Debt Illusion, Broker Usage, and Mortgages

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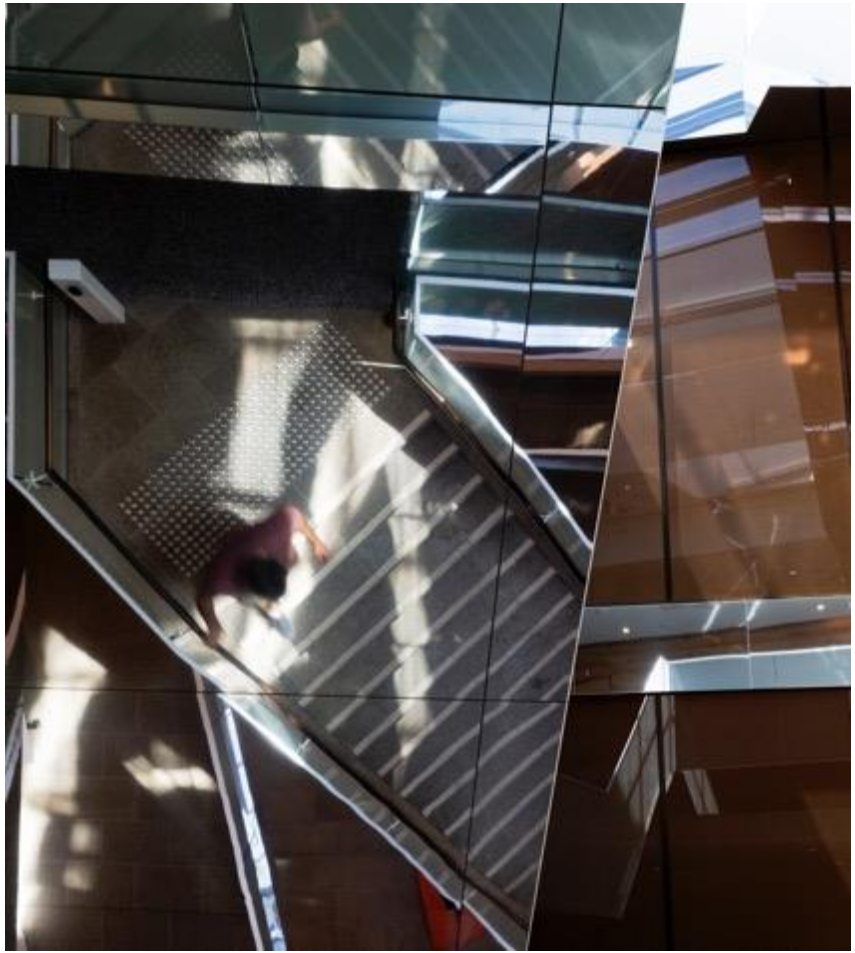
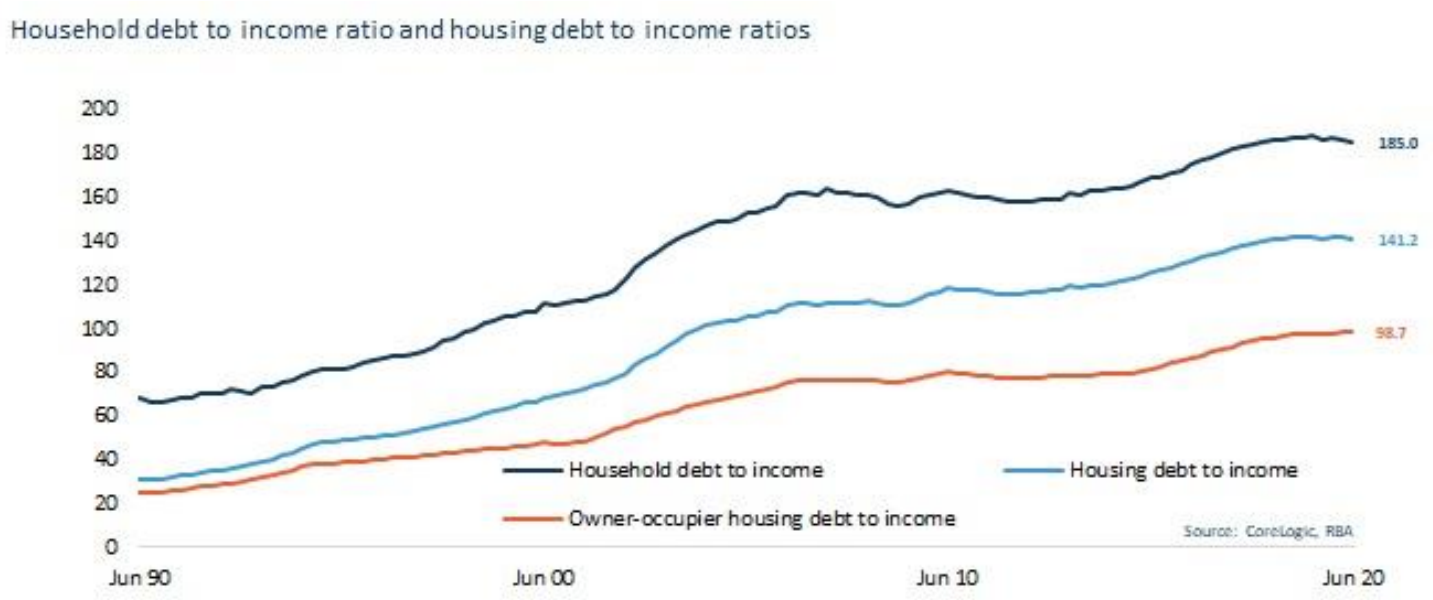


