

A Tale of Two Countries

**– The Real Estate Crises in 1990s
Japan and Contemporary China**

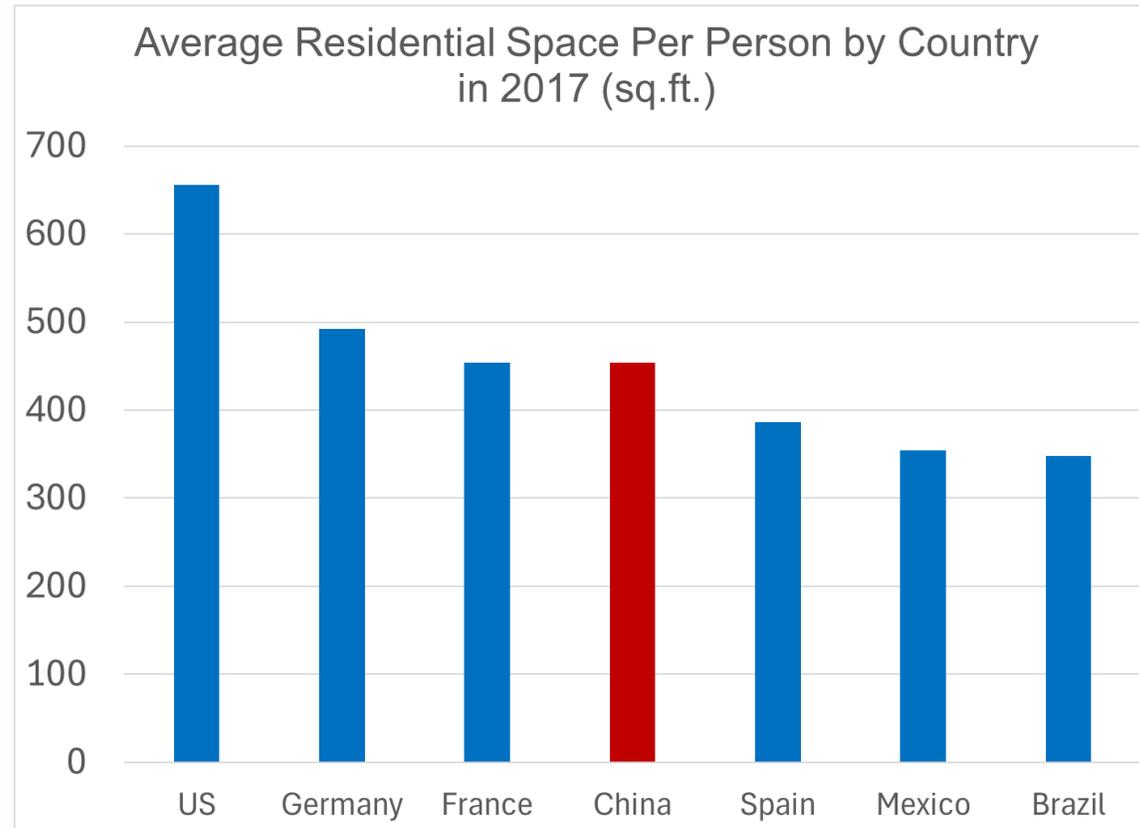
MARCH 27, 2026

Kenneth Rogoff, Harvard University
Yuanchen Yang (presenter), IMF

Motivation

- **Real Estate shifted from a growth engine to a drag on the Chinese economy.**
 - Over 25 percent of aggregate demand linked to housing, and 1/3 if related infrastructure is included
 - China's per capita housing space on par with that of advanced economies

China's per capita residential space comparable to that in wealthy European countries



