FY20 (in the form of a share buyback or special dividend). However, we do not expect this to eventuate given:

- A large portion of CBA's pro-forma 11.8% CET1 is dependent on the success of complex divestments which are unlikely to complete in the next 12 months, and;
- A newly formed, risk-averse management team is likely to take a prudent approach to the RBNZ's Tier 1 Capital proposal by meeting the requirements up front. Our proprietary calculations indicate management cannot afford to pursue this approach and provide a return of funds to shareholders

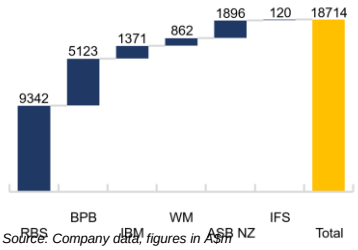
Key Financial Figures (A$m)	Historical					Projected			
(Fiscal Year Ends 30 June)	FY15A	FY16A	FY17A	FY18A	FY19A	FY20E	FY21E	FY22E	Forecast Trend
Net Interest Income	15,827	16,935	17,534	18,342	18,120	17,866	18,031	18,264	
Net Interest Margin	2.09%	2.14%	2.10%	2.15%	2.10%	2.05%	2.03%	2.00%	
Cost-to-Income Ratio	42.3%	42.1%	42.3%	44.1%	46.2%	44.8%	44.3%	42.9%	
NPLs / GLAAs	0.82%	0.79%	0.81%	0.87%	0.93%	0.96%	0.98%	1.00%	
Cash NPAT	9,165	9,508	9,806	9,412	8,706	8,466	8,398	8,565	
Cash NPAT Growth	5.59%	3.74%	3.13%	-4.02%	-7.50%	-2.75%	-0.81%	1.99%	
CET1 Ratio	9.1%	10.6%	10.1%	10.1%	10.7%	11.3%	11.2%	11.1%	
ROE	18.5%	16.6%	15.9%	14.4%	12.8%	11.7%	11.4%	11.5%	
Dividend Payout Ratio	75.0%	75.8%	75.7%	80.6%	87.6%	90.1%	90.9%	89.1%	
Dividend Yield	4.96%	5.65%	5.19%	5.91%	5.21%	5.21%	5.21%	5.21%	
Basic Cash EPS	$5.62	$5.62	$5.70	$5.39	$4.93	$4.79	$4.75	$4.84	
DPS	$4.20	$4.20	$4.29	$4.31	$4.31	$4.31	$4.31	$4.31	

Exhibit 1: Product vs Division Matrix



Source: Company data, SURG analysis

Exhibit 2: Divisional breakdown of Net Interest Income



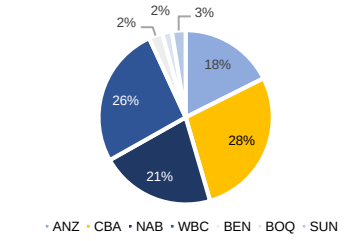
Source: Company data, figures in A$m

Exhibit 3: CBA's interest and non-interest earning income

Product	Interest	Fees
Home loans	X	X
Corporate loans	X	X
Credit cards	X	X
Financial advice		X
Transaction		X

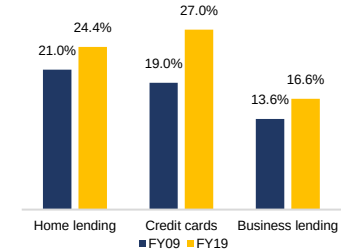
Source: Company data, figures in A$m

Exhibit 4: Home Loan Market Share



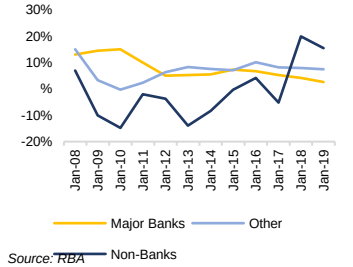
Source: APRA

Exhibit 5: CBA Market Share (FY09 v FY19)



Source: APRA

Exhibit 6: Non-bank lending growth



Source: RBA

BUSINESS DESCRIPTION

Overview

CBA's history of strong performance has been driven by its market-leading position in retail banking, servicing 17.4 million customers in 2019. CBA's strength in retail banking is attributable to its high-quality deposit franchise, leadership in home lending, and continued investment in its digital offering. CBA boasts superior market penetration with 7 million digital customers and 1 in 3 Australians naming CBA as their main financial institution (MFI). After a series of significant financial scandals uncovered by regulatory bodies and the Banking Royal Commission (BRC), particularly in CBA's wealth and insurance divisions, management have shifted their strategic focus towards business simplification and effective risk management, implementing a divestment-led realignment to the core banking business.

Business Model

CBA provides banking services to individuals, small businesses and institutions through 6 core business divisions: Retail Banking Services (RBS), Business & Private Banking (B&PB) and Institutional Banking & Markets (IB&M), Wealth Management and International Financial Services (IFS) (Exhibit 1). CBA's Australian operations comprise 85% of group revenue with its New Zealand operations (ASB Bank) comprising 12% of revenue. With CBA's core competitive advantage lying in retail banking, RBS represents the largest revenue generator of the business (50% of net interest income (NII); Exhibit 2) providing home loan, consumer finance and retail deposit products through CBA's industry-leading branch and ATM network. CBA generates revenue through two main channels: **1)** interest income and **2)** non-interest income.

Interest income: CBA provides loan products that generate revenue through the Net Interest Margin (NIM); the spread of interest charged on loans issued and interest paid to depositors and lenders. The key drivers of NIM are: **1)** *Maturity-transformation of assets* – whereby banks receive short-term financing (e.g. deposits) and issue long-term loans (e.g. mortgages) to generate revenue over the term spread. **2)** *Funding mix* – customer deposits are the cheapest source of funding for banks; CBA's strong high-quality deposit base optimises its NIM by minimising asset funding costs. Customer deposits accounted for 69% of CBA's total funding in FY19 and the remainder consisted of longer-term wholesale funding. **3)** *Asset pricing* – Higher spreads charged on CBA's loans drive NIM expansion. However, asset pricing is largely determined by industry dynamics, such as increased competition and the ease of customer refinancing to lower margin loans. **4)** *Basis risk* – the basis risk premium is the spread between the 3-month bank bill swap rate (BBSW) and the 3-month overnight index swap rate (OIS). A higher spread indicates lower system liquidity and greater costs of short-term lending, which will compress bank NIMs.

Non-interest income: CBA also generates revenue through: **1)** Fee-based services such as insurance and financial planning, primarily in its B&PB divisions. Fee-based revenues have shifted from an ongoing service fee models to a fee-for-service model following criticism during the BRC. **2)** Customer service fees are charged on lending, deposit and transaction accounts (e.g. lending fees from overdrawn accounts and transaction fees).

INDUSTRY OVERVIEW & COMPETITIVE POSITIONING

Four pillar oligopoly: CBA operates as one of four major commercial banks in Australia, alongside Westpac Banking Corporation (WBC), National Australia Bank (NAB), and Australia and New Zealand Banking Group (ANZ). These four make up APRA's 4 'domestic systematically important banks' (D-SIBs), holding 71% market share. CBA and WBC are known for their leadership in retail banking, with the highest share of household lending and deposits. NAB has historically dominated the business lending sector, with an industry leading corporate lending market share of 21%, while ANZ has seen a decline in its owner-occupied, home-lending market share (its 75 bps YoY decline to 15.7% is the largest fall in APRA history). The regional banks Bendigo and Adelaide Bank (BEN) and Bank of Queensland (BOQ) service retail and small business customers, particularly in rural areas, holding 2.7% and 1.7% share of home lending respectively.

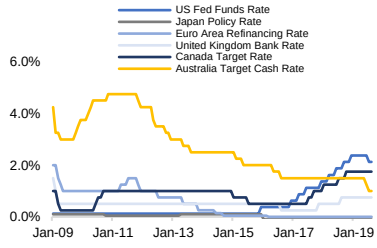
Retail banking dominance: CBA has cemented its position as an industry leader in retail banking, boasting superior market shares in the key product areas of home lending (24%), household deposits (28%) and credit cards (27%). CBA's leadership has resulted from a strong strategic focus on customer experience with the bank leveraging strong brand awareness, industry-leading digital offering and investment in its proprietary customer network, boasting the largest network of 1,000 branches and 3,000 ATMs in Australia. CBA's focus on technological innovation can be seen through CBA's mobile banking app being rated best in the country for three years in a row and being rated the best online bank by Canstar for 10 years in a row. CBA continues to lead majors in housing credit growth, with 3-month annualized growth at May-19 being 1.3x the system average. Through marketing initiatives targeting young people such as school banking programs, CBA has driven brand loyalty, particularly in the under 35 age group, allowing them to grow a high-quality, low-cost deposit base, with the largest proportion of household and SME stable deposits out of the majors (40% of deposit base vs 24% for majors ex. CBA). CBA also holds a dominant market position in New Zealand, operating under ASB New Zealand, holding 22% of the NZ mortgage lending market share behind ANZ (31%).

But competitive forces are growing with entrance of non-traditional players: Looking forward, CBA and other incumbents in the banking sector face growing competition from rivals such as neo-banks, peer-to-peer lenders and other non-authorised deposit-taking institutions (ADIs) who are often backed by superannuation funds or global private equity firms. The rise of non-traditional players attempting to disrupt the industry which traditionally had high barriers to entry have placed pressures on market share and pricing (Exhibit 6). Further, open banking provides access to consumer data across financial institutions, which has made it increasingly easier for customers to refinance and switch to new products and services, increasing competition and placing greater pricing pressure on banks.

Market Dynamics | Low rates are here to stay

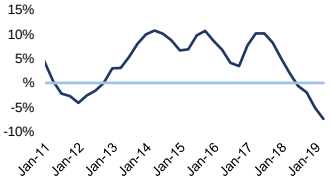
RBA rhetoric remains dovish: The market is expecting a deeper easing cycle following the Jun-19 and Jul-19 rate cuts, with a 100% probability of a rate-cut priced into interest rate futures for Nov-19 and a 65% probability for Mar-20. Dovish shifts across global central banks and market volatility driven by global trade war tensions point to a general weakening in the macroeconomic environment. Domestic conditions also remain soft with

Exhibit 7: Global Interest Rate Movement



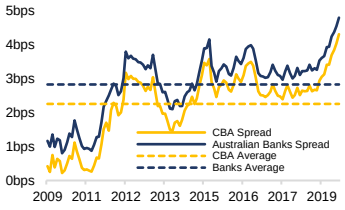
Source: RBA, EBC, BoE, BoJ, BoC,Fed

Exhibit 8: Residential Property Price Growth YoY



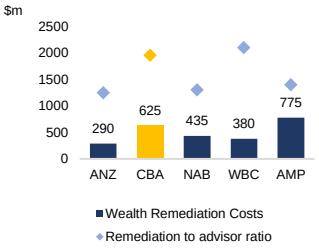
Source: ABS

Exhibit 9: Bank Dividend Yield Spread to 10Y Australian



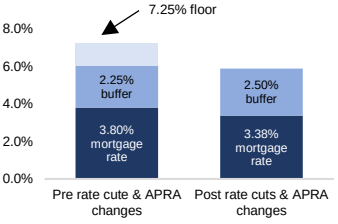
Source: ABS

Exhibit 10: Post-BRC Wealth Remediation Costs



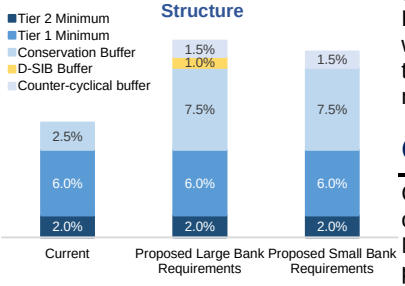
Source: ASIC, Company data

Exhibit 11: APRA Serviceability Buffer



Source: APRA

Exhibit 12: Changes in RBNZ Capital Structure



Source: RBNZ

wage growth remaining flat at 2.3% and consumer sentiment falling 4.1% in Jul-19 despite rate cuts and tax relief. Further, with Australia's record high household gearing levels (123% of GDP) causing a debt overhang effect, consumers are paying down record levels of debt while rates are low, weakening consumer spending growth to 1.4% and limiting economic activity. With the unemployment rate remaining stubborn at 5.2% for the third consecutive month in Aug-19, the RBA has recently revised down the non-accelerating inflation rate of unemployment (NAIRU) by 50bps to 4.5% in Jun-19. In light of this, we expect the RBA to cut rates to support a weakening labour market and stimulate credit growth and consumer spending, in the lead up to the crucial holiday period.

Bottoming housing market is stabilising but credit growth remains subdued: From 2012-2017, record low interest rates and elevated foreign residential investment drove a housing boom in the Australian property market, with growth in dwelling stock overtaking population growth in 2014. In just five years to late 2017, Australian house prices increased almost 50% in just 5 years with major cities such as Sydney and Melbourne seeing the largest price increases. However, a correction in the housing market in late 2018 resulted in a 9% correction in national prices from Oct-17 to Mar-19 with housing credit growth falling from a previous high of 4.9% to just 3.7% in May-19. Over August 2019, housing prices appeared to stabilise as the hardest-hit Sydney and Melbourne markets grew 1.6% and 1.4% respectively. Buyer demand and confidence responded positively to lower interest rates and easing credit policy, leading to an 80% and 76% auction clearance rates in Sydney and Melbourne (Aug-19, highest since early 2017). However, we note that a 40bps disparity still remains between national dwelling stock growth and population growth suggesting that downside risk still exists in the housing market. We expect mortgage credit growth to remain subdued as the market remains at the bottom of the cycle, with overall housing credit growth at 3.3% to Jul-19 and major banks' housing credit growth remaining weak at 1.5-2%.

Investors are chasing yield in an increasingly low rate environment: Long-term bond yields in major advanced economies have fallen considerably since the GFC, primarily driven by sustained levels of low inflation and unusually low term premiums, symptomatic of structural changes in the economy. Simultaneously, yield curves have flattened (Australia) and even inverted (U.S.). With 10Y Australian Government Bond yields falling below 1% for the first time in Aug-19 (currently 1.09%) and average term deposit rates remaining below 2%, CBA's current dividend yield of 5.4% has become increasingly attractive to yield-hungry investors in a low interest rate environment. With CBA offering a stable dividend yield (4.16% to 6.60% over the past five years) and its historical implementation of a progressive dividend policy, investors have particularly rewarded CBA, driving up its valuation premium ~30% over majors.

Industry Dynamics | Regulators crack the whip on bank misconduct

Royal Commission brings remediation costs into focus: BRC revealed numerous instances of misconduct in the banking industry, including fees charged for no service, conflicts of interest arising from mortgage broker remuneration structure and breaches of responsible lending laws. While the benign BRC Final Report saw the alleviation of significant regulatory tail risks for banks, the inquiry has seen elevated remediation, risk and compliance spend across the industry as banks take steps to remediate customers. The total misconduct cost across major banks and AMP has accumulated to $10bn, with CBA's costs up to $2.2bn (increasing $1bn in FY19) and employing 400 full-time employees to target customer remediation. The banks have shifted focus to their core operations and building trust through the implementation of consumer-centric initiatives - CBA's Better Customer Outcomes program involves removing and reducing fees and introducing pre-emptive fee alerts for customers. Similar programs have been seen across majors with WBC's "Get it right, put it right" program and NAB's review of 400 fees across the bank.

Credit conditions tighten post-Royal Commission: Following the findings from the Hayne inquiry, lending standards have significantly tightened as banks impose stricter assessments of mortgages. Banks have turned to restricted interpretations of regulatory guidance (such as an increased scrutiny of reported expenses and limitations imposed on equity drawdowns on residential properties), resulting in the fall of ~20% since 2015 in maximum loan size to new borrowers. The reduced availability of credit has contributed to the low-growth environment in the economy, despite the low interest rate environment. In response to this, APRA removed the 7% serviceability buffer for authorised deposit-taking institutions (ADIs) to increase borrower's credit capacity and indirectly stimulate economic growth. CBA responded by lowering its serviceability floor rate from 7.25% to 5.75%, and increasing its buffer rate from 2.25% to 2.5%. While these changes are likely to increase demand for credit (particularly for first home-buyers) and stimulate volume growth among banks, many risk factors are still in place, such as high household debt and subdued income growth.

APRA and RBNZ to increase regulatory capital requirements: Australian majors are facing pressure on capital requirements with proposed regulatory changes from APRA and RBNZ. APRA announced new requirements in Jul-19 for major banks to lift Total Loss-Absorbing Capital (TLAC) by 3% of risk-weighted assets (RWA) by Jan-24 to reduce the likelihood of taxpayer-funded bailouts in a financial crisis, representing a $13 billion increase in incremental Tier 2 capital for CBA, increasing CBA's cost of capital. The RBNZ has proposed lifting the minimum CET-1 required by the four Australian-owned NZ subsidiaries from 8.5% to 16%. With the majority of NZ's small, agricultural population being serviced by the major Australian banks, the rationale for the new requirements is for bank shareholders to bear a greater burden of the risk of losses to protect NZ depositors and to ensure banks system sufficiently capitalised to withstand a 1 in 200 year financial crisis. If implemented, the proposals are expected to require the major banks to raise an additional $10-11bn in Tier 1 by 2023. However, with APRA and RBNZ's strained relationship, APRA's amended APS 222 policy (see Appendix 23) will significantly affect the ability of majors to directly inject capital into NZ to meet this requirement by reducing the limit on CET1 investment in foreign subsidiaries to 25% (from 50%). We consider this as another incremental negative for the banking sector in an environment where there are few positives.

CORPORATE GOVERNANCE

CBA has undergone a significant renewal of its Executive Leadership Team (ELT) following revelations of ongoing misconduct and poor corporate governance, which culminated in the departure of former CEO Ian Narev in 2018. Newly-appointed CEO Matt Comyn admitted that CBA "has not had the right leadership in the past", and the new ELT has taken steps towards a more robust corporate governance framework, placing significant focus on the proper management of non-financial risk, realigning executive remuneration and repairing the bank's damaged relationship with customers and the community.

Exhibit 13: Corporate governance

CBA Corporate Governance History

Aug-17: AUSTRAC exposes CBA's breaches of AML and terrorism financing laws
Fine: $700m

May-18: APRA's 'scathing' inquiry into CBA culture

Aug-18: Ian Narev announces 'early retirement'

Aug-18: Catherine Livingstone cuts executive pay by $100m

Feb-19: BRC exposes fees-for-no-service, mis-sold insurance, mortgage broker misconduct

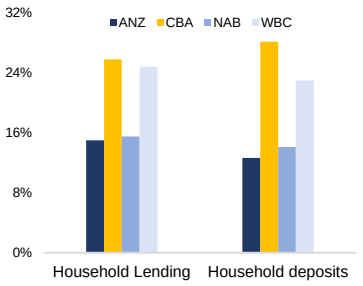
Jun-19: CBA's compensation bill reaches $2.2bn

Source: Company data

Significant corporate governance failings in recent memory: Since 2017, APRA, AUSTRAC and the BRC have uncovered significant failings of CBA's corporate governance processes and widespread instances of misconduct, particularly in the bank's wealth and insurance divisions. In Aug-17, AUSTRAC initiated Federal Court action against CBA for 'serious and systemic breaches' of anti-money laundering and terrorism financing laws for its failure to report automated cash deposits greater than $10,000 on 53,700 occasions. CBA settled the case paying a record civil penalty of $700m, with Chairman Catherine Livingstone admitting that early red flags missed by the Board represented a "significant failing of compliance". The Royal Commission also raised allegations of misconduct, with the bank selling junk insurance to 64,000 customers who were ineligible to claim (including students and the unemployed) and CBA's Financial Planning division charging fees for no service to 31,500 customers between Jul-07 and Jun-15. APRA's 'scathing' review into governance, accountability and culture at CBA reported a "widespread sense of complacency, dismissiveness of regulators" and "lack of accountability" within the company, and an ineffective board that lacked zeal and failed to provide oversight. As a result of these findings, CBA has implemented remediation programs and customer refunds costing the company $2.2bn. CBA's management has actively responded to the APRA and BRC inquiries with its Remedial Action Plan (which has submitted 75 of 156 milestones), and has so far implemented 23 of 76 recommendations following the BRC.

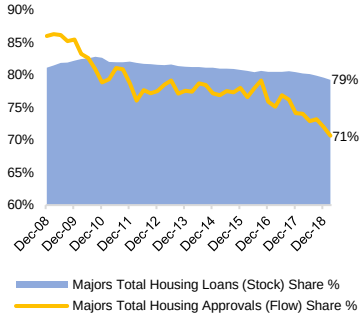
New management team tasked with repairing CBA's damaged reputation: The new ELT and Board have indicated a renewed strategic focus on becoming a 'simpler, better bank', with regaining public trust becoming a key focus. CBA has increased the implementation of customer-centric initiatives, such as the simplification or removal of fees, the development of customer benefits (such as app relaunches and saving tools), as well as divesting problematic wealth management (CFSGAM) and insurance (CommInsure Life) businesses. CBA has emphasized its focus on prudential management of non-financial risks, strengthening Board accountability and oversight by establishing a Non-Financial Risk Committee. In light of compliance failings, CBA has significantly increased its risk and compliance spending to 64% of total investment in FY19 (up from 50% in FY18). CBA has moved to realign executive remuneration structures to better align with prudent risk management, tying significant proportions of group executive performance to the successful delivery of CBA's Remedial Action Plan from FY19 onwards. Catherine Livingstone's first move in 2017 was to cut fees for non-executive directors by 20% and executive short-term bonuses to zero, with executives forfeiting a further $100m in remuneration in FY19 for their role in CBA's financial scandals. Going forward, we see the CBA's board as increasingly risk averse, focusing on reducing operational risks and realigning to CBA's core banking competencies.

Exhibit 14: CBA leads market share over majors in household lending and deposits



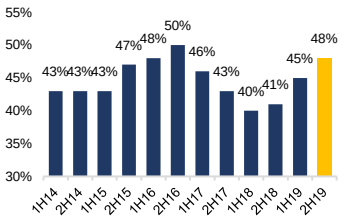
Source: APRA Monthly Banking Statistics

Exhibit 15: Majors' share of housing loans has fallen since 2008



Source: APRA Monthly Banking Statistics

Exhibit 16: Percentage of broker channel originations (1H14-2H19)



Source: Company data

INVESTMENT SUMMARY

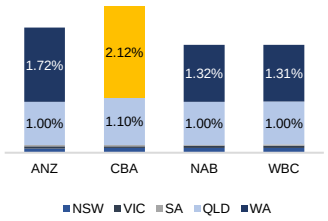
1. CBA is the first to walk the plank amidst overexposure to mortgage lending headwinds

CBA's strong performance in RBS has occurred against the backdrop of housing market strength, with mortgages comprising 70% of CBA's loan book (vs 63% for majors) historically driving earnings outperformance and delivering an average 14% ROE premium to other majors since 2009. However, the housing market correction in early 2019 and weak macroeconomic conditions (unemployment stubborn at 5.2% and flat wage growth at 2.3%) have stagnated mortgage credit growth to 3.3% in Jul-19 from its peak of 7.3% in Jul-17. Given CBA's overweight exposure to the housing market, this is set to disproportionately drive earnings headwinds as **1)** intense competition in the mortgage space accentuates pricing pressures, **2)** growth driven by the broker channel continues at the expense of margins; and **3)** asset quality deteriorates, increasing non-performing loans (NPLs) and impairment expenses.

Pricing pressure to continue with intense competition in mortgage space: CBA's overweight exposure to housing leaves its top-line vulnerable to intense market share competition, which will continue to accentuate pricing pressure on CBA's books. As housing credit growth stagnates (down to 3.3% YoY in Jul-19 from 4.9% in Sep-18), majors have been cutting fixed rates and increasing cashback incentives to retain market share from growing non-major banks and international PE firm-backed shadow banks (non-ADIs housing credit growth is at 10.8% YoY vs 2.2% for majors; Exhibit 6). The tightening of lending standards for ADIs post-BRC has contributed to aggressive growth of lightly-regulated shadow banks through easier terms, cash incentives and lower rates (P&I owner-occupied loans 52bps less than majors), attractive to borrowers who are rejected by ADI lenders. To defend against growing market share competition (which has seen majors share of mortgage flows falling to a record low of 71% in 4Q19; Exhibit 15), CBA has leveraged its large back-book of high margin mortgages to aggressively discount their front-book – as of Aug-19, CBA (and WBC) have been offering $2000 cash-back on refinancing, with CBA offering also up to 170bps off the standard variable rate (SVR). While this has contributed to CBA's above system growth in 2H19 (1.3x system), discounting and switching represented a 4bps drag on the NIM in the same period. We expect continued competition in a subdued credit growth environment to represent a material headwind on FY20E NIM as CBA pursues its aggressive discounting strategy. We also note that despite ultra-low interest rate environments, 70% of mortgagors are leaving repayments unchanged, accelerating loan amortisation (prepayments) and thus placing greater pressure on the majors' market shares. CBA's overweight mortgage portfolio will render CBA more exposed to pricing pressures, particularly in a lacklustre lending growth environment.

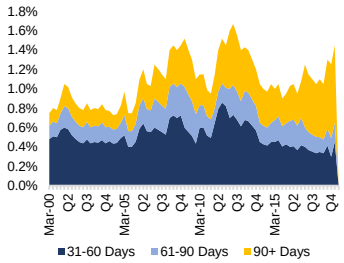
Above-peer home lending growth driven by broker flow is a volume-margin trade-off: CBA's increased reliance on broker flow to drive above-system volume growth will represent a margin headwind, and marks a departure from its traditional competitive advantage in proprietary loan origination. CBA's above-system home lending growth (1.3x system) in 2H19 was driven by above-peer growth in the broker channel, with broker flow growth up from 41% to 48% HoH (proprietary sales down 18% HoH while broker sales up by 15%). However, this contrasts with CBA's traditional strategy, having historically limited its reliance on brokers and maintaining the strongest proprietary distribution network out of the majors - the two periods prior to 2H19 saw CBA growth in proprietary volumes, but home lending growth was below system (1H19 0.9x, 2H18 0.6x). CBA's reacceleration of its presence in the broker channel to drive credit growth in a softening credit environment is reminiscent of 2H15-2H16, where we saw CBA increase broker flow to grow market share, before reversing this strategy to focus on its proprietary network (Exhibit 16). However, we are not comfortable with these increased levels of broker reliance for three reasons: **1)** Acceleration in broker sales has been driven by greater levels of discounting, which places further pricing pressure on the front-book with CBA offering 160-170bps off the advertised SVR for brokers. Increased reliance on broker sales leaves CBA more exposed to front-book discounting headwinds. **2)** Given the low rate environment and pricing pressures, now is not the right time in the cycle for CBA to be chasing balance sheet growth. CBA's recent focus on growing its loan book represents an inherent volume/margin trade-off, and will result in CBA holding a greater stock of low-margin loans on its book.

