Benchmarking the profitability of the New Zealand banks against international peers
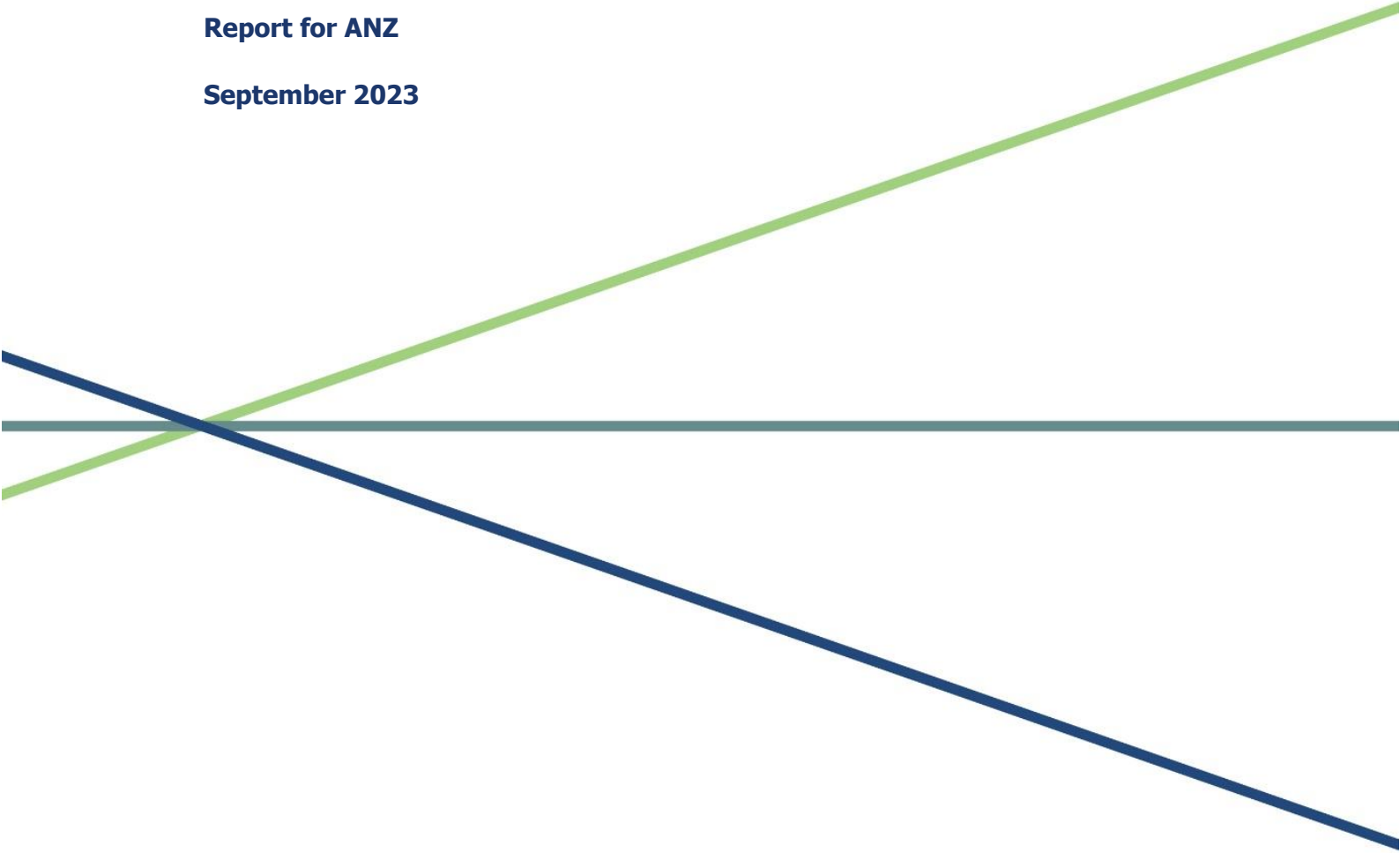
Report for ANZ

September 2023

INCENTA
ECONOMIC CONSULTING

Table of Contents

Appendices

Tables and figures

1. Executive Summary

1.1 The Commission's Preliminary Issues Paper

1. The New Zealand Commerce Commission ("Commerce Commission" or "the Commission") is undertaking a "Market study into personal banking services", and has recently published a *Preliminary Issues Paper* in which it has set out its preliminary findings. Based on an analysis of aggregated World Bank data the Commission has expressed the preliminary view that New Zealand's banking sector is achieving "persistently high profitability compared to banking sectors in international peer countries".

2. In this report we provide a critique of the Commission's methodology and undertake our own analysis to assess the Commission's preliminary views.

1.2 Summary of our findings: evidence is inconsistent with the Commission's view that NZ banks' profits are persistently high

3. In our view, the Commission's analysis does not provide evidence to support its preliminary view that "the New Zealand banking sector appears to have persistently high profitability compared to banking sectors in international peer countries".

4. The Commission's approach has shortcomings and departs significantly from the approach the Commission has previously and consistently taken when undertaking similar analysis. As a result, the Commission's analysis provides no evidence on which it can be reliably concluded that NZ banks have earned persistently high profits compared to comparable banks overseas.

5. In contrast, our analysis shows that ANZ's average post-tax return on equity (12.3 per cent) over the 2010 to 2021 period was "normal" and was:

   a. materially the same as the average post-tax returns (12.2 per cent) of its peer group of international banks when compared on a like-for-like basis, and

   b. toward the lower end of our estimates of the average cost of equity for ANZ over this period (12.1 per cent to 12.8 per cent).

6. We have previously expressed the view that caution is required when trying to make inferences about competition from profitability measures. However, on any view, our analysis is inconsistent with the Commission's preliminary view that New Zealand banks are making persistently high profits compared to overseas banks.

1.3 Shortcomings and errors in the Commission's approach mean it provides no reliable evidence that NZ banks' profits are persistently high

7. There are a number of material weaknesses or errors in the World Bank data the Commission has relied upon in conducting its analysis that mean the Commission's analysis does not produce reliable comparisons of NZ banks' performance. In particular:

a. The World Bank data includes banks that are not comparable with NZ banks (for example, banks with investment banking activities). This lack of comparability is compounded by the fact that the World Bank data is (we understand) a weighted average of firms in the relevant country, which means the results for some countries are likely to be dominated by banks that are not comparable to NZ banks, skewing the results of any comparison.

b. The Commission has incorrectly included in its sample countries whose banking markets – and therefore banks – are not comparable to New Zealand's due to crises that have affected banks operating environments, namely: in Japan (falling population and deflation) and countries within the European Union (EU Sovereign Debt Crisis and Brexit). Again, inclusion of banks in these jurisdictions skews the results.

8. Other shortcomings that we have identified with the Commission's analysis include:

a. The Commission has departed, without explanation, from its standard approach of looking at post-tax returns and has relied on pre-tax rates of return on assets / equity, which results in distortions due to varying tax rates in different countries.

b. Unlike its standard practice, the Commission has not addressed the potential for differences in financial leverage to affect the comparability of returns on equity. The Commission has previously accounted for such differences.

c. The Commission has incorrectly overlooked the fact that the cost of equity in New Zealand will be higher than in overseas countries due to higher government bond rates, and therefore incorrectly concluded that NZ banks face the same cost of capital as overseas banks.

9. Together, these shortcomings and errors mean that the Commission's analysis does not provide reliable evidence of a difference between NZ banks returns and returns of comparable banks overseas.

1.4   ANZ's returns are materially the same as its peer group of comparable banks

10. We applied the Commission's previously standard approach to derive a benchmark for the return on equity for the NZ banks, i.e., to assemble a set of banks whose activities are comparable to those of the NZ banks. Applying that approach, we derived a comparator group of 26 banks that are the closest comparators for NZ's banks.

11. After making adjustments to ensure like-for-like comparisons (see section 3.2 below) we find that the peer group's average post tax return on equity over the 2010 to 2021 period is 12.2 per cent compared to ANZ's 12.3 per cent.

12. Thus, we find that ANZ's returns and the returns of its peer group are materially the same. There is no evidence that ANZ's returns have been different from its peer group, let alone "persistently high".

1.5 A bottom-up cost of capital estimate confirms NZ banks' returns are normal

13. Unlike in previous market studies, the Commission has not undertaken a bottom-up estimate of the cost of capital.

14. While we agree that it is important to apply caution when comparing bottom-up estimates to observed returns, the results of our analysis are not consistent with the Commission's preliminary view that bank returns are persistently high. Rather, our analysis shows ANZ's return were normal.

15. Specifically, our estimate of the cost of equity for ANZ over the period is 12.1 per cent to 12.8 per cent, which we derive using the Commission's standard method. ANZ's actual post tax return on equity of 12.3 per cent sits within that range and toward the bottom.

2.   The Commission's Preliminary Issues Paper Analysis

2.1   Introduction

16.   On 10 August 2023 the New Zealand Commerce Commission ("Commerce Commission" or "the Commission") published a *Preliminary Issues Paper* as part of its "Market study into personal banking services."[1] In this section we consider the Commission's analysis and initial observations, provide our own comments on the Commission's approach. We then respond to the issues that we raise in our own preliminary benchmarking of the performance of the NZ banks against their international peers in section 3.

17.   At paragraph 119 the Commission concluded that based on its review, its initial observations are that:[2]

> *119.1 On some measures, the New Zealand banking sector appears to have persistently high profitability compared to banking sectors in international peer countries; and*

> *119.2 The four largest New Zealand banks appear to persistently derive higher returns on equity than the rest of the New Zealand banking sector.*

18.   In this report we devote most of our attention to the first issue – whether there is evidence indicating that New Zealand banks have "persistently high profitability." The performance data relied upon by the Commission was presented in its Attachment C, and for the first issue raised above consisted solely of aggregated country-level data that has been collated from various sources by the World Bank. As noted by the World Bank in its summary of the data, its includes measures of "(1) depth, (2) access, (3) efficiency, and (4) stability of financial systems." While several rate of return measures are provided, they are not the primary purpose for which the database was assembled.

2.2   Our observations on the Commission's approach

2.2.1   Caution is required when drawing inferences about competition from profitability

19.   Given that the Commission's focus is on the state of competition in the market for retail banking services, an important question the Commission needs to consider is the conditions under which it validly can be concluded that there is evidence of persistently high profits. That is, how much of a diversion from "normal" is required, and how long must it persist before a judgement of excess returns can be made?

---

[1]   New Zealand Commerce Commission (10 August, 2023), Market study into personal banking services, Preliminary Issues Paper.
[2]   New Zealand Commerce Commission (10 August, 2023), Market study into personal banking services, Preliminary Issues Paper, p.57.

20.   We observe that there are substantial challenges with using measured profitability to infer whether competition is effective. There are three different contributors to this.

a. First, the measurement of profitability itself, and the derivation of appropriate benchmarks for a normal level of profitability, faces substantial empirical challenges, a number of which are discussed below. Accordingly, there is a real risk that false inferences may be drawn.

b. Secondly, even putting aside the measurement issues, the generation of a "normal return" is a long-run equilibrium outcome of a competitive market, and hence is the outcome to which a market should tend as a consequence of the competitive process, around which the outcomes observed in a real-world competitive market may diverge from substantially at any point in time. Indeed, the Commission has commented previously on the limited importance of long run equilibrium outcomes for explaining the (market) value of assets in competitive markets, as follows:[3]

While the Commission agrees that workably competitive markets will tend towards equilibrium over time, asset values in these markets are not defined by a long-run equilibrium. J. M. Clark is the academic widely credited with first distinguishing workable competition from other traditional economic models of competition (refer Chapter 2). He noted that in workably competitive markets, "tendencies towards equilibrium ... never reach their static limits". So in workably competitive markets, long-run equilibrium is unlikely to be reached, shortages and surpluses continuously arise and outcomes constantly evolve. Asset values in particular vary in light of changing expectations about the future, not simply in light of changes in replacement costs today.

Empirical evidence supports this conclusion. It demonstrates that while asset values in workably competitive markets characterised by specialised assets may occasionally converge with replacement costs, they only very rarely if ever equate and will normally diverge by a significant amount for a prolonged period of time, including in some cases indefinitely. The extent and duration of any deviation will be influenced by, amongst other things, any arrangements that have shaped the relationship between suppliers and their consumers.

c. Thirdly, even where profitability is considered over a period that is long enough to allow for the effect of competitive responses to be felt (including entry and exit), firms may still earn a return above a level that is "normal" where the firm has superior efficiency to competitors (including through a superior product) and where competitors have not been able to replicate that advantage.

---

[3]   Commerce Commission (2010), Inputs Methodologies for the EDBs, December, para.4.3.60-4.3.61, and cited by the High Court of New Zealand (Wellington International Airport Ltd & Ors v Commerce Commission [2013] NZHC [11 December 2013], para.521).

21.   We observe that the factors above have led some competition authorities and commentators to question whether any reliable information may be drawn from measured profitability. For example:[4]

> *The economic and legal literature, while generally supportive of the logic behind the use of profitability estimates, has in general been rather sceptical about the use of profitability data as evidence of substantial market power. Judge Posner, for example, declared:*

>> *It is always treacherous to try to infer monopoly power from a high rate of return. ... Not only do measured rates of return reflect accounting conventions more than they do real profits (or losses), but there is not even a good economic theory that associates monopoly power with a high rate of return. [Blue Cross & Blue Shield United of Wisconsin v. Marshfield Clinic, 65 F.3d 1406 (7th Cir. 1995)].*

22.   Similarly, Bork and Sidak have commented as follows:[5]

> *Neither economic theory nor empirical evidence indicates a dispositive relationship between profit margins and the possession of market power.*

23.   Presumably in light of these factors, profitability assessments are not commonly applied in competition policy around the world, with the UK being a notable exception.[6]

24.   Where profitability assessments are applied as a tool for testing the degree of competition, a common theme is that three elements are required before any inference can be drawn from measured profitability. These elements are that:

   a. the difference between measured profitability and "normal" profitability should be "unequivocally substantial",[7] or "significant"[8]

---

[4]   OECD Competition Committee, *Evidentiary issues in proving dominance*, Competition policy roundtables, 2006, p 40.

[5]   Bork, R H and Sidak, J G, *The misuse of profit margins to infer market power*, Journal of Competition Law and Economics, 9(3), 2013, p 512.

[6]   OXERA, *Assessing profitability in competition policy analysis*, A report prepared for the Office of Fair Trading by Oxera, July 2003, p 27.

[7]   Competition Commission, *Guidelines for market investigations: Their role, procedures, assessment and remedies*, April 2013, para 122, where the Commission notes that "[i]n cases where a persistent gap is not unequivocally substantial, it is particularly important for the CC to consider the analysis in conjunction with other information about the operation and nature of the market concerned".

[8]   OFT, *Assessment of market power: Understanding competition law*, Competition law guideline, 2004, para 6.6. Oxera, in a discussion paper for the OFT, opined that profitability estimates must be robust and their divergence from a relevant benchmark must be statistically significant, although it noted that the question 'how excessive is excessive?' cannot be answered clearly (OXERA, *Assessing profitability in competition policy analysis*, A report prepared for the Office of Fair Trading by Oxera, July 2003, p 124).

b. the profitability gap referred to above must be persistent and, more specifically, endure over a sufficient period to account for fluctuations in the business cycle and investment outcomes,[9] and

c. for there to be confidence that the observed returns cannot be explained by superior performance.[10]

25. We return to the first two of these elements when discussing the profitability results for ANZ in section 3. For reasons we explain in that discussion, in our view it cannot be concluded from the evidence that the New Zealand banks' returns are "unequivocally substantially" or "significantly" above normal.