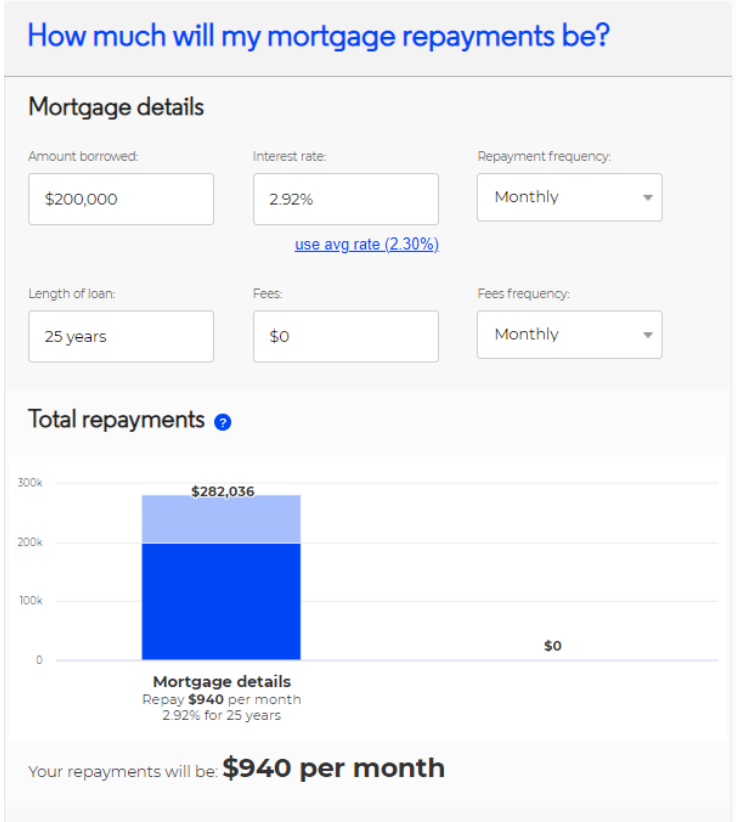
Mortgage Stress in Australia



- 1% of mortgages ($20 BN) are 30+ days behind payments (Illion, 2020)

Mortgage Debt Framing

- Borrowed as a lump sum
- Repaid monthly
- "Information architecture" and temporal framing