Exhibit 17: Negative equity state breakdown



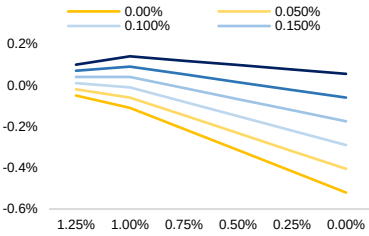
Source: RBA

Exhibit 18: 30, 60 & 90+ Days Arrears (2000-2019)



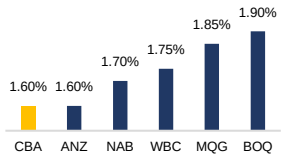
Source: RBA

Exhibit 19: NIM Sensitivity to Interest Rate Cuts



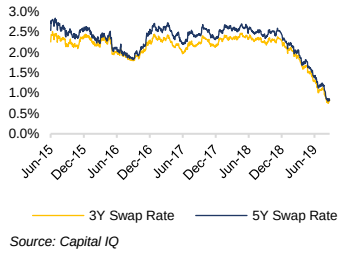
Source: RBA

Exhibit 20: Average 3-month Term Deposit Rates



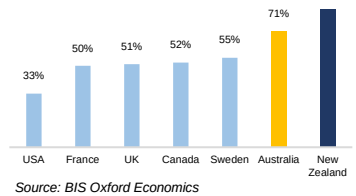
Source: Finder, Canstar, IRESS

Exhibit 21: Average Swap Rates



Source: Capital IQ

Exhibit 22: Market Share of Credit Provided by Banking Sector



Source: BIS Oxford Economics

3) With CBA historically driving its competitive advantage through brand loyalty and franchise strength, we see broker-originated loans as lower value and less sticky than proprietary-originated loans. Increasing exposure to the broker channel is not aligned to CBA's core strategy of direct customer relationships and leveraging strong proprietary network, and we find it particularly unusual given CEO Matt Comyn's forthright comments criticising the mortgage broking industry during the BRC in light of misconduct relating to trailing commissions and conflicts of interest. In light of operational and regulatory risk in the mortgage broking industry, now is not the time for CBA to be increasing its reliance on broker flow to drive growth.

Asset quality is showing signs of weakness, amidst negative equity emerging onto the scene: Arrears and negative equity trends are set to place pressure on CBA's earnings, with rising NPLs signalling an unpriced uplift of 4bps in impairment costs (BDD expenses) as a portion of GLAAs to 20bps come 1H20 results (currently 17bps of GLAA in 2H19) and posing a -3.56% drag on FY20 EPS. CBA's mortgages with negative equity (NE) are currently outpacing system growth and pose heightened default risk (driven by the rising cost of living and weak wage growth), increasing CBA's exposure to deteriorating asset quality trends.

We see three key trends of particular concern: **1)** Currently, 3.5% of CBA's accounts and 4.5% of balances are in a NE position; while the proportion of NE may seem insignificant in isolation, every 5% downward movement in house prices leads to a 1.75% increase in NE. CBA is overexposed to WA and QLD relative to other majors (~33% of loan portfolio), with the two states comprising 72% of CBA's total NE mortgages. This concentration has increased consumer provisions by 7% ($18m to $274m over FY18-19). CBA's presence in WA is correlated with the acquisition of Bankwest (Oct-2008) which has been heavily impacted by the 6% decrease in WA house prices over the past 10 years following the mining boom contraction. **2)** CBA has disclosed ~3% of its loan portfolio has loan-to-value ratios (LVR) >100% (i.e. mortgages in NE), peculiarly quoted based on volumes as opposed to value of loans. Adjusting for value of loans, 4.2% of CBA's portfolio would be in NE, suggesting an understatement of CBA's exposure unrecognised by the market. CBA's net mortgage portfolio LVR also increased 1.59% over 2H19 to 52.44%, while 2% of its loan book comprised of NE owner-occupied mortgages, posing a significant risk as these mortgages typically have higher starting LVRs than investor loans. **3)** Australian home loan arrears rose to 1.47% in Feb-19 – the highest level in 7 years. The proportion of loans 90 days overdue increased to 0.79% while 31-60 days arrears eased to 0.42%, suggesting home loans are shifting to longer time periods overdue (53% of total arrears are now 90+ days; Exhibit 18).

With Australian households the second-most geared in the world at 200% of disposable income, CBA's asset quality trends are highly leveraged to macroeconomic conditions, with further deterioration in the macroeconomy posing significant downside risk to earnings.

2. Interest rate risk is significant, a bleak outlook for sector NIMs and profitability

Given that until the Jun/Jul-19 rate cuts, Australia's cash rate has been elevated in comparison to global economies, the market has not yet witnessed the impact of record low <1% cash rates and a flattened yield curve on the robustness of CBA's NIM (Exhibit 19). Our higher estimate of the effective lower bound (ELB) in Australia vs. international economies (below) is expected to pressure both sides of CBA's NIM. Whilst market expectation of a deepening easing cycle is largely priced into interest rate futures (100% probability of a rate cut in Nov-19 and 65% in Mar-20) and was reflected in post-FY19 earnings corrections in early Aug-19, the market has underestimated the disproportionately negative effect of continued low rates as we see that **1)** CBA's lower-cost deposit base relative to peers reduces its ability to pass through rate cuts **2)** it has limited ability to offset reprice mortgage books due to heightened political pressure and **3)** the full effect of previous and future rate cuts will be felt on CBA's earnings as hedging benefits of the replicating portfolio run-off.

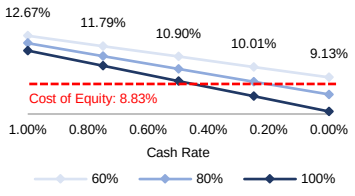
Lower cost deposit base: We expect CBA's higher proportion of rate-inert deposits relative to other majors, to leave the bank's NIM more exposed to falling rates as it will find it increasingly difficult to pass through further rate cuts. With rates charged on deposits relatively low compared to other majors (online savings account deposit rate is 0.50% vs industry average of 0.85% cf. Exhibit 20), CBA's NIM trajectory will underperform peers as deposits reach a natural zero bound. At the latest pricing change, CBA was unable to pass on the Jul-19 rate cuts in full on $160 billion deposits (25% of total deposit book). With the market predicting a deepening easing cycle and CBA expecting the Jun/Jul-19 rate cuts to have a continuing 4bps headwind on FY20E NIM, we expect the cost of subsequent rate cuts to be non-linear on CBA's NIM as this pool of rate-inert deposits increase. The market is underappreciating CBA's specific deposit spread risk below a 1% RBA cash rate.

Pressures limit repricing of mortgage book: Regulatory and political scrutiny following the BRC fallout has left limited scope to reprice mortgage books and hold back rate cuts in order to offset headwinds from increasingly rate-inert deposits. Since 2008, the majors have only passed ~50% of rate cuts to lenders within 12 months after RBA rate cuts. In light of the regulatory environment, our view is that mortgage lending betas will not remain at such elevated levels as any significant repricing of the mortgage book will be politically unpopular. After being heavily criticised for 'profits before people', the major banks have been reluctant to aggressively reprice their mortgage books, passing through almost 90% of the Jun and Jul-19 cash rate cuts (on average holding back only 6 bps of the 50bps rate cut). Further, recent narrowing in the BBSW/OIS spread (significantly reducing funding costs) places banks under even greater pressure to pass through rate cuts to the borrowers.

Run-off of replicating portfolio benefits to hit earnings: A sustained low rate environment will mean CBA becomes increasingly exposed to a run-off in its replicating portfolios and equity hedges as yields continue to decline. CBA currently uses replicating portfolios to hedge against the interest rate exposure of rate-inert deposits and capital; while average yields on CBA's replicating portfolios and equity hedges are currently 2.17% and 2.26% respectively, 3Y and 5Y spot rates have already fallen to 0.7% and 0.83% respectively (Exhibit 21). With the market having not yet seen the full earnings impacts of lower rates, CBA is exposed to significant NIM compression once these hedges roll-forward, with an expected 18.4% downside on FY20E cash NPAT (Exhibit 28).

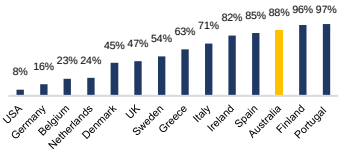
Australian banks are more vulnerable to lower rates due to a higher effective lower bound: The ELB is the point of lending unprofitability, where further cuts to the cash rate drives ROE below the cost of equity (COE). Here, bank NIMs are squeezed such that lending institutions are discouraged from lending, thereby constraining credit supply in the economy. This is known as the 'reversal rate' hypothesis (Brunnermeier, 2019). Through a reverse engineered dividend discount model (DDM) for CBA, we estimate the ELB for CBA to be ~0.20% (Exhibit 23), significantly higher than global estimates of ELBs (see Appendix for further comparisons). This conclusion is consistent with various idiosyncratic features of the Australian banking system, which renders it more

Exhibit 23: ELB estimation, flexing mortgage pass-through



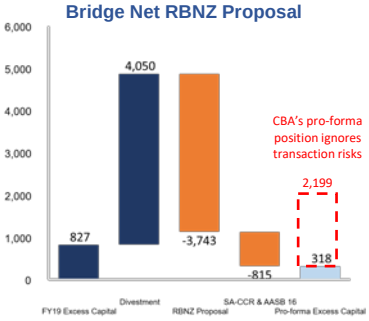
Source: RBA

Exhibit 24: Variable Rate Mortgages International Comparison



Source: European Central Bank, ABS

Exhibit 25: CBA Excess Capital Bridge Net RBNZ Proposal



Source: Company data, RBNZ, SURG analysis

Exhibit 26: Tier 1 Capital Consolidation

Figures in A$m	
Current RWA	52,404
New RWA (post floor and scalar)	60,789
Current T1	6,917
Current T1 Ratio	13.20%
Proposed T1 Ratio	16.00%
Proposed T1	9,726
T1 Delta	2,809
Non-compliant AT1 replaced	935
Net T1 Delta	**3,743**
5yr average net earnings	930
No. of years to meet delta organically	4.03

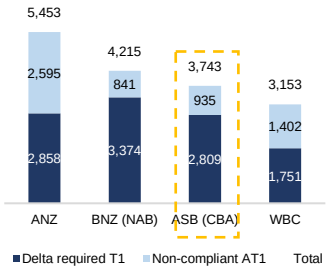
Source: Company data, RBNZ, SURG analysis

Exhibit 27: Divestment Timeline

Figures in A$m	Timing	bps	CET1
CFSGAM	Aug-19	68	3,079
CommInsure	1H20*	38	1,720
BoComm	1H20*	18	815
PTCL	1H20*	7	317
Total		**131**	**5,931**

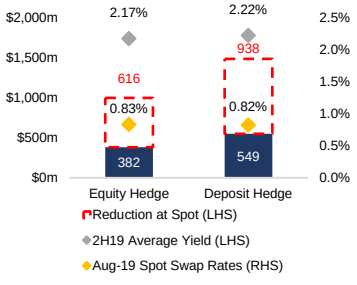
Source: Company data

Exhibit 28: Comparison amongst Majors



Source: Company data, RBNZ, SURG estimates

Exhibit 29: Replicating Portfolio



Source: Company data, SURG analysis

vulnerable to low interest rates, and is why we forecast a sector re-rate to occur as interest rates close in on the ELB. These features include 1) a higher share of variable rate mortgages (below); 2) the lack of a tiered reserve system in A&NZ (which cushions the impact of low interest rates on bank borrowing), such as the one in the Eurozone, and; 3) the Australian banking oligopoly, which dominates the supply of credit in the Australian economy (Exhibit 22), meaning that any pullback in major bank credit will have a material impact on credit supply.

Australian banks have a higher share of variable rate mortgages: We compare Australia, which has a significantly higher portion (88%) of variable rate mortgages to other developed economies; UK (47%) and USA (8%) (Exhibit 24). This means that CBA (and other Australian majors) rate cut pass-throughs to lending rates occur faster than international competitors. The corollary of this means that any negative impact on net worth and NIM is immediately felt as a higher percentage of CBA's back book will reprice to lower levels (intensified by CBA's low expected lending betas). As discussed above (page 4), the market is already underappreciating the impact of lower front book margins. Further, as NAB and ANZ have a higher percentage of fixed-rate loans (~5% higher than CBA), they would receive a benefit from the revaluation of their back book, as lower rates increase the value of their fixed-rate assets, thereby cushioning the flow of lower front book income on group NIMs. CBA however would not receive a similar magnitude of revaluation benefits for its back book income, whilst still bearing the brunt of lower front book income. In this sense, it is easier for lower RBA rates to hit CBA vs other majors and why our estimate of a structurally higher ELB vs banking systems with a higher percentage of fixed-rate loans makes intuitive sense.

3. CBA to disappoint on capital management

CBA's 7.71% grossed-up dividend yield is the key driver of CBA's current trading valuation, with highly attractive franking credits for domestic investors (~75% of investor base). The attractiveness of CBA's yield story has been enhanced by CBA's divestment program, which is expected to provide the bank with an estimated $5.93bn in excess capital (which equates to an 11.8% pro-forma CET1 ratio) of which we believe investors are expecting $3-4bn to be returned to shareholders (Exhibit 27). Although CBA is positioned to meet the tabled RBNZ proposal (Tier 1 lift from 8.5% to 16%) and APRA (only 25% Tier 1 foreign subsidiary investment limit under APS222) regulatory changes, we believe yield-hungry investors are overconfident in management to propose a capital return of capital to shareholders without fully considering the associated operational, regulatory and deal completion risks. It is this prospect of a major capital return which is driving CBA's P/E expanded premium to the other majors (currently double the 10-year historical average premium of 14%).

Risks to divestment program: The market is following CBA's guidance and expects the BoComm Life, CommInsure Life and PTCL divestments to be completed on-time in 1H20 and the full 110bps to be injected into CET1. We believe the market is currently pricing nil deal completion risk, which is incongruent with CBA's known history. When the sale of CommInsure to AIA Group was announced in Sep-17, it had an expected CY18 completion but this was first pushed back to Aug-19 and now to 2H20, with management citing regulatory and stakeholder delays. The market is underestimating the risk to this revised timeline given ~$1,475m of the $2,375m ($150m lower than the original sale price) total proceeds remains contingent on Chinese regulatory approval of the sale of CBA's 37.5% equity stake in BoComm Life to MS&AD Insurance Group. Our analysis suggests CBA's projected capital position is overstated by 63bps ($2.85bn) and is more realistically ~11.2%, accounting for potential regulatory and transaction risks in the divestment of CBA's life insurance businesses.

How much capital is prudently 'excess' after RBNZ's proposal? Given the RBNZ (an organisation which is both NZ's central bank and prudential regulatory body) has shown no intention to step away from its proposed Tier 1 Capital requirements, we expect the RBNZ to fully implement its proposal. The proposal is a highly significant reform for the New Zealand given the nation's small, agriculture-heavy economy that is a net importer of financial services and reliant upon foreign banks where ~85% of total system loans and deposits sit on Australian major bank subsidiary balance sheets. This leaves the RBNZ with very limited ability to raise capital in time of a crisis without APRA oversight, a lack of access to CET1 capital, and large offshore liquidity risk which has *"sat very uncomfortably"* with RBNZ Governor Orr. We estimate CBA will need to increase $3.74bn in T1 capital for its NZ subsidiary, ASB, to meet RBNZ's proposed 16% T1 target (see Exhibit 28). Net of the CFSGAM divestment and 38% of CommInsure Life proceeds, this leaves CBA with a pro-forma excess capital of ~$315m (7bps) for distribution to shareholders which is $1.88bn (42bps) short of CBA's disclosed CET1 pro-forma of 11.8% and current market expectations. Sensitising excess capital to divestment success reveals if the CommInsure alternative transaction pathway does not receive the required regulatory approvals, CBA will be left with only $366m in excess capital.

'Prudential' management - a return of funds won't happen: For an organisation still recovering from a recent history of governance shortcomings facing a challenging operating environment our view is that the Board is likely to take the most conservative route for capital management which is to meet RBNZ Tier 1 Capital requirements upfront rather than returning funds to shareholders. Moreover given CBA's ROE of 12.8% (FY19) sits above its cost of equity of 8.83%, there remains a strong mandate invest this capital in the business in the near term.

Given risks to capital management initiatives, we see significant risk to CBA's premium attached to 1H20 results: We expect CBA to disappoint market expectations of capital management initiatives come 1H20 earnings announcement, which will catalyse a downward price movement.

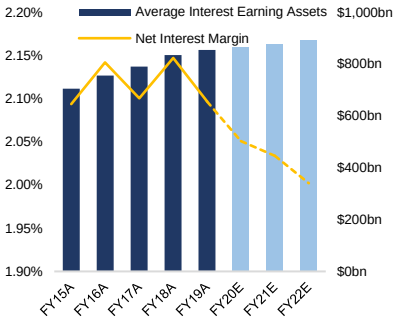
FINANCIAL ANALYSIS

Profitability

Net Interest Margin under pressure in a more challenging macroeconomic environment: CBA's NIM has trended downwards since FY18 and we forecast this trend to continue in the medium-term, reaching 2.00% in FY22E. The NIM contraction can largely be explained by three key factors:

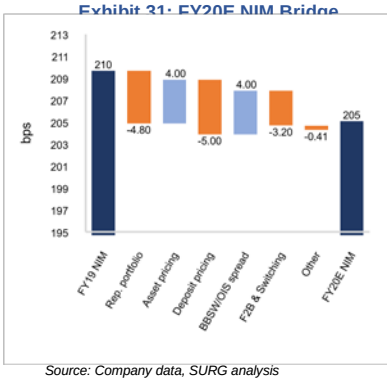
1) There remains little room for the rebasing of deposit rates which are already at historic lows. The average interest rate on total interest-bearing deposits has trended downwards since 2H16 from 2.22% to 1.84% in 2H19. Hence, further falls in the interest rate will likely squeeze the NIM more than CBA's guidance of a further 4bp headwinds on FY20 NIM from the recent Jun-19/Jul-19 rate cuts to a $348.91m impact on earnings. Moreover, asset yields across all loan portfolios have contracted since FY18 and with interest rate futures pricing in a 65% chance of the cash rate reaching 0.5% by Mar-20, our analysis finds these cuts will likely translate into a 10bps decline of the NIM over the next three years to reach 2.00% in FY22.

Exhibit 30: CBA NIM and AIEA evolution



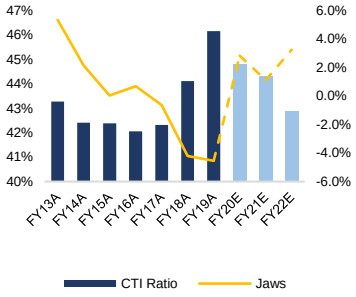
Source: Company data, SURG analysis

Exhibit 31: FY20E NIM Bridge



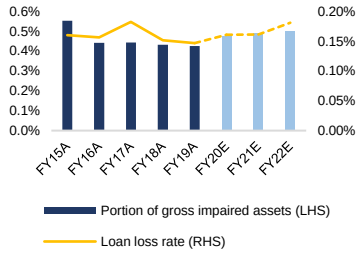
Source: Company data, SURG analysis

Exhibit 32: Jaws and Cost-to-Income Ratio



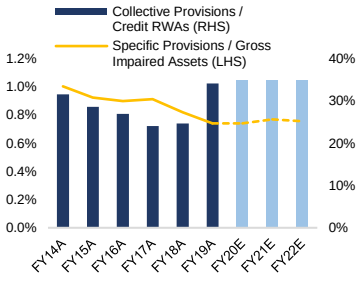
Source: Company data, SURG estimates

Exhibit 33: Loan Loss Rate & Gross Impaired Assets



Source: Company data, SURG estimates

Exhibit 34: Provisions



Source: Company data, SURG estimates

2) Lower interest rates for longer means CBA is becoming increasingly exposed to a run-off in its replicating portfolios and equity hedges as yields continue to decline leaving CBA further exposed to NIM pressures once these hedges roll-forward. The replicating portfolio contributed to a -2bps decline in NIM in FY18 resulting from a ~200bps decline in both 3-year and 5-year swap rates over the period. Assuming yields on replicating portfolios converge with current spot rates, we estimate a potential interest income headwind of $1,554m over the next 3-5 years which is equivalent to a -17.9% reduction on FY19 cash NPAT (Exhibit 29).

3) The BBSW/OIS spread will no longer provide a significant tailwind. CBA has guided that every 5bps reduction in the BBSW/OIS spread translates to 1bp uptick in NIM and since the average BBSW/OIS spread was ~40bps in FY19, our analysis finds that the current spot spread of 29bps implies a NIM tailwind of 4bps into FY20E. This will not be sufficient to offset contractions in the NIM which we forecast to reach 2% by FY22E.

Earnings expected to continue downwards trajectory: CBA's core banking operations have recently shown signs of weakness with slowing loan book growth, high and growing operating expenses and lower fee revenue:

1) Gross, loans and acceptances (GLAAs) growth have tapered from 6.25% in FY15 to 1.63% in FY19 in line with a contraction in system credit growth. CBA saw contractions in non-housing lending in FY18 and FY19 of -2.00% and -3.56% respectively. Personal loans has declined over past three consecutive years while business and corporate loans have declined in the last two. Home lending growth grew at 1.3x system in FY19 but we note this was largely driven by the lower quality broker channel. We expect housing grow below trend in the medium-term growing at CAGR of 3.84% over FY20-22E in line with RBA expectations of declining dwelling investment and a trough in late 2020. Given the weak economic environment, we expect the recovery in non-housing lending to be delayed and forecast positive growth in FY22E.

2) CBA's cost-to-income (CTI) ratio has inflated to 46.2% in FY19 (41.6% excl. one-offs) largely due to the higher customer remediation costs in CBA's wealth management division ($639m in FY19), increased spending in risk and compliance programs ($866m), and greater investment spend into IT (Exhibit 32). Cumulative spend on remediation and program costs reached $2,174m in FY19 which consisted of implementing Royal Commission recommendations refunding customer refunds for "fees for no service" and mis-sold insurance (see Appendix 33). Although CBA has set a strategic goal of obtaining a sub-40% CTI ratio to offset the impact of NIM contractions on earnings, no specifics have been given on the time horizon of this endeavour. Moreover, an additional 1050 full-time employees (FTEs) were hired in FY19 with 450 FTEs categories as "notable" under major compliance and remediation programs. Risk and compliance related investment spend was 64% of total investment in FY19 compared to 50% in FY18. We note this increase was at the expense of productivity and growth spend which contracted 21% over the same period. This trade-off is surprising given CBA has a strong focus in investing in its digital capabilities and experience. Despite CBA categorising the spending on risk and compliance programs as a one-off, we expect expenses in this area to remain elevated and relatively sticky in the short-term given CBA has completed 75 of the 156 milestone commitments of the Remedial Action Plan in response to the APRA Prudential Inquiry. Consequently, we don't see CBA achieving its sub-40% CTI target in the near term given it has historically "focused on maintaining a positive jaws ratio… [and] has never being good at reducing costs" (Linda Carroll, CBA Investor Presentation FY19) which suggests operating expenses will remain stubborn which leaves the Bank particularly exposed to a jaw's reversal from top line headwinds.

3) A Du-Pont analysis reveals that CBA's ROE decline from 18.4% (FY15) to 12.7% (FY19), consistent with the trend across the majors can largely be explained reduction in financial leverage which has decreased from 17.0x (FY15) to 14.3x (FY19) in line with increase in APRA regulatory CET1 capital requirements to 10.5% of RWAs, and a 300bps reduction in the cash NPAT margin over the period. Similarly, CBA's ROTE has declined from 23% to 14.5% over FY15-19 due to lowering returns to assets from 1.09% to 0.89% in the same period and more prudent capital requirements.

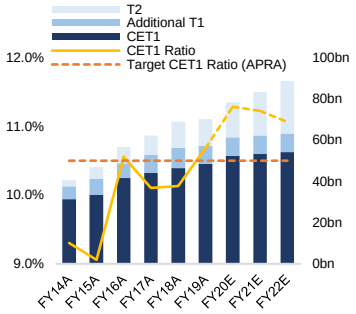
Non-equity Bank Funding

Funding costs have reached historic lows: CBA obtains non-equity funding from three main sources: retail deposits (69%), wholesale deposits and wholesale debt. The funding composition has remained stable since FY08, aside from the large increase in domestic deposits post-GFC when banks sought the stability of term deposit funding. New liquidity regulations (e.g. Net Stable Funding Ratio in 2018) also supported CBA's demand for stable funding in recent years. Bank funding costs were elevated through FY18, driven by a rise in the cost of wholesale funding indexed to money market rates, offset slightly by reducing costs of retail deposits. A significant increase in the BBSW throughout 2018 prompted ANZ, CBA and WBC to lift mortgage rates between 14 and 16 bps in Aug-18 and Sep-18 in response to increased short term funding costs. However, a sharp decline in the BBSW in late FY19 has alleviated funding pressures. The cost of ~66% of CBA's debt and deposit funding is indexed to the BBSW due to interest rate hedging practices. A large share of wholesale funding for CBA is sourced from offshore markets in US dollar denominated debt and are hedged using cross-currency swaps to reduce interest rate exposure.

Asset Quality

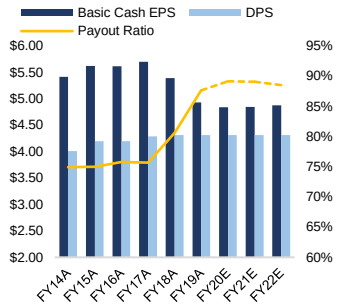
Pockets of weakness in retail portfolios are emerging: While CBA's asset quality has historically remained stable, there are emerging pockets of weakness with gross impaired assets and corporate troublesome debt increasing 4bps and 9bps respectively over FY18-19 which will add pressure to the loan-loss rate in coming years. In FY19, CBA reported large downgrades in single name exposures particularly in the construction (7.10% of total committed exposures (TCEs)) and retail/wholesale trade sectors (3.16% of TCEs) on the back of lower investments into housing development and weakness in discretionary retail. Given the size of its mortgage portfolio, CBA's credit exposure is heavily tilted towards the retail segment which currently accounts for 58.9% of TCEs. This leaves the bank particularly vulnerable to lower wages growth, rising essential costs and the ongoing housing market downturn. CBA's 90+ day's arrears in the retail portfolio has been trending upwards since FY17 and has risen to 0.44% of GLAAs in 2H19 compared to 0.30% in 1H16 although this remains relatively low compared to the other major Australian banks. The personal loan 90D+ arrears cycle has trended up since FY15 with CBA citing emerging stress in Western Sydney and areas of Melbourne. Arrears are also facing particular stress in the Northern Territory and Western Australia with ratios rising above ~1.25% since FY18. In response, CBA has lifted its collective provisions to 1.05% of credit RWAs in FY19 compared to 0.72% 2 years ago (Exhibit 34). On the whole, CBA's asset quality remains relatively sound however we remain cautious as Australian economic conditions are likely to continue to soften hence we expect asset quality metrics to remain elevated over the next three years.

