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Review of "Market Power in Banking: A Study of New Zealand Banks" (2024) by D. Margaritis and M. Hasannasab

Prepared for Bell Gully

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Project Team

James Mellsop
Jono Henderson
Shaheer Salman

NERA
Level 11
15 Customs Street West
Auckland 1010, New Zealand
www.nera.com

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1. Overview

1. We have been asked to provide our views on the paper titled "Market Power in Banking: A Study of New Zealand Banks" (2024) by D. Margaritis and M. Hasannasab (the **"M&H paper"**), which was published alongside the Commerce Commission's (**"Commission"**) draft report.
2. The M&H paper attempts to construct measures of efficiency, market concentration, scale economies, and market power for New Zealand banks. It uses these estimates to examine the relationship between market structure and firm efficiency. The Commission's draft report states the Commission requested this analysis to provide an alternative view to that offered by standard measures such as ROA, ROE, and NIM (and to inform its interpretation of those measures). [1]
3. The Commission's draft report states the Commission found M&H's analysis useful and consistent with its own findings, but that it did not rely heavily on the analysis in arriving at its preliminary findings and draft recommendations.[2] However, the Commission's draft report does cite M&H's paper as evidence of moderate[3] and variable[4] market power for the major banks, and as evidence of Kiwibank not benefitting from economies of scale.[5]
4. To summarise the findings which we are responding to, as we understand them:
   A. The M&H paper's fundamental premise is that market power for bank loans can be measured by the Lerner index (the difference between price and marginal cost as a proportion of price).[6]
   B. M&H find that there is moderate market power in the banking industry according to both the Lerner index (which is lending-specific) and an alternative measure, the Panzar-Rosse H-statistic (which applies at the whole-bank level).[7]
   C. M&H conclude that NZ banks achieve overall relatively high levels of cost efficiency and profit efficiency and that both of these are positively associated with market power (as measured by the Lerner index). They find that this lends support to an "efficiency hypothesis" under which high efficiency leads to high profits, as opposed to a "quiet life hypothesis" whereby high profits lead to low efficiency.[8]
   D. M&H find most banks operate under increasing returns to scale. In other words, as their output grows, their costs grow by a less-than-proportionate amount, implying the banks are achieving economies of scale. However, as an exception to this they find that Kiwibank exhibits decreasing returns to scale in 2021 and 2022, and infer that this casts doubt on

1 NZCC, Personal banking services market study: draft report, March 2024, para 1.69.
2 NZCC, Personal banking services market study: draft report, March 2024, para 1.70.
3 NZCC, Personal banking services market study: draft report, March 2024, paras 6.59-6.60.
4 NZCC, Personal banking services market study: draft report, March 2024, footnote 99.
5 NZCC, Personal banking services market study: draft report, March 2024, para 2.29.
6 D. Margaritis & M. Hasannasab, Market power in banking: a study of New Zealand banks, March 2024, p.3.
7 D. Margaritis & M. Hasannasab, Market power in banking: a study of New Zealand banks, March 2024, pp.16, 18.
8 D. Margaritis & M. Hasannasab, Market power in banking: a study of New Zealand banks, March 2024, p.19.

whether a larger Kiwibank would be more competitive.[9] They also separately estimate a positive relationship between increasing returns to scale and market power.[10]

5. In our view, the authors' use of the Lerner index is questionable because marginal costs are difficult to estimate in practice, and because banks face high fixed costs which require a price-cost margin to compensate. We also have concerns about the authors' use of the Panzar-Rosse H-statistic (which is ambiguous to interpret) and their analysis of economies of scale (which we believe is not informative of banking market structure).
6. We believe these caveats undermine the usefulness of the M&H paper for deriving conclusions about market power in the New Zealand personal banking sector. Accordingly, we recommend the Commission takes caution when using M&H's analysis to inform its own findings. We set out our critique in detail below.