Sources: Point2Homes and authors' calculations

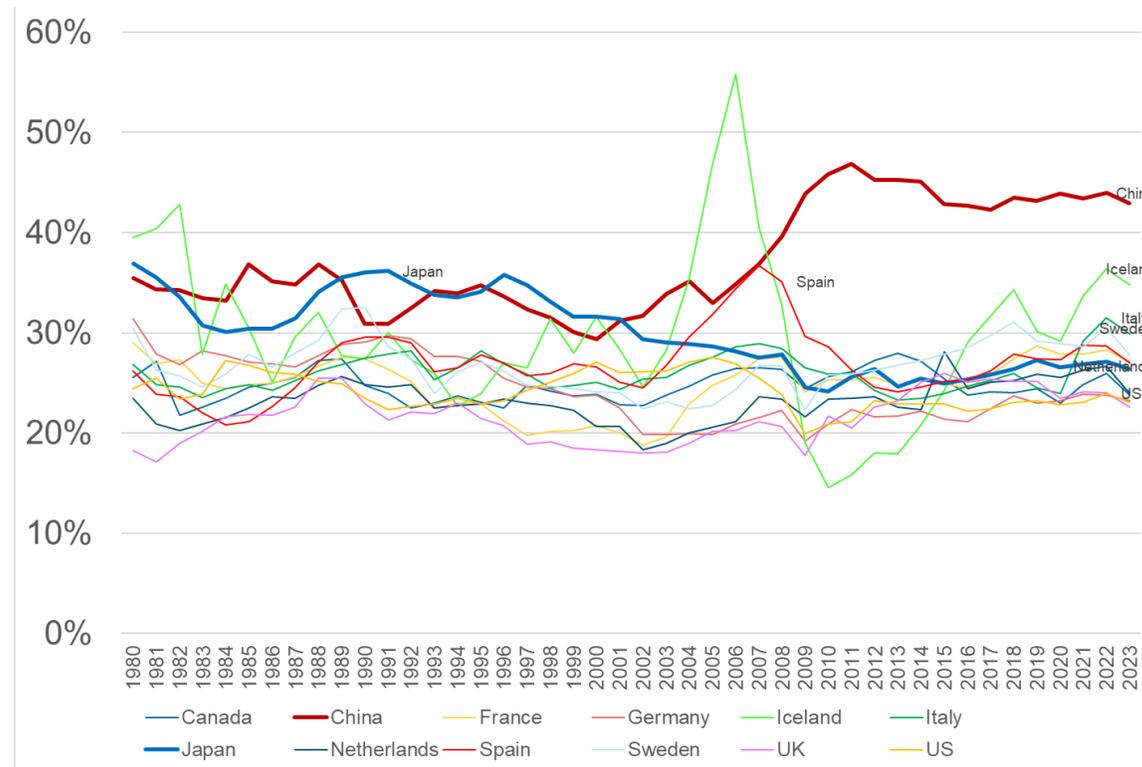
Motivation

- **Real Estate shifted from a growth engine to a drag on the Chinese economy.**
 - Over 25 percent of aggregate demand linked to housing, and 1/3 if related infrastructure is included
 - China's per capita housing space on par with that of advanced economies
 - Housing imbalances are primarily concentrated in poorer tier 3 cities
(Rogoff and Yang, 2020; 2024)
- **What could be the economic costs?**
 - Investment overhang
 - Reverse wealth effects
 - Deteriorating sentiment
 - Other amplification mechanisms (local government debt, financial multipliers)
- **How long will the adjustment last? Is the worst still ahead?**
 - Lessons from Japan's experience

Real estate — a sector of systemic importance to the Chinese economy ...

Investment, of which housing related investment makes up a large share, has hovered around 40% of GDP.

Investment Over GDP Ratio by Country



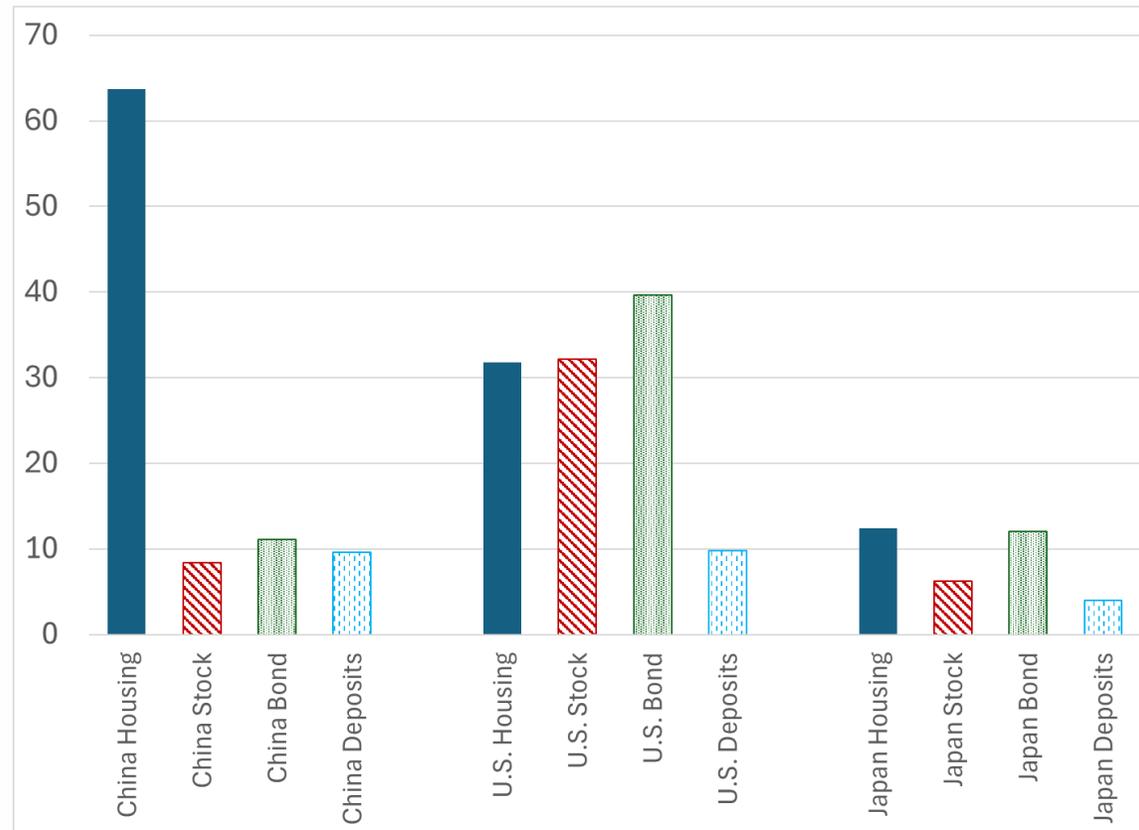
Sources: Penn World Tables 11.0 and authors' calculations

Notes: Investment includes both public and private investment, measured as a percentage of GDP.

... and to Chinese households

Housing wealth is far more significant than other asset classes to Chinese households.

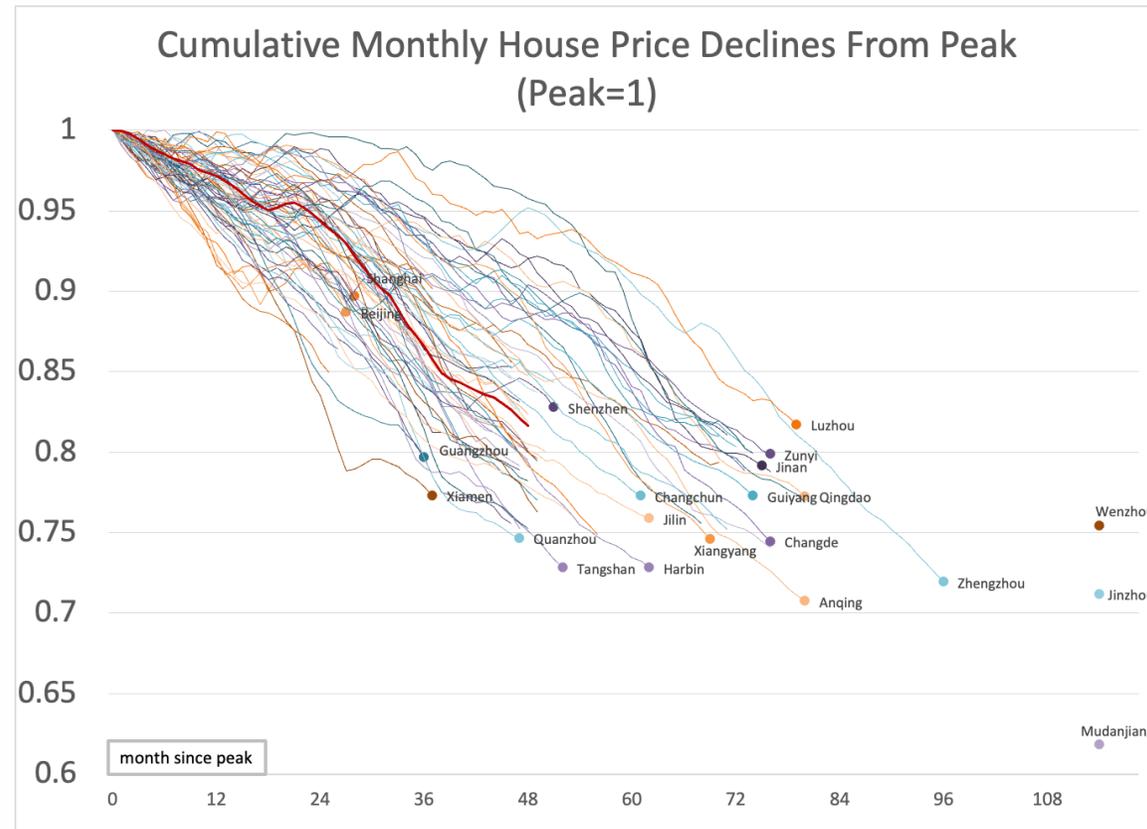
Valuation of Different Asset Classes in Trillion Dollars (2017)