Exhibit 35: CBA Capital Stack



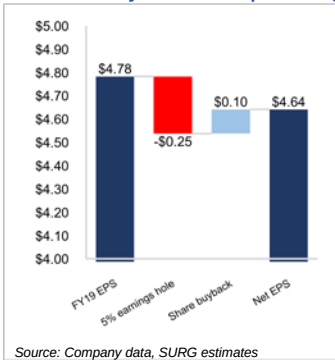
Source: Company data, SURG estimates

Exhibit 36: Dividend Payout Ratio



Source: Company data, SURG estimates

Exhibit 37: Buyback EPS Impact Bridge



Source: Company data, SURG estimates

Exhibit 38: Valuation Matrix

Valuation Matrix		
Method	**Weightings**	**Share Price**
Residual Income Model	30%	$66.88
Dividend Discount Model	10%	$73.42
Relative Valuation	60%	$71.12
P/BV vs ROE Regression	0%	$53.81
Target Price		$70.08
Premium / (Discount) to last close		*-12.19%*

Exhibit 39: Valuation Assumptions

Global Assumptions	Forecast	Terminal
Risk-free Rate	1.72%	2.49%
Beta	1.07	1.08
Market Risk Premium	6.65%	6.50%
Cost of Equity	**8.83%**	**9.51%**
Terminal Growth Rate		**2.30%**

Exhibit 40: Residual Income Model

Residual Income Model - Base Case	
Residual Income Terminal Value	22,925
Current Ordinary Shareholder's Equity	68,450
PV Terminal Residual Income	17,785
Sum of PV Residual Income	5,564
Equity Value	**91,799**
Implied Share Price	**$51.86**
Terminal Franking Credits	27,849
PV Terminal Franking Credits	21,605
Sum of PV Franking Credits	4982
Franking Credits Value	**26,587**
Franking Credits Value per share	**$15.02**
Shares Outstanding	1770.24
Implied Share Price	**$66.88**
Premium / (Discount) to last close	*-16.2%*

Capital Management

Recent divestments leave capital well positioned amongst peers: CBA remains in a strong capital position relative to peers with a CET1 ratio of 10.7%, 2bps above APRA's "exceptionally strong" benchmark of 10.5%. Consistent with industry trends, CBA's string of divestments in its wealth management division has added an additional c.130bps to its surplus capital position which has enabled them to achieve a pro-forma FY19 CET1 ratio of 11.8% although they have left a 5% earnings hole. As per our discussion in the investment summary, we believe this CET1 figure is overstated given it is highly contingent on the sale of CommLife and BoComm. Contrary to the market, we do not expect the divestment to be completed by end of FY20 which was expected to release an additional $1.72bn of CET1 capital over the period. Rather we see expect the revised transaction pathway of CommInsure to inject 38% of total proceeds ($653m) and leave CBA with a pro-forma CET1 of 11.4% assuming the successful sale of PTCL. Moreover, CBA's liquidity coverage ratio (LCR) remains stable at 132% above the 100% minimum and has a Leverage Ratio of 5.6% above APRA's proposed minimum requirement of 3.5% for internal rating-based approach (IRB) banks. The combination of organic capital generation and divestments in non-core businesses has enabled CBA a degree of capital management flexibility and has allowed them to maintain their full year DPS at $4.31 and neutralise their final dividend reinvestment program (DRP) in FY19. However, we expect macroeconomic headwinds and deteriorating asset quality to increase pressure on capital management initiatives. We note that CBA's dividend payout ratio (DPR) has reached 87.6% in FY19 (much higher than management's target payout range of 70-80%) and expect it to reach 89% by FY21E as ROE continues its downwards trajectory. A $4.31 full-year dividend reduces the CET1 ratio by ~80bps.

Excess capital overstated: CBA's management guided pro-forma CET1 ratio of 11.8% implies a ~$5.89bn in surplus capital when viewed against the minimum 10.5% target. As discussed above, the market is pricing in a high likelihood of management engaging in a $3bn share buy-back program in early 1H20 once more certainty is provided regarding the outcome of RBNZ's capital review in Dec-19 (in contrast to our view that CBA management will not return capital to investors). Although a share buyback will slightly offset the ROE and EPS dilution from the recent divestments, our analysis finds that it will not be enough to plug the ~5% earnings hole (Exhibit 37). If management delivers capital return, which we see as unlikely (see above), an off-market buyback is more likely than the on-market alternative or a special dividend given the notional size, franking credit characteristics, and capital gain advantages for shareholders.

CBA well capitalised to meet APRA proposal but RBNZ proposal relies on divestment success: In light of the recent developments in APRA's Total-Loss-Absorbing-Capital (TLAC) proposal of a benchmark total capital ratio of 18% (i.e. an additional 3% in Total Capital), CBA will need to generate additional Tier 2 Capital to lift its current capital ratio of 15.5% to the new target by 2024 although we note management doesn't expect these changes to have a material impact on capital. Our analysis finds that for CBA to achieve a target the new APRA Tier 2 buffer of 5%, the bank will be required to raise an additional ~$9.89bn in subordinated debt based on CBA's FY19 $453bn RWAs. This equates to ~$1.98bn p.a. in subordinate debt raising for CBA to achieve the additional 218bps by 2024. CBA expects this proposal to "decrease the senior funding requirement… although the ultimate cost is not yet known given the pricing of the instruments will be impacted by the change in market supply of new issuance by the Australian banks". However, APRA expects the additional subordinated funding to increase bank of capital by less than 5bps. In terms of the RBNZ's proposed capital changes, management has guided that the impact to be ~NZ$3bn in additional CET1 capital and is not expected to change Level 2 CET1 and manageable at Level 1 CET1 (within APS222 capacity limits). However as per our analysis in thesis point three, CBA's ability to meet the proposed changes is highly sensitive to the success of its divestments.

VALUATION

Our target price of $70.08 was derived as the weighted average of a combination of intrinsic and relative valuation methodologies including the residual income model (RIM) [30%], dividend discount model [10%], and relative valuation [60%]. Given the peculiar financial structure of a bank which requires a unique treatment of debt, interest and regulatory capital, equity-side valuation approaches and multiples were deployed to incorporate the effects of financing directly.

Valuation | Residual Income Model

Our two-stage Residual Income Model (RIM) inclusive of franking credits valued CBA at $66.88 per share assuming a forecast and terminal cost of equity of 8.83% and 9.51% respectively, a terminal growth rate of 2.30% (Exhibit 39). A forecast horizon of three years was used given the maturity of the business and to reduce forecast inaccuracy that accompanies a longer time horizon. Residual income represents the excess return that can be generated by the bank's invested capital above the cost of capital itself and was calculated by forecasting cash earnings and deducting capital charges by multiplying the cost of equity by the book value of equity in each period. Terminal residual income value was estimated using the perpetuity growth formula.

Cash Earnings: Mortgages, personal and business loans were projected relative to system credit growth trends to reflect softer domestic economic conditions. We estimate the average yields on each loan and deposit category and calculate the respective spread to BBSW. Given our expectations of two further rate cuts by the Mar-20, we forecast yields on home, business and personal loans to taper to 13bps, 81bps and 27bps into FY22. Given the limited scope for CBA to reprice their deposit books, we forecast a 5bp reduction in transaction deposit rates, 8bps reduction in saving deposit rates, and 21bps reduction in term deposit rates. Collectively, we project NIM to contract by 10bps to 2.00% into FY22. We are bearish on management's ability to achieve a sub-40% CTI in the near term and forecast CTI to trend towards to 42.9%% into FY22E. We expect asset quality to deteriorate with upticks in the loan loss rate from 16bps in FY19 to 20bps in FY22E. An effective tax rate of 28.30% was assumed over the forecast period by weighting the Australian and New Zealand statutory tax rates by FY19 geographical cash earnings split. Overall, we forecast cash NPAT to continue its downwards trajectory at a CAGR of -0.54% over the next three years.

Residual Income: Annual capital charges were calculated by applying a cost of equity of 8.83% and 9.51%, forecast and terminal respectively (see Appendix 18) to the average of the current and previous year's ordinary shareholder's equity balance. Residual income was then derived for each period by subtracting each year's capital charge from the respective cash NPAT. Terminal value of residual income was estimated using the perpetuity growth formula assuming a terminal growth rate of 2.3% (see Appendix 19). By dividing the implied equity value of the firm by 1,770m the number of shares outstanding, we arrived an equity valuation of $51.86

per share exclusive of franking credits. By assuming CBA continues to fully frank their dividends into the future, we value franking credits at $15.02 to arrive at our final RIM valuation of $66.88 per share (Exhibit 40).

Exhibit 41: Dividend Discount Model

Dividend Discount Model - Base Case	
Terminal Value of Dividends	108,300
PV Terminal Dividends	84,019
Sum of PV Forecast Dividends	19,373
Equity Value	**103,392**
Implied Share Price	**$58.41**
Terminal Value of Franking Credits	27,849
PV Terminal Value Franking Credits	21,605
Sum of PV Forecast Franking Credits	4982
Franking Credits Value	**26,587**
Franking Credits Value per Share	**$15.02**
Shares Outstanding	1,770
Implied Share Price	**$73.42**
Premium / (Discount) to 1m VWAP	*-8.0%*

Valuation | Dividend Discount Model

The DDM is highly relevant to CBA given it is a regulated ADI with regulatory capital requirements and dividends are the more appropriate valuation measure of cash flows compared to free cash flows. Furthermore, CBA has not cut its full-year DPS since the GFC which satisfies the DDM requirement of a stable stream of dividend payouts. We forecast CBA to retain its current DPS of $4.31 over the next three years before entering terminal growth at 2.30%. By assuming a cost of equity of 8.83% and 9.51%, in the forecast and terminal periods respectively, we obtain an implied share price of $73.42 inclusive of franking credits (Exhibit 41).

Valuation | Relative Valuation

Our multiples analysis yielded a relative valuation of $71.12 per share derived from analysis of P/E and P/BV multiples of the comparable set. The five listed retail banks were selected as appropriate comparables given the fairly homogenous operating models and capital structures (a function of regulatory requirements) of Australian retail banks, with growth prospects relatively consistent across incumbent banks due to the banking industry's maturity. Equity multiples were considered most appropriate for valuing banks given that enterprise values and EBITDA are not easily calculated due to the difficulty in defining debt for a financial institution.

Exhibit 42: Market Multiples

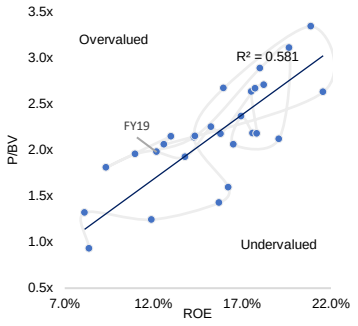
Ticker	P/E (1YF)	P/BV (1YF)	P/TBV (1YF)
CBA	16.68x	1.92x	2.21x
ANZ	11.68x	1.28x	1.38x
WBC	12.74x	1.54x	1.86x
NAB	12.54x	1.49x	1.66x
BOQ	12.04x	0.95x	1.20x
BEN	13.97x	0.96x	1.35x
Median	**12.54x**	**1.28x**	**1.38x**
Adjusted	14.26x	1.78x	1.38x
Implied Price	$68.23	$74.01	$49.94
Weightings	50%	50%	0%
Price		**$71.12**	

P/E$_{1yr\ fwd}$ was given 50% weighting, reflecting the importance of bottom-line earnings in driving value for banks. 1-year forward cash earnings were used to provide a forward-looking valuation baking in market expectations of subdued earnings and NIM compression as well as regulatory (RBNZ, APRA) changes in capital requirements, with cash earnings used to exclude the effect of one-offs (e.g. discontinued operations). CBA trades at a forward P/E of 16.68x, representing a 33% premium to the comparable set median of 12.54x which implies share price of $68.23. While CBA has historically traded at a 13.65% premium to peers, CBA's inflated P/E ratio highlights its stretched valuation. Distortions in P/E ratios may arise depending on differences in how conservative or aggressive peers are in their loan loss provision policies, however, CBA's peers operate with similar loss provision policies, supporting the use of this multiple.

P/BV: was given a 50% weighting and considered appropriate to value financial services firms as banks' balance sheets are a key driver of earnings. The P/BV multiple provides greater explanatory power for financial services firms (vs. non-FS firms) given that banks' assets and liabilities are periodically marked to market. Thus, book value equity is more likely to reflect market value and a stronger relationship between P/BV and ROE is expected, providing insight into market expectations of growth and risk. We arrived at a median P/BV of 1.28x for the comparable set implying a share price $74.01, with CBA currently trading at a 50% premium over peers at 1.92x.

Premium: While we believe that CBA's current valuation of 16.68x earnings and 2.03x FY19 book value is stretched, we note that CBA has historically traded at a premium relative to other banks: 13.7% on a P/E basis and 39% on a P/BV basis since 2009. With ROE being a key driver of both P/E and P/BV multiples, this historical premium is partially explained by CBA's superior ROE which has historically been 24% higher than majors; FY19 ROE of 12.5% still represents a 14% premium over other majors. In addition to delivering superior returns to shareholders, CBA's historical trading premium is also driven by reputational factors. CBA has garnered its reputation as a high quality business, becoming a market darling for both retail and institutional investors as it holds the largest share of Australian residential mortgages, delivers consistent dividend yields and has excellent brand awareness. We expect CBA's P/E and trading premium to narrow from current levels and converge to historical levels. Our view is that while CBA's earnings trajectory is expected to decline over the forecast period, ROE headwinds will be industry-wide and thus CBA's reputational and operational strengths will continue to drive a premium. Thus, we have applied this historical P/E premium of 13.7% and P/BV premium of 38% yielding an implied share price of $71.12.

Exhibit 43: CBA P/BV vs ROE Time Series Regression

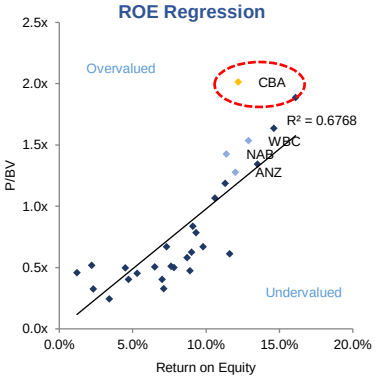


Source: Company data, SURG estimates

Valuation | P/BV vs ROE Global Banks Regression

Given that profitability is a fundamental driver of a banks' value and market capitalisation, a firm's P/BV is theoretically correlated to its ROE. We regressed the P/BV multiple against ROE for major diversified commercial banks with total assets greater than $500bn and primary operations in Australia, New Zealand, Canada and the United States to determine the relative valuation of CBA and the other major banks in an global context (see Appendix 17). Our regression analysis of 13 global banks yielded an R-squared of 42.8% demonstrating sub-optimal explanatory power and found CBA to be significantly overvalued compared to North American peers where its current P/BV of 2.03x is much greater than its predicted P/BV of 1.37x at its FY19 ROE of 12.2% (Exhibit 44). The average P/BV of our North American and other majors peer group was 1.42x which means CBA currently yields a 41.6% premium. The regression analysis values CBA at $53.81 per share. However, given a fair portion of the variance, 57.3%, is explained by factors other than the ROE such as different regulatory capital requirements and competitive dynamics, we do not include this valuation approach in the triangulation of our target share price. Our developed markets bank regression is alternative provided in Appendix 17.

Exhibit 44: Global Banks P/BV vs ROE Regression



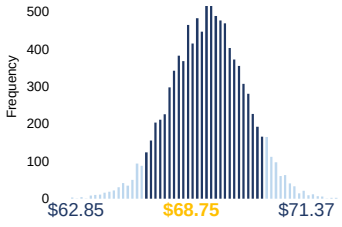
Source: Capital IQ, SURG estimates

INVESTMENT RISKS

[V1] Valuation Risk | Sensitivity, scenario and simulation analyses

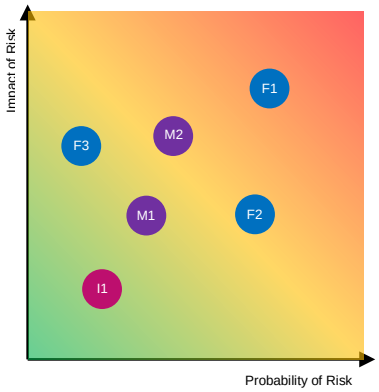
A **sensitivity analysis** was performed to flex the key drivers of CBA's share price. We find a 100bps improvement in CBA's CTI over the forecast period corresponds to a $1.07 increase in the share price, representing a 1.45% upside to our RIM valuation. An improvement of 100bps to credit growth across the period led to a 2.57% upside to $68.21. A **scenario analysis** was conducted to evaluate the significance of changes in macroeconomic conditions on our valuation. Our bull scenario assumes a more favourable domestic economic environment with greater demand for credit, management able to achieve their sub-40% CTI target within the next three years, and the bank able to maintain a 2.10% NIM pressures from low rates, yielding a share price of $86.28 representing a 8.11% upside on last close. Our bear case scenario assumes economic conditions deteriorate to worse than expected levels accompanied by RBA cutting rates beyond 0.50% nearing our estimated ELB of ~30%, an elevated CTI ratio with difficulties to achieve absolute cost reduction. By assuming flat GLAAs growth into FY23, the NIM declining to 1.80% and an elevated CTI of ~43%, we obtain a bear share price of $65.30. Given this scenario analysis is not reflective of probabilities, a **Monte Carlo**

Exhibit 45: Monte Carlo Simulation



Source: SURG analysis

Exhibit 46: Risk Matrix



Source: SURG analysis

Exhibit 47: Cost-to-Income Sensitivity

CTI	FY20E Earnings	Price	Delta
46.1%	8,229	$66.29	(340)
45.1%	8,399	$67.66	(170)
44.1%	8,569	$69.02	0
43.1%	8,739	$70.40	170
42.1%	8,909	$71.77	340
41.1%	9,079	$73.14	510
40.1%	9,249	$74.51	681

Source: SURG analysis

Exhibit 48: Net Interest Margin Sensitivity

NIM	FY20E Earnings	Price	Delta
1.85%	7,870	$63.40	(698)
1.90%	8,045	$64.80	(524)
1.95%	8,219	$66.21	(349)
2.00%	8,394	$67.62	(175)
2.05%	8,568	$69.02	0
2.10%	8,743	$70.43	175
2.15%	8,918	$71.84	349

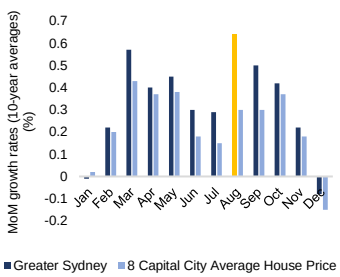
Source: SURG analysis

Exhibit 49: Loan Impairment Expense Sensitivity

Loan Loss	Earnings	Price	Delta
0.128%	8,737	$70.38	165
0.138%	8,682	$69.93	110
0.148%	8,627	$69.49	55
0.158%	8,572	$69.02	0
0.168%	8,517	$68.61	(55)
0.178%	8,462	$68.16	(110)
0.188%	8,407	$67.72	(165)

Source: SURG analysis

Exhibit 50: 10-Year Average MoM Housing Growth Rates



Source: CoreLogic

simulation was performed with 10,000 runs by flexing NIM, CTI and GLAAs growth to yield a RIM valuation range of $66.68 to $70.81 at a 90% confidence level.

[F1] Firm Risk | Yield-investors may be reluctant to shift

Although CBA is subject to earnings headwinds, investors may prioritise CBA's dividend yield of 5.6% (vs ASX200 4.8%). Further, international investors seek Australian equities if 1) the Fed hastens pursuit of rate cuts, and 2) European yields tighten following ECB's proactivity in rate cuts. As 51.46% of CBA's shareholders are retail, the majority of whom invest for yield, and so timelines to reach our price target may stretch. **Valuation Impact**: Upside is unlikely, and our DDM base case of a $4.31 dividend drives a $73.42 price, which is still an 8.0% downside.

Mitigant: CBA's full valuation (16.28x P/E, 2.01x P/B) is not only indicative of the bank's attractive dividend yield, but also the expectation of an incoming return to shareholders following a string of major divestments (primarily, CFSGAM). Our proprietary calculations which demonstrate CBA's inability to return to shareholders whilst meeting the RBNZ's newly proposed 16% CET1 requirement is the primary mitigant to this risk. Moreover, markets are becoming cautious of payout unsustainability amidst sector wide dividend pressure. Long term investors will move quickly to signs of weakness, transitioning to alternative high yielding ASX200 stocks.

[F2] Firm Risk | Striking the bullseye, and achieving cost targets early

If management are able to achieve absolute cost reductions ahead of schedule, investors are likely to drive upside from **1)** positive earnings news and **2)** increased confidence in management's future ability to deliver cost savings. Although CBA's CTI target of 40% is ambitious given current CTI of 46.2%, a cost-out program is currently being undertaken with McKinsey. Yet, akin to NAB's 6,000 job cuts across 5 years returning ~$1.21bn, a CBA cut of 6,000 FTE leads to an impact of ~7% on CTI **Valuation Impact**: Our scenario analysis prices in bullish CTI news of a $74.65 share price (vs $70.53 RI base), if a major $0.5bn is achieved in cost savings FY20.

Mitigant: Wage growth and IT increases (+$229m) continue to outstrip business simplification (-$190m), and we see this trend clearly continuing into 2020. Underlying costs ex one-offs rose 2.4% in FY19. Despite a focus on transformative banking, costs are forecasted to climb with FY20-21 uplift in CHESS replacement costs, IT legacy system repair costs and wage inflation - further driven as wages are at the bottom of the cycle at 2.3% growth YoY and fuelled by growing 6% per worker costs. Furthermore, whilst other majors are aggressively reducing their branch footprint, CBA is increasing their branch network, a strategy that is in line with their unwavering focus on being the MFI for all Australians. Net net, cost savings would have to be 2.5x revenue, which is highly unlikely given aforementioned macro and firm specific drivers.

[F3] Firm Risk | Mortgage repricing, the rabbit in the hat

Despite intense political, customer and regulatory pressure, CBA could plausibly proceed to reprice variable rates on both their front and back mortgage books to reduce a NIM contraction. There is no legislation preventing limiting the pass through of RBA rate cuts and thus increasing the NIM margin for CBA. Management could employ this strategy to sustain bottom line earnings and contain a DPR escalation. **Valuation Impact**: A bullish upside of ~15bps hold-back on variable rates across 3 years marginally inflates the price target to $71.49.

Mitigant: Management's ambition to remain a prudent and customer oriented business mitigates the risk of brazen repricing. Matt Comyn's comments during the BRC that the bank had not been properly led in the past highlights a newfound emphasis on remediating customers.

[M1] Market Risk | RBA holding off rate cuts

In the upside case that RBA delays on its prerogative to achieve 2-3% inflation, as indicated by recent commentary on a reactive response to stubborn unemployment, inflation and sluggish growth, banks will see NIM pressures ease. As decomposed in above (page 5), this would lead to a proportionately less severe outcome for CBA relative to the majors, given its high variable rates proportion in the front book and back book. Notably, a rate cut is priced in at 100% in November by interest rate futures, accompanying a (65%) probability of a further 25bp reduction in Mar-20. We note in order for the RBA to hold off two cuts, wage growth needs to tick up to 2.4%, consumer spending needs to climb, and new housing price data needs to reverse 4-5% on its 9% correction coupled with positive YoY tax return figures funnelling through across the Sep-Oct 2019 period. We expect the Westpac-MI Consumer sentiment index to remain steady, yet an uptick will compound this upside risk. Relaxed political pressure for banks to pass on full rate cuts would also ease the NIM squeeze**. Valuation Impact:** Our bull-case analysis assumes the RBA deploys one rate cut before CY19 end which results with a less pronounced EPS downgrade in FY20 of -2.2% yielding a positive adjustment in our valuation of $0.83.

Mitigant: As the RBA remains heavily data driven, all leading indicators support the case for monetary policy intervention. The timing of the cuts may stretch beyond 6 months, yet the impact will continue to face heavy pressure from the political sector to pass on cuts. In any form, the current levels already dangerously sit above our calculated Australian ELB tipping point, and CBA's NIM is facing pressure on both sides.

[M2] Market Risk | Mortgage turnaround via a housing rebound

Dwelling prices in Australia rebounded in August, with Sydney and Melbourne driving 1.6% and 1.4% MoM growth respectively – the largest monthly rise since March 2017. This was driven by the surprise re-election of the Coalition government and a dovish rhetoric from the RBA. The market is expecting a recovery across 2H2019 and 2020, given recent policy stimulus in APRA's abolishment of the 7% serviceability interest rate floor, expected to lower mortgage rates and translate into higher borrowing for prospective buyers. Sydney's dwelling prices, which have declined ~15% over 2017-18, rebounded 0.3% over two weeks post-election, as buyer demand increased auction clearance rates. This is a turnaround contrasting to the falling residential housing market for almost two years, rallying positive sentiment in CBA's home lending presence. **Valuation Impact**: We proxy a rapid housing turnaround to system credit growth upside, sensitised via our Monte Carlo simulation (Exhibit 45), yielding an upside of $71.37 on the 90th percentile of housing price growth.

Mitigant: Despite uptick in the market, housing prices in capital cities remain well below 2017 peaks (-5.2% YoY), and the 1.6% MoM growth in Sydney is supported by August's seasonal lift (Exhibit 50). Residential construction also remains weak over 2019, given building approvals declined at -9.7% MoM across July. August growth, as seen in Exhibit 50, is merely transient, and the housing market will remain subdued, particularly as the Performance of Construction Index (PCI) holds at 43.1, starkly below 50.0 regrowth.

