Impact of Mortgage Brokers on Consumer Preferences and Perceptions

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28th Colloquium on Pensions and Retirement Research
Dec 09, 2020

THE UNIVERSITY OF SYDNEY

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Consumer Confusion in Mortgages

- Households are increasingly responsible for financial decisions (e.g., mortgages, retirement savings, aged care)
- Yet many financial products are complex because:

  1. They have many attributes (e.g. interest rate, term, fixed/variable, interest-only, offset account)

  2. There are many alternatives (e.g. 4,000 available home loans on the market)

- Financial advisors might help, but their incentives may not be aligned with consumers

Project Summary

- We study consumers' perceived confusion and importance level of common mortgage attributes on a best-worst scale

- We model the influence of broker-advisers on consumers' willingness to pay for mortgage attributes in a choice experiment
  - Compared with non-advised consumers, broker-advised consumers express preferences that value home loans with a longer-term and lower upfront fees.

Data and Methods

- Focus Groups
- Online experiments in Australia (N=1,882)
  - Best-worst scaling on the importance and confusion of mortgage attributes
  - Discrete choice experiment
    a) Mixed logit model with hierarchical parameters
    b) Willingness-to-pay (WTP) estimated for each attribute and each respondent

Summary Statistics

Table G.1 Descriptive statistics for respondent-specific characteristics (N=1,882)

	Frequency: n (%)
Experience to consult broker	
Yes	959 (50.96)
No	923 (49.04)
Risk aversion	
Yes	851 (45.22)
No	1,031 (54.78)
Patient	
Yes	1,293 (68.70)
No	589 (31.30)
Financial literacy	
Low	996 (52.92)
High (correct all 3 answers)	886 (47.08)
Numeracy	
Low	867 (46.07)
High (correct 2 answers or all 3 answers)	1,015 (53.93)
Household income: range	
Middle income households ($45,000 - $103,999)	963 (51.17)
High income households ($104,000+)	919 (48.83)
Mortgage experience	
Currently have a mortgage	1,176 (62.49)
Never have a mortgage	706 (37.51)
Decision maker in the household	
I am	1,176 (62.49)
Someone else, or someone else and I are equally responsible	706 (37.51)
Education level	
> Bachelor's degree	1,045 (55.53)
< Bachelor's degree	837 (44.47)
Total	**1,882 (100)**
	Mean
Age (years)	45.15

Table H.1 Descriptive statistics for socio-demographics (N=1,882)

	Frequency: n (%)
Gender	
Female	964 (51.22)
Male	917 (48.72)
Prefer not to say	1 (0.05)
Age: range	
25-34 years	591 (31.40)
35-54 years	642 (34.11)
55-65 years	649 (34.48)
Household income: range	
Middle income households ($45,000 - $103,999)	963 (51.17)
High income households ($104,000+)	919 (48.83)
Educational level	
Low	580 (30.82)
Middle	988 (52.50)
High	314 (16.68)
Experience to consult broker	
Yes	959 (50.96)
No	923 (49.04)
Total	**1,882 (100)**
Mortgage experience	
Currently have a mortgage	1,176
Had a mortgage in the past	459
Plan to take out a mortgage in the near future	675

Clusters by Experience with Brokers

We group the consumers who have used brokers into two clusters via K-means based on their sociodemographic information:

- Cluster 1: older with more mortgage experience
- Cluster 2: younger with higher education and income, less mortgage experience

Cluster	N	Used Broker	Age	Female	College	# of Mortgages Before	Mortgage Literacy	Numeracy	High Income
					Sample Mean				
brokered_1	388	1.00	55.65	0.47	0.47	2.83	0.85	0.58	0.46
brokered_2	570	1.00	33.13	0.51	0.72	1.93	0.76	0.48	0.60
non-brokered	923	0.00	48.16	0.53	0.49	2.26	0.77	0.56	0.43

