



# The nature of competition for personal banking services

PUBLIC VERSION

**Prepared for Kiwibank**

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## Contents

Definitions .....	1
Executive Summary .....	2
1 Introduction .....	5
2 Extent of competitive constraint on the largest banks .....	5
2.1 Lack of response to Kiwibank’s 100 bps reduction in the variable rate .....	6
2.2 Regression analysis of the effects of Kiwibank’s rates on the rates of the largest four banks .....	7
3 The ability of small banks to win customers through switching .....	9
3.1 The growth of small banks .....	10
3.2 Whether Kiwibank can attract customers by offering more attractive lending rates .....	12
3.3 The incentive required to switch.....	21
3.4 Concluding remarks .....	21
4 Effect of prudential regulation on competition.....	22
4.1 Prudential regulation has had an asymmetric effect on large vs small lenders.....	23
4.2 Differences in the capital ratio requirements between large and small banks did not reflect differences in loan risk .....	24
4.3 Staged reform of capital requirements .....	25
4.4 Dampening effect on competition .....	25
4.5 This historic example implies a need for more explicit analysis of competition impacts in regulatory options analysis .....	26
Appendix A: Empirical analysis of whether Kiwibank’s rates constrain the rates of the largest four banks .....	27

## Definitions

<b>AML</b>	Anti-Money Laundering
<b>Bps</b>	Basis points
<b>CCCFA</b>	Credit Contracts and Consumer Finance Act
<b>DSIBs</b>	Domestic Systemically Important Banks
<b>FY</b>	Financial Year
<b>IRB</b>	Internal Ratings-Based approach to capital requirements for credit risk
<b>LVR</b>	Loan-to-Value Ratio
<b>OCR</b>	Official Cash Rate
<b>R<sup>2</sup></b>	A statistical measure that shows how well the data fit the regression model
<b>RBNZ</b>	Reserve Bank of New Zealand

## Executive Summary

1. Link Economics has been engaged by Kiwibank to assess submissions made to the Commerce Commission on the Preliminary Issues Paper on the Market Study into Personal Banking Services (the “Preliminary Issues Paper”). Our report considers whether Kiwibank competitively constrains the largest four banks, the extent of switching and whether a lack of switching is limiting competition, and the effect of regulation on competition.

***Empirical analysis suggests that the market structure for home lending is an oligopoly with a competitive fringe that places little constraint on the lending rates of the largest four banks***

2. Several of the large banks’ submissions describe themselves as competing with Kiwibank – for example, one included Kiwibank and the other Australian-owned banks in its description of its closest competitors,<sup>1</sup> another said it competes on a day-to-day basis with both large and small banks,<sup>2</sup> and another expressed the view that all banks compete aggressively with each other.<sup>3</sup> Several of the largest banks expressed a view that there are 5 large banks (that is, including Kiwibank).<sup>4</sup>
3. We sought to test these views using empirical analysis of the home loan interest rates offered by ANZ, ASB, BNZ, Kiwibank, and Westpac, by examining whether the data reveals that the largest 4 banks respond to Kiwibank’s home loan rates. In particular, we:
  - a. Examined whether the large four banks responded when Kiwibank dropped its variable rate by 100 bps for a 12-month period from June 2020, and
  - b. Conducted a regression analysis to assess whether the home loan interest rates of the largest 4 banks statistically significantly respond to Kiwibank’s home loan rates.
4. We found that:
  - a. In mid-June 2020, Kiwibank reduced its variable rate by 100 bps from 4.4% to 3.4%. None of the large 4 banks responded with a cut to their published variable rates: all left their variable rates unchanged. The 100-bps gap between the rates of the large 4 and Kiwibank persisted for more than a year.
  - b. Regression analysis shows that Kiwibank’s home loan rates do not have a statistically significant impact on the rates of ANZ, ASB, or Westpac. The primary drivers of rates for these three banks are the rates of the other large banks and the OCR. While Kiwibank’s rates appear to have some impact on BNZ’s rate, this is limited compared with the more dominant effect of the other large banks rates and the OCR.
5. Our analysis suggests that home lending presently has an oligopolistic market structure where the largest 4 banks face little or no constraint from smaller lenders (where Kiwibank is one of

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<sup>1</sup> ANZ Bank New Zealand Limited (7 September, 2023), *Market Study into Personal Banking Services Preliminary Issues Paper ANZ Bank New Zealand Limited Submission* (“ANZ Submission”), para 50.

<sup>2</sup> ASB (September 2023), *ASB response to the Commerce Commission’s Preliminary Issues paper for the market study into personal banking services* (“ASB submission”), para 9.3.

<sup>3</sup> Westpac New Zealand Limited (7 September, 2023), *Market Study into Personal Banking Services Westpac New Zealand Limited’s Response to the Preliminary Issues Paper* (“Westpac Submission”), para 3.1(b).

<sup>4</sup> ANZ submission para 4, ASB submission para 1.2, and Bank of New Zealand (7 September, 2023), *Bank of New Zealand’s submission on the Commerce Commission’s preliminary issues paper regarding the market study into personal banking services* (“BNZ Submission”), para 1.9.

these small lenders) and that the largest 4 banks respond primarily to each other's pricing and changes in the OCR. Even when a smaller lender acts as a maverick player by dropping lending rates, a lack of switching (presumably as a result of customer inertia and switching costs) means that there is little consumer response.

6. Reducing the barriers that small banks face in competing for customers (such as switching, which we discuss below) would likely force the large 4 banks to compete with smaller banks by responding to their pricing initiatives, bringing the benefit of greater price competition to consumers.

***Low switching rates for Main Bank customer relationships and for home lending constrain competition***

7. Several submissions by the largest banks highlight the growth of Kiwibank and other smaller banks, including observations that Kiwibank reached 1 million customers and that its growth exceeds that of the overall market.<sup>5</sup> What is not apparent from the discussion in those submissions is that this growth is only partially achieved through switching customers from other banks. Switching rates are low for the "Main Bank" customer relationship and for home lending, so growth for small banks is heavily dependent on new-to-system customers (such as youths and immigrants) and secondary bank relationships. Growth by small banks cannot, therefore, be interpreted as contestability of the overall market, but rather seems to reflect small banks focussing on customer niches that do not already have a relationship with a bank, and specific products that can be switched without changing the Main Bank relationship.
8. Submissions also included views from a large bank that any perception that switching rates are low could simply reflect high customer satisfaction,<sup>6</sup> and that customers are well-placed to switch through the presence of multi-banking relationships.<sup>7</sup> Smaller banks and others expressed concerns that customer inertia and difficulties in switching are holding back switching levels. We note that the Commission intends to conduct a consumer survey, which may help test the varying hypotheses on why customers do or don't switch. However, to shed further light on whether customers switch in response to more attractive pricing by small banks, we explored what the data reveals by comparing the share of new loans and refinanced loans (switches) with interest rates. We find that Kiwibank has a limited ability to gain new or refinanced home loans through offering favourable interest rates. Our empirical analysis shows that if a large bank and a small bank have an identical rate, the large bank will win twice as many new home loans as the small bank.
9. LINZ data on mortgage registrations shows that small banks struggle to increase their share of new home loans, with small lenders' shares of new purchase home loans typically reflecting their overall share of home lending. The data also shows that home loan holders who do switch (through refinancing) are more likely than new purchase borrowers to consider small banks. However, because the number of borrowers choosing to switch each year is low, refinance customers provide only a very limited opportunity for small banks to grow.
10. Our findings that small banks face significant challenges in enticing customers to switch indicate that customer education/awareness campaigns and improvements to the switching

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<sup>5</sup> ASB submission at paras 9.13 and 9.17, BNZ submission at para 2.6.

<sup>6</sup> BNZ submission at para 2.19, and accompanying report by Deloitte Access Economics.

<sup>7</sup> Westpac submission at para 4.

process (including changes to the way that AML and CCCFA requirements are imposed and implemented) could contribute significantly towards strengthening competition.

***The effects of disproportionate regulation on market outcomes show a critical need to consider how competition is considered in future regulatory decisions and reviews***

11. A number of submissions point out that the regulatory environment shapes market outcomes, including RBNZ prudential regulations.<sup>8</sup> What does not come through sharply in some of these submissions is the historical significance of the impact that regulation has had on competition in the banking environment, especially for home-lending, and what can be learnt from this for future regulatory decisions and reviews.
12. Banks and non-bank lenders are required to satisfy regulatory capital ratios, which set the amount of 'high quality' capital that the lender must hold against the loans it provides. Historically, the use of the internal ratings base (IRB) approach by the big four banks for calculating capital ratios appears to have provided them with significant advantages in their residential home loan book, and seemingly their financial performance. For each dollar of lending, the largest four banks have only been required to hold around 70% of the capital that smaller banks have been required to hold under the standardised ratio rules.
13. This situation has persisted during an extended period of residential mortgage growth and is likely to have been a major driver of profitability for the four largest banks, while having a limiting effect on the expansion opportunities of smaller banks. Simply put – the more small banks lend for residential mortgages, the greater the amount they need to hold in liquid capital compared to the largest four banks.
14. These regulatory capital requirements appear to have been structurally disproportionate and, for more than a decade, have constrained both market competition and smaller lender growth relative to their larger competitors. The RBNZ's Capital Review and ongoing reforms are attempting to address aspects of this big bank regulatory advantage by setting an 85% floor on the IRB capital ratios. The RBNZ is also raising the additional 'buffer' level of capital that the big 4 banks are required to hold. While this process will eventually wind back some of the big bank advantage, the 5-year timeline of the reforms will continue to have a constraining impact on the prospects for smaller bank expansion.
15. Looking forward, this historic example of how prudential regulation has distorted competition highlights a critical need to examine the way in which competition impacts of regulation are assessed and weighed up in future regulatory decisions and reviews.

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<sup>8</sup> For example, the ANZ submission at para 22 and the ASB submission at para 2.5 and 3.8.

## 1 Introduction

16. Kiwibank Limited (Kiwibank) engaged Link Economics Limited to consider certain aspects of the submissions made to the Commerce Commission on its preliminary issues paper on the market study into personal banking services (the Preliminary Issues Paper).
17. In section 2 we investigate what data on interest rates tell us about the extent of competitive constraint that Kiwibank places on the largest 4 banks. In section 3, in response to submissions made on the extent of switching, we examine whether a lack of switching is hindering competition. A number of submitters have discussed the trade-off between prudential regulation and competition – we examine this issue in section 4.
18. In preparing this report we have drawn on publicly available data and confidential information provided by Kiwibank. All confidential information is marked with square brackets and highlighted in yellow.

## 2 Extent of competitive constraint on the largest banks

19. In response to the Commission’s question on whether competition is more or less intense between or within any particular group of providers, the large banks submissions describe themselves as competing with Kiwibank – for example, one included Kiwibank and the other Australian-owned banks in its description of its closest competitors,<sup>9</sup> another said it competes on a daily-basis with both large and small banks,<sup>10</sup> and another expressed the view that all banks compete aggressively with each other.<sup>11</sup>
20. We sought to test these views using empirical analysis based on data on home loan interest rates of ANZ, ASB, BNZ, Kiwibank, and Westpac. In particular, we:
  - a. Examined whether the large four banks responded when Kiwibank dropped its variable rate by 100 bps for a 12-month period in 2020, and
  - b. Conducted a regression analysis of whether the Kiwibank rates had a causal effect on the rates of the large four banks.
21. We found that:
  - a. None of the large four banks responded to Kiwibank’s sustained reduction in the variable rate, and
  - b. Regression analysis found that Kiwibank’s published home loan rates do not have a statistically significant impact on the published home loan rates of ANZ, ASB, or Westpac. While Kiwibank’s rates have some impact on BNZ’s rates, this is limited compared with the more dominant effect of the rates of the other large banks and the OCR.

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<sup>9</sup> ANZ stated on in paragraph 50 of its submission that “ANZ considers ASB, BNZ, Kiwibank and Westpac to be its closest competitors in the supply of home loans.

