International comparability of the capital ratios of New Zealand's major banks – update paper



New Zealand Bankers' Association 17 May 2019





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17 May 2019

Dear Sir,

International comparability of the capital ratios of New Zealand's major banks - update report

We are pleased to enclose our update paper regarding the International comparability of the capital ratios of New Zealand's major banks, which we have carried out in accordance with your instructions and our letters of engagement dated 14 February and 3 April 2019. We are grateful for the assistance and support of NZBA during the project and for the contribution of the four major New Zealand banks who provided the data and analysis necessary for this update paper.

We would be pleased to discuss any aspect of this report with yourselves, the participating banks or the Reserve Bank of New Zealand.

Yours faithfully,

Chris Cooper Partner

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1. Executive summary

- In March 2017, the Reserve Bank of New Zealand (RBNZ) announced that it would undertake a review of its capital framework in light of international and domestic developments and their experience with the current regime.
- The announcement made reference to the 2014 Financial System Inquiry in Australia which recommended setting capital ratios for Australian banks so that they are "unquestionably strong", with the top quartile of internationally active banks given as a guide.
- The RBNZ acknowledged that comparing New Zealand banks against international peers is not a straightforward task given the need to understand and allow for the idiosyncrasies and relative conservatism of New Zealand's approach to the Basel framework and the impact this has on the headline capital ratios of New Zealand banks compared to peer country banks. This report assesses the quantum of these differences.
- Compared to New Zealand and Australia, most other jurisdictions do not apply stricter requirements than the Basel framework for RWAs. This is supported by reports published by the Basel Committee as part of its Regulatory Consistency Assessment Programme (RCAP), which assesses how individual jurisdictions have implemented the Basel framework, and how that implementation differs from the minimum standards. This finding is in line with the observation that, when seeking to achieve more conservative prudential outcomes, many jurisdictions increase minimum overall capital requirements, rather than adjusting RWAs.
- As a result, the headline capital ratio number doesn't tell the whole story.

"When I convert my height from inches to centimetres, I produce a bigger number but I don't get taller" Wayne Byers – APRA

 A study was commissioned by the New Zealand Bankers' Association in 2017 to provide context to the RBNZ's industry consultation process. Importantly, the study did not make recommendations on the appropriateness of New Zealand's current or future capital settings, which are the responsibility of the RBNZ. The 2017 study can be found here: https://www.nzba.org.nz/2017/11/15/international-comparability-capital-ratios-new-zealandsmajor-banks/

- The 2017 study found that an upward adjustment to capital ratios of around 600 basis points is therefore required in order to compare against banks in other countries.
- In January 2019 RBNZ issued Capital Review Paper 4: "How much capital is enough?" which proposes to almost double the required amount of high quality capital that banks will have to hold.
- This update paper provides further analysis of the capital comparisons carried out in the 2017 study and assesses the impact of the RBNZ's proposals on the capital ratios of the New Zealand major banks.

Key findings of this update paper:

- 1. NZ's major banks already well capitalised:
 - they are at or above what APRA would consider to be "unquestionably strong"
 - they are in the top quartile of large international banks
- 2. The proposed capital changes would cause the NZ major banks to hold more than double the capital compared to the average held by large international banks
- 3. While there are some margins of error in the estimations used in this report, they are not in our view sufficiently large to overwhelm the above conclusions

1. Executive summary (continued)





1. Source: BCBS Monitoring report - Fully phased in Pillar III ratios that use a consistent definition of regulatory capital and are "to the maximum extent possible, internationally comparable".

2. Source: APRA Improving the transparency, comparability and flexibility of the ADI capital framework

NZ's major banks are currently required to apply a buffer of about **44%** to RWAs (i.e. the denominator in the capital equation) by comparison to Basel Pillar 1 requirements.

An upward adjustment to capital ratios of around 580 basis points is therefore required in order to compare against banks that apply Basel Pillar 1 rules. For conservatism, we have

rounded down by 60 basis points in this analysis.

RBNZ's proposed changes will increase internationally

comparable ratios to approximately **27%** (assumes all Tier 1 is satisfied by CET1 and no buffer is maintained).

27.1%

1. Executive summary (continued)

The following table shows the relative positioning of the New Zealand major banks (and their Australian parents) compared to 97 major international banks in peer countries noted in Section 6) as well as other advanced economies whose capital rules have been compared to the Basel Framework. All banks have been re-stated to a best estimate of international comparability¹.

Major international banks - CET1 Ratio (Internationally comparable)



1. Refer to Appendix C for detail on the calculation of internationally comparable ratios.

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2.1 The capital comparability issue

Published capital ratios don't tell the full story

- Global banking rules (Pillars 1 and 2 of "The Basel Framework") provide a broadly consistent approach for setting minimum capital levels, with flexibility in implementation in each country.
- Pillar 1 defines the minimum capital level required for credit market and operational risks, and Pillar 2 requires supervisors to assess additional capital required to protect against additional risks which are not taken into account in Pillar 1 (e.g. Large exposures, credit concentrations, interest rate risk in the banking book, business and strategic risks or external factors). This may be applied in the following ways:

Option 1	Option 2
Capital ratio measured in accordance with Basel Pillar 1 rules (This approach is adopted in most countries)	Apply Pillar 2 considerations and other national discretions to risk weighted assets (New Zealand & Australia use this option)
Capital ratio = Capital	Capital ratio = Capital
Risk Weighted Assets	Risk Weighted Assets + buffers
Hypothetically for NZ major banks as at 31 March 2017:	Actuals for NZ major banks as at 31 March 2017:
\$27bn CET1 Capital/\$174bn Basel RWAs = 15.5% (internationally equivalent CET1 ratio)	\$26bn CET1/(\$174bn Basel RWAs + \$78bn buffer) = 10.3% (average actual CET1 ratios)
Hypothetical minimum requirement = 7% + 3.1% overlay adjustment = 10.1%	Actual minimum requirement = 7%
(7% x \$78bn buffer/\$174bn Basel RWAs)	(4.5% Basel minimum + 2.5% Capital Conservation Buffer)
Different ways of a	achieving the
same capital outco	ome result in
different CET	1 ratios

2.2 Methodology used in the study

- The international comparability study which we carried out in 2017 has attracted an amount of discussion and comment. Additional commentary and analysis has therefore been included in this update paper to clarify and provide further context to our 2017 study.
- We believe the methodology that was used in our 2017 study is sound. To the best of our knowledge the conclusions are valid and without bias. In particular, we believe it is appropriate to eliminate "Pillar 2" buffers from the capital ratio for the sake of international comparability and this was done with risk data that was provided by the New Zealand major banks and which appears reasonable.
- Comparing the relative capital strength of different banks (even banks that operate in the same country) is not an exact science, however Pillar 1 of the Basel Framework provides a set of detailed rules and assumptions that allows a level of uniformity.
- A haircut of 60 basis points has been applied in this update paper to allow for estimation uncertainty (see analysis of conservatism factor on page 13).
- The approach adopted in this study has been compared with APRA's International Comparability study of 2018 in Section 3 of this update report.



2.3 Changes made in this update paper in response to feedback on the 2017 study

RBNZ feedback	Responses
Issue 1: no recognition of country risks	Allowance for country risks is typically achieved through increasing the minimum capital ratios and hence such risks are not reflected in the reported capital ratios of most international peer banks.
Issue 2: no recognition of the impact of model techniques and accounting discretion	Analysis of the impact of different modelling techniques and resulting risk weights was provided in Section 7 of the 2017 study. Further comparisons are made in Sections 5 and 6 of this update paper.
 Issue 3: weaknesses in the treatment of RBNZ departures Uplift for farm lending higher than expected Use of an unapproved mortgage PD model Removal of the 1.25% mortgage PD overlay 	APRA has issued a similar study in relation to the comparability of capital ratios for its major banks. A detailed analysis has been made in Section 3 of this update report to compare the quantum and nature of adjustments identified by APRA against those observed in NZ. Mortgage restatements are considered reasonable, however a 20 basis point reduction of the estimated impact of removing the LGD floors on farm lending has been applied in this update report in order to align with previous RBNZ estimates. In addition, a further downward revision of 60 basis points has been applied so that the internationally comparable ratios for NZ major banks are more conservatively stated.
Issue 4: weaknesses in the treatment of foreign regimes	 Pillar 2 requirements in peer countries have been included in the analysis and assessments made whether the NZ banks would meet those requirements. Further research and analysis has been provided in Section 5 of this update report in relation to Nordic countries, where comparisons are problematic because of the low observed risk weights for certain asset types (e.g. Swedish mortgages). Switzerland has been removed from the list of peer countries based on feedback that the major Swiss banks are G-SIFIs and therefore have dissimilar business models by comparison to the NZ majors. Australia has been added to the list of peer countries, also based on feedback, and by extension Canada has been added as well. Banks in countries whose capital rules have not been reviewed have been removed from the comparison group.
Issue 5: potential impact of "Pillar 2" not assessed	Analysis of Pillar 2 adjustments in peer countries is provided in Section 6 of this update paper.

2.4 Comparisons used in this report

This paper has considered comparisons in 3 alternative ways. The 2017 study compared capital ratios of New Zealand banks in two different ways. Firstly they were compared to over 100 overseas banks on an internationally comparable basis (i.e. by applying Basel Pillar 1 rules) and secondly they were compared to the largest banks in 7 other countries by applying the capital rules in those locations. A third method of comparison is by considering comparative risk weights, as described below:



Basel Pillar 1 Rules

Measuring a bank's capital ratio using the Basel Pillar 1 rules allows banks from different countries to be compared on a like-for-like basis. The Basel rules comprise an internationally agreed and well understood framework for measuring bank capital adequacy.

Unlike some other jurisdictions which have applied conservatism to their own capital requirements through higher minimum capital ratio requirements, RBNZ's rules apply conservatism through targeted measures that strengthen the definition of capital and determination of RWA. This therefore requires adjustment to enable capital ratios of NZ banks to be presented on an internationally comparable basis.

See Section 4
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Local Capital Rules

NZ banks have been compared to overseas banks by measuring their capital ratio using capital rules applicable in selected overseas countries.

Comparative Risk Weights

Comparisons may be made using actual risk weightings across different asset classes (corporate loans, mortgages, etc.).

For example a bank that has a risk weighting of 15% for mortgages and a capital ratio of 12% therefore holds **\$1.80** of capital for every \$100 of mortgage exposure.

By contrast, NZ major banks have a risk weighting of 28% for mortgages and a capital ratio of 10% which means they hold **\$2.80** of capital for every \$100 of mortgage exposure.

3. APRA's perspectives on comparability of capital ratios

APRA's Discussion Paper: Improving the transparency, comparability and flexibility of the ADI capital framework, 15 August 2018 comments as follows:

"

Since the business of banking is built on trust and confidence, it is essential that banks not only have adequate capital, but also that depositors and other investors are confident that that is the case. In this regard, disclosure has an important role to play as well, allowing stakeholders to understand and assess a bank's capital adequacy, both over time and relative to peers.

"

In implementing the Basel Committee on Banking Supervision's capital framework, the Australian Prudential Regulation Authority (APRA) has adopted a more conservative approach than the internationally agreed minimum requirements in a number of areas. As a result, the reported capital ratios of Australian authorised deposit-taking institutions (ADIs) will generally be lower than banks of comparable capital strength in other jurisdictions. Concern has been expressed that, if these Australian differences are not well understood, the capital strength of Australian ADIs may be underestimated, which could in turn make it more difficult or costly for ADIs to raise funds and access international capital markets (particularly in times of market disruption or other financial stress).

The average increase in the CET1 capital ratio due to APRA's relative conservativism for the four largest ADIs was in the order of 485 basis points as at June 2017.

"

In its current program of reform of the ADI capital framework, APRA is pursuing three principal objectives:

- the quantum of capital to achieve an overall level of capital that meets the 'unquestionably strong' aspiration set by the Financial System Inquiry (as set out in APRA's July 2017 Information Paper);
- the allocation of capital to improve the risk sensitivity of current capital requirements, where possible, by more appropriately aligning capital requirements to underlying risks (as set out in APRA's February 2018 Discussion Paper); and
- the comparability of capital to improve the transparency, comparability and flexibility of the capital framework where possible, without materially jeopardising either of the other two objectives.

3. APRA's perspectives on comparability of capital ratios (continued)

Internationally comparable estimates for Australia:

APRA estimate: 485 basis points uplift

Australian bank estimates: 510 basis points uplift

Internationally comparable estimates for New Zealand:

Initial RBNZ estimate: 100 - 200 basis points uplift (March 2017 speech)



APRA has determined that the four major Australian banks need CET1 capital ratios of at least 10.5% to be considered 'unquestionably strong' and has set prudential standards to achieve this outcome.

3. APRA's perspectives on comparability of capital ratios

Relative conservatism Australia vs New Zealand

APRA identified the most material aspects of relative conservatism in its IRB framework to be as follows:	Impact sm in its IRB framework to be as follows: Impact (basis points) Areas of relative conservatism applicable to the major to New Zealand (see Appendix B for further details) nservatism within definition of capital 130 NZ's rules are equivalent (but impact lower due to different to sheet composition) loss given default (LGD) portfolio constraint required ial mortgage exposures and higher correlation factors 150 NZ applies additional constraints to PDs, LGDs and correlat which produce average risk weights of 28% (vs 24% for Aus uirement for IRRBB, which is not included in the Basel rework's minimum requirements 30 A standardized approach is used for traded and non-traded risk which is more conservative than Basel's advanced appr eter for unsecured non-retail exposures 80 NZ advanced banks apply the same conservative LGD para ersion factors (CCFs) for undrawn non-retail its 30 NZ advanced banks apply the same conservative CCFs ervisory slotting and the scaling factor for specialised 50 NZ also requires supervisory slotting			Level of judgement ¹ (basis points)
Relative conservatism within definition of capital	130	NZ's rules are equivalent (but impact lower due to different balance sheet composition)	60	-
20 per cent loss given default (LGD) portfolio constraint required for residential mortgage exposures and higher correlation factors	150	NZ applies additional constraints to PDs, LGDs and correlations which produce average risk weights of 28% (vs 24% for Australia)	190	+/- 20
Capital requirement for IRRBB, which is not included in the Basel capital framework's minimum requirements	30	A standardized approach is used for traded and non-traded market risk which is more conservative than Basel's advanced approach	50	-
LGD parameter for unsecured non-retail exposures	80	NZ advanced banks apply the same conservative LGD parameters	40	+/- 5
Credit conversion factors (CCFs) for undrawn non-retail commitments	30	NZ advanced banks apply the same conservative CCFs	20	-
Use of supervisory slotting and the scaling factor for specialised lending	50	NZ also requires supervisory slotting	60	+/- 15
Risk weights for other retail exposures covered by the standardised approach to credit risk	10	NZ also applies additional risk weights to retail exposures	10	-
Exchange rate used to convert Euro-denominated thresholds in the Basel capital framework into Australian dollars.	5	NZ also applies thresholds in local currency	30	-
		NZ also requires higher RWAs for farm lending by comparison to Basel minimum	120	+/- 20
		Application of conservatism factor	(60)	+/- 60
APRA's estimated overall impact	485	Overall impact (after rounding down by 60 basis points)	520	
Unquestionably strong 10.5% (APRA rule = 15.35% internationally equivalent basis (10.5%	es) 5 + 4.85%)	In 2017 NZ major banks were at 10.3% = 15.5% internationally equivalent basis ((RBNZ rules) 10.3% + 5.2%) %)

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¹ Adjustments to PD or LGD models require judgement and hence have a level estimation uncertainty of possibly 10% to 20%

4. Comparisons with major banks in other countries

4.1 Comparative CET1 ratios

To permit more granular analysis, this study has collected capital data at individual bank level, including 97 major banks in North America, Europe and Asia. Where practical to do so, this study has estimated the adjustments required to move banks in other jurisdictions to the chosen internationally comparable benchmark. Examples of adjustments made are:

- foreseeable dividends (European Union);
- specialised lending (UK and Singapore);
- sovereign LGD floor (UK); and
- Australian bank self-calculated international comparability differences (consistent with the approach adopted by APRA).

