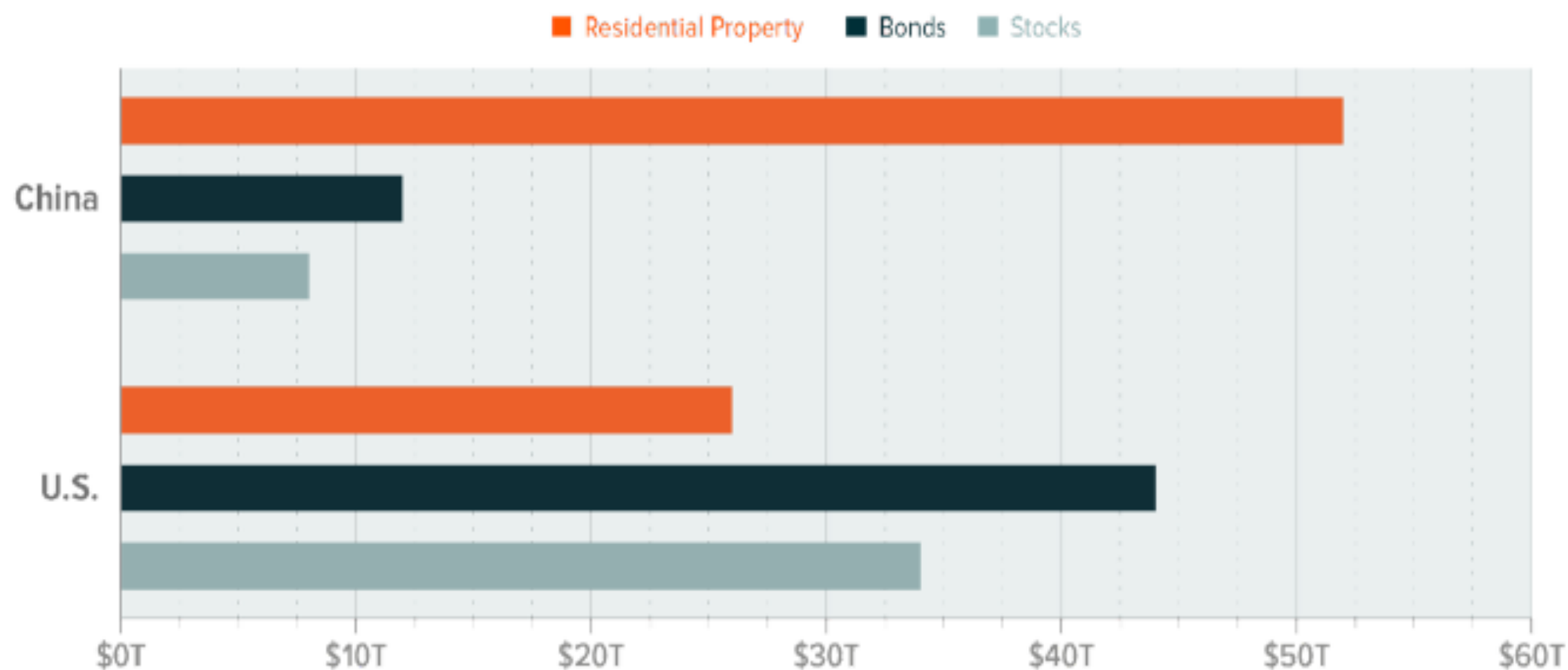


Chinese Real Estate Market

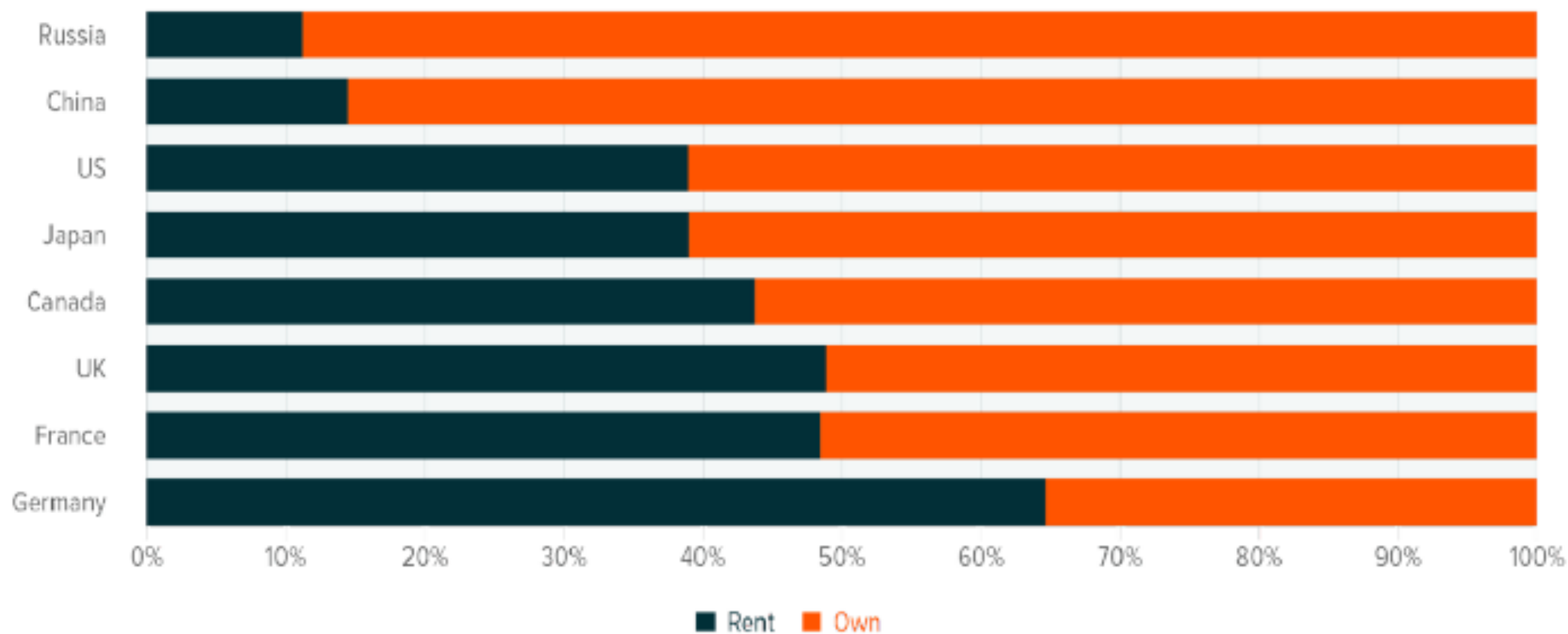
MARKET VALUE OF ASSET CLASS (IN TRILLIONS), 2019

Source: Goldman Sachs.



RENTING OR OWNING ACCOMMODATION BY COUNTRY

Source: Statista Global Consumer Survey.