2.2.2 Shortcomings in the Commission's method for deriving its observed "peer group" and benchmark return on equity

26. In the current matter, the Commission has derived its observed return on equity for the international peers to the NZ banks by relying upon existing country-level data from the World Bank, and referencing the mean and interquartile range of those country-level figures. We further understand that, within each country, the figures represent a weighted average across the banking sector (we presume the weights are total assets or something similar). The Commission's use of an existing dataset, and application of country-level data, is a marked departure of the Commission's approach for the market studies of the retail fuel and retail grocery sectors, as well as the Commission's standard method of estimating asset betas in regulatory matters. In those other matters, the Commission has carefully constructed a sample of comparators and gathered its own data at the company level.

27. In our view, there are four shortcomings in the method the Commission has applied to derive the return on equity benchmarks for the NZ banks' international peers.

a. First, the World Bank dataset is not transparent about the make-up of the sample for each country, which makes it difficult to assess the comparability of that sample. We note that, in the banking sector, whilst there are typically a number of banks in each country that are involved in traditional banking activities, a number of countries also have very large, diversified banks, where investment banking and other transactional activities are a substantial part of their activities. Deriving a reliable benchmark for the NZ banks requires separating out a sample of banks that is most comparable to the NZ banks, which are not diversified. In addition, the World Bank dataset also does not provide the full set of information required to reliably benchmark the returns of the NZ banks. For example, the dataset does not include a measure of (average) gearing that is consistent with the measured return on equity.

b. Secondly, the application of the World Bank data – which, as noted above, is believed to provide weighted estimates for each country – means that more weight is applied to

---

9   Competition Commission, Guidelines for market investigations: Their role, procedures, assessment and remedies, April 2013, para 121.

10   See, for example, OECD Competition Committee, *Evidentiary issues in proving dominance*, Competition Policy Roundtables, 2006, p 41.

some observations than others. In all other matters, including industry reviews and when estimating the cost of capital for regulate firms, the Commission's position (correctly in our view) has been that an equal weight should be applied to all observations.[11] The Commission has never applied value-weights to observations.

    i.   One outworking of the use of value-weights in the World Bank dataset is that the large, diversified banks referred to in the previous point would likely have a very large weight applied in a number of countries (such as the US, Canada, UK, France and Germany), even though these banks are the least comparable to the NZ banks for the reasons we discuss in set out in paragraph 25(c).

    ii.   The use of value weights within a country, but simply averages (or interquartile ranges) across countries, also results in unusual weights being applied to certain observations for no justifiable reason. For example, a small bank by international standards that operates in a small country may be assigned substantially more weight than a much larger bank that operates in a large country.

c.   Thirdly, the Commission has not critically assessed the comparability of the countries that it has used from the World Bank dataset for the NZ banks.[12] In our view, however, there is evidence that the banks operating in Japan and member countries of the European Union are not valid comparators for New Zealand banks, as the financial performance of these banks has been influenced by macroeconomic events that are not relevant to the NZ banks. This is a critical issue in our view for the benchmarking of the returns of the NZ banks, and that we discuss in greater depth in section 3.1.1.

d.   Fourthly, the (weighted) average returns for banks within a country also masks the variation that is observable in the return to the individual banks, and artificially increases the sense of precision in the benchmarking process. For example, the interquartile range the Commission presents from the World Bank data is the interquartile range for the (weighted) average country-level performance, which necessarily will be much narrower than the interquartile range of the performance of individual banks.

28.   In our view, the most appropriate approach to derive a benchmark for the return on equity for the NZ banks is to apply the Commission's standard approach. That is, to assemble a sample of potentially comparable firms (noting the Commission has typically used the Bloomberg service for this purpose), and then refine the sample to arrive at a set of entities whose activities are comparable to those of the NZ banks. We undertake this activity in section 3.1 below.

---

[11]   The Commission has stated at times that different weights may be appropriate where some estimates are believed to be more reliable than others (i.e., using weights that are designed to derive an error-minimising average), but has never (to our recollection) found such weighting to be warranted. The Commission has not explained why such weightings are appropriate in this case.

[12]   The Commission appears to have applied all of the countries that are rated as having "Developed" (capital markets) by the FTSE Equity Country Classification, although a small number of such countries have been omitted (Ireland, Poland, South Korea and Spain).

2.2.3   Other issues with the Commission's benchmarking

Reference to pre-tax rates of return

29.   The Commission has relied on the pre-tax Return on Assets (RoA) and pre-tax Return on Equity (RoE) as measures of banking performance. However, the Commission has not previously applied pre-tax measures of return, which reflects the fact that investors target post tax returns in their decision-making, and so the pre-tax returns will disregard the impact of taxation arrangements in the relevant jurisdiction.[13]

Table 1: Bank performance indicators, 2010-2021, based on World Bank data

Country	NIM	ROA Pre Tax	ROA PostTax	ROE Pre Tax	ROE PostTax
Netherlands	1.21%	0.5%	0.4%	8.6%	7.5%
Japan	0.80%	0.3%	0.2%	6.7%	4.7%
France	0.66%	0.3%	0.3%	7.7%	7.1%
Germany	0.86%	0.1%	0.0%	1.9%	0.5%
Italy	1.28%	-0.1%	-0.1%	-1.1%	-0.6%
United States	3.39%	1.4%	1.0%	12.9%	9.3%
Singapore	1.49%	1.2%	1.0%	11.6%	10.2%
United Kingdom	1.74%	0.4%	0.3%	4.0%	3.1%
Canada	2.05%	1.2%	0.9%	19.0%	15.0%
Israel	2.43%	1.0%	0.7%	13.7%	9.2%
New Zealand	2.03%	1.3%	0.9%	17.3%	12.6%
Norway	1.62%	1.1%	0.9%	14.8%	11.7%
Sweden	1.31%	0.9%	0.7%	15.4%	12.2%
Australia	1.79%	1.0%	0.8%	15.8%	11.9%
Denmark	1.02%	0.6%	0.5%	7.2%	6.2%
Austria	1.27%	0.6%	0.6%	8.2%	7.3%
Finland	0.61%	0.5%	0.4%	10.0%	7.9%
Hong Kong	1.45%	1.2%	1.1%	14.0%	13.0%
Belgium	1.30%	0.6%	0.5%	8.7%	8.9%
Portugal	1.21%	-0.6%	-0.6%	-5.6%	-5.1%
Switzerland	0.82%	0.2%	0.2%	3.2%	2.4%
Average	1.44%	0.6%	0.5%	9.2%	7.4%

Source: The World Bank – Global Financial Development Database

30.   In Table 1 above, we show the Net Interest Margin, pre-tax Return on Assets and pre-tax Return on Equity that the Commission relied on in making its preliminary observations, which spans the 2010-21 period. In addition, we have calculated from the World Bank data the corresponding values for post-tax Return on Assets and post-tax Return on

---

[13]   As we discuss in section 3.3, in all decisions where the Commission has estimated a cost of capital (i.e., when setting prices or benchmarking profitability), it has applied the "capital asset pricing model" (and, specifically, the simplified Brennan-Lally version) to estimate the cost of equity component. The capital asset pricing model delivers an estimate of the required return after corporations tax.

Equity. It can be seen from Table 1 that, when measured on a pre-tax basis, the return on equity for the New Zealand banks appears to be much higher than that of banks operating in Singapore, Sweden, Norway and Hong Kong, but this gap narrows substantially when returns are measured correctly on a post-tax basis (and, indeed, the returns to Hong Kong banks becomes higher than those in New Zealand).

The importance of leverage for explaining returns on equity

31.   When the Commission estimates the cost of capital for regulated infrastructure, as well as in the other market studies it has undertaken, the Commission has been careful to account for the fact that the cost of equity depends on the level of financial leverage. This fact is embedded in the fact that the Commission always converts observed equity betas (which depend on the level of financial leverage) into asset betas (which have had the effects of leverage stripped out) to make them comparable. However, in the current matter, the Commission has compared returns on equity without acknowledging the potential effects of differences in leverage.[14]

32.   In our view, whilst we acknowledge that adjusting for differences in leverage is imprecise, failing to adjust for such differences (even on a qualitative basis) is an error. We discuss the effect of the differences in leverage between the set of comparable entities and the New Zealand banks in section 3 below.

The cost of equity depends on the total market return, not the market risk premium

33.   When discussing the results of its benchmarking of the return in equity, the Commission noted that one factor that may explain the difference in the return on equity across countries is a difference in the cost of capital across countries. However, the Commission compared the market risk premium[15] quoted for New Zealand by a particular source,[16] and observed that this is very similar to the market risk premium quoted for the countries against which New Zealand was benchmarked, and so dismissed differences in the underlying cost of capital for a country as a reason to expect a difference in the return on equity. The Commission also showed graphically (its Figure C13) that there appeared to be no relationship between the market risk premium and the return on equity across the countries in its sample. A time series was also shown between the market risk premium for New Zealand and the return on equity for the NZ banks, where again it was concluded that there was no relationship.

34.   In our view, however, the Commission has compared the wrong parameter when determining whether the cost of capital is likely to vary across countries – the cost of capital will vary with the *total market return* to equities (that is, the sum of the risk free rate of return and the market risk premium) rather than simply the market risk

---

[14]   As discussed above, if the World Bank dataset is applied, then the capacity to adjust for differences in leverage is limited, which is a problem with using the World Bank dataset.

[15]   The Commission referred to the "equity risk premium", which is a synonym for the market risk premium. We use the latter term in this report for consistency with our discussion later around estimating the cost of equity for the NZ banks.

[16]   Aswath Damodaran (updated 23 March 2023), *Equity Risk Premiums: Determinants, Estimation and Implications – the 2023 Edition.*

premium.[17] Thus, any differences in the level of government bond rates between counties will also cause a difference in the cost of capital. We discuss this further in section 3.2, where we show that there has been a material difference in government bond rates between New Zealand and the countries in which our banking sample operates, and so the cost of equity would be expected to be higher for the New Zealand banks (all else constant).

35.   In addition, we note that it would be extraordinary if a relationship was established between the return on equity achieved in a single year and the market risk premium (the Commission's Figure C13), or in the time series between the return on equity and market risk premium (the Commission's Figure C14). This is because the outcome whereby returns should equate to the cost of capital is a long run equilibrium outcome in a workably competitive market, rather than something that should be observed continuously over time.

Reluctance to estimate a cost of equity using a bottom-up model

36.   In previous market studies, the Commission has placed substantial weight on its own bottom-up estimate of the cost of capital when benchmarking the return earned by the firm in question. However, in the current matter, it has decided not to undertake such a task.

37.   Whilst we consider that caution is required when comparing returns against a bottom-up estimate of the cost of capital, this exercise nonetheless provides additional relevant information. Moreover, once a sample of comparable entities has been established (as we discussed above), estimating the cost of capital (and, specifically in this case, the cost of equity) applying the Commission's standard methods is reasonably straightforward. Accordingly, we undertake this task in section 3.3.

---

[17]   We also note that the source the Commission has used is only one indicator of the possible relativity in the market risk premium across countries, and which applies a method that is biased towards finding no differential. This is because the Damodaran source assumes the market risk premium for all countries to be equal to the US market risk premium, adjusted only for differences in the default risk of government securities. No account is taken of the historical equity risk premium in the country in question, nor of current expectations for the equity risk premium for the country in question.

3. Our benchmarking of the profitability of the NZ banks

3.1 The method we used to derive an appropriate sample of comparator firms

38. The key requirement of a group of comparator businesses, in this case banks, is to ensure that they are materially similar. Our method to derive a sample of banks that are as similar as possible to the large New Zealand banks has three parts:

   a. Comparability of experiences of banking crises – although every country experienced the Global Financial Crisis in some degree, we reject as not comparable with New Zealand those countries / regions that we know have experienced multiple deep-seated banking crises over recent decades. These regions / countries are: The European Union, the United Kingdom and Japan.

   b. Comparability of operations – not all banks are similar enough to be considered close comparators for testing the performance of New Zealand banks. We reject as not similar to New Zealand those banks that Bloomberg describes as "Diversified" since they have a substantially different business model to the New Zealand banks.

   c. Analysis of key valuation and risk characteristics – Having determined groups of comparable and non-comparable countries / banks, we then test our qualitative classification of the firms into different groups against the available quantitative evidence, namely the key valuation and risk summaries of the firms. This analysis confirms that the characteristics of the best comparator group is differentiated in predictable ways from the banks that we choose not to include in our sample of comparable entities.

39. By undertaking this analysis, we derive a peer group sample of 26 banks that we consider sufficiently similar to NZ banks and that are located in countries that we consider to have operating environments for banks that are similar to New Zealand's operating environment. In Appendix D we show that based on several key demographic (population), economic (GDP per capita) and financial (10-year government bond rates) criteria, New Zealand is far more similar to the countries from which our 26 peer banks are drawn than it is to the countries whose banks we reject as not being sufficiently similar. That is, we are able to show the banks we have excluded from our peer group analysis countries face materially different operating conditions, and the profitability performance of banks in those countries cannot be considered to be a reliable benchmark for ANZ and NZ banks in general.

3.1.1 Comparability of country operating environments

40. Canada, New Zealand and Australia, among other countries, weathered the Global Financial Crisis relatively well and were largely untouched by the Euro Zone Sovereign Debt Crisis. As noted by former RBNZ Governor Alan Bollard and Tim Ng (2012), in

the case of the latter countries this was due to their concentration on traditional banking:[18]

In New Zealand and Australia, problems in the core banking system during the [Global Financial] crisis were comparatively mild, reflecting our more vanilla-flavoured banking sector and relatively sound banking capital structures. There was little exposure to complex instruments and opaque interconnections in our markets.

41. A recent study by the Bank for International Settlements (BIS) observed that:[19]

...while advanced economy banks shared the [global financial] crisis-induced decline and subsequent partial recovery, cross-country differences have been substantial. Euro area banks, in particular, stand out, with valuations underperforming those of many of their international peers.

That is, many countries in the EU, including the United Kingdom, with complex and inter-related banking systems were doubly hit – directly or indirectly - by the Global Financial Crisis (2008-09) and by the Euro Zone Sovereign Debt Crisis (2010-12) that followed. As it was the EU's financial hub, the UK's banking industry (as well as the EU's banks) experienced a further round of uncertainty in the latter half of the study period (2010-2021) due to Brexit.

42. In addition, we note the longstanding economic and financial malaise suffered by Japan, where population stagnation and decline since the 1990s triggered deflation and a collapse of bank credit ratings.

43. We conclude that banks located in the European Union, the United Kingdom and Japan are not suitable as performance comparators for New Zealand banks.

3.1.2   Comparability of operations

44. To derive an appropriate sample of comparator firms based on similarity of operations, we searched the Bloomberg service for all businesses classified under BICS level 4 sub-industries:[20]

    a. Banking (being banks that have a greater focus on deposit taking), and

    b. Diversified banking (which operate in several lines of business, including investment banking and complex instruments and often have substantial foreign operations).