Financial Performance	Valuation	Miscellaneous
1. Income Statement	13. Valuation Summary & Football Field	23. Regulatory Capital Explanation
2. Balance Sheet	14. Residual Income Model	24. CBA's Business Operations and Divisional Performance
3. Capital	15. Dividend Discount Model	25. Industry Dynamics – The Increasing Trend of Open Banking and Fintechs
4. Loan, Provisions & Impairment Evolution	16. Relative Valuation	26. The Australian Banking System Oligopoly
5. Net Interest Income	17. Regression Analysis	27. APRA's Total Loss Absorbing Capital (TLAC) Proposal
6. Average Interest Earning Assets	18. Cost of Equity	28. RBNZ Capital Review
7. Average Interest Bearing Liabilities	19. Terminal Growth Rate & Horizon	29. Australian Leading Macroeconomic Indicators
8. Share Price History	20. Sensitivity Analysis	30. Juxtoposition of Banking and Mortgage Regulatory Impacts
9. Net Interest Income Build-Up	21. Scenario Analysis	31. Global Estimates of the Effective Lower Bound
10. Pro-forma Assumptions	22. Simulation Analysis	32. Basel III and APRA Risk Weighted Asset (RWA) Amendments
11. Relative Performance of Australian Majors (ROE & NIM)		33. Case Study – CBA's Corporate Governance History
12. Relative Performance of Australian Majors (NPL & P/E)		34. SA-CCR Quantitative Impact
		35. Summary of Royal Commission Recommendations
		36. Porter's Five Forces Analysis
		37. Citations

APPENDIX 1: INCOME STATEMENT

Income Statement (A$m)	1H18A	2H18A	1H19A	2H19A	1H20E	2H20E	1H21E	2H21E	1H22E	2H22E	FY18A	FY19A	FY20E	FY21E	FY22E
Net interest income	9,257	9,085	9,134	8,986	8,909	8,957	8,970	9,061	9,073	9,191	18,342	18,120	17,866	18,031	18,264
Other banking income	2,706	2,509	2,636	2,432	2,323	2,248	2,198	2,150	2,131	2,112	5,215	5,068	4,571	4,347	4,243
Lending fees	558	551	506	485	463	448	438	429	425	421	1,010	1,036	1,078	1,103	1,109
Commissions and other fees	1,355	1,357	1,360	1,313	1,254	1,214	1,187	1,161	1,150	1,140	2,223	2,318	2,482	2,583	2,712
Trading income	556	469	494	480	458	444	434	424	421	417	1,087	1,191	1,149	1,105	1,025
Other income	237	132	276	154	147	142	139	136	135	134	603	885	811	449	369
Total Banking Income	**11,963**	**11,594**	**11,770**	**11,418**	**11,232**	**11,205**	**11,167**	**11,211**	**11,203**	**11,303**	**23,557**	**23,188**	**22,437**	**22,378**	**22,506**
Funds Management Income	568	551	570	502	507	499	506	497	504	494	1,119	1,072	1,006	1,003	998
Insurance Income	112	126	68	79	80	80	80	80	80	80	238	147	159	159	159
Total Operating Income	**12,643**	**12,271**	**12,408**	**11,999**	**11,819**	**11,784**	**11,753**	**11,787**	**11,786**	**11,876**	**24,914**	**24,407**	**23,602**	**23,541**	**23,663**
Investment experience	6	2	3	1	0	0	0	0	0	0	8	4	0	0	0
Total Income	**12,649**	**12,273**	**12,411**	**12,000**	**11,819**	**11,784**	**11,753**	**11,787**	**11,786**	**11,876**	**24,922**	**24,411**	**23,602**	**23,541**	**23,663**
Operating Expenses	(5,456)	(5,539)	(5,289)	(5,980)	(5,276)	(5,300)	(5,229)	(5,200)	(5,065)	(5,080)	(10,995)	(11,269)	(10,576)	(10,429)	(10,144)
Underlying Profit	**7,193**	**6,734**	**7,122**	**6,020**	**6,542**	**6,484**	**6,524**	**6,587**	**6,722**	**6,797**	**13,927**	**13,142**	**13,026**	**13,112**	**13,518**
Loan impairment expense	(596)	(483)	(577)	(624)	(586)	(633)	(673)	(727)	(766)	(807)	(1,079)	(1,201)	(1,218)	(1,399)	(1,573)
Net Profit before tax	**6,597**	**6,251**	**6,545**	**5,396**	**5,957**	**5,851**	**5,851**	**5,861**	**5,956**	**5,990**	**12,848**	**11,941**	**11,808**	**11,712**	**11,945**
Income Tax	(1,993)	(1,927)	(1,863)	(1,574)	(1,686)	(1,656)	(1,656)	(1,658)	(1,685)	(1,695)	(3,920)	(3,437)	(3,341)	(3,314)	(3,380)
NPAT	**4,604**	**4,324**	**4,682**	**3,822**	**4,271**	**4,195**	**4,196**	**4,202**	**4,271**	**4,295**	**8,928**	**8,504**	**8,466**	**8,398**	**8,565**
Minority Interests	(6)	(7)	(6)	(6)	0	0	0	0	0	0	(13)	(12)	0	0	0
Cash NPAT from continuing operations	**4,598**	**4,317**	**4,676**	**3,816**	**4,271**	**4,195**	**4,196**	**4,202**	**4,271**	**4,295**	**8,915**	**8,492**	**8,466**	**8,398**	**8,565**
Cash NPAT from discontinued operations	273	224	92	122	0	0	0	0	0	0	497	214	0	0	0
Cash NPAT	**4,871**	**4,541**	**4,768**	**3,938**	**4,271**	**4,195**	**4,196**	**4,202**	**4,271**	**4,295**	**9,412**	**8,706**	**8,466**	**8,398**	**8,565**
Significant items	(58)	(126)	(74)	13	0	0	0	0	0	0	(184)	(61)	0	0	0
Hedging and IFRS volatility	96	5	(91)	12	0	0	0	0	0	0	101	(79)	0	0	0
Other non-cash items	(3)	3	(4)	9	0	0	0	0	0	0	0	5	0	0	0
Reported NPAT	**4,906**	**4,423**	**4,599**	**3,972**	**4,271**	**4,195**	**4,196**	**4,202**	**4,271**	**4,295**	**9,329**	**8,571**	**8,466**	**8,398**	**8,565**

APPENDIX 2: BALANCE SHEET

Balance Sheet (A$m)	1H18A	2H18A	1H19A	2H19A	1H20E	2H20E	1H21E	2H21E	1H22E	2H22E	FY18A	FY19A	FY20E	FY21E	FY22E
Assets															
Cash and liquid assets	37,322	36,417	37,220	29,387	37,517	37,784	38,115	38,667	39,252	39,869	36,417	29,387	37,784	38,667	39,869
Receiveables due from other financial institutions	6,955	9,222	7,744	8,093	8,130	8,188	8,260	8,380	8,506	8,640	9,222	8,093	8,188	8,380	8,640
Trading assets at fair value	34,696	32,254	33,615	32,506	32,656	32,888	33,176	33,657	34,166	34,704	32,254	32,506	32,888	33,657	34,704
Derivative assets	25,228	32,133	28,569	25,215	25,331	25,512	25,735	26,108	26,503	26,920	32,133	25,215	25,512	26,108	26,920
Life insurance investment assets	382	372	0	0	0	0	0	0	0	0	372	0	0	0	0
Investment securities (at amortised cost and fair value)	83,913	82,240	82,236	86,267	86,665	87,282	88,046	89,322	90,673	92,099	82,240	86,267	87,282	89,322	92,099
Loans, bills discounted and other receivables	736,316	743,365	753,507	755,141	779,690	785,603	792,629	804,297	816,424	829,404	743,365	755,141	785,603	804,297	829,404
Bank acceptances of customers	222	379	53	32	32	32	32	32	32	32	379	32	32	32	32
Property, plant & equipment	2,635	2,576	2,417	2,383	2,417	2,417	2,417	2,417	2,417	2,417	2,576	2,383	2,417	2,417	2,417
Investment in associates and joint ventures	2,750	2,842	2,831	3,001	2,831	2,831	2,831	2,831	2,831	2,831	2,842	3,001	2,831	2,831	2,831
Intangible assets	9,038	9,023	8,161	7,965	8,161	8,161	8,161	8,161	8,161	8,161	9,023	7,965	8,161	8,161	8,161
Other assets	22,473	24,342	24,077	26,512	24,077	24,077	24,077	24,077	24,077	24,077	24,342	26,512	24,077	24,077	24,077
Total Assets	**961,930**	**975,165**	**980,430**	**976,502**	**1,007,506**	**1,014,774**	**1,023,479**	**1,037,949**	**1,053,043**	**1,069,154**	**975,165**	**976,502**	**1,014,774**	**1,037,949**	**1,069,154**
Liabilities															
Deposits & other public borrowings	624,897	622,234	637,010	636,040	642,086	646,656	652,320	661,776	671,784	682,349	622,234	636,040	646,656	661,776	682,349
Payables to other financial institutions	24,466	20,899	22,545	23,370	25,264	25,443	25,699	26,079	26,507	26,925	20,899	23,370	25,443	26,079	26,925
Bank acceptances	222	379	53	32	32	32	32	32	32	32	379	32	32	32	32
Current tax liabilities	642	952	401	326	326	326	326	326	326	326	952	326	326	326	326
Other provisions	2,120	1,889	2,171	2,751	2,751	2,751	2,751	2,751	2,751	2,751	1,889	2,751	2,751	2,751	2,751
Insurance policy liabilities	481	451	0	0	0	0	0	0	0	0	451	0	0	0	0
Debt issues	166,510	172,294	168,851	163,990	177,282	178,533	180,331	182,997	186,002	188,937	172,294	163,990	178,533	182,997	188,937
Bills, payables and other liabilities	18,211	21,843	17,335	18,805	20,329	20,473	20,679	20,985	21,329	21,666	21,843	18,805	20,473	20,985	21,666
Derivative liabilities	23,563	28,472	26,305	22,777	24,623	24,797	25,047	25,417	25,834	26,242	28,472	22,777	24,797	25,417	26,242
Liabilities held for sale	14,543	14,900	14,350	15,796	17,076	17,197	17,370	17,627	17,916	18,199	14,900	15,796	17,197	17,627	18,199
Loan capital	20,184	22,992	22,831	22,966	24,827	25,003	25,254	25,628	26,049	26,460	22,992	22,966	25,003	25,628	26,460
Total Liabilities	**895,839**	**907,305**	**911,852**	**906,853**	**934,597**	**941,210**	**949,809**	**963,618**	**978,530**	**993,887**	**907,305**	**906,853**	**941,210**	**963,618**	**993,887**
Net Assets	**66,091**	**67,860**	**68,578**	**69,649**	**72,910**	**73,564**	**73,670**	**74,332**	**74,513**	**75,267**	**67,860**	**69,649**	**73,564**	**74,332**	**75,267**
Shareholder's Equity															
Ordinary share capital	36,776	37,270	38,015	38,020	38,020	38,020	38,020	38,020	38,020	38,020	37,270	38,020	38,020	38,020	38,020
Preference share capital	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reserves	1,494	1,676	2,051	3,092	3,092	3,092	3,092	3,092	3,092	3,092	1,676	3,092	3,092	3,092	3,092
Retained earnings	27,267	28,360	27,959	28,482	31,743	32,397	32,503	33,165	33,346	34,100	28,360	28,482	32,397	33,165	34,100
Non-controlling interests	554	554	553	55	55	55	55	55	55	55	554	55	55	55	55
Total Shareholders' Equity	**66,091**	**67,860**	**68,578**	**69,649**	**72,910**	**73,564**	**73,670**	**74,332**	**74,513**	**75,267**	**67,860**	**69,649**	**73,564**	**74,332**	**75,267**

APPENDIX 3: CAPITAL

Capital (A$m)	1H18A	2H18A	1H19A	2H19A	1H20E	2H20E	1H21E	2H21E	1H22E	2H22E	FY18A	FY19A	FY20E	FY21E	FY22E
Total Shareholders' Equity	66,091	67,860	68,578	69,649	72,910	73,564	73,670	74,332	74,513	75,267	67,860	69,649	73,564	74,332	75,267
Less: Preferred Stock	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Less: Minority Interests	(554)	(554)	(553)	(55)	(55)	(55)	(55)	(55)	(55)	(55)	(554)	(55)	(55)	(55)	(55)
Less: Goodwill & Intangibles	(9,038)	(9,023)	(8,161)	(7,965)	(8,161)	(8,161)	(8,161)	(8,161)	(8,161)	(8,161)	(9,023)	(7,965)	(8,161)	(8,161)	(8,161)
Tangible Common Equity (TCE)	**56,499**	**58,283**	**59,864**	**61,629**	**64,694**	**65,348**	**65,454**	**66,116**	**66,297**	**67,051**	**58,283**	**61,629**	**65,348**	**66,116**	**67,051**
Total Shareholders' Equity	66,091	67,860	68,578	69,649	72,910	73,564	73,670	74,332	74,513	75,267	67,860	69,649	73,564	74,332	75,267
Less: Prudential Adjustments	(810)	(711)	(646)	(246)	(246)	(246)	(246)	(246)	(246)	(246)	(711)	(246)	(246)	(246)	(246)
Fundamental Tier 1 Capital	**65,281**	**67,149**	**67,932**	**69,403**	**72,664**	**73,318**	**73,424**	**74,086**	**74,267**	**75,021**	**67,149**	**69,403**	**73,318**	**74,086**	**75,021**
Add: Additional Tier 1 Capital	8,523	9,895	9,492	8,988	8,988	8,988	8,988	8,988	8,988	8,988	9,895	8,988	8,988	8,988	8,988
Gross Tier 1 Capital	**73,804**	**77,044**	**77,424**	**78,391**	**81,652**	**82,306**	**82,412**	**83,074**	**83,255**	**84,009**	**77,044**	**78,391**	**82,306**	**83,074**	**84,009**
Less: Deductions for Tier 1 Capital	(19,441)	(20,679)	(19,906)	(21,036)	(20,991)	(20,953)	(20,922)	(20,894)	(20,868)	(20,847)	(20,679)	(21,036)	(20,953)	(20,894)	(20,847)
Goodwill	(8,051)	(8,021)	(7,504)	(7,680)	(7,680)	(7,680)	(7,680)	(7,680)	(7,680)	(7,680)	(8,021)	(7,680)	(7,680)	(7,680)	(7,680)
Other intangibles	(968)	(952)	(1,067)	(301)	(301)	(301)	(301)	(301)	(301)	(301)	(952)	(301)	(301)	(301)	(301)
Capitalised software	(1,896)	(1,819)	(1,782)	(1,712)	(1,667)	(1,629)	(1,598)	(1,570)	(1,544)	(1,523)	(1,819)	(1,712)	(1,629)	(1,570)	(1,523)
Other capitalised expenses	(652)	(714)	(741)	(720)	(720)	(720)	(720)	(720)	(720)	(720)	(714)	(720)	(720)	(720)	(720)
Other Tier 1 Capital deductions	(7,874)	(9,173)	(8,812)	(10,623)	(10,623)	(10,623)	(10,623)	(10,623)	(10,623)	(10,623)	(9,173)	(10,623)	(10,623)	(10,623)	(10,623)
Tier 1 Capital	**54,363**	**56,365**	**57,518**	**57,355**	**60,661**	**61,353**	**61,490**	**62,180**	**62,386**	**63,162**	**56,365**	**57,355**	**61,353**	**62,180**	**63,162**
Less: Additional Tier 1 Capital	(8,523)	(9,895)	(9,492)	(8,988)	(8,988)	(8,988)	(8,988)	(8,988)	(8,988)	(8,988)	(9,895)	(8,988)	(8,988)	(8,988)	(8,988)
Common Equity Tier 1 (CET1) Capital	**45,840**	**46,470**	**48,026**	**48,367**	**51,673**	**52,365**	**52,502**	**53,192**	**53,398**	**54,174**	**46,470**	**48,367**	**52,365**	**53,192**	**54,174**
Tier 2 Capital															
General provision for BDD (net of FITB)	185	176	764	799	818	820	864	877	933	949	176	799	820	877	949
Tier 2 hybrids	(31)	(25)	(23)	(30)	(30)	(30)	(30)	(30)	(30)	(30)	(25)	(30)	(30)	(30)	(30)
Subordinated debt	10,468	12,428	12,191	11,981	14,081	16,181	18,281	20,381	22,481	24,581	12,428	11,981	16,181	20,381	24,581
Total	**10,622**	**12,579**	**12,932**	**12,750**	**14,869**	**16,971**	**19,115**	**21,228**	**23,384**	**25,500**	**12,579**	**12,750**	**16,971**	**21,228**	**25,500**
Total Capital	**64,985**	**68,944**	**70,450**	**70,105**	**75,529**	**78,324**	**80,605**	**83,409**	**85,770**	**88,662**	**68,944**	**70,105**	**78,324**	**83,409**	**88,662**
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Risk Weighted Assets (RWA)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Credit Risk Weighted Assets	366,985	369,528	369,356	372,574	372,386	373,312	375,483	381,355	387,750	394,680	369,528	372,574	373,312	381,355	394,680
Interest Rate Risk in the Banking Book (IRRBB) Weight	27,944	24,381	13,872	9,898	11,119	11,195	11,278	11,422	11,564	11,723	24,381	9,898	11,195	11,422	11,723
Traded Market Risk Weighted Assets	4,829	8,255	5,263	10,485	11,779	11,859	11,947	12,099	12,250	12,418	8,255	10,485	11,859	12,099	12,418
Operational Risk Weighted Assets	41,078	56,448	56,653	59,805	67,184	67,642	68,145	69,012	69,871	70,830	56,448	59,805	67,642	69,012	70,830
Credit risk weighted assets on housing loans	143,985	147,288	153,064	157,593	161,899	166,316	170,757	175,460	180,285	185,232	147,288	157,593	166,316	175,460	185,232
Credit risk weighted assets on non-housing loans	223,000	222,240	216,292	214,981	210,487	206,996	204,727	205,894	207,465	209,448	222,240	214,981	206,996	205,894	209,448
Risk weighted assets on non-lending assets	73,851	89,084	75,788	80,188	90,082	90,696	91,370	92,533	93,685	94,971	89,084	80,188	90,696	92,533	94,971
Total RWA	**440,836**	**458,612**	**445,144**	**452,762**	**462,468**	**464,008**	**466,854**	**473,887**	**481,435**	**489,651**	**458,612**	**452,762**	**464,008**	**473,887**	**489,651**
Total Assets	**961,930**	**975,165**	**980,430**	**976,502**	**1,007,506**	**1,014,774**	**1,023,479**	**1,037,949**	**1,053,043**	**1,069,154**	**975,165**	**976,502**	**1,014,774**	**1,037,949**	**1,069,154**
Tangible Assets	**952,892**	**966,142**	**972,269**	**968,537**	**999,345**	**1,006,613**	**1,015,318**	**1,029,788**	**1,044,882**	**1,060,993**	**966,142**	**968,537**	**1,006,613**	**1,029,788**	**1,060,993**
Excess / (Deficit) Capital	**(448)**	**(1,684)**	**1,286**	**827**	**3,113**	**3,644**	**3,483**	**3,434**	**2,848**	**2,761**	**(1,684)**	**827**	**3,644**	**3,434**	**2,761**
CET1 Ratio	**10.40%**	**10.13%**	**10.79%**	**10.68%**	**11.17%**	**11.29%**	**11.25%**	**11.22%**	**11.09%**	**11.06%**	**10.13%**	**10.68%**	**11.29%**	**11.22%**	**11.06%**
Tier 1 Ratio	**12.33%**	**12.29%**	**12.92%**	**12.67%**	**13.12%**	**13.22%**	**13.17%**	**13.12%**	**12.96%**	**12.90%**	**12.29%**	**12.67%**	**13.22%**	**13.12%**	**12.90%**
Tier 2 Buffer	**2.41%**	**2.74%**	**2.91%**	**2.82%**	**3.22%**	**3.66%**	**4.09%**	**4.48%**	**4.86%**	**5.21%**	**2.74%**	**2.82%**	**3.66%**	**4.48%**	**5.21%**
Total Capital Ratio	**14.74%**	**15.03%**	**15.83%**	**15.48%**	**16.33%**	**16.88%**	**17.27%**	**17.60%**	**17.82%**	**18.11%**	**15.03%**	**15.48%**	**16.88%**	**17.60%**	**18.11%**

APPENDIX 4: LOANS, PROVISIONS & IMPAIRMENT EVOLUTION

Loans, Provisions & Impairment Evolution (A$m)	1H18A	2H18A	1H19A	2H19A	1H20E	2H20E	1H21E	2H21E	1H22E	2H22E	FY18A	FY19A	FY20E	FY21E	FY22E
Home loans	492,688	501,665	512,505	522,942	532,810	542,880	552,864	563,532	574,414	585,514	501,665	522,942	542,880	563,532	585,514
Securitisation	(14,730)	(13,089)	(13,299)	(13,521)	(14,358)	(14,630)	(14,899)	(15,186)	(15,479)	(15,779)	(13,089)	(13,521)	(14,630)	(15,186)	(15,779)
Home loans (net of securitisation)	477,958	488,576	499,206	509,421	518,452	528,250	537,965	548,346	558,934	569,735	488,576	509,421	528,250	548,346	569,735
Consumer finance	23,593	23,317	22,690	21,993	21,357	20,759	20,474	20,485	20,496	20,507	23,317	21,993	20,759	20,485	20,507
Business and corporate loans	223,981	222,367	222,996	214,953	209,998	206,135	203,319	203,972	205,059	206,586	222,367	214,953	206,135	203,972	206,586
Loans (excluding acceptances, net of securitisation)	725,532	734,260	744,892	746,367	749,807	755,145	761,759	772,803	784,489	796,828	734,260	746,367	755,145	772,803	796,828
Bank acceptances	222	379	53	32	32	32	32	32	32	32	379	32	32	32	32
Gross Loans & Acceptances (GLAAs)	**740,484**	**747,728**	**758,244**	**759,920**	**764,198**	**769,806**	**776,690**	**788,021**	**800,001**	**812,639**	**734,639**	**746,399**	**755,177**	**772,835**	**796,860**
GLAAs (net of securitisation)	725,754	734,639	744,945	746,399	749,839	755,177	761,791	772,835	784,521	796,860	747,728	759,920	769,806	788,021	812,639
Growth															
Performing Loans	734,457	741,333	751,469	752,961	757,111	762,579	769,309	780,441	792,214	804,635	728,244	739,440	747,950	765,255	788,856
Non-Performing Loans	6,027	6,395	6,775	6,959	7,086	7,227	7,381	7,580	7,787	8,004	6,395	6,959	7,227	7,580	8,004
90-Days Past Due	2,660	3,216	3,215	3,337	3,398	3,466	3,539	3,635	3,734	3,838	3,216	3,337	3,466	3,635	3,838
Gross impaired assets	3,367	3,179	3,560	3,622	3,688	3,761	3,842	3,945	4,053	4,166	3,179	3,622	3,761	3,945	4,166
Less: Provision for Loan impairment Losses															
Collective provision	(2,749)	(2,735)	(3,711)	(3,820)	(3,910)	(3,920)	(4,130)	(4,195)	(4,459)	(4,539)	(2,735)	(3,820)	(3,920)	(4,195)	(4,539)
Individually assessed provisions	(974)	(870)	(920)	(895)	(911)	(1,001)	(1,060)	(1,128)	(1,200)	(1,275)	(870)	(895)	(1,001)	(1,128)	(1,275)
Less: Unearned income	(1,057)	(1,059)	(1,219)	(1,125)	(1,131)	(1,140)	(1,150)	(1,167)	(1,184)	(1,203)	(1,059)	(1,125)	(1,140)	(1,167)	(1,203)
Net loans, advances & other receivables	**741,731**	**749,459**	**759,169**	**761,039**	**765,332**	**770,973**	**777,731**	**789,111**	**800,945**	**813,626**	**736,370**	**747,518**	**756,344**	**773,925**	**797,847**
Securitised loans	14,730	13,089	13,299	13,521	14,358	14,630	14,899	15,186	15,479	15,779	13,089	13,521	14,630	15,186	15,779
Total Net Loans	**756,461**	**762,548**	**772,468**	**774,560**	**779,690**	**785,603**	**792,629**	**804,297**	**816,424**	**829,404**	**749,459**	**761,039**	**770,973**	**789,111**	**813,626**

APPENDIX 5: NET INTEREST INCOME

Net Interest Income (A$m)	1H18A	2H18A	1H19A	2H19A	1H20E	2H20E	1H21E	2H21E	1H22E	2H22E	FY18A	FY19A	FY20E	FY21E	FY22E
Interest Income	17,181	17,073	17,515	17,073	17,111	17,170	17,210	17,373	17,464	17,663	34,254	34,588	34,280	34,583	35,126
Interest Expense	(7,926)	(7,988)	(8,381)	(8,087)	(8,202)	(8,213)	(8,241)	(8,311)	(8,391)	(8,472)	(15,914)	(16,468)	(16,414)	(16,552)	(16,862)
Net Interest Income	**9,255**	**9,085**	**9,134**	**8,986**	**8,909**	**8,957**	**8,970**	**9,061**	**9,073**	**9,191**	**18,340**	**18,120**	**17,866**	**18,031**	**18,264**
Net Interest Margin	**2.16%**	**2.14%**	**2.10%**	**2.10%**	**2.04%**	**2.07%**	**2.02%**	**2.05%**	**1.99%**	**2.02%**	**2.15%**	**2.10%**	**2.05%**	**2.03%**	**2.00%**