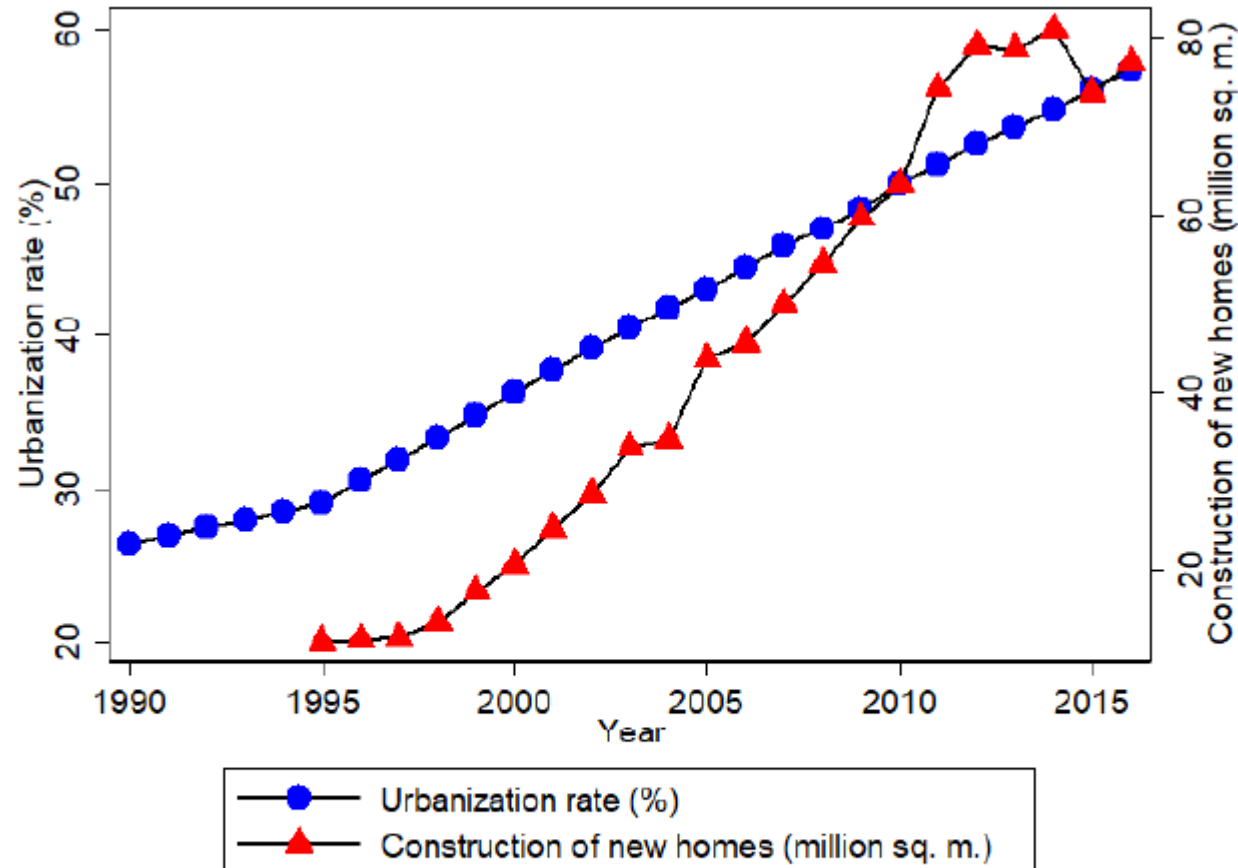
Development of China's Real Estate Market

- Housing reform
 - 1988: amended constitution to allow land transactions: set the legal stage for privatization of housing
 - 1994: allowed state sector employees to purchase property rights at subsidized prices
 - 1998: abolished the welfare housing system ; targeted the real estate sector as a new engine of economic growth
 - 1998: People's Bank of China (PBC) outlined procedures for home buyers to obtain residential mortgages at subsidized interest rates.
 - between 1998 and 2002, the PBC lowered mortgage interest rate five times Broadening the scope of real estate loans
 - allowing pre-sales by developers.

Development of China's Real Estate Market (cont'd)

- Urbanization process

- 10th Five-Year Plan (2001), set urbanization as a national strategy
- Allowed free rural-to-urban migration for counties and small towns.



Between 1980 and 2020, the urban population increased from 19.4% to 63.9%,

Figure 2: China's Urbanization Process

The housing boom

AVERAGE REAL ESTATE SALE PRICE (RMB/SQUARE METER)

Source: China National Bureau of Statistics.

