

HOUSE PRICE EXPECTATIONS AND CONSUMPTION — A SURVEY-BASED EXPERIMENT

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MOTIVATION

- Housing influences consumer spending
 - ▶ Wealth effect: house prices $\uparrow \implies$ wealth \uparrow
 - ▶ Collateral effect: house prices $\uparrow \implies$ collateral value \uparrow
- House price expectations play an important role in housing dynamics (Shiller, 2007; Kaplan et al., 2017)
- Empirical literature:
 - ▶ A lot of evidence relating *realized* house prices to consumption decisions (Cooper, 2013; Mian et al., 2013; Kaplan et al., 2016; Aladangady, 2017)
 - ▶ Little evidence relating consumption to *expectations* of future house prices

This paper investigates the *empirical* effect of individuals' house price expectations on their spending decisions.

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This paper investigates the *empirical* effect of individuals' house price expectations on their spending decisions.

- House price expectations are endogenous
 - ▶ Expectations relate to aggregate conditions
 - ▶ Expectations are affected by personal experiences (Kuchler & Zafar, 2017)
- Common approaches to identification:
 - ▶ Controlling for confounding variables (Bover, 2015; Qian, 2018)
- Concern: may not address all endogeneity issues
 - ▶ Example: unobserved characteristics (optimism/pessimism)

- Use a survey-based experiment
- Respondents are *randomly* assigned *different* professional forecasts of nationwide house prices
 - ▶ survey design builds on Roth & Wohlfart (2018)
- I study the response of household spending to the *exogenous* difference in house price expectations due to the information treatment

MAIN FINDINGS

- Expected nationwide house prices $\uparrow 1\%$ \implies intended annual household spending $\uparrow 0.4\%$
- Stronger responses: potentially borrowing-constrained respondents (low income, young, maxed out credit cards)

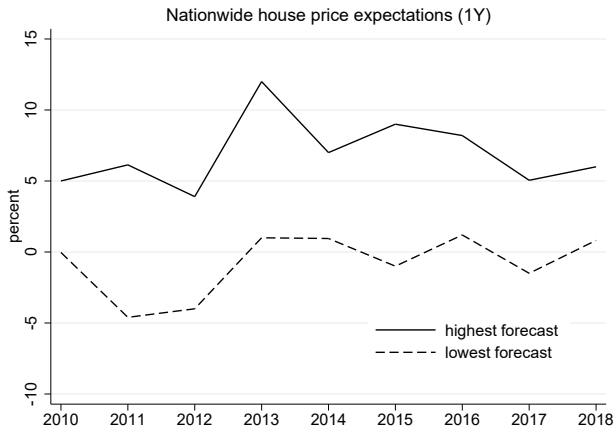
- 1,003 U.S. adults recruited through “Research Now” (February, 2019)
- Baseline survey:
 - ▶ Module 1: Demographics
 - ▶ Module 2: Pre-treatment expectations
 - ▶ house prices (nationwide, zip code, primary residence)
 - ▶ household spending, household income
 - ▶ Module 3: Treatment
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- Professional forecasters disagree on future house price growth



HIGH TREATMENT VS LOW TREATMENT

- Respondents randomly receive one treatment:
 - ▶ “High Treatment”: the *highest* professional forecast of nationwide house prices from the 2018 SPF (forecast = 6%)
 - ▶ “Low Treatment”: the *lowest* professional forecast of nationwide house prices from the 2018 SPF (forecast = 0.8%)

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 - ▶ inflation, overall business conditions
- Follow-up survey: one month, actual spending

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SUMMARY STATISTICS

- The sample is nationally representative

	Survey Sample	2017 ACS
Female	0.50	0.52
Age	45.60	47.67
At least bachelor's degree	0.33	0.30
Married	0.55	0.51
Homeowner	0.68	0.67
Household income <50K	0.38	0.34
Household income \geq 100K	0.29	0.34
Family size	2.93	2.86
Northeast	0.19	0.18
Midwest	0.21	0.21
South	0.35	0.38
West	0.25	0.24
Max out a credit card	0.15	
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BALANCE ACROSS TREATMENT GROUPS

- Treatment groups are largely balanced on observable characteristics

	High Treatment	Low Treatment	P-value
Age	45.25	45.97	0.54
Female	0.46	0.53	0.04
At least bachelor's degree	0.33	0.33	0.78
Married	0.56	0.55	0.83
Home ownership	0.68	0.67	0.75
Household income <50K	0.27	0.28	0.64
Household income \geq 100K	0.42	0.44	0.62
Family size	2.90	2.96	0.68
Max out a credit card	0.14	0.17	0.28
Plan on buying a home	0.14	0.12	0.35
<i>Expected annual growth rate before treatment</i>			
Household spending	2.21	1.71	0.39
Household income	3.71	3.83	0.86
Nationwide house price	3.53	3.80	0.59
Zipcode house price	3.35	3.95	0.18
Primary house price	3.29	3.28	0.98

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TREATMENT EFFECT ON HOUSE PRICE EXPECTATIONS

- Treatment significantly shifts nationwide house price expectations

	Post-treatment nationwide house price expectations (1Y)		
	(1)	(2)	(3)
$\mathbb{1}\{\text{High Treatment}\}$	2.776*** (0.356)	2.738*** (0.359)	2.815*** (0.338)
Individual controls	No	Yes	Yes
Initial expectations	No	No	Yes
Observations	819	819	819
Adjusted R^2	0.068	0.069	0.177

- Estimate is also significant for local house price expectations.