Perceived saving adequacy of lump sums vs. annuities

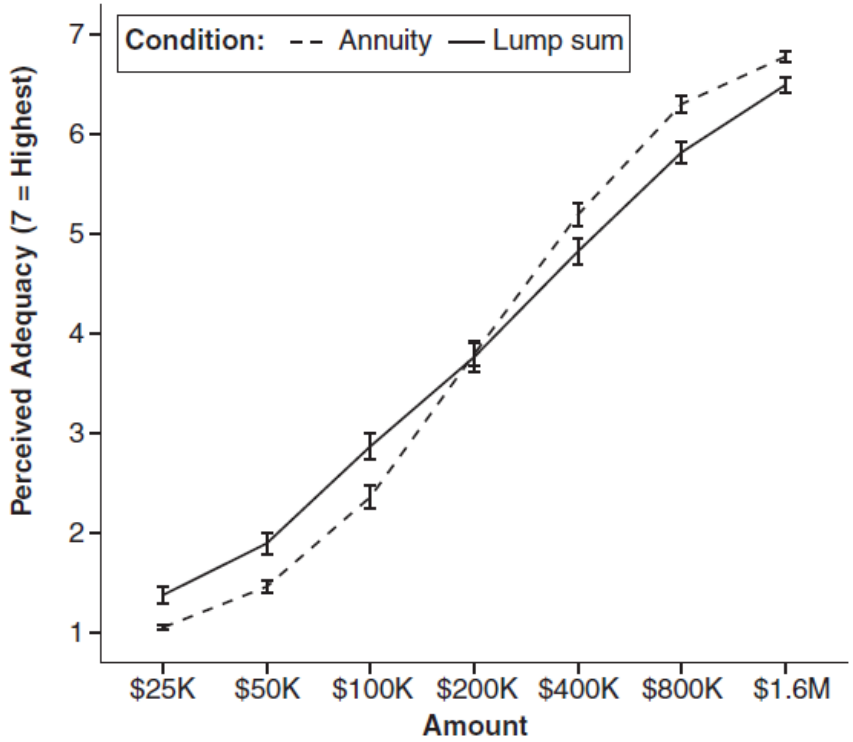


Figure 2, Goldstein et al 2016

Mortgage Brokers

- Common for Australian borrowers, especially the first home buyers (ASIC 2019; MFAA 2020)
- Brokerage services
  - Advice provision
  - Knowledge transfer (confusion reduction, e.g. Chung et al 2021)
  - Emotional values (comfort with debts)
- Potential agency problem: brokers are more likely to offer mortgages with (ASIC 2017; Sedgwick 2017)
  - Larger loan size
  - Higher loan-to-value ratio
  - Interest-only attribute

Research Questions

Q1: Does information format (lump sum or monthly repayment) affect the perceived comfort level with mortgage debts?

- If yes, does the format affect the intended amount to borrow?

Q2: How do mortgage brokers affect borrower's comfort level with mortgage debts and the lump sum framing effect?

Experiment 1(a)

Perceived comfort with a given debt amount from $200,000 to $2,979,000 (10 levels), framed as lump sums or monthly repayments (within- and between-subject variations)

Suppose

- you are buying a new house and taking out a new **residential mortgage**;
- this is the only residential mortgage you have;
- the loan must be fully repaid after 25 years;
- a 20% deposit has already been paid.

We will show you different total debt amounts for this mortgage. Please indicate how comfortable you would be with the given total mortgage debt amount. Please remember there are no right or wrong answers; these questions are only about your mortgage preferences.

Scenario 1 of 10

Suppose your total mortgage debt is **$200,000** and you do not have to borrow any more beyond this amount. Please rate how **comfortable or uncomfortable** you would be with a total debt of **$200,000**.

Very uncomfortable	Uncomfortable	Slightly uncomfortable	Neither comfortable nor uncomfortable	Slightly comfortable	Comfortable	Very comfortable
○	○	○	○	○	○	○

Experiment 1(a) – cont'd

Perceived comfort with a given debt amount from $200,000 to $2,979,000 (10 levels), framed as lump sums or monthly repayments (within- and between-subject variations)

Suppose

- you are buying a new house and taking out a new **residential mortgage**;
- this is the only residential mortgage you have;
- the loan must be fully repaid after 25 years;
- a 20% deposit has already been paid.

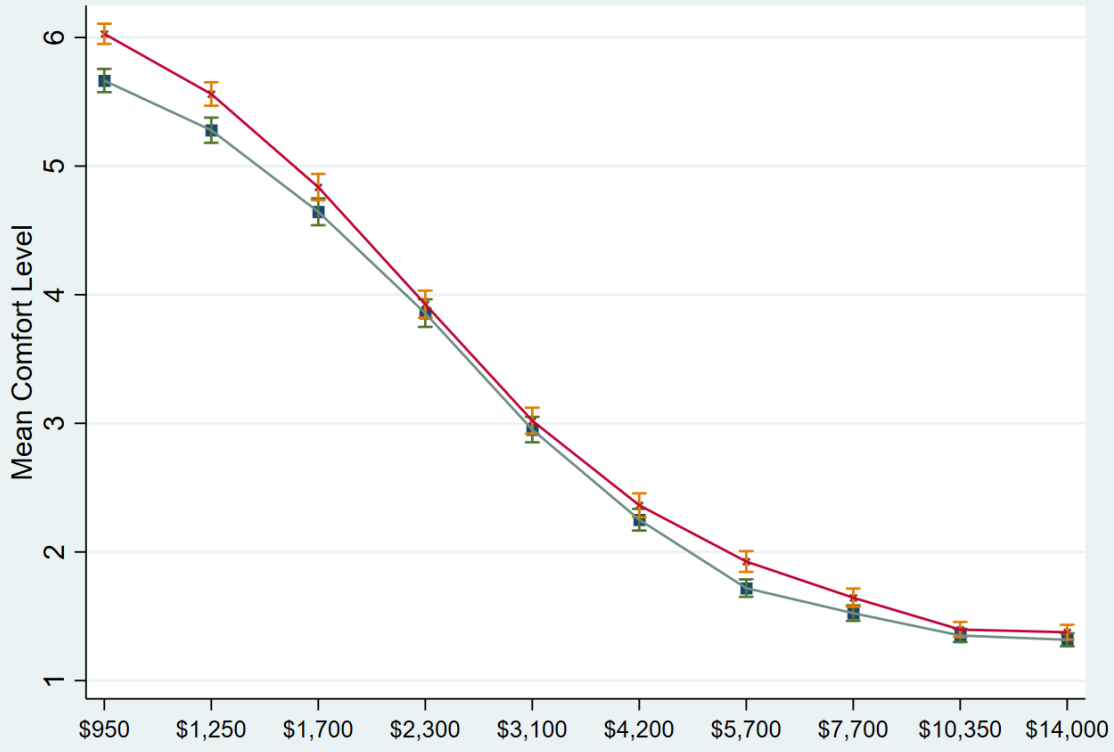
We will show you different monthly debt repayments for this mortgage. Please indicate how comfortable you would be with the given monthly mortgage debt repayment. Please remember there are no right or wrong answers; these questions are only about your mortgage preferences.

