



THE QUANTIUM GROUP



**Evidence Based Pricing  
CBA Term Deposits**

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80

CBA – Evidence Based Pricing

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**CBA Term Deposits**

1.	Introduction	3
2.	Strategic and Tactical uses of <b>s 22</b>	4
3.	CBA Rate Change	10
4.	Competitor Rate Change	12
5.	Change in Hero or Headline Rate	17
6.	Shift in the WOF Curve	20

1. Introduction

The Term Deposit (TD) product area within CBA and Quantum have been working together to analyse historical pricing and customer data to understand the link between TD interest rates and the levels of acquisition and retention. For further details on the modelling techniques used and detailed findings please refer to the **s 22**

**s 22**

**s 22**

This paper addresses the business applications that are now available to CBA through the use of **s 22**

2. Strategic and Tactical uses of s 22

This paper addresses how s 22

s 22 Specifically, this paper considers four different situations s 22

s 22

The four situations considered in this paper are when:

- A new balance or NiM target has been dictated;
- Competitors are likely to change their rates;
- There is a large proportion of TDs that are coming up to maturity on what is currently the hero or headline term; and
- There has been a sudden shift in the WOF curve.

These situations are not an exhaustive list of the uses of s 22 but form a foundation that other scenarios can be based upon.

82

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2.1. Baseline Assumptions

For each situation, changes are compared to a baseline scenario where CBA and competitors both have an identical rate sheet. The default rate sheet, as shown below, has a hero rate at eight months and a headline rate at four months for the \$10k and above tiers. The \$5-10k tier has a hero rate at four months and no headline rate.

Term	<5k	5-10k	10-25k	25-50k	50-100k	100-250k
1M	0.00	2.50	2.75	2.75	3.00	0.00
2M	0.00	2.50	2.75	2.75	3.00	0.00
3M	0.00	2.50	2.75	2.75	3.00	0.00
4M	0.00	4.50	5.40	5.50	5.60	0.00
5M	0.00	2.80	3.00	3.00	3.50	0.00
6M	0.00	2.80	3.00	3.00	3.50	0.00
7M	0.00	2.80	3.00	3.00	3.50	0.00
8M	0.00	3.25	5.45	5.55	5.65	0.00
9M	0.00	3.25	3.50	3.60	4.00	0.00
10M	0.00	3.25	3.50	3.60	4.00	0.00
11M	0.00	3.25	3.50	3.60	4.00	0.00
12M	0.00	3.50	3.75	3.85	4.25	0.00

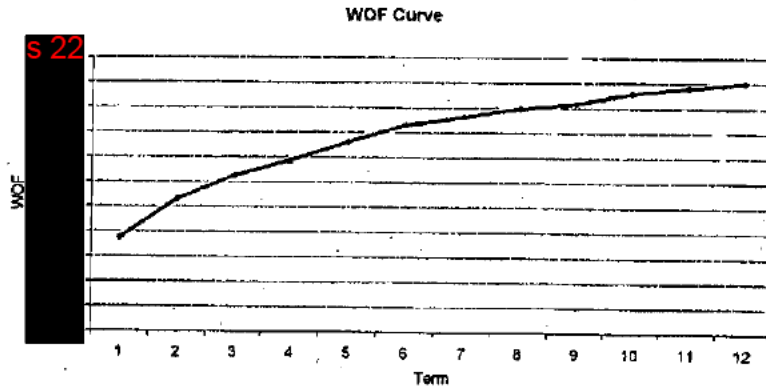
■ Best Rate ■ Next Best Rate

The hero rate is the best rate offered by CBA for a particular tier. The headline rate is a rate lower than the hero rate (within 55bps) but substantially in excess of the non-headline rates which are typically 100-250bps lower than the hero rate.

Please note that the '<\$5k' and '\$100-250k' tier was out of scope for this project. The \$0-5k tier is no longer actively promoted by CBA and the \$100-250k tier is managed by a different division within CBA and was out of scope for the project.

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The Worth of Funds (WOF) or yield curve is assumed to be upward sloping. CBA makes an interest margin on balances invested at rates lower than this yield curve.



