

The Lavish, the Wealthy, and the Healthy

- Effect of Housing Wealth on Health Outcomes and Behaviors

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Abstract

We study the effect of housing wealth on health outcomes and behaviors of Chinese older population by exploiting a discontinuity in housing wealth generated by two policies. These policies gave tax and down-payment breaks to owners of houses sized 90m² or smaller. We find that increased housing wealth leads to exacerbated cases of self-reported lung, stomach, heart diseases, and dyslipidemia. However, objective biomarker indicators only point to a deteriorating effect on lung functionality. One possible explanation for such discrepancy is that wealth not only affects health directly but increases the possibility of diagnosing a disease. These results also echo our findings that increased housing wealth induces more frequent healthcare use and worsened smoking habits.

Motivation & Contribution

Housing is the most important store of value for Chinese households

- accounts for 46% of their total assets and 54% of their net worth
- have been appreciating at 8% annually in the past two decades

China is facing an intensified situation of population aging

- holds the world's largest pool of older population (191M 65+, 264M 60+)
- aging faster than almost all other countries in modern history

Contribution	Existing literature	Our study
Data	Only self-reported health and disease status.	Both self-reported measures and objective biomarker information
Methodology	Fixed-effect estimates assuming variations in housing value across time are exogenous. Use city-level housing price variation.	Regression discontinuity estimates imposing much fewer restrictions for identification. Individual-level housing price variation.
Population of interest	Highly developed and least-developed nations	A rapid-growing transiting developing country with the world's largest pool of older adults

Policy & Data

Housing Policies

- Houses sized ≤ 90m² have become more appealing following the introduction of two housing policies:

House ≤ 90m ²	Before	After	Effective year
Downpayments	30%	20%	2006
Property deed tax	3%	1%	2008

- We found an annual housing wealth increase of about CNY 7,840 to 12,320 (USD 1,206 to 1,895) for home-owners whose house is just below 90m² relative to those whose house is just above.

CHARLS Survey

- 4 waves of China Health And Retirement Longitudinal Study (2011, 2013, 2015, 2018).
- CHARLS surveys nationally representative middle-aged and elderly population (aged 45 and above) in China.
- **Physical test** results come from CHARLS sub-survey in 2011, 2013, and 2015 with respective response rates of 79%, 71%, and 78%.
- **Blood test** reports were collected in the 2011 and the 2015 wave with response rates of 67% and 64%.

Empirical Strategy

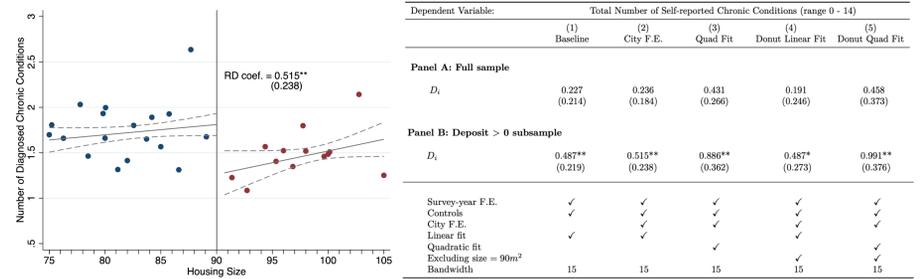
$$Y_i = \beta_0 + \beta_1 D_i + \beta_2 (X_i - 90) + \beta_3 (X_i - 90) D_i + C_i + \varepsilon_i$$

- Y_i : a series of health outcomes and behaviors of home-owner
- X_i : housing size
- D_i : = 1 if $X_i \leq 90m^2$ and = 0 otherwise
- C_i : survey-year fixed effects and city fixed effects

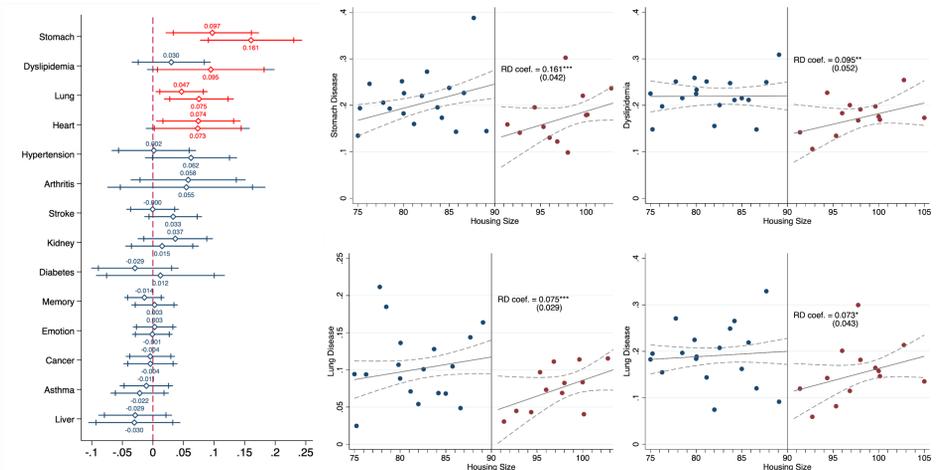
Threats to identification	Alleviation strategy
Manipulation at 90m ²	Focus on houses purchased before 2006 so no manipulation is possible (Li et al, 2020) ¹
Measurement error in housing size	“Donut” RD estimator which drops houses = 90m ² (Barreca et al., 2011) ²
Specification error	Cluster standard errors at house-size level (Lee and Card, 2008) ³
Multiple hypothesis testing	Romano-Wolf corrected p-values (Clarke, Romano, and Wolf, 2020) ⁴