Mortgage Attributes in Best-Worst Scaling

	Attribute
1	Type of mortgage lender (major bank; other)
2	Loan term (years)
3	Interest rate
4	Type of interest rates: Fixed, Variable and Hybrid (split loan between fixed and variable interest rates)
5	Maximum Loan-to-Value Ratio (LVR)
6	Compulsory Lenders Mortgage Insurance (LMI)
7	Establishment fee
8	Repayment type: Principal and Interest (P&I) mortgage and Interest-Only (IO) mortgage
9	Ability to make extra repayments
10	Offset account
11	Redraw facility
12	Portability
13	Mortgage package

Best-Worst Questions

Please tell us which mortgage feature is **MOST confusing** to you and which is **LEAST confusing** to you.

Hover your cursor over the mortgage features to read the definition. Click here to review the description of all mortgage features (a new tab will open).

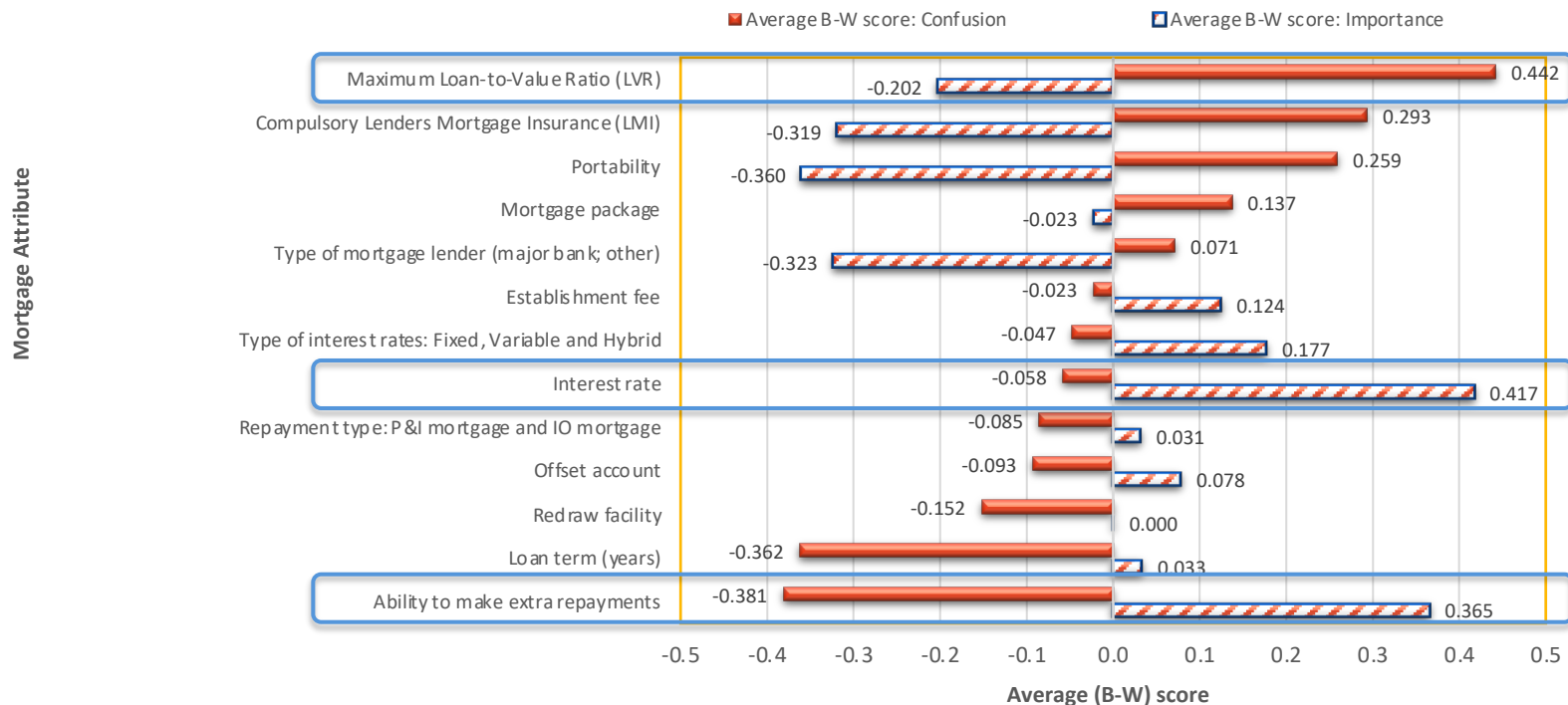| Most confusing to me:	Mortgage features to evaluate	Least confusing to me:
○	Repayment types	○
○	Type of interest rates	○
○	Mortgage package (Home loan package)	○
○	Lenders Mortgage Insurance (LMI)	○