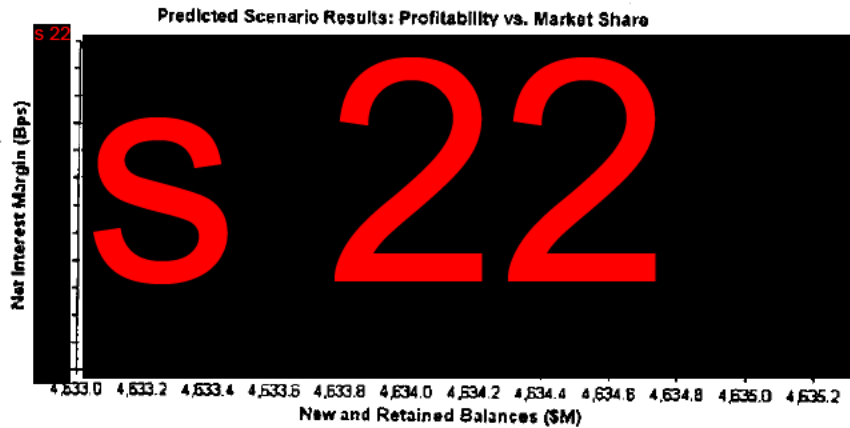
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## 2.2. Baseline Results

For this paper, TDs that mature between 12 June 2005 and 7 August 2005 (8 weeks) were loaded into the system. The balance figures shown in this paper represent new balances lodged in this period and renewing balances from TDs that mature in this period. The base scenario is forecasting new and renewing balances of \$4,634 million.

The 'Net Interest Margin (Bps)' is the annualised margin received on the TD portfolio. The Net Interest Margin (NIM) is calculated as the balance weighted average of the difference between the rates from the WOF curve and the effective rate given on the TDs. For the base scenario, the NIM is **\$ 22**

The following figure is used to compare results through out this paper. It shows the trade-off between profitability (NIM) and market share (New and Renewing Balances).



82

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In further detail, the total balance figure can be broken down into the proportion on the hero, headline and non headline rates. For the base line scenario it can be seen that the total new money (renewals and new business) value of \$4.634 billion has \$2.014 billion on a hero rate, \$1.724 billion on a headline rate and \$0.896 billion on a non headline rate.

		Hero	Head Line	Non Head Line	Total
<b>New Money</b>					
Value (\$M)		\$2,014	\$1,724	\$896	\$4,634
Volume		30,759	41,304	41,596	173,659
<b>Proportions</b>					
Value		43.5%	37.2%	19.3%	100.0%
Volume		52.3%	23.8%	24.0%	100.0%
NIM		s 22			
NIE		s 22			

The Net Interest Earnings (NIE) is found as the product of balance and NIM and assumes the TD stays in force for 12 months at the NIM it is lodged at. The Rest of Financial Year (ROFY) NIE is lower than the annualised NIE because there are only two and half weeks between the start of the prediction period and the end of the financial year (30 June 2005).

It may be surprising that s 22

s 22



62

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It is also possible to view the detailed breakdown of the scenario for renewals or acquisition only. Below is the output for renewals. It can be seen \$4,003m matures in the 8 weeks between 12 June 2005 and 7 August 2005. We expect \$3,551m to renew, implying a balance weighted renewal rate of 88.7%. The volume weighted renewal rate is lower because the renewal rate is marginally higher for larger TDs.

Tier		Portfolio	Renewal	Acquisition	
Expected Renewals		Hero	Head Line	Non Head Line	Total
	Value (\$M)	81,603	31,059	5969	83,551
	Volume	74,360	21,116	41,270	136,746
Proportions	Value	45.1%	26.5%	28.0%	100.0%
	Volume	54.4%	15.4%	30.2%	100.0%
Renewal Rate	Value	40.0%	26.5%	22.2%	88.7%
	Volume	47.7%	13.6%	26.5%	87.8%
NIM	(box)	s 22			
NIE		s 22			