Sources: World Bank, BIS, National Bureau of Statistics of China, Bank of Japan, FRED, Zillow, and authors' calculations

Structural imbalances prompting adjustments ...

Official data indicate that house prices have fallen by more than 20 percent nationwide.

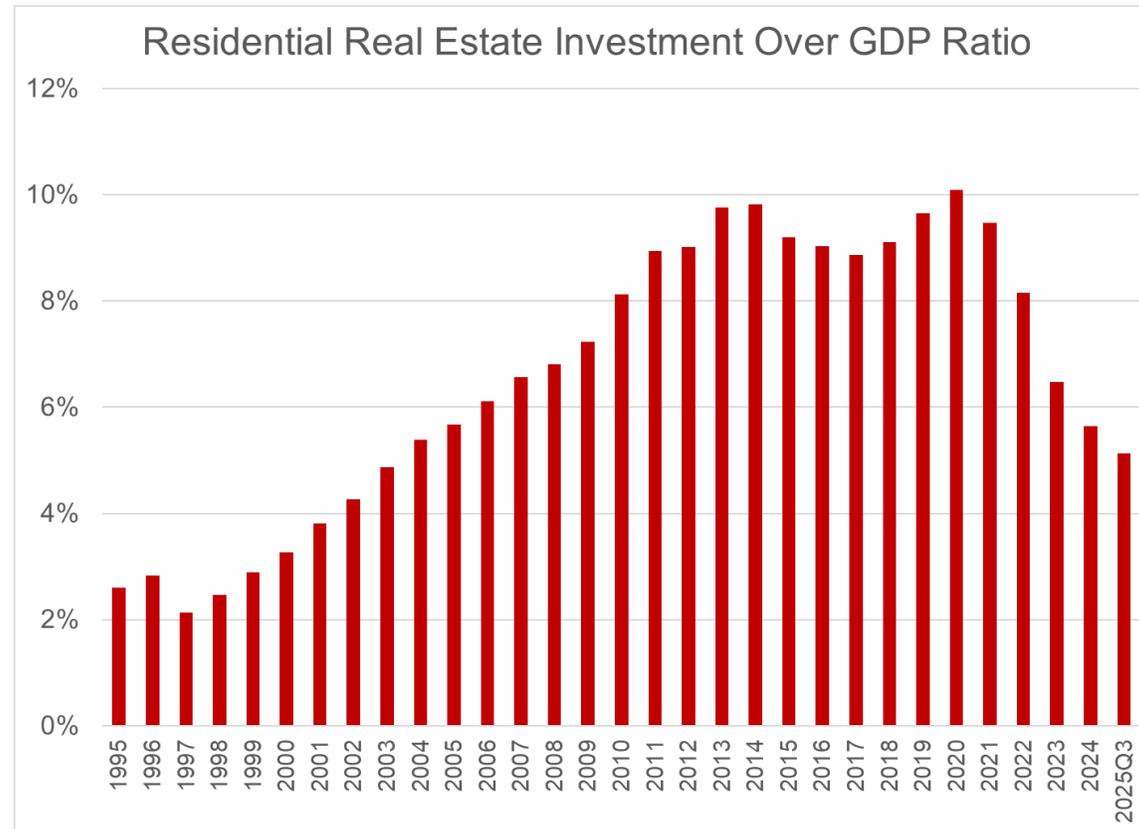


Sources: National Bureau of Statistics of China and authors' calculations

Notes: The price index is constructed using the National Bureau of Statistics' monthly residential property resale price index for 70 large and medium-sized Chinese cities. For each city, the index is normalized to its historical peak (the series begins in 2011, with peaks occurring between 2017 and 2023 depending on the city). All other monthly observations are then expressed relative to this benchmark.