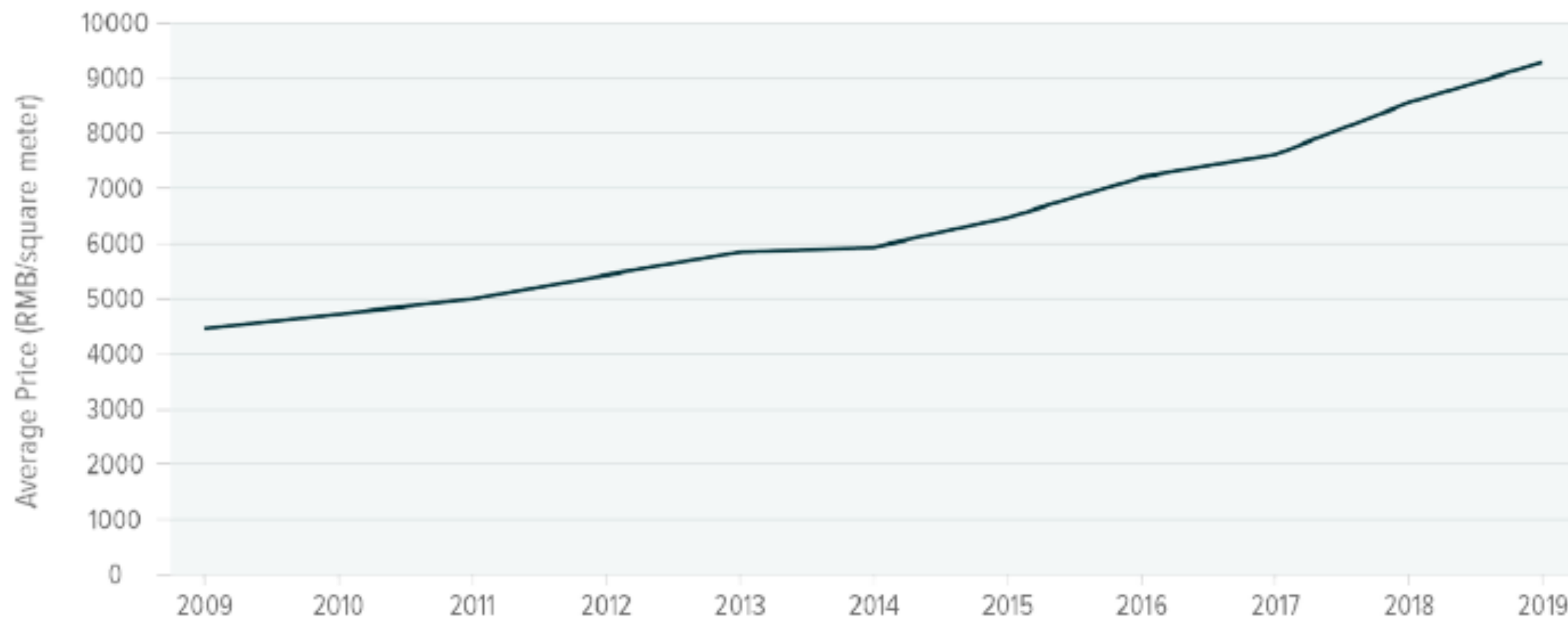


Figure 1

Price Growth by Tier: China and the United States

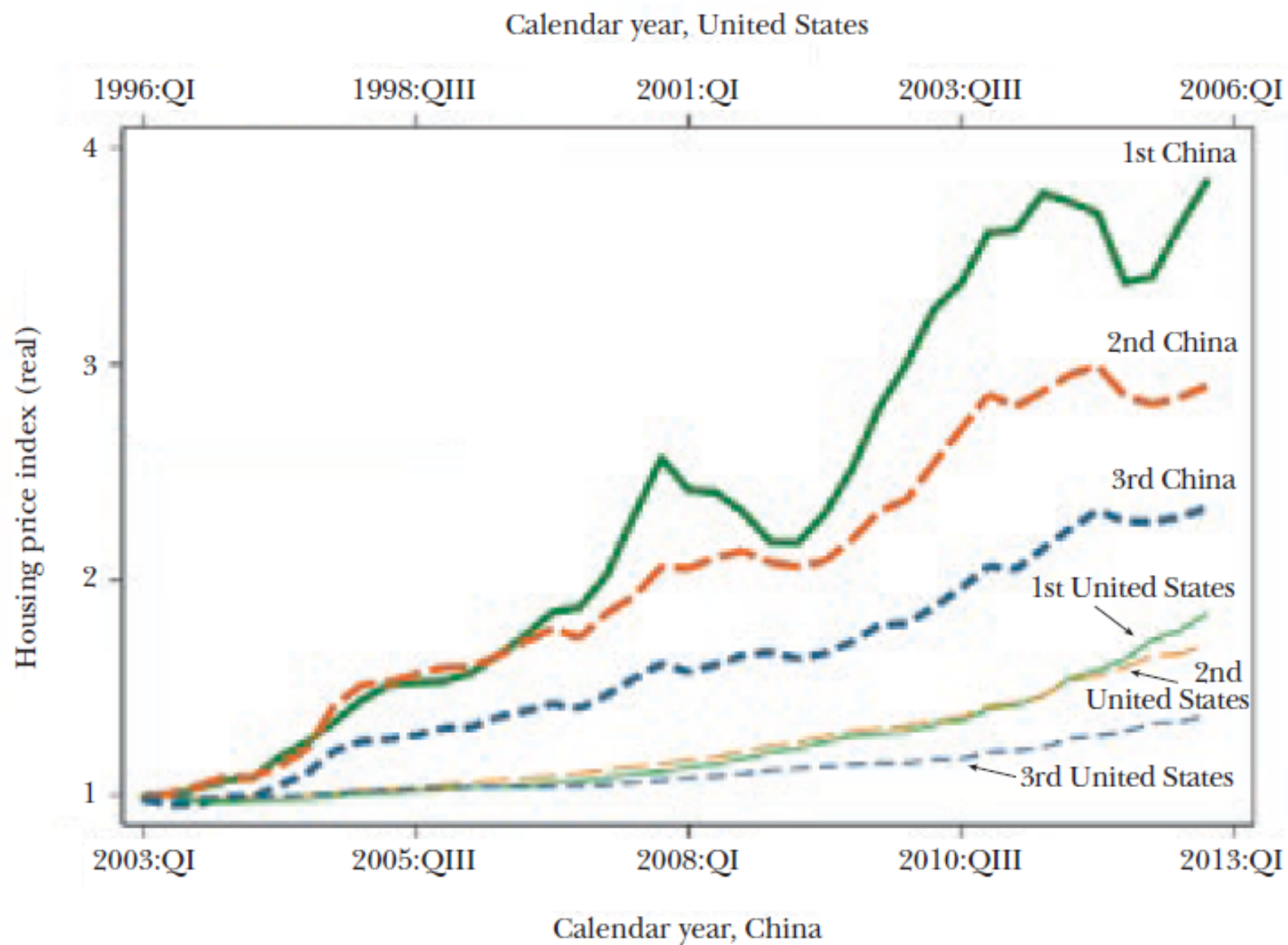
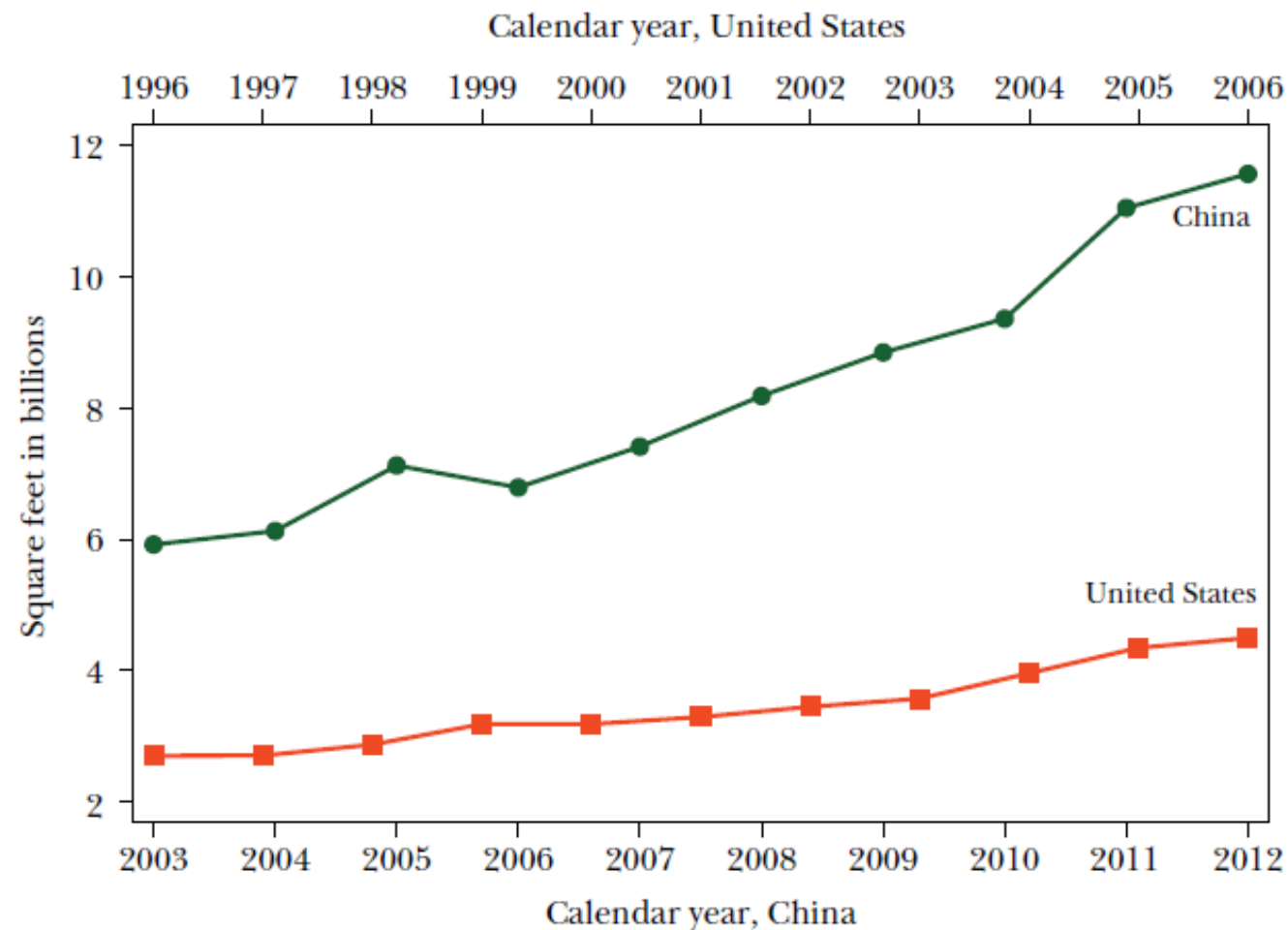