It has not been possible to adjust US banks for the removal of the concessionary SME corporate asset class under US advanced rules which would be likely to improve the relative positioning of US banks.

Furthermore, it has not been possible to adjust EU banks for the sub-equivalent EU rules for exposures to SME corporates and sovereign counterparties which would be likely to worsen the relative positioning of EU banks.

Norway applies an output floor of 80% of Basel I RWAs and floors to IRB parameters in certain portfolios (0.9% PD floor and 20% LGD floor for mortgages and 40% LGD floor for corporates). Also, there are restrictions on the use of advanced approaches (IRB for low-default portfolios, AMA for operational risk and IMM for market risk are not allowed).

It has not been possible to adjust CET1 ratios for Norwegian banks to remove these IRB constraints, however we note that their risk weights for both retail and non-retail asset classes are broadly in line with international averages.

Capital data from all banks is at the latest year or half year end which had been published as at 31 July 2017.

A full analysis of the 97 major banks, together with the adjustments made, is contained in Appendix D. Note that the Swedish banks' CET 1 ratio have been adjusted to take account of the impact of the Basel I floor on RWAs¹.

Average internationally comparable CET1 %



Internationally comparable CET1 % after RBNZ's changes

Average of Internationally Comparable CET1%

¹ Published CET1 ratios of the Norwegian banks already include an adjustment to take account of the impact of the Basel I floor on RWAs New Zealand Bankers' Association

4. Comparisons with banks in other countries (cont'd)

4.2 Comparative risk weights

- RBNZ's capital rules require the New Zealand major banks to hold higher risk weights against their loans (and therefore higher capital) by comparison to the minimum levels prescribed by the Basel Pillar 1 rules.
- Australia also has capital rules that produce higher risk weights than the Basel requirements, although not as high as New Zealand.
- By contrast, the Nordic countries of Sweden, Denmark and Finland have relatively low risk weights less than half the risk weights observed in New Zealand.
- The graphs opposite show the impact of the RBNZ rules on relative risk weights for Corporates and Retail Mortgages asset classes (which for the NZ major banks make up 36% and 46% of credit RWAs respectively).
- The risk weights of the New Zealand banks have been adjusted to an internationally
 equivalent basis by unwinding any RBNZ rules that are not in line with the Basel Pillar 1
 rules.

Conclusion: For NZ major banks, a downward revision to risk weights is necessary for international comparability

Risk weights - Corporates





5. Comparison with Nordic countries

The average CET1 ratios of Nordic banks is significantly higher than the global median, however this is largely driven by relatively low credit risk weights – particularly for mortgages – that are reported by banks in Sweden, Denmark and Finland. This means that the reported Pillar 1 capital ratios of the banks in these countries are most likely higher than they would be on an internationally comparable basis. This conclusion is acknowledged by the Swedish Central Bank in a memorandum that was written as a basis for the meeting of the Financial Stability Council in June 2015: Capital Requirements for the major Swedish banks – the Riksbank's view, 3 March 2015.

Public disclosures do not contain the granularity required to accurately re-state these banks to more internationally comparable basis, however comparisons can be made of capital coverage - the amount of capital per \$100 of credit exposure for each asset type (i.e. CET1 ratio x Risk Weights x \$100).

For example: Swedish banks average CET1 (24.6%) x average mortgage risk weights (6%) = capital coverage of \$1.47 for every \$100 of mortgage lending

The table below shows how much capital would be held by New Zealand banks if Nordic capital coverage levels were to be applied. The analysis shows that the NZ banks hold marginally more capital for credit risk than the Nordics, but marginally less capital for market and operational risk.

Actual capit banks	tal coveraç	ge of No	ew Z	ealand	major	ajor Capital that would be held by the NZ major banks if Nordic capital coverage levels were maintained												
EAD (\$'bn)	RWA (\$'bn)	RW	C cov	Capital erage ²	CET1 (\$'bn)	RW c	orwegian overage ³	CET1 (\$'bn)	RW	Finnish coverage	CET1 (\$'bn)	RW	Swedish coverage	CET1 (\$'bn)	RW	Danish coverage	CET1 (\$'bn)	Nordic average CET1 (\$'bn)
177	126	71%	\$	7.60	13.5	47% \$	9.31	16.5	36%	\$ 8.44	15.0	29%	\$ 7.05	12.5	36%	\$ 6.44	11.4	13.9
24	5	22%	\$	2.34	0.6	2%\$	0.43	0.1	21%	\$ 4.82	1.2	18%	\$ 4.52	1.1	21%	\$ 3.70	0.9	0.8
27	1	3%	\$	0.28	0.1	0%\$	-	-	0%	\$ 0.27	0.1	-	\$ 0.27	0.1	0%	\$ 0.27	0.1	0.1
227	63	28%	\$	2.98	6.8	19% \$	3.76	8.5	10%	\$ 2.39	5.4	6%	\$ 1.47	3.3	15%	\$ 2.60	5.9	5.8
22	17	77%	\$	8.23	1.8	24% \$	4.80	1.1	26%	\$ 6.11	1.3	27%	\$ 6.74	1.5	28%	\$ 4.88	1.1	1.2
12	8	72%	\$	7.71	0.9	47% \$	9.32	1.1	12%	\$ 2.70	0.3	16%	\$ 3.99	0.5	70%	\$ 12.45	1.4	0.8
3	2	54%	\$	5.79	0.2	34% \$	6.65	0.2	124%	\$ 28.98	0.9	86%	\$21.13	0.6	316%	\$ 55.71	1.7	0.9
492	222	45%	\$	4.84 <mark></mark>	<mark>23.8</mark>	\$	7.24	27.5		\$5.19	24.2		\$ 4.57	19.6		\$ 4.43	22.5	23.4
	30	12%			3.2	9%		2.3	16%		4.3	16%		4.3	16%		4.3	3.8
	252.0				27.0	50%		29.8	26%		28.5	22%		23.9	30%		26.8	27.3
		lf t	he N	IZ major	banks he	ld the	If	If the NZ major banks held		If the NZ major banks held the			he	If the NZ major banks be				
Conclusions:				f coverag ay they w	age as the same levels of c y would as banks in Finlan					same	levels of in Swede	coverage a en they wou	s Id	the same levels of coverage as banks in Denmark they			capital	
hold \$27.5bn of CET ⁻			f CET1 a	gainst	wo	ould hold	24.2bn	of CET1	hold \$1	9.6bn of	CET1 agair	nst	would	hold \$22.	5bn of	Nordic		
creat risks which is 16%				rrently ho	Id -	a	gainst cred	alt risks	Which is	credit r	isks whic	h is 18% le	SS	CET1 a	against cre	dit risks	countries	
		he	ence	Norway	appears	rs more bold bone			an iney	be same	than	they curr	ently hold -		which is	5% less t	han they	about th
			stron	gly capi	talised vs	d vs NZ as NZ				strongly capitalised vs NZ				currently	same as			
	Actual capit banks EAD (\$'bn) 177 24 27 227 22 12 3 492	Actual capital coverage banks EAD (\$'bn) RWA (\$'bn) 1777 126 24 5 27 1 227 63 22 17 12 8 3 2 492 222 30 252.0	Actual capital coverage of Nebanks EAD (\$'bn) RWA (\$'bn) RW 177 126 71% 24 5 22% 27 63 28% 22 17 77% 12 8 72% 3 2 54% 492 222 45% 30 12% SS: If t back 5	Actual capital coverage of New Z banks EAD (\$'bn) RWA (\$'bn) RW coverage of New Z banks 177 126 71% \$ 177 126 71% \$ 24 5 22% \$ 27 1 3% \$ 227 63 28% \$ 22 17 77% \$ 12 8 72% \$ 3 2 54% \$ 492 222 45% \$ 30 12% 252.0	Actual capital coverage of New Zealand banks EAD (\$'bn) RWA (\$'bn) RW [Capital coverage ²] 177 126 71% \$ 7.60 24 5 22% \$ 2.34 27 1 3% \$ 0.28 227 63 28% \$ 2.98 22 17 77% \$ 8.23 12 8 72% \$ 5.79 492 222 45% \$ 4.84 30 12% × 252.0 If the NZ major same levels of banks in Norw hold \$27.5bn or credit risks whit than they cup hence Norway strongly capitor str	Actual capital coverage of New Zealand major banks EAD (\$'bn) RWA (\$'bn) RW Capital coverage ² CET1 (\$'bn) 177 126 71% \$ 7.60 13.5 24 5 22% \$ 2.34 0.6 27 1 3% \$ 0.28 0.1 227 63 28% \$ 2.98 6.8 22 17 77% \$ 8.23 1.8 12 8 72% \$ 7.71 0.9 3 2 54% \$ 5.79 0.2 492 222 45% \$ 4.84 23.8 30 12% 3.2 27.0 SS: If the NZ major banks he same levels of coverage banks in Norway they whold \$27.5bn of CET1 acredit risks which is 16% than they currently ho hence Norway appears strongly capitalised vs	Actual capital coverage of New Zealand major banks Capital coverage? Cert1 (\$'bn) RWA (\$'bn) RW coverage? CET1 (\$'bn) RW Nc 177 126 71% \$ 7.60 13.5 47% \$ 24 5 22% \$ 2.34 0.6 2% \$ 27 1 3% \$ 0.28 0.1 0% \$ 227 63 28% \$ 2.98 6.8 19% \$ 12 8 72% \$ 7.71 0.9 47% \$ 3 2 54% \$ 5.79 0.2 34% \$ 492 222 45% \$ 4.84 23.8 \$ 30 12% 3.2 9% 5.79 0.2 \$ 50% 252.0 27.0 20% \$ \$ \$ 10 12% \$ 5.79 0.2 \$ \$ 30 12% \$ 5.79 0.2 \$ \$ 112 8 7.71 0.9 \$ \$ \$ 250.0 252.0 27.0 5.0% \$ </td <td>Actual capital coverage of New Zealand major banks Capital that would (\$'bn) Capital (\$'bn) RWA (\$'bn) RW Capital (\$'bn) CET1 (\$'bn) RW Norwegian coverage³ 177 126 71% \$ 7.60 13.5 47% \$ 9.31 24 5 22% \$ 2.34 0.6 2% \$ 0.43 27 1 3% \$ 0.28 0.1 0% \$ - 227 63 28% \$ 2.98 6.8 19% \$ 3.76 22 17 77% \$ 8.23 1.8 24% \$ 4.80 12 8 72% \$ 7.71 0.9 47% \$ 9.32 3 2 54% \$ 5.79 0.2 34% \$ 6.65 492 222 45% \$ 4.84 23.8 \$ 7.24 30 12% 3.2 9% 5.79 0.2 50% 50% If the NZ major banks held the same levels of coverage as banks in Norway they would hold \$27.5bn of CET1 against credit risks which is 16% more than they currently hold - hence Norway appears more strongly capitalised vs NZ 29 10</td> <td>Actual capital coverage of New Zealand major banks Capital that would be held EAD (\$'bn) RWA (\$'bn) RW coverage² CET1 (\$'bn) RW coverage³ CET1 (\$'bn) 177 126 71% \$ 7.60 13.5 47% \$ 9.31 16.5 24 5 22% \$ 2.34 0.6 2% \$ 0.43 0.1 27 1 3% \$ 0.28 0.1 0% \$ - - 227 63 28% \$ 2.98 6.8 19% \$ 3.76 8.5 22 17 77% \$ 8.23 1.8 24% \$ 4.80 1.1 12 8 72% \$ 5.79 0.2 34% \$ 6.65 0.2 492 222 45% \$ 4.84 23.8 \$ 7.24 27.5 30 12% 3.2 5.79 0.2 34% \$ 6.65 0.2 492 222 45% \$ 4.84 23.8 \$ 7.24 27.5 30 12% 3.2 5.79</td> <td>Actual capital coverage of New Zealand major banks Capital that would be held by the EAD (\$'bn) RWA (\$'bn) RW Capital coverage² CET1 (\$'bn) 1777 126 71% \$ 7.60 13.5 47% \$ 9.31 16.5 36% 24 5 22% \$ 2.34 0.6 2% \$ 0.43 0.1 21% 27 1 3% \$ 0.28 0.1 0% \$ - - 0% 227 63 28% \$ 2.98 6.8 19% \$ 3.76 8.5 10% 22 17 77% \$ 8.23 1.8 24% \$ 4.80 1.1 26% 12 8 72% \$ \$.771 0.9 47% \$ 9.32 1.1 12% 30 12% \$ 5.79 0.2 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¹ Market & Operational percentages included in the "RW" column refer to the average percentage of market and operational RWA over the total RWA of the banks in each country.

²NZ banks CET1 capital adjusted to be internationally comparable (per Appendix A2)

³ Norwegian banks' capital coverage was calculated using RWAs which exclude the Basel I floor RWA top-up. This has the effect of increasing the capital coverage for Norway and improves the level of consistency with other Nordics.

New Zealand Bankers' Association

6. Comparisons with peer countries

Comparisons have been made to banks in countries that are considered to have similar characteristics to New Zealand. Comparisons were made on the following bases: 1) Basel Pillar 1 rules, 2) local capital rules and, 3) Comparative risk weights.