45. For each country we arranged the downloaded banks by country and in order of Equity Market Capitalisation (in USD) as at 31 December 2022, and selected banks based on:

---

[18]   Bollard, Alan and Tim Ng, (9 August, 2012), *Learnings from the Global Financial Crisis*, A speech delivered to Australian National University in Canberra, p.22.

[19]   Bilyana Bogdanova, Ingo Fender and Elod Takats, (March, 2018), "The ABCs of bank PBRs", *BIS Quarterly Review*, p. 83.

[20]   That is, "BICS_LEVEL_4_SUB_INDUSTRY_NAME".

a. being classified as a globally systemically significant bank

b. being classified as a domestically systemically significant bank with a market capitalisation in excess of USD5 billion,[21] or

c. having a market capitalisation in excess of USD10 billion irrespective of whether it is listed as a domestically systemically significant bank.

46. This yielded a sample of **63 banks** drawn from 18 countries.[22]

3.1.3   Bank comparator sample

47. Based on comparability of experiences of banking crises and of operations, we identified 4 categories of banking businesses:

a. EU/UK/Japan – countries (including the United Kingdom) belonging to the European Union (EU) during the Euro Zone Sovereign Debt Crisis and Japan. Banks in this region can be further sub-divided into:

   i.   "Banking" and

   ii.   "Diversified"

None of these are suitable comparators for New Zealand banks for the reasons explained above.

b. The Rest of the World (RoW) – which includes the US, Canada, Australia, Hong Kong, Israel, Norway, and Singapore.[23] Banks in this region may similarly be sub-divided into:

   i.   "Banking" and

   ii.   "Diversified"

Only the "RoW/Banking" category (b.i above, with **26 banks**) has a high degree of comparability to New Zealand banks for the reasons explained above.

---

[21]   We kept the market capitalisation above USD5 billion as that size of bank would be reasonably important in the New Zealand banking market (although smaller than the four large banks). Reducing the cut-off to USD2.5 billion or USD1 billion would have materially expanded the number of comparators just in the US (by an additional 28 and 81 comparator banks, respectively).

[22]   For Switzerland and Portugal, no listed bank satisfied the selection criteria.

[23]   We note that 13 of the 26 banks in the "banking" segment of the Rest of the World group are based in the US, while 5 of the 9 "diversified" banks in the Rest of the World group are based in Canada.

Table 2: Classification of banking firms

	Total	EU UK & Japan	Rest of World
Banks	37	11	26
Diversified banks	26	17	9
Total	**63**	**28**	**35**

Source: Bloomberg and Incenta analysis

3.1.4 Analysis of valuation and risk characteristics

48. In this section we test whether the valuation and risk characteristics of banks that we include in our sample of comparable entities, compared to those that we do not include, are sufficiently differentiated in predictable ways, and find that this is indeed the case. That is, the banks that operate in countries that have experienced multiple banking crises demonstrate low valuation metrics and high risk, which confirms that they are not appropriate comparators for New Zealand banks.

Price / Book and Probability of Default

49. Figure 1 shows how RoW and EU/UK/Japan groups compare on both Price / Book ratio and 1-Year Probability of Default. Most RoW countries (except for Israel) had a Price / Book ratio above unity over the 2010-2021 period combined with a relative lower Probability of Default. Almost all the EU/UK/Japan countries had a long-term Price / Book value below unity and a relatively higher Probability of Default (implying a lower credit rating). The two exceptions were Sweden and Finland, where the effects of the financial crises appeared to have had less effect on the banking sector.[24] We left the Israel, Sweden and Finland banks within their regional assignments in order to maintain our original geographical allocations based on *a priori* analysis of regional fundamentals.

50. In our view, regions and countries where the Price / Book ratio is below unity and / or the Probability of Default of banks on average exceeds approximately 0.10 are not appropriate comparators for New Zealand banks.

---

[24] Reasons may include that Sweden is not in the Euro zone and that both Sweden and Finland do not have any large, diversified banks.

Figure 1: Price / Book ratio vs Probability of Default
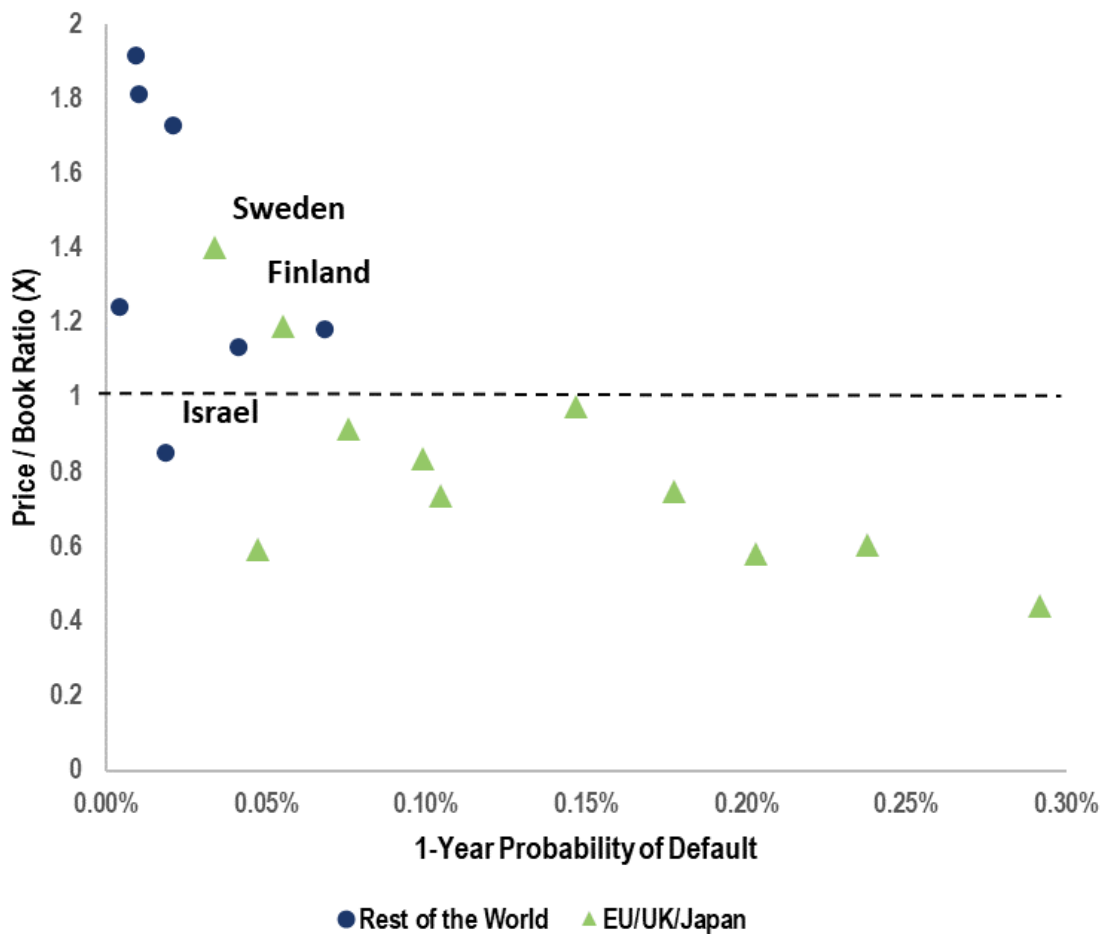
Source: Bloomberg and Incenta analysis

Risk Weighted Assets

51.   Another indicator of business comparability is the Risk Weighted Assets / Total Assets ratio (RWA/TA). This ratio summarises the riskiness of the asset mix which can include riskless assets like sovereign bonds, or high-risk loans to corporates or agribusiness. Over the period 2010-2021, ANZ's RWA/TA ratio averaged 56 per cent. Figure 2 below we show that on this ratio for much of the period ANZ lay much closer to the average of RoW/Banking than to the EU/UK/Japan groups.

Figure 2: Risk Weighted Assets / Total Assets by comparator group, 2010 to 2021
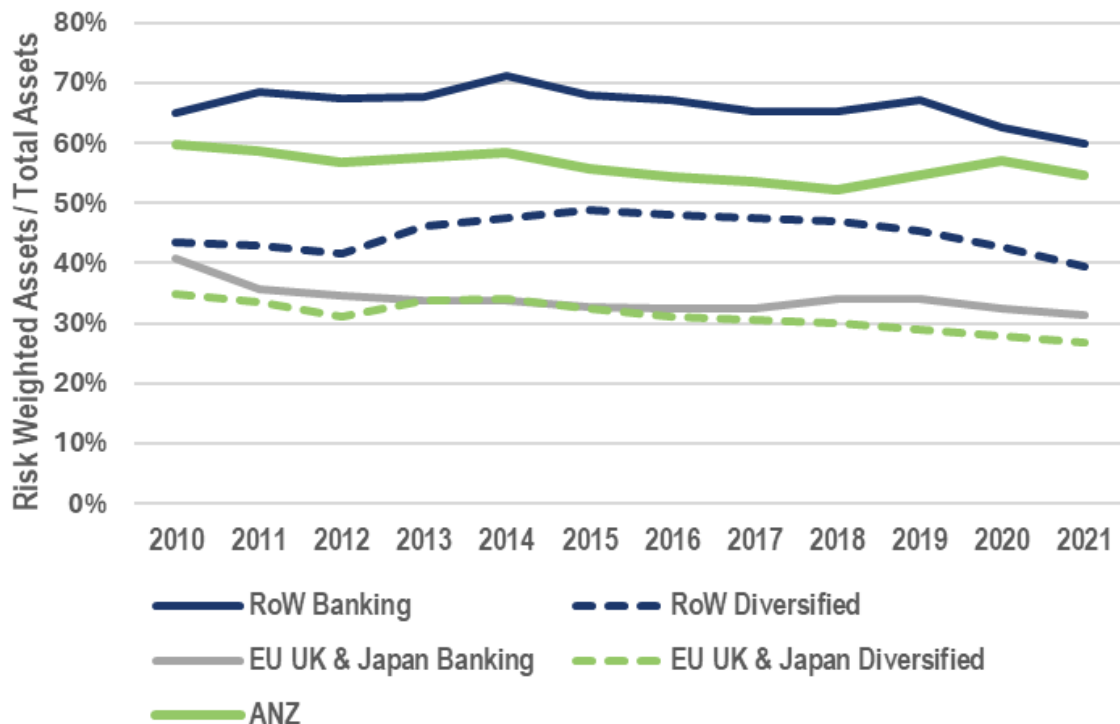
Source: Bloomberg and Incenta analysis

3.2 Comparison of ANZ's profitability performance against its peer group

52. In this section we examine ANZ's profitability performance over the 2010 to 2021 period relative to the peer group discussed above. Our results:

    a. are not consistent with the Commission's preliminary finding of "persistently high profitability" among New Zealand banks, and

    b. show that by aggregating whole banking sector returns by country the Commission overlooked material volatility in rates of return at bank level.

53. Table 3 compares the average of ANZ's post tax return on equity over this period to that of the sample of peer firms (the "rest of the world – banking" group) that were discussed in the previous section.

Table 3: Profitability of ANZ vs. the peer group, average over 2010 to 2021 (cumulative effects)

		Column A Unadjusted	Column B Benchmark goodwill adjustment	Column C *Plus* Risk-free rate adjustment	Column D *Plus* Equity ratio (leverage) adjustment
Peer group	**Post tax return on equity**	11.0%	9.5%	10.6%	**12.2%**
	Equity ratio	*9.5%*	*10.3%*	*10.3%*	*8.7%*
ANZ	**Post tax return on equity**				**12.3%**
	Equity ratio				*8.7%*

Source: ANZ, Bloomberg and Incenta analysis

54.   The first column of results in Table 3 (Column A) shows the raw figures, and the next three columns show the effects of the adjustments to the returns of the peer firms that we think are required to make the returns comparable with ANZ.

a.   First, ANZ has a "goodwill" asset on its balance sheet, which arose out of its acquisition of National Bank in 2003. We discuss the merits of including goodwill in an assessment profitability in section 3.3.3 and Appendix C below, and conclude that this amount must be included in the value of ANZ's assets (and hence in the value of equity) when deriving its cost of equity.[25] However, an issue of comparability arises with peer firms, because the assets that are reflected in this "goodwill" element – whilst economically meaningful – are typically not capitalised under accounting rules, and indeed only enter the balance sheet where transactions occur (and, in this situation, becomes "goodwill"). This means that, whilst all banks would have these assets, there is a mismatch between firms that have not acquired businesses (where no value for these assets will be recorded on their balance sheets) and those that have experienced transactions (where a value may be "booked" as a consequence of the transaction). We address this comparability issue by recalculating the return on equity and equity ratio for the peer group on the assumption that each has the same level of "goodwill" asset as ANZ (measured as a proportion of total assets), which is shown in the Column B. As can be seen, adjusting for goodwill reduces the peer group's post-tax return on equity (as equity increases on average across the sample) and increases the equity ratio (as net assets increase on average across the sample).[26]

b.   Secondly, as we discussed in section 2.2.3, the cost of capital for a New Zealand bank would be expected to be higher than its foreign peers if the cost of capital for New Zealand firms in general is higher. As also noted in that section, one factor that will cause a difference in the cost of capital is a difference in government bond rates (i.e., the return available on a risk-free asset). Column C also adjusts the returns observed

---

[25]   We conclude in section 3.3.3 that the goodwill is likely to represent the amount it paid to acquire the reputation and operational capability that National Bank had developed, which is an economically-meaningful asset, and one that a new entrant bank would need to develop in order to provide an equivalent service.

[26]   We also observe that, if you simply remove goodwill for ANZ and the peer group (i.e., calculate all returns on the basis of zero goodwill) then, whilst all returns increase compared to those reported in this section (i.e., as the denominator reduces), the returns to ANZ and the peer group increase by a similar magnitude, and so the results of the benchmarking are essentially the same.

for the peer firms for the difference between the 10 year risk free rate of return between New Zealand and the country in which the peer firm operates. Essentially, this adjustment allows for the fact that, if New Zealand's higher government bond rates had been observed in the countries in which the peer group operates, then the returns of those firms would be expected to have been higher by the same amount. This adjustment therefore reduces the chance that any difference in returns will be the result of differences in the cost of equity. Figure 3 shows the path of average of the 5 year and 10 year government bond rates over the period for the countries in which the peer firms operate. This adjustment does not affect the equity ratio (because net assets are unchanged).