Figure 2

Construction (Square Footage) in China and the United States



Source and Note: Annual completed residential space for China is from *China Statistical Yearbook*. Annual completed residential space for the US is calculated as units of single family homes completed multiplied by average square footage of new single family homes, plus units of multi-family homes completed multiplied by average square footage of new multi-family homes

The housing boom

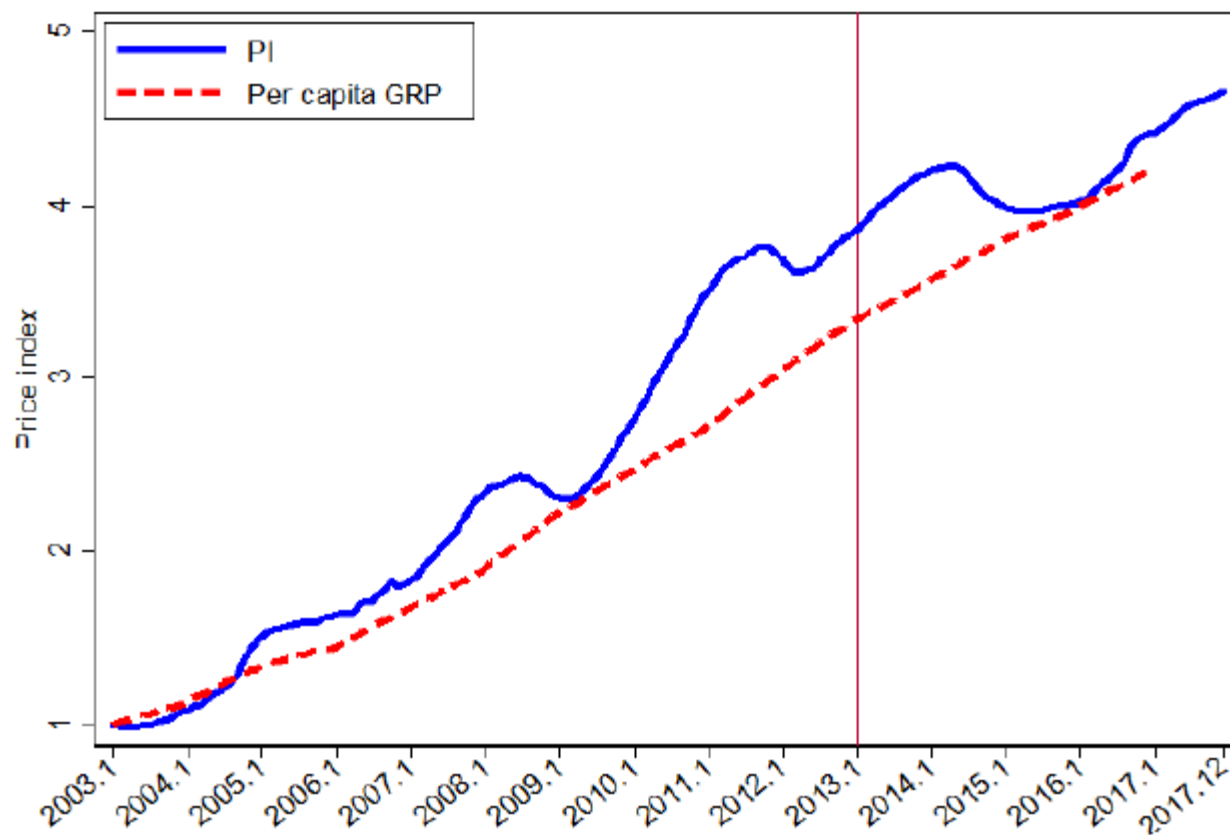
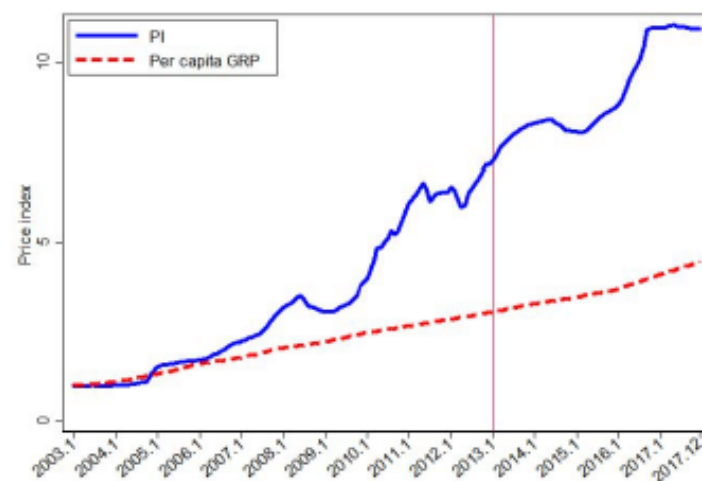


Figure 4: National Average Housing Price Index, 2003–2013

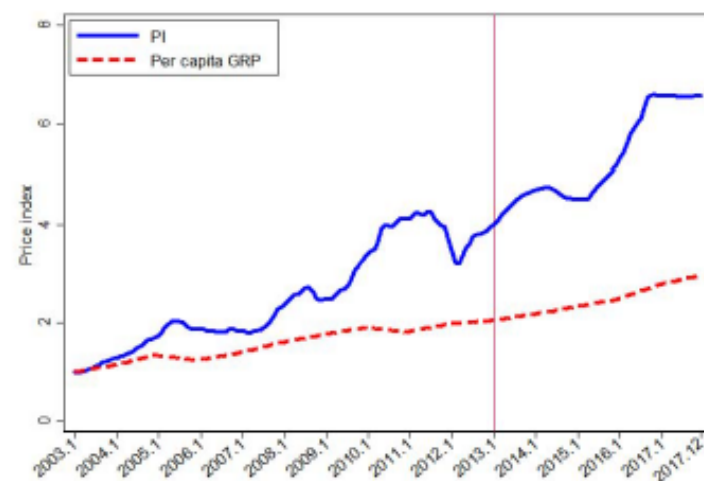
Notes: PI is weighted by urban population.

Source: Fang et al. (2016) and NBS.