Best-Worst Questions

Please tell us which mortgage feature is **MOST important** to you and which is **LEAST important** to you.

Hover your cursor over the mortgage features to read the definition. Click here to review the description of all mortgage features (a new tab will open).

| Most important to me:	Mortgage features to evaluate	Least important to me:
◯	Offset account	◯
◯	Ability to make extra repayments	◯
◯	Types of mortgage lenders (providers)	◯
◯	Repayment types	◯

Maximum loan-to-value ratio is most confusing;
Interest rate and flexible repayments look most important

Comparison of Average B-W scores (Confusion and Importance)

■ Average B-W score: Confusion   □ Average B-W score: Importance

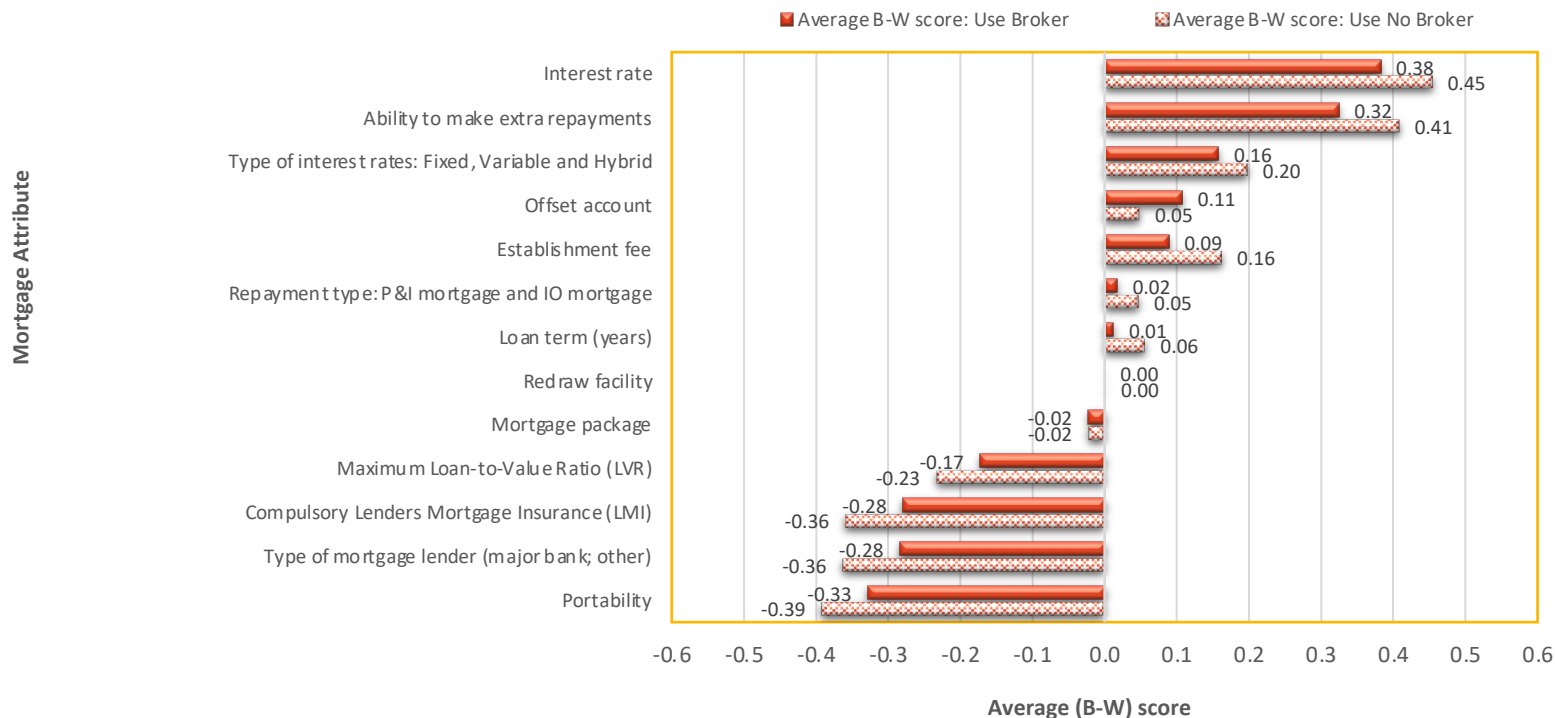| Mortgage Attribute	Average B-W score: Importance	Average B-W score: Confusion
Maximum Loan-to-Value Ratio (LVR)	-0.202	0.442
Compulsory Lenders Mortgage Insurance (LMI)	-0.319	0.293
Portability	-0.360	0.259
Mortgage package	-0.023	0.137
Type of mortgage lender (major bank; other)	-0.323	0.071
Establishment fee	-0.023	0.124
Type of interest rates: Fixed, Variable and Hybrid	-0.047	0.177
Interest rate	-0.058	0.417
Repayment type: P&I mortgage and IO mortgage	-0.085	0.031
Offset account	-0.093	0.078
Redraw facility	-0.152	0.000
Loan term (years)	-0.362	0.033
Ability to make extra repayments	-0.381	0.365