2. The authors' measures of banking market power have significant limitations

7. In its draft report the Commission cites the M&H paper when discussing why it is unsatisfied with alternative explanations for the high returns observed in the New Zealand banking sector (footnotes omitted):[11]

   Professor Margaritis and Dr Hasannasab found evidence of what they described as 'moderate market power' in the market for loans, and across the banking sector more generally based on their estimates of the Lerner Index and the Panzar-Rosse H statistic respectively. They also found statistically significant and positive associations between ROE, ROA, and NIM and the Lerner Index of market power, although we note that their findings do not indicate a causal relationship.

8. However, we consider both the Lerner index and the Panzar-Rosse H-statistic have significant limitations when being used as empirical measures of banking market power.

2.1. Lerner index

9. The Lerner index measures a firm's price-cost margin, with a higher Lerner index theoretically implying more market power.[12] However, there are conceptual and practical difficulties with the Lerner index.
10. First, calculating the Lerner index relies on estimating marginal cost. This is unavoidably imprecise because marginal cost is an economic concept, not an accounting one. It does not get reported in financial statements and must instead be inferred.
11. Second, a large price-cost margin may not necessarily signal market power. Large price-cost margins can simply reflect the need to cover large fixed costs – and as the NZCC

9 D. Margaritis & M. Hasannasab, Market power in banking: a study of New Zealand banks, March 2024, p.15.

10 D. Margaritis & M. Hasannasab, Market power in banking: a study of New Zealand banks, March 2024, pp.19-20.

11 NZCC, Personal banking services market study: draft report, March 2024, para 6.60.

12 The general formula is given by $L = \frac{P-MC}{P}$ where P and MC refer to the price and marginal cost. A firm with a price of \$6/unit and a marginal cost of \$4/unit would have a Lerner index of 0.33. A Lerner index of 0 indicates no margin and a Lerner index of 1 indicated full margin. Accordingly, a higher Lerner index implies more market power.

acknowledges, *"there are significant fixed costs in providing banking services"*.[13] For example, Bork & Sidak (2013) write that *"prices exceeding marginal cost are common in industries with low marginal costs and high sunk costs".*[14] Elzinga & Mills (2011) write that:[15]

> *The most important limitation of the Lerner Index, as summarized by Eric B. Lindenberg and Stephen A. Ross (1981), is that the Index "does not recognize that some of the deviation of P from MC comes from either efficient use of scale or the need to cover fixed costs" (p. 28). When using the Index to assess departures from the social optimum of firms with increasing returns to scale, it is misleading to attribute the entire departure to the exercise of monopoly power. […] This is a significant limitation because few firms fit the textbook description of perfect competition. The cost structure of firms in many technology-driven industries (e.g., software, pharmaceuticals) is markedly front-loaded. Marginal cost pricing in these industries is neither feasible nor desirable.*

12. Consequently, it is more common to find Lerner indices used as a theoretical "textbook" framework for market power than it is to see them applied in antitrust enforcement.[16]

2.2. Panzar-Rosse H-statistic

13. The Panzar-Rosse H-statistic measures changes in revenue in response to changes in input prices.

14. As we understand it, firms in a perfectly competitive market should have an H-statistic of 1 (both revenue and marginal cost change proportionally to input prices if all firms price at marginal cost). Conversely, a profit-maximising monopoly should have an H-statistic below 0 (higher input prices and therefore marginal costs lead to lower revenue, since the monopoly faces elastic demand implying revenue will decline should it raise its prices). Accordingly, a lower H-statistic theoretically implies more market power.

15. In our view, Panzar-Rosse H-statistics arguably carry even more limitations than Lerner indices. For example, there does not appear to be consensus in the literature about how to interpret H-statistics between 0 and 1 (which all of them are in this case, according to M&H). While a positive H-statistic was traditionally considered sufficient to rule out significant market power, Shaffer & Spierdijk (2015) argue that the H-statistic can take either sign for any degree of competition, negating its usefulness as a measure of market power.[17]

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13 NZCC, Personal banking services market study: draft report, March 2024, para 2.20.21.