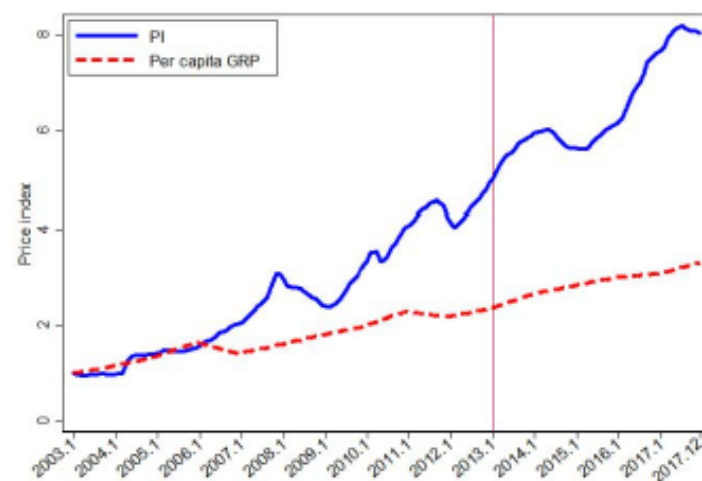
A.Beijing



B.Shanghai



C.Guangzhou



D.Shenzhen

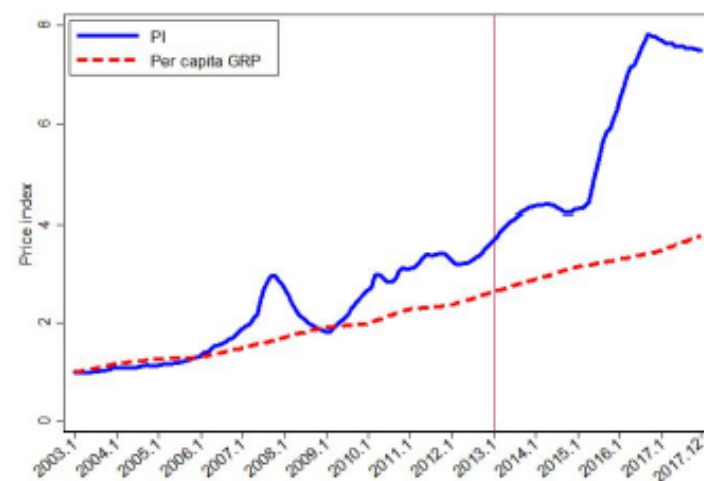


Figure 5: Housing Price Indices for China's First-Tier Cities

Source: Fang et al. (2016) and NBS.

Real estate and local governments

Land sales

- land supply in Chinese cities is determined by land sales of local governments
- land is legally owned by the State and controlled by local governments.
- Under the current land law, industrial land can be leased for a term of 30 years, commercial land for 40 years, and residential land for 70 years.
- Land transactions between local governments and private buyers constitute the primary land market
- sale revenues serve as an important source for local governments to fund their fiscal budgets and local infrastructure projects.

Real estate and local governments

Policy Implication Tax-sharing Reform in 1994

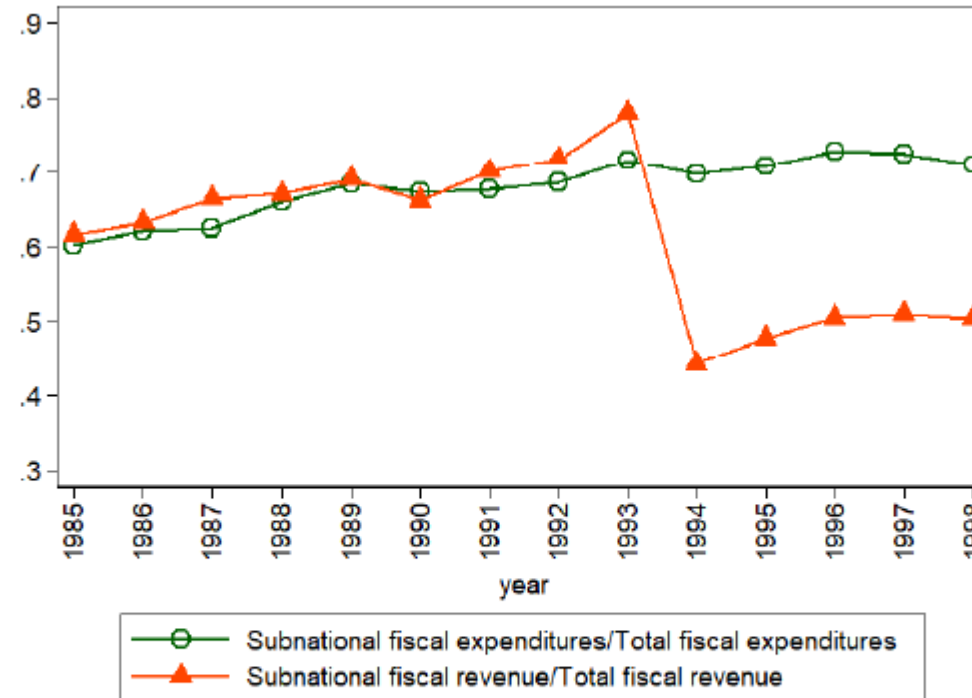


Figure 9: Shares of Fiscal Revenue and Expenditures of Subnational Governments, 1985–1998

Data Source: *Public Finance Statistic Yearbook in Fifty Years of China*, edited by the Ministry of Finance

Kung, Xu, and Zhou (2009) and Han and Kung (2015) argue that the changing fiscal incentives might have caused local governments to shift their efforts from fostering industrial growth to “urbanizing” China, for instance, by developing the real estate and construction sector.

Real estate and local governments

Policy Implication Budge Law 1995

- prohibited local governments from running budgetary deficits or obtaining external financing