3. CBA Rate Change

3.1. Situation

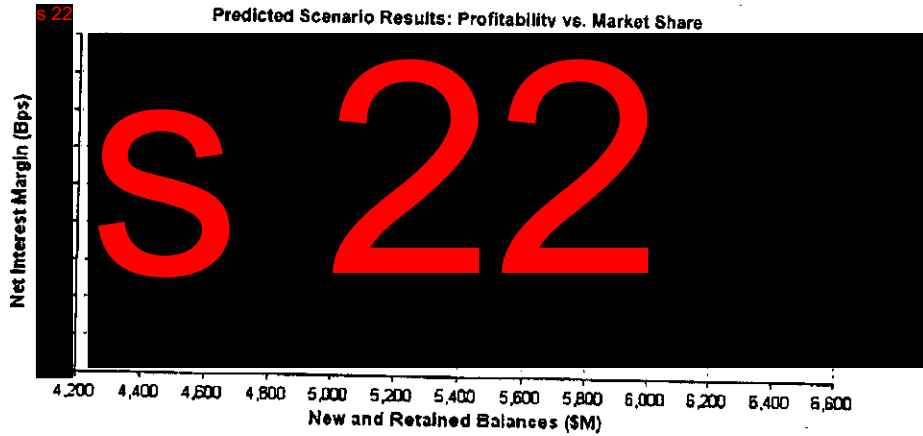
A new balance or NIM target has been set. How should CBA change rates to achieve this target?

3.2. Analysis

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s 22 See the next section for addressing changes in competitor rates.

3.3. Result



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s 22 New and retained balance ranges from \$4.2 billion to \$6.6 billion.

Caution would have to be used in running predictions where CBA was more than s 22

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80

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**4. Competitor Rate Change**

**4.1. Situation**

You believe that competitors are likely to change their rates and you wish to quantify how this would affect the portfolio.

**4.2. Analysis**

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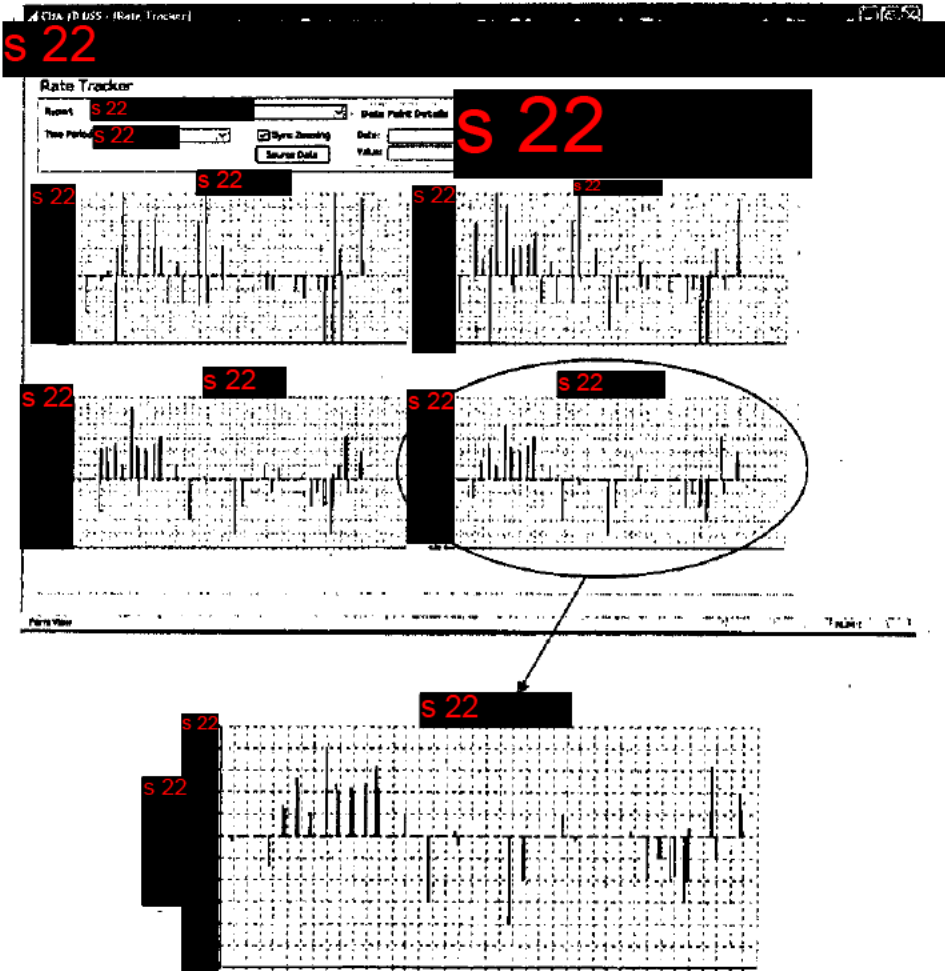
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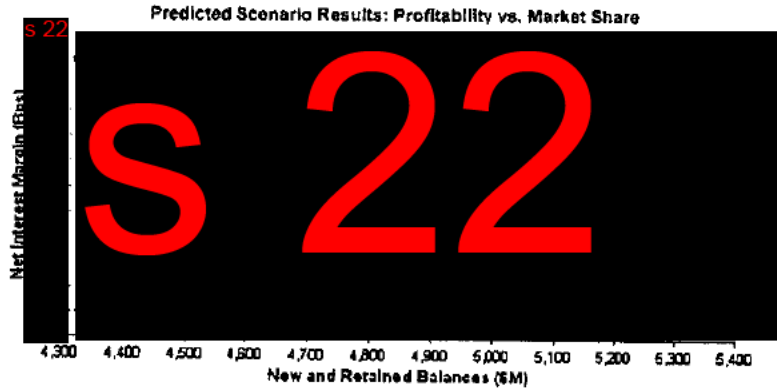
By examining rate tracker from January to October 2005, it can be seen that, historically, competitors s 22