Country	CET1 ratio Basel Pillar 1 rules	NZ current uplift vs Country av. (local rules) ²	NZ proposed uplift vs Country av. (local rules) ²	Risk weights corporate	Risk weights retail mortgage
Canada	10.7%	4.8%	16.4%	43%	6%
Sweden ¹	13.2%	4.2%	15.8%	29%	6%
Austria	13.4%	1.7%	13.3%	57%	20%
Ireland	14.1%	1.1%	12.7%	92%	31%
Singapore	14.4%	0.6%	11.5%	65%	11%
Netherlands	14.9%	0.4%	12.0%	42%	15%
Australia	15.1%	0.9%	9.8%	61%	24%
New Zealand	15.5%	N/A	N/A	71%	28%
Norway ¹	16.9%	-5.6%	2.7%	47%	19%
Denmark ¹	17.8%	-2.1%	9.6%	36%	15%
Finland ¹	22.1%	-7.7%	3.9%	36%	10%

Key conclusions:

Based on the analysis presented on the following pages, we have drawn the following conclusions:

- 1. NZ's current capital levels appear to be:
 - Superior to banks in Canada, Austria, Ireland, Singapore, Netherlands and Australia.
 - Similar to banks in Sweden, Denmark and Finland (see pages 21, 22 and 23 for rationale).
 - Inferior to banks in Norway.
- 2. RBNZ's proposed capital rules would increase capital levels in New Zealand above all peer countries, including Norway.

¹CET1 for Norway and Sweden include a Basel I Floor; however Denmark and Finland do not.

² Difference between the CET1 ratio average of NZ banks restated under local rules and the local banks average (for current and proposed ratios). Refer to Appendix A3 and D for detail on how NZ CET1 ratios have been restated to each jurisdiction local rules.

New Zealand Bankers' Association

6. Comparisons with peer countries - Australia

Commentary

- The average asset mix for the banking industry in NZ is remarkably similar to Australia (51% retail and circa 45% non-retail).
- NZ major banks have higher risk weights for both retail and non-retail exposures compared to their Australian parent groups.
- The average CET1 for NZ banks (applying APRA capital rules) is 100 basis points higher than the average CET1 ratio of their Australian parent banks.
- NZ banks also have higher average levels of capital coverage compared to Australia.
- As noted in Section 3, the Australian banks are considered to be "unquestionably strong" when they achieve a capital ratio of 10.5% (minimum requirement of 9.5% + 1% assumed buffer).

Conclusion: NZ more strongly capitalised

(Based on higher CET1 and higher capital coverage)

NZ banks CET1 ratios restated using Australia's capital standards



Relative levels of average capital coverage

Australia						Australia			N	IZ Current r		NZ Proposed rules				
	CET1	Tier 1	Total capital	Capital	CET1 %	RWA	С	ET1	CET1 %	RWA	С	ET1	CET1 %	RWA	C	ET1
Minimum Requirements	4.5 %	6.0 %	8.0 %	Adjusted ¹	11.3%	\$ 1,612	\$	183	10.7%	\$ 252	\$	27	16.0%	\$ 289	\$	46
Buffers:																
Conservation	2.5%	2.5%	2.5%	RWA	% EAD	RW	Cov	verage	% EAD	RW	Cov	erage	% EAD	RW	Co	verage
		2.070		Total Non-Retail	44%	45%	\$	5.11	46%	58%	\$	6.19	46%	67%	\$	10.70
G-SIIs / O-SIIs	1.0 %	1.0 %	1.0 %	Corporate	30%	61%	\$	6.96	36%	71%	\$	7.64	36%	82%	\$	13.09
Counter-Cyclical	0.0%	0.0%	0.0%	Total Retail	 51%	27%	\$	3.03	51%	32%	\$	3.44	51%	39%	\$	6.20
Total Requirements	8.0%	9.5%	11.5%	Retail Mortgage	46%	24%	\$	2.69	46%	28%	\$	2.98	46%	34%	\$	5.47

¹ CET1 has been adjusted to Basel's definition of capital in the calculation of capital coverage. Australian banks are adjusted by 130 basis points as per APRA estimation of relative conservatism within the definition of capital. New Zealand banks' adjustments include the application of the threshold deduction approach for deferred tax assets and expected loss adjustment.

6. Comparisons with peer countries - Singapore

Commentary

- · Weighted average CET1 ratios are higher for NZ banks using Singapore rules.
- Singapore banks have significantly higher non-retail exposures and correspondingly lower retail exposures by comparison to NZ.
- NZ major banks have higher risk weights for both retail and non-retail exposures compared to banks in Singapore.
- NZ banks have significantly higher levels of capital coverage against retail exposures but marginally lower coverage for non-retail exposures compared to Singapore.
- NZ banks have higher internationally comparable CET1 ratios.

Conclusion: NZ more strongly capitalised

(Based on higher CET1 and higher average capital coverage)





Relative levels of average capital coverage

		Singar				Singapor		N7	7 Current ri		NZ Proposed rules					
	CET1	Tier 1	Total capital	Capital	CET1 %	RWA	۔ د	ET1	CET1 %	RWA	C	ET1	CET1 %	RWA	Tules	CET1
Minimum Requirements	6.5 %	8.0 %	10.0 %	Adjusted ¹	13.9%	\$ 692	\$	97	10.7%	\$ 252	\$	27	16.0%	\$ 289) \$, 46
Buffers:																
Conservation	06%	0.6%	0.6%	RWA	% EAD	RW	Cov	/erage	% EAD	RW	Cov	erage	% EAD	RW	Cc	overage
			0.070	Total Non-Retail	62%	50%	\$	6.94	46%	58%	\$	6.19	46%	67%	\$	10.70
G-SIIs / O-SIIs	0.1 %	0.1 %	0.1 %	Corporate	42%	65%	\$	9.13	36%	71%	\$	7.64	36%	82%	\$	13.09
Counter-Cyclical	0.0%	0.0%	0.0%	Total Retail	21%	15%	\$	2.12	51%	32%	\$	3.44	51%	39%	\$	6.20
Total Requirements	7.2%	8.7%	10.7%	Retail Mortgage	16%	11%	\$	1.55	46%	28%	\$	2.98	46%	34%	\$	5.47

¹ CET1 has been adjusted to Basel's definition of capital in the calculation of capital coverage. New Zealand banks' adjustments include the application of the threshold deduction approach for deferred tax assets and expected loss adjustment. Singapore banks don't include any adjustments.

New Zealand Bankers' Association

6. Comparisons with peer countries - Norway

Commentary

- Norway applies relatively high minimum capital levels and they are well capitalised both from the point of view of their published capital ratios and the level of capital coverage.
- Both major Norwegian banks (DNB and Nordea) apply a Basel 1 floor in determining their CET1 ratio (in contrast to Sweden where the ratios are stated without the floor).
- Nordea has notably lower IRB risk weights by comparison to its larger rival DNB, but has a larger Basel I floor adjustment which compensates.
- The lower CET1 ratios for NZ major banks under Norwegian rules reflect their estimated Basel I RWAs.
- Norwegian banks have higher levels of capital coverage for non-retail exposures by comparison to NZ and marginally lower coverage for retail exposures (see also Section 5).

Conclusion: Norway more strongly capitalised

(Based on higher CET1 ratios and higher average capital coverage)

NZ banks CET1 ratios restated using Norway's capital standards



Relative levels of average capital coverage

		Norw	ay			N	lorway			N	IZ Basel ru	les		NZ Proposed rules			
	CET1	Tier 1	Total capital	Capital	CET1 %	R	RWA	CE	T1	CET1 %	RWA	C	ET1	CET1 %	RWA	С	ET1
Minimum Requirements	4.5 %	6.0 %	8.0 %	Adjusted ¹	16.9%	\$	1,411	\$	239	10.7%	\$ 252	\$	27	16.0%	\$ 289	\$	46
Buffers																	
Conservation	2.5 %	2.5 %	2.5 %	RWA	% EAD		RW	Cover	age ³	% EAD	RW	Cov	erage	% EAD	RW	Cov	/erage
Systemic risk	3.0 %	3.0%	3.0%	Total non-retail	42%	4	46%	\$	8.99	46%	58%	\$	6.19	46%	67%	\$	10.70
G-SIIs / O-SIIs	2.0 %	2.0 %	2.0 %	Corporate	40%	4	47%	\$	9.31	36%	71%	\$	7.64	36%	82%	\$	13.09
Counter-Cyclical ²	1.2 %	1.2 %	1.2 %	Total retail	38%	2	20%	\$	3.90	51%	32%	\$	3.44	51%	39%	\$	6.20
Other Pillar II add-ons ²	1.5%	1.5%	1.5%	Retail Mortgage	33%	1	19%	\$	3.76	46%	28%	\$	2.98	46%	34%	\$	5.47
Total Requirements	14.7%	16.2%	18.2%	SEE S	ECTIC	ON 5	5 FOF	R FL	JRTH	IER ANA	LYSIS	OF	COV	ERAGE	LEVE	LS	

¹ CET1 has been adjusted to Basel's definition of capital in the calculation of capital coverage. New Zealand banks' adjustments include the application of the threshold deduction approach for deferred tax assets and expected loss adjustment. Norway banks have been adjusted for the foreseeable dividend deduction.

² Bank - specific requirements (CC buffer and pillar II requirements) are included as the weighted average of major banks. The CC buffer that should be applied to exposures in Norway is 1.5%.

³ Norwegian banks' capital coverage was calculated using RWAs which exclude the Basel I floor RWA top-up. This has the effect of increasing the capital coverage for Norway and improves the level of consistency with other Nordics.

New Zealand Bankers' Association

6. Comparisons with peer countries - Sweden

Commentary

- Sweden's banks have very high published capital ratios and minimum capital requirements but very low risk weights. This makes it difficult to compare NZ and Swedish banks based on published CET1 ratios.
- Swedish banks do however publish a Basel 1 capital floor and it is possible to compare on the basis of Basel 1 Total Capital ratios. NZ and Swedish banks are similarly capitalised on this basis before considering capital coverage.
- Comparisons on the basis of capital coverage show that NZ banks hold marginally lower levels of capital coverage for non-retail exposures but more than double the coverage for mortgages (see also Section 5).
- NZ banks therefore appear to have higher capital coverage overall and we have therefore concluded that NZ banks are at least as well capitalized as Swedish banks.

Conclusion: NZ similar to Sweden

(Based on similar Basel 1 ratios, although NZ banks have higher capital coverage)



¹ Until the end of 2017 Basel standards included a transitional floor which required banks to maintain at least 80% of Basel I capital requirements. The graph above shows Swedish and NZ banks total capital in relation to the 8% Basel I minimum requirements, therefore TC ratios have been calculated taking into account 80% of RWA under Basel I. Refer to Appendix A for detail on how NZ banks have been restated.

Minimum Capital Requirements Relative levels of average capital coverage NZ Basel rules NZ Proposed rules Sweden Sweden CET1 **Total capital** Capital CET1 % **RWA** CET1 CET1 % RWA CET1 **CET1 %** CET1 Tier 1 RWA Adjusted¹ 24.6% \$ 392 10.7% \$ 252 \$ 27 \$ 289 \$ 1,596 16.0% \$ 46 **Minimum Requirements** 4.5 % 6.0 % 8.0 % Buffers RWA % EAD RW Coverage % EAD RW Coverage % EAD RW Coverage Conservation 2.5 % 2.5% 2.5% 43% 27% \$ 6.72 46% \$ 46% 67% \$ Total Non-Retail 58% 6.19 10.70 Systemic risk² 3.0 % 3.0% 3.0% 38% 29% \$ 7.05 36% 71% \$ 7.64 36% 82% \$ 13.09 Corporate G-SIIs / O-SIIs² 2.0 % 2.0 % 2.0 % Total Retail 38% \$ 2.06 51% 32% \$ 51% 39% \$ 8% 3.44 6.20 Counter-Cvclical ³ 0.9 % 0.9 % 0.9 % Retail Mortgage 34% 6% \$ 1.47 46% 28% \$ 2.98 46% 34% \$ 5.47 Other Pillar II add-ons 3 9.0% 9.0% 9.0% SEE SECTION 5 FOR FURTHER ANALYSIS OF COVERAGE LEVELS **Total Requirements** 23.4% 25.4% 21.9%

¹ CET1 has been adjusted to Basel's definition of capital in the calculation of capital coverage. New Zealand banks' adjustments include the application of the threshold deduction approach for deferred tax assets and expected loss adjustment. Swedish banks have been adjusted for the foreseeable dividend deduction.

² Only the maximum of the Systemic risk and SII is used in the calculation of the total capital buffers.

³ Bank - specific requirements (CC buffer and pillar II requirements) are included as the weighted average of major banks.

New Zealand Bankers' Association

NZ and Swedish banks Total Capital ratios compared to Basel I floor¹

6. Comparisons with peer countries - Denmark

Commentary

- Denmark's banks have high published capital ratios but significantly lower risk weights, particularly for corporate exposures. This makes it difficult to compare NZ and Danish banks based on published CET1 ratios.
- Unlike their Swedish neighbours, banks in Denmark do not appear to apply a Basel I capital floor, and it is therefore not possible to compare using Basel 1 ratios.
- Comparisons on the basis of capital coverage show that NZ banks hold somewhat higher levels of capital coverage for both non-retail and retail exposures by comparison to Danish banks. Further analysis is shown in Section 5, which indicates that overall coverage levels are similar.

Conclusion: NZ similar to Denmark

(based on similar level of capital coverage; CET1 ratios not comparable)

NZ banks CET1 ratios restated using Danish capital standards



Relative levels of average capital coverage

		Denmarl	(Denmark			N	Z Basel rule	es		NZ Proposed rules				
	CET1	Tier 1	Total capital	Capital	CET1 %	RWA	С	ET1	CET1 %	RWA	CI	ET1	CET1 %	RWA	C	ET1	
linimum Requirements	4.5 %	6.0 %	8.0 %	Adjusted ¹	17.7%	\$ 1,347	\$	238	10.7%	\$ 252	\$	27	16.0%	\$ 289	\$	46	
Buffers				RWA	% EAD	RW	Cov	/erage	% EAD	RW	Cov	erage	% EAD	RW	Co	verage	
Conservation	0.6 %	0.6%	0.6%	Total Non-Petail	30%	3/%	¢	6.08	<u>/6%</u>	58%	¢.	6 10	<u>/6%</u>	67%	¢	10.70	
Systemic risk ²	0.0 %	0.0 %	0.0 %	Corporate	36%	36%	<u>♥</u> \$	6.44	36%	71%	_ ¥ \$	7.64	36%	82%	¥ \$	13.09	
G-SIIs / O-SIIs ²	1.0 %	1.0 %	1.0 %	Total Retail	40%	16%	\$	2.75	51%	32%	\$	3.44	51%	39%	\$	6.20	
Counter-Cyclical ³	0.2 %	0.2%	0.2%	Retail Mortgage	36%	15%	\$	2.60	46%	28%	\$	2.98	46%	34%	\$	5.47	
Other Pillar II add-ons ³	1.8 %	1.8%	1.8%				· ·										

SEE SECTION 5 FOR FURTHER ANALYSIS OF COVERAGE LEVELS

¹ CET1 has been adjusted to Basel's definition of capital in the calculation of capital coverage. New Zealand banks' adjustments include the application of the threshold deduction approach for deferred tax assets and expected loss adjustment. Danish banks have been adjusted for the foreseeable dividend deduction.