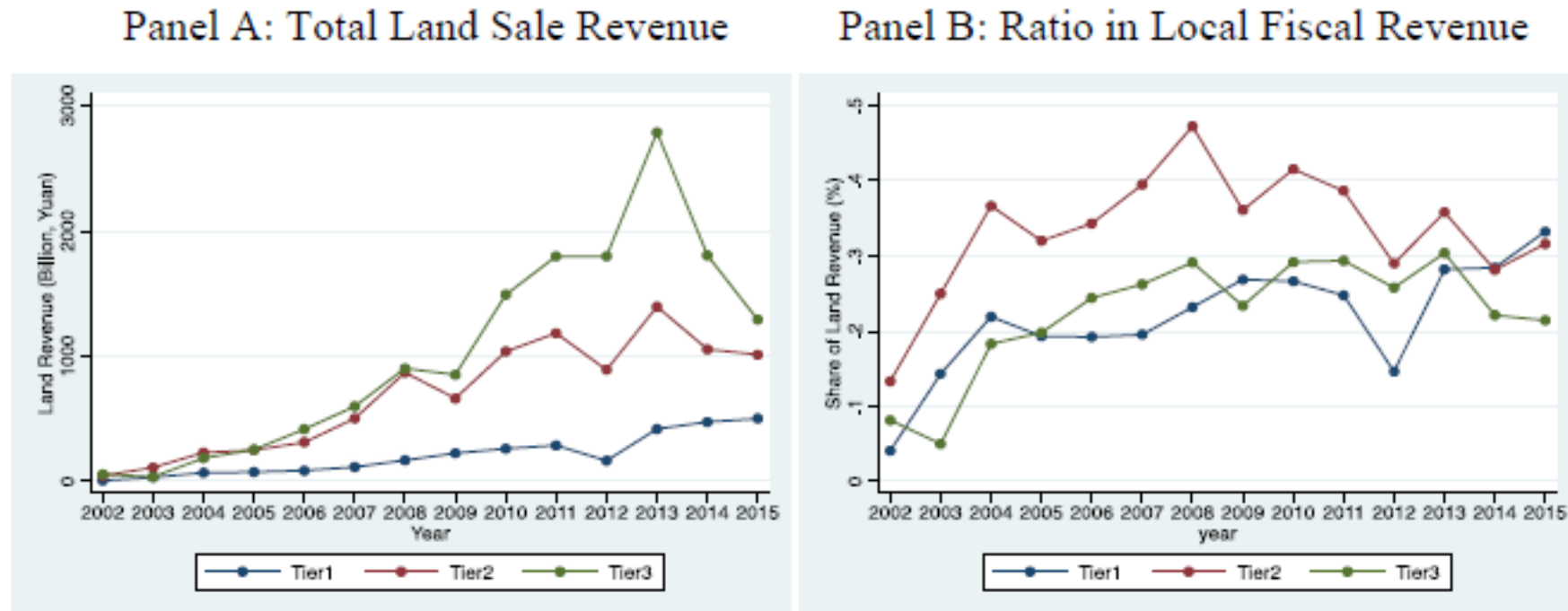


Figure 10: Land Sale Revenue for China's Local Government in 2002–2015

Data Source: China Municipal Statistical Yearbook and China National Land Resource Yearbook, various years

Real estate and local governments

- Tying local government budgets to revenue from land sales is a novel mechanism design.
- local tax revenue was far from enough to fund large capital-intensive infrastructure projects and other local business developments.
- The great uncertainty also discouraged banks from funding such projects
- land prices paid by buyers are determined by current business conditions in a city and their expectations of future conditions.
- As local governments need to regularly sell land to the public to fund their future budgets, they are incentivized to implement those promised infrastructure projects and improve local business environments. Thus, this is an incentive-compatible design, much like staged VC financing.

Real estate and local governments

- land is an important instrument for local governments to attract prominent firms
 - pursue projects in their cities
 - support local industrial policies
- Land (especially industrial land) is often given out for free to promising firms in high-priority industries.
- Local governments may also supplement the land grant with an additional tax allowance or funding support.
- In return, local governments benefit from future tax revenues from these supported firms or from an improved business environment and industry structure in their regions.

Real estate and local governments

Local government debt

- Land and future land sale revenues serve as key collaterals for local governments to raise debt financing.
- 2008: 4 trillion RMB stimulus program , equivalent to 12.5% of China's GDP.
 - mostly infrastructure projects, implemented and financed by local governments
 - infeasible for local governments to fund this program through regular tax revenue or land sales in a short time period.
 - the central government allowed local governments to create the LGFP to raise debt
- a local government creates an LGFP and injects land reserves or future land sale revenues as capital into the LGFP, which in turn can apply for bank loans.
- LGFP also carries either explicit or implicit guarantees from the local government.
- this led to tremendous growth in debt taken on by local governments after 2008.

Real estate and households

- 23% of household consumption as of 2019
- accounted for 66% of household wealth in 2016

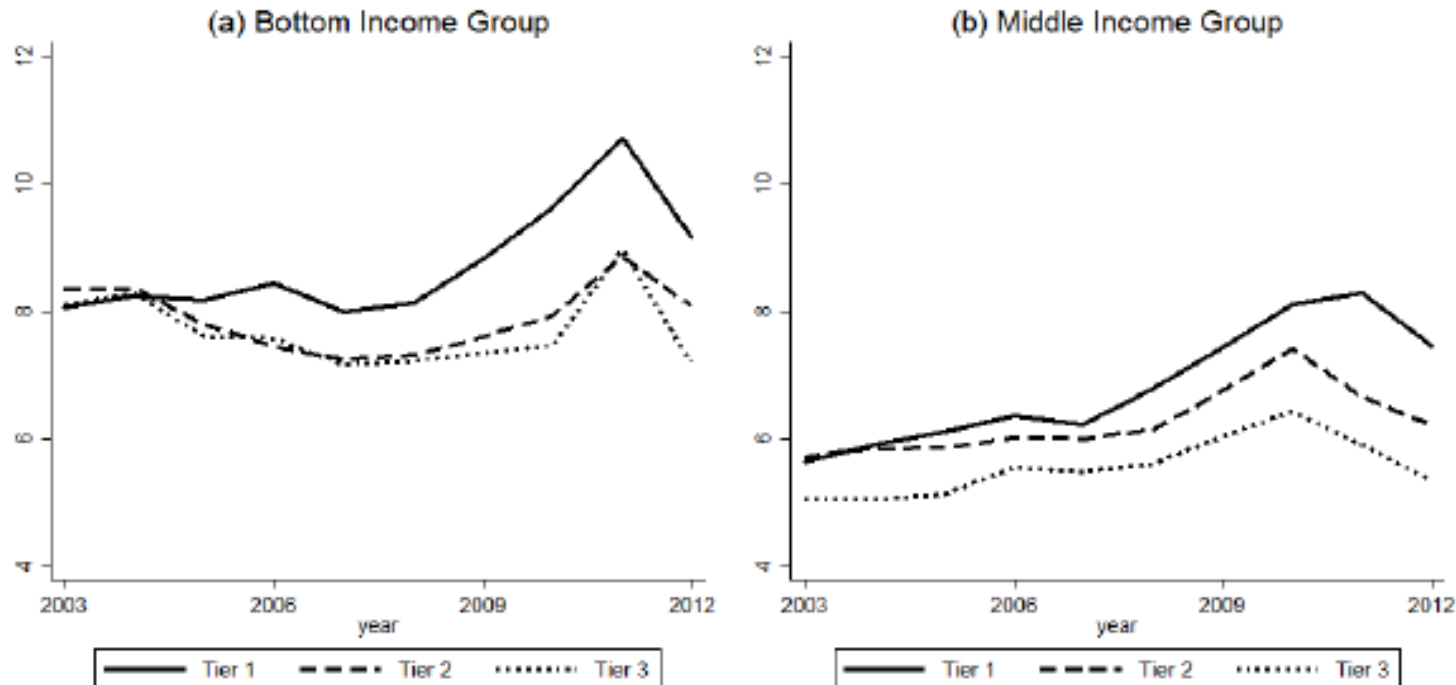


Figure 8: Price-to-Income Ratio of Mortgage Borrowers

Data Source: Fang et al. (2016)