14 Bork, Robert H., and J. Gregory Sidak. "The misuse of profit margins to infer market power." *Journal of Competition Law and Economics* 9, no. 3 (2013): 511-530.

15 Elzinga, Kenneth G., and David E. Mills. "The Lerner index of monopoly power: origins and uses." *American Economic Review* 101, no. 3 (2011): 558-564.

16 E.g., see Elzinga, Kenneth G., and David E. Mills. "The Lerner index of monopoly power: origins and uses." *American Economic Review* 101, no. 3 (2011): 558-564.

17 See Shaffer, Sherrill, and Laura Spierdijk. "The Panzar–Rosse revenue test and market power in banking." *Journal of Banking & Finance* 61 (2015): 340-347. *"In short, H>0 appears not to be a pathological or rare outcome for non-competitive situations, but can arise under a wide variety of highly non-competitive conditions. In combination with the results from the existing literature, this leads to the conclusion that the H statistic can take either sign for any degree of competition. Consequently, the Panzar–Rosse revenue test can be used neither as a quantitative measure nor as a one-sided measure of market power."* Also see Sanchez-Cartas, Juan Manuel. "The Panzar–Rosse H statistic and monopoly. Issues on its use as a market power measure." *The BE Journal of Economic Analysis & Policy* 20, no. 4 (2020): 20200193.

16. Although we note that M&H place less emphasis on the Panzar-Rosse H-statistics as opposed to the Lerner index, it is still worth mentioning that the banks with the lowest H-statistics (i.e., closest to being below zero which theoretically implies a monopoly) are the three that are hypothesised to have the least market power (SBS, TSB, and Kiwibank). This calls into question the usefulness of individual bank-level H-statistics.

3. The authors' analysis of economies of scale does not provide meaningful insights about competition

17. The Commission's draft report proposes that there are two separate tiers of personal banking providers, with Kiwibank sitting in between the two tiers, and that this structure produces a *"stable oligopoly of major banks with no maverick to disrupt them"*.[18] It cites the M&H paper when discussing the role of economies of scale in separating the larger banks from the smaller ones:[19]

    The major personal banking providers also tend to benefit from economies of scale and scope, up to a point. For example, a larger provider has lower wholesale funding costs because the fixed transaction costs are spread across a larger issuance. The four major banks also have the benefit of wholesale lenders recognising the buying-power of the parent companies. Professor Margaritis and Dr Hasannasab found that most banks operate under economies of scale in relation to loans, with the exception of Kiwibank after 2021. The smaller banks have the potential to benefit from larger size with the exception of Kiwibank after 2020.