² Only the maximum of the Systemic Risk and SII is used in the calculation of the total capital buffers.

9.7%

8.2%

³ Bank - specific requirements (CC buffer and pillar II requirements) are included as the weighted average of major banks.

11.7%

New Zealand Bankers' Association

Minimum Capital Requirements

Total

6. Comparisons with peer countries - Finland

Commentary

- Finland's banks have high published capital ratios but significantly lower risk weights, particularly for corporate exposures. This makes it difficult to compare NZ and Finnish banks based on published CET1 ratios.
- Unlike their Swedish neighbours, banks in Finland do not appear to apply a Basel I capital floor, and it is therefore not possible to compare using Basel 1 ratios.
- Comparisons on the basis of capital coverage show that NZ banks hold lower levels
 of capital coverage for non-retail exposures by comparison to Finnish banks but
 somewhat higher coverage for mortgages. Further analysis is shown in Section 5,
 which indicates that overall coverage levels are similar.
- Finnish major banks have unusually low exposures to mortgages and other retail.

Conclusion: NZ similar to Finland

(based on similar level of capital coverage; CET1 ratios not comparable)

NZ banks CET1 ratios restated using Finnish capital standards



Relative levels of average capital coverage

-	Finland					Finland			N	Z Basel rul	es		NZ Proposed rules				
	CET1	Tier 1	Total capital	Capital	CET1 %	RWA	C	ET1	CET1 %	RWA	C	ET1	CET1 %	RWA	C	ET1	
Minimum Requirements	4.5 %	6.0 %	8.0 %	Adjusted ¹	23.4%	\$ 86	\$	20	10.7%	\$ 252	\$	27	16.0%	\$ 289	\$	46	
Buffers:				RWA	% EAD	RW	Co	verage	% EAD	RW	Cov	erage	% EAD	RW	Co	verage	
Conservation	2.5 %	2.5%	2.5%	Total Non-Retail	37%	34%	\$	7.92	46%	58%	\$	6.19	46%	67%	\$	10.70	
Systemic risk ²	NA	NA	NA	Corporate	31%	36%	<u>*</u>	8.44	36%	71%	<u>:</u>	7.64	36%		<u>*</u> \$	13.09	
G-SIIs / O-SIIs ²	2.0 %	2.0 %	2.0 %	Total Retail	24%	16%	¥	3.69	51%		<u>*</u>	3 44	51%		\$	6.20	
Counter-Cyclical ³	0.1 %	0.1%	0.1%	Retail Mortgage	18%	10%	• \$	2.39	46%	28%	*	2.98	46%		<u>*</u>	5.47	
Other Pillar II add-ons ³	1.8 %	1.8%	1.8%				····*								<u>-</u>		

SEE SECTION 5 FOR FURTHER ANALYSIS OF COVERAGE LEVELS

¹ CET1 has been adjusted to Basel's definition of capital in the calculation of capital coverage. New Zealand banks' adjustments include the application of the threshold deduction approach for deferred tax assets and expected loss adjustment. Finnish banks have been adjusted for the foreseeable dividend deduction.

² Only the maximum of the Systemic Risk and SII is used in the calculation of the total capital buffers. The O-SIIs buffer for banks in Finland does not apply to Aktia Bank.

³ Bank - specific requirements (CC buffer and pillar II requirements) are included as the weighted average of major banks. Nordea Finland and OP Cooperative pillar II add-ons were not publically available and, therefore, are not included in the weighted average.

New Zealand Bankers' Association

10.9%

12.4%

14.4%

Minimum Capital Requirements

Total

6. Comparisons with peer countries - Austria

Commentary

- Weighted average CET1 ratios are 180 basis points higher for NZ banks using Austrian rules.
- Austrian banks have higher levels of capital coverage for non-retail exposures by comparison to NZ and marginally lower coverage for retail exposures.
- However it appears from Pillar 3 reports that Austrian banks have higher levels of stressed and defaulted assets in their corporate and mortgage portfolios by comparison to NZ banks, which would require higher levels of coverage.

Conclusion: NZ more strongly capitalised

(based on higher CET1 ratios; lower coverage appears to be riskrelated)

NZ banks CET1 ratios restated using Austrian capital standards



Minimum Capital Requirements

Relative levels of average capital coverage¹

Austria						Austria			N	IZ Basel ru		NZ Proposed rules				
	CET1	Tier 1	Total capital	Capital	CET1 %	RWA	C	ET1	CET1 %	RWA	C	ET1	CET1 %	RWA	(CET1
Minimum Requirements Buffers:	4.5 %	6.0 %	8.0 %	Adjusted ²	13.5%	\$ 191	\$	26	10.7%	\$ 252	\$	27	16.0%	\$ 289) \$	46
Conservation	0.6 %	0.6%	0.6%	RWA	% FAD	RW	Соу	erage	% FAD	RW	Cov	erage	% FAD	RW	Cc	verage
G-SIIs / O-SIIs ³	0.3 %	0.3 %	0.3 %	Total Non-Retail	38%	52%	\$	7.02	46%	58%	\$	6.19	46%	67%	\$	10.70
Counter-Cyclical ⁴	0.0%	0.0%	0.0%	Corporate	33%	57%	\$	7.62	36%	71%	\$	7.64	36%	82%	\$	13.09
Other Pillar II add-ons 4	3.3%	3.3%	3.3%	Total Retail	21%	26%	\$	3.46	51%	32%	\$	3.44	51%	39%	\$	6.20
Total	8.7%	10.2%	12.2%	Retail Mortgage	12%	20%	\$	2.69	46%	28%	\$	2.98	46%	34%	\$	5.47

¹ Only transitional detailed information on RWA and capital published for Raiffeisen which is used in the capital coverage calculation. Transitional CET1 ratio was 13.9% vs 13.6% on fully loaded basis. ² CET1 has been adjusted to Basel's definition of capital in the calculation of capital coverage. New Zealand banks' CET1 amounts have been adjusted for deferred tax assets and Austrian banks have been adjusted for the foreseeable dividend deduction.

³ Only the maximum of the Systemic Risk and SII is used in the calculation of the total capital buffers.

⁴ Bank - specific requirements (CC buffer and pillar II requirements) are included as the weighted average of major banks. Erste Pillar II add-on was not publically available and, therefore, is not included in the weighted average

New Zealand Bankers' Association

6. Comparisons with peer countries - Ireland

Commentary

- Weighted average CET1 ratios are 110 basis points higher for NZ banks using Irish rules.
- Irish banks have higher levels of capital coverage by comparison to NZ but this appears to be reflective of higher levels of defaulted exposures in the portfolio.

Conclusion: NZ more strongly capitalised

(based on higher CET1 ratios; lower coverage appears to be risk-



Relative levels of average capital coverage

related)

	Ireland				Ireland			N	Z Current ru	lles		NZ	Proposed r	ules	
CET1	Tier 1	Total capital	Capital	CET1 %	RWA	С	ET1	CET1 %	RWA	С	ET1	CET1 %	RWA	(CET1
4.5 %	6.0 %	8.0 %	Adjusted ¹	14 1%	\$ 105	\$	15	10.7%	\$ 252	\$	27	16.0%	\$ 289	\$	46
						Ψ			····				φ 200	·····	
0.6 %	0.6%	0.6%		% 640	DW/	Cov	orago		DW/	Cov	orago		DW/	60	vorago
0.0 %	0.0 %	0.0 %	NWA	/0 EAD		001	relage	/0 EAD		00	eraye	78 EAD	NW.	00	verage
0.0 %	0.0 %	0.0 %	Total Non-Retail	27%	60%	\$	8.43	46%	58%	\$	6.19	46%	67%	\$	10.70
0.0%	0.0%	0.0%	Corporate	16%	92%	\$	12.95	36%	71%	\$	7.64	36%	82%	\$	13.09
5.1%	5.1%	5.1%	Total Retail	35%	32%	\$	4.53	51%	32%	\$	3.44	51%	39%	\$	6.20
10.3%	11.8%	13.8%	Retail Mortgage	33%	31%	\$	4.40	46%	28%	\$	2.98	46%	34%	\$	5.47
	CET1 4.5 % 0.6 % 0.0 % 0.0 % 0.0% 5.1% 10.3%	Ireland CET1 Tier 1 4.5 % 6.0 % 0.6 % 0.6% 0.0 % 0.0 % 0.0 % 0.0 % 0.0% 0.0% 5.1% 5.1% 10.3% 11.8%	Ireland CET1 Tier 1 Total capital 4.5 % 6.0 % 8.0 % 0.6 % 0.6% 0.6% 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 10.3% 11.8% 13.8%	Ireland CET1 Tier 1 Total capital 4.5 % 6.0 % 8.0 % 0.6 % 0.6% Adjusted ¹ 0.6 % 0.6% 0.6% 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 5.1 % 5.1 % 10.3 % 11.8 % 13.8 %	Ireland CET1 Tier 1 Total capital 4.5 % 6.0 % 8.0 % 0.6 % 0.6% 0.6% 0.0 % 0.0 % 0.6% 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % Corporate 16% Total Retail 35% 33%	Ireland Ireland CET1 Tier 1 Total capital 4.5 % 6.0 % 8.0 % A.5 % 6.0 % 8.0 % A.5 % 6.0 % 8.0 % A.5 % 0.6 % 0.6% 0.6 % 0.6% 0.6% 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 5.1 % 5.1 % 10.3 % 11.8 % 13.8 %	Ireland Ireland CET1 Tier 1 Total capital 4.5 % 6.0 % 8.0 % A.5 % 6.0 % 8.0 % A.5 % 6.0 % 8.0 % A.5 % 0.6 % 0.6% 0.6 % 0.6% 0.6% 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 5.1 % 5.1 % 10.3 % 11.8 % 13.8 %	Ireland Ireland CET1 Tier 1 Total capital 4.5 % 6.0 % 8.0 % Adjusted ¹ 14.1% \$ 105 \$ 15 0.6 % 0.6% 0.6% 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 5.1 % 5.1 % 5.1 % 10.3 % 11.8 % 13.8 %	Ireland Ireland Ireland Ni CET1 Tier 1 Total capital Capital CET1 % RWA CET1 CET1 % CET1 %	Ireland Ireland NZ Current ru CET1 Tier 1 Total capital Capital CET1 % RWA CET1 CET1 % RWA 4.5 % 6.0 % 8.0 % Adjusted ¹ 14.1% \$ 105 \$ 15 10.7% \$ 252 0.6 % 0.6% 0.6% RWA % EAD RW Coverage % EAD RW 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % 0.0 % S 8.43 46% 58% 0.0 % 0.0 % 0.0 % 0.0 % Corporate 16% 92% \$ 12.95 36% 71% 5.1% 5.1% 5.1% 5.1% 32% \$ 4.53 51% 32% 10.3% 11.8% 13.8% Retail Mortgage 33% 31% \$ 4.40 46% 28%	Ireland Ireland NZ Current rules CET1 Tier 1 Total capital Capital CET1 % RWA CET1 CET1 % RWA CET1 CET1 % RWA C 4.5 % 6.0 % 8.0 % Adjusted ¹ 14.1% \$ 105 \$ 15 10.7% \$ 252 \$ 0.6 % 0.6% 0.6% RWA % EAD RW Coverage % EAD RW Coverage % EAD RW Coverage % EAD \$ 105 \$ 12.95 36% \$ 11% \$ 103 \$ 12.95 36% \$ 11% \$ 103 \$ 12.95 36% 71% \$ 103 \$ 103 \$ 12.95 36% 71% \$ 103 \$ 103 \$ 12.95 36% \$ 105 \$ 103 \$ 12.95 36% 71% \$ 103 \$ 103 \$ 103 \$ 103 \$ 12.95 36% 71% \$ 103 \$ 103 \$ 103 \$ 103 \$ 103 \$ 103 \$ 103 \$ 103 \$ 103 \$ 103 \$ 103 \$ 103 \$ 103<	Ireland Ireland NZ Current rules CET1 Tier 1 Total capital CET1 % RWA CET1 CET1 % CET1 %	Ireland Ireland NZ Current rules NZ CET1 Tier 1 Total capital CET1 % RWA CET1 CET1 % CET1 % CET1 CET1 % CET1 % CET1 CET1 % CET1 %	Ireland Ireland NZ Current rules NZ Proposed r CET1 Tier 1 Total capital CET1 % RWA CET1 CET1 % CET1	Ireland Ireland NZ Current rules NZ Proposed rules CET1 Tier 1 Total capital CET1 % RWA CET1 CET1 % RWA CET1 <td< td=""></td<>

¹ CET1 has been adjusted to Basel's definition of capital in the calculation of capital coverage. New Zealand banks' adjustments include the application of the threshold deduction approach for deferred tax assets and expected loss adjustment. Ireland banks have been adjusted for the foreseeable dividend deduction.

²Only the maximum of the Systemic Risk and SII is used in the calculation of the total capital buffers.

³ Bank - specific requirements (CC buffer and pillar II requirements) are included as the weighted average of major banks. AIB Pillar II add-on was not publically available and, therefore, is not included in the weighted average.

New Zealand Bankers' Association

Minimum Capital Requirements

NZ banks CET1 ratios restated using Irish capital standards

6. Comparisons with peer countries - Canada

Commentary

- The weighted average CET1 ratio for NZ banks using Canadian rules is nearly 5% higher than Canada.
- The risk weights for retail and non-retail exposures are much lower for Canadian
 banks compared to NZ.
- Note that mortgages held by Canadian banks may be insured with the Canada Mortgage and Housing Association, which is fully guaranteed by the Canadian government, and are afforded the lower sovereign risk weight.
- Comparisons on the basis of capital coverage show that NZ banks also hold substantially higher levels of capital against both corporate and retail exposures by comparison to Canadian banks.

Conclusion: NZ more strongly capitalised

(higher CET1 and higher capital coverage)





Relative levels of average capital coverage

-	Canada				Canada			N	Z Current ru	ules		NZ	Proposed	rules		
	CET1	Tier 1	Total capital	Capital	CET1 %	RWA	С	ET1	CET1 %	RWA	С	ET1	CET1 %	RWA	C	CET1
Minimum Requirements	4.5 %	6.0 %	8.0 %	Adjusted ¹	10.7%	\$ 1,664	\$	178	10.7%	\$ 252	\$	27	16.0%	\$ 289	\$	46
Buffers				RWA	% FAD	RW	Cov	erage	% FAD	RW	Соу	erage	% FAD	RW	Co	verage
Conservation	2.5 %	2.5%	2.5%					ciugo				ciugo	70 ERD			veruge
Systemic risk	0.0 %	0.0 %	0.0 %	Total Non-Retail	34%	30%	\$	3.23	46%	58%	\$	6.19	46%	67%	\$	10.70
D-SIB/ G-SIB	1.0 %	1.0 %	1.0 %	Corporate	22%	43%	\$	4.63	36%	71%	\$	7.64	36%	82%	\$	13.09
Counter-Cyclical	0.0%	0.0%	0.0%	Total Retail	30%	15%	\$	1.64	51%	32%	\$	3.44	51%	39%	\$	6.20
Total Requirements	8.0%	9.5%	11.5%	Retail Mortgage	19%	6%	\$	0.69	46%	28%	\$	2.98	46%	34%	\$	5.47

¹ CET1 has been adjusted to Basel's definition of capital in the calculation of capital coverage. New Zealand banks' adjustments include the application of the threshold deduction approach for deferred tax assets and expected loss adjustment. Canadian banks don't include any adjustments.