Average (B-W) score

Brokers seem to help reducing confusion with LVR

Comparison of Average B-W scores: Confusion (Broker vs No Broker)
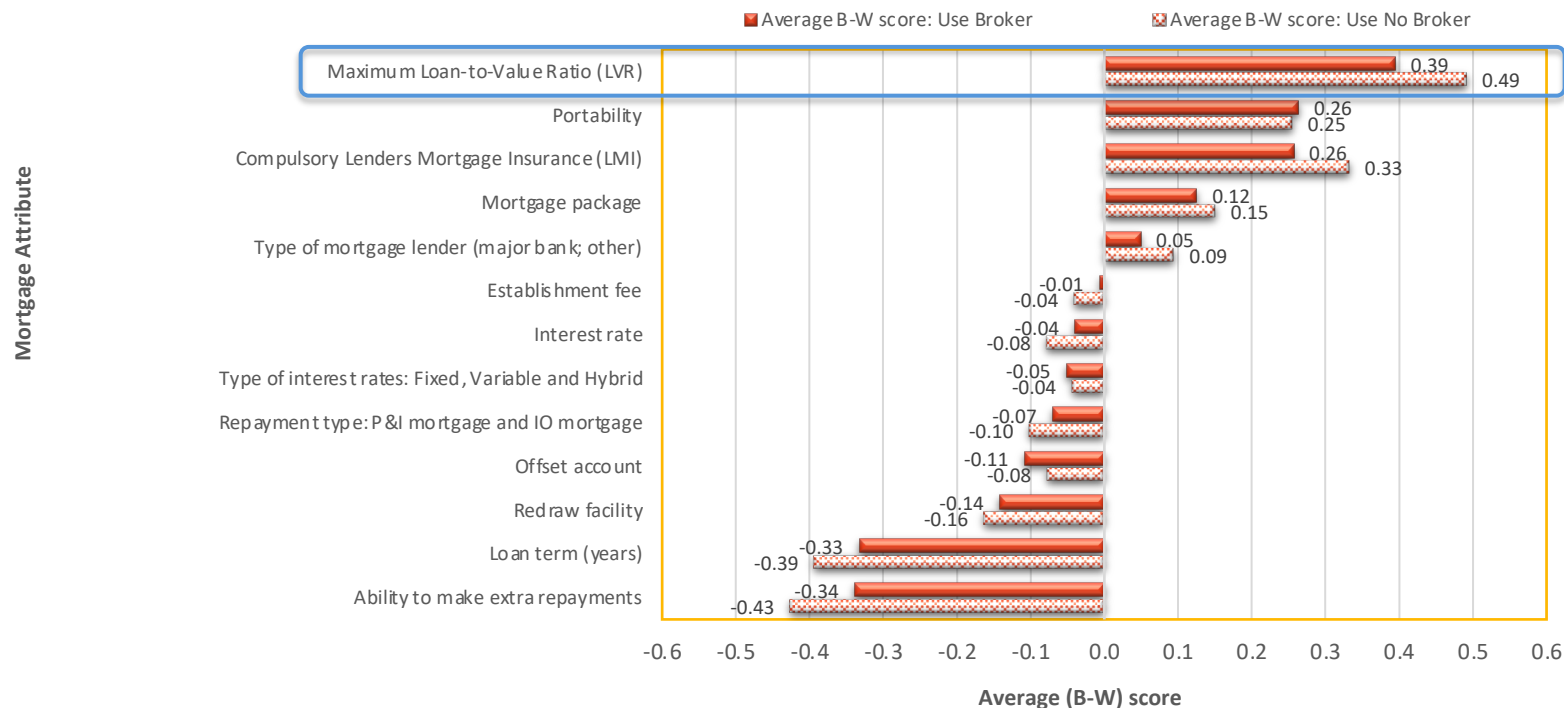
Brokers seem to reduce the variation in importance across attributes