Results

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COULD THESE BE EXPERIMENTER EFFECTS?

Treatment effect is unlikely an experimenter effect:

- Persistence
 - ▶ Effect on nationwide HP expectations persists after one month
- Heterogeneity
 - ▶ Change depends on the difference between their initial expectations and the professional forecast
 - ▶ Stronger response: those with uncertain initial expectations

NATIONWIDE HOUSE PRICE EXPECTATIONS AND CONSUMPTION

- Expected nationwide house prices $\uparrow 1\%$ \implies intended annual household spending $\uparrow 0.4\%$

	Post-treatment household spending expectations (1Y)		
	(1)	(2)	(3)
Nationwide HP expectations	0.477** (0.197)	0.461** (0.198)	0.392** (0.167)
Individual controls	No	Yes	Yes
Initial expectations	No	No	Yes
Observations	819	819	819
1st stage F-statistic	60.63	58.24	69.57

Notes: Coefficients are estimated using an instrumental variable strategy. Standard errors are in parentheses.

EFFECT OF DIFFERENT HOUSE PRICE EXPECTATIONS

- Effect of local house price expectations is also positive.

	Post-treatment household spending expectations (1Y)		
	(1)	(2)	(3)
Nationwide HP expectations	0.392** (0.167)		
Zipcode HP expectations		0.773** (0.342)	
Primary HP expectations			0.934 [†] (0.597)
Individual controls	Yes	Yes	Yes
Initial expectations	Yes	Yes	Yes
Observations	819	819	553
1st stage F-statistic	69.57	19.97	8.01

[†]: Significant at the 15 percent level ($p=0.12$).

- Evidence from actual spending data is consistent but statistically weaker

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- Evidence from actual spending data is consistent but statistically weaker

- Income expectations \uparrow when house price expectations \uparrow

	Post-treatment expectations (1Y)		
	(1) Income	(2) Inflation	(3) Overall business conditions
Nationwide HP expectations	0.336* (0.186)	-0.007 (0.023)	0.014 (0.017)
Individual controls	Yes	Yes	Yes
Initial expectations	Yes	Yes	Yes
Observations	819	819	819
1st stage F-statistic	69.57	69.57	69.57

Notes: The coefficients are estimated using an instrumental variable strategy. Standard errors are in parentheses.

HOUSE PRICE EXPECTATIONS AND INCOME EXPECTATIONS

- Effect is still significant after controlling for income expectations.

	Post-treatment household spending expectations (1Y)					
	Baseline Results			Controlling for Income exp.		
	(1)	(2)	(3)	(4)	(5)	(6)
Nationwide HP expectations	0.392** (0.167)			0.335** (0.171)		
Zipcode HP expectations		0.773** (0.342)			0.691* (0.364)	
Primary HP expectations			0.934 (0.597)			0.780 (0.580)
Income expectations				0.171*** (0.039)	0.127** (0.057)	0.220*** (0.063)
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes
Initial expectations	Yes	Yes	Yes	Yes	Yes	Yes
Observations	819	819	553	819	819	553
1st stage F-statistic	69.57	19.97	8.01	66.21	17.54	7.54

Notes: The coefficients are estimated using an instrumental variable strategy. Standard errors are in parentheses.

HETEROGENEITY - HOMEOWNERSHIP

- Homeownership matters for the response to house price expectations

	Post-treatment household spending expectations (1Y)		
	(1) All	(2) Homeowners	(3) Renters
Nationwide HP expectations	0.335** (0.171)	0.351 (0.235)	0.285 (0.210)
Income expectations	Yes	Yes	Yes
Individual controls	Yes	Yes	Yes
Initial expectations	Yes	Yes	Yes
Observations	819	553	266
1st stage F-statistic	66.21	44.34	26.73

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	Post-treatment household spending expectations (1Y)				
	(1) All	(2) Homeowners	(3) Renters	(4) Homeowners excl. pot. homebuyers	(5) Renters excl. pot. homebuyers
Nationwide HP expectations	0.335** (0.171)	0.351 (0.235)	0.285 (0.210)	0.341* (0.182)	0.109 (0.221)
Income expectations	Yes	Yes	Yes	Yes	Yes
Individual controls	Yes	Yes	Yes	Yes	Yes
Initial expectations	Yes	Yes	Yes	Yes	Yes
Observations	819	553	266	480	231
1st stage F-statistic	66.21	44.34	26.73	54.03	23.44

Notes: The coefficients are estimated using an instrumental variable strategy. Standard errors are in parentheses.