... both in prices and quantities

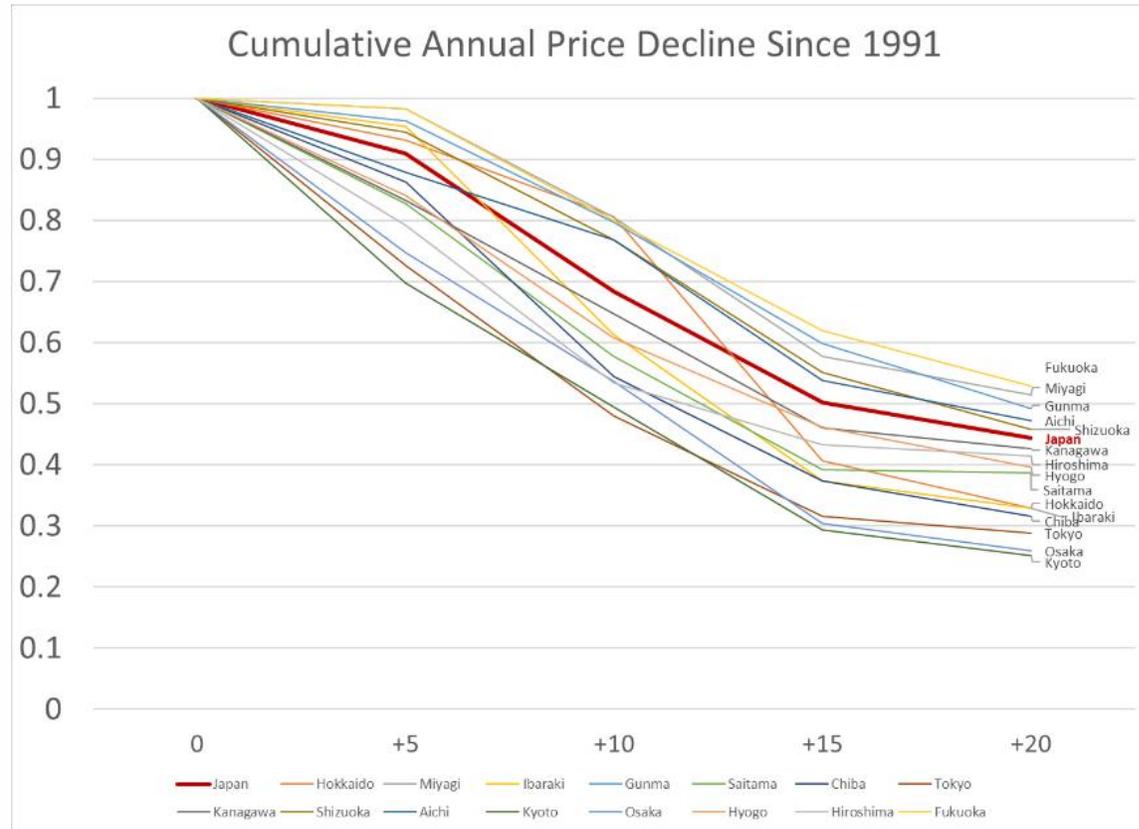
Real estate investment has decelerated but remains high, with substantial stock accumulated during the boom.



Sources: National Bureau of Statistics of China, and authors' calculations

Adjustments of this scale were also seen in Japan in the 1990s ...

The decline in Japan's house prices was large and very long lasting.

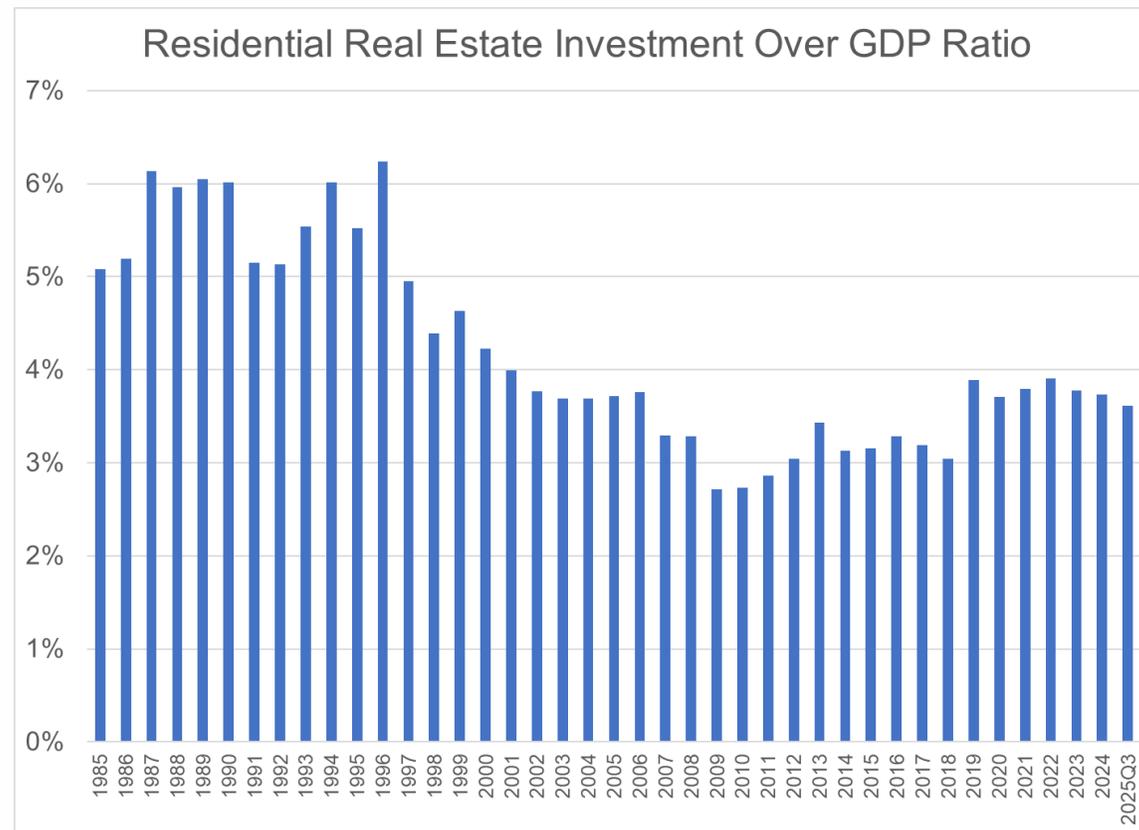


Sources: Statistics Bureau of Japan and authors' calculations.

Notes: The price index is constructed using the Statistics Bureau of Japan's annual house land price per 3.3 m² of Japanese prefectures. For each city, the index is normalized to its historical peak. All other observations are then expressed relative to this benchmark.

... alongside a gradual unwinding of investment from historically high levels

Japan also experienced an investment boom well above historical levels.