Results

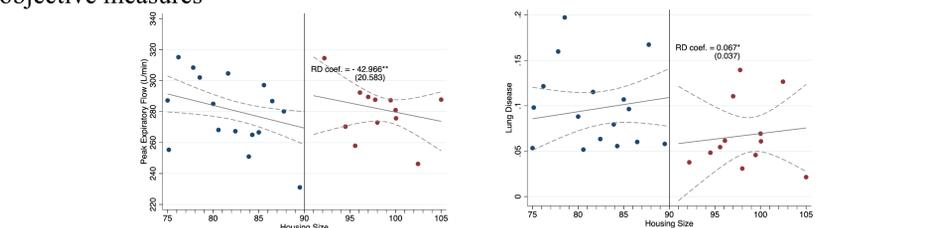
1. Increased housing wealth raises the number of self-reported chronic conditions for credit-unconstrained individuals who may adjust their consumption patterns utilizing bank deposits.



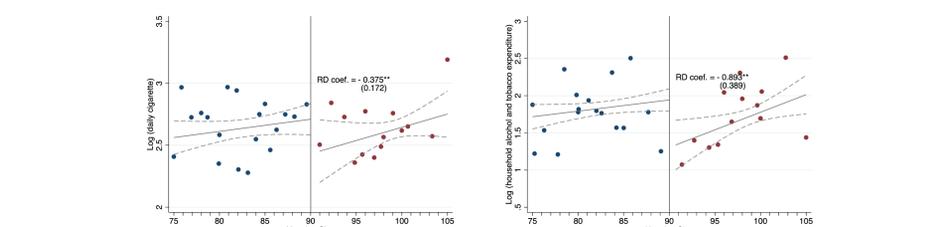
2. Worsened chronic conditions are mainly driven by lung, heart, stomach diseases, and dyslipidemia. The effects are more salient for credit-unconstrained individuals (bottom coefficient for each condition).



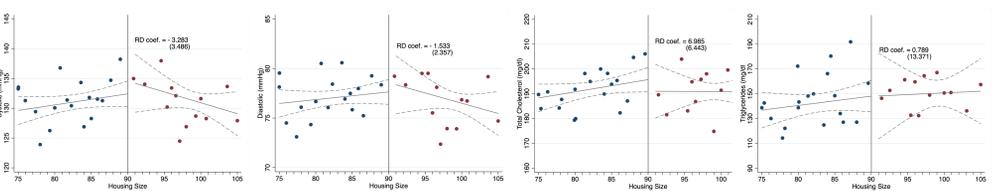
3. Using biomarker information as the outcome variables (peak expiratory flow) confirms deteriorating lung functionality. and subset the data to those with both self-reported and objective measures



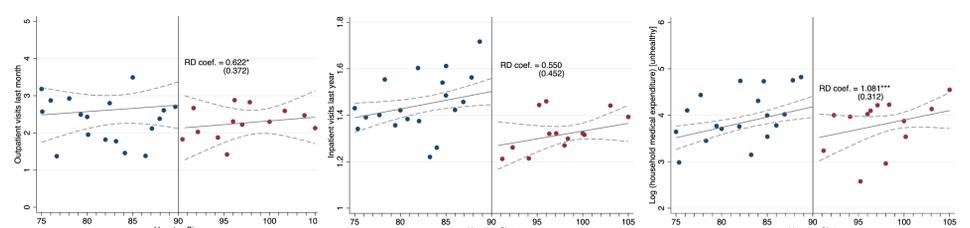
4. This is echoed by worsened smoking habits and increased expenditure on alcohol and tobacco products.



5. However, housing wealth has overall null effect on the other health outcomes (hypertension, dyslipidemia, and diabetes).



6. One possible explanation for such discrepancy is that wealth not only affects health directly but increases the possibility of diagnosing a disease through more frequent healthcare use.



References

1. Li, Han, Jiangyi Li, Yi Lu, and Huihua Xie. 2020. "Housing wealth and labor supply: Evidence from a regression discontinuity design." *Journal of Public Economics* 183:104139.
2. Barreca, Alan I, Melanie Guldi, Jason M Lindo, and Glen R Waddell. 2011. "Saving babies? Revisiting the effect of very low birth weight classification." *The Quarterly Journal of Economics* 126 (4):2117-2123.
3. Lee, David S and David Card. 2008. "Regression discontinuity inference with specification error." *Journal of Econometrics* 142 (2):655-674.
4. Clarke, Damian, Joseph P Romano, and Michael Wolf. 2020. "The Romano-Wolf multiple-hypothesis correction in Stata." *The Stata Journal* 20 (4):812-843.