Scenario 1 of 10

Suppose your total monthly repayment is **$950** and you do not have to repay any more beyond this amount. Please rate how **comfortable or uncomfortable** you would be with a monthly repayment of **$950**.

Very uncomfortable	Uncomfortable	Slightly uncomfortable	Neither comfortable nor uncomfortable	Slightly comfortable	Comfortable	Very comfortable
○	○	○	○	○	○	○

Experiment 1(a) - Findings



Red: monthly repayments
Green: Lump sums

Experiment 1(a) Analysis

$$Y_{ij} = \beta_1 \boldsymbol{LS\ framing}_{ij} + \beta_2 \boldsymbol{Log(loan\ size)}_j + \beta_3 \boldsymbol{Log(loan\ size)} \times \boldsymbol{LS\ framing}_{ij} + \beta_4 \boldsymbol{Used\ broker}_i + \beta_5 \boldsymbol{Used\ broker} \times \boldsymbol{LS\ framing}_{ij} + \beta_6 \boldsymbol{Fin\ lit}_i + \beta_7 \boldsymbol{Fin\ lit} \times \boldsymbol{LS\ framing}_{ij} + \beta_8 \boldsymbol{Increasing\ size}_i + X_i + \epsilon_{ilt} \quad (1)$$

Y_{ij} = Comfort level (1 to 7)

X_i = Gender, age, income, education, risk aversion, patience, employed, numeracy

Instrumental variable for "Used broker": number of financial advisors in the postcode

Experiment 1(a) - Findings

	(1)	(2)	(3)	(4)	IV
Log (loan size)	-1.848***	-1.848***	-1.848***	-1.848***	-1.848***
	(0.021)	(0.021)	(0.019)	(0.019)	(0.029)
LS framing	-0.153***	-0.153***	-0.153***	-0.153***	-0.152***
	(0.039)	(0.039)	(0.035)	(0.035)	(0.051)
Log (loan size) x LS framing		0.087**	0.087**	0.087**	0.087
		(0.041)	(0.039)	(0.039)	(0.058)
Used broker			0.363***	0.363***	3.787**
			(0.038)	(0.038)	(1.642)
Used broker x LS framing				0.153**	1.437
				(0.072)	(1.294)
Fin lit			-0.285***	-0.285***	-0.533***
			(0.043)	(0.043)	(0.130)
Fin lit x LS framing				0.176**	0.036
				(0.079)	(0.180)
Controls	YES	YES	YES	YES	YES
Number of obs	7,820	7,820	7,820	7,820	7,820

Dependent variable = Comfort Level (1 to 7)

Lump sum framing:

- reduces comfort with debts
- reduce sensitivity to debt sizes

Broker experience:

- Increases comfort with debts
- Mitigates the lump sum framing effect

Experiment 2(a)

Same as 1(a), but only between-subject variation in debt levels

Suppose your total mortgage debt is **$200,000** and you do not have to borrow any more beyond this amount. Please rate how **comfortable or uncomfortable** you would be with a total debt of **$200,000.**

Very uncomfortable	Uncomfortable	Slightly uncomfortable	Neither comfortable nor uncomfortable	Slightly comfortable	Comfortable	Very comfortable
○	○	○	○	○	○	○

Suppose your total monthly repayment is **$950** and you do not have to repay any more beyond this amount. Please rate how **comfortable or uncomfortable** you would be with a monthly repayment of **$950.**

Very uncomfortable	Uncomfortable	Slightly uncomfortable	Neither comfortable nor uncomfortable	Slightly comfortable	Comfortable	Very comfortable
○	○	○	○	○	○	○

Experiment 2(a) - Findings

	(1)	(2)	(3)
Loan size category 2	-1.617***	-2.312***	-2.167***
	(0.373)	(0.517)	(0.452)
Loan size category 3	-2.816***	-3.676***	-3.372***
	(0.346)	(0.510)	(0.468)
Loan size category 4	-3.480***	-4.029***	-3.297***
	(0.378)	(0.510)	(0.447)
Lump sum framing	-0.005	-1.029**	-0.797*
	(0.260)	(0.510)	(0.462)
Category 2 x LS framing		1.380*	0.987
		(0.744)	(0.663)
Category 3 x LS framing		1.595**	1.183*
		(0.691)	(0.644)
Category 4 x LS framing		1.059	0.232
		(0.759)	(0.667)
Used broker			0.274
			(0.246)
Fin lit			-1.047***
			(0.264)
Controls	YES	YES	YES
Number of obs	258	258	258

Dependent variable = Comfort Level (1 to 7)

Lump sum framing:

- reduces comfort with debts
- reduces sensitivity to debt sizes

Broker experience does not have a significant effect

Summary

Lump sum framing

- Reduces the comfort
- Does not alter willingness to change the debt size

Experience with brokers

- More comfort with debts
- Less sensitive to the lump sum framing effect
- More certain about future housing market

Thank you!