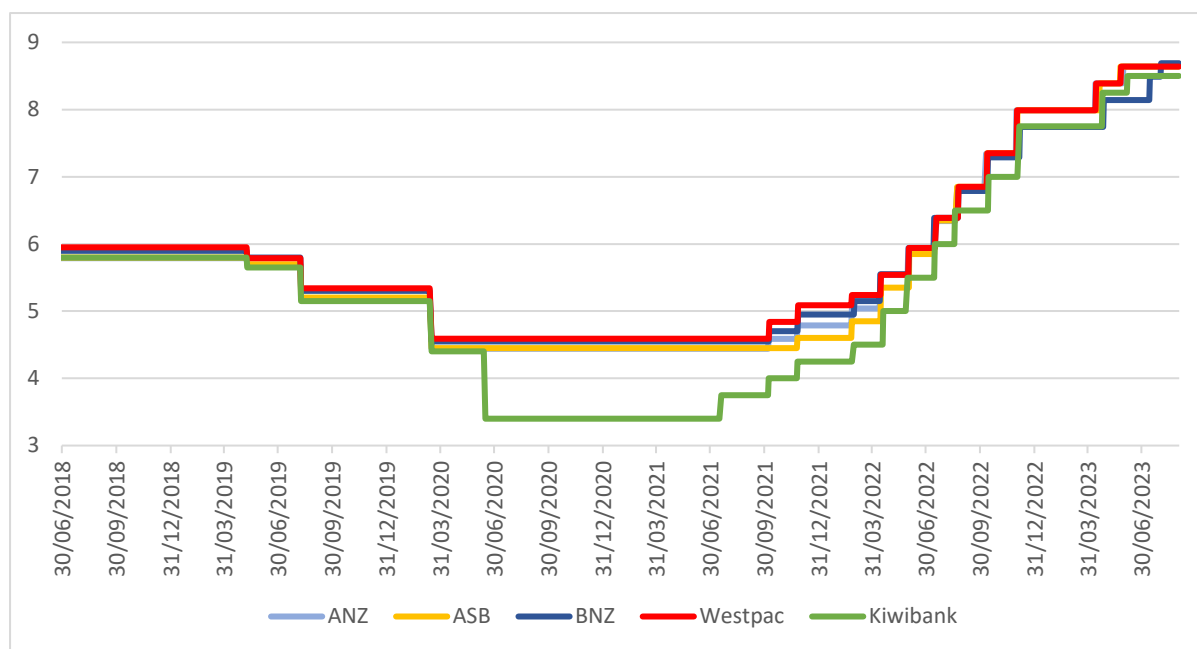
<sup>10</sup> Paragraph 50 of BNZ’s submission states that: “In relation to personal banking, BNZ competes on a daily basis with a wide range of key competitors operating different business models. That includes larger banks (ANZ, Kiwibank, ASB, and Westpac), smaller banks (such as TSB, Heartland, SBS, Cooperative, and Rabobank), and non-bank competitors ...”

<sup>11</sup> Paragraph 3.1(b) of Westpac’s submission states that: “All New Zealand banks compete aggressively with each other to win new business.”

## 2.1 Lack of response to Kiwibank's 100 bps reduction in the variable rate

22. In mid-June 2020, Kiwibank reduced its published variable rate by 100 bps from 4.4% to 3.4%. None of the large 4 banks responded with a cut to their published variable rates: all left their published variable rates unchanged (see Figure 1). The 100-bps gap between the published rates of the large 4 and Kiwibank persisted for more than a year. After that, Kiwibank's variable rate stepped up to be somewhat closer to rates of the other banks, but generally maintained a position of offering the lowest published variable rate.

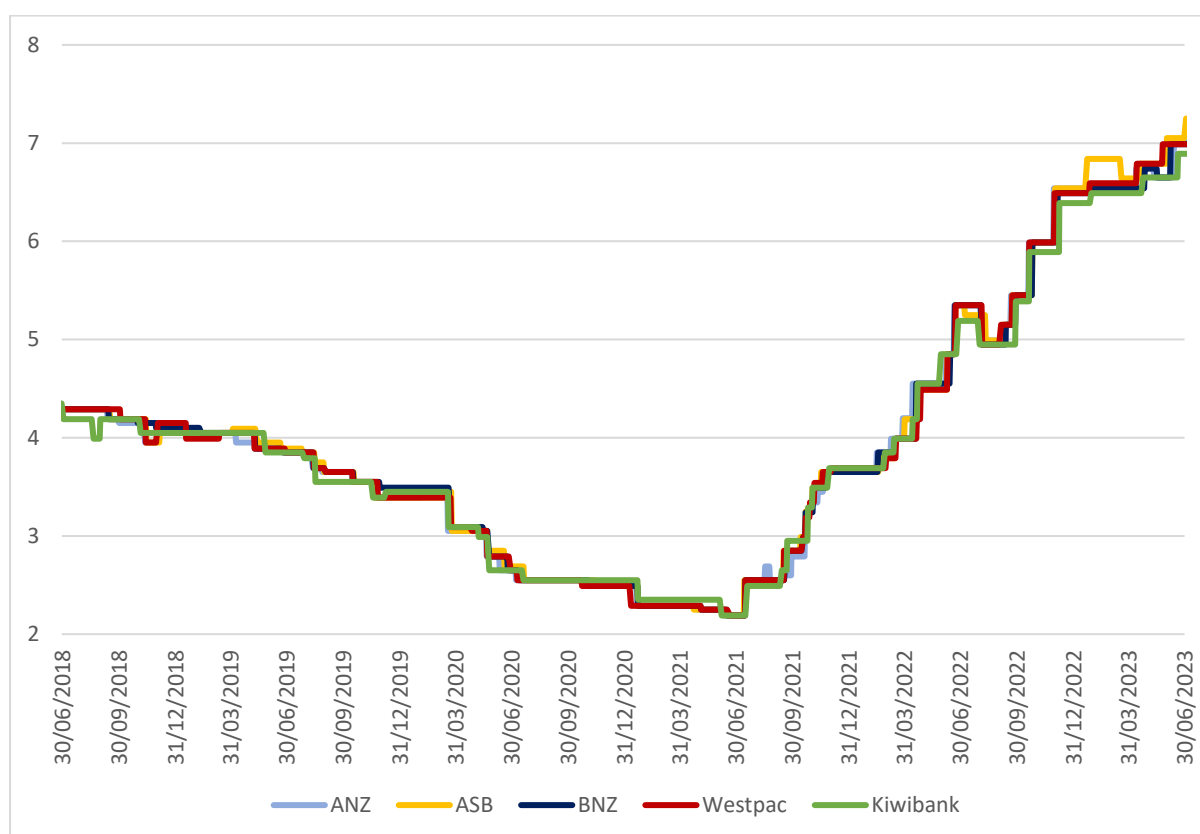
**Figure 1 Variable home lending rates**



Source: Rates collected from interest.co.nz

23. The large 4 banks do not appear to have responded strongly to Kiwibank's variable rate drop through prices of other published home loan rates either – while there were periods when the 1-year fixed and 2-year fixed rates of larger banks were below Kiwibank's rates, the differential was typically 10 bps or less (for example – see the 1-year rates in Figure 2).



**Figure 2 One-year fixed home loan rates**

Source: Rates collected from interest.co.nz

## 2.2 Regression analysis of the effects of Kiwibank's rates on the rates of the largest four banks

24. We used regression analysis to examine whether Kiwibank's rates are statistically significant in explaining the rates of the largest four banks. We ran the analysis by regressing the rates of each large bank on:
  - a. the average interest rate of the other three large banks,
  - b. the OCR, and
  - c. Kiwibank's rates.
25. The analysis was carried out separately on each of the following rates: the variable rate, the 1-year fixed rate, and the 2-year fixed rate.
26. The results show Kiwibank's rates have no statistically significant effect on the rates of ANZ, ASB and Westpac at the 5% level of significance (which is the most common level used for tests of statistical significance). The primary drivers of rates for these three banks are the rates of the other large banks and the OCR. For BNZ, Kiwibank's rates are statistically significant at the 5% level of significance but the effect of Kiwibank's rates are much weaker than other explanatory variables – for the variable rate, the OCR is the dominant driver of BNZ's rates, while the rates of the other large banks is the most powerful driver of the 1-year and 2-year fixed rates.

27. More specifically, the findings of the analysis were:
- a. For ANZ:
    - i. The dominant drivers of ANZ's standard variable mortgage rates are the standard variable mortgage rates of the other large banks and the cash rate.
    - ii. The only statistically significant driver of ANZ's 1-year fixed mortgage rate is the average 1-year fixed mortgage rate charged by the other three D-SIBs. Changes in Kiwibank's one-year mortgage rates do not have a statistically significant influence on the one-year mortgage rate of ANZ.
    - iii. Similarly, the only statistically significant driver of ANZ's 2-year fixed mortgage rates is the average 2-year fixed mortgage rate charged by the other D-SIBs. Changes in Kiwibank's one-year mortgage rates do not have a statistically significant influence on the one-year mortgage rate of ANZ.
  - b. For ASB:
    - i. The average standard variable mortgage rates of the largest four banks have a strong, statistically significant impact on ASB's standard variable mortgage rates. Kiwibank's standard variable mortgage interest rates do not statistically significantly affect ASB's standard variable mortgage interest rates at the 5% level.
    - ii. The average 1-year fixed mortgage rates of the other big four banks have a statistically significant impact on ASB's 1-year fixed mortgage rates: a 100-basis point increase in the 1-year average fixed rate of the big four banks leads to an 82 basis point increase in ASB's 1-year fixed rates. Similarly, the average 2-year fixed mortgage rates of the other D-SIBs have a statistically significant impact on ASB's 2-year fixed mortgage rates: a 100-basis point increase in the 2-year average fixed rate of the big four banks lead to a 92-basis point increase in ASB's 2-year fixed rates. In contrast, Kiwibank's 1-year fixed mortgage interest rates do not statistically significantly affect ASB's 1-year or 2-year fixed rates.
  - c. For BNZ:
    - i. The most important driver of BNZ's standard variable mortgage rates is the OCR. However, Kiwibank's standard variable mortgage interest rates statistically significantly affect BNZ's standard variable mortgage interest rates at all conventional significance levels. The average standard variable mortgage rates of the other big four banks have no statistically significant impact on BNZ's standard variable mortgage rates.
    - ii. Both the Kiwibank 1-year fixed mortgage interest rate and the average 1-year fixed mortgage rate of the other big four banks statistically significantly affect BNZ's 1-year fixed mortgage interest rates at all conventional significance levels. Upward movements in Kiwibank's 1-year fixed mortgage rates have a statistically significantly different impact on BNZ's 1-year fixed mortgage rates than downward movements at all conventional significance levels. A 100-basis point downward movement in the Kiwibank 1-year fixed mortgage rate will reduce the BNZ 1-year fixed mortgage rate by 28 basis points, and an upward movement of 100-basis points will increase BNZ's 1-year fixed mortgage rates by

26-basis points. However, the other D-SIBs have a more powerful influence on BNZ's 1-year fixed rate: a 100-basis point increase in the 1-year average fixed rate of the big four banks leads to a 75-basis point increase in BNZ's 1-year fixed rates.

