

Fixed or floating? The borrowers' dilemma

Claire Matthews*
Zaihua Zhang

School of Economics and Finance
Massey University
Private Bag 11-222, Palmerston North, New Zealand 4442
Ph +64 6 3569099 Extn 2329
C.D.Matthews@massey.ac.nz

* *Corresponding author*

Abstract

Short-term fixed interest rate home loans (FRMs) are popular in New Zealand, although floating interest rate loans (ARMs) continue to be widely used. This study used a short questionnaire to explore the choices made by borrowers between fixed interest rates and floating interest rates, and the factors that influence that choice. Two- and three-year fixed interest rates were the most preferred options, with younger borrowers and those on lower incomes more likely to have a fixed interest rate loan.

Keywords: ARMs, FRMs, loan interest rate, borrower choice, New Zealand

JEL Codes: D12, D14, G21

*Paper presented at the
Academy of Financial Services Conference
Denver, Colorado, USA
9-10 October 2010*

INTRODUCTION

A notable feature of the New Zealand mortgage market in recent years has been the increasing popularity of fixed interest rates on home loans, both in terms of the dollar value of loans and the number of loans. However, unlike the mortgage market in other countries, loans with a floating interest rate, commonly known as adjustable-rate mortgages (ARMs) in other countries, also maintain a strong presence. In fact, fixed and floating interest rate loans are commonly used together to facilitate effective management of the borrower's interest rate risk.

The New Zealand mortgage market is unlike other markets, such as that of the United States, with floating rate loans more common and fixed interest rates generally comparatively short-term in nature, with most borrowers choosing 2-3 year terms, and five years being the longest term commonly available¹. The range of terms and relative interest rates available are discussed later in the paper.

While the popularity of fixed rate lending is recognised, there has been limited understanding of the factors that influence the choice customers make between fixed interest rates and floating interest rates. This paper reports a recent study into the choices borrowers make with respect to the type of interest rate that applies to their loan. The next section of the paper discusses interest rates in the New Zealand home loan market in more detail, while the following section compares mortgage markets in different countries and considers previous related research. The subsequent section outlines the methodology used for the study. The results are then presented and discussed, before the final section concludes.

HOME LOAN INTEREST RATES IN NEW ZEALAND

To understand the New Zealand mortgage market, it is helpful to start by understanding the operation of fixed and floating interest rates. In New Zealand, the term "floating interest rate" is used to refer to what is often known elsewhere as an adjustable-rate or a variable-rate. However, a floating rate does not have set adjustment periods; instead it is reviewed by the lender on a daily basis and adjusted whenever necessary. In practice, it would be unusual for there to be less than a month between interest rate changes due to the processes involved in

¹ One major bank does offer a 7-year term for a fixed interest rate, but it is the only one to do so and the popularity of this option appears limited.

making changes. In fact, the changes usually occur around the time of the approximately six-weekly review of the Official Cash Rate (OCR)² by the Reserve Bank of New Zealand. Any change to a lender’s floating interest rate is usually effective immediately for new loans and becomes effective 2-3 weeks later for existing loans. By contrast, as the name suggests, a fixed interest rate is fixed and does not change for the specified term, ranging from six months to seven years. Terms of less than three years are generally preferred, and Figure 1 below provides support for this preference.

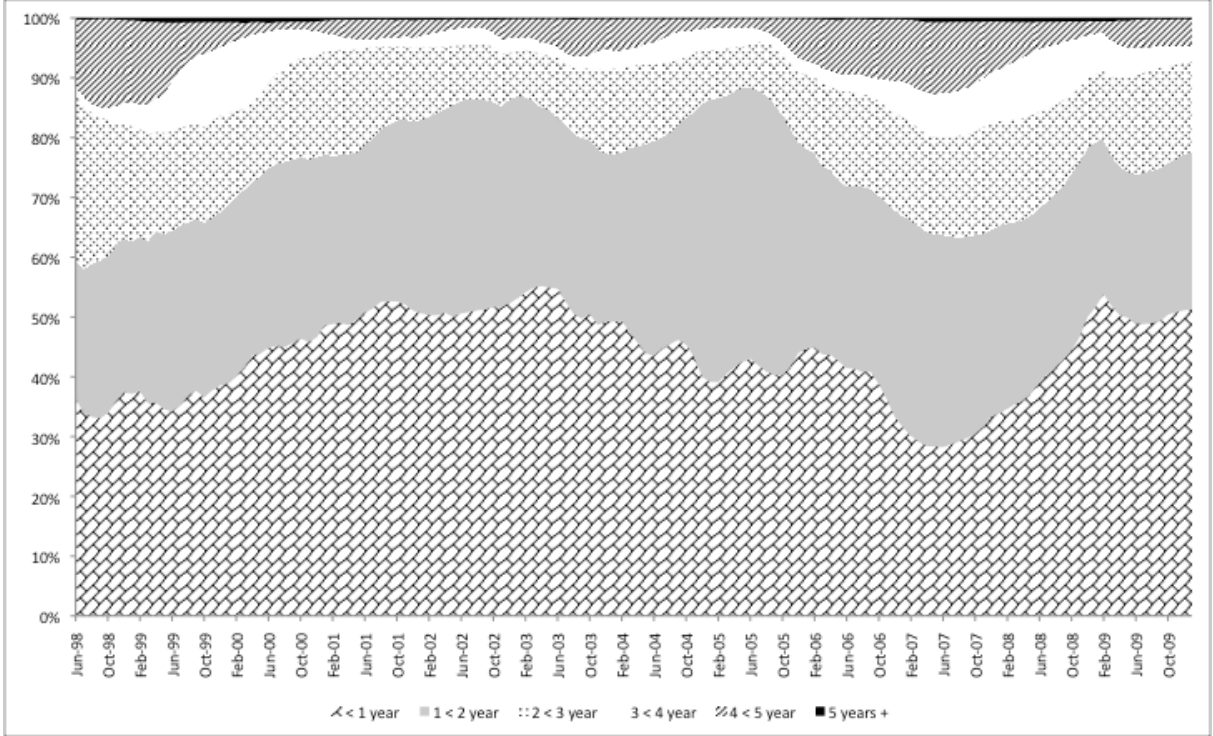


Figure 1: Time to reset^{3, 4}

An important element of a fixed interest rate is that early repayment carries a cost, incurring what is commonly referred to as a break fee⁵. Westpac, one of the major banks in the New