Figure 3: Risk free rates in comparator countries vs New Zealand, 2010-2021
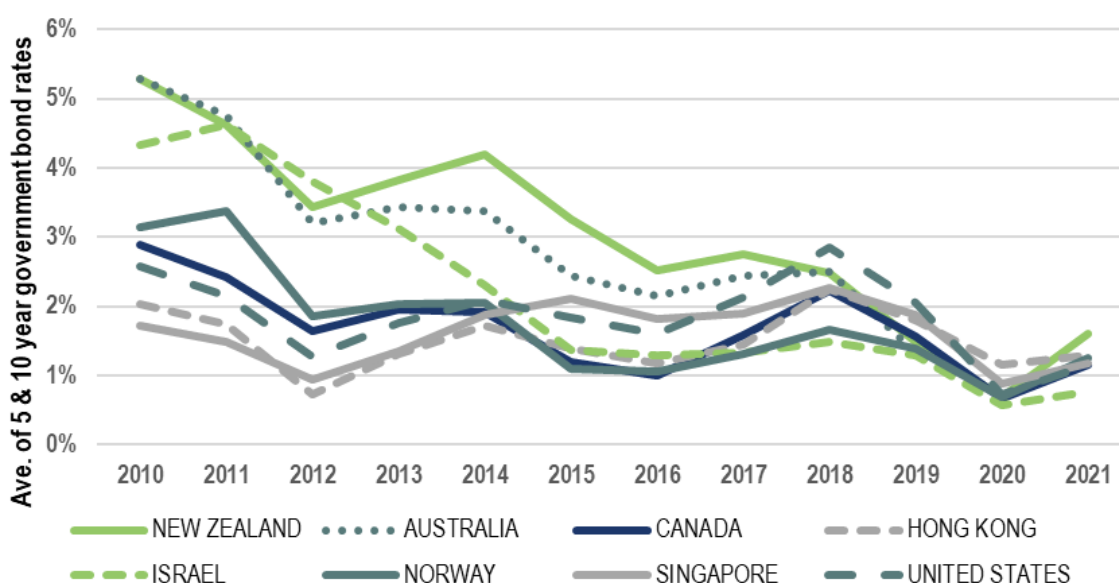
Source: Bloomberg and Incenta analysis

c. Thirdly, the equity ratio of ANZ over this period is lower (and so hence its leverage is higher) than that of the peer firms, which standard finance principles suggest would increase its cost of equity relative to those peer firms. The further adjustment that we make in this table in Column D reflects the difference between the cost of equity that we estimate on a bottom-up basis for ANZ using the peer group equity ratio, and the cost of equity that is consistent with ANZ's equity ratio (see section 3.3.2 and Table 4). Essentially, this adjustment notes that the previous two adjustments will deliver a return that is consistent with a comparable level of goodwill to ANZ and is adjusted to be relevant to New Zealand (i.e., reflecting differences in country government bond rates), but notes that differences in leverage will also affect a bank's cost of equity. Thus, this adjustment is also made to standardise the observed returns to reduce the chance that any differences in returns will be the result of differences in the cost of equity.

55.   The conclusion to be drawn from this table is that ANZ's profitability performance over the period was very similar to the peer firms that we identified, particularly once the

adjustments required for a proper like-for-like comparison of returns between ANZ and the peer firms have been made. Indeed, ANZ's average profitability was slightly lower than the average of the peer firms over this period.

56.   Figure 4 shows how ANZ's annual profitability performance compares to that of the peer group over time, after the adjustments described above have been made. This figure shows that ANZ's annual profitability was within the interquartile range for the peer group in almost all years spanning 2010 to 2021. Indeed, its profitability only exceeded the third quartile of the peer firms' returns in a single year, and was below the first quartile in two years.

Figure 4: ANZ's performance against the peer firms (2010 to 2021)
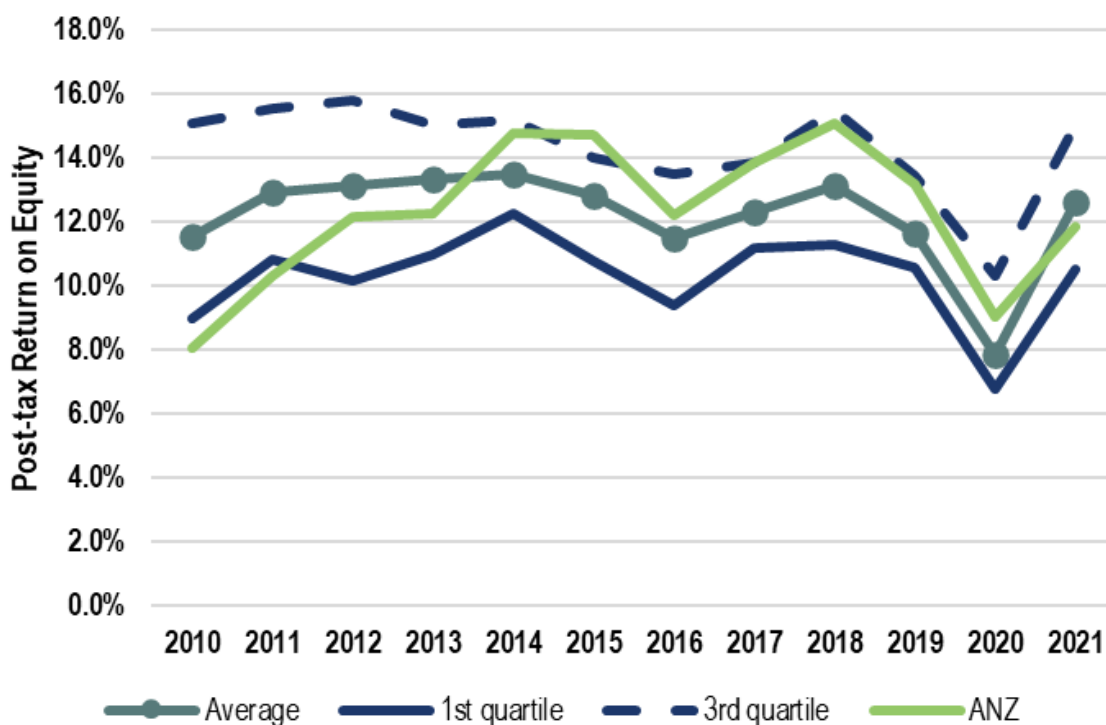
Source: ANZ, Bloomberg and Incenta a analysis

57.   We also commented earlier that the Commission's use of country-level data hides the degree of variability that exists in returns in the banking sector. We illustrate this variability in Figure 5, which displays the individual paths of Post Tax Return on Equity over the 2010 to 2021 period earned by the 26 comparator banks in the RoW/Banking category, with ANZ superimposed as a heavy dashed green line. We draw from this figure that profitability performance at the individual firm level varies substantially year-by-year, and further that ANZ clearly sits within the pack. Moreover, this figure illustrates the difficulties with drawing firm conclusions about the state of competition from an analysis of actual profitability.

Figure 5: Variability of Return on Equity, 2010-2021
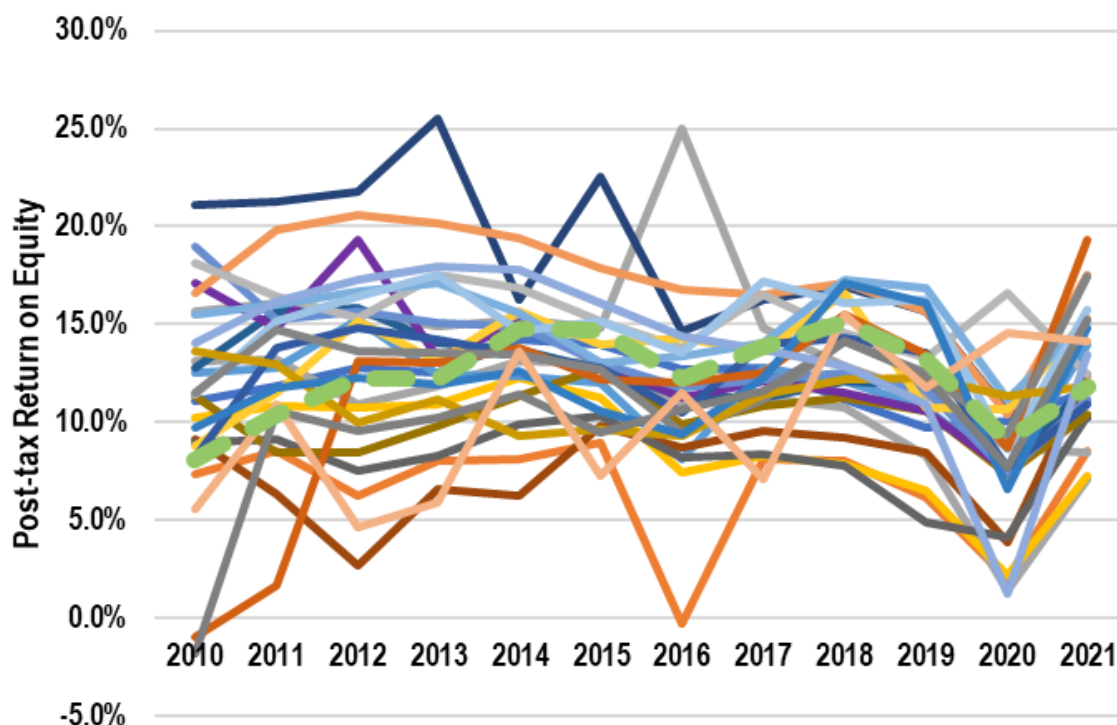
Source: Bloomberg and Incenta analysis. ANZ's returns are shown as the heavy dashed green line.

3.3   Cost of capital for the New Zealand banks

3.3.1   Introduction

58.   In the discussion above, we have responded to the Commerce Commission's benchmarking of the returns of the New Zealand banks against their international peers. We note that, in previous market studies, when assessing the reasonableness of profitability the Commission placed weight – and, indeed, most weight – on a comparison between returns of the target entity and an estimate of the associated cost of capital. In this matter, however, the Commission has signalled that it does not intend to estimate the cost of capital for the New Zealand banks and to benchmark their returns against this, noting that:[27]

> *We do not propose to conduct our own internal calculations of firm's opportunity cost of capital or profitability.*

59.   In our view, there are difficulties with drawing inferences for competition from a comparison of a firm's accounting returns against an estimate of the cost of capital, which we have explained in previous reports to the Commission. First, idiosyncratic factors will always cause a firm's actual returns to vary from what may have been

---

27   New Zealand Commerce Commission (10 August 2023), *Market study into personal banking services, Preliminary Issues Paper*, p.57.

expected, and so a sufficient period is required before reliable inferences can be drawn. We note, however, that the same problem exists when benchmarking the returns of the target firm against its international peers. Secondly, there is also the potential for the accounting measure of asset values to exclude valuable assets – namely, the investment required to generate and preserve operational capability (which is typically classified for accounting purposes as operating expenditure) – so that the measured accounting return may be overstated. This second issue provides a reason as to why the accounting return may *exceed* the cost of capital, requiring caution as to how the results are interpreted, which we return to further in section 3.3.2.

60. Notwithstanding the difficulties mentioned above, benchmarking the returns of the New Zealand banks against an estimate of their cost of capital provides additional information, including that this will naturally adjust for differences between the cost of capital of banks overseas and those in New Zealand. We also note that, given the Commission's extensive analysis of cost of capital issues for the regulated infrastructure sector, and in previous market reviews, this exercise is also reasonably straightforward – that is, the market-wide issues have been widely debated (although some controversies remain, which we return to below), the focus need only be on the industry-specific aspects, which in this case is the (equity) beta. Accordingly, we conduct this benchmarking of the New Zealand banks' returns below.

3.3.2 Estimating the cost of equity using the Commission's standard approach

61. Whilst for the regulated infrastructure sectors the Commission estimates and applies a weighted average cost of capital as the applicable discount rate, an estimate of the cost of equity is a central component of this. The Commission's standard approach for estimating the cost of equity for the regulated infrastructure sector is to apply the simplified Brennan-Lally version of the capital asset pricing model (CAPM), which is of the following form:

$$K_e = R_f(1 - T_I) + \beta_e(R_m - R_f(1 - T_I))$$

62. The Commission's standard practice in relation to the inputs required – aside from in relation to the equity beta – is as follows:

a. the risk-free rate of return (R_f) is taken as the yield to maturity on New Zealand Government securities with the same term to maturity as the regulatory of pricing period, measured as closely as possible to the period in question

b. the tax-adjusted market risk premium (this is the item given by the difference between the expected overall market return, less the tax adjusted risk-free rate of return, i.e., $R_m - R_f(1-T_I)$) has been assumed to be either 7.0 per cent or 7.5 per cent for different periods since 2010, and

c. the investor tax rate (T_I) has been assumed to be the highest portfolio investment entity (PIE) rate for New Zealand residents, which has been 28 per cent during the period since 2010.

63.   The one modification the Commission has made to this standard approach when estimating the cost of capital for non-regulated entities is with respect to the term of the risk-free rate, given that there is no defined regulatory or pricing period. In the other market studies – where the same issue arises – the Commission has applied a range reflecting terms to maturity of 5 years and 10 years, and focussed on the average of these.

64.   The only remaining input required to estimate the cost of capital for the New Zealand banks is the equity beta, which measures the degree of systematic risk of the returns to the equity finance of the target activity (in this case, the activities of the New Zealand banks). The Commission's standard practice in relation to the equity beta is to:

   a.   assemble a large sample of sharemarket-listed firms[28] whose activities are expected to be comparable in systematic risk to that of the target, which is inevitably is dominated by firms whose operations are in other countries[29]

   b.   eliminate firms for which the trading pattern of its shares causes empirical issues for equity beta estimation (the principal factor the Commission considers is that there is sufficient liquidity in a firm's shares)

   c.   estimate the equity beta for each firm using both weekly and monthly return intervals,[30] and for periods that span both the previous five years and the five years before that, and then take an average of all of the estimates to derive the estimate of the equity beta for the firm in question, and

   d.   establish the equity beta for the target activity by taking an average of the betas observed for all firms, after adjusting for the effects of financial leverage on the beta.[31]

65.   In terms of this exercise, the firms that we selected as a peer group of firms for the benchmarking of actual returns on equity is also appropriate for the purposes of estimating equity betas, which we have applied.[32] The average equity beta for the sample – where the beta for each firm is derived using both monthly and weekly return intervals,

---

[28]   Equity betas can only be estimated using conventional empirical techniques for firms that are listed on a sharemarket.

[29]   For example, the sample of firms the Commission uses to estimate the equity beta for the electricity distribution businesses comprises around 60 firms, only one of which is a New Zealand firm (Vector), and the majority of which operate in North America.

[30]   Equity betas are estimated using a statistical regression technique, whereby the economic returns (i.e., change in share price plus dividends) to a firm's equity are regressed against the economic return to a value weighted index of firms listed in the relevant market.

[31]   The Commission converts each equity beta into an asset beta (which is the equity beta with the effects of leverage removed), averages the asset betas, and then relevers the selected asset beta to be consistent with the target level of leverage (with this target typically derived as the average of the firms in the sample that were used to estimate the beta). We use the same leverage formula below to derive an equity beta that is consistent with ANZ's leverage level.

[32]   We tested for any liquidity issues and eliminated one firm out of the 26 firms in the most comparable segment (First Citizens BancShares Inc/NC) from the beta estimation because its bid-ask spread exceeded 0.5 per cent. In the EU/UK/Japan / Banking group we removed the beta estimates of BNP Paribas Fortis SA (which is in the EU/UK/Japan – Banking group) as there was no bid-ask spread data, no Bloomberg Liquidity Index data, and no evidence the bank was followed by equity analysts.

and over the past five and previous five-year periods – was 1.19 for the peer group, although the equity beta was quite similar across all of the sub-samples of firms. The full results by firm, return interval and period are set out in Appendix B.[33]

66. In terms of adjusting this figure for financial leverage, we noted above that the equity ratio of ANZ is slightly lower than for the average of the peer group (8.7 per cent compared to 10.3 per cent, once the peer group's equity value was adjusted to include a comparable amount of "goodwill"). This suggests that the equity beta for ANZ would be higher (all else constant), and we estimate (using the conventional formula for adjusting equity betas for leverage)[34] that the equity beta that is consistent with ANZ's level of leverage is 1.41.