- iii. The average 2-year fixed mortgage rates of the other D-SIBs has a statistically significant impact on BNZ 2-year fixed mortgage rates, as do the Kiwibank 2-year fixed mortgage interest rates. The other D-SIBs have a more powerful influence on BNZ's two-year mortgage rate than Kiwibank's rate does: a 100-basis point increase in the 2-year average fixed rate of the other D-SIBs leads to an 84-basis point increase in BNZ 2-year fixed rates, while a 100-basis point increase in Kiwibank's fixed rate will increase BNZ's 1-year fixed rate by just 15 basis points.
- d. For Westpac:
- i. The average standard variable mortgage rates of the other D-SIBs have a strong, statistically significant impact on Westpac's standard variable mortgage rates: a 100-basis point increase in the average standard variable mortgage rate of the other D-SIBs leads to a 73-basis point increase in Westpac's average standard variable mortgage rates.
  - ii. Kiwibank's variable, 1-year and 2-year interest rates do not statistically significantly affect Westpac's corresponding interest rates at the 5% level of statistical significance. The average 1-year fixed mortgage rates of the other D-SIBs has a statistically significant impact on Westpac's 1-year fixed mortgage rates, and the same is true for 2-year fixed rates. A 100-basis point increase in the 2-year average fixed rate of the big four banks leads to a 93-basis point increase in Westpac's 2-year fixed rates.
28. Appendix A contains further details of the regression results and tests. The analysis was carried out using a monthly time series of published rates (the rates published on interest.co.nz at the end of each month).
29. The regression results indicate that Kiwibank does not place a significant competitive constraint on the large Australian-owned banks. Based on this analysis, we conclude the market structure for the supply for home lending is best described as an oligopoly of 4 large banks, that faces little constraint from the competitive fringe. Reducing the barriers (such as customer inertia and switching costs) that small banks face in competing for customers would force the large 4 banks to compete with smaller banks by responding to their pricing initiatives, bringing the benefit of greater price competition to consumers.

### 3 The ability of small banks to win customers through switching

30. A number of the largest banks' submissions highlighted the growth of Kiwibank and other smaller banks, including observations that Kiwibank reached 1 million customers and that its growth exceeds that of the overall market. What is not apparent from the discussion in those submissions is that this growth is only partially achieved through switching customers from other banks. Switching rates are low for the "Main Bank" customer relationship and for home lending, so growth for small banks is heavily dependent on new-to-system customers (such as youths and immigrants) – we discuss this below in section 3.1. Growth by small banks cannot, therefore, be interpreted as meaning that the overall market is contestable, or as evidence

that customers can and do switch freely in response to attractive pricing, but rather seems to reflect small banks focussing on niches that do not already have a relationship with a bank.

31. Submissions also included views that low switching rates could reflect high customer satisfaction, and that customers are well-placed to switch, while smaller banks and other submitters expressed concerns that customer inertia and difficulties in switching are holding back switching levels. We note that the Commission intends to conduct a consumer survey, which may help test the varying hypotheses on why customers do or don't switch. However, to shed further light on whether customers switch in response to more attractive pricing by non-DSIBs banks, in section 3.2 we examine what the data reveals by comparing the share of new loans and refinanced loans (switches) with interest rates. We find that small banks have a limited ability to gain new purchase or refinanced home loans through offering favourable interest rates.
32. Our findings that small banks face significant challenges in enticing customers to switch indicate that customer education/awareness campaigns and improvements to the switching process could contribute significantly towards strengthening competition.

### **3.1 The growth of small banks**

33. An entrant or small provider of personal banking services could grow its share of personal banking customers by either:
  - a. winning customers from an existing provider, either by becoming their primary provider of banking services ("Main Bank") or as a "Second Bank" provider of one or more services, or
  - b. acquiring new-to-system customers (that is, people who do not have an existing provider of personal banking services).
34. The latter group of potential new-to-system customers is generally more contestable as they are not already attached to a provider. This group is demographically small and primarily includes youth opening their first bank account plus immigrants. As Main Bank switching rates are low, entrants/small providers have a limited pool of customers that they are able to fully contest.
35. [
- 36.
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**Figure 3**

Source:

38.

**Figure 4**

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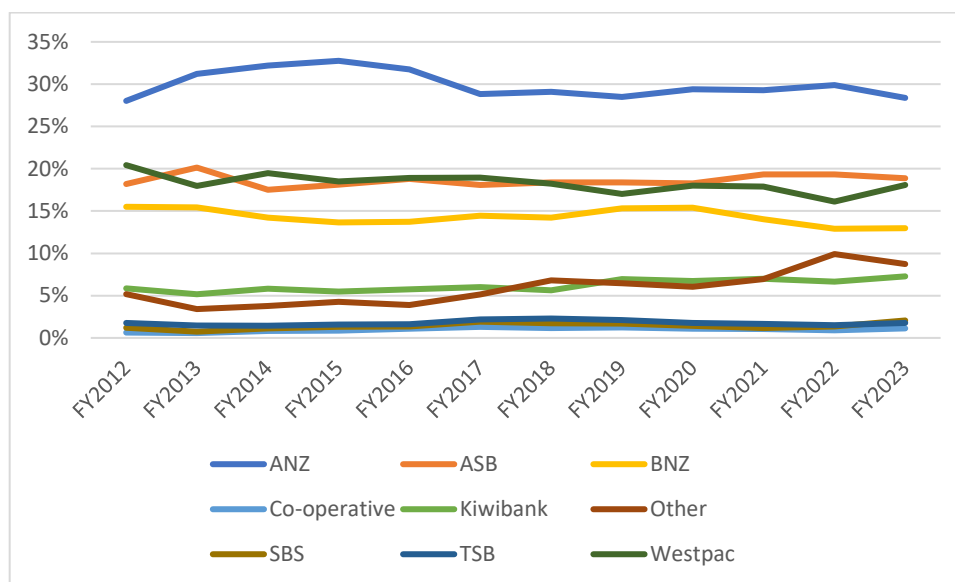
**3.2 Whether Kiwibank can attract customers by offering more attractive lending rates**

39. An entrant/small lender of home loans can seek to expand its home loan customer activities by acquiring:
- Customers who are setting up a new home loan, and/or
  - Existing borrowers who have a home loan with another provider.
40. LINZ data on mortgage registrations shows that small banks struggle to increase their share of new home loans. The data also shows that home loan holders who switch (refinance) are more likely than new purchase borrowers to consider small banks. However, because the number of borrowers choosing to switch each year is very low, refinance customers provide only a very limited opportunity for small banks to grow.
41. Panel data regression analysis indicates that if two banks charge the same one-year interest rate, but one bank is big and the other is small, then the big bank will win approximately double the number of new purchase home loans. For refinanced home loans that switch home lender, the big bank will win more loans than the small bank, but the effect is not as strong as for new purchases.

### Small banks struggle to increase their share of home loans

42. As can be seen from Figure 5, over the past few years Kiwibank has won 7% of new home loans, which is similar to its share of existing home loan assets.<sup>12</sup> Similarly, TSB's 2% share of new home loans is close to its share of existing home loan assets. This implies that small banks are not gaining market share through new home loans.

**Figure 5 Shares of new purchase home loans**



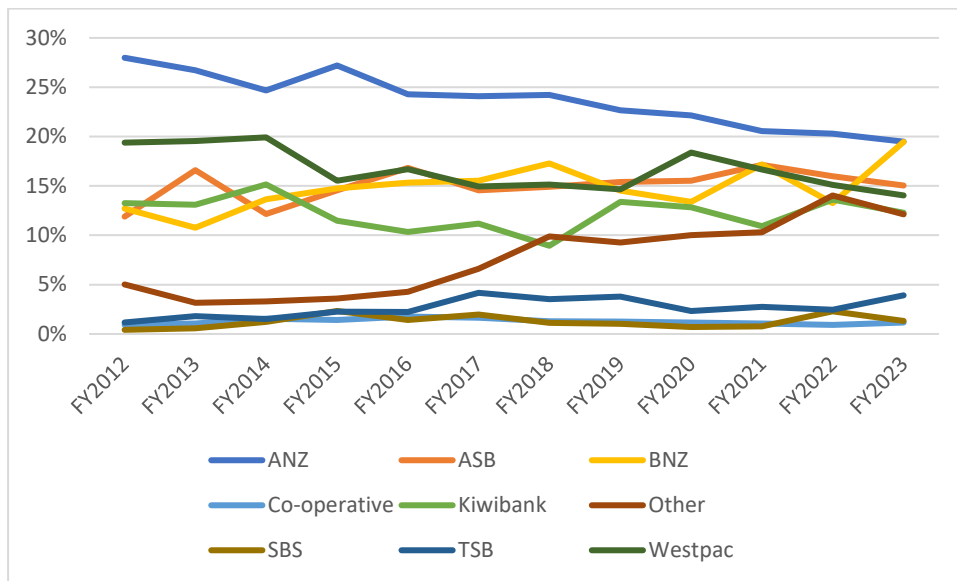
Source: LINZ database

Note: The "Other" group of lenders includes Bank of China, Basecorp and China Construction Bank who are specialist lenders mainly focussed on construction, plus a number of sub-prime lenders. As a result, the "other" growth is not directly driven by standard residential home lending and so we do not focus on these.

43. Turning to customers that switch (that is, customers who refinance with a provider that is different to their existing home loan provider), LINZ data shows that the share of home loan switchers won by Kiwibank has increased over time and at some points has been comparable to the share won by some of the large banks. In FY2023, Kiwibank won 12% of refinance LINZ registrations and TSB won 4%. These shares of refinance registrations won by Kiwibank and TSB indicates that small lenders are better able to contest switchers than new home loans.

<sup>12</sup> The RBNZ dashboard data shows that Kiwibank's share of home loan assets as at the quarter ending June 2023 was 7.2%.

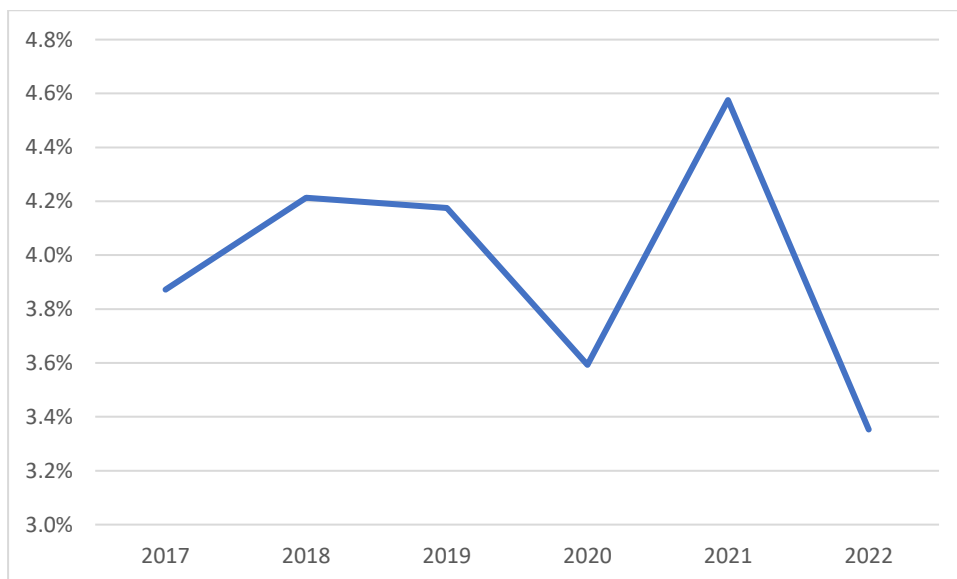
**Figure 6 Share of refinance LINZ registrations**



Source: LINZ mortgage registrations

44. However, only a small proportion of home loan customers switch each year. RBNZ data shows that over the last 6 years, the total value of home lending that has switched loan provider has ranged from 3.4% (in 2022) to 4.6% (in 2021).

**Figure 7 Percentage of home lending value that has changed loan provider**



Source: RBNZ, New Residential Mortgage Lending by Borrower type - C33

45. Therefore, even though small lenders appear to better contest home loan borrowers who switch than new purchase home loans, the low switching rate severely limits their ability to grow market share – even if Kiwibank were to continue the FY2023 win rate of around 12% of switchers per year, this would only allow it to increase its share of home loans by around 0.5% per year (before accounting for switches out/discharges).