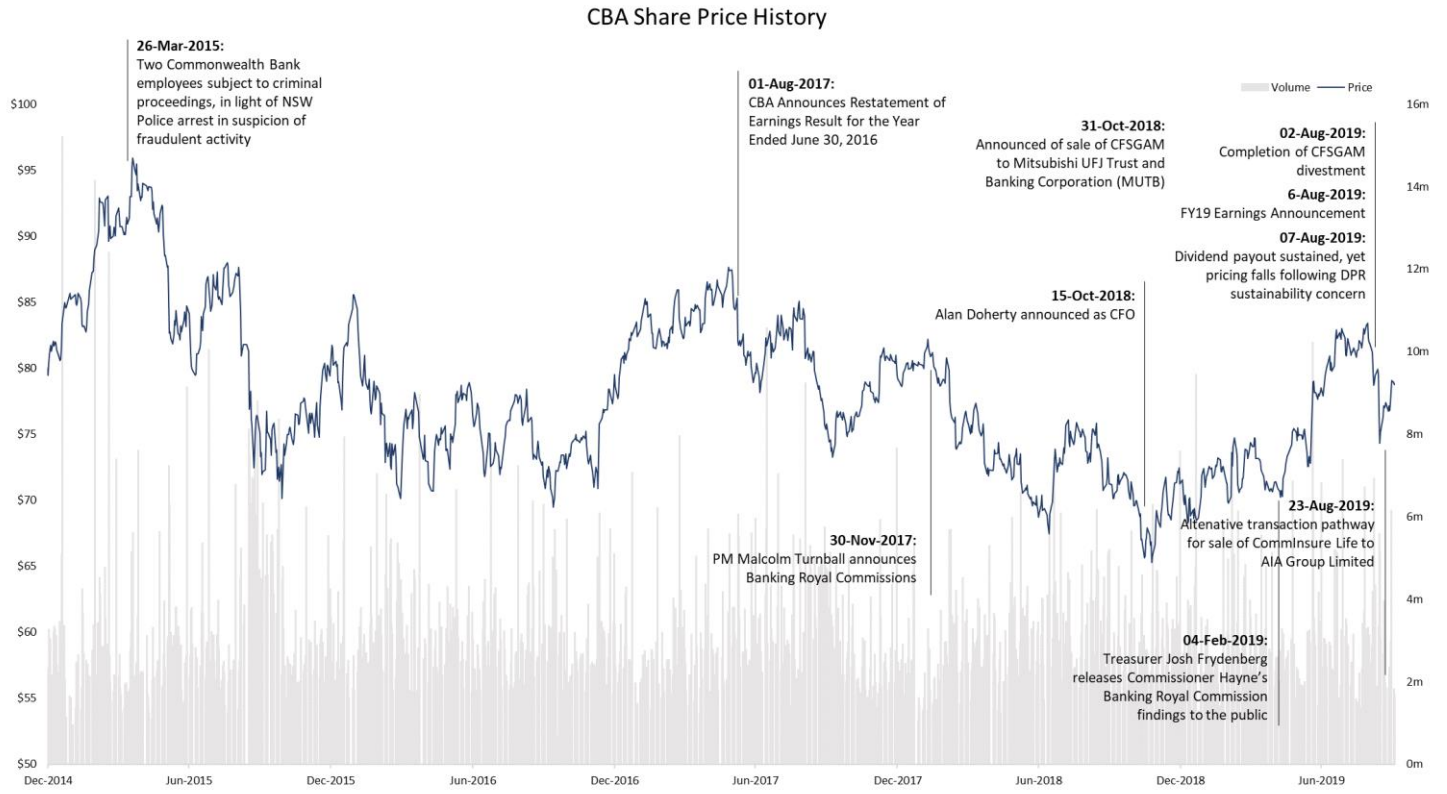
APPENDIX 6: AVERAGE INTEREST EARNING ASSETS

Average Interest Earning Assets (A$m)	1H18A	2H18A	1H19A	2H19A	1H20E	2H20E	1H21E	2H21E	1H22E	2H22E	FY18A	FY19A	FY20E	FY21E	FY22E
Geographic Breakdown															
Housing	412,688	417,579	423,906	430,654	438,243	445,693	453,270	461,204	469,505	477,957	415,535	427,973	442,889	458,304	474,722
SME	82,642	83,524	83,819	82,162	80,117	78,911	78,515	78,515	78,711	79,302	82,792	82,412	79,881	78,673	79,265
Institutional	80,053	76,070	73,750	72,286	69,418	65,947	62,650	61,044	61,044	61,044	77,976	72,862	67,864	62,776	61,166
Personal	21,196	20,947	20,459	19,775	19,163	18,588	18,168	18,031	18,031	18,031	21,041	20,146	18,918	18,204	18,067
Total	**596,579**	**598,119**	**601,934**	**604,877**	**606,941**	**609,140**	**612,602**	**618,793**	**627,291**	**636,332**	**597,343**	**603,394**	**609,551**	**617,957**	**633,220**
New Zealand loans															
Housing	47,326	49,236	50,304	53,535	55,514	57,457	59,321	61,101	62,934	64,822	48,251	52,038	56,611	60,340	64,015
Business	27,169	28,273	29,050	30,718	31,325	31,945	32,577	33,221	33,879	34,549	27,766	29,760	31,699	32,966	34,283
Personal	963	1,012	1,020	1,071	1,063	1,064	1,075	1,085	1,096	1,107	960	1,031	1,070	1,082	1,104
Total	**75,458**	**78,521**	**80,374**	**85,323**	**87,902**	**90,466**	**92,973**	**95,408**	**97,909**	**100,478**	**76,977**	**82,828**	**89,380**	**94,388**	**99,402**
Other overseas loans															
Housing	927	889	875	858	865	874	883	892	900	909	933	895	919	937	956
Business	24,594	24,768	23,792	21,077	19,335	19,335	19,335	19,335	19,335	19,335	24,656	22,417	20,427	20,427	20,427
Total	**25,521**	**25,657**	**24,667**	**21,935**	**20,201**	**20,209**	**20,218**	**20,227**	**20,236**	**20,245**	**25,589**	**23,312**	**21,346**	**21,364**	**21,383**
Housing	460,941	467,704	475,084	485,047	494,622	504,023	513,474	523,196	533,340	543,688	464,719	480,906	500,418	519,582	539,693
Personal	22,159	21,958	21,480	20,846	20,226	19,652	19,243	19,116	19,127	19,138	22,001	21,177	19,988	19,287	19,171
Business and corporate	214,458	212,635	210,411	206,242	200,196	196,139	193,077	192,115	192,968	194,229	213,190	207,451	199,870	194,841	195,141
Total	**697,558**	**702,297**	**706,975**	**712,135**	**715,043**	**719,814**	**725,793**	**734,427**	**745,435**	**757,055**	**699,909**	**709,534**	**720,277**	**733,709**	**754,005**
Non-lending interest earning assets	153,964	154,753	156,689	152,557	153,180	154,202	155,483	157,333	159,691	162,180	154,355	154,640	156,981	159,909	164,332
Average interest earning assets	**851,522**	**857,050**	**863,664**	**864,692**	**868,223**	**874,017**	**881,276**	**891,760**	**905,126**	**919,235**	**854,264**	**864,174**	**877,258**	**893,618**	**918,337**
Interest Revenue Buildup															
Gross Loans:															
Housing	460,941	467,704	475,084	485,047	494,622	504,023	513,474	523,196	533,340	543,688	464,351	480,107	499,361	518,375	538,557
Consumer Finance	22,159	21,958	21,480	20,846	20,226	19,652	19,243	19,116	19,127	19,138	22,058	21,160	19,937	19,179	19,132
Business and Corporate Loans	214,458	212,635	210,411	206,242	200,196	196,139	193,077	192,115	192,968	194,229	213,539	208,309	198,151	192,592	193,604
Total Gross Loans	**697,558**	**702,297**	**706,975**	**712,135**	**715,043**	**719,814**	**725,793**	**734,427**	**745,435**	**757,055**	**699,947**	**709,576**	**717,449**	**730,146**	**751,293**
Non-interest lending earning assets	153,964	154,753	156,689	152,557	153,180	154,202	155,483	157,333	159,691	162,180	154,362	154,606	153,695	156,415	160,946
Average interest earnings assets	**851,522**	**857,050**	**863,664**	**864,692**	**868,223**	**874,017**	**881,276**	**891,760**	**905,126**	**919,235**	**854,309**	**864,182**	**871,144**	**886,561**	**912,238**
Asset Yield (Annual)															
Housing	4.37%	4.26%	4.29%	4.17%	4.17%	4.17%	4.15%	4.15%	4.10%	4.08%	4.27%	4.18%	4.13%	4.11%	4.05%
Consumer Finance	12.98%	13.15%	12.97%	12.65%	12.62%	12.60%	12.55%	12.50%	12.45%	12.40%	26.93%	26.39%	25.97%	25.79%	25.58%
Business and Corporate Loans	4.22%	4.11%	4.27%	4.20%	4.20%	4.18%	4.15%	4.13%	4.10%	4.11%	8.42%	8.56%	8.46%	8.36%	8.29%
Total Gross Loans	**4.59%**	**4.49%**	**4.54%**	**4.42%**	**4.41%**	**4.40%**	**4.37%**	**4.36%**	**4.31%**	**4.29%**	**9.18%**	**9.06%**	**8.90%**	**8.82%**	**8.69%**
Non-interest lending earning assets	1.75%	1.93%	2.11%	1.97%	1.97%	1.97%	1.97%	1.97%	1.97%	1.97%	3.70%	4.10%	3.97%	3.97%	3.97%
Average interest earnings assets	**4.08%**	**4.02%**	**4.10%**	**3.99%**	**3.98%**	**3.97%**	**3.94%**	**3.93%**	**3.90%**	**3.88%**	**8.18%**	**8.16%**	**8.03%**	**7.95%**	**7.85%**
Interest Earned On:															
Housing	9,961	9,862	10,077	10,012	10,208	10,402	10,546	10,746	10,824	10,967	19,823	20,089	20,609	21,292	21,791
Consumer Finance	1,394	1,399	1,350	1,279	1,238	1,201	1,172	1,160	1,156	1,152	2,793	2,629	2,439	2,331	2,308
Business and Corporate Loans	4,481	4,328	4,447	4,284	4,161	4,053	3,966	3,922	3,916	3,951	8,809	8,731	8,213	7,888	7,867
Total Gross Loans	**15,836**	**15,589**	**15,874**	**15,575**	**15,607**	**15,655**	**15,684**	**15,828**	**15,895**	**16,070**	**31,425**	**31,449**	**31,262**	**31,512**	**31,966**
Non-interest lending earning assets	1,345	1,484	1,641	1,498	1,504	1,514	1,527	1,545	1,568	1,592	2,829	3,139	3,018	3,072	3,161
Average interest earnings assets	**17,181**	**17,073**	**17,515**	**17,073**	**17,111**	**17,170**	**17,210**	**17,373**	**17,464**	**17,663**	**34,254**	**34,588**	**34,280**	**34,583**	**35,126**

APPENDIX 7: AVERAGE INTEREST EARNING LIABILITIES

Average Interest Bearing Liabilities (A$m)	1H18A	2H18A	1H19A	2H19A	1H20E	2H20E	1H21E	2H21E	1H22E	2H22E	FY18A	FY19A	FY20E	FY21E	FY22E
Interest Expense Buildup															
Interest Bearing Deposits:															
Transaction deposits	74,769	72,266	77,716	76,292	77,017	77,565	78,245	79,379	80,579	81,847	73,518	77,004	77,291	78,812	81,213
Savings deposits	180,190	181,907	180,104	179,841	181,550	182,843	184,444	187,118	189,948	192,935	181,049	179,973	182,197	185,781	191,441
Investment deposits	218,940	221,881	220,786	219,752	221,841	223,420	225,377	228,644	232,101	235,752	220,411	220,269	222,630	227,010	233,927
Certificates of deposit and other	63,005	59,181	61,519	63,111	63,711	64,164	64,726	65,665	66,658	67,706	61,093	62,315	63,938	65,196	67,182
Total interest bearing deposits	**536,904**	**535,235**	**540,125**	**538,996**	**544,119**	**547,992**	**552,792**	**560,806**	**569,286**	**578,240**	**536,070**	**539,561**	**546,056**	**556,799**	**573,763**
Payables due to other financial institutions	28,601	25,252	22,338	20,770	22,453	22,612	22,840	23,177	23,558	23,930	26,927	21,554	22,533	23,008	23,744
Debt issues	163,855	170,431	170,152	164,044	177,340	178,592	180,390	183,057	186,063	189,000	167,143	167,098	177,966	181,724	187,531
Loan capital	9,078	8,696	9,356	11,514	12,447	12,535	12,661	12,849	13,059	13,266	8,887	10,435	12,491	12,755	13,163
Assets held at fair value	19,011	22,138	22,683	22,194	23,993	24,162	24,406	24,766	25,173	25,570	20,575	22,439	24,078	24,586	25,372
Total interest bearing liabilities	**757,449**	**761,752**	**764,654**	**757,518**	**780,353**	**785,894**	**793,089**	**804,655**	**817,140**	**830,005**	**759,601**	**761,086**	**783,123**	**798,872**	**823,572**
Interest Bearing Deposits Mix															
Transaction deposits	13.9%	13.5%	14.4%	14.2%	14.2%	14.2%	14.2%	14.2%	14.2%	14.2%	13.7%	14.3%	14.2%	14.2%	14.2%
Savings deposits	33.6%	34.0%	33.3%	33.4%	33.4%	33.4%	33.4%	33.4%	33.4%	33.4%	33.8%	33.4%	33.4%	33.4%	33.4%
Investment deposits	40.8%	41.5%	40.9%	40.8%	40.8%	40.8%	40.8%	40.8%	40.8%	40.8%	41.1%	40.8%	40.8%	40.8%	40.8%
Certificates of deposit and other	11.7%	11.1%	11.4%	11.7%	11.7%	11.7%	11.7%	11.7%	11.7%	11.7%	11.4%	11.5%	11.7%	11.7%	11.7%
Total interest bearing deposits	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Interest Expense paid on:															
Transaction deposits	298	281	297	285	269	271	273	277	282	286	579	582	540	551	568
Savings deposits	1,106	1,105	1,033	973	905	912	920	933	947	962	2,211	2,006	1,817	1,853	1,910
Investment deposits	2,646	2,657	2,820	2,743	2,701	2,687	2,677	2,682	2,688	2,696	5,303	5,563	5,388	5,360	5,384
Certificates of deposit and other	1,038	824	875	922	918	912	907	907	907	908	1,862	1,797	1,830	1,814	1,815
Total interest bearing deposits	**5,088**	**4,867**	**5,025**	**4,923**	**4,794**	**4,782**	**4,777**	**4,800**	**4,825**	**4,852**	**9,955**	**9,948**	**9,576**	**9,577**	**9,676**
Payables due to other financial institutions	200	218	228	236	255	257	260	263	268	272	418	464	512	523	540
Debt issues	1,999	2,170	2,371	2,192	2,370	2,386	2,410	2,446	2,486	2,525	4,169	4,563	4,756	4,856	5,012
Loan capital	386	450	483	468	506	510	515	522	531	539	836	951	1,015	1,037	1,070
Assets held at fair value	73	94	88	84	91	91	92	94	95	97	167	172	182	186	192
Bank Levy	180	189	186	184	186	186	186	186	186	186	369	370	373	373	373
Average interest expense	**7,926**	**7,988**	**8,381**	**8,087**	**8,202**	**8,213**	**8,241**	**8,311**	**8,391**	**8,472**	**15,914**	**16,468**	**16,414**	**16,552**	**16,862**
Average Interest Rate Paid On (Yield):															
Transaction deposits	0.80%	0.78%	0.77%	0.75%	0.70%	0.70%	0.70%	0.70%	0.70%	0.70%	0.79%	0.76%	0.70%	0.70%	0.70%
Savings deposits	1.23%	1.22%	1.15%	1.08%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.22%	1.11%	1.00%	1.00%	1.00%
Investment deposits	2.43%	2.41%	2.57%	2.51%	2.45%	2.42%	2.39%	2.36%	2.33%	2.30%	2.41%	2.53%	2.42%	2.36%	2.30%
Certificates of deposit and other	3.32%	2.80%	2.86%	2.94%	2.90%	2.86%	2.82%	2.78%	2.74%	2.70%	3.05%	2.88%	2.86%	2.78%	2.70%
Total interest bearing deposits	**1.90%**	**1.83%**	**1.87%**	**1.84%**	**1.77%**	**1.75%**	**1.74%**	**1.72%**	**1.70%**	**1.69%**	**1.86%**	**1.84%**	**1.75%**	**1.72%**	**1.69%**
Payables due to other financial institutions	1.40%	1.73%	2.05%	2.29%	2.29%	2.29%	2.29%	2.29%	2.29%	2.29%	1.55%	2.15%	2.27%	2.27%	2.27%
Debt issues	2.45%	2.56%	2.81%	2.69%	2.69%	2.69%	2.69%	2.69%	2.69%	2.69%	2.49%	2.73%	2.67%	2.67%	2.67%
Loan capital	8.68%	10.62%	10.59%	8.29%	8.29%	8.29%	8.29%	8.29%	8.29%	8.29%	9.41%	9.11%	8.13%	8.13%	8.13%
Assets held at fair value	0.77%	0.85%	0.78%	0.76%	0.76%	0.76%	0.76%	0.76%	0.76%	0.76%	0.81%	0.77%	0.76%	0.76%	0.76%
Average interest rate	**2.10%**	**2.11%**	**2.20%**	**2.15%**	**2.11%**	**2.10%**	**2.09%**	**2.08%**	**2.06%**	**2.05%**	**2.10%**	**2.16%**	**2.10%**	**2.07%**	**2.05%**

APPENDIX 8: SHARE PRICE HISTORY



APPENDIX 9: NET INTEREST INCOME BUILD-UP

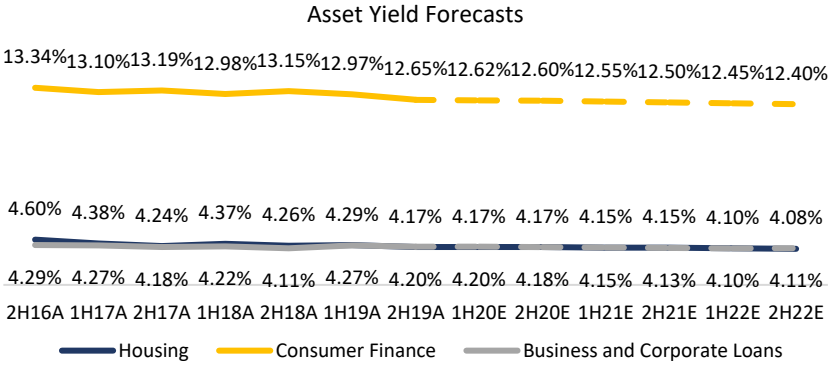
Net interest income is represents the difference in interest income received on interest earning assets and interest expense paid on interest bearing liabilities:

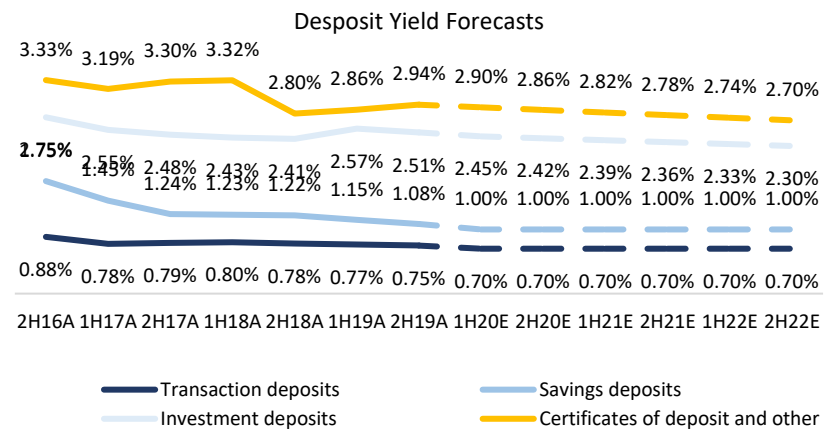
$$Net\ Interst\ Income = Interest\ Income - Interest\ Expense$$

$$Interest\ Income = Asset\ Yield \times Asset\ Balance$$

$$Interest\ Expense = Liabilities\ Yield \times Liabilities\ Balance$$

$$Net\ Interest\ Margin = \frac{Net\ Interest\ Income}{Average\ Interest\ Earning\ Assets}$$





Asset-side forecasts: Home loan, business and personal loan balances were segmented to determine average balances, yields and interest income. Since asset yields are priced off the cash rate, we forecast asset yields to decline gradually over the forecast period with consideration of the two further cash rate cuts in Nov-19 and Mar-20. Refer to Appendix 5 for our breakdown of average loan balances.

Deposit-side forecasts: CBA's funding consists predominately of deposit borrowing which is priced against the BBSW. However as depicted on the right, a large portion of these deposits are near the zero lower bound and cannot be repriced further. We expect CBA to reduce rates on term deposits over the forecast period given the lower interest rate environment to offset NIM pressures stemming from pressures to reprice their mortgage book.

Net Interest Margin: The net interest margin can then derived using the formula displayed above.

APPENDIX 10: PRO-FORMA ASSUMPTIONS

10.1 Income Statement Assumptions

Line Item	Assumptions
Net Interest Income	Net interest income was analysed at the loan and deposit level. Average yields on loans and deposits were calculated and then used to forecast interest income and expense. See Appendix 9 for more details.
Other Banking Income	This line item consists of fees, commissions and trading income. We forecast this to continue its downwards trajectory and forecast negative growth of -9.81%, -4.88%, -2.41% over the period given the CBA is undertaking a strategic review of its wealth management businesses (e.g. CFS, Aligned Advice) after the scathing report following the Royal Commission. CBA's "Better Customer Outcomes" has also foregone fee/commission revenue by placing customers first which we expect to continue.
Fund Management Income	This was forecasted by analysing trends in average Funds Under Management (FUM) and its accompanying margin. Given CBA's divestment of CFSGAM, intention to exit of CFS under the business simplification strategy, we expect FM income to decline -6.1%, -0.3%, -0.6% over FY20-22.
Insurance Income	General Insurance is under strategic review, hence we forecast insurance income to remain flat over the forecast period at $80m p.a. given no clear trend of historic growth trend.
Investment Experience	This consists of net returns from shareholder investments held within RBS, WM, NZ and Indonesian life insurance business which has trended down consistently over the past three years to $1m in FY19. We forecast nil investment experience over the forecast period.
Operating Expense	One-off items was first separated to look at normalised OPEX. CTI was forecasted to taper down from 49.8% to 42.8% over the forecast period.
Loan Impairment Expense	Bad debt charges were forecasted as a percentage of GLAAs (loan loss rate). The loan loss rate is forecasted to tick up in FY21 from 18bps to 20bps in FY22.
Income Tax	An effective tax rate of 29.76% was assumed over the forecast period by weighing the Australian and New Zealand statuary tax rates by FY19 geographical cash earnings split.
Minority Interests	Minority interests were straight-lined from FY19.
Dividends	Full year DPS was straight-lined at $4.31 per share over the forecast period given the negative market signals a dividend cut would conjure. However, we note the rising unsustainability of dividends with the DPR reaching 90% in FY20-21 as earnings decline.

10.2 Balance Sheet Assumptions

Line Item	Assumptions
Loans	Loans were forecasted based on product and geography: home, personal, business and corporate across Australia, New Zealand and overseas. Home loan growth was forecasted to remain flat at 3.4% in FY20-21 and 3.5% in FY22 as we expect the housing market to bottom out in the near term. We expect SME business loans to decline by -3.0% in FY20, 0% in FY21 and 1.5% in FY22. Corporate loans have decline over the past two years largely due to portfolio optimisation initiatives which we forecast to remain flat over the forecast period given the lack of guidance. All considered, we forecast GLAAs to grow at 1.2%, 2.3%, and 3.1% over the forecast period.
Deposits	The loan-to-deposit ratio has remained stable between 116-118% over the past three years. We forecast forward taking the three-year historical average of 117%.
Cash and other liquid assets	Given we used a model plug over a cash flow statement for simplicity, we model cash as a percentage of deposits which has remained stable between 5.6%-7.5% over the past five years. We forecast cash to stay at 5.8% of deposits.
Receivables due from other financial institutions	This was modelled using the GLAAs growth rate over the period.
Trading assets at fair value	This was modelled using the GLAAs growth rate over the period.
Derivative assets	This was modelled using the GLAAs growth rate over the period.
Investment securities (at amortised cost and fair value)	This was modelled using the GLAAs growth rate over the period.

Bank acceptances of customers	Straight-lined from FY19 value of $32m.
Property, plant & equipment	Since financial institutions generate value by investing in growing their loan book while facing regulatory capital constraints rather than real assets such as PPE, we straight-line PPE over the forecast period at $2,383m.
Intangibles	Similar to PPE intangibles make a small portion of the asset and investments into intangibles is not a major driver of value. Hence we straight-line the FY19 balance at $7,965.
Other assets	This item was straight-lined over the period.
Liabilities	Bank acceptances, current tax liabilities, other provisions were straight-lined at their current balance. Other liabilities items (excl. deposits) were modelled as a plug for the balance sheet and hence displays a growth profile closely resembling that of GLAAs.
Ordinary share capital	We do not incorporate share buyback impacts directly into our modelling given the inherent uncertainty of forecasting such initiatives. We straight-line ordinary share capital over the period at $38,020.
Reserves	This item was straight-lined at $3,092.
Non-controlling interests	This item was straight-lined at $55m as it is a trivial item representing external equity interests of subsidiaries.

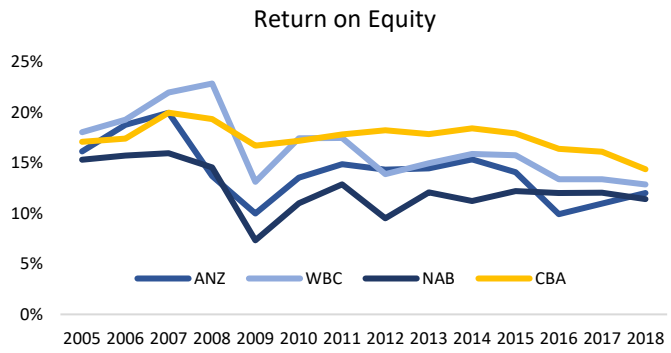
10.3 Asset Quality Assumptions

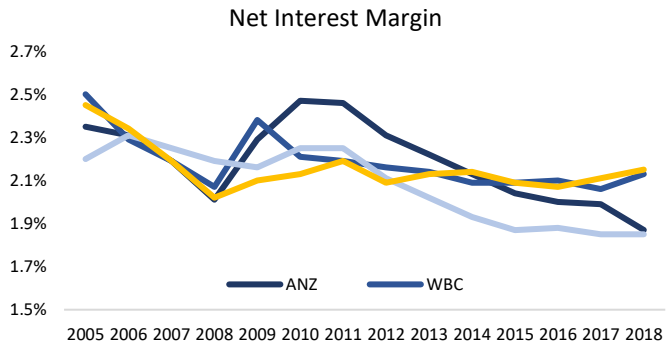
Line Item	Assumptions
Gross impaired assets	This was modelled as a portion of GLAAs which we forecast to increase over the period from 0.49% to 0.52% given the signs of upticks in arrears.
Collective provision	We forecast collective provisions to increase from 103bps in FY19 to 115bps in FY22 given weakening domestic conditions such as subdued wage growth and pockets of weakness in retail.
Individual provisions	We forecast individual provisions to tick up later in the forecast period in light of rising 90+ day arrears in the retail portfolio flowing through to gross impaired assets.

10.4 Capital Assumptions

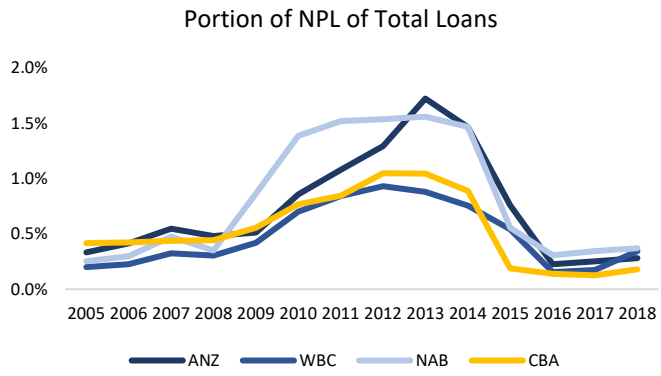
Line Item	Assumptions
Franking rate	We forecast CBA to sustain its 100% franking rate given management's strong commitment to providing a steady return of funds to shareholders.
Risk Weighted Assets (RWA)	RWA assets can be broken down into credit-risk weighted (CRW) assets, interest rate risk in the banking book (IRRBB) and traded market risk components. CRW assets were first broken down into housing and non-housing components which we tick up by 50bps each year as we expect a weakening economic environment to lead to greater strain on asset quality and a riskier loan book. Risk weights on non-lending assets was kept flat at 37.02%.
CET1 Capital	This is an output figure which equates to total shareholder's equity, less preferred stock, less minority interests and less goodwill. We model in the divestment of CFSGAM ($3,395.72m) explicitly which lifts CET1 ratio to 11.33% in FY20E. Due to earnings pressure and upticks in risk-weights we expect this to trend down to 11.09%. We note the RBNZ proposal as discussed in this report but we do not model this explicitly given the forecast complexities in distinguishing Level 1 and Level 2 entities.
Tier 2 Capital	In response to APRA's TLAC proposal, we model increases in subordinated debt to lift the Tier 2 buffer from 2.82% to 5.20% by FY22 (proposed target is a 5% T2 buffer).