² The OCR is the interest rate set by the Reserve Bank of New Zealand to meet its inflation target and is reviewed eight times a year, although it may be adjusted at other times to respond to unexpected or sudden developments. The OCR influences the price of borrowing money in New Zealand and enables the Reserve Bank of New Zealand to influence the level of economic activity and inflation. (From <http://www.rbnz.govt.nz/monpol/about/0072140.html>, retrieved 30th March 2010).

³ Data source: Aggregate Standard Statistical Return Part E from the Reserve Bank of New Zealand.

⁴ The data in Figure 1 is for the time to reset, rather than the term at the start of the fixed rate, but is the only relevant information available.

⁵ In practice, small additional repayments in excess of the contracted repayments are generally accepted, but more substantial repayments will incur a break fee. For example, Westpac allows regular payments to be increased by up to 20% of the minimum repayment (<http://www.westpac.co.nz/olcontent/olcontent.nsf/Content/Choices+home+loan+rates>, Retrieved 28th June 2010)

Zealand market, explains that the reason for charging a prepayment cost (the term they use) is that they agree to lend money on a fixed interest rate with the “understanding that [the borrower] will make certain contractual fixed-rate payments for the whole of the fixed rate period” and the bank therefore manages their “fixed-rate portfolios on that assumption”, which means the bank “may make a loss from re-arranging [its] funding positions” (Westpac, 2010, p. 1). Each lender uses a formula to determine the extent of their loss and the resultant break fee to charge. A standard formula for calculating a break fee has been established by the Credit Contracts and Consumer Finance Act 2003, but lenders may use their own formula provided it is deemed fair to borrowers⁶. A key driver of the break rate is current interest rates and their relativity to the fixed rate being charged; the lower current interest rates are, relative to the fixed interest rate being charged, the greater the break fee, and this can run into the tens of thousands of dollars.

The next step is to consider the proportional split of home mortgage lending between fixed and floating interest rates, and how that has changed over time. This is shown in the two graphs below, with Figure 2 showing the split by dollar volume of loans while Figure 3 provides similar information by the number of loans.

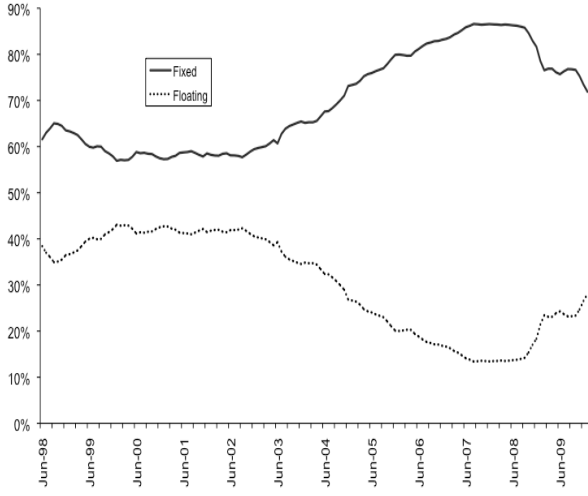


Figure 2: Fixed/Floating split by volume (\$)

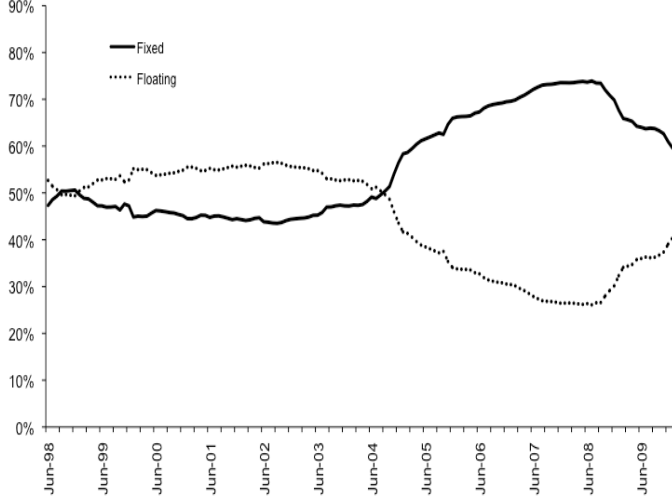


Figure 3: Fixed/Floating split by number of loans

In dollar terms, the share of loans on fixed interest rates has been consistently higher than that on floating interest rates, and the gap grew considerably between 2002 and 2008, before

⁶ The Commerce Commission has recently completed an investigation into the break fees charged by the main bank lenders and found that on the whole the formulas used were acceptable.

narrowing again as the Global Financial Crisis occurred. The split in terms of the number of loans has not been as great, with borrowers holding more floating rate loans until 2004, but the pattern is similar.

In looking at this comparison, it is helpful to understand how borrowers are encouraged to structure their borrowings. As discussed earlier, there are strong restrictions on borrowers' ability to make early repayments on loans with a fixed interest rate, whether that payment is full or only partial. For that reason, it is understood that many borrowers choose to structure their borrowings with two (or more) loans, putting the largest proportion of their borrowings on a fixed interest rate and a smaller proportion on a floating rate to have the flexibility to make early repayments if desired. In more recent times, there has been an increasing tendency to have multiple fixed interest rate loans, using different terms to better manage the associated interest rate risk.