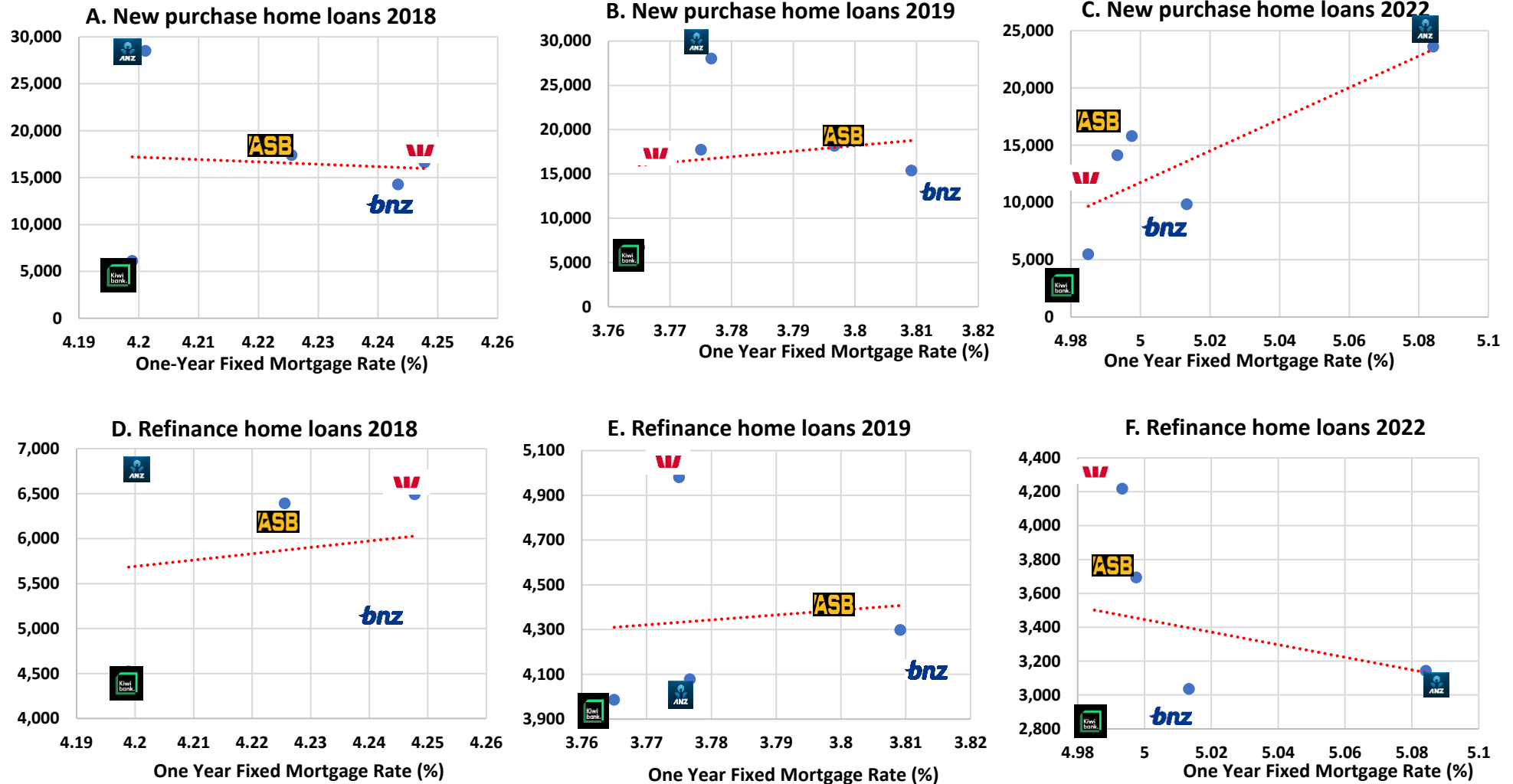
***Empirical analysis shows that Kiwibank has a limited ability to gain new purchase and refinanced home loans through offering favourable interest rates***

46. To better understand the ability of small banks to increase their share of home loan customers, we examined empirically how Kiwibank's home loan interest rates affect its number of new and refinanced home loans.
47. We examined scatterplot analysis of the number of new purchase and refinanced home loans over three separate years (2018, 2019 and 2022) against the one-year fixed home loan rates of the big four banks and Kiwibank. As can be seen from the charts included in Figure 8:
  - a. The bank which offers the lowest average one-year fixed mortgage rate in 2018 was Kiwibank (4.199%) (bottom left-hand corner of graph A), which also has the lowest number of new purchase mortgages. ANZ has the highest number of new purchase home loans in the New Zealand market in 2018 and has the second lowest one-year fixed rate (4.201%). The bank with the highest one-year fixed rate, Westpac, has the third highest number of new purchase home loans out of the big four banks.
  - b. In the case of mortgage refinance switching numbers for 2018 (graph D), again Kiwibank has both the lowest number of refinance home loans and the lowest 1-year fixed interest rates. ANZ has the highest number of refinances in 2018, followed by Westpac and then the ASB, while BNZ has the lowest number of refinances in 2018 which is the same ranking as the big four banks in the case of new purchase home loans.
  - c. Moving forward to 2019, graph B indicates a similar scenario to that of 2018, with the bank with the lowest home loan rate having the lowest number of new purchase home loans (Kiwibank). ANZ once again has the highest number of new purchase home loans and the third lowest home loan rate, and BNZ has the lowest number of new home loan mortgages and the highest 1-year fixed rate.
  - d. Graph E presents the scatterplot for 2019 home loan refinances, with Kiwibank having the fewest home loan refinance numbers once again despite offering the lowest rates, Westpac has the highest number of home loan refinance numbers and offers the second lowest rates, ANZ home loan refinance numbers dropped-off sharply with the lowest number of refinances out of the big four banks. And BNZ has the highest one-year fixed home loan rate and the second lowest number of refinances.
  - e. Graph C contains a scatterplot of new purchase home loans in 2022, capturing the end of the major Covid impact and the partial return to normality. Once again Kiwibank has the lowest one-year home loan rate and the lowest number of new purchase home loans, ANZ bank again has the highest number of new purchase home loans despite having the highest 1-year fixed rate of interest, and BNZ has the lowest number of new purchase home loans out of the big four banks.
  - f. Graph F presents new refinance home loan numbers against the one-year fixed rate in 2022, with Kiwibank again with the lowest number of refinances following in second last place by BNZ and then ANZ. Westpac has the highest number of refinance home loans.
48. We can see from the graphs that in 4 out of 6 cases the relationship between the number of new or refinance home loans and the one-year fixed home loan rate is a positive relationship, as indicated by the trend line through the scatterplot. In 3 out of 4 of these upward sloping trendline cases, this is directly attributable to the Kiwibank result. In other words, if the

Kiwibank datapoint in the scatterplot were removed from the scatterplot then the trendline's slope would change from positive to negative. The only scatterplot in which this did not occur is the Covid affected result in 2022 for new mortgage purchases.

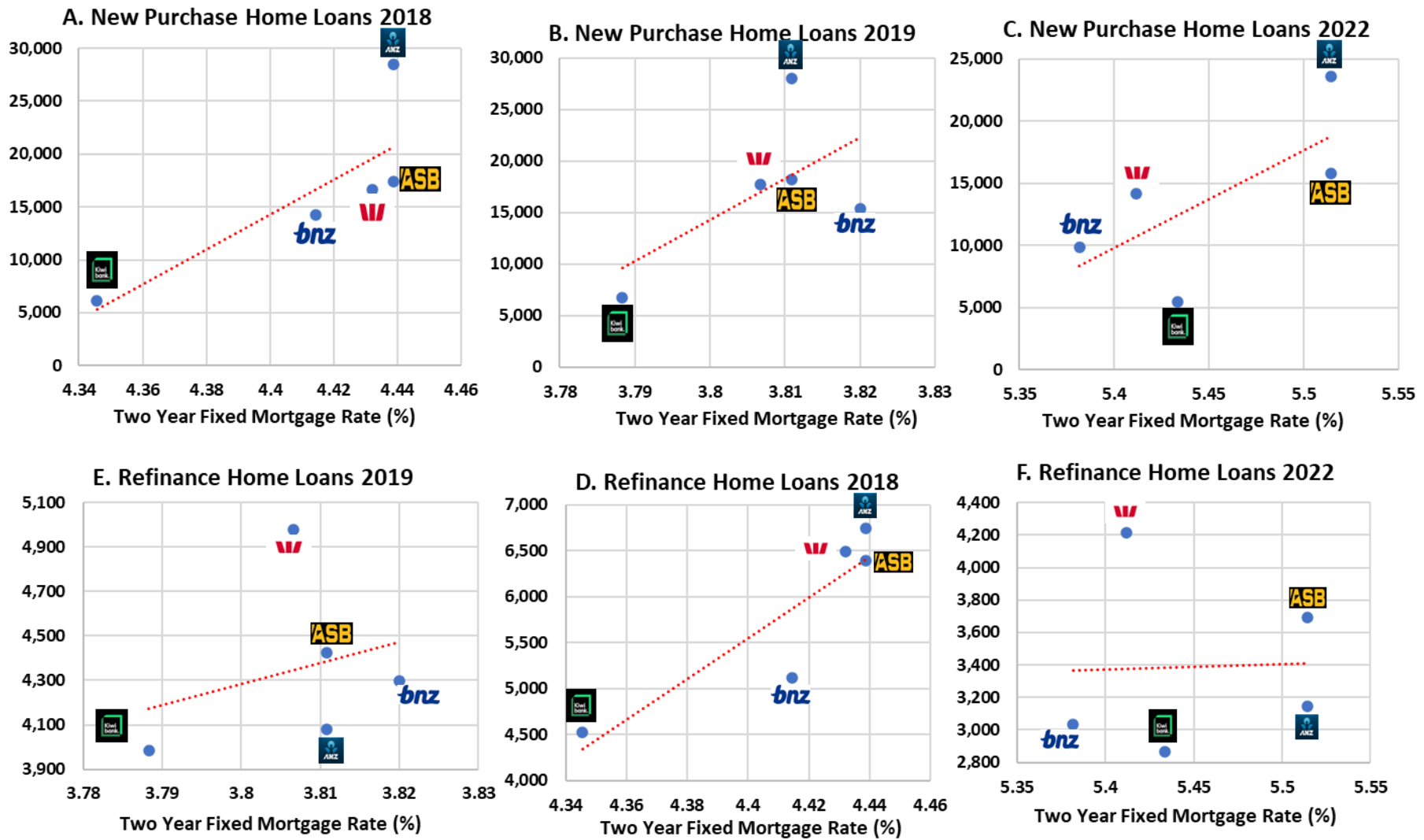
49. We replicated the scatterplots for 2-year fixed rates and found similar results, with low rates offered by Kiwibank (especially in 2018 and 2019) not translating to customer acquisition.
50. These results suggest that there is limited ability for Kiwibank to be able to use home loan rates to gain a greater share of new purchase home loans and refinance home loans.

Figure 8 Scatterplots of New Purchase and Refinance Home Loans against 1-year fixed interest rates



Source: LINZ database and interest.co.nz

Figure 9 Scatterplots of New Purchase and Refinance Home Loans against 2-year fixed interest rates



Source: LINZ database and interest.co.nz

51. There are likely other non-price factors at play in driving the number of new purchase mortgages and refinance mortgages, such as:
- whether the bank has an existing relationship with the customer, such as a retail banking relationship,
  - interest rates of other terms and off-carded rates,
  - the ability to offer lower retail banking fees and charges or better relationship banking terms and conditions as a result of the mortgage relationship, (such as free access to a credit card loyalty program, a greater credit card limit or more free debit card transactions),
  - greater resources channelled into mortgage marketing effort,
  - lower administrative fees and charges associated with the mortgage, such as establishment or application fees, lenders mortgage insurance, property valuation, exit fees, exit penalty fees and ongoing account keeping fees, and
  - quality of service (including customer service and system reliability).
52. We note that the small banks have performed well in industry rankings. For example:
- TSB won the Canstar 2023 Bank of the Year for Home Loans.<sup>13</sup> This award represents the strongest combination of products and institutional services. SBS won the same award in 2022, with Kiwibank winning the award in 2021.
  - The Co-operative Bank won the Canstar Most Satisfied Customer Award for Home Loans each year from 2021 to 2023.<sup>14</sup>
  - Kiwibank was the only bank to achieve a top 20 ranking in the 2023 Kantar Corporate Reputation Index.
53. As a result, it is not obvious that differences in quality of service or other aspects of home loan product offerings explain the difficulties by small banks in acquiring home loan customers. We also note that the observation from Figure 6 that when customers do switch their home loan through refinancing, Kiwibank wins a considerable proportion, also indicates that quality-related factors do not appear to substantially inhibit a switch to Kiwibank.