67. Our estimate of the cost of equity that results from using both an adjusted and unadjusted equity beta in combination with the other inputs explained above is set out in Table 4 below, with the cost of equity prior to the leverage adjustment shown for completeness. We have derived the risk-free rate of return as the simple average of the daily yield on New Zealand Government securities with a remaining term to maturity of 5 and 10 years over the period from 1 October 2009 to 30 September 2021 (sourced from Bloomberg). This results in a range for the average cost of equity for ANZ over the period that is consistent with the Commission's standard methodology of between 12.1 per cent and 12.8 per cent.

Table 4: Estimated cost of equity for a New Zealand bank

	Equity beta = 1.19		Equity beta = 1.41	
	TAMRP = 7.0%	*TAMRP = 7.5%*	*TAMRP = 7.0%*	*TAMRP = 7.5%*
Risk free rate of return	3.1%	3.1%	3.1%	3.1%
Equity beta	1.19	1.19	1.41	1.41
Equity ratio	10.3%	10.3%	8.7%	8.7%
Tax adjusted market risk premium (TAMRP)	7.0%	7.5%	7.0%	7.5%
Investor tax rate	28%	28%	28%	28%
Cost of equity (post tax)	**10.6%**	**11.2%**	**12.1%**	**12.8%**

Source: Bloomberg and Incenta analysis applying Commerce Commission methodology

3.3.3 Comparing ANZ's actual returns to our estimate of its cost of equity

ANZ's returns have been "normal"

68. We observe that ANZ's actual post tax return on equity over this period (12.3 per cent, as discussed above) falls within the range that we have estimated, and indeed is towards the

---

[33] While ANZ is a division of ANZ Group Holdings, which is in the peer banks sample, we do not consider this a material issue since the former constitutes less than 20 per cent of the total assets of the parent company.

[34] The Commission's standard approach for adjusting equity betas for leverage is to apply the Harris-Pringle formula, and further to assume a beta for debt of zero. Under this formula, the equity beta for the target entity is calculated as:

$$\beta_{Equity}^{Target} = \beta_{Equity}^{Observed} \cdot \frac{Equity\ Ratio^{Observed}}{Equity\ Ratio^{Target}}$$

lower end of this range. Accordingly, in our view, these results corroborate our earlier findings that a proper benchmarking of ANZ's returns against its international peers is not suggestive of material and enduring excess returns, but rather that ANZ's returns have been "normal".

69.   We also note, for completeness, that the period covered by the analysis above included a substantial period where government bond rates were materially below their previous long term historical averages. During this period there has been a substantial debate as to whether the cost of equity followed government bond rates one-for-one, or remained more stable, so that the risk premium over government bond rates expanded.[35] The Commission's decisions have been consistent with the assumption that the (tax adjusted) market risk premium remained virtually unchanged over the period, so that the cost of equity fell in line with government bond rates. However, to the extent that the counter view – that the cost of equity was more stable – were correct, then the above estimate would under-estimate the cost of equity during this period.

ANZ's goodwill should be included in its asset value

70.   As discussed above, the book value of ANZ's assets (and hence equity) includes a goodwill component, which resulted from ANZ's acquisition of the National Bank of New Zealand in 2003. In previous matters the Commission has resisted the inclusion of goodwill when testing the returns of firms, on the basis that the Commission does not consider goodwill to represent assets that are required to provide the relevant service. In our view, however, there are powerful reasons as to why the goodwill should be retained in ANZ's asset value, and that excluding it would cause an economically meaningless result.

71.   Our reasons for retaining this value in ANZ's assets are as follows.

    a. As discussed in detail in Appendix C, there is a substantial financial economics literature that concludes that unbooked intangible assets – which are comprised of operational capability, reputation and the like – are becoming an increasingly important focus of investment by modern firms, and an increasingly important source of the market value of such firms. However, as accounting rules typically do not permit investment in these intangible assets to be capitalised, a difference occurs between the accounting values of firms and their economic values, which has become increasingly material over recent decades. This means that it is incorrect to simply compare an accounting rate of return against a cost of capital because the denominator of the former will exclude important assets. This literature also recognises that intangible assets are likely to be particularly important for the banking sector, reflecting matters like the value of relationships that have been created with customers.[36]

---

[35]   For a discussion in the economics literature, see: Caballero, Ricardo J., Emmanuel Farhi, and Pierre-Olivier Gourinchas (2017), "The Safe Assets Shortage Conundrum." *Journal of Economic Perspectives*, 31 (3): 29-46.

[36]   Bogdanova, Bilyana, Ingo Fender and Elod Takats (March, 2018), "The ABCs of bank PBRs", *BIS Quarterly Review*, pp. 81-95.

b. That financial economics literature on intangible assets discussed above also highlights that the one time when an accounting value may be generated for these intangible assets is where an asset is acquired, and an explicit payment is made for the intangible assets.[37] As the underlying assets ordinarily cannot be capitalised, they are required to be reported as "goodwill". Indeed, the empirical literature on intangible assets typically uses booked goodwill as a consequence of transactions as a proxy for the value of the underlying intangible assets. This also means that a firm's booked goodwill is more likely than not to understate the full value of its intangible assets because the transaction that gave rise to the goodwill may have applied to only a part of the firm's operations, and the transaction may have taken place some time ago, and so may understate the current value of the intangible assets.

c. We also think that there is much less risk that the goodwill reported on ANZ's balance sheet may in fact have been a capitalisation of expected monopoly rents than may have been the case in other matters.

    i. First, the Commission cleared ANZ's acquisition of National Bank on the basis that the acquisition would not substantially lessen competition.[38] In contrast, the Commission concluded that Progressive's acquisition of Woolworth NZ in 2001 would substantially lessen competition, and it was only when the Commission was forced to consider the transaction under the previous dominance test that the transaction was cleared.[39]

    ii. Secondly, the average value of ANZ's goodwill as a proportion of its total assets is 2.3 per cent over the analysis period, which is only marginally above the average value of the goodwill of the US banks over the same period (2.1 per cent). The similarity of ANZ's goodwill to that of the US banks – which operate in a much larger and obviously competitive market – means that there is no scope for ANZ's goodwill to include a material monopoly rent component.[40]

---

[37]   To be clear, creating operational capability and other relevant intangible assets requires cost and time to be incurred, and so it would be rational to pay an amount for these assets in an acquisition. Similarly, a firm that sought to enter the market would need to incur the cost and time to create these assets.

[38]   Commerce Commission (2003), ANZ Banking Group (New Zealand) Limited and NBNZ Holdings Limited: Decision No.507, September.

[39]   Commerce Commission (2001), Progressive Enterprises Limited and Woolworths (NZ) Limited: Decision No.448, December.

[40]   We find in the data that the banks in our sample have undertaken a number of transactions during the analysis period, which in itself is evidence that the US competition regulators consider the market to be competitive.

A. Characteristics of banking firms

Table 5: Characteristics of banking firms – rest of the world – banking (peer group)

Rest of the World - Banking Ticker	Name	Country	Mkt Cap USD	NIM	RoA (pre-tax)	RoA (post-tax)	RoE (pre-tax)	RoE (post-tax)	Equity Beta	1yr Default Probability	Equity Ratio	RWA/ TA
CBA AU Equity	Commonwealth Bank of Australia	Australia	118,027	2.1%	1.4%	1.0%	21.8%	16.1%	1.03	0.009%	6.3%	44.7%
NAB AU Equity	National Australia Bank Ltd	Australia	64,599	1.8%	0.9%	0.6%	15.6%	10.0%	1.25	0.018%	6.1%	47.0%
WBC AU Equity	Westpac Banking Corp	Australia	55,873	2.1%	1.2%	0.9%	18.1%	13.1%	1.26	0.019%	6.9%	46.6%
ANZ AU Equity	ANZ Group Holdings Ltd	Australia	48,456	2.3%	1.1%	0.8%	17.4%	12.1%	1.31	0.024%	6.4%	46.3%
NA CN Equity	National Bank of Canada	Canada	22,706	1.6%	1.0%	0.8%	18.9%	18.1%	1.08	0.014%	5.2%	31.7%
2388 HK Equity	BOC Hong Kong Holdings Ltd	Hong Kong	36,048	1.7%	1.3%	1.2%	15.0%	14.0%	0.95	0.016%	8.8%	40.4%
11 HK Equity	Hang Seng Bank Ltd	Hong Kong	31,808	1.8%	1.8%	1.6%	18.9%	16.9%	0.71	0.003%	9.7%	38.2%
LUMI IT Equity	Bank Leumi Le-Israel BM	Israel	12,859	2.4%	1.0%	0.6%	13.6%	8.8%	1.01	0.020%	7.0%	72.6%
POLI IT Equity	Bank Hapoalim BM	Israel	12,050	2.6%	1.0%	0.6%	13.7%	8.7%	0.96	0.017%	7.5%	77.8%
DNB NO Equity	DNB Bank ASA	Norway	30,711	1.5%	1.0%	0.8%	14.6%	11.7%	1.25	0.042%	7.1%	43.0%
DBS SP Equity	DBS Group Holdings Ltd	Singapore	65,159	1.8%	1.1%	0.9%	12.0%	10.7%	1.31	0.006%	9.6%	59.4%
OCBC SP Equity	Oversea-Chinese Banking Corp Ltd	Singapore	40,888	1.7%	1.2%	1.0%	12.7%	11.5%	1.11	0.003%	9.5%	46.7%
UOB SP Equity	United Overseas Bank Ltd	Singapore	38,395	1.9%	1.2%	1.0%	12.7%	11.2%	1.19	0.005%	9.8%	58.7%
WFC US Equity	Wells Fargo & Co	US	158,298	3.1%	1.6%	1.1%	15.2%	11.3%	1.18	0.050%	10.4%	71.2%
USB US Equity	US Bancorp	US	66,766	3.3%	1.8%	1.4%	17.2%	14.5%	1.04	0.026%	10.6%	81.3%
PNC US Equity	PNC Financial Services Group Inc/The	US	63,334	3.2%	1.5%	1.3%	11.4%	10.5%	1.14	0.032%	12.7%	83.3%
TFC US Equity	Truist Financial Corp	US	57,093	3.4%	1.4%	1.0%	11.1%	8.5%	1.20	0.033%	12.5%	80.0%
MTB US Equity	M&T Bank Corp	US	24,557	3.5%	1.8%	1.2%	14.2%	10.0%	0.99	0.033%	12.6%	82.5%
FITB US Equity	Fifth Third Bancorp	US	22,422	3.1%	1.6%	1.2%	14.4%	11.0%	1.40	0.056%	11.5%	86.1%
HBAN US Equity	Huntington Bancshares Inc/OH	US	20,347	3.2%	1.3%	1.0%	12.4%	9.9%	1.26	0.073%	10.1%	84.1%
RF US Equity	Regions Financial Corp	US	20,148	3.2%	1.2%	0.8%	9.0%	6.4%	1.48	0.104%	12.9%	79.1%
KEY US Equity	KeyCorp	US	16,259	3.0%	1.3%	1.0%	11.6%	9.1%	1.36	0.087%	11.2%	89.7%
FHN US Equity	First Horizon Corp	US	13,159	3.0%	0.9%	0.7%	8.2%	6.6%	1.35	0.145%	10.6%	83.7%
FCNCA US Equity	First Citizens BancShares Inc/NC	US	11,001	3.7%	1.3%	0.9%	14.4%	9.9%	n/a	0.021%	9.0%	78.2%
CMA US Equity	Comerica Inc	US	8,755	2.9%	1.3%	1.0%	12.4%	9.0%	1.44	0.056%	10.5%	94.4%
ZION US Equity	Zions Bancorp NA	US	7,308	3.3%	1.0%	0.7%	9.1%	6.0%	1.39	0.195%	11.5%	79.0%
Average			**41,039**	**2.6%**	**1.3%**	**1.0%**	**14.1%**	**11.0%**	**1.19**	**0.043%**	**9.5%**	**66.4%**

Table 6: Characteristics of banking firms – rest of the world – diversified

Rest of the World - Diversified Ticker	Name	Country	Mkt Cap USD	NIM	RoA (pre-tax)	RoA (post-tax)	RoE (pre-tax)	RoE (post-tax)	Equity Beta	1yr Default Probability	Equity Ratio	RWA/ TA
MQG AU Equity	Macquarie Group Ltd	Australia	44,012	1.5%	1.4%	1.0%	16.2%	11.7%	1.24	0.036%	8.3%	41.9%
RY CN Equity	Royal Bank of Canada	Canada	130,375	1.8%	1.2%	0.9%	20.7%	17.4%	0.88	0.007%	5.8%	38.1%
TD CN Equity	Toronto-Dominion Bank/The	Canada	118,039	2.0%	1.0%	0.8%	16.4%	14.3%	0.81	0.011%	6.1%	33.9%
BMO CN Equity	Bank of Montreal	Canada	63,749	1.9%	0.9%	0.7%	15.7%	13.4%	0.96	0.011%	5.9%	39.7%
BNS CN Equity	Bank of Nova Scotia/The	Canada	58,454	1.8%	1.1%	0.9%	18.4%	15.5%	0.94	0.010%	6.1%	40.7%
CM CN Equity	Canadian Imperial Bank of Commerce	Canada	36,688	2.1%	1.0%	0.8%	21.0%	18.0%	0.95	0.009%	4.9%	35.2%
JPM US Equity	JPMorgan Chase & Co	US	393,484	2.3%	1.4%	1.0%	14.9%	11.4%	1.28	0.038%	9.1%	56.6%
BAC US Equity	Bank of America Corp	US	264,853	2.4%	0.8%	0.6%	7.1%	5.6%	1.49	0.068%	10.9%	60.7%
C US Equity	Citigroup Inc	US	87,610	2.8%	1.0%	0.6%	9.5%	6.2%	1.67	0.079%	10.4%	58.7%
Average			**133,029**	**2.1%**	**1.1%**	**0.8%**	**15.5%**	**12.6%**	**1.14**	**0.030%**	**7.5%**	**45.1%**