Figure 4 below shows the relationship between the yield curve, as reflected in the fixed interest rates available, and the proportion of fixed rate lending that is done.

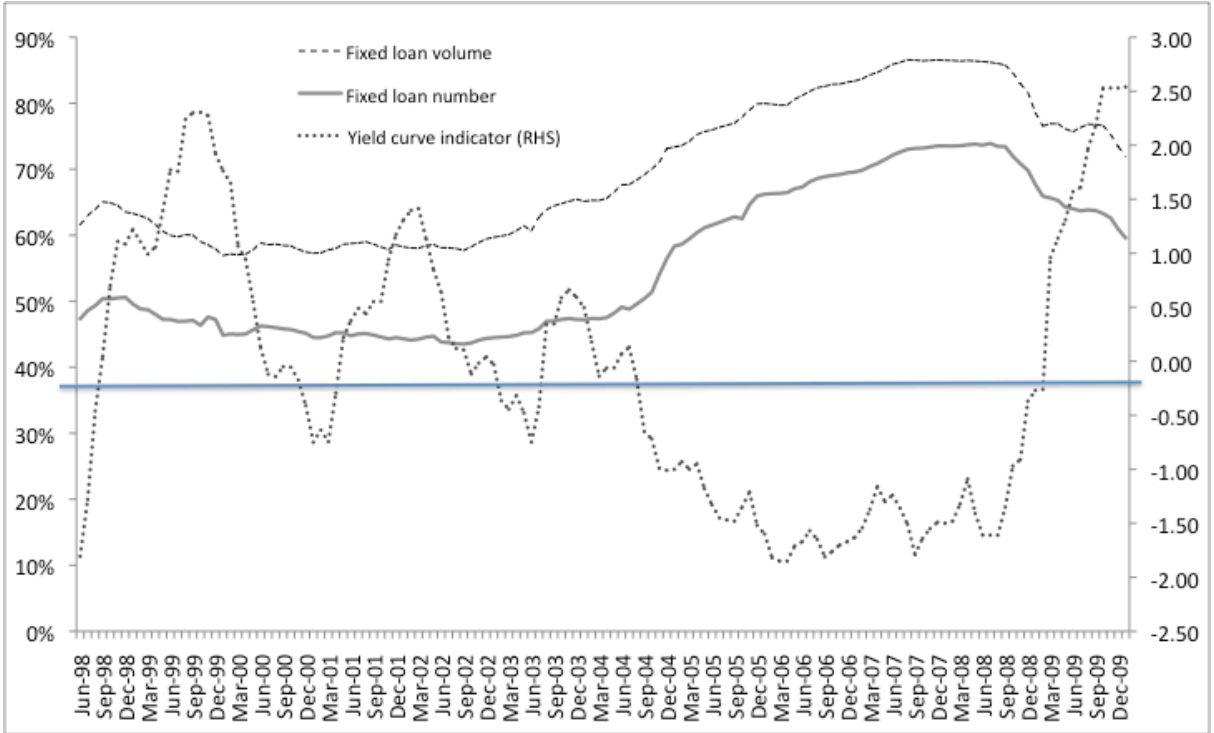


Figure 4: Fixed lending in relation to the yield curve

The yield curve indicator in Figure 4 represents the 5-year fixed rate less the floating rate. Where this value is positive, it indicates that long-term rates are higher than short-term rates, and a normal yield curve exists. A negative value indicates the floating rate is higher, and an

inverted yield curve exists. As the graph shows there was a sustained period with an inverted yield curve from late 2004 to late 2008, and over this time the proportion of fixed rate lending grew substantially as borrowers took advantage of lower long-term rates. As the Reserve Bank of New Zealand reacted to the Global Financial Crisis and the New Zealand recession from late 2008, short term rates fell substantially and a normal yield curve returned, and borrowers' preference changed to the lower floating interest rates.

The New Zealand mortgage market is considered to be very competitive. The level of competition intensified when the Bank of New Zealand launched its Unbeatable Campaign in October 2004, sparking a 'mortgage war' among the main bank retail lenders. Whitechurch (2005) noted that the key objectives of the campaign were "to grow the value of Bank of New Zealand's mortgage book and to achieve market recognition of [the bank's] price competitiveness" (p. 60). The focus of the mortgage war was the two-year fixed rate, reflecting the popularity of that fixed interest rate term with borrowers, with the Bank of New Zealand promising to provide a lower fixed interest rate for the two-year term than its main competitors, being the other major banks (Whitechurch, 2005).

	Fixed terms ⁷							
	Floating	6Mth	12Mth	18Mth	2Yr	3Yr	4Yr	5Yr
ANZ⁸	5.69%	5.99%	6.20%	6.69%	7.25%	7.75%	8.19%	8.49%
ASB Bank	5.75%	6.00%	6.25%	6.70%	7.10%	7.70%	8.20%	8.50%
Bank of New Zealand	5.99%	5.75%	6.25%	n.a.	7.10%	7.75%	8.19%	8.49%
Kiwibank	5.65%	5.75%	6.15%	6.49%	7.10%	7.70%	8.20%	8.50%
National Bank⁸	5.75%	5.70%	6.15%	6.60%	7.20%	7.79%	8.20%	8.50%
SBS Bank	5.90%	6.00%	6.25%	n.a.	7.20%	7.75%	n.a.	8.50%
TSB Bank	5.99%	5.75%	6.20%	n.a.	7.09%	7.80%	8.20%	8.50%
Westpac	6.29%	5.75%	6.15%	6.79%	7.10%	7.70%	8.20%	8.50%
Size of range⁹	0.64	0.30	0.10	0.30	0.16	0.10	0.01	0.01

Table 1: Interest rate comparison (as at 30th March 2010)¹⁰

⁷ As the Bank of New Zealand is the only lender offering a 7 year fixed interest rate this is not included in the table. On 30th March 2010, this rate was 8.75% (http://www.bnz.co.nz/Rates_and_Fees/1,1184,20-184-485.html)

⁸ ANZ and National Bank are separately operated brands of one bank, ANZ National Ltd.