### ***Regression analysis of the relationship between loans and interest rates***

54. Panel data analysis can produce a more formal set of the results on the relationship between the number of new and refinanced home loans, and interest rates.
55. We estimate the following panel data regression for both the new purchase mortgage product and the refinance mortgage product over the time period 2018 to 2022 and using the cross-section ANZ, ASB, BNZ, Westpac and Kiwibank. The panel regression that we estimate is:

$$\text{Log Loans}_{it} = \alpha_0 + \alpha_1 \text{One-Year Fixed Rate}_t + \alpha_2 \text{Big Bank}_{it} + \text{Residual}_{it}$$

Where:

<sup>13</sup> <https://www.canstar.co.nz/star-rating-reports/bank-of-the-year-home-loans/>

<sup>14</sup> <https://www.canstar.co.nz/star-rating-reports/msc-home-loans-provider-award-2023/>

the Big Bank variable takes on the value 1 when the cross-sectional observation is ANZ, ASB, BNZ, or Westpac and the value 0 for Kiwibank,

the  $i$  subscript represents the five cross-sectional banks, and

the  $t$  subscripts represent the annual time periods  $t=2018$  through to  $t=2022$ .

The Big Bank variable is used to control for the non-price forces that are affecting the demand for the new purchase mortgage and the refinance mortgage products.

56. Table 1 contains the results of a panel regression in the case of new purchase mortgages. The key variables of interest are the 1-Year Fixed Rate and the Big Bank dummy variable. The coefficient of the one-year fixed rate indicates that if bank A has a 100 basis-point lower one-year fixed rate than bank B, this will result in 14.1% greater new purchase mortgages to bank A compared to bank B, other things being equal. The one-year fixed rate variable is statistically significant at the 2.4% and higher levels of statistical significance. The big bank variable indicates that if two banks charge the same interest rate, but one bank is big and the other is small than the big bank will have approximately double the number of new purchase mortgages.

**Table 1 Panel data analysis results - new purchase home loans**

Variable	Coefficient	Standard Error	t-value	Probability
Constant	9.331997	0.244868	38.11024	0.0000
One-year Fixed Rate <sub>it</sub>	-0.141458	0.058534	-2.416674	0.0244
Big Bank	1.041853	0.128557	8.104220	0.0000
$R^2 = 76.4\%$				

Source: Regression analysis of data from LINZ database and interest.co.nz

57. The estimated panel regression in the case of refinance mortgages is presented in Table 2 below. The coefficient of the one-year fixed rate variable indicates that if bank A has a 100 basis-point higher one-year fixed rate than bank B, this will result in 8.5% greater number of refinance mortgages to bank A compared to bank B, other things being equal. The one-year fixed rate variable is statistically significance at the 3.9% and higher levels of statistical significance. The big bank variable indicates that if two banks charge the same interest rate, but one bank is big and the other is small than the big bank will have approximately 19.8% more refinance mortgages. This variable is statistically significant at all conventional significance levels.

**Table 2 Panel data analysis results – refinance home loans**

Variable	Coefficient	Standard Error	t-value	Probability
Constant	8.702367	0.176198	49.38963	0.0000
One-year Fixed Rate <sub>it</sub>	-0.085	0.038830	-2.197077	0.0394
Big Bank	0.198267	0.081828	2.422985	0.0245
Covid	-0.286529	0.069631	-4.114956	0.0005
$R^2 = 53.2\%$				

Source: Regression analysis of data from LINZ database and interest.co.nz

58. The two sets of panel regression results indicate that big banks are less successful at drawing mortgage customers away from small banks in the case of refinance mortgages.

### 3.3 *The incentive required to switch*

59. The propensity for customers to seek out the best deal for deposit accounts seems to be significantly higher than for home lending, reflecting that switching deposits does not require a change in the Main Bank relationship. While the majority of customers hold their deposits at their primary bank, a significant proportion of customers hold deposits at a second bank, with those customers being price-sensitive to the interest rate. This appears to enable smaller banks to better contest deposits than home lending. One submitter commented, for example, on the success of Kiwibank in winning customers “due to its more aggressive competitive position in term deposits.”<sup>15</sup> However, the need for a more aggressive position than its larger rivals, in order to win customers, likely reflects customer inertia. [

60.

**Figure 10**

**Figure 11**

61.

**Table 3**

**Table 4:**

]

62. Submissions on switching included views from the largest banks that consumers can readily switch between providers<sup>16</sup> and that customers are well-placed to switch because of the presence of multi-banking/multi-homing.<sup>17</sup> While customers do multibank, including for deposits, the mere fact that this occurs does not mean that customer inertia or switching costs do not limit competition. It can simply reflect that smaller banks/entrants are offering pricing that not only matches but is significantly more attractive than that of larger banks in order to induce switching from the most price sensitive customers.

### 3.4 *Concluding remarks*

63. Despite comments to the effect that customers are well-placed to switch or that customers not switching reflects high satisfaction, the large banks also provided insights as to how some of the financial regulations, such as the AML and the CCCFA, create friction for customers seeking to switch. Some suggestions were offered on how switching processes could be improved, such as transferable AML/CFT.<sup>18</sup> Our findings that Kiwibank’s consistently low rates for home lending do not translate to customer acquisition, and that small banks struggle to increase their market share through switching (instead relying heavily on acquiring new-to-system customers) indicates that switching constraints are holding back competition. As a result, we

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<sup>15</sup> ASB submission, paragraph 9.30

<sup>16</sup> BNZ submission, section 2(E).

<sup>17</sup> Westpac submission, para 3.1(c).

<sup>18</sup> Westpac submission, para 17 (d).

suggest customer education and an advanced switching process (including relief from CCCFA and AML requirements) would strengthen competition.

## 4 Effect of prudential regulation on competition

64. There was considerable comment from submitters on the RBNZ prudential regulations that manage the risks to, and the stability of, the banking system. Many of these submitters reference the impact of regulation on the banking entities and refer, either directly or indirectly, to the impact that regulation has had on the nature of banking competition over recent years. ANZ, in particular, points out trade-offs between competition and other regulatory objectives<sup>19</sup> while Professor David Tripe highlighted that regulation may have dimmed competition: *“Whereas, prior to the GFC, smaller banks (such as TSB Bank) were not necessarily disadvantaged in competition with larger ones, this is no longer necessarily the case.”*<sup>20</sup> Westpac rightly comment on the importance of proportionality in Section 2 of its submission.<sup>21</sup>
65. What these and other submitters did not fully address is the historical significance of the impact that regulation has had on the competitive banking environment, especially in the home-lending market, and what can be learnt from this for future regulatory decisions and reviews. Over an extended period of time, the RBNZ capital ratio rules have established a structural advantage for the big banks that smaller banks could not overcome through the normal competitive process. While the Capital Review conducted by the RBNZ has established a pathway for change, the capital requirements that have arisen through prudential requirement provide a case study on just how significantly regulation can inadvertently distort competition, allowing lessons to be drawn on how future regulatory decisions account for competition impacts.
66. The regulatory capital ratios that banks and non-bank lenders must satisfy set out the amount of ‘high quality’ capital that the lender must hold against the loans it provides. High quality capital is mostly made up of greater levels of owners’ equity, retained earnings and dividend reinvestment. Lower capital ratios should be the result of a lower risk loan book that, overall, enables more profitable lending. Under existing prudential regulations, market entrants and smaller participants are in a situation where they have higher capital ratio requirements and substantially less equity in absolute terms than large banks. Together these factors constrain the ability of small banks to grow.
67. Capital (ratio) requirements are determined by risk weighting various classes of loans using historical loan data. This approach was implemented as one aspect of the reform of banking system risk management following the 2008 Global Financial Crisis (GFC) and is now common in many countries. It has been a developing process under the shared reform agreement – the

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<sup>19</sup> ANZ submission, para 21.

<sup>20</sup> [David-Tripe-Submission-on-Market-study-into-personal-banking-services-Preliminary-Issues-paper-6-September-2023.pdf \(comcom.govt.nz\)](#)

<sup>21</sup> Westpac submission, para 2.2.



Basel Framework for banking reform.<sup>22</sup> Here in New Zealand the RBNZ has an implementation programme of further regulatory reform that extends out to 2028.<sup>23</sup>

#### 4.1 Prudential regulation has had an asymmetric effect on large vs small lenders

68. The capital ratio reforms that the RBNZ prudential regulations established after 2008 allowed a suitably 'authorised' bank to calculate its own capital requirements using its own models, data, resources, and loan books (the so-called internal ratings-based approach, IRB). To date only the four big New Zealand banks have been approved to undertake IRB capital calculations. Other banks are required to use a standardised set of capital ratios for each lending class in the loan book.
69. There is anecdotal international evidence that the IRB approach is quite demanding and requires considerable resource and investment in data processes and documentation, as well as access to long historical data sets.<sup>24</sup> The four big banks (with Australian owners) have been particularly advantaged here – they are long established in New Zealand, have sufficient scale to fund the IRB activity and importantly have the data sets to enable IRB modelling capability to the level of detail that RBNZ requires.
70. Our understanding of the high-level process is that a bank's loan book is divided up into specified classes of loans, is then further divided up into sub-classes of various types, one of which is home loans. The home loan class is then split out into loan-to-value ratio (LVR) ranges as a proxy for risk categories. The IRB models estimate the risk-adjusted losses from default of these smaller groups of loans by assessing the LGD (loss given default) and the PD (probability of default). Residential mortgages are the largest class in the loan book of nearly all banks and, being assessed as low risk on average, have one of the lowest capital ratios (see Figure 12 below).
71. Because they are not approved to use the IRB approach (or more likely cannot justify the costs of implementation and do not have the required historical datasets), small banks and non-bank lenders are required to use the 'standardised methodology' to risk-weight their loan book. This approach sets out RBNZ mandated proportion (%) of the value of different classes of loans to be held in high quality liquid capital against the risks of default. While we note above that these reforms are to be an ongoing process it is important to put on record that the four big NZ banks have been using the IRB approach and enjoying the financial advantages for 15 years.
72. The impacts of the different approaches to capital ratios for big versus smaller banks are described in Figure 12 below, which is from the review of capital prudential rules that the RBNZ undertook in the period 2017-2020, ahead of the next stage of regulatory development under the Basel process.<sup>25</sup>

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<sup>22</sup> <https://www.bis.org/bcbs/basel3.htm>

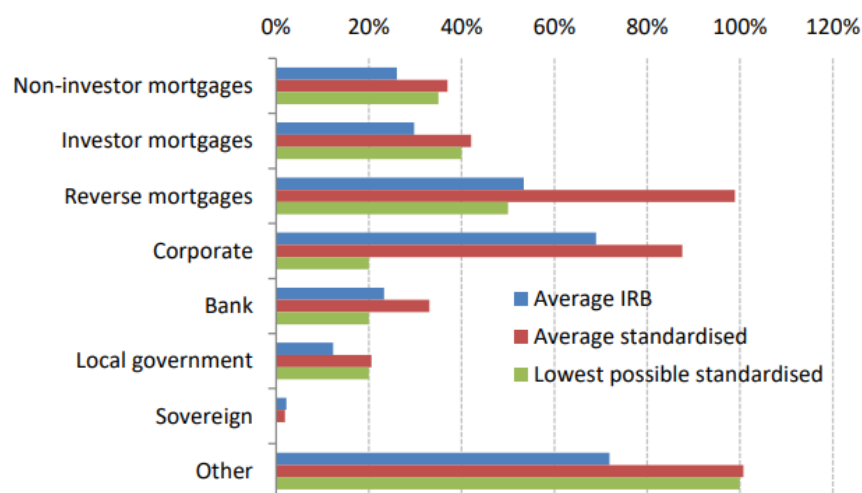
<sup>23</sup> <https://www.rbnz.govt.nz/regulation-and-supervision/oversight-of-banks/standards-and-requirements-for-banks/capital-requirements-for-banks-in-new-zealand>

<sup>24</sup> Davis and Lawrence, K. 2015, 'Basel 3 and 4 and Australian Banking', presented at 20th Melbourne Money and Finance Conference, Brighton, Victoria, 13 July.