Debt Levels

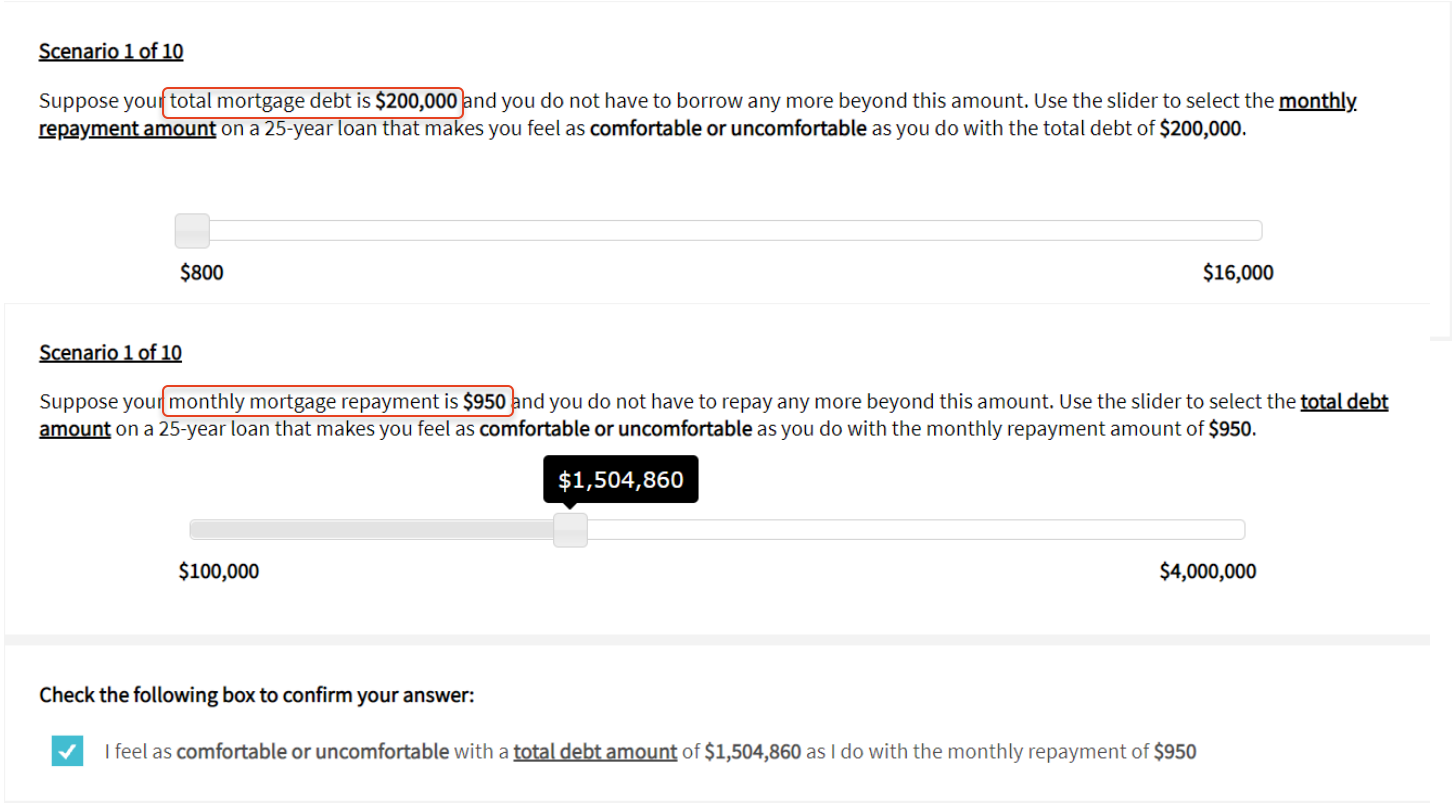
- Assuming interest rate = 2.92% p.a., loan term = 25 years
- Log (loan size) increases linearly

Lump Sum	Monthly Repayments
200,000	950
270,000	1,250
365,000	1,700
492,000	2,300
664,000	3,100
897,000	4,200
1,211,000	5,700
1,634,000	7,700
2,206,000	10,350
2,979,000	14,000

Back

Experiment 1(b)