Comparison of Average B-W scores: Importance (Broker vs No Broker)

■ Average B-W score: Use Broker   ▨ Average B-W score: Use No Broker

Mortgage Attribute	Use Broker	Use No Broker
Interest rate	0.38	0.45
Ability to make extra repayments	0.32	0.41
Type of interest rates: Fixed, Variable and Hybrid	0.16	0.20
Offset account	0.11	0.05
Establishment fee	0.09	0.16
Repayment type: P&I mortgage and IO mortgage	0.02	0.05
Loan term (years)	0.01	0.06
Redraw facility	0.00	0.00
Mortgage package	-0.02	-0.02
Maximum Loan-to-Value Ratio (LVR)	-0.17	-0.23
Compulsory Lenders Mortgage Insurance (LMI)	-0.28	-0.36
Type of mortgage lender (major bank; other)	-0.28	-0.36
Portability	-0.33	-0.39

Average (B-W) score

Part II: Discrete Choice Experiment

Choice set 1 of 4

If you are offered mortgage product options A, B and C below, which one would you <u>most likely choose</u> and <u>least likely choose</u>?

Hover your cursor over the blue text for further information.

Product A	Product B	Product C
1. Mortgage product A is provided by **Foreign banks**	1. Mortgage product B is provided by **Big four banks**	1. Mortgage product C is provided by **Credit unions and building societies**
2. Mortgage term is **20 years**	2. Mortgage term is **10 years**	2. Mortgage term is **30 years**
3. Interest rate is **5% p.a.**	3. Interest rate is **3.5% p.a.**	3. Interest rate is **4.5% p.a.**
4. **Hybrid** interest rate mortgage	4. **Fixed** interest rate mortgage	4. **Hybrid** interest rate mortgage
5. **No ($0)** mortgage set up fee	5. **$400** mortgage set up fee	5. **$800** mortgage set up fee
6. **Principal and Interest (P&I) mortgage**	6. **Principal and Interest (P&I) mortgage**	6. **Interest-Only (IO) mortgage**
7. You **can** make **extra repayments**	7. You **cannot** make **extra repayments**	7. You **cannot** make **extra repayments**