<sup>25</sup> <https://www.rbnz.govt.nz/-/media/project/sites/rbnz/files/consultations/banks/review-capital-adequacy-framework-for-registered-banks/decisions/capital-review-decisions.pdf>

73. This review has brought to public light the significant historical differences in the capital ratio outcomes from the IRB method used by the largest 4 banks and the standardised methodology used by smaller banks.<sup>26</sup>

**Figure 12 RBNZ chart on risk weights by IRB and standardised approaches (provisional data)**



Source: The above chart was Figure 3 in the RBNZ Consultation Paper: Review of the Capital Adequacy Framework for locally incorporated banks: calculation of risk weighted assets. RBNZ describes the source as “Balance sheet survey data as at 30 June 2017 from four internal models banks and six standardised banks, and Reserve Bank calculations.”

74. The scale of the financial advantage to big banks from this distortion can be estimated from RBNZ data, across all lending classes. Big bank lending is dominated by residential mortgages – this is the loan book asset class where their capital ratio is only 70% of the of the proportion of capital that the smaller banks are required to hold. This situation has persisted during an extended period of residential mortgage growth and is likely to have been a major driver of profitability for the four largest banks while limiting the expansion opportunities of smaller banks. Simply put – the more capital that small banks lend for residential mortgages, the more they need to hold in liquid capital compared to the largest four banks.

#### **4.2 Differences in the capital ratio requirements between large and small banks did not reflect differences in loan risk**

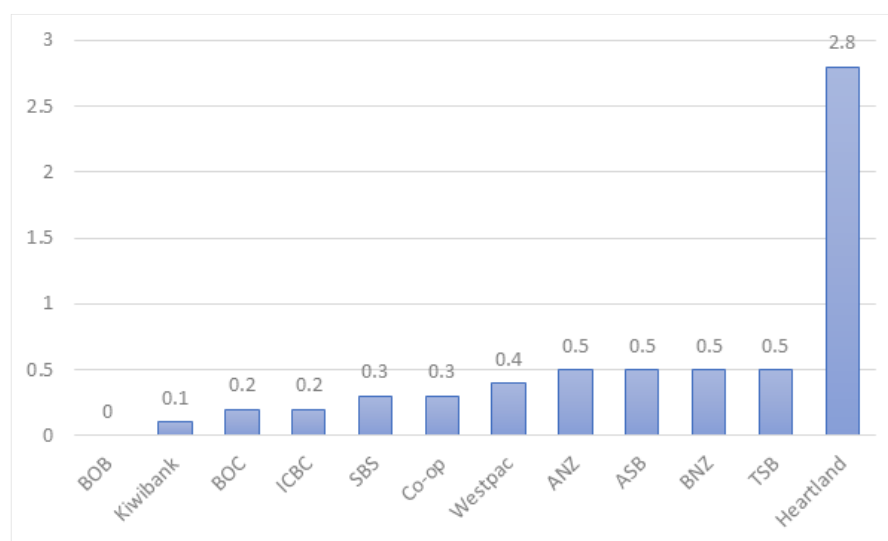
75. While the use of IRB modelling by the largest four banks has enabled them to hold a lower proportion of risk-related capital for home loans, data collected by the RBNZ indicates the ratio of non-performing loans of *smaller* banks in general is the same, or lower, than the large banks (see Figure 13 below).
76. In other words, the lower capital requirement achieved through the IRB models *do not appear to reflect underlying lower levels of risk* and are simply a benefit of being large enough to have accredited modelling capability and supporting data.<sup>27</sup> The notable exception in Figure 13 below is Heartland bank with 2.8% of its loans non-performing, though this is likely explained

<sup>26</sup> <https://www.rbnz.govt.nz/-/media/project/sites/rbnz/files/consultations/banks/review-capital-adequacy-framework-for-registered-banks/capital-review-denominator-consultation-paper-002191217.pdf>

<sup>27</sup> The RBNZ acknowledged this was likely the situation in its 2017 provisional report referenced in footnote 5 above.

by this bank having a focus on motor vehicle, business and personal loans, as well as providing reverse mortgages and rural loans.

**Figure 13 Non-performing loans of New Zealand lenders (%)**



Source: <https://bankdashboard.rbnz.govt.nz/asset-quality> (Note: we have excluded Rabobank as it does not offer residential home loans.)

### 4.3 Staged reform of capital requirements

From 2017, the RBNZ's Capital Review, and ongoing reforms are attempting to address aspects of this big bank regulatory advantage in a number of ways – for example by using an 85% floor (compared to the standardised approach) on the capital ratios under the IRB modelling. In addition to the floor, the RBNZ is also raising the additional 'buffer' level of capital that the big 4 banks are required to hold. While this overall process may eventually wind back some of the big bank financial advantage, it is only scheduled to take place in stages through to 2028.

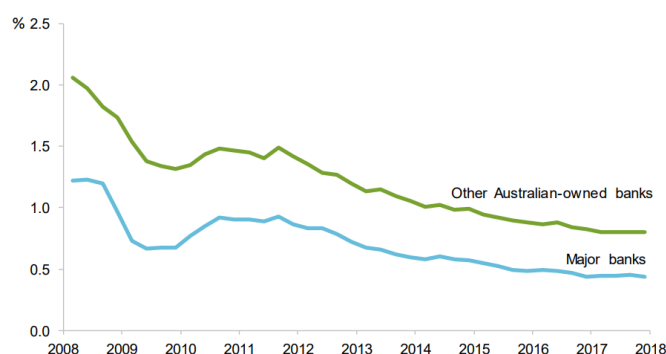
77. Macro-economic conditions are likely to influence how this regulatory path will improve competition, especially within the residential mortgage market. Subdued economic growth with elevated inflation and interest rates is having an impact on consumer confidence and their willingness to take on sizeable home loans. Some of these effects are already visible in housing loans being financed/refinanced with very short-term fixed rates.
78. The regulatory capital requirements appear to have constrained entry and particularly small bank competitive expansion for more than a decade. While the RBNZ recognises this and is acting on the need for reform, changing economic conditions and the path of reform will continue to have a constraining impact on the prospects for smaller bank expansion.

### 4.4 Dampening effect on competition

79. Asymmetric costs to small banks arising from the use of IRB vs standardised capital ratio models have limited their ability to expand and impacted their profitability which, in combination, affect the ability of these smaller banks to compete.
80. The overall cost impacts of this asymmetry should not be trivialised and relegated to history – the Australian Productivity Commission estimates that the collective cost saving for the four major banks in Australia from using their own risk models (IRB) is well in excess of \$1 billion a

year. The Productivity Commission also estimated that the costs of funding for the smaller banks (that use standardised risk weights) places them in a real competitive disadvantage:

Figure 8.6 **Marginal cost of major versus other banks**  
Average cost a bank incurs for an additional unit of lending<sup>a</sup>



<sup>a</sup> Uses a transcendental logarithmic cost function estimation as detailed in Demircug-Kunt, Peria & Soledad (2010). The model uses labour, fixed capital and funding as factor inputs to derive a total cost function. This is derived with respect to quantity to arrive at marginal cost, which eliminates the banks' fixed cost elements (such as labour, property and equipment and technology). The model uses unpublished APRA data on Australian-owned bank costs (excludes foreign banks, credit unions and building societies).

Source: Productivity Commission estimates based on unpublished APRA data (2018)

81. Also, smaller banks effectively face capacity constraints on their ability to expand because of higher capital ratios. This means that they are less likely to act like “maverick or disruptive” competitors – simply put, they do not have incentives to be especially aggressive because they will reach a point where they will not have the capital capacity to support competitive growth.
82. While retained earnings provide a source of funding to support growth, the higher costs of smaller banks have led to smaller profits than the larger competitors which compounds the capacity limitations of small banks to expand.

#### 4.5 *This historic example implies a need for more explicit analysis of competition impacts in regulatory options analysis*

83. A number of submitters provide specific comments on how the regulations around AML and CCCFA could be amended to either enhance the switching process or improve consumer outcomes in other ways. Commentary was also provided in one submission on the need to develop a longer-term regulatory roadmap to reduce uncertainty for both incumbents and entrants, and on the need for enhanced regulator alignment (between the RBNZ, the Commission, and the FMA).<sup>28</sup> Related to this last point, the example of prudential capital requirements demonstrates a critical need to examine the way in which competition impacts of financial regulation are assessed and weighed up. In Australia, for example, the Productivity Commission’s review of competition in the Australian financial system had a specific focus on how competition impacts could be better included in decisions taken by regulators that could have the impact of restricting competition.<sup>29</sup>

<sup>28</sup> For example, Westpac in 1.7(c) and 2.6 of its submission,

<sup>29</sup> Australian Government Productivity Commission (June 2018), *Competition in the Australian Financial System Productivity Commission Inquiry Report Overview & Recommendations*, pp. 52-53.

## Appendix A: Empirical analysis of whether Kiwibank's rates constrain the rates of the largest four banks

### Regression Specifications

84. We estimated the following multivariate linear regressions for each of the big four banks:

$$\begin{aligned} \text{ANZ Rate}_t = & \alpha_0 + \alpha_1 \left( \frac{\text{ASB Rate}_t + \text{BNZ Rate}_t + \text{WBC Rate}_t}{3} \right) + \alpha_2 \text{Cash Rate}_t + \alpha_3 \text{Kiwi Rate}_t \\ & + \alpha_4 \text{Kiwi Rate Upward}_t + \varepsilon_{\text{ANZ}t} \end{aligned} \quad (1)$$

$$\begin{aligned} \text{BNZ Rate}_t = & \beta_0 + \beta_1 \left( \frac{\text{ASB Rate}_t + \text{ANZ Rate}_t + \text{WBC Rate}_t}{3} \right) + \beta_2 \text{Cash Rate}_t + \beta_3 \text{Kiwi Rate}_t \\ & + \beta_4 \text{Kiwi Rate Upward}_t + \varepsilon_{\text{BNZ}t} \end{aligned} \quad (2)$$

$$\begin{aligned} \text{WBC Rate}_t = & \delta_0 + \delta_1 \left( \frac{\text{ASB Rate}_t + \text{ANZ Rate}_t + \text{BNZ Rate}_t}{3} \right) + \delta_2 \text{Cash Rate}_t + \delta_3 \text{Kiwi Rate}_t \\ & + \delta_4 \text{Kiwi Rate Upward}_t + \varepsilon_{\text{WBC}t} \end{aligned} \quad (3)$$

$$\begin{aligned} \text{ASB Rate}_t = & \tau_0 + \tau_1 \left( \frac{\text{WBC Rate}_t + \text{ANZ Rate}_t + \text{BNZ Rate}_t}{3} \right) + \tau_2 \text{Cash Rate}_t + \tau_3 \text{Kiwi Rate}_t \\ & + \tau_4 \text{Kiwi Rate Upward}_t + \varepsilon_{\text{ASB}t} \end{aligned} \quad (4)$$

85. The variable  $\text{Kiwi Rate Upward}_t$  requires some explanation. The  $\text{Kiwi Rate}_t$  variable can be broken up into three components:

$$\text{Kiwi Rate}_t = \text{Kiwi Rate}_0 + \text{Sum of Kiwi Up}_t + \text{Sum of Kiwi Down}_t$$