s 22 This gives us some confidence that

s 22



4.3. Results



Firstly, it can be seen that CBA attracts more balance when competitors decrease their rates and CBA holds its rates constant. Likewise, when competitors increase their rates, CBA becomes less competitive and loses balance. This is an intuitive result; when CBA's rates are more competitive they attract and retain more TD balances.

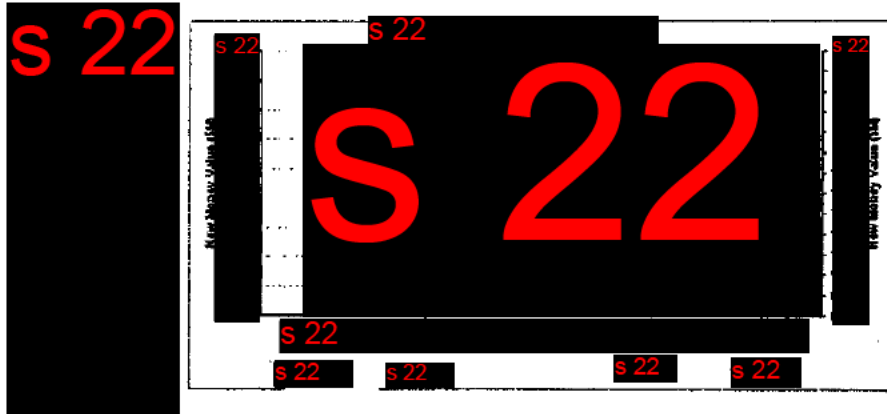
What is initially surprising is S 22

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In order gain an understanding of the reason for § 22 we can examine the price sensitivity of different tiers.



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CBA Change

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Competitors Movement

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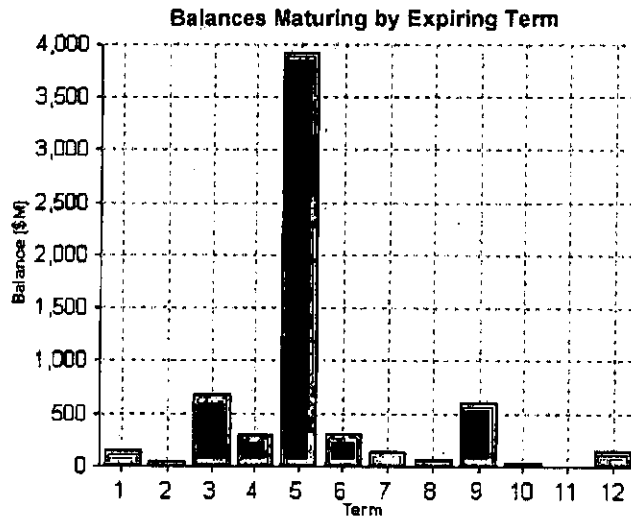
**5. Change in Hero or Headline Rate**

**5.1. Situation**

There is a large proportion of TDs that are coming up to maturity on what is currently the headline term. If CBA does not change term then NIM will be reduced significantly as passive rollovers will receive substantially greater interest rates.

What would be the result of changing the term of the hero and headline rate?