These features are always the same for the three products

- Maximum Loan-to-Value Ratio (LVR) is 80%
- Lenders do NOT require you to pay Lenders Mortgage Insurance (LMI)
- Offset account is available
- Redraw facility is available
- Portability is available
- Mortgage package is not available

	Product A	Product B	Product C
Most likely choose:	○	○	○
Least likely choose:	○	○	○

From Mixed Logit to WTP Estimation

– In the traditional mixed logit model, the utility of respondent *i* choosing product *j* is:

$$U_{ij} = \beta_{i1} Interest\ Rate_j + \beta_{i2} I_j(Big\ Four\ Lender)$$

$$+ \beta_{i3} Term_j + \beta_{i4} I_j(Fixed\ Rate) + \beta_{i5} I_j(Variable\ Rate)$$

$$+ \beta_{i6} Establishment\ Fee_j + \beta_{i7} I_j(Principal\ and\ Interest)$$

$$+ \beta_{i8} I_j(Able\ to\ Pay\ Extra) + \epsilon_{ij}$$

where βs are random variables

However, WTPs are hard to estimate in this model

For example,

$$w_{i2} = \text{WTP of a big four lender for respondent i}$$

$$= -1 \times \frac{\text{Marginal utility of a big four lender}}{\text{Marginal utility of interest rate}}$$

$$= -\frac{\partial U_{ij}}{\partial \theta_{j2}} / \frac{\partial U_{ij}}{\partial \theta_{j1}}$$

$$= -\frac{\beta_{i2}}{\beta_{i1}}$$

which is a ratio of two random variables and may not have a finite variance.

Therefore, we estimate a mixed logit model in the WTP space (Train and Weeks 2005)

$$U_{ij} = \beta_1 \Big[-1 \times Interest\ Rate_j + w_{i2}I_j(Big\ Four\ Banks)$$

$$+ w_{i3}Term_j + w_{i4}I_j(Fixed\ Rate) + w_{i5}I_j(Variable\ Rate)$$

$$+ w_{i6}Establishment\ Fee_j + w_{i7}I_j(Principal\ and\ Interest)$$

$$+ w_{i8}I_j(Ability\ to\ make\ extra\ repayments) + \varepsilon_{ij} \Big]$$

$$\Longleftrightarrow \frac{U_{ij}}{\beta_1} = -1 \times Interest\ Rate_j + w_{i2}I_j(Big\ Four\ Banks)$$

$$+ w_{i3}Term_j + w_{i4}I_j(Fixed\ Rate) + w_{i5}I_j(Variable\ Rate)$$

$$+ w_{i6}Establishment\ Fee_j + w_{i7}I_j(Principal\ and\ Interest)$$

$$+ w_{i8}I_j(Ability\ to\ make\ extra\ repayments) + \varepsilon_{ij}$$

The utility of respondent *i* choosing product *j is:*

$$U_{ij} = \beta_1[\text{-}Interest\ Rate_j + \boxed{w_{i2}}I_j(Big\ Four\ Lender)$$

$$+ w_{i3}Term_j + w_{i4}I_j(Fixed\ Rate) + w_{i5}I_j(Variable\ Rate)$$

$$+ w_{i6}Establishment\ Fee_j + w_{i7}I_j(Principal\ and\ Interest)$$

$$+ w_{i8}I_j(Able\ to\ Pay\ Extra) + \epsilon_{ij}]$$

where β_1 (WTP for the "price") is a constant and w's are random variables

Furthermore, we introduce a hierarchical structure to examine effects of chosen covariates on preferences

- For each respondent i and attribute k ($k = 2, 3, \ldots, 8$).

$$w_{ik} = w_k + \delta_{k1}I_i(\text{Broker Cluster 1}) + \delta_{k2}I_i(\text{Broker Cluster 2}) + \delta_{k3}I_i(\text{Risk Averse})$$
$$+ \delta_{k4}I_i(\text{Fin. Literate}) + \delta_{k5}I_i(\text{Numerate}) + \delta_{k6}I_i(\text{HH Decision Maker}) + \nu_{ik}$$

- We estimate the <u>individualised</u> WTP for each attribute and each respondent using this model.