Sources: Cabinet Office of Japan, and authors' calculations

Data

- **Detailed city-level database for China, covering 298 cities**
 - Population censuses (1990, 2000, 2010, 2020), national and provincial statistical yearbooks (1990–2025), construction industry associations, CEIC, and others
 - Cross-validation using multiple data sources
 - Deep learning-based housing market sentiment indicator
- **Historical database for Japan, covering 43 prefectures**
 - Manually compiled local macroeconomic data
 - Merged with comparable social indicators, extending back to 1975

Empirical Strategy – Investment Overhang

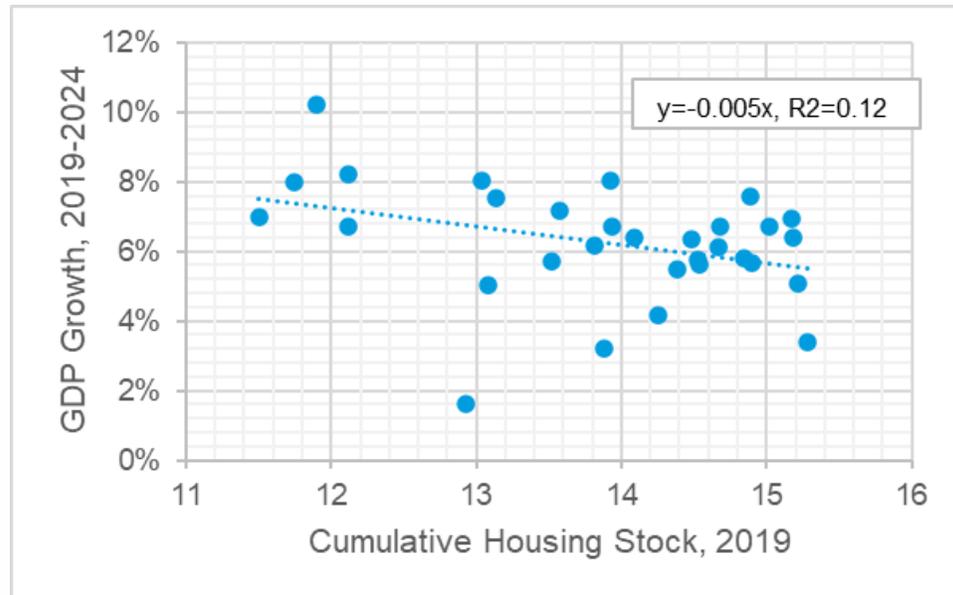
- Endogeneity concerns arise when examining the relationship between real estate investment and economic growth...
- ...mitigated by a **shift–share instrumental variable** (Goldsmith-Pinkham, Sorkin, and Swift, 2020)
 - **Shift**: national real estate investment growth
 - **Share**: lagged local exposure to real estate investment
- Interaction with cumulative investment to trace how returns to real estate investment change with different levels of stock

$$RE_{i,t} = \alpha + \beta \times v_{i,t} + \Gamma \times v_{i,t} \times S_{i,t} + \Pi \times R_{i,t-1} + \delta_i + \theta_t + \varepsilon_{i,t} \quad (1)$$

$$y_{i,t} = a + b \times \widehat{RE}_{i,t} + \Gamma_1 \times \widehat{RE}_{i,t} \times S_{i,t} + \Pi_1 \times R_{i,t-1} + \delta_i + \theta_t + \varepsilon_{i,t} \quad (2)$$

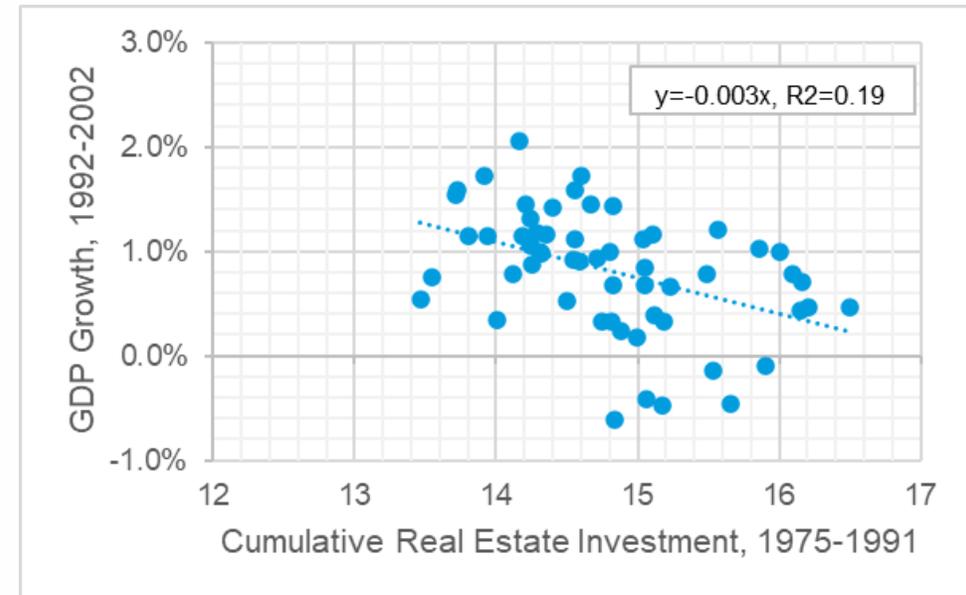
Greater cumulative investment is associated with lower growth in both countries

Cumulative Housing Stock and Subsequent GDP Growth: China



Sources: Bureau of Statistics of China and authors' calculations
Notes: The figure plots province-level cumulative housing stock in 2019 against average GDP growth from 2019 to 2024. Each point represents the aggregation of all prefecture-level cities within a province.

Cumulative Real Estate Investment and Subsequent GDP Growth: Japan



Sources: Cabinet Office of Japan and authors' calculations
Notes: The figure plots prefecture-level cumulative investment stock from 1975-1991 against average GDP growth from 1992-2002. Each point corresponds to a prefecture in Japan.

Investment overhang adjusts slowly due to the durable nature of housing capital...