The following figure shows the balances of TDs coming up for maturity between 12 June 2005 and 7 August 2005 by expiring term.



82

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5.2. Analysis

For this situation, assume we have the following rate sheet.

Term	< 5k	5-10k	10-25k	25-50k	50-100k	100-250k
1M	0.00	2.50	2.75	2.75	3.00	0.00
2M	0.00	2.50	2.75	2.75	3.00	0.00
3M	0.00	2.50	2.75	2.75	3.00	0.00
4M	0.00	2.80	3.00	3.00	3.50	0.00
5M	0.00	4.50	5.40	5.50	5.60	0.00
6M	0.00	2.80	3.00	3.00	3.50	0.00
7M	0.00	2.80	3.00	3.00	3.50	0.00
8M	0.00	3.25	5.45	5.55	5.65	0.00
9M	0.00	3.25	3.50	3.60	4.00	0.00
10M	0.00	3.25	3.50	3.60	4.00	0.00
11M	0.00	3.25	3.50	3.60	4.00	0.00
12M	0.00	3.50	3.75	3.85	4.25	0.00

■ Best Rate ■ Next Best Rate

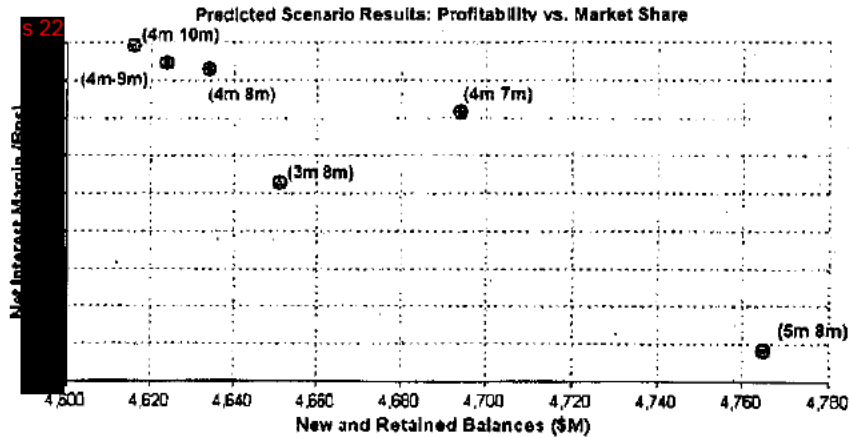
Note that the headline rate is on a five month term. This is the same term as where the bulk of TDs approaching maturity have their term.

We tested six different scenarios:

- Headline rate at 5 months and the hero at 8 months (5m 8m) - this is the base scenario;
- Headline at 4 months and the hero rate at 8 months (4m 8m);
- Headline at 3 months and the hero rate at 8 months (3m 8m);
- Headline at 4 months and the hero rate at 7 months (4m 7m);
- Headline at 4 months and the hero rate at 9 months (4m 9m); and
- Headline at 4 months and the hero rate at 10 months (4m 10m).

In all of the scenarios, both the hero and headline interest rate were kept constant. Only the term of the hero and headline rates has been changed.

5.3. Results



The most striking scenario is the initial position (5m 8m) which has a much lower NIM (16bps lower) and slightly higher balance than the other scenarios. This is due to the very large proportion of TDs approaching maturity which have their term at 5 months. An individual is more likely to renew if they happen to 'fall' onto a headline rate, this results in the higher balances. However, passive investors who don't check the rates and automatically roll over the TD will receive the headline rate instead of the non-headline rate. If the headline term were shifted to another term, fewer TDs would be renewed but more TDs would fall onto a non-headline rate which would increase NIM.

The other striking scenarios are the three month headline (3m 8m) and the seven month hero (4m 7m). There are a series of factors which explain why these are different from the other scenarios:

- Since the terms have shifted down, this will shift balances further down the WOF curve. Since the WOF curve is upward sloping this will decrease the NIM of the scenarios, especially for the three month headline;
- Shifting the terms downwards changes the competitive situation as rivals do not currently have their best rates at such low terms; and
- The three month headline and seven month hero also have different maturity profiles in terms of the proportion of passive investors.