86.  $\text{Kiwi Rate}_0$  is the starting value for Kiwibank interest rates.  $\text{Sum of Kiwi Up}_t$  represents the cumulative sum of the changes in Kiwi Rates in each month that is upward up to month  $t$ , and  $\text{Kiwi Down}_t$  represents the cumulative sum of the changes in Kiwi Rates in each month that is downward to month  $t$ . For example, let us suppose that the starting value of Kiwi Rates in April 2018 is  $\text{Kiwi Rate}_0 = 4.29\%$ . Let us suppose that in May 2018 Kiwi Rates go up to 4.4%. In this case,  $\text{Kiwi Upward}_{\text{May 2018}} = 0.11\%$  and  $\text{Kiwi Down}_{\text{May 2018}} = 0$ . The value of Kiwi Rates in May 2019 is therefore:

$$\begin{aligned} \text{Kiwi Rates}_{\text{May 2018}} &= \text{Kiwi Rate}_0 + \text{Sum of Kiwi UP}_{\text{May 2018}} + \text{Sum of Kiwi Down}_{\text{May 2018}} \\ &= 4.29\% + 0.11\% + 0\% = 4.40\% \end{aligned}$$

87. Let us now suppose in June 2018 Kiwi Rates increase further to 4.5%. The  $\text{Sum of Kiwi Up}_{\text{June 2018}}$  becomes  $0.11\% + 0.1\% = 0.21\%$  while  $\text{Kiwi Down}_{\text{June 2018}} = 0\% + 0\% = 0\%$ . The  $\text{Kiwi Rate}_{\text{June 2018}}$  is:

$$\begin{aligned} \text{Kiwi Rates}_{\text{June 2018}} &= \text{Kiwi Rate}_0 + \text{Sum of Kiwi UP}_{\text{June 2018}} + \text{Sum of Kiwi Down}_{\text{June 2018}} \\ &= 4.29\% + (0.11\% + 0.10\%) + (0\% + 0\%) = 4.50\% \end{aligned}$$

88. Let us now suppose that Kiwi Rates fall to 4.3% in July 2018. The sum of Kiwi Up<sub>July 2018</sub> is 0.11% + 0.1% + 0% = 0.21% while Kiwi Down<sub>July 2018</sub> = 0% + 0% - 0.20%. The Kiwi Rates in July 2018 are then:

$$\begin{aligned} \text{Kiwi Rates}_{\text{July 2018}} &= \text{Kiwi Rate}_0 + \text{Sum of Kiwi UP}_{\text{July 2018}} + \text{Sum of Kiwi Down}_{\text{July 2018}} \\ &= 4.29\% + (0.11\% + 0.10\% + 0\%) + (0\% + 0\% - 0.20\%) = 4.50\% \end{aligned}$$

89. What splitting the Kiwibank rate up into downward and upward movements allows us to do is include the variable Kiwi Rate<sub>t</sub> in each regression as well as the variable Kiwi UP<sub>t</sub> in each regression and if the coefficient attached to Kiwi Up<sub>t</sub> is statistically significantly different from zero we can conclude that the way the dependent variable in the regression reacts to Kiwibank rates is different when Kiwibank lifts its rate compared to when it reduces its rate. We would expect that the big four banks will reduce their rates by more for a given reduction in Kiwibank rates than they will increase their rates for the same increase in Kiwibank's rate. If this is the case, we would expect that the coefficient attached to Kiwi Up<sub>t</sub> is likely to be negative, meaning that the response is weaker for rate increases.
90. The regressions (1) to (4) were estimated for three sets of data:
- variable mortgage rates,
  - 1-year fixed rates, and
  - 2-year fixed rates.
91. We wish to test to see whether the Kiwibank rate and Kiwi Up has any statistically significant influence on the rates of each of the Big Four banks after controlling for the average rates of the three remaining big four banks and the underlying cost of funding as proxied by the RBNZ official cash rate. If we find that the Kiwibank rate is statistically significant then we conclude that Kiwibank is big enough to influence the pricing decisions of the big four banks. The results are presented in the discussion and tables below.

### **ANZ regression specification**

#### *Variable home loan rates*

92. The estimated results of the multivariate regression (1) in the case in which the interest rate data used is the standard variable mortgage rate is summarised in the Table below.

**Figure 14 Regression results for ANZ variable rates**

Variable	Coefficient	Standard Error	t-value	Probability
Constant	2.375623	0.380128	6.249533	0.0000
$\frac{\text{ASB Rate}_t + \text{BNZ Rate}_t + \text{WBC Rate}_t}{3}$	0.378140	0.098690	3.831605	0.0003
Cash Rate <sub>t</sub>	0.458985	0.076638	5.989032	0.0000
Kiwi Rate <sub>t</sub>	0.068305	0.036488	1.871970	0.0661
Kiwi Up <sub>t</sub>	0.004570	0.019377	0.235838	0.8144
$R^2 = 99.7\%$				

93. Findings from this analysis are:

- a. Kiwibank standard variable mortgage interest rates do not statistically significant affect ANZ standard variable mortgage interest rates at the 5% significance level (although they do statistically significant affect ANZ interest rates at the 6.6% significance level). This is indicated by the p-value attached to the Kiwi Rate<sub>t</sub> variable in the regression, which is located in the last column and found to be 0.0661.
- b. Upward movements in Kiwibank standard variable mortgage interest rates have the same impact as downward movements. This is found because the Kiwi Up<sub>t</sub> variable was found to be statistically insignificant at conventional significance levels, with an estimated p-value of 0.8144.
- c. The dominant drivers of ANZ standard variable mortgage rates are the standard variable mortgage rates of the other big banks and the cash rate.

### 1-Year Fixed Rates

94. The estimated multivariate regression (1) when the mortgage rates data used is the one-year fixed rate is summarised in the table below.

**Figure 15 Regression results for ANZ 1-year fixed rates**

Variable	Coefficient	Standard Error	t-value	Probability
Constant	-0.009581	0.092433	-0.103653	0.9178
$\frac{\text{ASB Rate}_t + \text{BNZ Rate}_t + \text{WBC Rate}_t}{3}$	0.889218	0.149932	5.930798	0.0000
Cash Rate <sub>t</sub>	-0.014682	0.030025	-0.488982	0.6266
Kiwi Rate <sub>t</sub>	0.112623	0.152229	0.739827	0.4623
Kiwi Up <sub>t</sub>	0.019095	0.012785	1.493509	0.1405
$R^2 = 99.7\%$				

95. The findings of the analysis are:
- a. The only statistically significant driver of ANZ 1-year fixed mortgage rate is the average 1-year fixed mortgage rate charged by the other big banks.
  - b. Changes in Kiwibank one-year mortgage rates does not have a statistically significant influence on the one-year mortgage rate of ANZ bank.

### 2-Year Fixed Rates

96. The estimated multivariate regression (1) when the mortgage rates data used is the two-year fixed rate is summarised in the table below.

**Figure 16 Regression results for ANZ 2-year fixed rates**

Variable	Coefficient	Standard Error	t-value	Probability
Constant	-0.000216	0.089496	-0.002409	0.9981
$\frac{\text{ASB Rate}_t + \text{BNZ Rate}_t + \text{WBC Rate}_t}{3}$	0.857116	0.116465	7.359404	0.0000
Cash Rate <sub>t</sub>	-0.011716	0.021761	-0.538361	0.5923
Kiwi Rate <sub>t</sub>	0.151467	0.120537	1.256604	0.2138

Kiwi Up <sub>t</sub>	0.662603	0.014008	0.662603	0.5101
R <sup>2</sup> = 99.5%				

97. The findings from the analysis are:

- a. The only statistically significant driver of ANZ 2-year fixed mortgage rates is the average 2-year fixed mortgage rate charged by the other big banks.
- b. Changes in Kiwibank one-year mortgage rates does not have a statistically significant influence on the one-year mortgage rate of ANZ bank.

### ASB Regression Specification

#### Variable Rates

98. The estimated results of the multivariate regression (4) in the case in which the interest rate data used is the standard variable mortgage rate is summarised in the Table below.

**Figure 17 Regression results for ASB variable rates**

Variable	Coefficient	Standard Error	t-value	Probability
Constant	-0.909788	0.520004	-1.749579	0.0853
$\frac{\text{BNZ Rate}_t + \text{ANZ Rate}_t + \text{WBC Rate}_t}{3}$	1.232380	0.136046	9.058536	0.0000
Cash Rate <sub>t</sub>	-0.052804	0.098099	-0.538274	0.5924
Kiwi Rate <sub>t</sub>	-0.072475	0.042483	-1.705981	0.0932
KiwiUp <sub>t</sub>	-0.022791	0.021071	-1.081630	0.2837
R <sup>2</sup> = 99.6%				

99. The findings from the analysis are:

- a. Kiwibank standard variable mortgage interest rates statistically significantly affect BNZ standard variable mortgage interest rates at the 10% level of statistical significance only.
- b. Upward movements in Kiwibank standard variable mortgage rates have the same impact as downward movements at conventional significant levels.
- c. The average standard variable mortgage rates of the other big banks have a strong, statistically significant impact on ASB standard variable mortgage rates.

#### 1-Year Fixed Rates

100. The estimated results of the multivariate regression (4) in the case in which the interest rate data used is the one-year fixed mortgage rate is summarised in the Table below.

**Figure 18 Regression results for ASB 1-year fixed rates**

Variable	Coefficient	Standard Error	t-value	Probability
Constant	0.034309	0.066414	0.516587	0.6073
$\frac{\text{BNZ Rate}_t + \text{ANZ Rate}_t + \text{WBC Rate}_t}{3}$	0.824968	0.103688	7.956451	0.0000



Cash Rate <sub>t</sub>	0.036109	0.021202	1.703076	0.0937
Kiwi Rate <sub>t</sub>	0.154053	0.106069	1.452390	0.1516
KiwiUp <sub>t</sub>	0.0007893	0.009133	0.086846	0.9311
R <sup>2</sup> = 99.8%				

101. The findings from the analysis are:

- a. Kiwibank 1-year fixed mortgage interest rates do not statistically significantly affect ASB 1-year fixed mortgage interest rates at all conventional significance levels.
- b. Upward movements in Kiwibank 1-year fixed mortgage rates do not have a statistically significantly different impact on ASB 1-year fixed mortgage rates than downward movements at all conventional significance levels.
- c. The average 1-year fixed mortgage rates of the other big banks have a statistically significant impact on ASB 1-year fixed mortgage rates.
- d. A 100-basis point increase in the 1-year average fixed rate of the big banks leads to an 82 basis point increase in ASB 1-year fixed rates.

#### 2-Year Fixed Rates

102. The estimated results of the multivariate regression (4) in the case in which the interest rate data used is the two-year fixed mortgage rate is summarised in the Table below.

**Figure 19 Regression results for 2-year fixed rates**

Variable	Coefficient	Standard Error	t-value	Probability
Constant	-0.028006	0.061589	-0.454733	0.6509
$\frac{\text{BNZ Rate}_t + \text{ANZ Rate}_t + \text{WBC Rate}_t}{3}$	0.920874	0.080320	11.46504	0.0000
Cash Rate <sub>t</sub>	0.022127	0.014890	1.485998	0.1425
Kiwi Rate <sub>t</sub>	0.077988	0.083307	0.936152	0.3529
KiwiUp <sub>t</sub>	-0.001888	0.009595	-0.196803	0.8446
R <sup>2</sup> = 99.8%				

103. The findings from the analysis are:

- a. Kiwibank 2-year fixed mortgage interest rates do not statistically significantly affect ASB 2-year fixed mortgage interest rates at all conventional significance levels.
- b. Upward movements in Kiwibank 2-year fixed mortgage rates do not have a statistically significantly different impact on ASB 2-year fixed mortgage rates than downward movements at all conventional significance levels.
- c. The average 2-year fixed mortgage rates of the other big banks have a statistically significant impact on ASB 2-year fixed mortgage rates.
- d. A 100-basis point increase in the 2-year average fixed rate of the big banks lead to a 92-basis point increase in ASB 2-year fixed rates.