Cumulative Real Estate Investment and Growth: China and Japan

	China	Japan
Variables	Real GDP Growth	
Instrumented Real Estate Investment Ratio	0.602*** (0.156)	2.705*** (1.094)
Instrument × Cumulative Real Estate Investment	-0.059*** (0.020)	-0.146** (0.069)
Year Fixed Effects	Yes	Yes
Prefecture Fixed Effects	Yes	Yes
Number of Observations	5,980	1,931
R-squared	0.366	0.638

- The large accumulated stock of existing real estate investment has led to a deterioration in real estate investment returns, as evidenced by the significantly negative coefficients on the interaction terms in the table.
- Specifically, when a city’s cumulative real estate investment increases by one standard deviation, its annual real GDP growth rate falls by 0.8 percent; in Japan, this value is 0.3 percent.

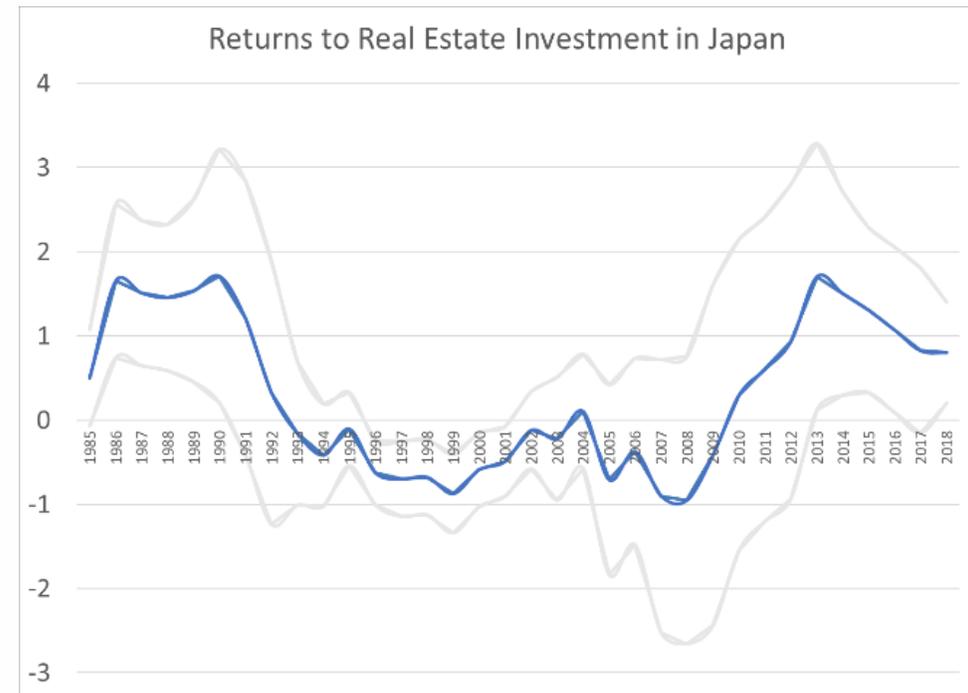
... leading to lagged recovery during the bust

Returns to real estate investment in China have declined over time, slipping into negative territory in recent years.



Sources: National Bureau of Statistics of China, and authors' calculations

In Japan, real estate returns turned negative during the early 1990s and stays at persistently low levels over the early 2000s.



Sources: National Bureau of Statistics of China, and authors' calculations

... and persistently depressed prices, which reverse wealth effects

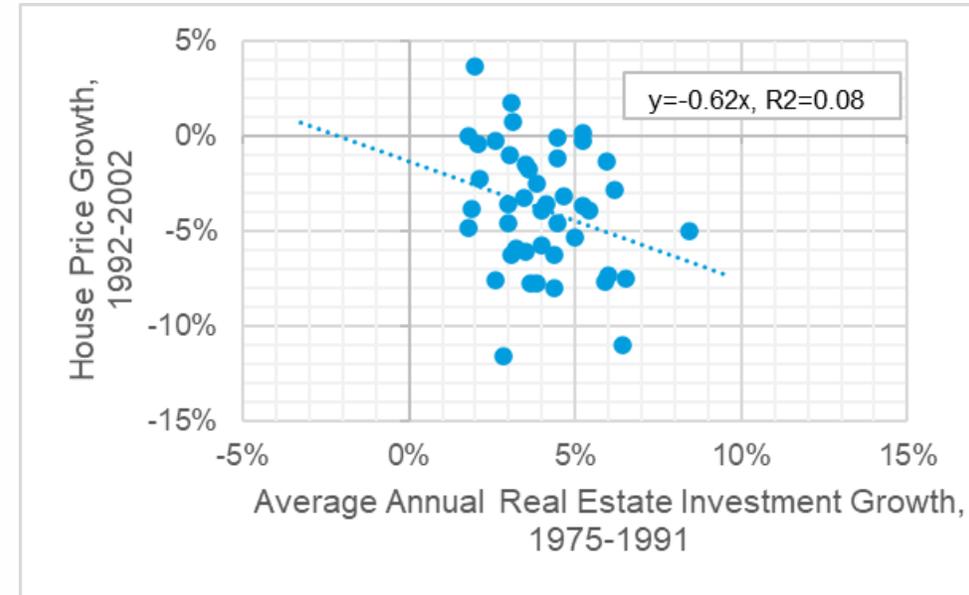
Real Estate Investment Growth and House Price Changes: China



Sources: Bureau of Statistics of China and authors' calculations

Notes: The figure plots city-level average annual real estate investment growth rate in the period of 2010-2018 against house price growth from 2019 to January 2026. Each point corresponds to one of the 70 large and medium-sized cities in China.

Real Estate Investment Growth and House Price Changes: Japan



Sources: Cabinet Office of Japan and authors' calculations

Notes: The figure plots city-level average annual real estate investment growth rate from 1975-1991 against house price growth from 1992-2002. Each point corresponds to a prefecture in Japan.

Empirical Strategy – Wealth Effects

- Estimating the housing wealth elasticity is complicated by endogeneity issues
- → **a sensitivity Index** (Guren, McKay, Nakamura, and Steinsson, 2020)
 - first measure the historical responsiveness of local house prices to regional housing cycles
 - then combine these estimates with current regional house price shocks

$$p_{i,j,t} = \alpha_i + \beta_i P_{j,t} + X_{i,j,t} + \epsilon_{i,j,t} \quad (1)$$

$$y_{i,j,t} = \beta_1 + \beta_2 P_{j,t} + \beta_3 p_{i,j,t} + X_{i,j,t} + \epsilon_{i,j,t} \quad (2)$$

Significant housing wealth effects observed in both countries ...