Table 7: Characteristics of banking firms – EU/UK/Japan – banking

EU/UK/Japan - Banking Ticker	Name	Country	Mkt Cap USD	NIM	RoA (pre-tax)	RoA (post-tax)	RoE (pre-tax)	RoE (post-tax)	Equity Beta	1yr Default Probability	Equity Ratio	RWA/ TA
EBS AV Equity	Erste Group Bank AG	Austria	13,040	2.5%	0.6%	0.3%	7.4%	4.8%	1.47	0.153%	7.8%	50.1%
RBI AV Equity	Raiffeisen Bank International AG	Austria	5,391	2.7%	0.9%	0.6%	10.4%	6.9%	1.46	0.203%	8.2%	58.6%
KBC BB Equity	KBC Group NV	Belgium	26,846	1.7%	0.9%	0.7%	13.4%	8.9%	1.57	0.153%	6.4%	35.0%
FBAVP BB Equity	BNP Paribas Fortis SA	Belgium	18,404	1.9%	0.8%	0.5%	8.9%	7.2%	n/a	0.140%	8.3%	43.2%
DANSKE DC Equity	Danske Bank A/S	Denmark	16,976	1.1%	0.4%	0.3%	8.7%	6.7%	1.05	0.076%	4.3%	23.5%
NDA FH Equity	Nordea Bank Abp	Finland	39,039	1.0%	0.6%	0.5%	12.7%	10.1%	1.06	0.055%	5.1%	25.6%
CBK GR Equity	Commerzbank AG	Germany	11,853	1.1%	0.1%	0.0%	1.9%	1.7%	1.34	0.426%	5.2%	36.0%
ISP IM Equity	Intesa Sanpaolo SpA	Italy	42,211	1.4%	0.3%	0.2%	4.3%	3.5%	1.42	0.160%	7.2%	41.3%
UCG IM Equity	UniCredit SpA	Italy	27,511	1.5%	-0.2%	-0.2%	-2.8%	-2.7%	1.66	0.316%	6.5%	44.6%
8309 JP Equity	Sumitomo Mitsui Trust Holdings Inc	Japan	12,858	0.7%	0.5%	0.3%	10.0%	7.4%	1.34	0.073%	5.3%	42.2%
7182 JP Equity	Japan Post Bank Co Ltd	Japan	32,271	0.8%	0.2%	0.2%	4.7%	3.1%	0.89	0.016%	5.2%	16.1%
INGA NA Equity	ING Groep NV	Netherlands	44,145	1.4%	0.6%	0.4%	10.6%	7.3%	1.64	0.110%	5.2%	31.0%
ABN NA Equity	ABN AMRO Bank NV	Netherlands	12,425	1.6%	0.5%	0.3%	10.3%	7.7%	1.19	0.088%	4.3%	28.6%
SEBA SS Equity	Skandinaviska Enskilda Banken AB	Sweden	24,341	1.0%	0.8%	0.6%	14.8%	11.7%	1.15	0.039%	5.2%	25.6%
SHBA SS Equity	Svenska Handelsbanken AB	Sweden	19,981	1.2%	0.7%	0.6%	15.6%	12.3%	0.99	0.020%	4.7%	21.3%
SWEDA SS Equity	Swedbank AB	Sweden	19,119	1.3%	1.0%	0.8%	16.8%	12.9%	1.00	0.042%	5.8%	24.6%
LLOY LN Equity	Lloyds Banking Group PLC	UK	36,966	1.4%	0.3%	0.2%	4.7%	2.7%	1.15	0.142%	5.4%	28.5%
Average			**23,728**	**1.4%**	**0.5%**	**0.4%**	**9.0%**	**6.6%**	**1.27**	**0.130%**	**5.9%**	**33.9%**

Table 8: Characteristics of banking firms – EU/UK/Japan – diversified

EU/UK/Japan - Diversified Ticker	Name	Country	Mkt Cap USD	NIM	RoA (pre-tax)	RoA (post-tax)	RoE (pre-tax)	RoE (post-tax)	Equity Beta	1yr Default Probability	Equity Ratio	RWA/ TA
BNP FP Equity	BNP Paribas SA	France	70,351	1.4%	0.5%	0.3%	10.2%	7.5%	1.53	0.103%	4.8%	30.3%
ACA FP Equity	Credit Agricole SA	France	31,838	1.0%	0.2%	0.1%	6.1%	3.4%	1.61	0.307%	3.6%	19.4%
GLE FP Equity	Societe Generale SA	France	20,148	1.1%	0.4%	0.2%	7.9%	4.6%	1.76	0.199%	4.7%	27.2%
DBK GR Equity	Deutsche Bank AG	Germany	23,623	1.7%	0.1%	0.0%	2.1%	-0.3%	1.24	0.158%	3.9%	22.3%
8306 JP Equity	Mitsubishi UFJ Financial Group Inc	Japan	82,165	1.0%	0.5%	0.3%	8.2%	6.5%	1.39	0.056%	5.5%	38.4%
8316 JP Equity	Sumitomo Mitsui Financial Group Inc	Japan	54,983	1.1%	0.6%	0.4%	10.8%	8.6%	1.31	0.046%	5.4%	36.0%
8411 JP Equity	Mizuho Financial Group Inc	Japan	35,903	0.7%	0.4%	0.3%	8.7%	8.3%	1.09	0.047%	4.4%	32.2%
HSBA LN Equity	HSBC Holdings PLC	UK	124,581	1.4%	0.7%	0.5%	9.4%	6.5%	1.02	0.034%	7.2%	39.0%
NWG LN Equity	NatWest Group PLC	UK	31,397	1.6%	0.0%	-0.1%	-0.1%	-2.9%	1.24	0.131%	5.8%	27.8%
BARC LN Equity	Barclays PLC	UK	30,437	1.3%	0.3%	0.1%	5.7%	2.7%	1.35	0.131%	5.0%	27.5%
STAN LN Equity	Standard Chartered PLC	UK	21,591	1.8%	0.6%	0.4%	8.1%	4.7%	1.39	0.084%	7.1%	43.6%
Average			47,911	1.3%	0.4%	0.2%	7.0%	4.5%	1.36	0.118%	5.2%	31.2%

Source: Bloomberg

B. Equity betas and gearing for the peer firms

Table 9: Equity beta and gearing – rest of the world – banking (peer group)

| Rest of the World - Banking | | Country | Mkt Cap | Equity | 5 years to Dec 2016 | | 5 years to Dec 2021 | | Average |
Ticker	Name		USD	Ratio	Weekly	Monthly	Weekly	Monthly	Beta
CBA AU Equity	Commonwealth Bank of Australia	Australia	118,027	6.3%	1.04	1.04	1.03	1.02	1.03
NAB AU Equity	National Australia Bank Ltd	Australia	64,599	6.1%	1.22	1.29	1.20	1.29	1.25
WBC AU Equity	Westpac Banking Corp	Australia	55,873	6.9%	1.32	1.41	1.17	1.14	1.26
ANZ AU Equity	ANZ Group Holdings Ltd	Australia	48,456	6.4%	1.32	1.37	1.27	1.27	1.31
NA CN Equity	National Bank of Canada	Canada	22,706	5.2%	1.01	1.10	1.11	1.11	1.08
2388 HK Equity	BOC Hong Kong Holdings Ltd	Hong Kong	36,048	8.8%	0.88	1.00	0.81	1.11	0.95
11 HK Equity	Hang Seng Bank Ltd	Hong Kong	31,808	9.7%	0.64	0.69	0.69	0.81	0.71
LUMI IT Equity	Bank Leumi Le-Israel BM	Israel	12,859	7.0%	1.04	1.27	0.83	0.91	1.01
POLI IT Equity	Bank Hapoalim BM	Israel	12,050	7.5%	1.02	0.98	0.85	1.01	0.96
DNB NO Equity	DNB Bank ASA	Norway	30,711	7.1%	1.16	1.32	1.22	1.29	1.25
DBS SP Equity	DBS Group Holdings Ltd	Singapore	65,159	9.6%	1.22	1.37	1.27	1.39	1.31
OCBC SP Equity	Oversea-Chinese Banking Corp Ltd	Singapore	40,888	9.5%	1.10	1.06	1.13	1.17	1.11
UOB SP Equity	United Overseas Bank Ltd	Singapore	38,395	9.8%	1.16	1.25	1.18	1.18	1.19
WFC US Equity	Wells Fargo & Co	US	158,298	10.4%	1.14	0.98	1.27	1.30	1.18
USB US Equity	US Bancorp	US	66,766	10.6%	1.07	0.84	1.14	1.09	1.04
PNC US Equity	PNC Financial Services Group Inc/The	US	63,334	12.7%	1.11	0.89	1.23	1.33	1.14
TFC US Equity	Truist Financial Corp	US	57,093	12.5%	1.12	1.07	1.34	1.27	1.20
MTB US Equity	M&T Bank Corp	US	24,557	12.6%	0.99	0.76	1.13	1.08	0.99
FITB US Equity	Fifth Third Bancorp	US	22,422	11.5%	1.22	1.27	1.65	1.45	1.40
HBAN US Equity	Huntington Bancshares Inc/OH	US	20,347	10.1%	1.20	1.22	1.33	1.30	1.26
RF US Equity	Regions Financial Corp	US	20,148	12.9%	1.50	1.47	1.52	1.45	1.48
KEY US Equity	KeyCorp	US	16,259	11.2%	1.27	1.10	1.60	1.47	1.36
FHN US Equity	First Horizon Corp	US	13,159	10.6%	1.29	1.19	1.48	1.43	1.35
FCNCA US Equity	First Citizens BancShares Inc/NC	US	11,001	9.0%	n/a	n/a	n/a	n/a	n/a
CMA US Equity	Comerica Inc	US	8,755	10.5%	1.37	1.43	1.44	1.51	1.44
ZION US Equity	Zions Bancorp NA	US	7,308	11.5%	1.45	1.45	1.25	1.41	1.39
Average				9.5%					1.19

Table 10: Equity beta and gearing – rest of the world – diversified

| Rest of the World - Diversified | | Country | Mkt Cap | Equity | 5 years to Dec 2016 | | 5 years to Dec 2021 | | Average |
Ticker	Name		USD	Ratio	Weekly	Monthly	Weekly	Monthly	Beta
MQG AU Equity	Macquarie Group Ltd	Australia	44,012	8.3%	1.19	0.92	1.38	1.46	1.24
RY CN Equity	Royal Bank of Canada	Canada	130,375	5.8%	0.87	1.00	0.84	0.79	0.88
TD CN Equity	Toronto-Dominion Bank/The	Canada	118,039	6.1%	0.88	0.68	0.81	0.87	0.81
BMO CN Equity	Bank of Montreal	Canada	63,749	5.9%	0.83	0.79	1.05	1.17	0.96
BNS CN Equity	Bank of Nova Scotia/The	Canada	58,454	6.1%	0.98	1.13	0.80	0.87	0.94
CM CN Equity	Canadian Imperial Bank of Commerce	Canada	36,688	4.9%	0.83	0.98	0.95	1.03	0.95
JPM US Equity	JPMorgan Chase & Co	US	393,484	9.1%	1.33	1.53	1.16	1.11	1.28
BAC US Equity	Bank of America Corp	US	264,853	10.9%	1.57	1.60	1.32	1.49	1.49
C US Equity	Citigroup Inc	US	87,610	10.4%	1.59	1.75	1.53	1.79	1.67
Average				7.5%					1.14

Table 11: Equity beta and gearing – EU/UK/Japan – banking

| EU/UK/Japan - Banking | | Country | Mkt Cap | Equity | 5 years to Dec 2016 | | 5 years to Dec 2021 | | Average |
Ticker	Name		USD	Ratio	Weekly	Monthly	Weekly	Monthly	Beta
EBS AV Equity	Erste Group Bank AG	Austria	13,040	7.8%	1.55	1.63	1.29	1.40	1.47
RBI AV Equity	Raiffeisen Bank International AG	Austria	5,391	8.2%	1.63	1.76	1.26	1.17	1.46
KBC BB Equity	KBC Group NV	Belgium	26,846	6.4%	1.56	1.98	1.28	1.44	1.57
FBAVP BB Equity	BNP Paribas Fortis SA	Belgium	18,404	8.3%	n/a	n/a	n/a	n/a	n/a
DANSKE DC Equi	Danske Bank A/S	Denmark	16,976	4.3%	1.01	1.15	0.91	1.11	1.05
NDA FH Equity	Nordea Bank Abp	Finland	39,039	5.1%	0.89	0.93	1.27	1.15	1.06
CBK GR Equity	Commerzbank AG	Germany	11,853	5.2%	1.20	1.30	1.37	1.49	1.34
ISP IM Equity	Intesa Sanpaolo SpA	Italy	42,211	7.2%	1.38	1.54	1.24	1.53	1.42
UCG IM Equity	UniCredit SpA	Italy	27,511	6.5%	1.70	1.86	1.43	1.65	1.66
8309 JP Equity	Sumitomo Mitsui Trust Holdings Inc	Japan	12,858	5.3%	1.50	1.63	1.13	1.09	1.34
7182 JP Equity	Japan Post Bank Co Ltd	Japan	32,271	5.2%	1.01	1.41	0.62	0.53	0.89
INGA NA Equity	ING Groep NV	Netherlands	44,145	5.2%	1.45	1.45	1.53	2.12	1.64
ABN NA Equity	ABN AMRO Bank NV	Netherlands	12,425	4.3%	0.82	0.96	1.44	1.52	1.19
SEBA SS Equity	Skandinaviska Enskilda Banken AB	Sweden	24,341	5.2%	1.16	1.16	1.15	1.16	1.15
SHBA SS Equity	Svenska Handelsbanken AB	Sweden	19,981	4.7%	1.05	1.09	0.97	0.83	0.99
SWEDA SS Equity	Swedbank AB	Sweden	19,119	5.8%	1.11	1.03	0.92	0.94	1.00
LLOY LN Equity	Lloyds Banking Group PLC	UK	36,966	5.4%	0.95	0.94	1.17	1.56	1.15
Average				5.9%					1.27

Table 12: Equity beta and gearing – EU/UK/Japan – diversified

| EU/UK/Japan - Diversified | | Country | Mkt Cap | Equity | 5 years to Dec 2016 | | 5 years to Dec 2021 | | Average |
Ticker	Name		USD	Ratio	Weekly	Monthly	Weekly	Monthly	Beta
BNP FP Equity	BNP Paribas SA	France	70,351	4.8%	1.34	1.46	1.43	1.88	1.53
ACA FP Equity	Credit Agricole SA	France	31,838	3.6%	1.43	1.73	1.40	1.87	1.61
GLE FP Equity	Societe Generale SA	France	20,148	4.7%	1.69	1.90	1.56	1.91	1.76
DBK GR Equity	Deutsche Bank AG	Germany	23,623	3.9%	1.33	1.28	1.21	1.15	1.24
8306 JP Equity	Mitsubishi UFJ Financial Group Inc	Japan	82,165	5.5%	1.38	1.72	1.18	1.29	1.39
8316 JP Equity	Sumitomo Mitsui Financial Group Inc	Japan	54,983	5.4%	1.33	1.58	1.10	1.24	1.31
8411 JP Equity	Mizuho Financial Group Inc	Japan	35,903	4.4%	1.08	1.37	0.98	0.92	1.09
HSBA LN Equity	HSBC Holdings PLC	UK	124,581	7.2%	1.12	1.18	0.82	0.94	1.02
NWG LN Equity	NatWest Group PLC	UK	31,397	5.8%	1.05	1.02	1.22	1.66	1.24
BARC LN Equity	Barclays PLC	UK	30,437	5.0%	1.29	1.06	1.44	1.59	1.35
STAN LN Equity	Standard Chartered PLC	UK	21,591	7.1%	1.34	1.52	1.29	1.41	1.39
Average				5.2%					1.36

Source: Bloomberg

C.   Intangible assets

C.1   Intangible assets and "goodwill"

72.   A substantial literature in financial economics has developed to analyse the growing importance of intangible assets, which are the outcome of previous investments in organisation capability, internal processes and staff, but are generally not reported as assets in financial accounts. The exception is where assets have been traded and the value above book value has been reflected in an asset termed "goodwill".[41] The importance of intangible assets to assessments of firm performance using accounting data was summarised by Eisfeldt, Kim and Papanikolaou (2021):[42]

Intangible assets have become an important and fast-growing part of firms' capital stocks. Corrado, Hulten, and Sichel (2009) estimated intangibles to be about one third of the US non-residential capital stock in 2003,[43] while, using more recent data, Eisfeldt and Papanikolaou (2013b),[44] Falato, Kadyrzhanova, and Sim (2013),[45] Belo, Gala, Salomao, and Vitorino (2019),[46] and Ewens, Peters, and Wang (2020)[47] all estimate the contribution of intangible capital to overall corporate capital stocks to be around one half. In addition, these same studies report much higher investment rates for intangible assets relative to physical assets. The majority of intangible assets are created by investments in employee, brand, and knowledge capital that is expensed, and thus do not appear on corporate balance sheets. This has resulted in a growing mis-measurement of book assets.