New Zealand Bankers' Association

6. Comparisons with peer countries - Netherlands

Commentary

- Dutch banks have relatively low risk weights for non-retail exposures by comparison to international averages.
- The weighted average CET1 ratio for NZ banks using Dutch rules is marginally higher than those of the major banks in the Netherlands.
- Comparisons on the basis of capital coverage show that NZ banks hold higher levels capital against both retail and non-retail exposures by comparison to Dutch banks.

Conclusion: NZ more strongly capitalised

(based on similar CET1 ratios and higher capital coverage)



Relative levels of average capital coverage

		Netherlan	ds			Netherland	s		N	Z Current ru	Iles		NZ	Propo	sed ru	ules	
	CET1	Tier 1	Total capital	Capital	CET1 %	RWA	С	ET1	CET1 %	RWA	С	ET1	CET1 %	R۱	NA	С	ET1
Minimum Requirements	4.5 %	6.0 %	8.0 %	Adjusted ¹	14.9%	\$ 630	\$	94	10.7%	\$ 252	\$	27	16.0%	\$	289	\$	46
Buffers:							····•				·····			····•		····•	
Conservation	0.6 %	0.6%	0.6%	RWA	% FAD	RW	Cov	verage	% FAD	RW	Cov	erage	% FAD	R	w	Cov	verage
Systemic risk ²	0.8 %	0.8 %	0.8 %	Total New Datail		000/	-	4.04	70 EAD	500/		C 40	/0 EAD		70/	*	40.70
D-SIB/G-SIB ²	0.0 %	0.0 %	0.0 %	lotal Non-Retail	53%	28%		4.21	40%	58%	ə	6.19	40%		70 		10.70
Counter-Cvclical ³	0.0%	0.0%	0.0%	Corporate	32%	43%	\$	6.20	36%	71%	\$	7.64	36%	82	<u>2</u> %	\$	13.09
Other Pillar II add-ons ³	4.4%	4.4%	4.4%	Total Retail	39%	17%	\$	2.53	51%	32%	\$	3.44	51%	39	9%	\$	6.20
Total	10.3%	11.8%	13.8%	Retail Mortgage	36%	15%	\$	2.25	46%	28%	\$	2.98	46%	34	1%	\$	5.47

¹ CET1 has been adjusted to Basel's definition of capital in the calculation of capital coverage. New Zealand banks' adjustments include the application of the threshold deduction approach for deferred tax assets and expected loss adjustment. Dutch banks have been adjusted for the foreseeable dividend deduction.

² Only the maximum of the Systemic Risk and SII is used in the calculation of the total capital buffers.

³ Bank - specific requirements (CC buffer and Pillar II requirements) are included as the weighted average of major banks. ABN AMRO Pillar II add-on was not publically available and, therefore, is not included in the weighted average.

New Zealand Bankers' Association

Appendix A: Detailed analysis of differences

Table A1 – Summary of CET1 adjustments

	Ref	ANZ 31/03/2017	ASB 31/12/2016	BNZ 31/03/2017	WNZ 31/03/2017	Weighted Average
CET1 (RBNZ)		10.2%	9.7%	10.6%	10.7%	10.3%
Deferred tax asset	NZ1	0.0%	0.3%	0.4%	0.4%	0.3%
Revaluation reserve	NZ2	0.0%	0.1%	0.0%	0.0%	0.0%
Farm lending	NZ3	0.9%	1.6%	1.8%	0.9%	1.2%
Currency threshold adjustments	NZ4	0.2%	0.5%	0.2%	0.4%	0.3%
Specialised lending	NZ5	0.8%	0.0%	0.7%	0.7%	0.6%
Unsecured non-retail LGD	NZ6	0.7%	0.1%	0.4%	0.2%	0.4%
Undrawn non-retail EAD	NZ7	0.1%	0.2%	0.2%	0.3%	0.2%
Local government reclassification	NZ8	0.0%	0.0%	0.0%	0.0%	0.0%
Secured residential lending	NZ9	1.2%	2.6%	1.9%	2.4%	1.9%
Market risk	NZ10	0.7%	0.7%	0.4%	0.0%	0.5%
Retail exposures	NZ11	0.0%	0.3%	0.0%	0.0%	0.1%
Adjustment for expected loss		0.3%	0.2%	0.3%	0.5%	0.3%
Total adjustment		4.9%	6.6%	6.3%	5.8%	5.8%
Internationally comparable CET1 ratio before rounding		15.1%	16.3%	16.9%	16.5%	16.1%
Rounded down by 60bps		-0.6%	-0.6%	-0.6%	-0.6%	-0.6%
Adjusted Internationally comparable CET1 ratio (current RBNZ rules)		14.5%	15.7%	16.3%	15.9%	15.5%
Proposed RBNZ rules ¹		16%	16%	16%	16%	16%
Internationally comparable CET1 ratio (proposed RBNZ rules) ²		27.2%	28.0%	27.3%	25.8%	27.1%

¹ The CET1 ratio under proposed RBNZ rules assumes that the proposed Tier 1 requirement of 16% is satisfied by CET1 capital and no buffer is maintained. The RWA amount has also been adjusted to reflect the impact of changing the calibration of the "IRB scalar" from 1.06 to 1.20 and the impact of using standardised approach for sovereign and bank portfolios.

² For the re-statement of the CET1 ratio under proposed RBNZ rules to an internationally comparable basis, adjustments have been made to CET1 Capital. No further adjustments were required to be made in relation to internationally comparable RWAs.

Note: When expressed in capital ratio terms, the cumulative impact of all adjustments exceeds the sum of each individual adjustment when calculated on a stand-alone basis. The difference between the cumulative and 'sum of the parts' impact has been allocated to each item above, in proportion to the stand-alone benefit. Table A2 below shows the actual stand-alone CET1 and RWA of each individual adjustment.

New Zealand Bankers' Association

Table A2 – Summary of CET1 adjustments (in NZ\$ millions)

Capital and RWA values have been rounded to the nearest \$ million.

		AN 31/03/2	Z 2017	ASB 31/12/20	016	BNZ 31/03/20	017	WNZ 31/03/20	:)17	Totals 31/03/20	s)17
	Ref	Capital	RWA	Capital	RWA	Capital	RWA	Capital	RWA	Capital	RWA
CET1 (RBNZ)		8,689	84,947	5,192	53,490	6,294	59,643	5,765	53,908	25,940	251,988
Deferred tax asset	NZ1	-	-	123	-	182	-	171	-	475	-
Revaluation reserve	NZ2	-	-	25	-	-	-	-	-	25	-
Farm lending	NZ3	-	(4,776)	-	(5,438)	-	(6,524)	-	(3,055)	-	(19,793)
Currency threshold adjustments	NZ4	-	(1,307)	-	(1,961)	-	(667)	-	(1,431)	-	(5,366)
Specialised lending	NZ5	-	(4,695)	-	-	-	(2,756)	-	(2,416)	-	(9,867)
Unsecured non-retail LGD	NZ6	-	(3,916)	-	(438)	-	(1,672)	-	(871)	-	(6,897)
Undrawn non-retail EAD	NZ7	-	(798)	-	(578)	-	(811)	-	(963)	-	(3,150)
Local government reclassification	NZ8	-	(54)	-	(3)	-	109	-	(17)	-	35
Secured residential lending	NZ9	-	(6,824)	-	(8,319)	-	(6,672)	-	(7,694)	-	(29,509)
Market risk	NZ10	-	(4,190)	-	(2,529)	-	(1,425)	-	(184)	-	(8,328)
Retail exposures	NZ11	-	-	-	(1,033)	-	-	-	-	-	(1,033)
Adjustment for expected loss		152	-	63	-	126	-	214	-	555	-
Total adjustment		152	(26,561)	211	(20,299)	308	(20,418)	385	(16,631)	1,055	(83,908)
Internationally comparable CET1 / RWA		8,841	58,386	5,403	33,191	6,602	39,225	6,150	37,277	26,995	168,080
Rounded down by 60bps		-	2,400	-	1,200	-	1,400	-	1,400	-	6,400
Adjusted Internationally comparable CET1 / RWA		8,841	60,786	5,403	34,391	6,602	40,625	6,150	38,677	26,995	174,480
Proposed RBNZ rules		16,404	102,523	9,415	58,844	10,764	67,275	9,608	60,052	46,191	288,695
Proposed Internationally comparable ratio		16,556	60,786	9,626	34,391	11,072	40,625	9,993	38,677	47,246	174,480

¹ The CET1 ratio under proposed RBNZ rules assumes that the proposed Tier 1 requirement of 16% is satisfied by CET1 capital and no buffer is maintained. The RWA amount has also been adjusted to reflect the impact of changing the calibration of the "IRB scalar" from 1.06 to 1.20 and the impact of using standardised approach for sovereign and bank portfolios.

² For the re-statement of CET1/RWAs under proposed RBNZ rules to an internationally comparable basis, adjustments have been made to CET1 Capital. No further adjustments were required in relation to internationally comparable RWAs.

New Zealand Bankers' Association

Table A3 – Overseas jurisdiction specific CET1 adjustments (in NZ\$ millions)

Capital and RWA values have been rounded to the nearest \$ million.

	3	ANZ 1/03/2017			ASB 31/12/2016	6		BNZ 31/03/201	7		WNZ 31/03/2017	,	Weighted Average
	CET1%	Capital	RWA	CET1%	Capital	RWA	CET1%	Capital	RWA	CET1%	Capital	RWA	CET1%
Internationally comparable	14.5%	8,841	60,786	15.7%	5,403	34,391	16.3%	6,602	40,625	15.9%	6,150	38,677	15.5%
With proposed new rules	27.2%	16,556	60,786	28.0%	9,626	34,391	27.3%	11,072	40,625	25.8%	9,993	38,677	27.1%
UK restatement													
Total adjustments (UK)		(87)	5,499		(251)	90		(462)	3,063		(441)	2,129	
CET1 UK	13.2%	8,754	66,286	14.9%	5,152	34,481	14.1%	6,140	43,688	14.0%	5,709	40,806	13.9%
Proposed CET1 UK	24.8%	16,469	66,286	27.2%	9,375	34,481	24.3%	10,610	43,688	23.4%	9,552	40,806	24.8%
Singapore restatement													
Total adjustments (SG)		(90)	4,695		-	-		(62)	2,756		(114)	2,416	
CET1 Singapore	13.4%	8,751	65,482	15.7%	5,403	34,391	15.1%	6,540	43,381	14.7%	6,036	41,093	14.5%
Proposed CET1 Singapore	25.1%	16,466	65,482	28.0%	9,626	34,391	25.4%	11,010	43,381	24.0%	9,879	41,093	25.5%
Europe restatement													
Total adjustments (EU)		-	-		(250)	-		(400)	-		(330)	-	
CET1 Europe	14.5%	8,841	60,786	15.0%	5,153	34,391	15.3%	6,202	40,625	15.0%	5,820	38,677	14.9%
Proposed CET1 Europe	27.2%	16,556	60,786	27.3%	9,376	34,391	26.3%	10,672	40,625	25.0%	9,663	38,677	26.5%

Table A3 (continued) – Overseas jurisdiction specific CET1 adjustments (in NZ\$ millions)

Capital and RWA values have been rounded to the nearest \$ million.

		ANZ 31/03/2017			ASB 31/12/2016			BNZ 31/03/2017			WNZ 31/03/2017		Weighted Average
	CET1%	Capital	RWA	CET1%									
Norway restatement													
Total adjustments (NW)		-	22,987		(250)	11,589		(400)	17,597		(330)	17,500	
CET1 Norway	10.6%	8,841	83,774	11.2%	5,153	45,980	10.7%	6,202	58,222	10.4%	5,820	56,177	10.7%
Proposed CET1 Norway	19.8%	16,556	83,774	20.4%	9,376	45,980	18.3%	10,672	58,222	17.2%	9,663	56,177	18.9%
Australia restatement													
CET1 (RBNZ)	10.2%	8,689	84,947	9.7%	5,192	53,490	10.6%	6,294	59,643	10.7%	5,765	53,908	10.3%
Proposed RBNZ rules	16.0%	16,404	102,523	16.0%	9,415	58,845	16.0%	10,764	67,275	16.0%	9,608	60,052	16.0%
Total adjustments (AU)		(880)	(7,352)		(153)	(1,759)		45	(9,643)		(11)	(5,872)	
CET1 AU	10.1%	7,809	77,595	9.7%	5,039	51,731	12.7%	6,339	50,000	12.0%	5,754	48,036	11.0%
Proposed CET1 AU	20.0%	15,523	77,595	17.9%	9,262	51,731	21.6%	10,809	50,000	20.0%	9,597	48,036	19.9%

Table A4 – Summary of Total Capital adjustments (in NZ\$ millions)

Capital and RWA values have been rounded to the nearest \$ million.