Housing Wealth Effects: China and Japan

	China	Japan
Variables	Change in Consumption	
Change in House Price	0.151*** (0.034)	0.063** (0.031)
Controls	Yes	Yes
City Fixed Effects	Yes	Yes
Region-year Fixed Effects	Yes	Yes
Number of Observations	1247	1056
R-squared	0.553	0.325

- The consumption elasticity with respect to house prices in China is estimated at 0.151, implying a potential impact of 2–4 percent of GDP, with a standard error of 0.8 percent, given the average cumulative decline in house prices of 20–40 percent nationwide.
- On average, Japanese households' consumption responds to house price changes with an elasticity of 0.063—lower than in China but roughly comparable to the United States.

... which were aggravated by negative sentiment

The Sentiment Channel: China and Japan

Variables	China	Japan
	Change in Consumption	
Change in House Price	0.126*** (0.104)	0.028 (0.031)
Change in House Price × Negative Sentiment	0.176*** (0.066)	0.124* (0.073)
Controls	Yes	Yes
City Fixed Effects	Yes	Yes
Region-year Fixed Effects	Yes	Yes
Number of Observations	1247	1056
R-squared	0.552	0.374

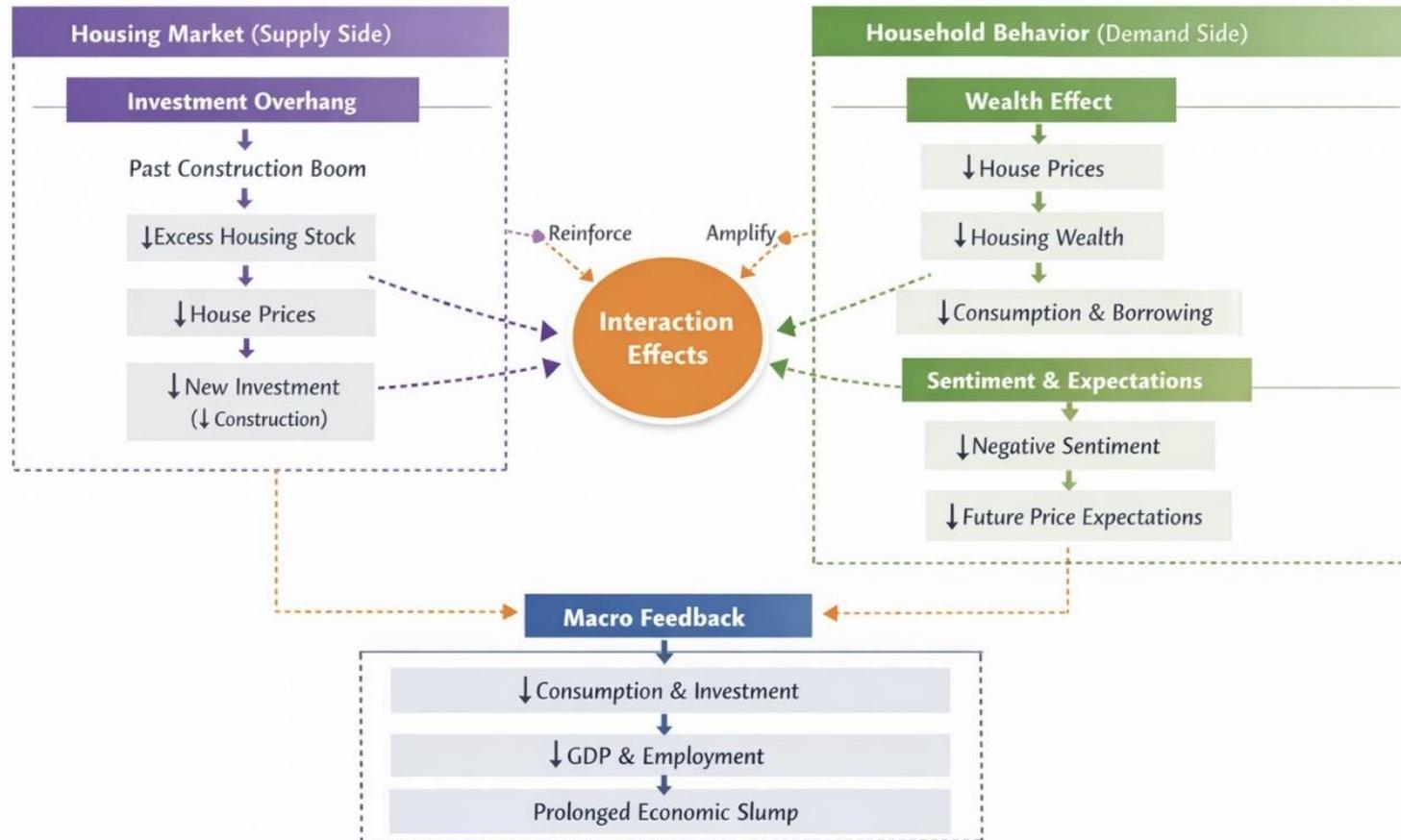
- In China, heightened pessimism increases the elasticity by an additional 0.176, on top of the baseline effect, suggesting a substantially stronger overall consumption response to house price movements when pessimistic sentiment prevails.
- Likewise, Japan's consumption growth is positively correlated with housing market sentiment. When households are pessimistic, they reduce consumption more sharply, amplifying the downturn beyond what would be predicted by wealth effects alone.

Robustness tests

- Standard checks of a shift-share model
 - Alternative shares
 - Alternative shifts
 - Exclusion of heavy-weight cities/prefectures
 - Additional controls
 - Additional fixed effects
- Alternative measures of sentiment
- Alternative house price instruments
- Broader definition of investment
- Population outflows and negative sentiment

To recap...