Consumers value flexible repayments and low establishment fees

Sample Average Individual WTP (measured in int. rate) and Estimated Impact								
	-1*Interest Rate	Big 4 Lender	Term	Fixed Rates	Variable Rates	Est. Fee ($000)	P&I	Extra Payment
Average WTP	/	0.200	-0.011	0.115	0.331	-0.920	0.945	1.392
Std. Err.	/	0.008	0.001	0.003	0.003	0.009	0.015	0.023
$ impact on monthly payment	/	$52	$49	$79	$166	-$73	$172	$554
$ amount impact in 20 years in PV	/	$8,750	$8,274	$13,214	$27,040	-$12,856	$28,062	$80,243

Consumers are willing to pay, in terms of interest rate or dollar amount:
- 0.2% ($8,750) to be served by a Big 4 lender
- 0.92% ($12,856) to avoid $1,000 establishment fee
- 1.4% ($80,243) to be able to make extra payments

Note: for the $ amount impact, we assume a 20-year $500,000 mortgage with a fixed rate of 3.5% p.a.

Heterogeneity in WTPs Explained by Different Factors

Hierarchical Parameters Model of the WTP for Each Attribute								
	-1*Interest Rate	Big 4 Lender	Term	Fixed Rates	Variable Rates	Est. Fee	P&I	Extra Payment
Average WTP	/	0.200	-0.011	0.115	0.331	-0.920	0.945	1.392
Broker_Gp1	/	-0.130	0.008	-0.060	0.160	-0.264**	-0.166	-0.057
Broker_Gp2	/	0.073	0.014**	-0.025	0.115	-0.264	-0.303**	-0.633***
Risk Aversion	/	0.119	0.005	0.009	0.227**	-0.481***	0.049	0.130
Financial Literacy	/	-0.135	0.003	-0.019	0.054	-0.264	0.394***	0.251**
Numeracy	/	0.132	0.004	-0.232**	-0.073	-0.218**	0.310**	0.185
HH Decision Maker	/	-0.187*	-0.014**	-0.130	-0.129	0.219**	-0.224**	-0.152
Intercept	0.806***	0.260**	-0.015**	0.346***	0.254**	-0.627***	0.834***	1.425***

Level of Significance: *0.1 **0.05 ***0.01

Older broker-advised consumers (cluster 1) will pay more to avoid higher establishment fees

Hierarchical Parameters Model of the WTP for Each Attribute								
	-1*Interest Rate	Big 4 Lender	Term	Fixed Rates	Variable Rates	Est. Fee	P&I	Extra Payment
Average WTP	/	0.200	-0.011	0.115	0.331	-0.920	0.945	1.392
Broker_Gp1	/	-0.130	0.008	-0.060	0.160	-0.264**	-0.166	-0.057
Broker_Gp2	/	0.073	0.014**	-0.025	0.115	-0.264	-0.303**	-0.633***

Younger broker-advised consumers (cluster 2) accept longer loan terms and place less value on P&I and flexible repayments

Hierarchical Parameters Model of the WTP for Each Attribute								
	-1*Interest Rate	Big 4 Lender	Term	Fixed Rates	Variable Rates	Est. Fee	P&I	Extra Payment
Average WTP	/	0.200	-0.011	0.115	0.331	-0.920	0.945	1.392
Broker_Gp1	/	-0.130	0.008	-0.060	0.160	-0.264**	-0.166	-0.057
Broker_Gp2	/	0.073	0.014**	-0.025	0.115	-0.264	-0.303**	-0.633***

Summary

- We study the perceived confusion and importance of common mortgage attributes for Australia consumers via an online experiment (additional analysis on the role of brokers not shown)

- We estimate each consumer's WTP for mortgage attributes and examine the role of brokers on shaping consumer preferences.

- Compared with non-advised consumers, broker-advised consumers express preferences that align with broker incentives to tilt clients to longer-term home loans.