	3'	ANZ 31/03/2017			ASB 1/12/2016		3	BNZ 1/03/2017		3	WNZ 1/03/2017	Weighter Average	
	TC %	Capital	RWA	TC %	Capital	RWA	TC %	Capital	RWA	TC %	Capital	RWA	TC %
Total capital (RBNZ)	13.8%	11,701	84,947	13.7%	7,316	53,490	13.3%	7,927	59,643	12.8%	6,903	53,908	13.4%
Capital instruments subject to phase-out		(234)			(220)			(181)			-		
Total capital Basel III fully phased-in (RBNZ)	13.5%	11,467	84,947	13.3%	7,096	53,490	13.0%	7,746	59,643	12.8%	6,903	53,908	13.2%
International comparable adjustments		152	(26,561)		211	(20,172)		308	(20,418)		385	(16,631)	
Rounded down by 60bps			2,400			1,200			1,400			1,400	
Total capital (internationally comparable)	19.1%	11,619	60,786	21.2%	7,307	34,518	19.8%	8,054	40,625	18.8%	7,288	38,677	19.6%
Internationally comparable TC ratio - proposed RBNZ rules	31.8%	19,334	60,786	33.3%	11,452	34,391	30.8%	12,524	40,625	28.8%	11,131	38,677	31.2%

Appendix B: Analysis of RBNZ treatments

Ref	Description	Basel framework treatment	RBNZ treatment	Approach taken in this study
Capital deduction	ons			
NZ1	Deferred tax asset	Basel III para 69: Deferred tax assets (DTAs) that rely on future profitability of the bank to be realised are to be deducted in the calculation of Common Equity Tier 1. Deferred tax assets may be netted with associated deferred tax liabilities (DTLs) only if the DTAs and DTLs relate to taxes levied by the same taxation authority and offsetting is permitted by the relevant taxation authority. Where these DTAs relate to temporary differences (eg allowance for credit losses) the amount to be deducted is set out in the "threshold deductions" section below. All other such assets, eg those relating to operating losses, such as the carry forward of unused tax losses, or unused tax credits, are to be deducted in full net of deferred tax liabilities as described above. The DTLs permitted to be netted against DTAs must exclude amounts that have been netted against the deduction of goodwill, intangibles and defined benefit pension assets, and must be allocated on a pro rata basis between DTAs subject to the threshold deducted in full net of DTAs that net to be deducted in full	The RBNZ did not adopt the threshold deduction approach for deferred tax assets for temporary differences. Instead these exposures must be deducted in full from CET1 capital. RBNZ does not permit netting of DTL against DTA arising from the carry forward of unused tax losses or tax credits, but Basel allows netting.	DTAs which meet Basel threshold treatment have been added back to CET1, and risk-weighted at 0%.
NZ2	Revaluation reserve	 Basel II para 52: Common Equity Tier 1 capital consists of the sum of the following elements: Accumulated other comprehensive income and other disclosed reserves 	Basel requires all other reserves to be included in CET1. RBNZ requires revaluation reserves of tangible fixed assets, foreign currency translation reserves and reserves arising from revaluation of security holdings be included in Tier 2 capital.	Reclassify asset revaluation reserves classified by the banks in Tier 2 capital to CET1.
n/a	Goodwill and other intangibles	Basel III para 67: Goodwill and all other intangibles must be deducted in the calculation of Common Equity Tier 1, including any goodwill included in the valuation of significant investments in the capital of banking, financial and insurance entities that are outside the scope of regulatory consolidation. With the exception of mortgage servicing rights, the full amount is to be deducted net of any associated deferred tax liability which would be extinguished if the intangible assets become impaired or derecognised under the relevant accounting standards. The amount to be deducted in respect of mortgage servicing rights is set out in the threshold deductions section below.	Basel requires exposures classified as intangible assets amounts to be deducted in full net of any associated deferred tax liability, with the exception of mortgage servicing rights which are to be deducted based on set threshold deductions. RBNZ requires the full amount of intangible assets to be deducted net of any associated deferred tax liability.	No adjustment applicable to NZ major banks

Ref	Description	Basel framework treatment	RBNZ treatment	Approach taken in this study
n/a	Credit enhancements provided to affiliated insurance groups and associated funds management and securitisation vehicles	No requirement	RBNZ requires the full amount of credit enhancements where the credit enhancement has not been expensed under certain circumstances to affiliated insurance groups, associated funds management and securitisation vehicles to be deducted from CET1 capital.	No participant banks had any credit enhancements provided that has not been expensed to affiliated insurance groups and associated funds management and securitisation vehicles in these certain circumstances – no adjustment made for this item.
n/a	Funding provided to affiliated insurance groups and associated funds management and securitisation vehicles	No requirement	RBNZ requires the full amount of funding provided under certain circumstances to affiliated insurance groups, associated funds management and securitisation vehicles to be deducted from CET1 capital.	No participant banks had any funding provided to affiliated insurance groups and associated funds management and securitisation vehicles in these certain circumstances – no adjustment made for this item.
n/a	Advances of a capital nature provided to connected persons	No requirement	For any fair value gains and losses relating to financial instruments for which a fair value cannot be reliably be calculated, except that a fair value loss that has arisen from credit impairment on a loan and that has been recognised in retained earnings must in all cases be deducted from CET1 capital.	No participant banks hold any financial instruments where the fair value cannot be reliably calculated – no adjustment made for this item.

Ref	Description	Basel framework treatment	RBNZ treatment	Approach taken in this study
n/a	Holdings of own	Basel III para 78:	The RBNZ does not have any	No participant banks have holdings of
	shares	All of a bank's investments in its own common shares, whether held directly or indirectly, will be deducted in the calculation of Common Equity Tier 1 (unless already derecognised under the relevant accounting standards). In addition, any own stock which the bank could be contractually obliged to purchase should be deducted in the calculation of Common Equity Tier 1. The treatment described will apply irrespective of the location of the exposure in the banking book or the trading book. In addition:	requirements in respect of deduction of gross long positions net of short positions and look through holdings of index securities.	their own shares – no adjustment made for this item.
		• Gross long positions may be deducted net of short positions in the same underlying exposure only if the short positions involve no counterparty risk.		
		 Banks should look through holdings of index securities to deduct exposures to own shares. However, gross long positions in own shares resulting from holdings of index securities may be netted against short position in own shares resulting from short positions in the same underlying index. In such cases the short positions may involve counterparty risk (which will be subject to the relevant counterparty credit risk charge). 		
		This deduction is necessary to avoid the double counting of a bank's own capital. Certain accounting regimes do not permit the recognition of treasury stock and so this deduction is only relevant where recognition on the balance sheet is permitted. The treatment seeks to remove the double counting that arises from direct holdings, indirect holdings via index funds and potential future holdings as a result of contractual obligations to purchase own shares.		
		Following the same approach outlined above, banks must deduct investments in their own Additional Tier 1 in the calculation of their Additional Tier 1 capital and must deduct investments in their own Tier 2 in the calculation of their Tier 2 capital.		
n/a	Market value of securities holdings	No requirement	For any unrealised revaluation losses on securities holdings where the book value of the securities exceeds the market value but the resulting unrealised loss has not been incorporated into the accounts, the full value of the difference should be deducted from CET1 capital.	No participant banks have any of such securities holdings – no adjustment made for this item.

Ref	Description	Basel framework treatment	RBNZ treatment	Approach taken in this study
n/a	Reverse mortgages	No requirement	RBNZ requires deduction from CET1 capital of the amount to which the loan value of a reverse residential mortgage loan exceeds the value of the security for the loan that is residential property	No participant banks have reverse mortgages loans where the value exceeds the value of the security – no adjustment made for this item.
n/a	Insignificant holdings	Basel III para 80:	RBNZ does not specify netting rules	No participant banks have
	or financial institution capital	The regulatory adjustment described in this section applies to investments in the capital of banking, financial and insurance entities that are outside the scope of regulatory consolidation and where the bank does not own more than 10% of the issued common share capital of the entity. In addition:	for holdings in both the banking book and trading book.	insignificant holdings of financial institution capital – no adjustment made for this item.
		 Investments include direct, indirect and synthetic holdings of capital instruments. For example, banks should look through holdings of index securities to determine their underlying holdings of capital. 		
		• Holdings in both the banking book and trading book are to be included. Capital includes common stock and all other types of cash and synthetic capital instruments (eg subordinated debt). It is the net long position that is to be included (ie the gross long position net of short positions in the same underlying exposure where the maturity of the short position either matches the maturity of the long position or has a residual maturity of at least one year).		
		 Underwriting positions held for five working days or less can be excluded. Underwriting positions held for longer than five working days must be included. 		
		 If the capital instrument of the entity in which the bank has invested does not meet the criteria for Common Equity Tier 1, Additional Tier 1, or Tier 2 capital of the bank, the capital is to be considered common shares for the purposes of this regulatory adjustment. 		
		 National discretion applies to allow banks, with prior supervisory approval, to exclude temporarily certain investments where these have been made in the context of resolving or providing financial assistance to reorganise a distressed institution. 		

Ref	Description	Basel framework treatment	RBNZ treatment	Approach taken in this study
n/a	Significant holdings of financial institution capital	Basel III para 86: Investments included above that are common shares will be subject to the threshold treatment described in the next section.	RBNZ did not apply the threshold deduction approach. Instead the full amount of the investment is deducted.	No participant banks have significant holdings of financial institution capital – no adjustment made for this item.
Credit risk RWAs	s – standardised			
NZ11	Retail exposures – risk weight 100%	Basel II para 69: Claims that qualify under the criteria listed in paragraph 70 may be considered as retail claims for regulatory capital purposes and included in a regulatory retail portfolio. Exposures included in such a portfolio may be risk-weighted at 75%, except as provided in paragraph 75 for past due loans.	Basel requires retail exposures to apply a 75% risk weight. RBNZ requires all retail exposures (excluding residential mortgage loans) to apply a 100% risk weight.	Reduce risk-weighting to 75% on relevant portfolios subject to the standardised approach.
n/a	Retail mortgage risk – risk weight > 35%	Basel II para 72: Lending fully secured by mortgages on residential property that is or will be occupied by the borrower, or that is rented, will be risk-weighted at 35%. In applying the 35% weight, the supervisory authorities should satisfy themselves, according to their national arrangements for the provision of housing finance, that this concessionary weight is applied restrictively for residential purposes and in accordance with strict prudential criteria, such as the existence of substantial margin of additional security over the amount of the loan based on strict valuation rules. Supervisors should increase the standard risk weight where they judge the criteria are not met.	Basel requires retail mortgage lending to be risk-weighted at 35%. RBNZ prescribes risk weights by different levels of LVR distinguishing between non property-investment residential mortgage loans and property- investment residential mortgage loans, and if there is lenders mortgage insurance. RBNZ's minimum risk weights are 35% or higher.	Immaterial or no impact for New Zealand major banks

Ref	Description	Basel framework treatment	RBNZ treatment	Approach taken in this study	
Credit risk	RWAs: AIRB				
NZ3	Farm lending	Farm lending There are no specific Basel requirements for farm lending. Basel II does not specify any treatment for farm lending exposures corporate asset class, RBNZ • Own estimates of LGD mu greater than or equal to m LGDs that correspond to d levels of LVRs • The firm-size adjustment for farm lending exposures for consolidated turnover of levels of LVRs • The effective maturity per each facility is subject to a minimum of 2.5 years	Basel II does not specify any specific treatment for farm lending exposures. For farm lending exposures within the corporate asset class, RBNZ requires:	Participants banks calculated the impact on RWA for farm lending exposures by:	
			Own estimates of LGD must be	requirements	
			greater than or equal to minimum LGDs that correspond to different levels of LVRs	Applying the firm-size adjustment of \$50 million	
			 The firm-size adjustment for small- medium sized entities for firms with consolidated turnover of less than \$50 million must not be applied 	 Removing the minimum effective maturity period of 2.5 years 	
			 The effective maturity period for each facility is subject to a minimum of 2.5 years 		

Ref	Description	Basel framework treatment	RBNZ treatment	Approach taken in this study
NZ4	Currency threshold adjustments	 Basel II para 232, 234, 273: 232. The exposure must be one of a large pool of exposures, which are managed by the bank on a pooled basis. Supervisors may choose to set a minimum number of exposures within a pool for exposures in that pool to be treated as retail. Small business exposures below €1 million may be treated as retail exposures if the bank treats such exposures in its internal risk management systems consistently over time and in the same manner as other retail exposures. This requires that such an exposure be originated in a similar manner to other retail exposures. Furthermore, it must not be managed individually in a way comparable to corporate exposures, but rather as part of a portfolio segment or pool of exposures with similar risk characteristics for purposes of risk assessment and quantification. However, this does not preclude retail exposures from being treated individually at some stages of the risk management process. The fact that an exposure is rated individually does not by itself deny the eligibility as a retail activities generally. Segmentation at the national or country level (or below) should be the general rule. The exposures are revolving, unsecured, and uncommitted (both contractually and in practice). In this context, revolving exposures are defined as those where customers' outstanding balances are permitted to fluctuate based on their decisions to borrow and repay, up to a limit established by the bank. The maximum exposure to a single individual in the sub- portfolio is €100,000 or less. Because the asset correlation assumptions for the QRRE risk weight function are markedly below those for the other retail risk weight function is constrained to portfolios that have exhibited low volatility of loss rates, relative to their average level of loss rates, especially within the low PD bands. Supervisors will review the relative volatility of loss rates across the QRRE risk weight function as a markedly below those for the ot	For small business exposures, Basel II set a threshold of €1 million to be included in the retail portfolio. RBNZ converted this threshold to New Zealand Dollars on a 1:1 basis (effectively setting a lower threshold). For retail revolving exposures, Basel II sets the maximum exposure to a single individual in the qualifying revolving retail sub-portfolio at €100,000. RBNZ converted this threshold to New Zealand Dollars on a 1:1 basis (effectively setting a lower threshold). However, RBNZ has not allowed exposures to be included in a qualifying revolving retail portfolio. Such (otherwise qualifying) exposures fall into the other retail portfolio), which results in a higher capital requirement. The Basel II firm size adjustment for small and medium-sized entities that are risk-weighted on the corporate curve cuts out for firms with a turnover above €50 million. RBNZ converts this threshold to New Zealand Dollars on a 1:1 basis (effectively setting a lower threshold).	 Participant banks calculated the risk-weighted asset impact: if the current retail threshold was increased to NZ\$1.6 million from NZ\$1 million if the current retail revolving exposure asset class classification was allowed and the threshold was increased to NZ\$160,000 from NZ\$100,000 if the SME turnover threshold was increased to NZ\$80 million from NZ\$50 million

Ref	Description	Basel framework treatment	RBNZ treatment	Approach taken in this study
		 Data on loss rates for the sub-portfolio must be retained in order to allow analysis of the volatility of loss rates. 		
		f. The supervisor must concur that treatment as a qualifying revolving retail exposure is consistent with the underlying risk characteristics of the sub-portfolio.		
		273. Under the IRB approach for corporate credits, banks will be permitted to separately distinguish exposures to SME borrowers (defined as corporate exposures where the reported sales for the consolidated group of which the firm is a part is less than €50 million) from those to large firms. A firm-size adjustment (i.e. $0.04 \times (1 - (S - 5)/45)$) is made to the corporate risk weight formula for exposures to SME borrowers. S is expressed as total annual sales in millions of euros with values of S falling in the range of equal to or less than €50 million or greater than or equal to €5 million.		
		Reported sales of less than €5 million will be treated as if they were equivalent to €5 million for the purposes of the firm-size adjustment for SME borrowers.		