73.   The intangible assets literature suggests the true value of assets employed by firms is likely to be materially higher than those recognised for accounting purposes. Hence, to the extent that returns are compared to an estimate of the cost of equity, an appropriate test requires an allowance for omitted intangible assets.

---

[41]   Hall, Robert E., (2001), "The stock market and capital accumulation," *American Economic Review*, Vol. 91, pp.1185-1202.

[42]   Eisfeldt, Andrea, Edward T. Kim and Dimitris Papanikolaou (29, April, 2021), "Intangible Value", UCLA Anderson School of Management, Kellogg School of Management and NBER. To estimate the value of intangibles assets, Eisfeldt, Kim and Papanikolaou (2021, p.2) applied the same approach to measure the value of intangibles as Eisfeldt and Papanikolaou (2014).

[43]   Corrado, Carol, Charles Hulten, and Daniel Sichel. (2009), "Intangible capital and US economic growth," *Review of income and wealth*, Vol. 55(3), pp.661–685.

[44]   Eisfeldt, Andrea L., and Dimitris Papanikolaou, (May, 2014), "The value and ownership of intangible capital," *American Economic Review*, Vol.104(5), pp.189–94.

[45]   Antonio Falato, Dalida Kadyrzhanova, and Jae Sim, (September, 2013), Rising intangible capital, shrinking debt capacity, and the US corporate savings glut. Technical report, FEDS Working Paper, No. 2013-67.

[46]   Belo, Frederico, Vito Gala, Juliana Salomao, and Maria Ana Vitorino, (2019), "Decomposing firm value," Technical report, National Bureau of Economic Research.

[47]   Ewens, Michael, Ryan H Peters, and Sean Wang, (2020), "Measuring intangible capital with market prices," Technical report, URL https://papers.ssrn.com/sol3/ papers.cfm?abstract_id=3287437. (Forthcoming in *Management Science*).

74.   In their study covering the period 1975 to 2011, Peters and Taylor (2017) found that on average:[48]

   the mean (median) intangibles intensity is 43% (45%), so almost half of the capital is intangible in our typical firm year

75.   Figure 6 illustrates the growth in importance of intangible assets. Peters and Taylor, found that by 2015 intangibles comprised approximately 50 per cent of the total capital stock of consumer industries, and much higher proportions of high-tech and healthcare (75 per cent to 85 per cent).

Figure 6: Intangible asset intensity over time (US)
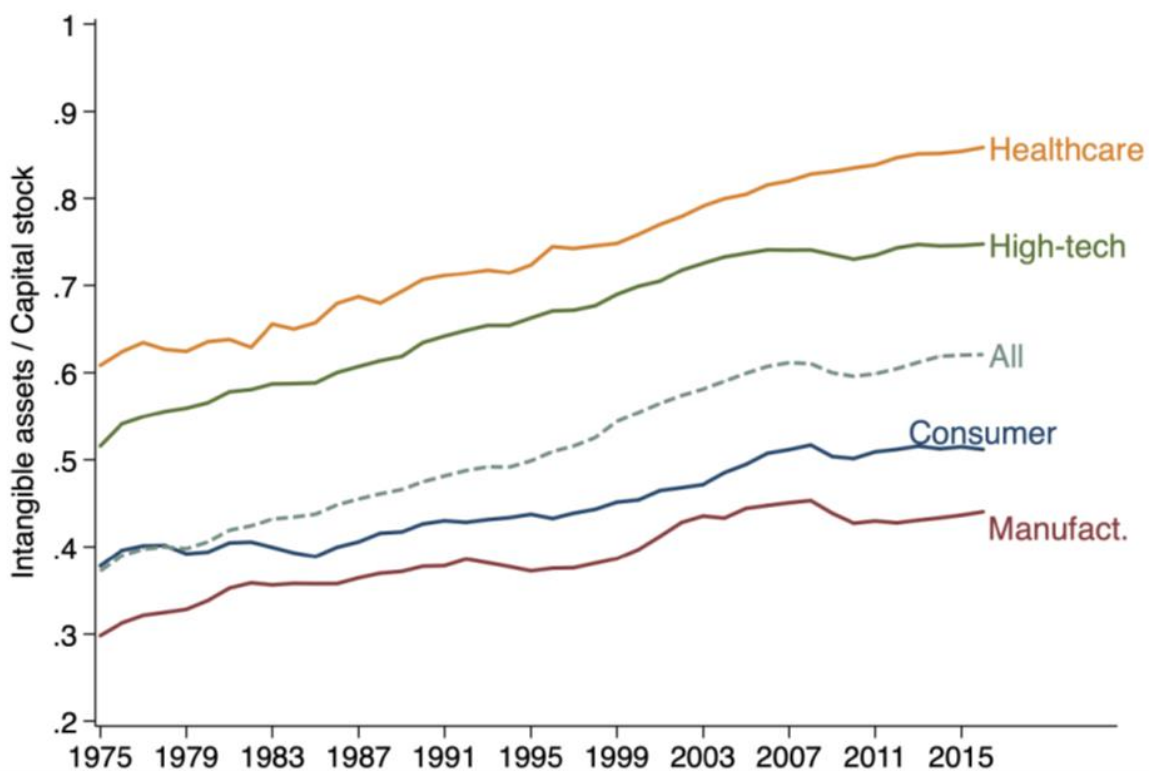
Source: Peters and Taylor (2017), p.259

76.   Subsequently Ewens, Peters and Wang (2019) used 1,521 acquisition purchase price allocations to estimate intangible capital stocks.[49] They found that 75 per cent of intangibles comes from organisational capital, and when intangibles were properly capitalised the average Market-to-Book (Price-to-Book) ratio observed for these acquisitions reduced from 1.74 to 1.0. In other words, their research led them to conclude

---

48   Peters, Ryan H., and Lucian A. Taylor, (2017), "Intangible capital and the investment-q relation", *Journal of Financial Economics*, Vol. 123, p.258. Their study defined "intangible capital intensity" as the intangible assets of firms (including unbooked intangible assets) as a proportion of the total of the physical and intangible assets.

49   Ewens, Michael, Ryan H. Peters and Sean Wang (June, 2019), *Acquisition prices and the measurement of intangible capital*, National Bureau of Economic Research, Working Paper 25960. Forthcoming in *Management Science*.

that what was been booked to accounts as "goodwill" in the course of acquisitions was actually the purchase price of intangibles, the most important of which is organisational capability.

77.   Figure 7 below shows how after adjusting the value of acquired businesses for the capitalised value of intangibles, the Price-to-Book ratio based on purchase prices reverted to close to unity. This finding supports the proposition that the "goodwill" purchased in acquisitions represents intangible capital (see below).

Figure 7: Market-to-Book (Price-to-Book) ratios 1997-2017, Impact of including intangibles
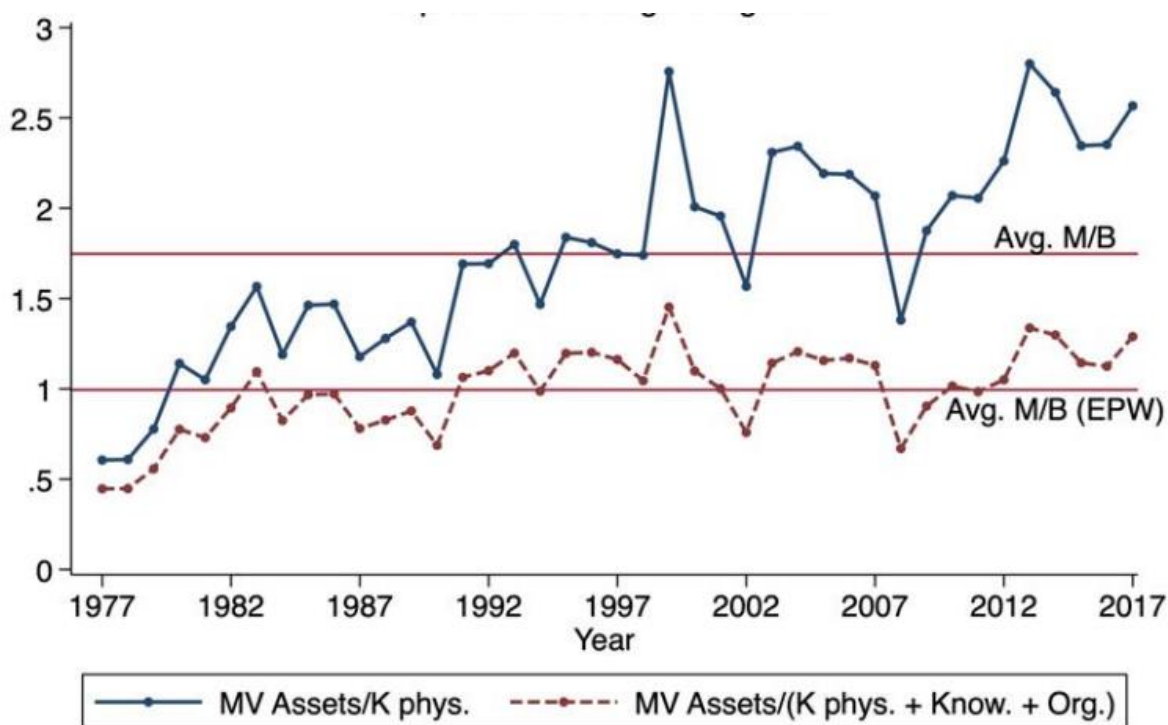
Source: Ewen, Peters and Wang (2019), p.44.

C.2   Intangible assets in banking

78.   In tandem with growing general awareness of the importance of unbooked intangibles, the bank-specific literature is rich with studies that recognise these assets and adjust their analysis accordingly. In the midst of the Euro Zone Sovereign Debt Crisis that followed the Global Financial Crisis researchers Charles W. Calomiris and Doron Nissim (February, 2012), referred to the importance of intangible assets in banking as follows:[50]

> *Intangible assets (goodwill, servicing rights, favourable leasehold rights, the values of different types of customer relationships, etc.) are generally recognized only when acquired: under GAAP, most internally developed intangibles are not reported on the*

---

[50]   Calomiris, Charles W. and Doron Nissim, (February, 2012), "Crisis-related shifts in the market valuation of banking activities," *National Bureau of Economic Research Working Paper Series*, Working Paper 17868, p.10.

balance sheet. As a result, the book value of intangible assets is likely to be a poor proxy for their economic value.

79. In a later study by BIS, Bogdanova, Fender and Takats (2018) explained that because banks are more likely than non-financial corporations to reflect market values in the accounting values of assets, liabilities and instruments held, this provides an opportunity to observe the value of intangibles in this industry:[51]

For banks and other financial firms, therefore, combining book- and market-based valuation metrics can provide useful information. In particular, price-to-book ratios (PBRs) above one – which have tended to prevail under normal conditions – will tend to be driven by the market value of intangible assets and liabilities, which in turn may be affected by market developments and the competitive environment in ways that are not reflected in their book values.

Changing economic conditions would thus be expected to affect PBRs largely via their effect on intangibles, on both the asset (e.g. Diamond (1984))[52] and liability sides (Gorton and Pennachi (1990))[53] of the balance sheet. For example, if interest rates are low for an extended period, having a stable base of core deposits may be less valuable to banks, to the extent that they are unable to reprice deposit rates in line with rates earned on the asset side of their balance sheets (BIS(2016))[54]. Similarly, loan relationships may lose value if the economic environment implies a lower ability for banks to benefit from the cross-selling of services.

80. We note in particular the reference to "normal conditions" being periods in which the Price/Book ratio of banks is "above one," which supports our removal from the sample of banks in geographical regions where that ratio has persistently fallen short of unity.

C.3   Implications for studies of bank profitability performance

81. The importance of unbooked intangibles suggests that if a measure of accounting return on investment is to be compared to an estimate of the cost of equity, an appropriate test would need:

   a. an allowance for unbooked intangible assets, or

   b. alternatively, if such an adjustment is not made, then it must be recognised that the likely presence of unbooked intangibles – and their omission from the book value of equity – would result in a higher observed return on equity than the estimated required cost of equity. This is due to firms in competitive markets being able to earn

---

[51]   Bogdanova, Bilyana, Ingo Fender and Elod Takats (March, 2018), "The ABCs of bank PBRs", *BIS Quarterly Review*, p.83.

[52]   Diamond, D. (1984), "Financial intermediation and delegated monitoring," *Review of Economic Studies*, Vol. 51, No. 3, pp.393-414.

[53]   Gorton, G. and G. Pennachi (1990), "Financial intermediaries and liquidity creation," *Journal of Finance*, Vol. 45, No.1, pp.49-71.

[54]   Bank for International Settlements (June, 2016), *86th Annual Report*, Chapter VI.

a return on all the assets that a new entrant would need to reproduce, regardless of whether they are formally reported in firms' balance sheets.

D. Demographics, economic growth and banking

82. In this Appendix we address:

    a. the studies that suggest that key country-level demographic (population), economic (GDP per capita) and financial (government bond rates) factors can have a material effect on banking performance, and

    b. show that, on these factors, New Zealand is far more similar to the countries from which our 26 bank peer comparator group is drawn than it is to the EU/UK/Japan group of countries.

D.1 Effects of macroeconomics on banking performance

83. Linkages between macroeconomic characteristics, banking sector performance and banking crises have been observed and studied for decades. The Japanese banking crisis that extended from the early 1990s to the mid-2000s demonstrated the long-term effects of an aging population on banking sector performance and economic growth.[55] Among developed countries, the decline in growth of population and increase in the proportion of the population aged over 65 was first experienced in Japan, where the housing price bubble burst and subsequently banks collapsed in the wake of a deflationary spiral. Growth in GDP per capita ceased and has not recovered over the past 25 years.

84. While most of Europe's demographic experience has not been as sharp as Japan's, in Western Europe, which two decades ago had high absolute levels of GDP per capita, some large countries (Germany and Italy) were experiencing a similar degree of population aging. Even prior to the Global Financial Crisis (GFC), population growth in countries like Japan, Italy and Germany was virtually zero.