Roadmap of the current study

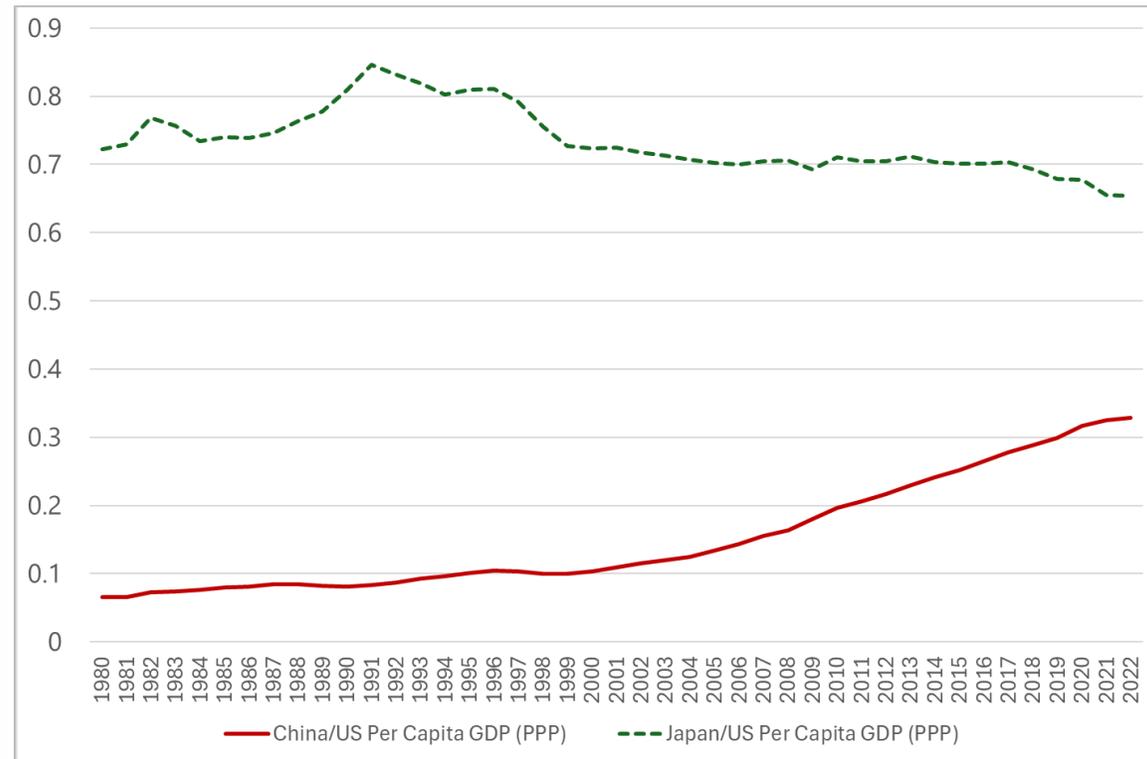


Conclusions

- China's housing sector has undergone significant adjustments
- In light of Japan's experience, China is still in the middle of multi-year adjustment

Lower income levels and external pressures add uncertainties to the adjustment path

China, Japan, and US Relative Per Capita Income



Sources: The Madison Project and authors' calculations

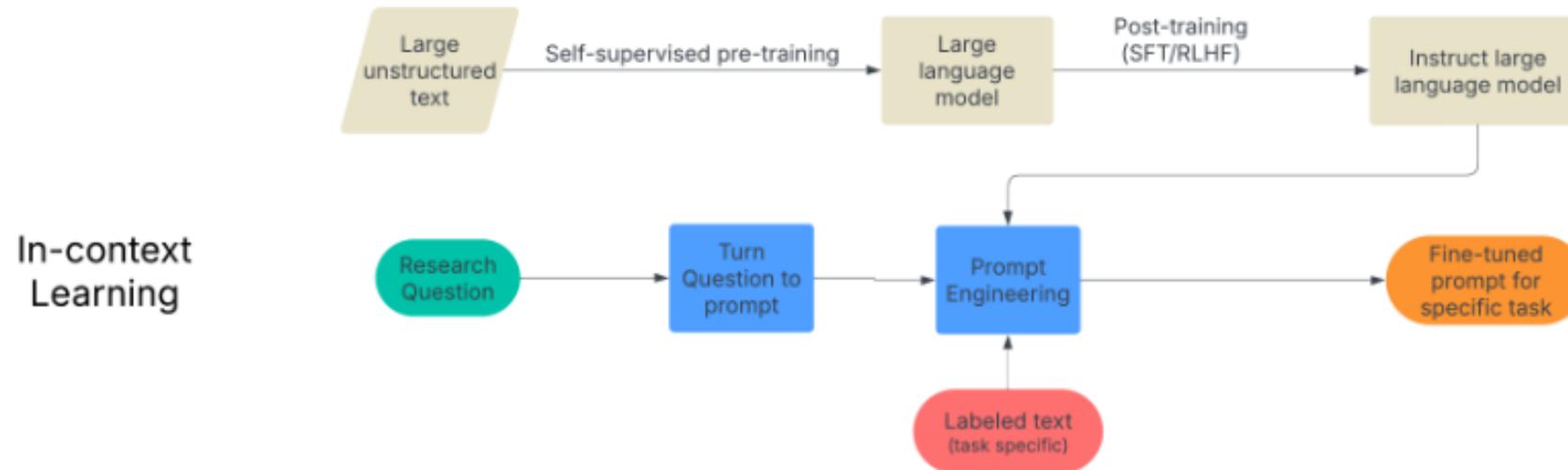
Conclusions

- China's housing sector has undergone significant adjustments
- In light of Japan's experience, China is still in the middle of multi-year adjustment
- Main channels operate through **investment overhang**, and the gradual adjustment of the overbuilt sector
- This channel interacts and reinforces **wealth effects** and **negative sentiment**, jointly contributing to the persistence of the downturn
- **Other amplification mechanisms**—local government debt, financial multipliers, etc.—may also play a role
- Future growth hinges on **productivity growth** and the capacity to restore real demand

Thank you

A deep learning-based housing sentiment index

- In the context of China, a measure of housing market sentiment is constructed using OpenAI's GPT-4o model, with inputs from daily economics- and finance-related articles from major Chinese newspapers.



- These scores are aggregated at the national level and adjusted by city-level news exposure, using the Baidu search index as a proxy for the attention of potential homebuyers and other local market shocks.