Ref	Description	Basel framework treatment	RBNZ treatment	Approach taken in this study
NZ5	Specialised lending	 Basel II para 215 and 275: 215. Under the IRB approach, banks must categorise banking- book exposures into broad classes of assets with different underlying risk characteristics, subject to the definitions set out below. The classes of assets are (a) corporate, (b) sovereign, (c) bank, (d) retail, and (e) equity. Within the corporate asset class, five sub-classes of specialised lending are separately identified. Within the retail asset classes, three sub classes are separately identified. Within the corporate and retail asset classes, a distinct treatment for purchased receivables may also apply provided certain conditions are met. 275. Banks that do not meet the requirements for the estimation of PD under the corporate IRB approach will be required to map their internal grades to five supervisory categories, each of which is associated with a specific risk weight. 	RBNZ took a decision to not allow any internal modelling of specialised lending (SL) risk parameters and to prescribe the more conservative slotting approach for all SL sub-asset classes.	The difference between the RWA calculated using the supervisory slotting methodology and the RWA calculated using participant banks risk estimates was deducted from the regulatory RWA.
				The following modelling assumptions were used :
				 Current internally calculated PD, LGD and EAD.
				• RWAs were calculated using the Basel framework defined HVCRE curve, which is more conservative than the standard corporate RWA function.
				It is noted that the supervisory slotting approach is a method defined by the Basel Framework, and so arguably not a departure. However given the widespread use of internal modelling overseas, it has been adjusted for the purposes of comparability.

Ref	Description	Basel framework treatment	RBNZ treatment	Approach taken in this study
NZ6	Unsecured non retail LGD	Basel II para 468: A bank must estimate an LGD for each facility that aims to reflect economic downturn conditions where necessary to capture the relevant risks. This LGD cannot be less than the long-run default-weighted average loss rate given default calculated based on the average economic loss of all observed defaults within the data source for that type of facility. In addition, a bank must take into account the potential for the LGD of the facility to be higher than the default-weighted average during a period when credit losses are substantially higher than average. For certain types of exposures, loss severities may not exhibit such cyclical variability and LGD estimates may not differ materially (or possibly at all) from the long-run default-weighted average. However, for other exposures, this cyclical variability in loss severities may be important and banks will need to incorporate it into their LGD estimates. For this purpose, banks may use averages of loss severities observed during periods of high credit losses, forecasts based on appropriately conservative assumptions, or other similar methods. Appropriate estimates of LGD during periods of high credit losses might be formed using either internal and/or external data. Supervisors will continue to monitor and encourage the development of appropriate approaches to this issue.	RBNZ published rules permit the use of own estimate LGDs in line with the Basel framework. However LGDs under RBNZ approved models typically result in higher LGDs than international norm, and are consistent with those used by APRA regulated parent banks.	Participant banks calculated the RWA impact of a LGD ceiling at 45% for non-retail lending.
NZ7	EAD: Non retail CCF	Basel II para 316:	RBNZ published rules permit the use	Participant banks calculated the RWA
		Banks which meet the minimum requirements for use of their own estimates of EAD (see paragraphs 474 to 478) will be allowed to use their own internal estimates of	of own estimate EADs in line with the Basel framework.	undrawn exposures to 75%.
		CCFs across different product types provided the exposure is not subject to a CCF of 100% in the foundation approach (see paragraph 311).	However LGDs under RBNZ approved models typically result in higher EADs than international norm, and are consistent with those used by APRA regulated parent banks	

Ret	Description	Basel framework treatment	RBNZ treatment	Approach taken in this study	
NZ8	Local government	Basel II para 57, 58:	Basel II allows discretion for risk-	Participant banks calculated the RWA	
		57. Claims on domestic PSEs will be risk-weighted at national discretion, according to either option 1 (Sovereign) or option 2 for claims on banks. When option 2 is selected, it is to be applied without the use of the preferential treatment for short-term claims.	either Sovereign or Bank asset class. RBNZ requires public sector entities (local authorities as defined for the	entities to Sovereign asset class from Bank asset class.	
		58. Subject to national discretion, claims on certain domestic PSEs may also be treated as claims on the sovereigns in whose jurisdictions the PSEs are established. Where this discretion is exercised, other national supervisors may allow their banks to risk weight claims on such PSEs in the same manner.	purposes of the Local Government (Rating) Act 2002 to be included in Bank asset class.		
NZ9	Secured residential	Basel II para 266, 328:	Basel II prescribes a 10% floor for	Participant banks calculated the RWA	
	lending	266. Owing to the potential for very long-run cycles in house prices which short-term	LGD and 0.15 correlation factor for exposures secured by residential mortgages that must be applied at the sub segment of exposures to which the risk weight asset formula is applied. RBNZ prescribes minimum LGD and correlation factor by different levels of LVR distinguishing between non property-investment residential mortgage loans and	impact of:	
		data may not adequately capture, during this transition period, LGDs for retail exposures secured by residential properties cannot be set below 10% for any sub- segment of exposures to which the formula in paragraph 328 is applied. During the		 Applying a flat 15% LGD factor as a proxy for the 10% LGD floor permitted by Basel. 	
		transition period the Committee will review the potential need for continuation of this floor.		 Using the Basel defined correlation factor. 	
		328. For exposures defined in paragraph 231 that are not in default and are secured or partly secured by residential mortgages, risk weights will be assigned based on the following formula:		 Removing supervisory overlays to PDs where applied. 	
		Correlation (R) = 0.15	mortgage loans. RBNZ's minimum		
		Capital requirement (K) = LGD \times N[(1 – R)^-0.5 \times G(PD) + (R/(1 – R))^0.5 \times G(0.999)] – PD x LGD	LGD requirements are 10% or higher, and correlation factor are 0.15 or higher. In addition, the RBNZ may require banks to apply the TUI model		
		Risk-weighted assets = K x 12.5 x EAD			
		The capital requirement (K) for a defaulted exposure is equal to the greater of zero and the difference between its LGD (described in paragraph 468) and the bank's best estimate of expected loss (described in paragraph 471). The risk-weighted asset amount for the defaulted exposure is the product of K, 12.5, and the EAD.			

Ref	Description	Basel framework treatment	RBNZ treatment	Approach taken in this study
Market risk				
NZ10	Market risk	Basel II para 718: 718(Lxx). The use of an internal model will be conditional upon the explicit approval of the bank's supervisory authority. Home and host country supervisory authorities of banks that carry out material trading activities in multiple jurisdictions intend to work co-operatively to ensure an efficient approval process.	Basel has market risk standards for both standardised and internal modelling approaches. The RBNZ has a standardised approach based loosely on the Basel Market Risk Amendment of 1996 to calculating exposures to interest rate, exchange price and equity price movements, and are markedly different from the current Basel standards.	 Participant banks calculated the impact of: Re-calculating RWAs for traded market risk using an internal (i.e. VaR) based model. Eliminating RWAs for non-traded interest rate risk.

Appendix C: Comparative data: NZ banks compared to major international banks

Major international banks of the countries analysed in this study, and the 4 NZ ma	ajor banks, ranked from lowest to highest by internationally comparable CET1 ratios.
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Rank	Bank	Country	Date	Reported CET1%	Dividend	Other	Internationally
1	Banca Monte dei Paschi	Italv	31/12/2016	<u>(unadjusted)</u> 8.2%	aujustments	aujustinents	8.2%
2	Bank of Naniin	China	31/12/2016	8.2%			8.2%
3	China Everbright Bank	China	31/12/2016	8.2%			8.2%
4	Bank of Beijing	China	31/12/2016	8.3%			8.3%
5	Ping An Bank	China	31/12/2016	8.4%			8.4%
6	Huaxia Bank	China	31/12/2016	8.4%			8.4%
7	Shanghai Pudong Bank	China	31/12/2016	8.5%			8.5%
8	Industrial Bank (China)	China	31/12/2016	8.6%			8.6%
9	Mebuki Financial	Japan	31/03/2017	8.6%			8.6%
10	Postal Savings	China	31/12/2016	8.6%			8.6%
11	China Minsheng Bank	China	31/12/2016	9.0%			9.0%
12	Bank of Jiangsu	China	31/12/2016	9.0%			9.0%
13	Suntrust Bank	United States	31/12/2016	9.4%			9.4%
14	Branch Banking and Trust	United States	31/12/2016	10.0%			10.0%
15	Bank of Montreal	Canada	31/10/2016	10.1%			10.1%
16	National Bank of Canada	Canada	31/10/2016	10.1%			10.1%
17	Fifth Third Bank	United States	31/12/2016	10.3%			10.3%
18	Agricultural Bank of China	China	31/12/2016	10.4%			10.4%
19	Toronto-Dominion Bank	Canada	31/10/2016	10.4%			10.4%
20	Resona Holdings	Japan	31/03/2017	10.7%			10.7%
21	Bank of America	United States	31/12/2016	10.8%			10.8%
22	Royal Bank of Canada	Canada	31/10/2016	10.8%			10.8%

Appendix C: Comparative data: NZ banks compared to major international banks (continued)

Rank	Bank	Country	Date	Reported CET1% (unadjusted)	Dividend adjustments	Other adjustments	Internationally Comparable CET1%
23	Citic Bank	China	31/12/2016	10.8%			10.8%
24	Banco Santander	Spain	31/12/2016	10.6%	0.4%		11.0%
25	Bank of Communications	China	31/12/2016	11.0%			11.0%
26	Scotiabank	Canada	31/10/2016	11.0%			11.0%
27	Sumitomo Mitsui Trust Bank	Japan	31/03/2017	11.0%			11.0%
28	PNC	United States	31/12/2016	11.1%			11.1%
29	Concordia FG	Japan	31/03/2017	11.1%			11.1%
30	Unicredit	Italy	31/12/2016	11.2%			11.2%
31	CFG Community Bank	United States	31/12/2016	11.2%			11.2%
32	Wells Fargo	United States	31/12/2016	11.3%			11.3%
33	BBVA	Spain	31/12/2016	10.9%	0.4%		11.3%
34	CIBC	Canada	31/10/2016	11.3%			11.3%
35	Mizuho Financial Group	Japan	31/03/2017	11.3%			11.3%
36	Natixis	France	31/12/2016	10.4%	1.0%		11.4%
37	Bank of China	China	31/12/2016	11.4%			11.4%
38	Banco BPM	Italy	31/12/2016	11.4%			11.4%
39	China Merchants Bank	China	31/12/2016	11.5%			11.5%
40	Svenska ¹	Sweden	31/12/2016	9.4%	2.1%		11.5%
41	USB Bancorp	United States	31/12/2016	11.7%			11.7%
42	Mitsubishi UFJ Bank	Japan	31/03/2017	11.8%			11.8%
43	Deutsche Bank	Germany	31/12/2016	11.8%	0.1%		11.9%
44	Sabadell	Spain	31/12/2016	12.0%			12.0%
45	BNP	France	31/12/2016	11.5%	0.5%		12.0%
46	Societe Generale	France	31/12/2016	11.5%	0.6%		12.1%
47	JP Morgan	United States	31/12/2016	12.2%			12.2%
48	Sumitomo Mitsui Financial Group	Japan	31/03/2017	12.2%			12.2%
49	Commerzbank	Germany	31/12/2016	12.3%			12.3%
50	Bank of Ireland	Ireland	31/12/2016	12.3%			12.3%
51	Caixabank	Spain	31/12/2016	12.4%			12.4%
52	Credit Agricole	France	31/12/2016	12.1%	0.4%		12.5%
53	SEB ¹	Sweden	31/12/2016	10.5%	2.0%		12.5%

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Appendix C: Comparative data: NZ banks compared to major international banks (continued)

Rank	Bank	Country	Date	Reported CET1% (unadjusted)	Dividend adjustments	Other adjustments	Internationally Comparable CET1%
54	Citibank	United States	31/12/2016	12.6%			12.6%
55	Barclays	United Kingdom	31/12/2016	12.4%	0.2%	0.10%	12.7%
56	ICBC	China	31/12/2016	12.9%			12.9%
57	Intesa Sanpaola	Italy	31/12/2016	12.9%			12.9%
58	China Construction Bank	China	31/12/2016	13.0%			13.0%
59	Bankia	Spain	31/12/2016	13.0%			13.0%
60	Erste Bank	Austria	31/12/2016	12.8%	0.4%		13.2%
61	United Overseas Bank	Singapore	31/12/2016	13.0%		0.20%	13.2%
62	Nordea ¹	Sweden	31/12/2016	11.4%	2.0%		13.3%
63	Bawag	Austria	31/12/2016	13.3%	0.1%		13.5%
64	Rabobank	Netherlands	31/12/2016	13.5%	0.03%		13.5%
65	Raiffeisen	Austria	31/12/2016	13.6%			13.6%
66	BNP Fortis	Belgium	31/12/2016	13.6%			13.6%
67	Credit Suisse	Switzerland	31/12/2016	13.5%	0.6%		14.1%
68	NAB	Australia	31/03/2017	10.1%		4.4%	14.5%
69	Standard Chartered	United Kingdom	31/12/2016	13.6%	0.1%	0.8%	14.5%
70	ANZ NZ	New Zealand	31/03/2017	10.2%		4.3%	14.5%
71	HSBC	United Kingdom	31/12/2016	13.6%	0.5%	0.5%	14.6%
72	Royal Bank of Scotland	United Kingdom	31/12/2016	14.1%		0.6%	14.7%
73	OCBC	Singapore	31/12/2016	14.7%		0.1%	14.8%
74	UBS	Switzerland	31/12/2016	13.8%	1.0%		14.8%
75	DBS Group	Singapore	31/12/2016	14.1%		0.9%	15.0%
76	Lloyds Bank	United Kingdom	31/12/2016	13.6%	1.0%	0.4%	15.0%
77	ING Group	Netherlands	31/12/2016	14.2%	0.8%		15.0%
78	WBC	Australia	31/03/2017	10.0%		5.3%	15.3%
79	ANZ	Australia	31/03/2017	10.1%		5.2%	15.3%
80	CBA	Australia	31/12/2016	9.9%		5.5%	15.4%
81	ASB	New Zealand	31/12/2016	9.7%		5.9%	15.7%
82	Allied Irish Banks	Ireland	31/12/2016	15.3%	0.5%		15.8%
83	WNZ	New Zealand	31/03/2017	10.7%		5.2%	15.9%
84	Dexia	Belgium	31/12/2016	16.2%	0.0%		16.2%

Appendix C: Comparative data: NZ banks compared to major international banks (continued)

Rank	Bank	Country	Date	Reported CET1% (unadjusted)	Dividend adjustments	Other adjustments	Internationally Comparable CET1%
85	BNZ	New Zealand	31/03/2017	10.6%		5.7%	16.3%
86	KBC Group	Belgium	31/12/2016	15.8%	0.7%		16.5%
87	Swedbank ¹	Sweden	31/12/2016	13.0%	3.7%		16.8%
88	Jyske	Denmark	31/12/2016	16.5%	0.3%		16.8%
89	Den Norske Bank ¹	Norway	31/12/2016	16.0%	0.9%		16.9%
90	Nordea Norge ¹	Norway	31/12/2016	17.0%			17.0%
91	Danske ²	Denmark	31/12/2016	16.2%	1.1%		17.3%
92	ABN Amro	Netherlands	31/12/2016	17.0%	0.4%		17.4%
93	Unicredit Austria Bank	Austria	31/12/2016	18.0%			18.0%
94	Nykredit ¹	Denmark	31/12/2016	18.8%			18.8%
95	OP Cooperative ²	Finland	31/12/2016	19.9%			19.9%
96	Aktia Bank OYJ ²	Finland	31/12/2016	19.5%	2.0%		21.5%
97	Nordea Finland ¹	Finland	31/12/2016	22.7%	1.6%		24.3%
98	WBC NZ (Proposed rules)	New Zealand	31/03/2017	16.0%		9.8%	25.8%
99	ANZ NZ (Proposed rules)	New Zealand	31/03/2017	16.0%		11.2%	27.2%
100	BNZ (Proposed rules)	New Zealand	31/03/2017	16.0%		11.3%	27.3%
101	ASB (Proposed rules)	New Zealand	31/12/2016	16.0%		12.0%	28.0%

¹ A transitional floor was in effect in Sweden in 2017 which required banks to maintain Total Capital of at least 80% of RWAs calculated under Basel I. Norwegian banks on the other hand apply the Basel 1 floor as a top-up to their Basel III RWAs which impacts their published CET1 ratios. For consistency, the capital ratios of Swedish banks have been adjusted to the same basis as Norway, which is more internationally comparable given Sweden's low risk weights.