⁹ The highest interest rate for each term is shaded, and the lowest is bordered. The size of the range is measured as the difference between the highest and lowest interest rate.

¹⁰ Source: Good Returns (<http://www.goodreturns.co.nz/mortgage-rates.html>)

Table 1 above provides a current comparison of interest rates available from the main retail bank lenders¹¹. The similarity in the fixed interest rates is not surprising, given that most of the funding for these loans is obtained via the same swaps market, and the banks therefore face similar funding costs. In addition to the fixed and floating interest rate options detailed in Table 1, Westpac offers a capped interest rate product, which has been available since the mid-1990s. In the past, Westpac has had 1, 2 and 3-year capped interest rate products, but in recent years the bank has restricted its capped offering to the one-year rate. A capped interest rate can be described as a cross between a fixed and a floating interest rate. The actual interest rate floats, but can only rise to the specified level, at which point it becomes fixed, unless the floating rate falls below that level again. Westpac also allows additional repayments on a loan with a capped interest rate, which is not possible with the fixed rates as discussed earlier. The effective price paid for having the benefits of a floating interest rate combined with the security of a maximum rate is that the actual interest rate paid is always 0.25% above the bank's current floating interest rate.

PRIOR RESEARCH

Adjustable-rate mortgages (ARMs) and fixed-rate mortgages (FRMs) are the dominant types of mortgage contracts in most mortgage markets, but there are differences in their use. First, the dominant mortgage in a country is different and it may also vary in the same country in a different time period. In the United States, continental Europe and Japan most mortgages are fixed while ARMs are more popular in other countries (Green & Wachter, 2005). About 72% of newly issued mortgages in the United States were FRMs on average for the period 1985 to 2005 (Campbell, 2006), but the share of ARMs varied between 10% and 70% (Koijen, Hemert & Nieuwerburgh, 2007). This contrasts with the New Zealand situation for the period to 1997, when floating rate loans were dominant (RBNZ, cited in Sheed, 1997).

The maturity of FRMs is also different between countries. For instance, FRMs in the United States are generally fixed long term, but in the UK FRMs are typically fixed for 1 to 5 years (Vickery, 2006). In France and Germany more than half of lending is fixed for 10 years or longer, while in Finland and Portugal few loans are fixed for more than five years (Paiella &

¹¹ The New Zealand home loan market is dominated by the eight main retail bank brands, but a website that provides comparative interest rates for homes loans lists 35 different lenders (<http://www.goodreturns.co.nz/mortgage-rates.html>)

Pozzolo, 2007). As discussed earlier, most fixed interest rates in New Zealand are fixed for terms of not more than three years, although terms of up to seven years are available.

In most countries around the world, there are significant prepayment penalties relative to FRMs, but fee-free prepayments are widely available in the United States, Denmark and Korea (Green & Wachter, 2005). Campbell (2006) points out that although most FRMs in the United States are fixed at 30 years originally and must be refinanced when a borrower moves, those mortgages can be refinanced by the borrower at any time without penalty. Thus, it can be argued that a FRM in the United States is not a “real” fixed contract because it is likely borrowers will choose to repay it if interest rates fall.

The frequency of interest rate adjustments for ARMs may also differ between countries. In both the United States (HSH, 2007) and the UK (Mortgage Quotes, 2007) after the initial fixed period ARMs may be adjusted at periods such as monthly, half-yearly, annually, or even every three or five years. By contrast, in New Zealand floating interest rates can be adjusted by banks at any time, as noted earlier.

Several theoretical studies exploring borrowers’ choices between ARMs and FRMs have been produced. Baesel & Biger (1980) pointed out that the consumer choice between ARMs and FRMs relies on not only the interest rate spread between ARMs and FRMs but also the correlation between the inflation rate and borrowers’ real labour income. If such a correlation is low, a rise of an ARM repayment due to the increase of nominal interest rates could not be offset by a wage increase and therefore a FRM will be preferred. Statman (1982) developed the framework by adding the net value of a house and suggested that the choice between an ARM and a FRM should also depend on the expected future value of the house. Aim and Follain (1984) extended the analysis further and included various constraints, such as the budget, wealth and down-payment/deposits etc.

The models mentioned above assumed that the future movements of interest rates, housing prices, and other economic variables are known. Aim & Follain (1987, cited in Follain, 1990), Smith (1987) and Brueckner (1986, cited in Follain, 1990) developed uncertainty models that treated interest rates and housing prices as stochastic variables. Both Smith and Aim & Follain’s work was based on the standard mean-variance expected utility model but in a single-period framework and a two-period model respectively. Smith (1987) concluded that with a wide and positive rate spread, real income and a real asset value increasing with both inflation and real interest rates, low risk aversion customers are more likely to adopt ARMs.