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6. Shift in the WOF Curve

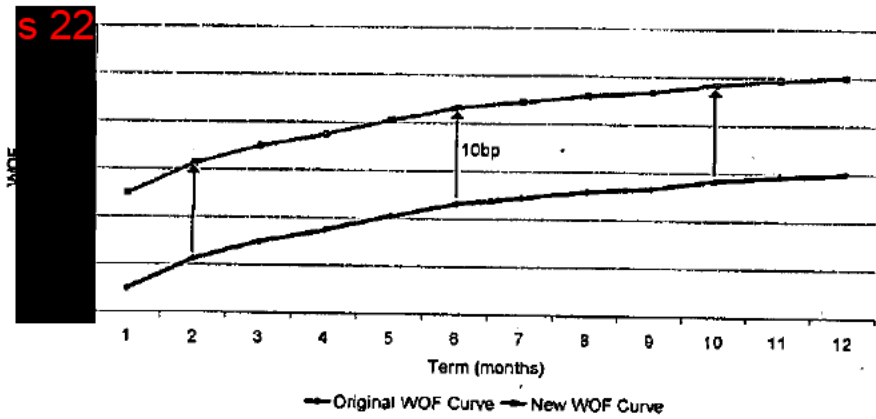
6.1. Situation

There has been a sudden parallel shift in the WOF curve and CBA wishes to calculate what the likely outcomes are, including the reaction of competitors.

6.2. Analysis

The WOF curve increases by 10bps at all terms

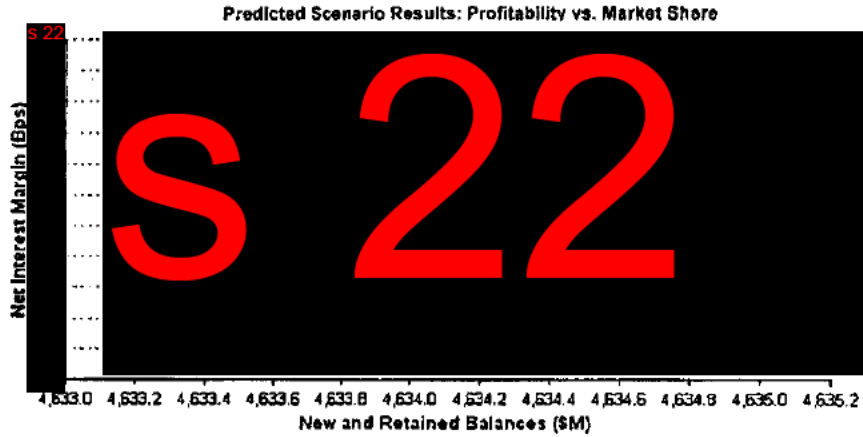
WOF Curve Movement



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Assuming CBA and competitors don't change their rates in response to the rate change, NIM increases by **s 22** while balance is unchanged.



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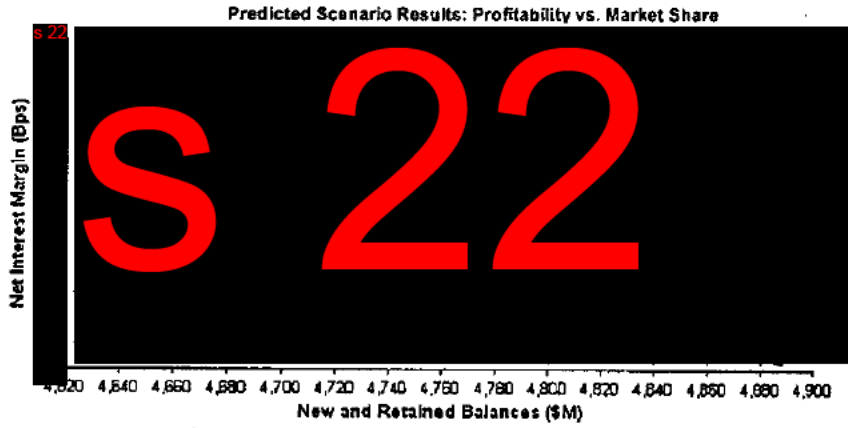
Term	< 5k	5-10k	10-25k	25-50k	50-100k	100-250k
1M						
2M						
3M						
4M						
5M						
6M						
7M						
8M						
9M						
10M						
11M						
12M						

A large red 's 22' is overlaid on the table.