Conversion between lump sums and monthly repayments



Experiment 1(b) Analysis

$$Y_{ij} = \beta_1 \boldsymbol{LS\ framing}_{ij} + \beta_2 \boldsymbol{Log(loan\ size)}_j + \beta_3 \boldsymbol{Log(loan\ size)^2}_j + \beta_4 \boldsymbol{Log(loan\ size)} \times \boldsymbol{LS\ framing}_{ij} + \beta_5 \boldsymbol{Used\ broker}_i + \beta_6 \boldsymbol{Used\ broker} \times \boldsymbol{LS\ framing}_{ij} + \beta_7 \boldsymbol{Fin\ lit}_i + \beta_8 \boldsymbol{Fin\ lit} \times \boldsymbol{LS\ framing}_{ij} + \beta_9 \boldsymbol{Increasing\ size}_i + X_{ij} + \epsilon_{ilt} \quad (2)$$

Y_{ij} = Absolute value of (reported amount/correct amount – 1)

X_{ij} = Gender, age, income, education, risk aversion, patience, employed, numeracy, seeing the lump sum questions first

Instrumental variable for "Used broker": number of financial advisors in the postcode

Experiment 1(b) - Findings

	(1)	(2)	(3)	(4)	IV
Log (loan size)	-0.213***	-0.213***	-0.213***	-0.213***	-0.213*
	(0.028)	(0.028)	(0.027)	(0.027)	(0.110)
Log (loan size)^2	0.105***	0.105***	0.105***	0.105***	0.105
	(0.037)	(0.037)	(0.036)	(0.036)	(0.144)
LS framing	-0.110**	-0.110**	-0.111**	-0.111**	-0.094
	(0.049)	(0.049)	(0.047)	(0.047)	(0.186)
Log (loan size) x LS framing		0.099*	0.099*	0.099*	0.099
		(0.057)	(0.055)	(0.055)	(0.220)
Used broker			-0.039	-0.039	3.003
			(0.057)	(0.057)	(3.737)
Used broker x LS framing				0.064	-16.627
				(0.095)	(18.477)
Fin lit			0.012	0.011	-0.086
			(0.060)	(0.060)	(0.274)
Fin lit x LS framing				0.081	0.444
				(0.108)	(0.596)
Number of obs	2,320	2,320	2,320	2,320	2,320

Dependent variable = Absolute error of conversion

- Smaller error in converting a lump sum to monthly repayments
- Broker experience does not have a significant effect

Experiment 2(b) Amount to Borrow

Suppose your total debt (monthly mortgage repayment amount) is $200,000 ($950). Would you increase the amount you have borrowed, keep the amount the same, or decrease the amount you have borrowed?

(between-subject variation in debt levels)

1. Decrease it a lot
2. Decrease it a bit
3. Keep it the same
4. Increase it a bit
5. Increase it a lot

Experiment 2(b) - Findings

	(1)	(2)	(3)
Loan size category 2	-0.236	-0.405	-0.574**
	(0.240)	(0.333)	(0.289)
Loan size category 3	-0.416*	-0.723**	-0.810***
	(0.235)	(0.341)	(0.300)
Loan size category 4	-0.813***	-1.213***	-0.886***
	(0.230)	(0.333)	(0.291)
Lump sum framing	0.012	-0.455	-0.117
	(0.170)	(0.326)	(0.282)
Category 2 x LS framing		0.429	0.285
		(0.482)	(0.416)
Category 3 x LS framing		0.659	0.417
		(0.475)	(0.415)
Category 4 x LS framing		0.808*	0.076
		(0.464)	(0.414)
Used broker			0.108
			(0.159)
Fin lit			-0.762***
			(0.168)
Controls	YES	YES	YES
Number of obs	255	255	255

Dependent variable = decision level (1 to 5)

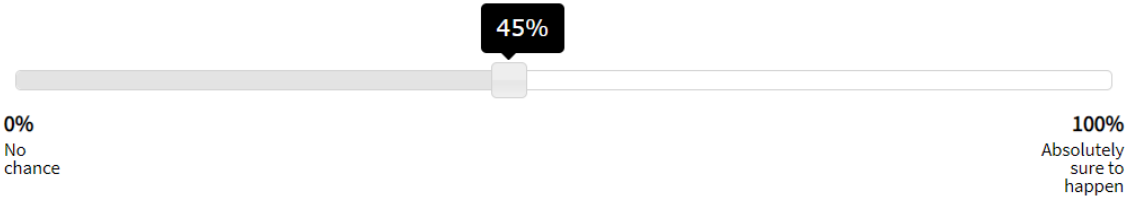
- The intention to change debt size unaffected by lump sum framing or broker experience