18. In our view, M&H's analysis does not meaningfully substantiate the existence of a two-tiered banking system.

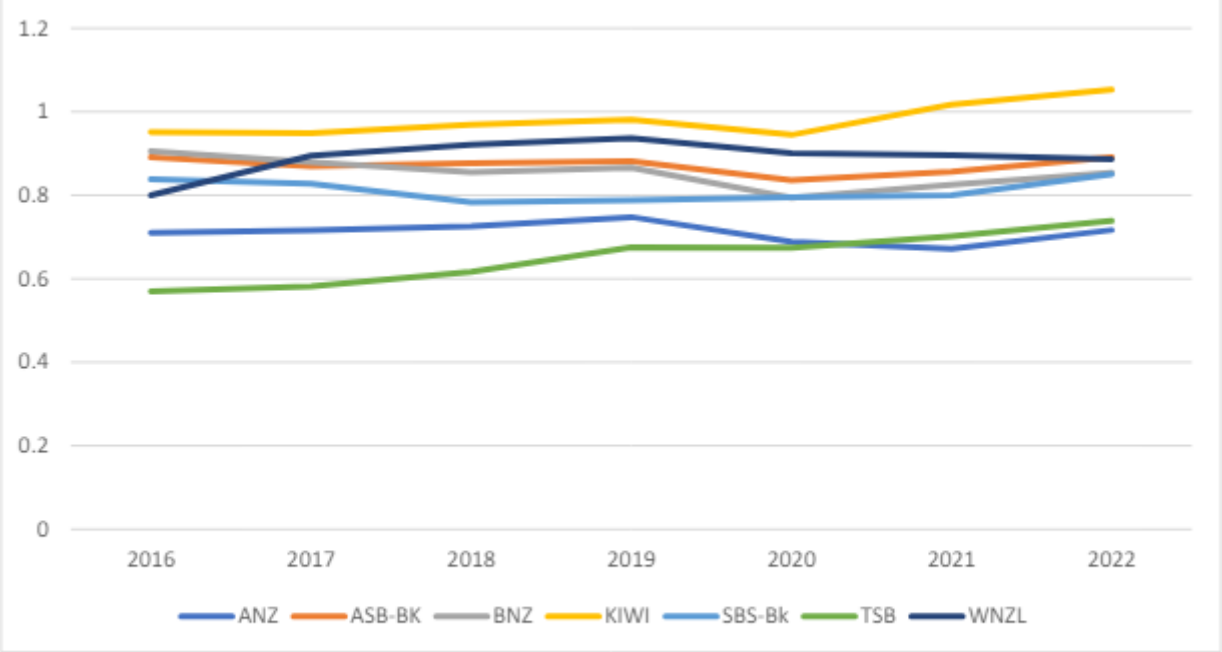
19. M&H's findings are based on estimates of cost elasticity, i.e., the rate at which costs change with output. The lower the cost elasticity, the less costs are said to increase following an increase in output.

20. We present a copy of M&H's cost elasticity estimates at Figure 1 below for convenience (we have not replicated the analysis ourselves). A cost elasticity less than 1 implies increasing returns to scale, whereas a cost elasticity greater than 1 implies decreasing returns to scale.

[18] NZCC, Personal banking services market study: draft report, March 2024, paras 2.22-2.23.

[19] NZCC, Personal banking services market study: draft report, March 2024, para 2.29.

Figure 1: M&H estimates of cost elasticity of scale for loans (reproduction of Figure 10)



Note: Loan Cost Elasticity of Scale is computed by taking the derivative of the cost function obtained from SFA with respect to loans.

Source: D. Margaritis & M. Hasannasab, Market power in banking: a study of New Zealand banks, March 2024, Figure 10

21. It is not clear that these results can be interpreted to show anything about competition. It does not seem to support the NZCC's two-tier theory as there is no clear delineation between large and small banks. We note that, while Kiwibank is estimated to have decreasing returns to scale in 2021 and 2022, the smaller banks SBS and TSB are both in line with the four large banks. In fact, Figure 1 shows that SBS and TSB generally perform better on the cost elasticity measure than all large banks except ANZ.

22. Additionally, macroeconomic conditions may also be relevant, especially to outcomes from 2020 onwards (i.e., due to Covid and the RBNZ response). The M&H paper does not feature any regression analysis that studies how cost elasticity is affected once macroeconomic conditions are controlled for.

23. We also note that Kiwibank appears to be something of an outlier in M&H's Lerner index estimation. It is odd that M&H estimates Kiwibank to be pricing materially below marginal cost in 2019, given its accounting profit after tax in that year was $108 million.[20]M&H's regression analysis finds a negative relationship between cost elasticity and the Lerner index,[21] but this

[20] While accounting profit is a different concept to economic profit, the existence of a sizeable accounting profit does not necessarily corroborate M&H's findings, particularly because their own analysis is based on accounting data. See Kiwibank. Registered Bank Disclosure Statement for the year ending 30 June 2023, Number 77.