Aim & Follain (1987, cited in Follain, 1990) believed households would maximize a utility function that depends on the mean and variance of wealth, and the wealth constraint depends on initial wealth, income and its growth rate, the cost of mortgage debt, etc. Furthermore, Brueckner (1986, cited in Follain, 1990) built a model where borrowers choose the size of the cap associated with interest-rate movement. In this model, if the cap is zero, then the mortgage is essentially a FRM while an infinite cap is equivalent to an ARM. An important finding was that borrowers usually choose a finite cap that depends on borrowers' and lenders' preferences for risk. Szerb's (1996) contribution was to consider mortgage choices not only with the effects of nominal shocks because of unexpected changes in the price level, but also with real shocks because of unanticipated changes in the production process that affect real interest rates.

Campbell & Cocco (2003) studied the optimal choice between ARMs and FRMs in a more general framework by adding income uncertainty, risk aversion, variability in the end-of-period value of the house, credit constraints and FRM refinancing options that should lead customers to prefer one type of mortgage to the other. They found unconstrained households and borrowing-constrained households with low risk aversion have a preference for ARMs over FRMs when the inflation risk is larger than the real interest rate risk. However, borrowing-constrained households with high risk aversion, especially those with a higher ratio of mortgage debt to income, will prefer FRMs.

A number of empirical studies have also been undertaken that focus on the determinants of the choice between ARMs and FRMs. Most results indicated that borrowers' characteristics did not significantly affect mortgage choice, with price variables playing a more important and significant role.

Dhillon, Shilling, & Sirmans (1987) used a probit discrete choice model to analyze data from 78 borrowers at the Baton Rouge office of a national mortgage banker for the period January 1983 to February 1984 and found that generally borrowers' characteristics had a weak impact on mortgage choice. Households with co-borrowers, married couples, and short-expected housing tenures may have the greatest probability of taking out ARMs, but price variables play a more significant role.

Using information about 1000 residential real estate transactions between late 1984 and 1985 from the Residential Mortgage Finance Database, Brueckner & Follain (1988) found that among borrower characteristics only income had significantly and positively affected

borrowers' election of ARMs but pricing variables, especially the interest rate differential between ARMs and FRMs, played more significant roles. Moreover, the result indicated that borrowers with a higher probability of moving had a preference for ARMs. Taube & MacDonald (1989) used data for the period 1985 – 1989 from a Connecticut bank in a New York metropolitan area, and confirmed the key roles of price variables. They found the consumer price index, Treasury bill rates and interest rate differential to be important factors in customers' selection between FRMs and ARMs.

Tucker (1989) studied the impact of inflation expectations on customers' choice of mortgages, using Federal Home Loan data from 1981 to 1987. He found customers preferred FRMs when they faced inflation uncertainty. However, if customers expected higher inflation, then ARMs will be more attractive.

As well as pricing variables and borrower characteristics, O'Brien & Wong (1990) added city characteristics into the model to examine which factors significantly affect customers' choice between ARMs and FRMs. The 1985 Home Financing Transaction database, containing information about more than 1000 individuals was used, and the results confirmed that pricing factors significantly impact on selection of mortgages. In addition, debt to income ratio did affect mortgage choice, and age became increasingly significant when considering city characteristics as controlling variables. Using a national sample of residential housing transactions between 1986 and 1988, Phillips & VanderHoff (1991) found that the ARM initial rate discount and the ratio of FRM to ARM points were key factors affecting customer choices. In addition, the level of local housing prices positively impacted on ARM choice.

Sa-aadu & Sirmans (1995) argued that not only pricing variables but also household characteristics significantly influenced mortgage choice. With a sample of 345 mortgage loans during the period 1979 to 1984 they found that borrower mobility including age and years at current address had a significant relationship with mortgage choice. It was interesting that the level of income was not significant, although an expectation of an increase in income was significant and associated with a preference for ARMs.

Outside of the United States, there are few studies into mortgage choices. Leece (2001) tried to compute the probability of choosing a FRM with independent variables including age, the level of the variable mortgage interest rate, the gap between the mortgage rate and short-term money market rates, income, a time trend, the correlation between income and mortgage interest rates and wealth. Only the level of the variable mortgage interest rate and the gap

between the mortgage rate and short-term money market rates were found to be significant, indicating that UK consumers are making a short-run interest rate gamble when they choose mortgages. Paiella & Pozzolo (2007) used the Bank of Italy's Survey of Household Income and Wealth and found most household characteristics are irrelevant for the mortgage choices. The price of mortgages and liquidity constraints were important factors that influenced people's mortgage choices.

Prior research has shown that countries differ in their use of and preferences for ARMs and FRMs. Studies, primarily from the United States have found that relative price variables tend to have more influence on the choice than borrower characteristics. However, income, age and years at the current address are borrower-related variables that have also been found to influence the choice between ARMs and FRMs.

DATA AND METHODOLOGY

A written questionnaire comprising 20 questions was used to collect data for this study. The first section of twelve questions sought information about the respondent's housing loan(s) and factors influencing their choice between floating and fixed rates. The second section comprised seven demographic questions and a final open question that allowed the respondent to offer any other comments related to fixed and floating interest rates.

The questionnaire was distributed over ten days near a supermarket and a major chain department store in Palmerston North, a city of around 80,000 people in the lower North Island of New Zealand. Participants were approached at random, and asked whether their owner-occupied home had a mortgage before seeking their participation in the study. Most participants preferred to take the questionnaire home and return it via the freepost reply envelope provided rather than complete it on the spot. Of the 300 questionnaires distributed, 135 were returned but two were unable to be used, giving a total of 133 valid responses for a response rate of 44%.

Key demographic characteristics are provided in Table 2 below. The respondents were predominantly female, with the proportion of female respondents (65.4%) being substantially higher than the proportion of females in the New Zealand population (51.2%). It is not unusual for survey respondents to be female dominated, as discussed by Hair, Bush and

Ortinau (2006). The respondents were also more concentrated between the ages of 30-49 years (68.3%) than the New Zealand population (at 40.6%). The concentration of age groups, as well as the predominance of married/partnered respondents, is likely to reflect the requirement that respondents have an owner-occupied home with a mortgage to participate in the study.