EXHIBIT 1—US AND CHINA STOCK PRICES, MONTHLY

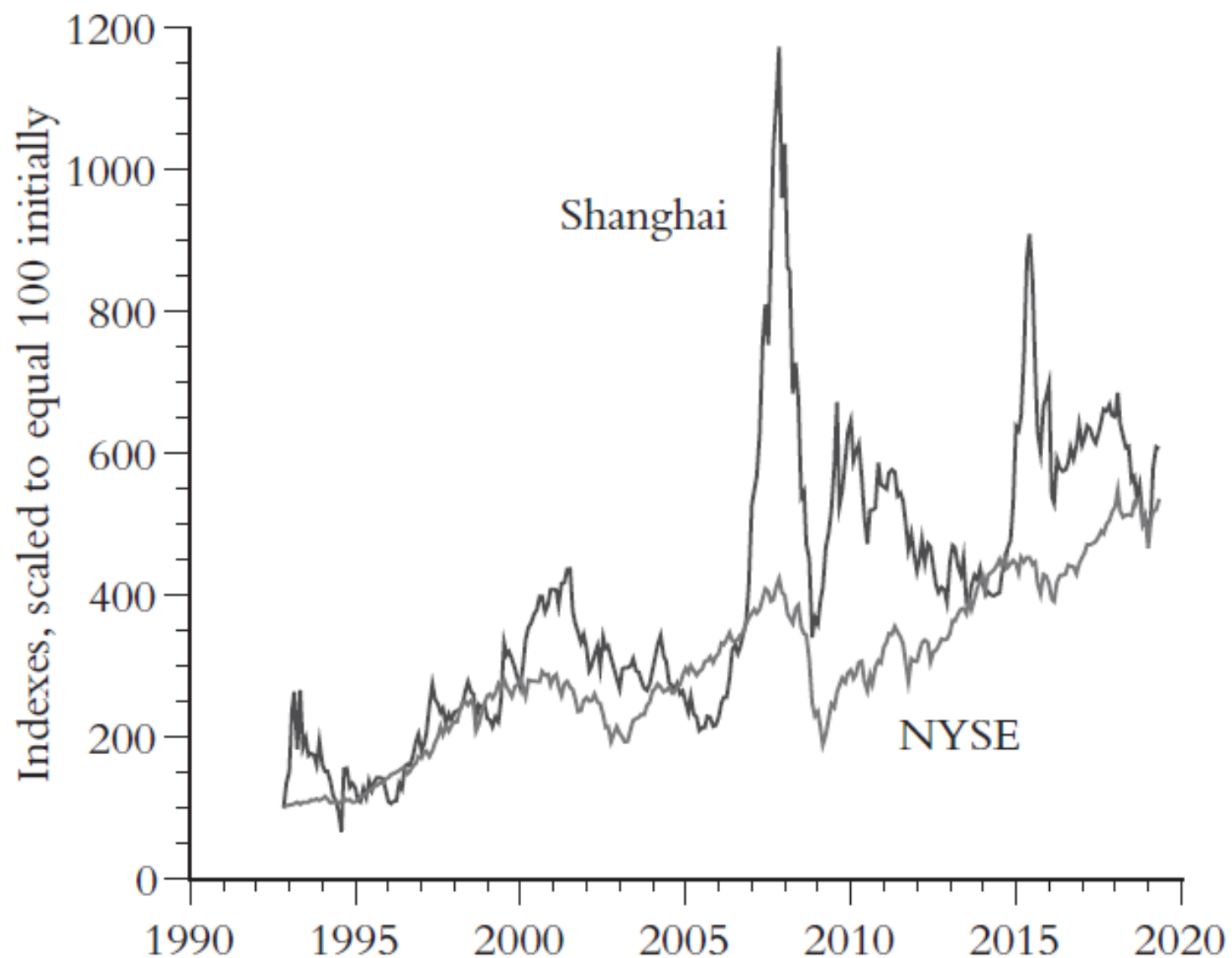
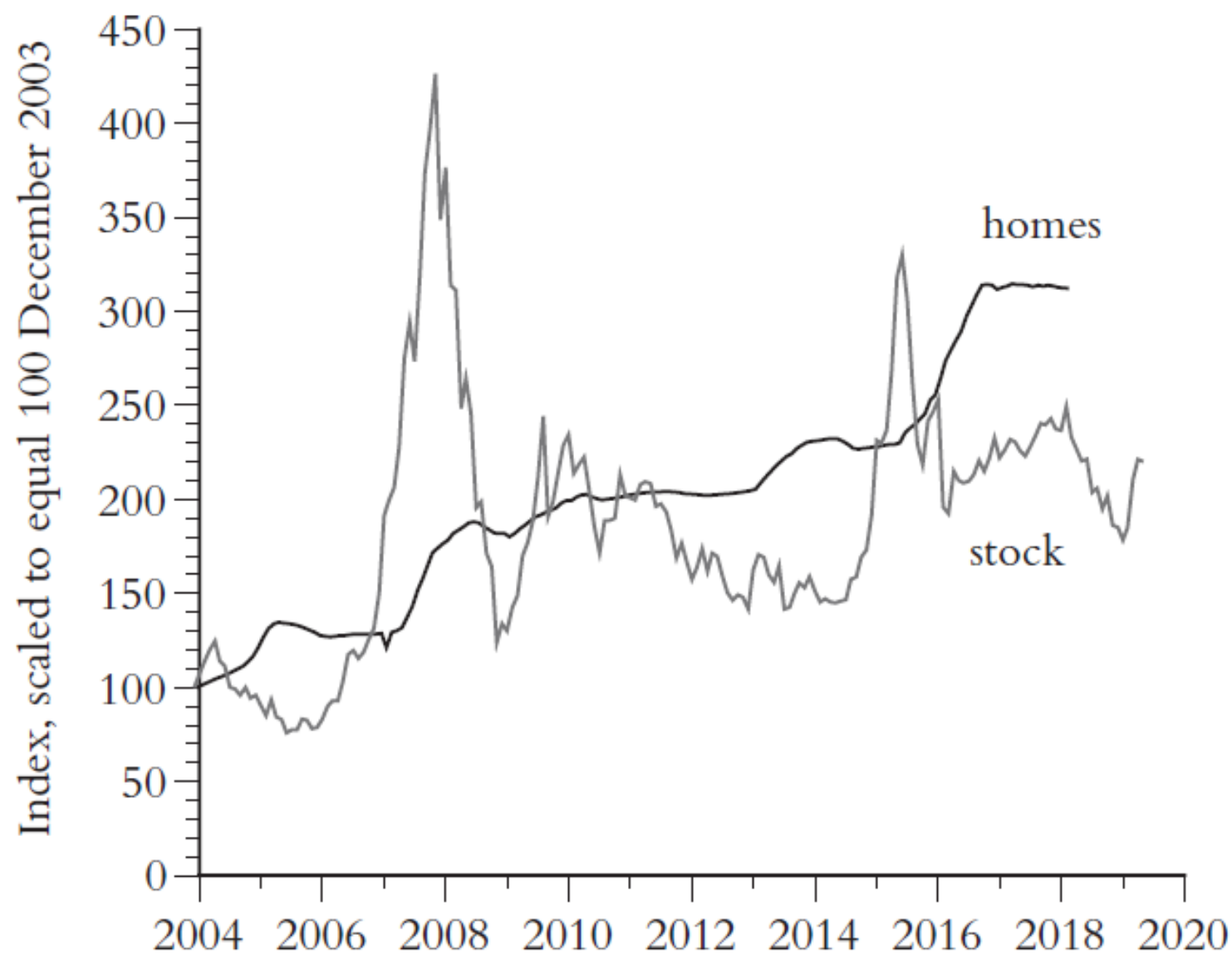