[21] I.e. lower cost elasticity (implying better economies of scale) is associated with having a higher Lerner index (implying more market power).

may be primarily driven by Kiwibank (i.e. the relationship may not persist if Kiwibank was excluded). [22]

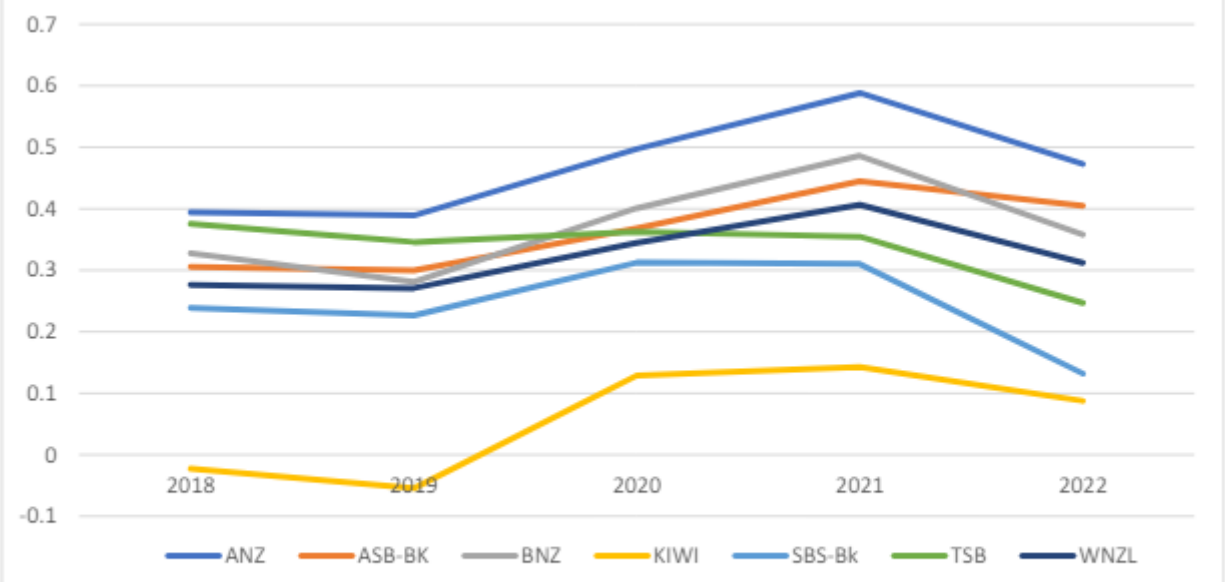
24. To illustrate this, we present a copy of M&H's Lerner index estimates at Figure 2 below, for comparison with Figure 1. Kiwibank clearly exhibits a negative relationship as it generally has the highest cost elasticity and the lowest Lerner index. But of the other banks, only ANZ seems to exhibit a negative relationship. Otherwise:

    A. SBS generally has the third-lowest cost elasticity and also the second-lowest Lerner index.

    B. ASB, BNZ, and Westpac generally score highly in both.

25. Accordingly we would urge caution in using Kiwibank's position in these charts to assist any broader generalisations about competition or a two-tier structure. This is particularly the case given the methodological issues with estimating and interpreting a Lerner index that we discussed in the previous section.

Figure 2: M&H estimates of Lerner index for loans (reproduction of Figure 11)



Note: The Lerner Index for loans is calculated as the difference between price and marginal cost, divided by price. Marginal costs are derived using SFA. Price data was only available after 2018.

Source: D. Margaritis & M. Hasannasab, Market power in banking: a study of New Zealand banks, March 2024, Figure 11

[22] We note that we have not replicated the regressions ourselves to test the effect of excluding Kiwibank since we do not have access to the raw estimates used in M&H's regression model. We have instead made this inference based on the trends evident in M&H's charts.

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NERA
Level 11
15 Customs Street West
Auckland 1010, New Zealand
www.nera.com