		%			%
Age	Under 30	9.3	Marital	Never married	9.3
	30-39	32.6		Married or live with a partner	78.3
	40-49	35.7		Separated	5.4
	50-59	17.1		Divorced	4.7
	60 above	5.4		Other	2.3
Income	Under \$40,000	13.0	Education	Secondary qualification	50.0
	\$40,000-\$59,999	22.9		University undergraduate diploma	13.7
	\$60,000-\$79,999	26.7		Bachelor degree	25.0
	\$80,000-\$99,999	17.6		Master degree	8.1
	\$100,000 above	19.8		PhD or other doctorate	3.2
Ethnicity	NZ European	69.9	Employment	Full time paid employment	55.3
	Other European	8.3		Part time paid employment	24.2
	Pacific Island	1.5		Student	3.8
	Maori	9.0		Not currently in paid employment	4.5
	Asian	0.8		Unemployed or beneficiary	3.8
	Other	10.5		Other	8.3
Gender	Male	34.6			
	Female	65.4			

Table 2: Respondents' demographic characteristics

There are some limitations associated with this study, which need to be acknowledged. With 133 valid responses the sample size is small, and there was no formal structure used to select participants to ensure a representative sample. Furthermore, the respondents were all drawn from the same community, which could restrict the ability to generalise the results to the rest of New Zealand.

RESULTS AND DISCUSSION

The survey was undertaken in 2007 when fixed rate lending was at its most popular. It is therefore not surprising that fixed interest rates were the most popular with respondents. It was, however, some surprise that 60% reported having only a fixed rate loan. A small

proportion (10%) reported having only a floating rate loan, with nearly a third (29%) having both fixed and floating loans. Only one respondent had a capped rate loan. The most popular term for the fixed rate loans was two years with 28% of respondents, followed closely by three years and five years with 27% and 24% of respondents respectively.

More than two thirds of respondents (68%) reported having had a mortgage previously, indicating borrowing experience. Based on anecdotal evidence it is believed that the average life of a mortgage loan is seven years. Only a third (33%) of respondents had had their current loan for five years or more, providing some support for this belief. However, 23% of respondents had had their current loan for less than 1 year, and a further 18% for 1-2 years.

Respondents were presented with ten factors that could influence their choice between floating and fixed interest rates, and asked firstly to identify all the factors that had influenced their choice, and then which was the most important. The results are shown in Figures 5 and 6.

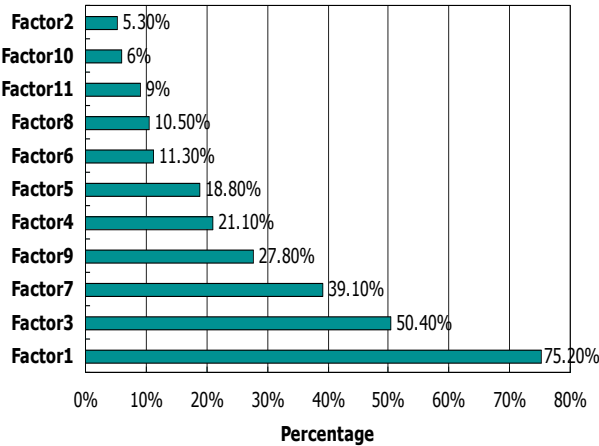


Figure 5: Influencing factors

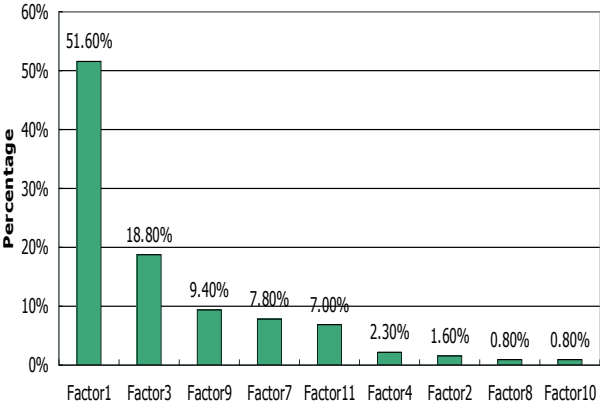


Figure 6: Most influential factor

- Factor 1 It seemed likely that interest rates were going to increase
- Factor 2 It seemed likely that interest rates were going to decrease
- Factor 3 Fixed rates offer fixed repayment amounts
- Factor 4 Floating rates offer variable repayment amounts
- Factor 5 The initial interest rate on the floating loan was higher
- Factor 6 Higher interest rate of floating-rate mortgages
- Factor 7 Lower interest rate of fixed-rate mortgages
- Factor 8 Differential between fixed-rate and floating-rate
- Factor 9 There is no penalty for making additional repayments on a floating-rate mortgage
- Factor 10 There are penalties for making additional repayments on a fixed-rate mortgage

For both questions, the most influential factor was a view that it was likely that interest rates were going to increase (Factor 1). Surprisingly, the opposite view, that interest rates were

likely to decrease (Factor 2), was reported to have had limited influence, which may simply reflect that at the time most loans were taken out interest rates were rising, and had been for the previous three years. The next most important factor was the fixed repayment amount associated with fixed rates (Factor 3), indicating that respondents like the certainty that offered. Respondents were also able to identify other factors that influenced their choice, one of which included making a choice based on other characteristics of the loan, with the example given of choosing a revolving credit mortgage loan for which the only option is a floating interest rate.

