Do Falling Housing Prices Influence Labor-Market Slack?
Evidence from the Household Side

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Research Question & Positioning

- **Context:** China's 2021 housing-market correction created large negative housing wealth shocks.
- **Research Question:** Do falling housing prices influence labor-market slack through household labor-supply responses?
- **Mechanism:** Housing-price declines tighten household liquidity/debt constraints, potentially affecting employment and work hours.
- **Positioning:**
  - Adds a household-supply-side channel to a literature largely focused on demand-side effects.
  - Links macro housing shocks to micro labor decisions using merged CFPS–city panel.

Methodology: Data & Variables

- **Household data:** China Family Panel Studies (CFPS, 2010–2022), including employment, income, debt, housing ownership, and demographic characteristics.
- **City-level data:**
  - Constructed panel of over 300 prefecture-level cities, 2010–2022.
  - *Housing prices* from the *China Real Estate Index System (CREIS).*
  - *Vacancy* from the *Zhilian* hiring platform dataset.
  - *GDP per capita, urbanization, real estate investment, and population density* from official *provincial and municipal Statistical Yearbooks.*
- **Key variables:**
  - y_{ict}: employment indicator (1 = employed), workhours (weekly).
  - $\ln P_{ct}$: log city-level housing price.
  - $\text{DebtRatio}_{i,pre}$: pre-shock debt-to-income ratio.
  - $\text{Slack}_{ct} : U/V$, the inverse of market tightness (more unemployed workers per vacancy).
  - $\text{Tightness}_{ct} : V/U$, standard measure of labor-market tightness.
  - $\text{Labor Force}_{ct} : E + U$, total number of employed and unemployed workers.

Methodology: Models

Model Design

Macro First-stage specification:

$$\Delta \ln P_{ct} = \alpha + \beta_1 IV_{ct} + \lambda_c + \lambda_t + \varepsilon_{ct}$$

Instrument:

$$IV_{ct} = (\text{National housing price downturn}_t) \times \left(\frac{\text{Average real estate investment}_{c,2015\text{–}2019}}{\text{Average GDP}_{c,2015\text{–}2019}} \right)$$

Second Stage:

$$\Delta y_{ct} = \beta_1 \widehat{\Delta \ln P_{ct}} + \lambda_c + \lambda_t + \varepsilon_{ct}$$

Micro Baseline regression:

$$y_{ict} = \beta_1 \widehat{\Delta \ln P_{ct}} + \mathbf{X}'_{ict}\delta + \lambda_c + \lambda_t + \varepsilon_{ict}$$

Micro Heterogeneity by household debt:

$$y_{ict} = \beta_1 \widehat{\Delta \ln P_{ct}} + \beta_2 (\widehat{\Delta \ln P_{ct}} \times \text{DebtRatio}_{i,pre}) + \beta_3 \text{DebtRatio}_{i,pre} + \mathbf{X}'_{ict}\delta + \lambda_c + \lambda_t + \varepsilon_{ict}$$

Macro Results: City-Level Responses

- **First stage strong:** F = 18.6; instrument variable predicts housing price declines.
- **First stage:**
  - Labor force decreases as prices fall, likely driven by population flows and registration dynamics. No significant effects on unemployment, slack, or tightness.
- **Sectoral reallocation:**
  - Secondary sector (Manufacturing & Construction) employment share declines when housing price growth slows, while Primary(Agriculture & Mining) and Tertiary sector(service) employment expand.

Macro Results Table 1

Table 1. Effects of Housing Price Declines on Employment (2SLS)

	$\Delta \ln P_{ct}$	Labor force
Panel A: First Stage		
IV_{ct}	-2.51***	
	(0.58)	
F-statistic	18.58	
Panel B: Second Stage		
$\widehat{\Delta \ln P_{ct}}$		201.62***
		(95.39)
City FE	Yes	
Year FE	Yes	
Observations	3,346	2,339
Clusters (city)	292	285

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors are in parentheses and clustered at the city level.

Macro Results Table 2

Table 2. Effects of Housing Price Declines on Industrial Employment Shares (2SLS)

	$\Delta \ln P_{ct}$	Primary	Secondary	Tertiary
Panel A: First Stage				
IV_{ct}	-2.51***			
	(0.58)			
F-statistic	18.58			
Panel B: Second Stage				
$\widehat{\Delta \ln P_{ct}}$		-11.81***	40.81***	-25.82***
		(5.72)	(14.02)	(12.12)
City FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	3,346	2,406	2,462	2,460
Clusters (city)	292	284	286	286

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors are in parentheses and clustered at the city level.

Micro Results: Baseline & Debt Heterogeneity

- Housing-price declines have no strong average effects on the baseline employment or weekly work hours.

  Household debt amplifies labor responses to housing shocks:

- **Employment:** high-debt households show significantly larger declines in employment when housing prices fall.
- **Workhours:** households with higher debt-to-income ratios increase weekly work hours more when prices decline.

Interpretation: evidence consistent with a liquidity-constraint / debt-overhang mechanism operating on both margins.

Employment Heterogeneity

Table 3.Employment Heterogeneity by Household Debt

	Employed$_{ict}$	
$\widehat{\Delta \ln P_{ct}}$	-1.07***	-0.90**
	(0.36)	(0.44)
DebtRatio$_{i,pre}$	-0.00	
	(0.00)	
DebtHigh$_{i,pre}$		0.03
		(0.02)
$\widehat{\Delta \ln P_{ct}} \times$ DebtRatio$_{i,pre}$	-0.14***	
	(0.02)	
$\widehat{\Delta \ln P_{ct}} \times$ DebtHigh$_{i,pre}$		-2.05**
		(1.00)
City FE	Yes	Yes
Year FE	Yes	Yes
City-specific trend	Yes	Yes
Observations	1,431	1,431

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered at the city level.

Workhours Heterogeneity

Table 4. Workhour Heterogeneity by Household Debt

	Workhours_{ict}	
$\widehat{\Delta \ln P_{ct}}$	79.36	50.60
	(53.43)	(61.46)
$\text{DebtRatio}_{i,pre}$	-0.02	
	(1.11)	
$\text{DebtHigh}_{i,pre}$		-2.63
		(2.29)
$\widehat{\Delta \ln P_{ct}} \times \text{DebtRatio}_{i,pre}$	-21.17**	
	(8.70)	
$\widehat{\Delta \ln P_{ct}} \times \text{DebtHigh}_{i,pre}$		-47.46
		(91.37)
City FE	Yes	Yes
Year FE	Yes	Yes
Individual controls	Yes	Yes
Observations	831	831

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered at the city level.

Implications & Limitations

Implications

- Housing downturns reshape labor allocation across sectors rather than raising measured slack.
- Household debt plays a key role in mediating labor-supply adjustments.

Limitations

- Only one post-2021 CFPS wave; limited dynamic analysis.
- Slack measurement coarse: city unemployment not public; vacancy data from single platform.
- Exposure varies across households despite city FE (homeownership, migration, within-city variation).
- CFPS lacks search intensity or reservation wage measures.