HETEROGENEITY - BORROWING CONSTRAINT

- Effect appears to vary with proxies of borrowing constraint.

Independent Variable: Nationwide HP expectations			
Dependent Variable: Post-treatment household spending expectations (1Y)			
Sample: Homeowners excl. pot. homebuyers			
Specification	Coef (s.e.)	Obs.	F-statistic
Household income			
I < 50K	0.824* (0.494)	125	10.7
50K ≤ I < 100K	0.163 (0.340)	173	13.9
I ≥ 100K	0.182 (0.194)	182	37.5
Mortgage			
Yes	0.555* (0.299)	303	26.8
No	0.102 (0.199)	177	30.8
Max out a credit card			
Yes	1.437 (1.829)	55	1.3
No	0.267 (0.171)	425	56.3
Age			
Age < 40	0.752 (0.512)	156	9.3
40 ≤ Age < 60	0.101 (0.195)	171	15.7
Age ≥ 60	0.340 (0.279)	153	35.9

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- Expected nationwide house prices $\uparrow 1\%$ \implies intended annual household spending $\uparrow 0.4\%$
- Results suggest that people consider house price increases as relaxing their borrowing constraints

APPENDIX

SAMPLE QUESTIONS - HOUSE PRICE EXPECTATIONS

- Over the **next 12 months**, what do you expect will happen to the following house prices?

	increase	stay the same	decrease
nationwide house prices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
price of homes in your zip code	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
price of your primary residence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SAMPLE QUESTIONS - HOUSE PRICE EXPECTATIONS

By about **what percent** do you expect house prices to change over the **next 12 months**?

- I expect the **nationwide** house price to (increase/decrease) by _____ %.
- I expect the price of homes in my **zipcode** to (increase/decrease) by _____ %.
- I expect the price of my **primary residence** to (increase/decrease) by _____ %.

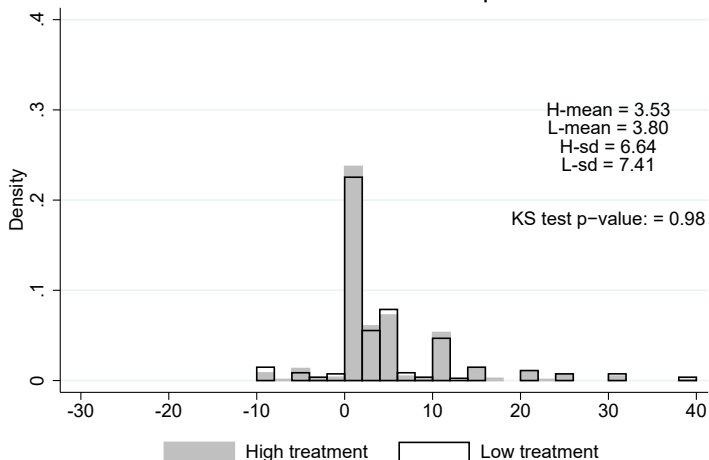
The message given to the high treatment group:

According to a financial services provider that regularly takes part in the Survey of Professional Forecasters, the **nationwide house price** will **increase by 6%** over the next 12 months.

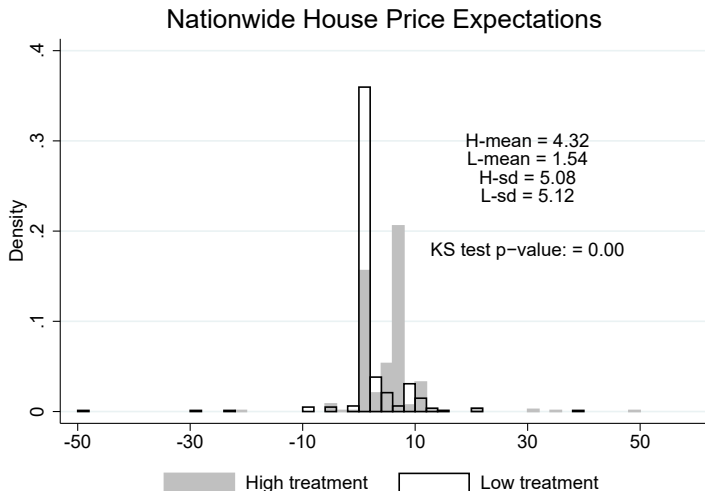
The message given to the low treatment group is the same except the percentage change is different.

DISTRIBUTIONS BEFORE TREATMENT ARE SIMILAR

Nationwide House Price Expectations



DISTRIBUTIONS ARE DIFFERENT AFTER TREATMENT



TREATMENT EFFECT ON HOUSE PRICE EXPECTATIONS

	Post-treatment house price expectations (1Y)		
	(1) Nationwide	(2) Zip code	(3) Primary residence
$\mathbb{1}\{\text{High Treatment}\}$	2.815*** (0.338)	1.439*** (0.322)	1.175*** (0.415)
Individual controls	Yes	Yes	Yes
Initial expectations	Yes	Yes	Yes
Observations	819	819	553
Adjusted R^2	0.177	0.289	0.297

back