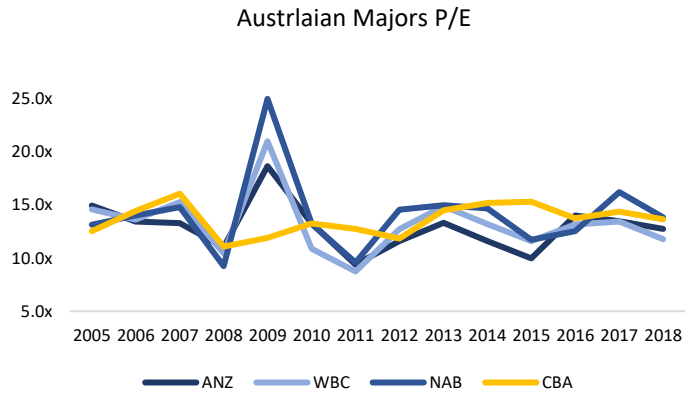
APPENDIX 11: RELATIVE PERFORMANCE OF AUSTRALIAN MAJORS (ROE & NIM)



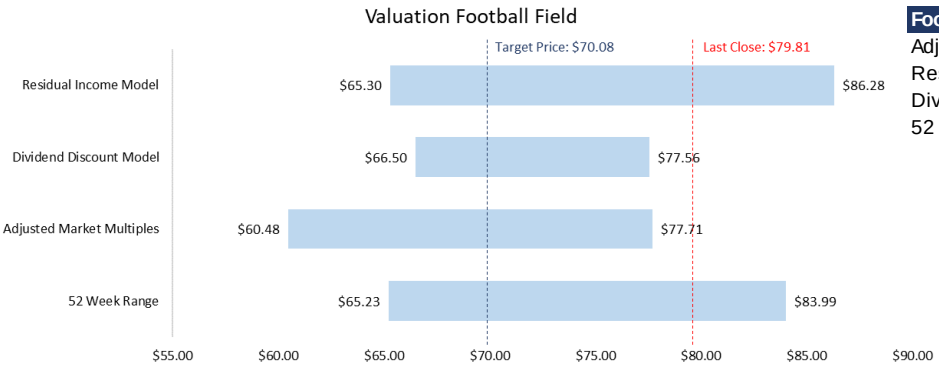


APPENDIX 12: RELATIVE PERFORMANCE OF AUSTRALIAN MAJORS (NPL & P/E)





APPENDIX 13: VALUATION SUMMARY & FOOTBALL FIELD



Football Field	Q1	Median	Q3
Adjusted Market Multiples	$60.48	$69.09	$77.71
Residual Income Model	$63.40	$72.76	$82.12
Dividend Discount Model	$62.91	$73.27	$83.63
52 Week Range	$65.23	$74.61	$83.99

Valuation Matrix		
Method	**Weightings**	**Share Price**
Residual Income Model	30%	$66.88
Dividend Discount Model	10%	$73.42
Relative Valuation	60%	$71.12
P/BV vs ROE Regression	0%	$53.81
Target Price		**$70.08**
Premium / (Discount) to last close		*-11.89%*

APPENDIX 14: RESIDUAL INCOME MODEL

Residual Income Model - Base Case	FY19A	FY20E	FY21E	FY22E
Cash NPAT	8,706	8,466	8,398	8,565
Average Ordinary Shareholder's Equity	68,450	71,552	73,893	74,744
Capital charge		(6,044)	(6,318)	(6,525)
Residual Income		**2,422**	**2,080**	**2,040**
Discount factor		0.92	0.84	0.78
Discounted Residual Income		**2,226**	**1,756**	**1,583**
Franking Credits		1,962	1,962	1,962
PV of Franking Credits		**1,803**	**1,657**	**1,522**

Forecast Horizon: A forecast horizon of three years was used to explicitly model key drivers of CBA's value. Given CBA is a mature business with waning growth organic growth prospects, a short forecast horizon was ideal as residual income growth of -1.6% in FY23 is already within the proximity of 2.3% terminal growth rate. A shorter forecast horizon allows us to hone in on the accuracy of our forecasts of NIM, cost margins, loan evolution and regulatory capital.

Residual Income Model - Base Case	
Residual Income Terminal Value	22,925
Current Ordinary Shareholder's Equity	68,450
PV Terminal Residual Income	17,785
Sum of PV Residual Income	5,564
Equity Value	**91,799**
Implied Share Price	**$51.86**
Terminal Franking Credits	27,849
PV Terrminal Franking Credits	21,605
Sum of PV Franking Credits	4982
Franking Credits Value	**26,587**
Franking Credits Value per share	**$15.02**
Shares Outstanding	1770.24
Implied Share Price	**$66.88**
Premium / (Discount) to Last Close	*-15.9%*

APPENDIX 15: DIVIDEND DISCOUNT MODEL

Dividend Discount Model (DDM) - Base Case	FY19A	FY20E	FY21E	FY22E
Cash NPAT	8,706	8,466	8,398	8,565
Dividend Payout Ratio	87.6%	90.1%	90.9%	89.1%
Dividends	7,630	7,630	7,630	7,630
DPS	$4.31	$4.31	$4.31	$4.31
Discount factor		0.92	0.84	0.78
PV of Dividends		**7,011**	**6,442**	**5,920**
Value of Franking Credits		1,962	1,962	1,962
PV of Franking Credits		**1,803**	**1,657**	**1,522**

Dividend Discount Model - Base Case	
Terminal Value of Dividends	108,300
PV Terminal Dividends	84,019
Sum of PV Forecast Dividends	19,373
Equity Value	**103,392**
Implied Share Price	**$58.41**
Terminal Value of Franking Credits	27,849
PV Terminal Value Franking Credits	21,605
Sum of PV Forecast Franking Credits	4982
Franking Credits Value	**26,587**
Franking Credits Value per Share	**$15.02**
Shares Outstanding	1,770
Implied Share Price	**$73.42**
Premium / (Discount) to Last Close	*-7.7%*

APPENDIX 16: RELATIVE VALUATION

Company	P/E (T)	P/E (1YF)	P/BV (T)	P/TBV (T)	P/PPOP (T)	ROE	ROTE	Cost of Equity	ROE-COE spread
Target									
COMMONWEALTH BANK OF AUSTRALIA	16.61x	16.62x	1.91x	2.21x	109.9x	12.5%	14.1%	9.2%	3.3%
Australian Majors									
AUST AND NZ BANKING GROUP	11.65x	11.68x	1.28x	1.38x	71.4x	10.5%	12.2%	10.6%	-0.1%
WESTPAC BANKING CORP	13.64x	12.74x	1.54x	1.86x	78.6x	11.2%	14.0%	9.9%	1.2%
NATIONAL AUSTRALIA BANK LTD	12.89x	12.54x	1.49x	1.66x	83.1x	10.9%	13.1%	8.1%	2.8%
Australian Regionals									
BANK OF QUEENSLAND LTD	11.65x	12.04x	0.95x	1.20x	69.6x	8.3%	10.6%	8.7%	-0.5%
BENDIGO AND ADELAIDE BANK	14.10x	13.97x	0.96x	1.35x	73.6x	7.3%	10.8%	9.3%	-2.0%
Min	**11.65x**	**11.68x**	**0.95x**	**1.20x**	**69.59x**	**7.3%**	**10.6%**	**8.1%**	**-2.0%**
Q1	**11.65x**	**12.04x**	**0.96x**	**1.35x**	**71.39x**	**8.3%**	**10.8%**	**8.7%**	**-0.5%**
Median	**12.89x**	**12.54x**	**1.28x**	**1.38x**	**73.62x**	**10.5%**	**12.2%**	**9.3%**	**-0.1%**
Q3	**13.64x**	**12.74x**	**1.49x**	**1.66x**	**78.59x**	**10.9%**	**13.1%**	**9.9%**	**1.2%**
Max	**14.10x**	**13.97x**	**1.54x**	**1.86x**	**83.08x**	**11.2%**	**14.0%**	**10.6%**	**2.8%**
CBA premium over majors ex. CBA	*29%*	*32%*	*28%*	*34%*	*40%*	*14%*	*8%*	*-7%*	*n.a.*
CBA premium over comparable set	*29%*	*32%*	*49%*	*60%*	*49%*	*19%*	*16%*	*-1%*	*n.a.*

Share Price (w/o premium)	P/E (1YF)	P/BV (T)	P/NTA (T)
Quartile 1	$57.61	$39.95	$48.99
Median	$60.04	$53.28	$49.94
Quartile 3	$60.95	$62.01	$59.98
Share Price (incl. premium)	**P/E (1YF)**	**P/BV (T)**	**P/NTA (T)**
Quartile 1	$65.47	$55.49	$48.99
Median	$68.23	$74.01	$49.94
Quartile 3	$69.27	$86.14	$59.98
Adjusted Share Price (incl. premium)	**P/E (1YF)**	**P/BV (T)**	**P/NTA (T)**
Premium applied	13.65%	39%	0%
Adjusted multiple	14.26x	1.78x	1.38x
Adjusted share price	$68.23	$74.01	$49.94
Weightings	50%	50%	0%
Relative Valuation Output			
Low			$60.48
Implied Share Price			**$71.12**
High			$77.71

Key Ratios - Base Case	Historical					Projected		
(Fiscal Year Ends 30 June)	FY15A	FY16A	FY17A	FY18A	FY19A	FY20E	FY21E	FY22E
Profitability								
Net Interest Margin	2.09%	2.14%	2.10%	2.15%	2.10%	2.05%	2.03%	2.00%
Return on Equity	18.5%	16.6%	15.9%	14.4%	12.8%	11.7%	11.4%	11.5%
Return on Tangible Equity	23.1%	20.2%	19.1%	16.8%	14.5%	13.2%	12.8%	12.9%
Return on RWAs	2.6%	2.5%	2.3%	2.1%	1.9%	1.8%	1.8%	1.8%
Cost-to-Income Ratio	42.3%	42.1%	42.3%	44.1%	46.2%	44.8%	44.3%	42.9%
Asset Quality								
Non-Performing Loans / GLAAs	0.819%	0.793%	0.810%	0.870%	0.932%	0.957%	0.981%	1.004%
Collective Provision / Credit RWAs	0.86%	0.81%	0.72%	0.74%	1.03%	1.05%	1.10%	1.15%
Specific Provision / Gross Impaired Assets	30.8%	30.0%	30.5%	27.4%	24.7%	26.6%	28.6%	30.6%
Provision / GLAAs	0.57%	0.54%	0.51%	0.49%	0.63%	0.65%	0.69%	0.73%
Loan impairment expense / GLAAs	0.16%	0.18%	0.15%	0.15%	0.16%	0.16%	0.18%	0.20%
Capital Management								
CET1 Ratio	9.06%	10.56%	10.10%	10.13%	10.68%	11.29%	11.22%	11.06%
Tier 1 Ratio	11.2%	12.4%	12.1%	12.3%	12.7%	13.2%	13.1%	12.9%
Tier 2 Ratio	1.54%	2.01%	2.15%	2.74%	2.82%	3.66%	4.48%	5.21%
Total Capital Ratio	12.7%	14.4%	14.2%	15.0%	15.5%	16.9%	17.6%	18.1%
Dividend Payout Ratio	75.0%	75.8%	75.7%	80.6%	87.6%	90.1%	90.9%	89.1%

APPENDIX 17: REGRESSION ANALYSIS

We conducted a linear regression analysis to on the P/BV multiples against its corresponding profitability metric, ROE.

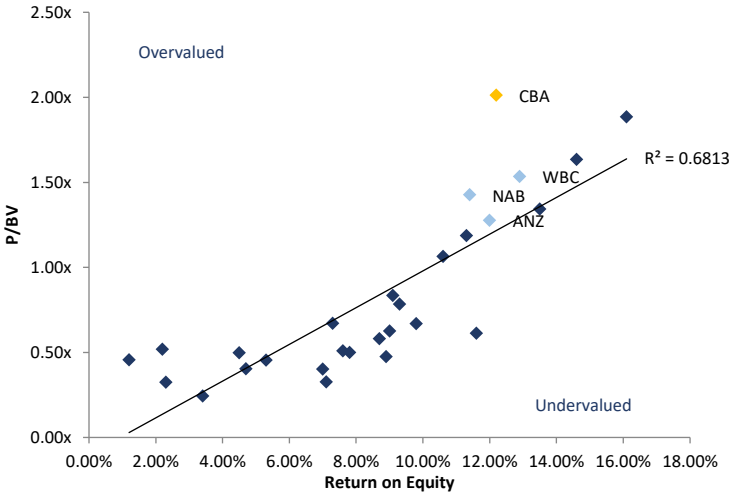
$$\frac{P_0}{BV_0} = \frac{ROE_s - g_s}{k_e - g_s}$$

We constructed three different samples to analyse CBA valuation against comparable major commercial banks: (1) North America, Australia and New Zealand peer group, (2) Developed market peer group, (3) CBA value map time-series. Data was obtained through Capital IQ and comparable diversified commercial banks with total assets above A$500bn to account for size and subject to regulatory capital requirements were chosen.

Comparable Set 1: Developed Market Global Banking Peers

Developed Market Global Banking Peers

Company Name	Ticker	FY19 ROE	P/BV
Bank of America Corporation	NYSE:BAC	10.60%	1.06x
Société Générale Société anonyme	ENXTPA:GLE	7.10%	0.33x
The Toronto-Dominion Bank	TSX:TD	14.60%	1.63x
Nordea Bank Abp	OM:NDA SE	9.30%	0.78x
Royal Bank of Canada	TSX:RY	16.10%	1.89x
Banco Bilbao Vizcaya Argentaria, S.A.	BME:BBVA	11.60%	0.61x
Wells Fargo & Company	NYSE:WFC	11.30%	1.19x
National Australia Bank Limited	ASX:NAB	11.40%	1.43x
Banco Santander, S.A.	BME:SAN	8.70%	0.58x
ING Groep N.V.	ENXTAM:INGA	9.80%	0.67x
Australia and New Zealand Banking Group Limited	ASX:ANZ	12.00%	1.28x
Citigroup Inc.	NYSE:C	9.10%	0.84x
Westpac Banking Corporation	ASX:WBC	12.90%	1.53x
Commerzbank AG	DB:CBK	3.40%	0.24x
Crédit Agricole S.A.	ENXTPA:ACA	7.80%	0.50x
Danske Bank A/S	CPSE:DANSKE	8.90%	0.47x
The Royal Bank of Scotland Group plc	LSE:RBS	4.50%	0.50x
Intesa Sanpaolo S.p.A.	BIT:ISP	7.30%	0.67x
Lloyds Banking Group plc	LSE:LLOY	9.00%	0.63x
Standard Chartered PLC	LSE:STAN	2.20%	0.52x
UniCredit S.p.A.	BIT:UCG	7.00%	0.40x
The Bank of Nova Scotia	TSX:BNS	13.50%	1.34x
BNP Paribas SA	ENXTPA:BNP	7.60%	0.51x
Commonw ealth Bank of Australia	ASX:CBA	12.20%	2.01x
Mizuho Financial Group, Inc.	TSE:8411	1.20%	0.46x
Mitsubishi UFJ Financial Group, Inc.	TSE:8306	4.70%	0.40x
Sumitomo Mitsui Financial Group, Inc.	TSE:8316	5.30%	0.45x
JAPAN POST BANK Co.,Ltd.	TSE:7182	2.30%	0.32x



Regression Statistics	
Multiple R	0.825386228
R Square	0.681262425
Adjusted R Square	0.669003288
Standard Error	0.291013446
Observations	28

ANOVA

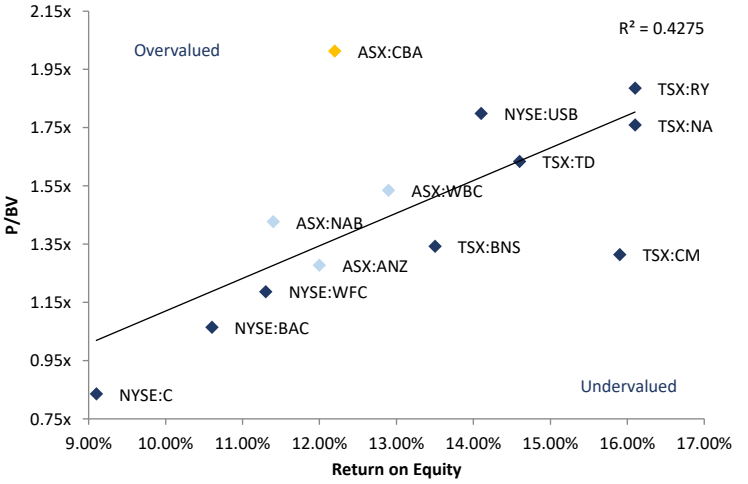
	df	SS	MS	F	Significance F
Regression	1	4.706311091	4.706311091	55.57180723	6.47527E-08
Residual	26	2.201909466	0.084688826		
Total	27	6.908220557			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-0.100964856	0.136498636	-0.739676667	0.466122872	-0.38154182	0.179612108	-0.38154182	0.179612108
FY Return on Equity %	10.8021845	1.4490532	7.454650041	6.47527E-08	7.823612986	13.78075601	7.823612986	13.78075601

Comparable Set 2: North America, Australia and New Zealand Banking Peers

North America, Australia and New Zealand Banking Peers

Company Name	Ticker	FY19 ROE	P/BV
Bank of America Corporation	NYSE:BAC	10.60%	1.06x
The Toronto-Dominion Bank	TSX:TD	14.60%	1.63x
Royal Bank of Canada	TSX:RY	16.10%	1.89x
Wells Fargo & Company	NYSE:WFC	11.30%	1.19x
U.S. Bancorp	NYSE:USB	14.10%	1.80x
National Australia Bank Limited	ASX:NAB	11.40%	1.43x
Australia and New Zealand Banking Group Limited	ASX:ANZ	12.00%	1.28x
Canadian Imperial Bank of Commerce	TSX:CM	15.90%	1.31x
Citigroup Inc.	NYSE:C	9.10%	0.84x
Westpac Banking Corporation	ASX:WBC	12.90%	1.53x
The Bank of Nova Scotia	TSX:BNS	13.50%	1.34x
National Bank of Canada	TSX:NA	16.10%	1.76x
Commonw ealth Bank of Australia	ASX:CBA	12.20%	2.01x



Regression Statistics	
Multiple R	0.657627384
R Square	0.432473777
Adjusted R Square	0.380880483
Standard Error	0.270329914
Observations	13

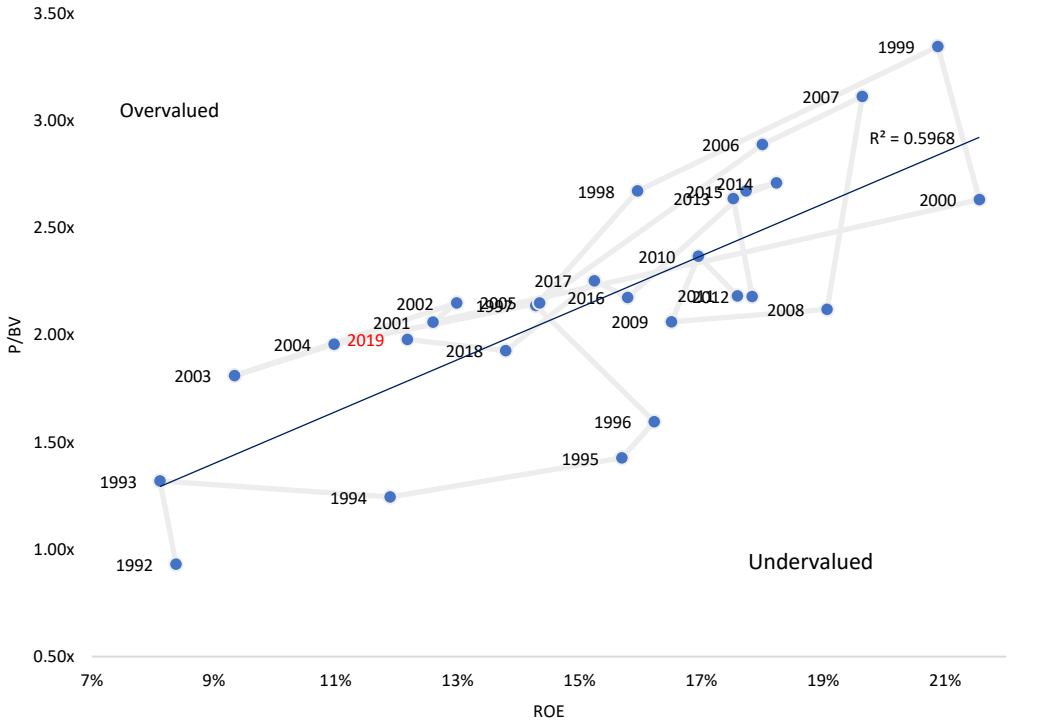
ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.612568616	0.612568616	8.382364276	0.014568868
Residual	11	0.803860886	0.073078262		
Total	12	1.416429501			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.143650819	0.463204438	0.310124014	0.762263098	-0.875855274	1.163156913	-0.875855274	1.163156913
FY19 ROE	10.132032	3.499558742	2.895231299	0.014568868	2.429555146	17.83450886	2.429555146	17.83450886

CBA P/BV vs ROE Time-Series Regression

CBA P/BV vs ROE Time-Series		
Year	ROE	P/BV
1992	8.38%	0.93x
1993	8.12%	1.32x
1994	11.89%	1.24x
1995	15.70%	1.43x
1996	16.23%	1.59x
1997	14.29%	2.14x
1998	15.96%	2.67x
1999	20.88%	3.34x
2000	21.56%	2.63x
2001	12.60%	2.06x
2002	12.99%	2.15x
2003	9.34%	1.81x
2004	10.97%	1.96x
2005	14.35%	2.15x
2006	18.00%	2.89x
2007	19.64%	3.11x
2008	19.07%	2.12x
2009	16.51%	2.06x
2010	16.95%	2.37x
2011	17.60%	2.18x
2012	17.83%	2.18x
2013	17.53%	2.63x
2014	18.23%	2.71x
2015	17.73%	2.67x
2016	15.79%	2.17x
2017	15.25%	2.25x
2018	13.79%	1.93x
2019	12.18%	1.98x



APPENDIX 18: COST OF EQUITY

The cost of equity was calculated using three methods: (1) Capital Asset Pricing Model (CAPM), (2) Fama French 3 Factor Model (FF3), and (3) Dividend Discount Model (DDM). The Capital Asset Pricing Model (CAPM) was weighted 100% in both the explicit and terminal period. The FF3 generated a low adjusted R-squared value of 0.32 suggesting the method had low explanatory value for the volatility of the stock's return. Similarly, the DDM was not used given the subjective nature of the growth assumptions. Hence, we applied the CAPM equation to determine CBA's cost of equity. We applied a cost of equity of 8.83% and 9.51% in the forecast and terminal periods respectively.

$$r_e = r_f + \beta \times (r_m - r_f)$$

- **Risk-free rate:** The 10 Year Australian Government Bond (10YGB) was determined to be an appropriate risk-free proxy for the forecast reflecting CBA's status as a going concern. The spot rate and 5Y average were weighted equally in the forecast period while we only used the 5Y average in the terminal period. A divergence in weightings was rationalised given interest rates are entering historically low levels which is unlikely to persist in perpetuity. Risk-free rate was 1.72% in the forecast period and 2.49% in the terminal period.
- **Beta:** CBA's beta was calculated via several methods: (1) Comparable beta, (2) Adjusted Bloomberg, (3) Reuters, (4) excess returns analysis. A regressed beta of 1.08 was calculated over a 5Y horizon using monthly data with the ASX200 used as the market proxy, eliminating the downward bias engendered by smaller indices such as the All Ordinaries. The regression beta was given 10% weighting in the forecast period and nil in the terminal given its robustness diminished in the long-term. Comparable betas of the other Australian majors was obtained through Bloomberg and given the highest weighting of 80% in the forecast period and 100% in the terminal period given the average of relatively homogenous banks reduced the standard error compared to a estimation of a single bank's beta. Given leverage is structurally high in this industry and the degree of leverage variation tends to negligible in this industry, we did not apply the Hamada formula during this process. The Bloomberg adjusted beta was given 10% weighting in the forecast period and nil in the terminal given the convergence of industry betas implicitly assumed in terminal valuation.
- **EMRP:** An EMRP of 6.65% and 6.5% was used in the forecast and terminal periods respectively. An equal weighting of historic bond and survey methods were used in the forecast period, with limitations to both. In the terminal period we only used the survey method given historic data is unlikely to reflect true MRP given its inherent assumption that historic premiums are representative of the market. Survey methods are subjective in nature but provide a forward-looking view and hence was the sole measure in the terminal period.
- **FF3:** Recognising the limits of market risk as the sole determinant of equity returns, the FF3 model was also used to consider the impact of size and value factors on the CBA returns. Asia pacific data was used to regress these factors and a cost of equity of 4.51% was obtained. However given this is purely an empirical model based on returns seen in the US, it was not factored into our final triangulation.

$$r_e = r_f + \beta_{MKT}(EMRP) + \beta_{SMB}(SMBP) + \beta_{HML}(HMLP)$$

- **DDM:** Under the Gordon Growth Mode, a one-stage DDM cost of equity of 7.85% was computed. The inputs used was the last close share price of $79.54, forward DPS of $4.41 and the assumption of a 2.30% terminal growth rate. However given the high sensitivity of the TGR on the implied cost of equity, we determined the CAPM was a more superior method.