² Basel I floor information not available. For peer banks in the same country the floor was binding and the information published on their Pillar III reports.

Explanation for adjustments made in Appendix C:

Dividend adjustment:

· Add back 'foreseeable dividend' if it has been deducted in published CET1 ratio (European banks).

Other adjustments:

- Australian banks: as per self-reported international comparability disclosures
- New Zealand banks: Adjustments as per Section 4 of this report.
- Singapore banks: Estimated benefit if exposures treated under supervisory slotting were re-calculated using a corporate risk weight equivalent to NZ internationally adjusted specialised lending exposures (42%).
- UK banks: Estimated benefit if: (i) exposures treated under supervisory slotting were re-calculated using a corporate risk weight equivalent to NZ internationally adjusted specialised lending exposures (42%) and (ii) sovereign exposures subject to 45% LGD floor were re-calculated using average sovereign risk weight reported by NZ major banks (4%).

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Appendix D: Jurisdiction specific adjustments

This Appendix summarises the findings from the analysis of local capital rules applicable in the overseas countries selected as comparable to New Zealand. The research was made for two purposes: (i) findings where a jurisdiction has not fully applied the Basel Framework (and so RBNZ may be more conservative if they have fully applied the Framework) and (ii) areas where that jurisdiction has been identified as being more conservative than the Basel Framework (and where RBNZ may be less conservative than that jurisdiction if they have applied the Basel minimum). The source of the information presented in the appendix includes RCAP reports, Pillar 3 reports, information published by national authorities and the accumulated experience of PwC global network in the countries.

Country / Area	Finding	PwC comment	
Canada – less conservative than Basel			
Inclusion of Preference Share Capital	Does not require preferred shares (accounted as liabilities & incl. in Additional Tier 1) to include the automatic conversion trigger at the capital ratio of 5.125 per cent of risk-weighted assets (as required by Basel).	Does not impact calculation of disclosed capital ratios. No adjustment made.	
Canada – more conservative than Basel			
Definition of capital and transitional arrangements	Office of the Superintendent of Financial Institutions (OSFI) expects all banking institutions to attain target capital ratios equal to or greater than the 2019 capital ratios from 2013.	Does not impact calculation of disclosed capital ratios. No adjustment made.	
	The Canadian Capital Adequacy Requirements (CAR) Guideline requires that any discretionary repurchases of common shares are subject to the prior approval of the Superintendent.	Does not impact calculation of disclosed capital ratios. No adjustment made.	
	Paragraphs 16 and 29 of the CAR Guideline require that amendments to the terms and conditions of additional Tier 1 and Tier 2 instruments are subject to the prior approval of the Superintendent.	Does not impact calculation of disclosed capital ratios. Not applicable to CET1. No adjustment made.	
Counterparty credit risk (Annex 4)	OSFI's expectation that banks will provide documented justification for their use of two different pricing models, in the case where the pricing model used to calculate counterparty credit risk exposure is different to the pricing model used to calculate market risk over a short horizon.	Qualitative requirement. Does not impact calculation of disclosed capital ratios. No adjustment made.	
	OSFI's expectation that banks will provide documented justification for their choice of calibration methods, when two different calibration methods are used for different parameters within the effective expected positive exposure model.	Qualitative requirement. Does not impact calculation of disclosed capital ratios. No adjustment made.	

For Australia, the APRA international comparability study was taken into account to identify what adjustment should be applicable to New Zealand under Australian rules.

Country / Area	Finding	PwC comment
Market risk	OSFI does not allow banks using the Standardised Approach to include unrated securities in the "qualifying" category for the computation of interest rate risk.	Negligible
	OSFI does not fully implement the futures-related arbitrage strategies that attract lower market risk capital charges.	Immaterial or not relevant for NZ banks. No adjustment made.
European Union – more conservative than Basel		
Credit risk: IRB	Basel allows risk weight for short-term, self-liquidating letters of credit with unrated banks to be lower than the risk weight of the bank's sovereign of incorporation; the Capital Requirements Regulation (CRR) does not include a similar provision.	Negligible
Foreseeable dividend treatment	Under European regulation banks are required to deduct foreseeable or expected future dividends from CET1.	Material. This adjustment was applied to the New Zealand banks when comparing with European banks.
European Union – less conservative than Basel		
Credit risk: IRB (SME)	Exposures to SMEs: As noted in the previous discussion of the credit risk standardised approach, under the transitional provisions in the CRR, capital requirements for credit risk on exposures to SMEs, both in the EU and abroad and under both the standardised and IRB approaches, are multiplied by a factor of 0.7619. This is a material deviation that EU authorities noted was introduced in response to local economic conditions. It is scheduled to be reviewed by 2017.	Material. Impractical to adjust EU banks to reverse this sub- equivalence: public disclosures do not contain sufficient granularity.
Credit risk: IRB (sovereign)	Material deviations from the Basel framework revolve around the exclusion of some significant exposures from the IRB framework. The exclusions cover a variety of exposures including sovereigns, Member State central banks and regional governments, local authorities, administrative bodies, public sector entities, intragroup exposures, and equity exposures incurred under legislative programmes to promote specified sectors of the economy. Most of these exposures are eligible for zero risk weight under the standardised approach, whereas they would typically be subject to a small positive risk weight under the advanced IRB approach. Data for the sample banks indicate that the impact on the CET1 ratios of four banks would be significant while that for one would be moderate.	Material. Impractical to adjust EU banks to reverse this sub- equivalence: public disclosures do not contain sufficient granularity.

Country / Area	Finding	PwC comment	
Norway – less conservative than Basel			
Credit risk: IRB (SME)	Exposures to SMEs: As noted in the previous discussion of the credit risk standardised approach, under the transitional provisions in the CRR, capital requirements for credit risk on exposures to SMEs, both in the EU and abroad and under both the standardised and IRB approaches, are multiplied by a factor of 0.7619. This is a material deviation that EU authorities noted was introduced in response to local economic conditions. It is scheduled to be reviewed by 2017.	Material. Impractical to adjust EU banks to reverse this sub- equivalence: public disclosures do not contain sufficient granularity.	
Credit risk: IRB (sovereign)	Material deviations from the Basel framework revolve around the exclusion of some significant exposures from the IRB framework. The exclusions cover a variety of exposures including sovereigns, Member State central banks and regional governments, local authorities, administrative bodies, public sector entities, intragroup exposures, and equity exposures incurred under legislative programmes to promote specified sectors of the economy. Most of these exposures are eligible for zero risk weight under the standardised approach, whereas they would typically be subject to a small positive risk weight under the advanced IRB approach. Data for the sample banks indicate that the impact on the CET1 ratios of four banks would be significant while that for one would be moderate.	Material. Impractical to adjust EU banks to reverse this sub- equivalence: public disclosures do not contain sufficient granularity.	
Norway – More conservative than Basel			
Credit risk: IRB (Mortgages and Corporate)	Finanstilsynet has set requirements for the PD level (0,9% floor aprox.) in the retail mortgage loans portfolio by defining the level during recessions, in addition to weighting good and bad economic periods. Finanstilsynet has also issued requirements for LGD levels for corporates (40% floor aprox.) and retail mortgage (20% floor).	Material. Impractical to adjust Norwegian banks to reverse this sub-equivalence: public disclosures do not contain sufficient granularity.	
Basel I floor	Norwegian banks are subject to a transitional rule for capital adequacy calculations which stipulates that total risk-weighted assets cannot be reduced to less than 80 per cent of the corresponding figure calculated according to the Basel I regulations.	Material. Adjustments were made to the New Zealand banks when comparing to the Norwegian banks.	

Country / Area Finding		PwC comment	
Singapore – less conservative than Basel			
Credit risk: Standardised Approach – Expanded list of eligible financial collateral	Structured deposits inclusion in the list of eligible financial collateral deemed inappropriate since the structured deposits are not comparable to deposits treated as "cash" and have higher risk.	Only impacts 2 per cent of the deposits in Singapore. Applicable to standardised approach. Negligible impact for NZ majors. No further adjustment necessary for NZ major bank ratios to compare to Singapore.	
Credit risk: Internal Ratings-Based Approach – Definition of Retail Exposures (PM)	Allows some exposures to individuals ineligible for retail exposure treatment to be risk- weighted at 100 per cent rather than being considered corporate exposures category under the IRB Approach. Also does not restrict the residential mortgage treatment of retail exposures only to exposures to individuals that are owner-occupiers of the property.	Determined as potentially material in Singapore (some banks noted an increase in ratio, others a decrease). No further adjustment necessary for NZ major bank ratios to compare to Singapore.	
Singapore – more conservative than Basel			
Definition of capital and transitional arrangements	Explicit CET1 capital adequacy requirement, to be set at 6.5 per cent (as compared to the Basel III minimum of 4.5 per cent)	Does not impact calculation of disclosed capital ratios. No adjustment applicable for this report.	
	Tier 1 capital adequacy requirement increased from the Basel III minimum of 6 per cent to 8 per cent.	As above.	
Slotting approach – Specialized lending	Mandatory use of supervisory slotting for specialised lending exposures. While not a departure from Basel, will result in more conservative risk weights than if own estimates are permitted.	Material. Included for NZ major bank ratios to compare to Singapore.	

Country / Area	Finding	PwC comment	
Australia – less conservative than New Zealand			
Farm lending	A specific supervisory overlays is required to risk estimates for farm lending.	Material. The adjustment was applied to New Zealand banks when comparing with Australian Banks.	
Specialised lending - scaling factor	APRA allows the removal of 1.06 scaling factor on exposures under supervisory slotting approach.	Material. The adjustment was applied to New Zealand banks when comparing with Australian Banks.	
Australia – more conservative than New Zealand			
Capital deductions (Intangible assets)	APRA requires the deduction of additional intangible assets compared to New Zealand rules. This deductions include: loan and lease origination fees and commissions paid to mortgage originators and brokers, costs associated with debt raisings, costs associated with issuing capital instruments, securitisation start-up costs and other capitalised expenses.	Material. The adjustment was applied to New Zealand banks when comparing with Australian Banks.	
Capital deductions (Equity investments)	Additional APRA deductions include total holdings in banks, financial institutions, insurers and fund managers.	Negligible	
Australia – Other adjustments			
Trading Book: Internal Model	The use of internal modelling for traded market risk is allowed. Depending on the bank's risk profile, this may be either an increase or decrease in market risk RWAs across trading and banking book.	Material. The adjustment was applied to New Zealand banks when comparing with Australian Banks.	
Secured residential lending - 25% average RW	While both jurisdictions are super-equivalent with regards to residential lending, an adjustment has been applied to the New Zealand banks to restate to the Australian average (25%).	Material. The adjustment was applied to New Zealand banks when comparing with Australian Banks.	

Appendix E: Glossary

ADI	Authorised deposit-taking institutions
Advanced banks	Banks which have been accredited to use their own models for calculating risk-weighted assets
AIRB (or Advanced IRB)	Advanced internal ratings-based approach
APRA	Australian Prudential Regulation Authority
Basel Framework	Basel Framework includes Basel II, Basel 2.5 and Basel III and refers a number of documents. Refer to the BCBS' Regulatory Consistency Assessment Programme (RCAP), Assessment of Basel III regulations – Canada June 2014, Annex 3: List of capital standards under the Basel Framework used for assessment.
BCBS	Basel Committee on Banking Supervision
BIS	Bank for International Settlements
CCF	Credit conversion factor
CET1	Common Equity Tier 1
CRR	Capital Requirements Regulation
D-SIB	Domestic systemically important bank
DTAs	Deferred tax assets
EAD	Exposure at default
EL	Expected loss
FIRB (or Foundation IRB)	Foundation internal ratings-based approach
G-SIB	Global systemically important bank
G-SIFI	Global systemically important financial institutions

G-SII	Global systemically important insurers
HVCRE	High-volatility commercial real estate
Internationally comparable CET1	Measurement using Basel Framework rules and allowing for national regulatory treatments which would impact on how those rules are implemented in that jurisdiction by comparison to international norms
IRB	Internal Ratings-Based approach
IRRBB	Interest rate risk in the banking book
LGD	Loss-given-default
LVR	Loan to value ratio
O-SII	Other systemically important institutions
PD	Probability of default
PSE	Public sector entity
QRRE	Qualifying revolving retail exposures
RBNZ	Reserve Bank of New Zealand
RCAP	Regulatory Consistency Assessment Programme
RUF	Revolving underwriting facility
RWAs	Risk-weighted assets
SL	Specialised lending
SME	Small and medium-sized entity
TC	Total capital

Approach

This study has been prepared by PwC Australia, with assistance from PwC New Zealand and PwC offices in other overseas locations. In compiling this study, PwC issued instructions and data templates, via the NZBA, to the participating banks, conducted analytical review over the data produced and through the NZBA, challenged individual banks to ensure that as far as possible the adjustments have been prepared fairly and reasonably and on a consistent basis. The study has compared the banks' results to externally reported information such as Pillar 3 reports, analyst reports and other relevant national and international information. This study is not an audit.

Use of this report

References to PwC refer to PwC Australia, unless specified otherwise. The views expressed in the report are those of PwC Australia. This report has been prepared for the purpose of supporting the NZBA in preparing its response to the RBNZ in relation to the review of New Zealand's banking capital framework. This report must not be used for any other purpose.

Declaration of interests

Members of the PwC network operate across all financial services sectors, and work with a high proportion of global and domestic financial institutions. The nature of PwC's business requires the highest levels of objectivity and independence, and this study has sought to reflect those standards. The Australian and New Zealand member firms of the PwC network provide advice to all the New Zealand banks discussed in this report and their Australian parent banks. PwC New Zealand is the external auditor of the NZBA, the RBNZ and two of the New Zealand major banks. PwC Australia is the external auditor of those banks' Australian parents.

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