EXHIBIT 2—SHANGHAI STOCK MARKET PRICES AND PRICES OF SECOND-HAND HOMES IN SHANGHAI



Real estate and households

- Housing market expectations

EXHIBIT 5—CHARACTERISTICS OF HOUSING SAMPLE DATA

	Average Number	Median	Median	Median	Median
	of Rooms	SQM	Monthly Rent	Price	Price/SQM
Beijing	1.75	61.50	\$954	\$707,750	\$11,517
Shanghai	1.64	55.59	\$611	\$409,750	\$6,925

EXHIBIT 7—BEIJING IRRs

	1st home	2nd home	1st home	2nd home	1st home	2nd home
Assumptions						
Down Payment	30%	60%	30%	60%	30%	60%
Mortgage Rate	5.50%	6.00%	5.50%	6.00%	5.50%	6.00%
Annual Price Increase	2.00%	2.00%	3.00%	3.00%	5.00%	5.00%
Annual Rent Increase	2.00%	2.00%	3.00%	3.00%	5.00%	5.00%
Annual Expenses Increase	2.00%	2.00%	3.00%	3.00%	3.00%	3.00%
Results						
First-year median IRR	-18.43%	-7.12%	-15.10%	-5.48%	-9.28%	-2.56%
10-year median IRR	-4.52%	-1.05%	-2.17%	0.29%	2.18%	3.02%
30-year median IRR	-0.34%	0.50%	1.11%	1.68%	4.31%	4.38%
Forever median IRR	N/A	N/A	N/A	N/A	5.89%	5.79%

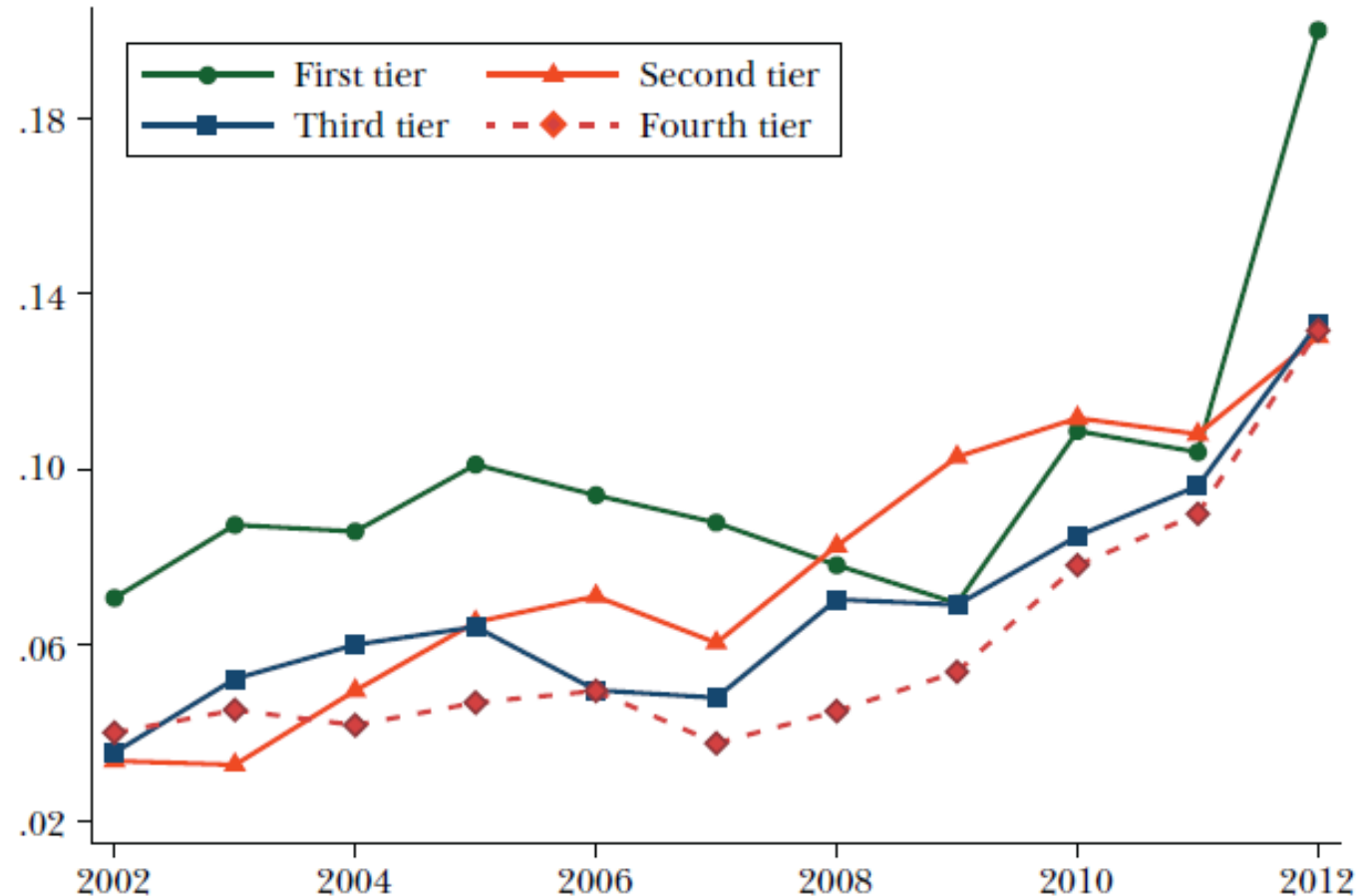
EXHIBIT 8—SHANGHAI IRRs

	1st home	2nd home	1st home	2nd home	1st home	2nd home
Assumptions						
Down Payment	30%	60%	30%	60%	30%	60%
Mortgage Rate	5.00%	5.25%	5.00%	5.25%	5.00%	5.25%
Annual Price Increase	2.00%	2.00%	3.00%	3.00%	5.00%	5.00%
Annual Rent Increase	2.00%	2.00%	3.00%	3.00%	5.00%	5.00%
Annual Expenses Increase	2.00%	2.00%	3.00%	3.00%	3.00%	3.00%
Results						
First-year median IRR	-16.50%	-6.22%	-13.20%	-4.58%	-7.44%	-1.68%
10-year median IRR	-3.17%	-0.26%	-0.92%	1.05%	3.27%	3.72%
30-year median IRR	0.27%	1.02%	1.70%	2.17%	4.87%	4.84%
Forever median IRR	2.18%	2.18%	3.16%	3.16%	6.09%	6.09%

Issues

- Overbuilt
- Bank exposure
- Real estate firms
- House purchasers
 - Mortgage payment

Figure 5
Household Vacancy Rates 2001–2012



Source: Data from China Urban Household Survey.

Note: We compute a vacancy rate across 36 cities by calculating the total number of vacant units owned by the residents of each city in the sample, and then dividing by the total number of housing units owned or occupied by the city's residents in the sample. We keep the 36 cities with observations throughout 2002–2012.

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