Broker Effects

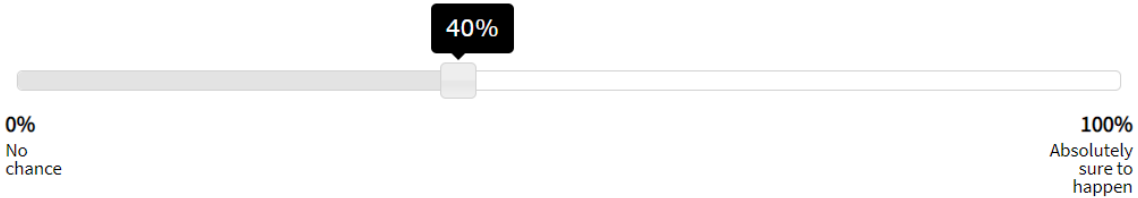
- We collect information on broker experience and future plans to use brokers
- Brokers may affect:
  1. Borrower's comfort with loans (maximum level vs. affordable level)
  2. Borrower's expectations of the future housing market

Borrower's expectations of the future housing market

On a scale from 0 percent to 100 percent where 0 means that you think there is no chance and 100 means that you think the event is absolutely sure to happen, **what do you think are the chances that by this time next year your home will be worth more than it is today?**



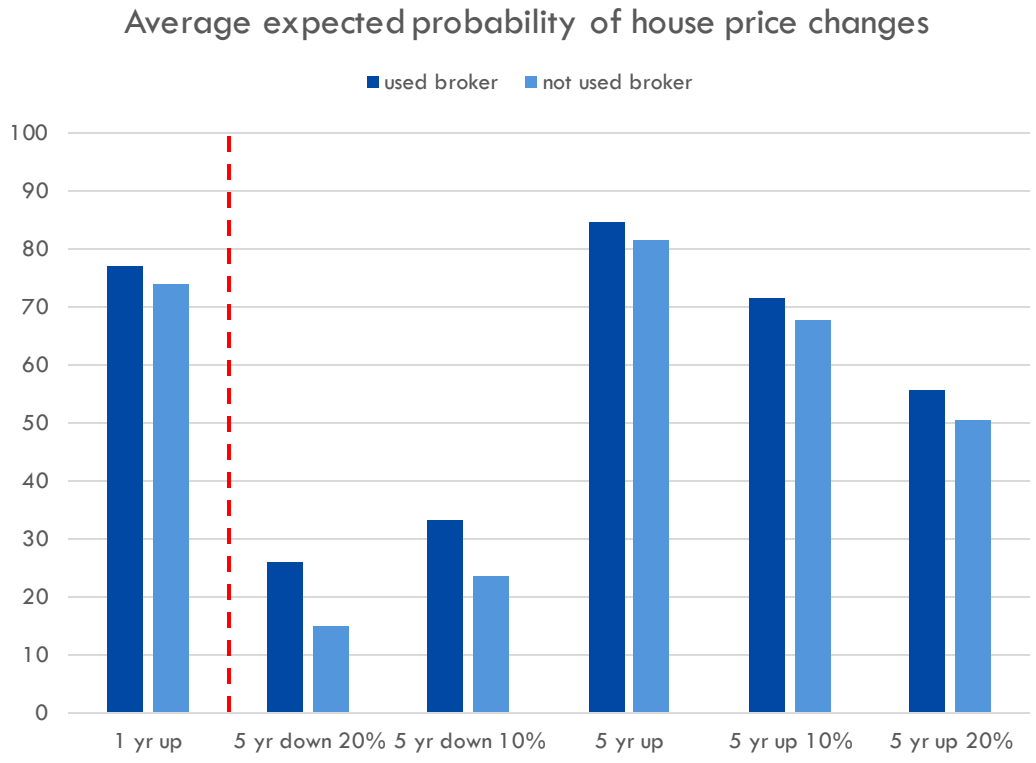
On a scale from 0 percent to 100 percent where 0 means that you think there is no chance and 100 means that you think the event is absolutely sure to happen, **what do you think are the chances that by this time next year home loan interest rates will be higher than they are today?**



Check the following box to confirm your answer:

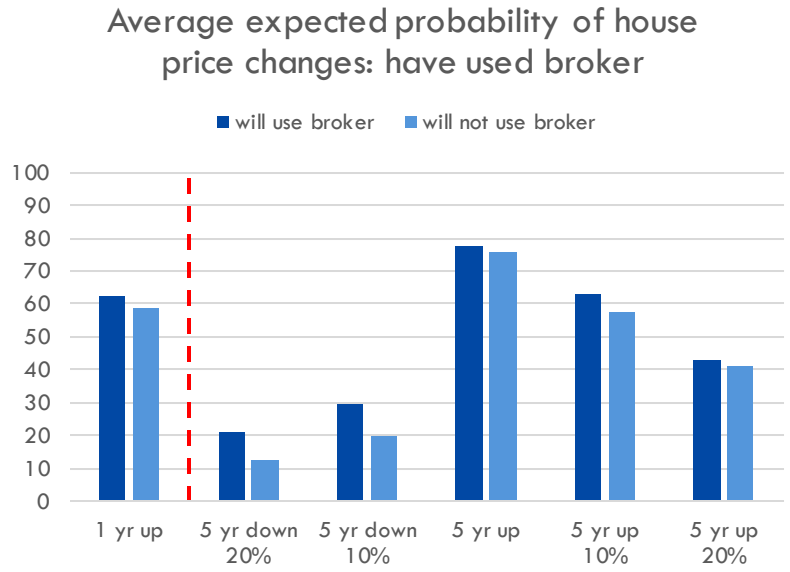
☐ I think there is a **40%** chance that by **this time next year home loan interest rates will be higher than they are today.**