Respondents were given three factors that may be associated with a fixed rate loan, being a fixed repayment, a lower interest rate, and lump sum payments incurring a penalty, and asked to identify whether each was seen as an advantage or a disadvantage of a fixed interest rate. The fixed repayments were seen as an advantage by 71% of respondents, while 77% selected a lower interest rate. This is likely to be a reflection of the fact that for most of the time that fixed rate loans have been available in New Zealand, floating rates have been higher, as seen earlier in Figure 4. The association of a penalty with lump sum payments was seen as a disadvantage of fixed interest rates by 80% of respondents. Another disadvantage noted by respondents was the need to sign a new fixed interest rate contract at the end of each fixed rate period.

The only advantage associated with floating interest rate loans, according to respondents, was the ability to make lump sum repayments without penalty, chosen by 86%. Respondents saw both higher repayments and a higher initial interest rate as disadvantages of floating interest rates, at 53% and 60% respectively. Variable monthly repayments were also seen as a disadvantage, but by less than half (48%) of respondents.

The study sought to further explore the importance of the certainty of repayments, the ability to make lump sum payments, and the actual interest rate payable. To do this, respondents were asked to indicate the importance of each of these three factors in influencing their choice between fixed and floating interest rates. The interest rate was the most important, with a mean of 4.4¹². The next most important was the variability or non-variability of the repayment with a mean value of 3.7, and the least important was the ability to make lump sum

¹² Respondents assigned a value for importance to each factor, with 1 being not important and 5 being most important.

repayments. A one-sample t test was used to check if the three mean values were significantly different to each other and they were.

The final question sought to determine whether the interest rate decision that had been made was one that the respondent was still happy with. Almost all respondents (90%) reported they were still happy with their choice, with only 2% reporting that they were not happy now, and the balance (7%) were undecided.

Analysis was undertaken to determine what effect demographic characteristics had on respondents' views¹³. Only age and income were found to have a significant relation with the respondent's current interest rate type. The test for the relation of interest rate type and age gave a chi-square value of 32.5, significant at the 1% level. Examining the cross-tabulation of the two variables indicates that younger respondents were more likely to have only a fixed rate loan, while the oldest group (60 and above) were likely to have only one type of loan but either fixed or floating. The next oldest age group (50-59) were more likely to have only a floating interest rate loan. This could reflect either their longer experience with borrowing with only a floating interest rate option, or it may be that this age group is more likely to be making additional repayments and therefore needs the flexibility of the floating interest rate.

The test for the relation of income and interest rate type gave a chi-square value of 22.4, significant at the 5% level. The cross-tabulation of income and interest rate type indicates that both the lowest income group (<\$40,000) and the two highest income groups (\$80,000+) were more likely to have floating rates. The three lowest income groups (<\$80,000) were more likely to have just a fixed interest rate loan. This suggests that for those on lower incomes the certainty of payments and/or the usually lower interest rates associated with fixed interest rates may be the driving influence. The apparent contradiction for the lowest income group being more likely to have both a fixed interest rate and a floating interest rate may be explained by this group having small loans and therefore not having multiple loans as the other groups might. Unfortunately, no question was asked in the survey about the amount of borrowing that the respondent had.

Testing of the relation of income and having a view that a lower interest rate is an advantage of a fixed interest rate found there is a significant relation, with a chi-square value of 14.2, significant at the 1% level. However, contrary to expectations those on higher incomes (\$60,000+) were more likely to see the lower interest rates as an advantage.

¹³ Only the relations found to be significant are reported and discussed here although other testing was done.

Education was found to have a relation with having a view that being able to make lump sum payments without penalty is an advantage of a floating interest rate. Testing gave a chi-square value of 14.4, significant at the 1% level. Those with a doctoral-level qualification were less likely to see this as an advantage, while those with a Masters-level qualification were more likely to see this as an advantage.

Further examination of the factors that are related to the choice of interest rate was undertaken. A significant relation was found between respondents' previous experience with a home loan and their interest rate choice on their current loan. Testing gave a chi-square value of 9.3, significant at the 5% level. Only those with previous home loan experience had only a floating interest rate.

Another significant relation found was identifying the view that interest rates were likely to increase as the most important factor in choosing an interest rate type, and the type of interest rate chosen. A chi-square value of 40.7 was found with testing, significant at the 1% level. Those who viewed this factor as the most important were more likely to have chosen a fixed rate, which appears logical. For this group, 71.0% chose a fixed rate only, compared to 27.3% of those who did not view a likely interest rate increase as the most influential factor.

Another significant relation found was between a view that low interest rates are an advantage of fixed interest rate loans and the type of interest rate chosen. The chi-square value was 10.9, significant at the 5% level. Respondents who viewed low interest rates as an advantage were more likely to have both a fixed and a floating interest rate, which is a little surprising. More surprising is that the respondents who did not hold this view were more likely to have a fixed interest rate.

The importance of the applicable interest rate and the ability (or inability) to make a lump sum repayment were also found to be significantly related to the choice of interest rate type. In the case of the applicable interest rate, the chi-square value was 32.4, significant at the 1% level. Respondents who rated this as most important (5) were more likely to have only a fixed rate loan, and those who were neutral (having chosen the middle value, 3) were more likely to have only a floating interest rate. The chi-square value for the importance of lump sum payments was 42.8, significant at the 1% level. Those who saw this as most important (5) were more likely to have a floating interest rate on their loan, either with or without a fixed interest rate loan as well. Those who saw it as important but less so (giving a value of 4) were more likely to have both a fixed and a floating rate loan. Those who saw it as not important

(1 or 2) were more likely to have only a fixed interest rate loan. This suggests that the ability to make additional repayments is actually the important factor.

CONCLUSION

The results of this study support the view that New Zealand borrowers prefer fixed-rate terms of two or three years, and generally remain happy with the choices made. The key factors influencing the choice of interest rate type are the current interest rates and the associated trends.