Forecast Horizon Cost of Equity		
Risk free Rate	**Proxy**	**Weight**
10Y CGS Yield Spot (20/8/2019)	0.95%	50%
10Y CGS Yield (5 Year Average)	2.49%	50%
10Y CGS Yield (10 Year Average)	3.41%	0%
Weighted Average	**1.72%**	**100%**
Adjusted Beta	**Proxy**	**Weight**
Comparable Beta	1.08	80%
Bloomberg	1.06	10%
Reuters	1.03	0%
CAPM Regression (5Y Monthly)	0.99	10%
Weighted Average	**1.07**	**100%**
Equity Market Risk Premium (EMRP)	**Proxy**	**Weight**
Historic EMRP (incl. imputation)	6.80%	0.50
Survey (Fernandez et al., 2019)	6.50%	0.50
Weighted Average	**6.65%**	**100%**
Capital Asset Pricing Model (CAPM)	**Proxy**	
Risk-free rate	1.72%	
Beta	1.07	
EMRP	6.65%	
CAPM Cost of Equity	**8.83%**	
Fama French 3 Factor Model (FF3)	**Proxy**	
Market Risk Premium (MRP)	0.52	0.09
Small Minus Big (SMB)	-0.42	-0.04
High Minus Low (HML)	-0.36	0.05
FF3 Cost of Equity	4.51%	
Dividend Discount Model (DDM)	**Proxy**	
Forward DPS	$ 4.41	
Current Stock Price	$79.54	
Dividend Growth Rate	2.30%	
DDM Cost of Equity	7.85%	
Cost of Equity	**Proxy**	**Weight**
Capital Asset Pricing Model	8.83%	100%
Fama French 3 Factor Model	4.51%	0.00
Dividend Discount Model	7.85%	0.00
Weighted Average	**8.83%**	100%

Terminal Horizon Cost of Equity		
Risk free Rate	**Proxy**	**Weight**
10Y CGS Yield Spot (20/8/2019)	0.95%	0%
10Y CGS Yield (5 Year Average)	2.49%	100%
10Y CGS Yield (10 Year Average)	3.41%	0%
Weighted Average	**2.49%**	**100%**
Adjusted Beta	**Proxy**	**Weight**
Comparable Beta	1.08	100%
Bloomberg	1.06	0%
Reuters	1.03	0%
CAPM Regression (5Y Monthly)	0.99	0%
Weighted Average	**1.08**	100%
Equity Market Risk Premium (EMRP)	**Proxy**	**Weight**
Historic EMRP (incl. imputation)	6.80%	0%
Survey (Fernandez et al., 2019)	6.50%	100%
Weighted Average	**6.50%**	100%
Capital Asset Pricing Model (CAPM)	**Proxy**	**Weight**
Risk-free rate	2.49%	
Beta	1.08	
EMRP	6.50%	
CAPM Cost of Equity	**9.51%**	
Fama French 3 Factor Model (FF3)	**Proxy**	
Market Risk Premium (MRP)	0.52	0.09
Small Minus Big (SMB)	-0.42	-0.04
High Minus Low (HML)	-0.36	0.05
FF3 Cost of Equity	4.51%	
Dividend Discount Model (DDM)	**Proxy**	
Forward DPS	$ 4.41	
Current Stock Price	$ 79.54	
Dividend Growth Rate	2.30%	
DDM Cost of Equity	7.85%	
Cost of Equity	**Proxy**	**Weight**
Capital Asset Pricing Model	9.51%	100%
Fama French 3 Factor Model	4.51%	0%
Dividend Discount Model	7.85%	0%
Weighted Average	**9.51%**	100%

APPENDIX 19: TERMINAL GROWTH RATE AND HORIZON

A terminal growth rate (TGR) was required to determine the terminal value of dividends, residual income and franking credits in our Dividend Discount Model and Residual Income Model respectively. We estimated the TGR at 2.3% and is based upon a triangulation of 3 growth metrics:

Terminal Growth Rate Calculation				
Region	**LT GDP Growth**	**AIEAs (FY19)**	**Contribution**	
Australia	2.74%	773,251	89%	*Source: OECD*
New Zealand	2.59%	91,441	11%	*Source: OECD*
Total	**2.72%**	**864,692**	**100%**	
TGR Proxy			**Weightings**	
Weighted Average GDP Growth Rate		2.72%	20%	
Long Run Average Inflation		2.20%	30%	*Source: RBA*
Australian Population Growth Forecast		1.60%	30%	*Source: ABS*
Long Term Australian Banking Industry Growth		3.10%	20%	*Source: IBISWorld*
Weighted TGR		**2.30%**	**100%**	

1. ***Long-term GDP growth rates:*** The OECD's long-term GDP growth forecasts of Australia and New Zealand were weighted by FY19 contribution to CBA's average interest earnings assets (AIEA) to build a geographically robust growth figure. This was weighted at 20% given an elevated level of uncertainty in regards to the general global economic outlook especially with Australian GDP annual growth reaching 1.4%, the slowest pace since the GFC.
2. ***Long-run average inflation rate:*** The RBA forecasts 2.2% inflation rate for FY23E which we weigh 30% given mature companies such as CBA tend to grow slower than the economy as a whole.
3. ***Australian population growth forecast:*** Australia's population growth is forecasted to grow at 1.6% by the ABS. We weight this 30% given bank profitability cannot exceed the population growth rate in the long-term given their maturity and limited opportunities for organic expansion.
4. ***Long-term Australian Banking Industry growth:*** IBISWorld forecasts the Australian banking industry to grow at 3.10% over the next 5 years. We weigh this only 20% given CBA is a market leader in the Australian banking sector but the industries growth fundamentally cannot exceed population growth in perpetuity

APPENDIX 20: SENSITIVITY ANALYSIS

Sensitivity Analysis 1: Terminal COE vs Terminal Growth Rate

Sensitivity - TCOE vs TGR (Residual Income Model)						
		Terminal Growth Rate				
		1.30%	1.80%	2.30%	2.35%	2.40%
Terminal Cost of Equity	6.51%	$93.40	$99.07	$106.09	$106.89	$107.70
	7.51%	$80.27	$83.80	$88.00	$88.47	$88.94
	8.51%	$70.78	$73.07	$75.74	$76.03	$76.32
	9.51%	$63.60	$65.13	$66.88	$67.06	$67.25
	10.51%	$57.98	$59.02	$60.17	$60.30	$60.42
	11.51%	$53.47	$54.16	$54.93	$55.01	$55.09
	12.51%	$49.75	$50.21	$50.71	$50.76	$50.82

Sensitivity - TCOE vs TGR (Dividend Discount Model)						
		1.30%	1.80%	2.30%	2.35%	2.40%
Terminal Cost of Equity	6.51%	$95.53	$104.66	$115.96	$117.24	$118.55
	7.51%	$82.36	$88.74	$96.34	$97.18	$98.04
	8.51%	$72.84	$77.56	$83.04	$83.63	$84.24
	9.51%	$65.64	$69.28	$73.42	$73.87	$74.32
	10.51%	$60.01	$62.91	$66.16	$66.50	$66.85
	11.51%	$55.48	$57.84	$60.46	$60.74	$61.02
	12.51%	$51.76	$53.73	$55.89	$56.12	$56.35

Sensitivity analysis were conducted to flex the assumptions of our intrinsic valuations. Given COE and TGR are key drivers of our RIM and DDM valuations, they were flexed between the ranges 6.51% to 12.51% and 1.3% to 2.4% using increments of 1% and 0.5% respectively. Terminal COE was flexed instead of forecast COE given a large portion of implied equity value is derived through the terminal value compare to forecast value (DDM: 81/19, RIM: 19/6 – we note that 75% of value in RIM is derived through current ordinary shareholder's equity).

- **Residual Income Model:** A 100bps increase/decrease in COE at base case 2.3% TGR and 9.51% COE results in a -10%/+13% change in the share price which signals the share price is highly sensitivity to movements in COE. A 50bps increase/decrease in TGR at base COE and TGR corresponds to a +0.28%/-2.61% change in share price. When TGR is held constant, share price ranges from $63.60 to $67.25 When COE is held constant, share price ranges from $50.71 to $106.09.
- **Dividend Discount Model:** A 100bps increase/decrease in COE at base case 2.3% TGR and 9.51% COE results in a -10%/+13% change in the share price which signals the share price is highly sensitivity to movements in COE. A 50bps increase/decrease in TGR at base COE and TGR corresponds to a +0.62%/-5.64% change in share price. When TGR is held constant, share price ranges from $55.89 to $115.96 When COE is held constant, share price ranges from $65.64 to $74.32.

Sensitivity Analysis 2: Key Value Driver Analyses

Cost-to-income sensitivities with respect to FY20E earnings and 12-month price targets are calculated as per Exhibit 47. It is noted that the $681mn cost savings necessary to achieve a CTI reduction from 44.1% to 40.1% would render a marginal $4.11 increase on our price target. Significantly, we expect management to struggle to achieve such results within a one year time frame, as a result of previously highlighted wage inflation of 6% per worker YoY and IT cost growth (~+229mn), outstripping business simplification (~-190mn).

Net interest margin sensitivities with respect to FY20E earnings and 12-month price targets are calculated as per Exhibit 48. A NIM squeeze to 1.95% renders a price target deflation to $64.80, representing a downside on last close of 18.8%. As detailed in *Investment Summary 2,* this is a plausible outcome given the Australian approach towards the *Effective Lower Bound* of ~0.20% as per our analysis. Upside towards a 2.15% NIM renders a price of $71.84, also maintained within a sell 9.99% downside.

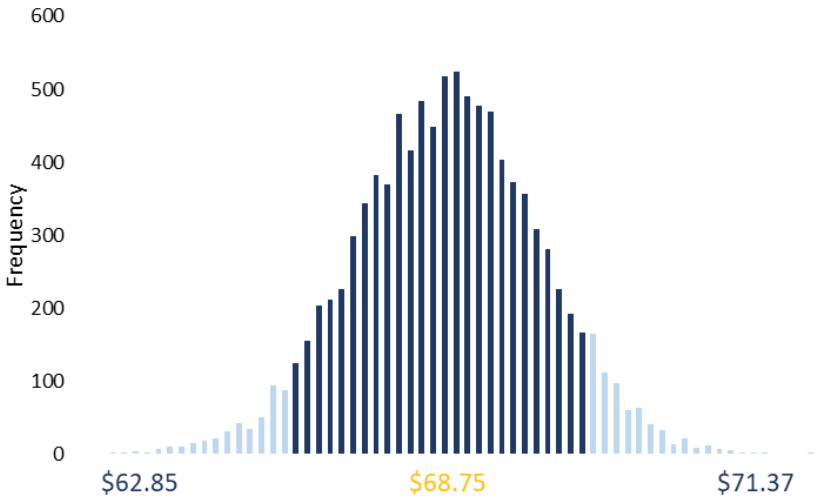
Loan impairment changes as a % of GLAAs are sensitised with respect to FY20E earnings as per Exhibit 49. A marginal uptick in loan impairments from 0.158% to 0.178% results in a $110mn earnings impact, thus a ~0.010% impairment delta has a ~$45-55mn impact on earnings.

APPENDIX 21: SCENARIO ANALYSIS

Bear Case: In our bear case, we assume that domestic economic conditions to remain subdued and lower than expected interest rate environment with the cash rate falling to the effective lower bound (~0.20% estimated) weighing on CBA's profitability. We have assumed in our RIM model that (1) NIM will decrease by 30bps over the next three years to 1.80% with net interest income projected to decrease at -2.60% CAGR, (2) GLAAs growth will remain flat over the next two years at 1.6% before ticking up to 2.4% as system credit growth recovers, (3) CTI will taper slowly over the period but remains above management's target of 40% given CBA has never being good at reducing their fixed costs base, (4) asset quality will further deteriorate leading to higher bad debt charges in FY22 with 2bps increase YoY over the forecast period. We arrive at a bear case valuation of **$65.30** implying a discount of 17.1% on last close.

Bull Case: We simulate an optimistic outlook on the Australian economy in our bull case scenario where CBA is able to adjust comfortably to the lower interest rate environment from a recovery in system credit growth while managing to achieve internal strategic goals of managing its cost base. We have assumed in our RIM model that (1) NIM will remain flat at 2.10% over FY20E to FY22E which will only be achieved if the RBA does implement further cash rate cuts, the tightening of the Bill/OIS spread is sufficient to counter oncoming headwinds from the Jun-19/Jul-19 and CBA is flexible in repricing its mortgage books without facing political backlash, (2) loan volumes will recover in line with an uplift in system credit growth which we forecast GLAAs growth to trend towards 5% p.a. (2017 levels), (3) Management will able to achieve a sub-40% CTI by F22 which we forecast CTI to reach 37.3% through reducing headcount of FTEs by ~2,900, reducing spend on risk and compliance programs to nil by end of FY21 and a 68bps reduction in occupancy, equipment and IT expenses as a portion of income, (3) asset quality will remain sound with tailwinds from increases in wage growth and lower unemployment stemming from aforementioned stimulus in the economy. We straight-line FY19 0.16% loan loss rate over the period. We arrive at a bull case valuation of **$86.28** representing an 8.47% premium on last close.

APPENDIX 22: SIMULATION ANALYSIS



Summary Statistics		Percentile	Output Price
Minimum	$62.85	5%	$66.12
Maximum	$75.18	10%	$66.68
Mean	$68.75	15%	$67.09
Std Deviation	$1.61	20%	$67.40
Variance	2.599097	25%	$67.67
Skewness	-0.05017098	30%	$67.91
Kurtosis	3.087157	35%	$68.14
Errors	0	40%	$68.35
Mode	$68.90	45%	$68.57
Trials	10000	50%	$68.77
		55%	$68.96
		60%	$69.16
		65%	$69.37
		70%	$69.57
		75%	$69.83
		80%	$70.10
		85%	$70.42
		90%	$70.81
		95%	$71.37

Variable	Distribution	Std. Dev.
Net Interest Margin	Normal	10bps
CTI Ratio	Normal	200bps
GLAAs Growth	Normal	20bps

APPENDIX 23: REGULATORY CAPITAL EXPLANATION

Regulatory Capital Definitions

Bank regulatory capital can be broken down into 'going-concern' capital and 'gone-concern' capital:

- **'Going-concern' capital** consist primarily of paid up ordinary shares, retained earnings and some reserves but it may also include perpetual subordinated debt and preference shares in some cases. This share of capital absorbs bank losses and hence falls during times of distress and increases when a bank makes a capital. The more going-concern capital the banks has, the less likely it is to reach solvency. Tier 1 capital is another name for this capital. CET1 is a subset of Tier 1 Capital.
- **'Gone-concern' capital** or Tier 2 capital consists primarily of long-dated subordinated debt. Unlike going-concern capital, the value of gone-concern will typically only absorb losses once the bank is close to insolvency and is being resolved. Hence, this capital slice only absorbs losses and thus protects senior creditors and depositors once the bank is no longer a going-concern.

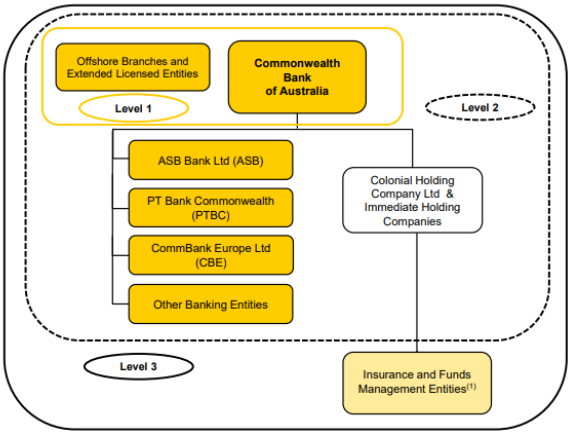
Types of bank funding		Examples of holdings
Tier 1 Capital	Common Equity Tier 1 (CET1)	Ordinary shares Retained earnings
	Additional Tier 1 (AT1)	Preference shares
Tier 2 Capital		Qualifying long-term subordinated debt
Other liabilities	Unsubordinated, unsecured liabilities	Call and term deposits Senior unsecured debt
	Secured liabilities and preferred creditors	Covered bonds Employee entitlements

Incurs bank losses first

Incurs bank losses last

APS 330 Reporting Structure

APRA adopts a tiered approach to the measurement of an ADI's capital adequacy. Capital ratios are reported at the consolidated level (Level 2) which excludes the insurance and funds management businesses and the entities through which securitisation of Group assets is conducted. This reporting structure complicated the **RBNZ Capital Proposal (Appendix X)**. Although the impact of the RBNZ's proposal should be readily absorbed at Level 2, a build retained earnings at the NZ Level 1 and lower dividends paid back to the Australian parent creates issues for the Level 1 Australian capital ratio. Hence, major Australian banks may face issues in managing capital at Level 1.



APS 222 Reporting

APS 222 adoption means that the limit on the amount of capital that Australian banks can allocate overseas subsidiaries such as those operating in New Zealand (e.g. ASB for CBA). The amount of Tier 1 capital that can be allocated to foreign subsidiaries is not capped at 25%, half of the previous 50% cap. This leaves some banks in difficult capital positions such as the Australia and New Zealand Banking Group (ANZ) which have a greater portion of New Zealand business.

	Current APS 222	Proposed APS 222
Related ADIs (or overseas-based equivalents)		
Exposure to individual related ADI	50% of Total Capital	25% of Tier 1 Capital
Aggregate exposure to all related ADIs	150% of Total Capital	75% of Tier 1 Capital
Other related entities		
Exposure to other individual regulated related entities (other than related ADIs and related overseas-based equivalents)	25% of Total Capital	25% of Tier 1 Capital
Exposure to individual unregulated related entity (including related individuals)	15% of Total Capital	15% of Tier 1 Capital
Aggregate exposure to all related entities (other than related ADIs and related overseas-based equivalents, and including related individuals)	35% of Total Capital	35% of Tier 1 Capital

APPENDIX 24: CBA'S BUSINESS OPERATIONS AND DIVISIONAL PERFORMANCE

Retail Banking Services (RBS): Over FY18-19, NPAT fell 10%, driven by a 4% decrease in total operating income (removal of fees on overdrawn accounts), 3% increase in operating expenses (higher risk and compliance spend), and 6% increase in loan impairment expense (reflecting softening economic conditions and higher arrears).

ASB New Zealand: Operates in New Zealand through four business units: (1) Retail Banking; (2) Business Banking; (3) Corporate Banking, and; (4) Private Banking, Wealth and Insurance. While its NII increased 5% on the prior year, driven by a growth of 6% in AIEA (average interest-earning assets), and the supportive New Zealand macroeconomic environment (2.7% GDP growth compared to Australia's 1.8%). ASB holds 22% of New Zealand market share in mortgages (behind ANZ's 29.7%), growing its mortgage book by $1.86bn Dec-18 to Jun-19.

Business and Private Banking (BPB): Revenue is generated through (1) relationship managed business and agribusiness customers; (2) private banking to high net worth individuals; (3) margin lending and trading through CommSec (Australia's largest online stockbroking firm), and; (4) retail banking products to non-relationship managed small business customers. This segment provides specialised banking services through four main channels, comprising 27% of NII. Revenue is generated through four main channels, and was hit by a 47% increase in loan impairment expenses following CBA's shift in focus to remediation, regulation and compliance cost (which surpassed $1.2 billion) as an implication of the BRC.

Institutional Banking and Markets (IBM): CBA offers debt capital market access, transaction banking and risk management capabilities. IBM's 7% decline in NPAT over FY18-19 was driven by an 8% decrease in income and lowering of business banking and lending fees as a result of regulatory pressures. Contributing 7% of NII through the servicing of commercial and wholesale banking to corporate, institutional and government clients, IBM's 7% decline in NPAT over FY18-19 was driven by lower lending fees and higher one-off risk/compliance expenses.

Wealth Management: This segment has been the subject of multiple divestments following the Banking Royal Commission, including the sale of Colonial First State Global Asset Management (CFSGAM) for $4.2bn in August 2019. Comprising 4% of CBA's income, WM provides superannuation, investment, retirement, insurance products and financial planning services. WM has been the subject of divestments, leading to a 42% drop in FY19 NPAT.

International Financial Services (IFS): IFS (0.64% of NII) incorporates the operations of Indonesian retail and business operations, and associate and joint venture investments in China (Bank of Hangzhou and Qilu Bank) and Vietnam (Vietnam International Bank). Driven by non-core divestments (most recently the Commonwealth Bank of South Africa to minority shareholder, African Rainbow Capital) and lower staff costs, IFS's NPAT jumped 49% and operating expenses decreased 28% on the prior year.

APPENDIX 25: INDUSTRY DYNAMICS – THE INCREASING TREND OF OPEN BANKING AND FINTECHS

Open banking means customers can request or give consent for their data to be shared with an accredited third party (e.g. another bank, financial services provider or utility provider). This is designed to be customer focused and encourage competition, which places neobanks (100% digital banks that communicate and provide services to clients exclusively through an application or online) at the forefront, as they are nimble and unconstrained by old legacy systems and networks. Rather than taking this as a threat to the dominant market share (majors taking up 83% of market share) or disruption to the banking industry, the trend signifies a turning point of innovation for the majors, who now look to develop technological platforms. A key example of this is CBA's app re-launch in August 2019, which uses vast pools of transaction data to create "personal databanks", helping customers with lifestyle choices.

In addition, there is an emergence of fintechs (companies that provide financial services to customers but are not classified as a bank), particularly in areas such as buy-now pay-later providers. Players such as Afterpay (APT.AX), Zip Co (Z1P.AX) and Splitit (SPT.AX) compete directly in the consumer finance by providing alternative products to credit cards. CBA, NAB and WBC have recognized the trend, and in turn launched Beem It in 2018, a third party payment app that allows instant payment between users. CBA has also explored unconventional avenues of growth – a US$100m partnership with Klarna (a Swedish-based fintech that provides direct payments, pay after delivery options and instalment plans for users) is allowing CBA to expand beyond traditional loans and fee-based services to diversify their financial products, and this is expected to ripple through to the other Australian majors.

APPENDIX 26: THE AUSTRALIAN BANKING SYSTEM OLIGOPOLY

As the four Australian majors provide 70-80% of total credit in the economy (depending on the year) vs ~50% in Rest of World (RoW) (see exhibit), our view is that the market has underestimated the effect of the Australian economy reaching the ELB as any pullback in bank credit supply would have a disproportionately larger impact on the economy by leaving less room for credit supply from other non-bank sources to fill the gap. With such liquidity risk posing significant implications for stability and growth in the broader economy, any subsequent falls in interest rates are expected to have an increasingly greater flow-on effects for both CBA performance and the macroeconomic outlook as Australian economy converges towards the ELB.

APPENDIX 27: APRA'S TOTAL LOSS ABSORBING CAPACITY (TLAC) PROPOSAL

Regulatory capital requirements are designed to broadly reflect the risks in a financial institution's business, and ensure that it holds a minimum amount of capital to absorb potential losses. The reform of the authorised deposit-taking institutions (ADIs) capital framework seeks to achieve the following objectives, including:

- Addressing the structural concentration in residential mortgages, including embedding improved serviceability assessments in the capital framework and targeting higher risk residential mortgages;
- Ensuring appropriate relative capital outcomes between the IRB and standardised approaches; and
- Improving the transparency, comparability and flexibility of the capital framework, without introducing undue complexity.

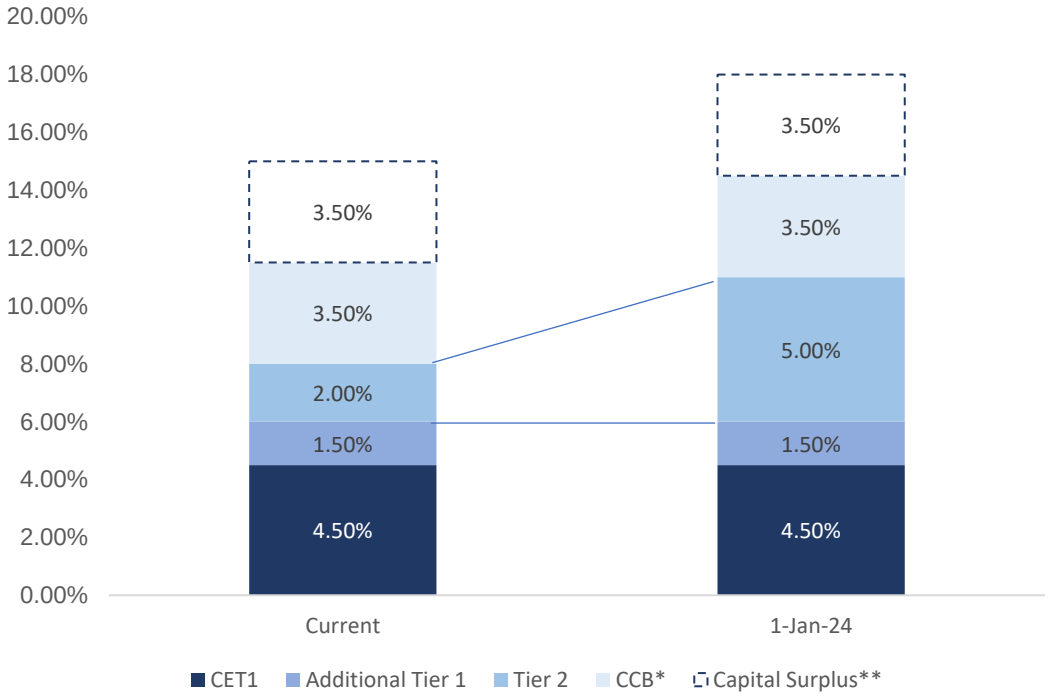
The implementation of revised capital standards is aligned with the Basel Committee's internationally agreed implementation date for Basel III of 1 January 2022. The Basel III framework is a series of reforms to the Basel capital framework following the global financial crisis that commenced with the Basel Committee on Banking Supervision's *Basel III: A global regulatory framework for more resilient banks and banking systems*.

APRA released a discussion paper '*Increasing the loss-absorbing capacity of ADIs to support orderly resolution'* in November 2018, proposing that the four major Australian banks be required to increase their Total Loss-Absorbing Capital (TLAC) by four to five percentage points of risk weighted assets (RWA) for domestic systemically important banks (D-SIBs) over four years, designed to help facilitate orderly resolution in the unlikely event of failure. APRA anticipated the banks would primarily satisfy the increased TLAC requirements by issuing additional Tier 2 capital. This discussion paper was in response to the Australian Government's 2014 Financial System Inquiry (FSI), who recommended that APRA implement a framework of minimum loss-absorbing and recapitalisation capacity in line with emerging international practice, sufficient to facilitate the orderly resolution of Australian ADIs and minimise taxpayer support.

Following extensive engagement with a range of stakeholders including ADIs, rating agencies and other market participants, APRA announced on 9 July 2019 that major banks are required to lift Total Capital by three percentage points of RWA by 1 January 2024. The key issue that accelerated this change was whether there would be sufficient capacity in debt markets to absorb anticipated additional Tier 2 capital issuance. In particular, stakeholders argued that the proposal may:

- Be unachievable due to sufficient market capacity for Tier 2 capital instruments (which is estimated to be ranging from $75 billion to $125 billion);
- Increase risks for ADIs if Tier 2 capital cannot be issued on a consistent basis, particularly during periods of poor market conditions; and
- Excessively increase funding costs for certain ADIs

APRA's overall term target of an additional four to five percentage points of loss absorbing capacity remains unchanged. The increase of TLAC by 3% of RWA was expected to strengthen loss-absorbing capacity of D-SIBs by $50 billion, and was also expected to have a small impact on overall funding costs (less than 5bps).



* Capital conservation buffer. **Capital surplus of 3.5% is generally higher than the level D-SIBs may normally maintain, as they have acted in anticipation of changes to the capital adequacy framework as a result of the 'unquestionably strong' capital benchmarks. APRA expects the D-SIBs to continue to maintain a normal capital surplus in excess of regulatory capital requirements once such changes are implemented.

On 11 July, APRA applied additional minimum capital requirements of $500 million each to ANZ, NAB and WBC, which will apply until the banks have completed their planned remediation to strengthen risk management. This follows APRA's decision in May 2018 to apply a $1 billion dollar capital add-on to CBA in response to the findings in relation to the governance, culture and accountability of the APRA-initiated Prudential Inquiry into CBA.

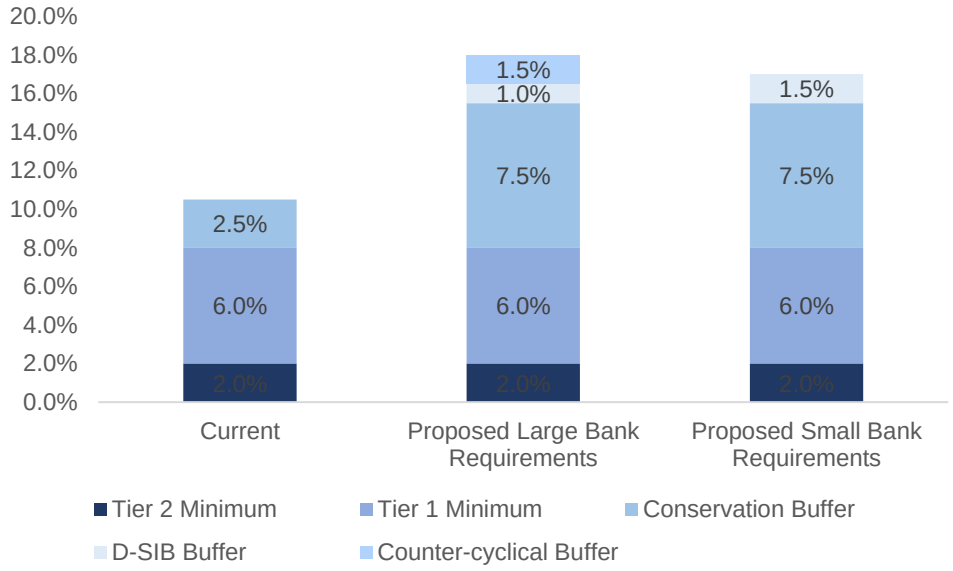
APRA Prudential Inquiry into CBA (May 2018)

The Inquiry and Final Report was comprehensive and contained a large number of findings and recommendations with regards to a number of incidents that damaged the reputation and public standing of CBA. The overarching conclusion was that "CBA's continued financial success dulled the senses of the institution", particularly in relation to the management of non-financial risks. The Report found a number of prominent cultural themes such as a widespread sense of complacency, a reactive stance in dealing with risks, being insular and not learning from experiences and mistakes. In response, CBA has acknowledged APRA's concerns, and offered an Enforceable Undertaking (EU), under which CBA's remedial action in response to the report will be monitored. Aforementioned, APRA has applied a $1 billion add-on to CBA's minimum capital requirement.