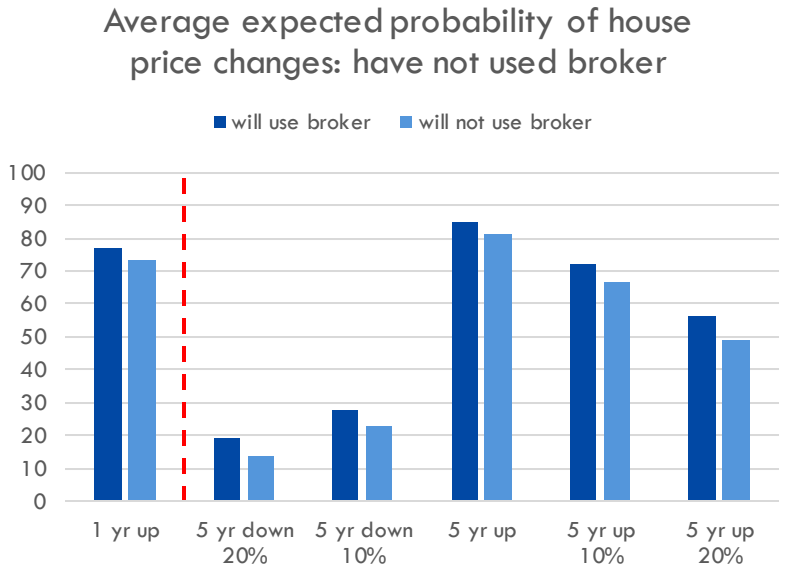
Experience with brokers and housing price expectation (1)



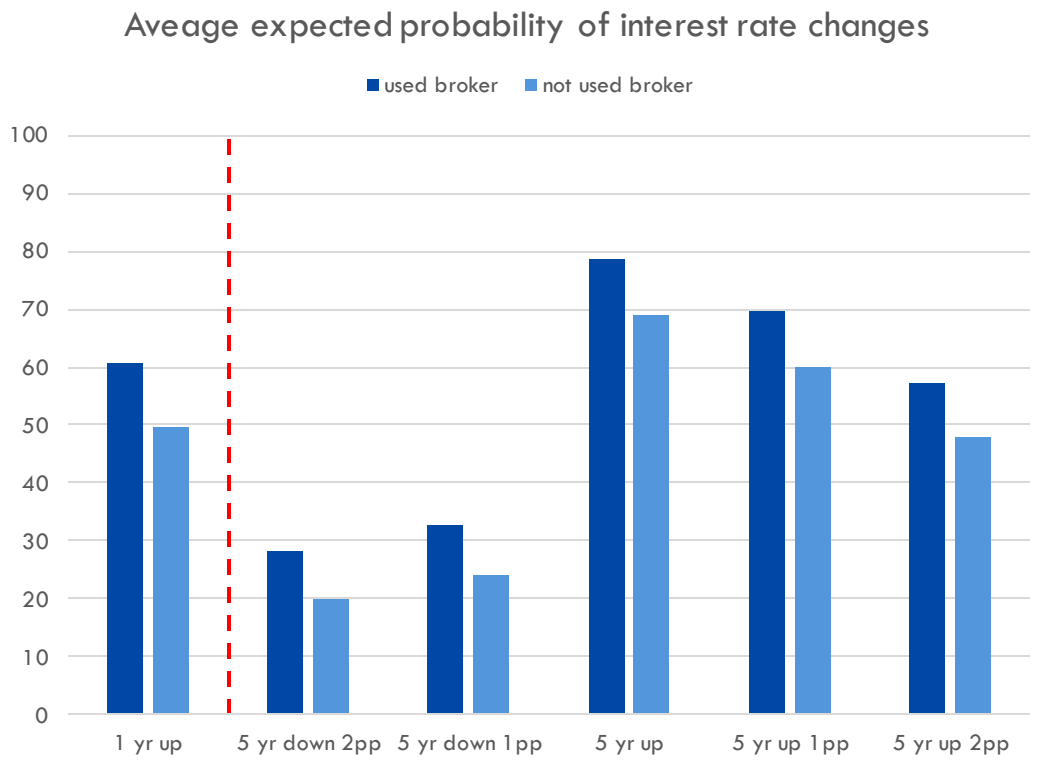
Experience with brokers and housing price expectation (2)

By intention to use brokers in the future





Experience with brokers and interest rate expectation (1)



Experience with brokers and interest rate expectation (2)

By intention to use brokers in the future