The advantages of fixed interest rate loans are perceived to be the lower interest rates and the certainty of repayment amount, while the disadvantage is the penalty incurred in making additional repayments. The advantages and disadvantages of floating interest rates loans are essentially the opposite. The key advantage is seen as the ability to make partial or full repayment without penalty, while the disadvantages are the higher interest rates and higher repayments.

This study supported findings of previous research regarding the influence of age and income. In particular, older borrowers and borrowers with higher incomes had a preference for floating interest rate loans. Another factor influencing the preference towards floating interest rates was previous experience with home loans. On the other side, a view that interest rates were likely to increase was also associated with a preference for a fixed interest rate.

It is important to note that this study was undertaken during a period of a sustained inverted yield curve. This has now been reversed and it would be interesting to repeat the study today to see how the influencing factors have changed. It would also be useful to include loan size as part of the study to ascertain the extent to which that affects the findings in respect of the influence of age and income on borrowers' choices.

REFERENCES

- Aim, J., & Follain Jr, J. R. (1984). Alternative mortgage instruments, the tilt problem, and consumer welfare. *Journal of Financial & Quantitative Analysis*, 19(1), 113.
- Baesel, J. B., & Biger, N. (1980). The allocation of risk: some implications of fixed versus index-linked mortgages. *Journal of Financial & Quantitative Analysis*, 15(2).
- Brueckner, J. K., & Follain, J. R. (1988). The rise and fall of the ARM: an econometric analysis of mortgage choice. *Review of Economics & Statistics*, 70(1), 93.
- Campbell, J. Y. (2006). Household finance. *Journal of Finance*, 61(4), 1553-1604.
- Campbell, J. Y., & Cocco, J. F. (2003). Household risk management and optimal mortgage choice. *Quarterly Journal of Economics*, 118(4), 1449-1494.
- Dhillon, U. S., Shilling, J. D., & Sirmans, C. F. (1987). Choosing between fixed and adjustable rate mortgages. *Journal of Money, Credit and Banking*, 19(2), 260-267.
- Follain, J. R. (1990). Mortgage choice. *Journal of the American Real Estate & Urban Economics Association*, 18(2), 125-144.
- Green, R. K., & Wachter, S. M. (2005). The American mortgage in historical and international context. *Journal of Economic Perspectives*, 19(4), 93-114.
- Hair, J.F., Bush, R.P., and Ortinau, D.U. (2006). *Marketing research within a changing information environment* (3rd ed.). New York: McGraw-Hill Irwin.
- HSH. (2007). Your ARM's new interest rate: How to check your lender's calculation. [Electronic Version]. Retrieved July 27, 2007 from http://library.hsh.com/?row_id=140.
- Koijen, R. S. J., Hemert, O. v., & Nieuwerburgh, S. V. (2007). Mortgage timing. [Electronic Version]. Retrieved March 24, 2007 from <http://ssrn.com/abstract=945429>.
- Leece, D. (2001). Regressive interest rate expectations and mortgage instrument choice in the United Kingdom housing market. *Real Estate Economics*, 29(4), 589-613.
- Mortgage Quotes. (2007). What is an adjustable rate mortgage? [Electronic Version]. Retrieved July 25, 2007 from <http://www.mortgage-quotes-finder.co.uk/arm-mortgages.php>.
- O'Brien, A. M., & Wong, S. Q. (1990). The choice between fixed and variable rate mortgages: Evidence from national data. *American Business Review*, 8(1), 49.
- Paiella, M., & Pozzolo, A. F. (2007). Choosing between fixed and adjustable rate mortgages [Electronic Version]. Retrieved April 3, 2007 from <http://ssrn.com/paper=976346>
- Phillips, R. A., & VanderHoff, J. (1991). Adjustable- versus fixed-rate mortgage choice: The role of initial rate discounts. *Journal of Real Estate Research*, 6(1), 39.
- Sa-aadu, J., & Sirmans, C. F. (1995). Differentiated contracts, heterogeneous borrowers, and the mortgage choice decision. *Journal of Money, Credit & Banking*, 27(2), 498-510.
- Sheed, A. (1997). Fixed rate mortgages. *New Zealand Banker*, 10(2).
- Smith, D. J. (1987). The borrower's choice between fixed and adjustable rate loan contracts. *AREUEA Journal: Journal of the American Real Estate & Urban Economics Association*, 15(2), 110-116.

- Statman, M. (1982). Fixed rate or index-linked mortgages from the borrower's point of view: A note. *Journal of Financial & Quantitative Analysis*, 17(3), 451-457.
- Szerb, L. (1996). The borrower's choice of fixed and adjustable rate mortgages in the presence of nominal and real shocks. *Real Estate Economics*, 24(1), 43-54.
- Taube, P. M., & MacDonald, D. N. (1989). A note on residential mortgage selection: Borrower decisions and inflation expectations. *Journal of Real Estate Research*, 4(1), 73.
- Tucker, M. (1989). Adjustable-rate and fixed-rate mortgage choice: A logit analysis. *Journal of Real Estate Research*, 4(2), 81.
- Vickery, J. (2006). Interest rates and consumer choice in the residential mortgage market. [Electronic Version]. Retrieved March 26, 2007 from http://www.newyorkfed.org/research/economists/vickery/Consumer_Choice_Mortgage_September_2006.pdf.
- Westpac. (2010). *Prepayment Costs on Fixed Rate Loans*. Retrieved March 30th from <http://www.westpac.co.nz/olcontent/olcontent.nsf/Content/Choices+home+loan+rates#Fixed>
- Whitechurch, A. (2005). An 'unbeatable' strategy. *InFinsia*, 119(5), 60-61.