85. Historically, it has been found that financial crises on average lowered the trend growth rate of GDP by two percentage points, with a "deep crisis" reducing the GDP trend growth rate by four percentage points.[56] Originating in the US, during 2008-09 the GFC started with the bursting of the US housing market bubble and was transmitted around the world through global financial market linkages. The US and many other countries fell into deep recessions. In the US during 2008, a large number of weak or failing banks were taken over by stronger banks, but over time the banking system returned to stability owing to relatively strong demographics and economic growth. Canada, like New Zealand and Australia, were also less affected in the longer term.

86. The situation was different in the European Union, which had poorer demographic indicators, and soon after the GFC was hit by the Euro Zone Sovereign Debt Crisis of 2010-12. The effects were differentiated, with most high GDP per capita western

---

[55] For example, see Masahiro Kawai and Peter Morgan, (July, 2013), *Banking Crises and "Japanization": Origins and Implications*, ADBI Working Paper Series, No.430, Asian Development Bank Institute.

[56] Furceri, D. and A. Mourougane (2009), *The Effect of Financial Crises on Potential Output: New Empirical Evidence from OECD Countries*, OECD Economics Department Working Papers, No.699, Paris, OECD.

European Union (EU) Euro currency countries with poor demographic fundamentals being most affected, and northern and eastern EU countries with growing GDP per capita (like Poland) faring much better. As noted by the RBNZ's former Governor, Alan Bollard:[57]

The [Euro Zone Sovereign Debt] crisis also refocused public and market attention on the fiscal cost of aging populations. The projected sharply increasing cost of state-funded health care and income support for retirees, at the same time as a reducing working population, had been recognised for some time… Five years after the first tremors in 2007, the world looks rather different. Interest rates are much lower. Risk pricing is much more sharply differentiated. The threat of deflation is now real for several countries, and inflation is very low for others. In most advanced countries since the [GFC] crisis, real per capita GDP growth has been insipid at best… Although weak banks appear to be much less of a problem in Australasia, impaired bank balance sheets in the Northern Hemisphere are casting a long economic shadow.

87.   As Europe's financial hub as well as being financially inter-connected with the US, the UK banking sector and economy were affected by both crises. Subsequently, the UK voted to leave the EU, which created additional uncertainty for the banking sector. "Brexit" did not just create risks for the UK banking sector, but also for the whole EU, which relied on the UK banking sector as a financial hub. To this end, the European Central Bank (ECB) "identified 'Brexit-related risk' as one of the key challenges for supervised entities, including it among its supervisory priorities."[58]

88.   The banking literature often references the effects of low interest rates on the banking sector.[59] Writing in the Reserve Bank of Australia's *Bulletin*, Hack and Nicholls identified the Net Interest Margin (NIM) as a mechanism by which the level of interest rates will affect bank profitability:[60]

If a decline in policy interest rates results in banks' funding costs declining by less than their lending rates, then NIMs will narrow and bank profits will decline (all else being equal).

89.   Hack and Nicholls conclude that low interest rates have a differential effect if they are prolonged:[61]

Overall, the available evidence indicates that lower interest rates typically have a negligible to modest negative effect on bank profitability in the short run. This is at least partly because of the positive effect that lower interest rates have on economic growth

---

[57]   Bollard, Alan and Tim Ng, (9 August, 2012), *Learnings from the Global Financial Crisis*, A speech delivered to Australian National University in Canberra, pp.9-11.

[58]   Cucunelli, Doriana, Paola Schwizer and Maria Gaia Soana (2021*)*, "Brexit and the Banking Sector: The Stock Market Reaction of UK and European Banks"*, International Journal of Business and Management*, Vol.16, No.4, p.28.

[59]   Hack, Mark, and Sam Nicholls (June, 2021), "Low Interest Rates and Bank Profitability – The International Experience," *Bulletin*, Reserve Bank of Australia, pp.77-85.

[60]   Hack, Mark, and Sam Nicholls (June, 2021), "Low Interest Rates and Bank Profitability – The International Experience," *Bulletin*, Reserve Bank of Australia, pp.78.

[61]   Hack, Mark, and Sam Nicholls (June, 2021), "Low Interest Rates and Bank Profitability – The International Experience," *Bulletin*, Reserve Bank of Australia, pp.83.

and banks' asset quality, which offsets the negative effects of lower interest rates on NIMs. However, there is evidence that bank profitability falls further when interest rates are at low levels and remain low for a prolonged period.

D.2   New Zealand's characteristics vs countries in the broader group of banks

90.   In Table 13 we find that in terms of the age of its population, measured as per cent of the population aged over 65, during the 2010-2021 period New Zealand (14.5 per cent) was well within the bounds of the RoW countries. In contrast, we find that all of the EU/UK/Japan countries had a higher percentage of over 65s (17.8 per cent in the case of the UK to 27.1 per cent in the case of Japan). Two of the largest EU economies, Germany and Italy, were quite close to Japan on this indicator. A comparison with the 2000-2007 period shows that aging of the population has progressed in every country.

91.   The situation is roughly similar if we look at population growth over the 2010-21 period, with New Zealand near the top of the RoW pack, and the only exceptions being Sweden and Hong Kong – i.e., Sweden had a higher population growth than some RoW countries and Hong Kong's population growth was lower than some EU/UK/Japan countries. In most countries, compared with the 2000 to 2007 period, the rate of population growth was lower.

Table 13: New Zealand vs "Rest of the World" – Population dynamics

Country Name	Population Over 65			Country Name	Population Growth		
	2000-07	2008-09	2010-21		2000-07	2008-09	2010-21
Singapore	6.8%	7.0%	9.9%	Israel	2.0%	2.1%	1.9%
Israel	10.1%	10.0%	11.0%	New Zealand	1.2%	0.9%	1.4%
New Zealand	11.9%	12.6%	14.5%	Australia	1.3%	2.0%	1.4%
United States	12.3%	12.8%	14.7%	Canada	1.0%	1.1%	1.1%
Australia	12.7%	13.3%	15.0%	Sweden	0.4%	0.8%	0.9%
Hong Kong SAR, China	12.0%	13.0%	16.0%	Norway	0.7%	1.3%	0.9%
Canada	12.9%	13.7%	16.2%	Singapore	1.8%	4.2%	0.7%
Norway	14.8%	14.7%	16.5%	United States	1.0%	0.9%	0.7%
United Kingdom	15.8%	16.1%	17.8%	United Kingdom	0.6%	0.8%	0.6%
Netherlands	14.0%	15.0%	17.9%	Belgium	0.5%	0.8%	0.6%
Belgium	17.0%	17.1%	18.3%	Austria	0.5%	0.3%	0.6%
Austria	15.9%	17.4%	18.5%	Hong Kong SAR, China	0.6%	0.4%	0.5%
Denmark	15.0%	15.9%	18.7%	Netherlands	0.4%	0.5%	0.5%
France	16.4%	16.8%	19.2%	Denmark	0.3%	0.6%	0.5%
Sweden	17.2%	17.8%	19.5%	France	0.7%	0.5%	0.4%
Finland	15.6%	16.8%	20.3%	Finland	0.3%	0.5%	0.3%
Germany	18.2%	20.3%	21.1%	Germany	0.0%	-0.2%	0.1%
Italy	19.3%	20.3%	22.1%	Italy	0.3%	0.6%	0.0%
Japan	19.8%	22.9%	27.1%	Japan	0.1%	0.0%	-0.2%

Source: World Bank and Incenta analysis

92.   Table 14 displays growth of GDP per capital and inflation, which are two key economic performance metrics. In both cases we again find that the RoW countries in general, and

New Zealand in particular, are within or close to the group of RoW countries. Only Singapore (6.4 per cent) and Israel (5.4 per cent) had higher growth of GDP per capita than New Zealand (5.3 per cent) between 2010 and 2021. Apart from Sweden (2.6 per cent), the rest of the EU/UK/Japan group returned a GDP per capita performance at or below (often far below) 2 per cent.

93.   With respect to inflation, New Zealand (1.8 per cent) was at the bottom of RoW group (only Singapore having lower inflation at 1.6 per cent) during 2010-21, but still higher than the EU/UK/Japan group (0.4 per cent to 1.8 per cent).

Table 14: New Zealand vs "Rest of the World" – GDP growth per capita and inflation

Country Name	Growth of GDP per capita			Country Name	Inflation		
	2000-07	2008-09	2010-21		2000-07	2008-09	2010-21
Singapore	8.0%	-0.6%	6.4%	Hong Kong SAR, China	-0.8%	2.4%	2.9%
Israel	3.5%	5.8%	5.4%	Norway	1.9%	3.0%	2.2%
New Zealand	10.7%	-6.8%	5.3%	Australia	3.2%	3.1%	2.1%
Hong Kong SAR, China	2.6%	0.2%	4.2%	United Kingdom	1.7%	2.7%	2.0%
Australia	9.5%	3.6%	3.5%	United States	2.8%	1.7%	2.0%
United States	4.2%	-0.9%	3.4%	Austria	2.0%	1.9%	1.9%
Sweden	7.6%	-5.9%	2.6%	Canada	2.3%	1.3%	1.8%
Canada	9.2%	-3.9%	2.5%	New Zealand	2.6%	3.0%	1.8%
Germany	6.1%	0.4%	2.0%	Belgium	2.1%	2.2%	1.8%
Norway	11.4%	-1.8%	1.9%	Netherlands	2.2%	1.8%	1.7%
United Kingdom	7.5%	-12.1%	1.7%	Singapore	1.0%	3.6%	1.6%
Denmark	7.6%	0.2%	1.5%	Germany	1.6%	1.5%	1.4%
Belgium	7.7%	0.8%	1.4%	Finland	1.6%	2.0%	1.3%
Finland	8.4%	-0.4%	1.2%	Denmark	2.0%	2.4%	1.2%
Austria	7.5%	1.7%	1.1%	Sweden	1.5%	1.5%	1.2%
Netherlands	8.2%	1.4%	1.0%	Italy	2.3%	2.1%	1.1%
France	7.1%	0.6%	0.6%	France	1.8%	1.5%	1.1%
Japan	-0.1%	7.5%	0.0%	Israel	1.5%	4.0%	1.0%
Italy	7.4%	-0.5%	-0.1%	Japan	-0.3%	0.0%	0.4%

Source: World Bank and Incenta analysis

94.   Average 10-year government bond yields over the period 2011 to 2021 are shown in Table 15.[62] We find that New Zealand's 10-year government bond yield (2.7 per cent) was the highest of any country over the 2013-2021 sub-period for which data were available (for almost all countries). A discussed in the body of this report, New Zealand's risk-free rate over the period 2010 to 2021 was higher than the RoW comparator group, which is also seen in Table 15 (where the RoW group of countries risk-free rate was only 1.7 per cent for the period).

95.   We also see from Table 15 that the EU/UK/Japan group of countries had a materially lower 10-year government bond yield than the RoW comparator group countries (0.4 per cent vs 1.7 per cent). In other words, we can see from these risk free rate averages that,

---

[62]   These were mostly BVAL measures of the 10 year government bond yield averaged over the daily values for each calendar year, which were not available for some countries prior to 2014. Since we needed the longer series for New Zealand we used the GNZGB10 Index in that case.

other things being equal, the required return on investment would be highest in New Zealand (as discussed in section 3.2), but also that the required return in investment would be higher in the RoW countries than in the EU/UK/Japan countries.

Table 15: 10-year Government bond yield - New Zealand vs RoW and EU/UK/Japan

Country	Ave 2013-21	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
New Zealand	2.7%	4.9%	3.7%	4.1%	4.3%	3.4%	2.8%	3.0%	2.7%	1.6%	0.9%	1.9%
Australia	2.4%	4.9%	3.4%	3.7%	3.7%	2.7%	2.3%	2.7%	2.7%	1.5%	0.9%	1.5%
Canada	1.3%	1.8%	1.4%	1.7%	1.6%	0.9%	0.8%	1.4%	2.2%	1.5%	0.6%	1.0%
Hong Kong	1.2%	1.1%	0.5%	0.9%	1.4%	1.2%	1.0%	1.4%	2.1%	1.5%	0.6%	0.8%
Israel	2.0%	4.5%	3.8%	3.8%	2.5%	2.2%	2.2%	1.8%	2.3%	1.0%	0.9%	1.2%
Norway	1.7%	2.8%	2.2%	2.6%	2.5%	1.6%	1.3%	1.6%	1.9%	1.5%	0.8%	1.4%
Singapore	1.5%	0.9%	0.6%	1.0%	1.4%	1.9%	1.6%	1.7%	2.1%	1.8%	0.8%	1.0%
United States	1.5%	1.3%	0.8%	1.2%	1.7%	1.6%	1.4%	1.9%	2.8%	2.0%	0.6%	0.9%
Average RoW	1.7%	2.5%	1.8%	2.1%	2.1%	1.7%	1.5%	1.8%	2.3%	1.5%	0.7%	1.1%
Sweden	0.8%	2.3%	1.6%	2.1%	1.7%	0.8%	0.5%	0.7%	0.7%	0.1%	0.0%	0.3%
Germany	-0.2%			0.8%	0.4%	0.0%	-0.4%	-0.4%	-0.2%	-0.6%	-0.7%	-0.6%
United Kingdom	0.9%	1.7%	0.8%	1.2%	1.7%	1.3%	0.6%	0.6%	1.1%	0.6%	0.1%	0.4%
Denmark	0.5%	2.5%	1.5%	1.6%	1.3%	0.7%	0.4%	0.5%	0.5%	-0.2%	-0.3%	-0.1%
Belgium	0.0%	3.5%	1.8%	1.2%	0.7%	0.1%	-0.3%	-0.2%	0.0%	-0.3%	-0.5%	-0.5%
Finland	0.6%	2.9%	2.0%	1.9%	1.5%	0.7%	0.4%	0.6%	0.7%	0.1%	-0.2%	-0.1%
Austria	0.8%	3.1%	2.4%	2.3%	1.8%	0.8%	0.7%	0.5%	0.6%	0.3%	-0.2%	0.2%
Netherlands	0.1%	2.1%	1.1%	1.1%	0.7%	0.2%	-0.2%	-0.1%	0.1%	-0.4%	-0.5%	-0.4%
France	0.0%			1.1%	0.6%	0.1%	-0.3%	-0.1%	0.0%	-0.4%	-0.5%	-0.5%
Italy	0.8%				1.3%	0.8%	0.5%	0.8%	1.7%	1.0%	0.5%	0.1%
Japan	0.0%	0.4%	0.3%	0.3%	0.2%	0.1%	-0.2%	-0.1%	-0.1%	-0.2%	-0.1%	-0.1%
Average EU/UK/Japan	0.4%	2.6%	1.6%	1.5%	1.2%	0.6%	0.2%	0.3%	0.5%	0.0%	-0.2%	-0.1%
Deltas:												
NZ vs RoW	1.1%	2.5%	1.9%	2.0%	2.2%	1.7%	1.2%	1.2%	0.5%	0.1%	0.2%	0.8%
NZ vs EU/UK/Japan	2.3%	2.3%	2.1%	2.6%	3.1%	2.9%	2.6%	2.7%	2.2%	1.6%	1.1%	2.0%

Source: Bloomberg and Incenta analysis