APPENDIX 28: RBNZ CAPITAL REVIEW

The capital adequacy framework in New Zealand is based on the Basel capital framework developed by the Basel Committee on Banking Supervision. In January 2019, the Reserve Bank of New Zealand (RBNZ) released '*Capital Review Paper 4: How much capital is enough*', which details a proposal to increase the minimum level of regulatory capital in the banking system and support financial stability in the wake of widespread unemployment, downward pressure on wages, collapsing house prices and other manifestations of a banking crisis. A final decision will be published in late November 2019.

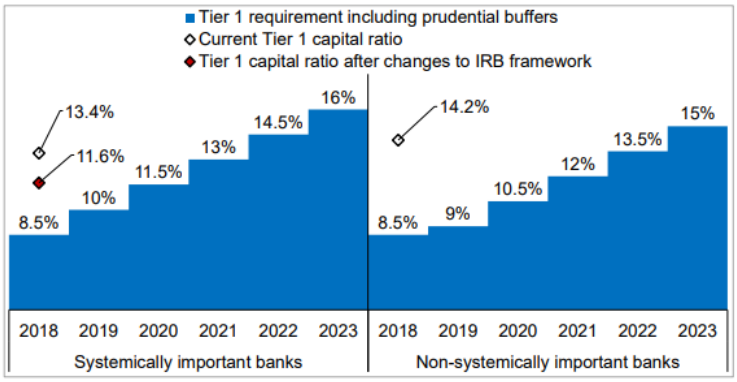
The paper proposes an increase in the Tier 1 Capital requirement for systematically important banks (i.e. CBA (ASB), ANZ, WBC, NAB (BNZ)) to 16% of risk-weighted assets which will become the highest in the world. Currently Tier 1 Capital ratios for Internal Ratings-Based (IRB) banks vary between 12-14.5%. The rationale for the increase is for shareholders to bear a greater burden of risk with and with the increase of T1 requirements to 16%, reduce the probability of a banking crisis to a 1 in 200 year event (less than 0.5%).



Key Takeaways:

- A Tier 1 capital ratio requirement of 16% for systemically important banks (minimum requirement of 6% and prudential capital buffer of 9-10%), which includes a conservation buffer of 7.5 percent, countercyclical capital buffer of 1.5 percent, and a D-SIB buffer of 1 percent;
  - 14.5% needs to be common equity Tier 1 (CET1), compared to APRA's requirement of 10.5% CET1 for the Australian banks
- A Tier 1 capital ratio requirement of 15 percent for non-systemically important banks, which includes a conservation buffer of 7.5% and countercyclical capital buffer of 1.5 percent; and
- Whether Tier 2 capital requirements should be retained (at the moment, there is a minimum total capital ratio of 8 percent of RWA, of which up to 2 percentage points can be met with Tier 2 capital).
- RWA calculation for IRB Banks proposed to change with an increase in the scalar from 1.06 to 1.2 along with setting an output floor of 85%. Expectation is that banks will increase their aggregate RWA from 76% to 90% of the outcome under a standardised approach.
- RBNZ proposes a transition period to 2023 before full implementation as shown below.
- More capital in the NZ subsidiary does not necessarily translate to more capital at Level 2 (group) as aggregate Level 2 capital levels are set through APRA targets which does not have a 1 to 1 translation.
- Impact of RWA inflation does flow through to group capital given it is a direct calculation against group RWA

Capital impacts with proposed Tier 1 target	Standardised banks	IRB banks
Current RWA $bn	38.4	251.1
New RWA (post floor and scalar) $bn	38.4	290
Current Tier 1 $bn	5.2	33.6
Current Tier 1 as percent of current RWA	13.60%	13.40%
Proposed Tier 1 using 16% of RWA, $bn	6.2	46.4
Increase required in Tier 1 $bn	0.9	12.8
Non-compliant AT1 to be replaced $bn	0.1	6.2
Net earnings, average past five years $bn	0.3	4.4
Estimated number of years required to meet new requirements through retention of earnings[25]	**7+ years**	**5 years**



APPENDIX 29: AUSTRALIAN LEADING MACROECONOMIC INDICATORS

VALUATION

2Q19 Australian GDP records weakest annual growth since 2009

The 2Q19 GDP update confirms our view that the economy is navigating a period of below trend growth ahead of the Jun-19 and Jul-19 RBA rate cuts, a positive inflection point in the housing market and further legislated tax relief.

i. **Australian GDP** as a whole was broadly in line with consensus data however below the RBA's August forecasts. The annual rate fell to +1.4% growth YoY, the weakest recorded growth since 2009,
ii. **Household consumption growth** remains subdued at +0.4% QoQ and the YoY figure (1.3%) is the slowest annual growth rate since mid-2013,

iii. **Dwelling investment** fell sharply, with the annual rate recording ~230bp below RBA forecasts. This was driven by weakness in non-residential building (-5% QoQ, -1.6% YoY) and engineering construction (-4.7% QoQ, -14.8% YoY), and;
iv. **Regionally**, state final demand (SFD) was weak in NSW (0.0% QoQ, +1.3% YoY), QLD (0.0% QoQ, +0.4% YoY) and SA (-0.2% QoQ, +0.4% YoY)

Distortions in National Employment as a result of forgotten pension changes

Participation rate growth Australia between Jun/Jul 2017 and Aug 2019 have been unnaturally emphasised partially via government amendments to the minimum retirement age from 65 to 67. Legislated in 2009 to take place in the form of six month incremental adjustments which came into effect in July 2017 and will finish July 2023, there is clear market overlook.

Particular emphasis is noted given minimal historical analysis and likely market mispricing towards the likelihood of RBA interest rate cuts. In fact, we expect the RBA to recognise these incongruences in the employment data, and continue to counter-argue unusual FY19 increases in participation with an appreciation of dynamic forces such as the retirement age, to thus deliver a more dovish and accurate look on the economy across the next 12 months.

i. **Participation rate metrics** depict a 1.0ppt increase in the June/July 2017 to current. Data highlights a 40% contribution to this rise is directly from an 80,000 increase in the labour force from the retirement age changes,
ii. **Future projections** show this will continue with 327,000 jobs artificially added across the next 5 years, and a significant 0.7 percentage point increase in the Australian participation rate. Notably, translation to the employment rate is negligible at ~2.3%,
iii. **Monetary stimulus** will continue to be necessary given current data points towards an Australian unemployment rate 70bps off the new NAIRU proposed by the RBA, and;
iv. **Participation data** remains subject to this distortion, and thus we emphasise caution with assessing the slack in the labour market as the dynamic retirement age changes thus rebasing must occur in order to render the participation rate comparably valid

RBA Lead and Lagging Indicators

The combination of the aforementioned data provides clear evidence that the RBA will face a high probability of requiring two cash rate cuts in response to lead and lagging indicators. Partial indicators as initiated by Edey and Pleban in March 1991, remain drivers of the monthly decision. Our analysis highlights i) Housing ii) Business investment iii) Consumption and iv) Labour market will experience headwinds in 1H20.

Leading indices of economic activity i) ABS Composite Leading Index ii) NATSTAT Leading Indicator and iii) Westpac-Melbourne Institute Leading Index are set to taper.

The Australian Government remains budget oriented, the RBA will be left to pick-up the crumbs

Treasurer Josh Frydenberg remains steadfast. Tension between the RBA's deteriorating ammunition as cash rates fall to 1.00%, and the Federal Government's fiscal stimulus absence amidst a determination to achieve the first budget surplus in 12 years, precariously position the Australian economy in a state of potential mismanagement.

- As the **RBA calls upon the government to provide fiscal stimulus**, we expect Phillip Lowe to continue to remain responsive to a softening economy amidst little confidence in fiscal stimulus
- Engineering and construction activity has **reached weakness levels in line with post-GFC** periods. Our analysis is in line with RBA projects of a requirement for a 10-year acceleration of infrastructure spend in order to counteract the requirement for a 50bps fall in rates across CY2020

APPENDIX 30: JUXTOPOSITION OF BANKING AND MORTGAGE REGULATORY IMPACTS VALUATION

Implementation of *Best Interest Duty* will pressure the market dominance of the top 4 DSIB Australian banks

As per APRA reforms to the mortgage lending space, sweeping amendments to the contractual obligation of mortgage brokers are set to sweep through industry. Of particular note is the 'best interest duty', mandating brokers to ensure the best deal is provided. As a result, we forecast two further factors to detriment CBA's books, i) an exodus from the 79% market share held by big firms, to be eroded as lending discounting via un-regulated online channels perpetuates and ii) increased churn further promotes lower pricing.

New mortgage evaluation frameworks to disproportionately impact the major top 4 DSIB Australian banks

Following re-assessment of the Household Expenditure Measure (HEM), amidst ongoing APRA amendments to the formal process of new loan approvals, a cost divergence is set to emerge between major banks and mortgage brokers. On a branch by branch basis, we project costs to impact the CBA at a distortional impact versus mortgage broker firms, not subject to regulatory pressure.

APPENDIX 31: GLOBAL ESTIMATES OF THE EFFECTIVE LOWER BOUND VALUATION

Economic Region	Effective Lower Bound	Validation
Australia & New Zealand	0.20%	SURG Proprietary Analysis (2019)
Canada	-0.5%	Bank of Canada (2016)
United Kingdom	0.5%	Bank of England (2015)
United States	-1.0%	Brunnermeier & Koby (2018)

APPENDIX 32: BASEL III AND APRA RISK WEIGHTED ASSET (RWA) AMENDMENTS VALUATION

As per the guidance released by APRA in the 2018 discussion paper "Revisions to the capital framework for authorised deposit-taking institutions", APRA recognises three key factors which are likely to take effect on 1 January 2021, subject to final rounds of commentary and quantitative analysis. In particular, a heightened adjustment to RWAs and thus a raising of minimum capital standards required for a bank set to rise as i) APRA counteracts downgrading retail risk weight commentary from Basel III, and alternatively consider uprating risk weights to 125% for non-credit card exposures. This follows with reference for 2017 Bank of England stress tests and separate APRA led stress testing indicating the "the retail portfolio experiences the highest potential loss rates in downturn scenarios relative to current levels of capital". Further, APRA commentary further rationalises an avoidance of Basel III transactors category and thus reduction in mortgage RWAs to 45%, highlighting the nature of mortgage books in Australia and the household debt levels in Australia sitting above 2x gross incomes in 2019, thus emphasising the requirement to further seek an increase in such weightings over time, supporting our current position on capital management set to be tested as NPLs grow and are up scaled in NPAs.

APPENDIX 33: CASE STUDY – CBA'S CORPORATE GOVERNANCE HISTORY

Investigations by APRA, AUSTRAC and the Royal Commission into Misconduct in the Banking, Superannuation and Financial Services Industry have exposed serious instances of misconduct and corporate governance failures on the part of the Board and executive leadership team (ELT). Case studies of specific instances have been detailed below:

AUSTRAC Anti-Money Laundering Scandal (2017)

- In Aug-17, financial intelligence agency AUSTRAC initiated Federal Court proceedings against CBA AUSTRAC alleged that CBA ignored warnings that its ATMs were being used for thousands of potentially illegal cash transactions made through CBA's network of 'Intelligent Deposit Machines' by criminals. The ATMs were being used to funnel money to individuals connected to, charged with and convicted of crimes ranging from dealing with the proceeds of crime to drug manufacture and distribution of drugs, terrorism and terrorism financing,
- CBA repeatedly failed to report obvious and very specific patters of structuring indicative money laundering, despite having identified it, thereby failing to comply with obligations to give a 'suspicious matter report' to AUSTRAC at all or within the time required (3 days) AUSTRAC alleges that the bank adopted a policy of not reporting suspicious transactions in some circumstances and ignored notifications from the authorities (including the Australian Federal Police) that unlawful activity was taking place.
- Suspicious transactions were expected to be valued at $625m took place using CBA's ATMs. Of this:
    - 6 breaches were related to customers who had been identified by the bank itself as having links to terrorism or terrorism financing
    - 1640 breaches of the $10,000 transaction threshold valuing at $17.3mn were directly connected to money laundering syndicates being investigated to money laundering syndicates being investigated and prosecuted by the AFP
    - 11 customers, involving at least four organised crime syndicates, have been convicted and jailed for money laundering offences using CBA's accounts
- AUSTRAC determined that the bank had only implemented 'sufficient appropriate risk-based controls to mitigate and manage' the money laundering and terrorist financing risk posed by the IDMs when it introduced daily limits on the machines in 2017. Had CBA introduced daily limits earlier it would have disrupted money laundering activity through IDMs by syndicate involved in the importation and distribution of drugs including methamphetamine
- Threshold transaction reports (TTRs), required to be send to AUSTRAC for deposits more than $10,000 also failed during the period due to a system error. Further, CBA admitted to not submitting 'suspicious matter reports' (SMRs) on 29 occasions within the required time frame in relation to the criminal syndicate of which customers were a member.
- CBA paid $700m fine for breaches of AML and terrorism financing laws – largest civil penalty paid in Australian corporate history

Specific Cases:

- Yuen Hong Fung
    - Mr Fung opened dozens of transaction accounts with CBA to lauder the proceeds of drug sales out of the country. Using CBA's "Intelligent Deposit Machines", Fung was able to deposit $670,420 in one day in Jun-15. Fung had been seen on frequent occasions depositing significant sums of cash through CBA's IDMs, ultimately being noticed by a branch manager on his 12th visit. By depositing less than $10,000 each time, he avoided the automatic reports that must be sent to AUSTRAC for deposits for more than that amount. Fung was arrested by the AFP and was convicted for money laundering offences
- Arlsan Shaffi and Salman Khan
    - Police found more than $3 million in banking receipts, some of which had been printed by CBA's deposit machines. Over the previous 7.5 months, the two men laundered $1.8mn by making 255 separate deposits into 101 CBA accounts. Dozens of CBA branches across Sydney were used to make deposits, many in amounts of $9900 or $9850, just below the $10,000 threshold.
    - Both men were arrested, refused bail, pleaded guilty in court, and were ultimately sentenced to jail term. After NSW Police emailed CBA 5 days after the arrest of their customers, CBA took two weeks to respond. Further, CBA's own AML procedures triggered alerts on one of the accounts being used by Mr Shaffi and Mr Khan, however, it took more than two months before this was reviewed by CBA's AML team.

APRA Prudential Inquiry into CBA (May 2018)

- APRA launched a review of corporate governance, accountability and culture at CA in the wake of allegations it broke anti-money laundering and counter-terrorism financing laws 53,700 time (above)
- The Final Report was comprehensive and contained a large number of findings and recommendations with regards to a number of incidents that damaged the reputation and public standing of CBA. The overarching conclusion was that "CBA's continued financial success dulled the senses of the institution", particularly in relation to the management of non-financial risks.
- The Report found a number of prominent cultural themes such as a widespread sense of complacency, a reactive stance in dealing with risks, being insular and not learning from experiences and mistakes. The Report also found an overly collegial and collaborative working environment, which lessened the opportunity for constructive criticism, timely decision-making and a focus on outcomes
- In response, CBA has acknowledged APRA's concerns, and offered an Enforceable Undertaking (EU), under which CBA's remedial action in response to the report will be monitored. APRA has applied a $1 billion add-on to CBA's minimum capital requirement until the changes required by the undertaking were completed to the regulator's satisfication

Mis-sold Consumer Credit Insurance (2018)

- CBA was exposed for selling consumer credit insurance to 64,000 customers who were ineligible to make a claim including students and the unemployed. Consumer insurance is designed to provide payouts to cover loan or credit card repayments for the ill or out of work
- ASIC first raised concerns regarding how these products were being sold through a report in 2011, however it took then Head of Retail Banking Matt Comyn years to become aware of these issues within CBA. The BRC heard that Comyn became fully aware of the issues in Apr-15 in an audit and attempted to raise them with then CEO Ian Narev. However, despite Comyn recommending the suspend the sales of the insurance product, this was not agreed with by the CEO with CBA not in favour of relinquishing the profits from the sale of these products. The lack of response to the mis-selling of insurance products reflects the general failure of leadership at CBA during that time
- After this scandal being exposed in the BRC, CBA is now refunding $15m to 64,000 credit card insurance customers

Fees-for-no-service (2018)

- During the BRC, CBA's subsidiary Count Financial was found to have charged fees to a customer who had been dead for over a decade
- ASIC found that CBA's financial planners systematically charged 'ongoing service' fees i.e. fees for no service to 31,500 customers and failed to provide them with 'annual reviews'. ASIC also found that the company breached its financial services license and banned CFP from earning any fees until it took 'reasonable steps to remediate victims

APPENDIX 34: SA-CCR QUANTITATIVE IMPACT

Standardised Approach for Counterparty Credit Risk (SA-CCR) regulations have already taken effect for ADIs, impacting the regulatory capital requirements and ratios for the institutional bank. The US Securities Industry and Financial Markets Association (SIFMA), the American Bankers Association (ABA), the Bank Policy Institute (BPI), and the Futures Industry Association (FIA) have already conducted a quantitative study to derive the ~30% increase in RWA compared to the former *current exposure method (CEM)* of quantifying counterparty risk.

An ADI that has OTC derivative exposure to only one counterparty must calculate its CVA risk capital charge as:

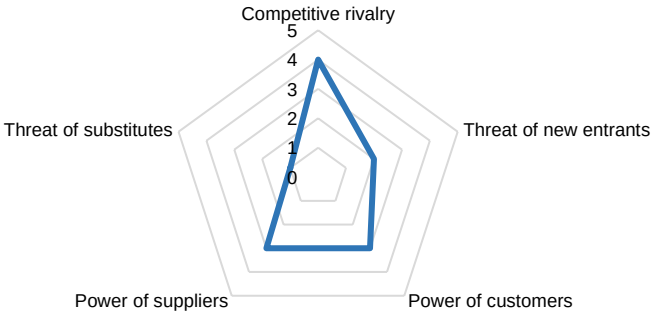
$$K_{CVA} = 2.33 \times w \times M \times D \times Exposure^{total}$$

$$K_{CVA} = 2.33 \sqrt{\left(\sum_i 0.5 w_i \left(M_i D_i Expsoure_i^{total} - M_i^{hedge} D_i^{hedge} B_i\right) - \sum_{ind} w_{ind} M_{ind} D_{ind} B_{ind}\right)^2 + 0.75 \sum_i w_i^2 \left(M_i D_i Exposure_i^{total} - M_i^{hedge} D_i^{hedge} B_i\right)^2}$$

APPENDIX 35: SUMMARY OF ROYAL COMMISSION RECOMMENDATIONS

Recommendation	Proposals	CBA position
Mortgage Brokers	• Mortgage brokers should have a 'best interests duty'; mortgage brokers would need to act in the best interests of borrowers and if this was breached, brokers would face a civil penalty • Lenders should be banned from paying trailing commissions to brokers i.e. where an annual fee is paid over the life of a product to brokers • The mortgage broking industry should shift to a model where the borrower pays the broker as opposed to the lender. It is proposed that commissions be banned over a period of 2-3 years • Mortgage brokers should be subject to and regulated by the same law that applies to financial advisers	SUPPORT ALL
Financial Advice	• Ongoing fee arrangements must be renewed annually by the client, clients be told each year what services they'll be entitled to receive and notified of the total fees to be charged • Financial advisers should be legally required to disclose any lack of independence and explain to clients why they are not independent, impartial and unbiased • Hawking (i.e. unsolicited selling) of life insurance products should be banned. Customer must bring up discussion of any life insurance and/or super products • Life insurance product commissions should be reduced to zero • Each financial adviser should be individually registered and a disciplinary body be established	SUPPORT ALL
Super	• MySuper accounts should be banned from charging advices fees and limiting advice fees for choice accounts • Default super accounts should only be created for new workers or those who don't have an existing super account	SUPPORT ALL
Regulators	• ASIC and APRA heavily criticised for failing to punish misconduct and impose penalties • Current 'twin peaks' financial regulation model should be maintained, however, there should be a clearer distinction between the roles of the two regulators	

APPENDIX 36: PORTER'S FIVE FORCES ANALYSIS



[1] Insignificant threat [2] Low level threat [3] Moderate level threat [4] Material threat [5] Significant threat

PORTER'S FIVE FORCES
Threat of new entrants – LOW
The retail and commercial banking industry has historically exhibited high barriers to entry due to the significant regulatory requirements governing the industry as well as the large network of customers required to operate (deposits must fund lending). Other major barriers consist of establishing technology, branch infrastructure, brand recognition and market acceptance by customers. However, technology has provided new opportunities for non-traditional players to enter the market, with Volt and Xinja (online-only neo-banks) receiving their licence to operate as an unrestricted ADI in 2019. We see the threat of new entrants as LOW but INCREASING

Threat of substitutes – INSIGNIFICANT
Although retail depositors may be able to invest in relatively low risk investments such as government bills or bonds and achieve a similar rate of return, no other investment provides the same level of liquidity, convenience and services as retail bank transaction and savings accounts. Further, retail borrower's ability to issue debt independently is severely limited and thus require an aggregator of funds such as a large commercial bank to provide debt to finance investments and purchases. We see the threat of substitutes as LOW and STABLE
Power of customers – MODERATE
Individual borrowers have limited ability to drive down interest rates charged on loans. However, mortgage brokers and new open banking regulations have reduced switching costs and made it easier for customers to refinance and switch to new/better products, placing pricing pressure on banks and increasing competition. We see power of customers as MODERATE
Power of suppliers – MODERATE
The power of suppliers is moderate as depositors generally need transaction and savings accounts to deposit their pay, hold their savings and carry every day transactions. Depositors have little power to directly influence rates paid on their deposits. However, switching costs are relatively low and consumers can easily switch to accounts offering higher interest rates. We note that depositors are relatively sticky as banks cross-sell products and usually are lazy in switching banks. We therefore see the bargain power of suppliers as MODERATE
Competitive Rivalry - HIGH
The banking industry has operated in a stable oligopoly, with four major players dominating the market. However, all banks offer homogenous products with pricing and service being key differentiators. Banks will find it difficult to charge higher prices and increase margins without losing market share. Further, with neo-banks and shadow-banks undercutting majors on price, competitive rivalry is expected to increase in the industry

APPENDIX 37: CITATIONS

Australia and New Zealand Banking Group Limited. (2019). Shareholder Centre – Annual Reports. Retrieved from https://www.anz.com/shareholder/centre/reporting/annual-report-annual-review/

Australian Bureau of Statistics. (2019). Residential Property Price Indices. Retrieved from https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/6416.0Mar%202019?OpenDocument

Australian Prudential Regulation Authority. (2019). Australian Lending Market Shares. Retrieved from https://www.apra.gov.au/monthly-authorised-deposit-taking-institution-statistics

Australian Prudential Regulation Authority. (2019). Australian Monthly Banking Statistics. Retrieved from https://www.apra.gov.au/monthly-authorised-deposit-taking-institution-statistics

Australian Prudential Regulation Authority. (2018). Increasing the loss-absorbing capacity of ADIs to support orderly resolution. Retrieved from https://www.apra.gov.au/sites/default/files/increasing_the_loss-absorbing_capacity_of_adis_to_support_orderly_resolution.pdf

Bank of Canada, Witmer, J. & Yang, J. (2016). Estimating Canada's Effective Lower Bound. Retrieved from https://www.bankofcanada.ca/wp-content/uploads/2016/05/boc-review-spring16-witmer.pdf

Bank of England. (2015). Stress Testing the UK banking system. Retrieved from https://www.bankofengland.co.uk/-/media/boe/files/stress-testing/2015/stress-testing-the-uk-banking-system-2015-results

BIS Oxford Economics. (2019). Market Share of Credit Providers by Banking Sector. Retrieved from https://www.bisoxfordeconomics.com.au/?page_d06aa832=32&page_374a91f4=18

Brunnermeier, M. & Koby, Y. (2018). The Reversal Interest Rate. Retrieved from https://scholar.princeton.edu/sites/default/files/markus/files/20p_reversalrate.pdf

Canstar. (2019). Average 3-month Term Deposit Rates. Retrieved from https://www.canstar.com.au/term-deposits/

Capital IQ. (2019). Commonwealth Bank Results and General Information. Retrieved from https://www.spglobal.com/marketintelligence/en/

Commonwealth Bank Limited. (2019). Investor Centre. Retrieved from https://www.commbank.com.au/about-us/investors/annual-reports/annual-report-2019.html

CoreLogic. (2019). 10-Year Average MoM Housing Growth Rates. Retrieved from https://www.corelogic.com.au/research/monthly-indices

European Central Bank. (2019). Monetary Policy Transmission. Retrieved from https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2243~a1f298ab9d.en.pdf

National Australia Bank Limited. (2019). Shareholder Centre – Annual Reports. Retrieved from https://www.nab.com.au/about-us/shareholder-centre/financial-disclosuresandreporting/annual-reports-and-presentations

Reserve Bank of Australia. (2019). Financial Stability Review. Retrieved from https://www.rba.gov.au/publications/fsr/2019/apr/box-b.html

Reserve Bank of Australia. (2019). Statistical Tables. Retrieved from https://www.rba.gov.au/statistics/tables/

Reserve Bank of Australia, Borio, C and Hofmann, B. (2017). Is Monetary Policy Less Effective When Interest Rates Are Persistently Low?. Retrieved from https://www.rba.gov.au/publications/confs/2017/borio-hofmann.html

Reserve Bank of New Zealand. (2019). Capital Review Background Paper – Supporting Analysis. https://www.rbnz.govt.nz/-/media/ReserveBank/Files/Publications/Policy-development/Banks/Review-capital-adequacy-framework-for-registered-banks/Capital-Review-An-outline-of-the-analysis-supporting-the-risk-appetite-framework.pdf?revision=058df82e-5fc8-4e4c-9431-5f2dfff5aa4a&la=en

S&P Global. (2019). Residential Mortgage Baked Securities Performance Watch – Market Overview. Retrieved from https://www.spratings.com/documents/20184/1310359/RMBS+Performance+Watch+Market+Overview+Mar+31+2019.pdf

Westpac Limited. (2019). Investor Centre – Annual Reports. Retrieved from https://www.westpac.com.au/about-westpac/investor-centre/financial-information/annual-reports/