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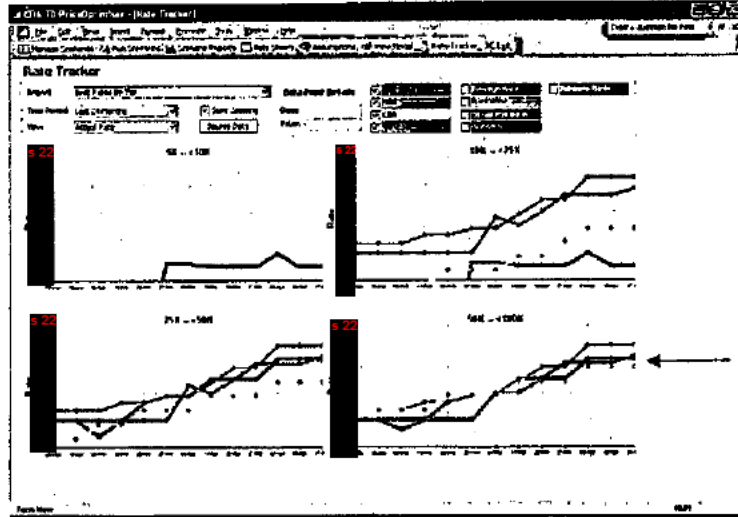


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82

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We now analyse how competitors are likely to react to CBA increasing their rates.



Historically, during periods of transition no major bank has been allowed to maintain a rate greater than competitors for **S 22**

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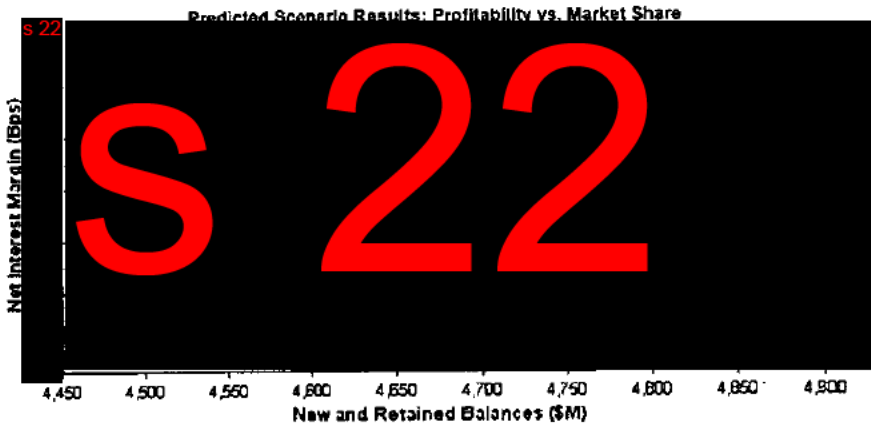
Predicted Scenario Results: Profitability vs. Market Share





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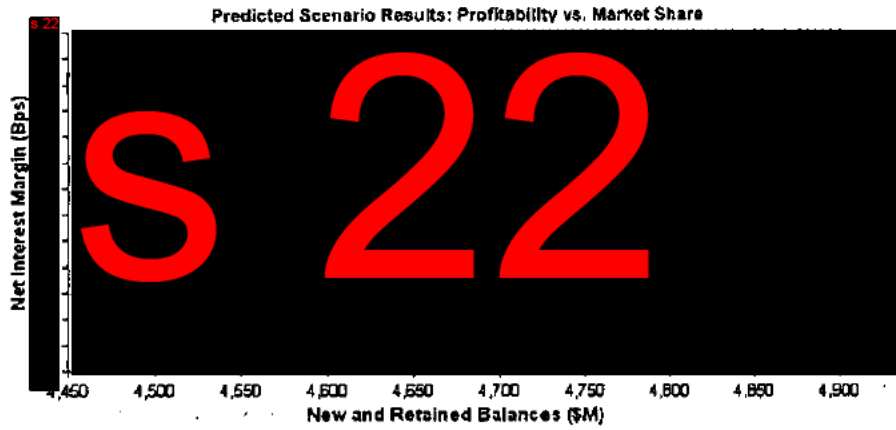
Term	< 5k	5-10k	10-25k	25-50k	50-100k	100-250k
1M						
2M						
3M						
3M						
5M						
6M						
7M						
8M						
9M						
10M						
11M						
12M						

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62

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