**BNZ Regression Specification****Variable Rates**

104. The estimated results of the multivariate regression (2) in the case in which the interest rate data used is the standard variable mortgage rate is summarised in the Table below.

**Figure 20 Regression results for BNZ variable rates**

Variable	Coefficient	Standard Error	t-value	Probability
Constant	3.428873	0.281064	12.19961	0.0000
$\frac{\text{ASB Rate}_t + \text{ANZ Rate}_t + \text{WBC Rate}_t}{3}$	0.054986	0.071149	0.772837	0.4427
Cash Rate <sub>t</sub>	0.552662	0.065596	8.425204	0.0000
Kiwi Rate <sub>t</sub>	0.202514	0.053329	3.797462	0.0003
KiwiUp <sub>t</sub>	-0.049153	0.032049	-1.533695	0.1304
R <sup>2</sup> = 99.2%				

105. The findings of the analysis are:

- a. Kiwibank standard variable mortgage interest rates statistically significantly affect BNZ standard variable mortgage interest rates at all conventional significance levels.
- b. Upward movements in Kiwibank standard variable mortgage rates have the same impact as downward movements at conventional significant levels, but at the 13% level of significance there is a finding that a 100-basis point downward movement in the Kiwibank standard variable mortgage rate will reduce the BNZ rate by 20-basis points, but an upward movement of 100-basis points will only increase BNZ standard variable mortgage rates by around 15-basis points.
- c. The average standard variable mortgage rates of the other big banks have no statistically significant impact on BNZ standard variable mortgage rates.
- d. The most important driver of BNZ standard variable mortgage rates is the cash rate.

**1-Year Fixed Rate**

106. The estimated results of the multivariate regression (2) in the case in which the interest rate data used is the one-year fixed mortgage rate is summarised in the Table below.

**Figure 21 Regression results for BNZ 1-year fixed rates**

Variable	Coefficient	Standard Error	t-value	Probability
Constant	-0.073552	0.045282	-1.624292	0.1096
$\frac{\text{ASB Rate}_t + \text{ANZ Rate}_t + \text{WBC Rate}_t}{3}$	0.749271	0.068529	10.93370	0.000
Cash Rate <sub>t</sub>	-0.017913	0.014691	-1.219334	0.2275
Kiwi Rate <sub>t</sub>	0.283870	0.069259	4.098667	0.0001
KiwiUp <sub>t</sub>	-0.018279	0.006217	-2.940279	0.0047
R <sup>2</sup> = 99.9%				

107. The findings of the analysis are:

- a. Kiwibank 1-year fixed mortgage interest rates statistically significantly affect BNZ 1-year fixed mortgage interest rates at all conventional significance levels.
- b. Upward movements in Kiwibank 1-year fixed mortgage rates have a statistically significantly different impact on BNZ 1-year fixed mortgage rates than downward movements at all conventional significance levels.
- c. A 100-basis point downward movement in the Kiwibank 1-year fixed mortgage rate will reduce the BNZ 1-year fixed mortgage rate by 28 basis points, but an upward movement of 100-basis points will only increase BNZ 1-year fixed mortgage rates by 26-basis points.
- d. The average 1-year fixed mortgage rates of the other big four banks have a statistically significant impact on BNZ 1-year fixed mortgage rates.
- e. A 100-basis point increase in the 1-year average fixed rate of the other big banks lead to a 75-basis point increase in BNZ 1-year fixed rates, while a 100-basis point increase in Kiwibank's fixed rate will increase BNZ's 1-year fixed rate by just 26 basis points. The big banks have a more powerful influence.

#### 2-Year Fixed Rate

108. The estimated results of the multivariate regression (2) in the case in which the interest rate data used is the two-year fixed mortgage rate is summarised in the Table below.

**Figure 22 Regression results for BNZ 2-year fixed rates**

Variable	Coefficient	Standard Error	t-value	Probability
Constant	-0.004700	0.053604	-0.087671	0.9304
$\frac{\text{ASB Rate}_t + \text{ANZ Rate}_t + \text{WBC Rate}_t}{3}$	0.840844	12.31538	12.31538	0.0000
Cash Rate <sub>t</sub>	-0.004241	0.013012	-0.325967	0.7456
Kiwi Rate <sub>t</sub>	0.162610	0.070848	2.295187	0.0252
KiwiUp <sub>t</sub>	-0.016466	0.008313	-1.980756	0.0522
R <sup>2</sup> = 99.8%				

109. The findings of the analysis are:

- a. Kiwibank 2-year fixed mortgage interest rates statistically significantly affect BNZ 2-year fixed mortgage interest rates at most conventional significance levels.
- b. Upward movements in Kiwibank 2-year fixed mortgage rates have a statistically significantly different impact on BNZ 2-year fixed mortgage rates than downward movements at the 5% and higher significance levels.
- c. A 100-basis point downward movement in the Kiwibank 2-year fixed mortgage rate will reduce the BNZ 2-year fixed mortgage rate by 16 basis points, but an upward movement of 100-basis points will only increase BNZ 2-year fixed mortgage rates by 15-basis points.

- d. The average 2-year fixed mortgage rates of the other big banks have a statistically significant impact on BNZ 2-year fixed mortgage rates.
- e. A 100-basis point increase in the 2-year average fixed rate of the other big banks lead to an 84-basis point increase in BNZ 2-year fixed rates, while a 100-basis point increase in Kiwibank's fixed rate will increase BNZ's 1-year fixed rate by just 15 basis points. The big banks have a more powerful influence on BNZ's two-year mortgage rate.

### Westpac Regression Specification

#### Variable Rates

110. The estimated results of the multivariate regression (3) in the case in which the interest rate data used is the standard variable mortgage rate is summarised in the Table below.

**Figure 23 Regression results for Westpac variable rates**

Variable	Coefficient	Standard Error	t-value	Probability
Constant	1.074552	0.379589	2.830826	0.0063
$\frac{\text{BNZ Rate}_t + \text{ANZ Rate}_t + \text{ASB Rate}_t}{3}$	0.732871	0.099330	7.378143	0.0000
Cash Rate <sub>t</sub>	0.135171	0.077092	1.753375	0.0846
Kiwi Rate <sub>t</sub>	0.060194	0.033448	1.799622	0.0769
KiwiUp <sub>t</sub>	0.002516	0.017710	0.142090	0.8875
$R^2 = 99.7\%$				

111. The findings of the analysis are:
- Kiwibank standard variable mortgage interest rates statistically significantly affect Westpac standard variable mortgage interest rates at the 10% level of statistical significance only.
  - Upward movements in Kiwibank standard variable mortgage rates have the same impact as downward movements at conventional significant levels.
  - The average standard variable mortgage rates of the other big four banks have a strong, statistically significant impact on Westpac's standard variable mortgage rates.
  - A 100-basis point increase in the average standard variable mortgage rate of the big four banks leads to a 73-basis point increase in Westpac's average standard variable mortgage rates.

#### 1-Year Fixed Rates

112. The estimated results of the multivariate regression (3) in the case in which the interest rate data used is the one-year fixed mortgage rate is summarised in the Table below.

**Figure 24 Regression results for Westpac 1-year fixed rates**

Variable	Coefficient	Standard Error	t-value	Probability
Constant	0.041633	0.061425	0.677777	0.5005

$\frac{\text{BNZ Rate}_t + \text{ANZ Rate}_t + \text{ASB Rate}_t}{3}$	0.824129	0.095564	8.623866	0.0000
Cash Rate <sub>t</sub>	0.032117	0.019626	1.636456	0.1070
Kiwi Rate <sub>t</sub>	0.154013	0.097798	1.574814	0.1206
KiwiUp <sub>t</sub>	-0.004789	0.008438	-0.567527	0.5725
R <sup>2</sup> = 99.9%				

113. The findings from the analysis are:

- a. Kiwibank 1-year fixed mortgage interest rates do not statistically significantly affect Westpac's 1-year fixed mortgage interest rates at all conventional significance levels.
- b. Upward movements in Kiwibank 1-year fixed mortgage rates do not have a statistically significantly different impact on the Westpac 1-year fixed mortgage rates than downward movements at all conventional significance levels.
- c. The average 1-year fixed mortgage rates of the other big four banks have a statistically significant impact on Westpac's 1-year fixed mortgage rates.
- d. A 100-basis point increase in the 1-year average fixed rate of the other three big banks lead to an 8- basis point increase in Westpac 1-year fixed rates.

#### 2-Year Fixed Rates

114. The estimated results of the multivariate regression (3) in the case in which the interest rate data used is the two-year fixed mortgage rate is summarised in the Table below.

**Figure 25 Regression results for Westpac 2-year fixed rates**

Variable	Coefficient	Standard Error	t-value	Probability
Constant	0.033388	0.051635	0.646622	0.5203
$\frac{\text{BNZ Rate}_t + \text{ANZ Rate}_t + \text{ASB Rate}_t}{3}$	0.932680	0.067290	13.86055	0.0000
Cash Rate <sub>t</sub>	0.004331	0.012515	0.346076	0.7305
Kiwi Rate <sub>t</sub>	0.058100	0.069929	0.830849	0.4094
KiwiUp <sub>t</sub>	0.000441	0.008050	0.054780	0.9565
R <sup>2</sup> = 99.8%				

115. The findings of the analysis are:

- a. Kiwibank 2-year fixed mortgage interest rates do not statistically significantly affect the Westpac 2-year fixed mortgage interest rates at all conventional significance levels.
- b. Upward movements in Kiwibank 2-year fixed mortgage rates do not have a statistically significantly different impact on Westpac's 2-year fixed mortgage rates than downward movements at all conventional significance levels.
- c. The average 2-year fixed mortgage rates of the other big four banks have a statistically significant impact on Westpac's 2-year fixed mortgage rates.
- d. A 100-basis point increase in the 2-year average fixed rate of the other big three banks lead to a 93-basis point increase in Westpac's 2-year fixed rates.

## About the authors

### Emma Ihaia

Emma Ihaia specialises in competition analysis and regulatory economics, with 25 years of experience in this field. Emma has been retained as an expert in the context of regulatory investigations and consultations, and has prepared competition assessments for merger clearances, authorisations, and market reviews. She has also provided expert evidence for legal proceedings.

Emma has previously worked for several international economics consultancies and established Link Economics in 2012. She holds a Master of the Arts (First Class Honours) in Economics from the University of Auckland.

**David de Boer** has a focus on regulatory economics and the application of regulatory systems in the real world. David has advised on regulatory determinations and on the establishment and periodic review of regulatory regimes. He has also undertaken market reviews, advised on mergers, and has published research on regulation and market performance.

David has a professional career that spans both economic consulting and the management of regulated entities. David has worked on the design and implementation of the regulatory regimes across multiple sectors. He spent several years as a senior consultant at the New Zealand Institute of Economic Research (NZIER). David is experienced in implementing structural market change to improve consumer outcomes – he advised the Commerce Commission on regulatory matters with the separation of Telecom into Chorus and Spark and advised Crown Fibre Holdings on the establishment of the Local Fibre Entities.

David holds an MCA (Economics) and an MBA (Finance & Strategy) from Victoria University.

**Dr. Anthony (Tony) G. Webber** is an economist and a quantitative modelling expert. These skills have led him to be engaged as an expert witness across a variety of court cases. He has held academic positions at the University of New England, the University of Wollongong, the University of NSW, the University of Sydney, Swinburne University of Technology and the University of Technology Sydney. Dr Webber has also been involved with overseas universities including the University of Lund in Sweden, Copenhagen University in Denmark, and Embry Riddle Aviation University in Florida, U.S.A.

Dr Webber was the chief economist at Qantas from 2004 to 2011 and has operated an aviation research consultancy over the past 12 years. Dr Webber has also applied his skills to the public sector – he was a manager and economist at the Reserve Bank of Australia and has consulted to a variety of government entities such as Transport for NSW, the Greater Cities Commission, Tourism Australia, and the Australian Federal Treasury.

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