China: Understanding the Residential Real Estate Market

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- Motivation - real estate a key growth engine for China but data are scattered

- Recent Development in Residential Real Estate

  ➢ Moderate pickup in property sales and prices after slowdown. Will the recovery continue?

  ➢ Fragmented markets: Signs of overheating and oversupply across cities

  ➢ Policy measures to stabilize real estate markets?

- Empirical analysis

  ➢ Assess how the oversupply comes about and how it may get back to an equilibrium level (an update of earlier version WP with recent data)

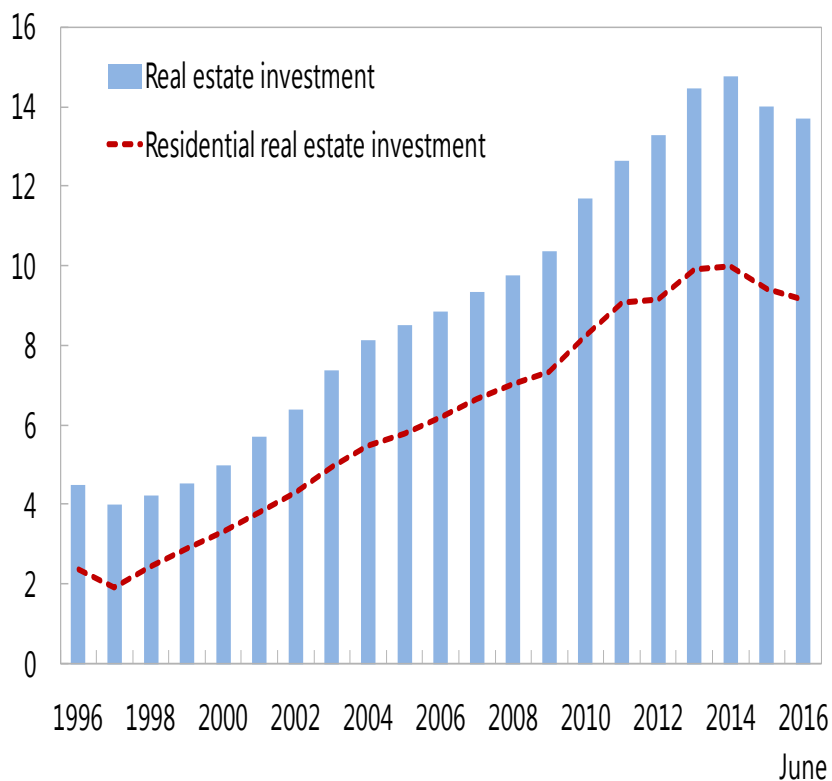 ➢ Gauge the severity and pace of adjustments

China: Why Looking at Real Estate?

1. Real estate sector a key engine for China's growth … and it is slowing.
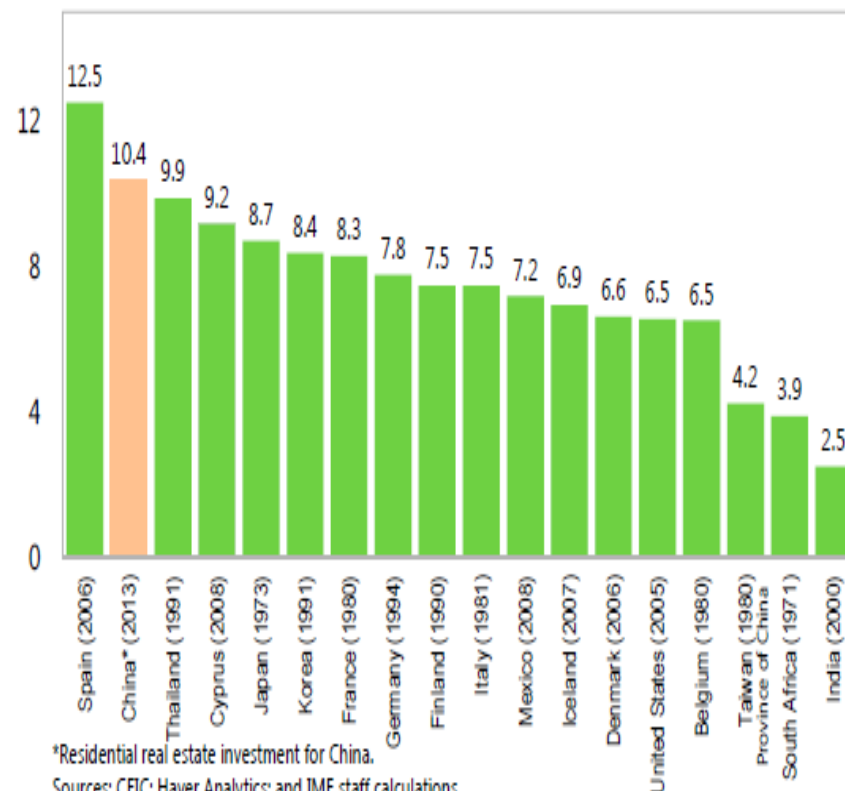
Real Estate Investment
(in percent of GDP)

Sources: CEIC, NBS

Peak Residential Construction Investment
(Percent of GDP)

*Residential real estate investment for China.
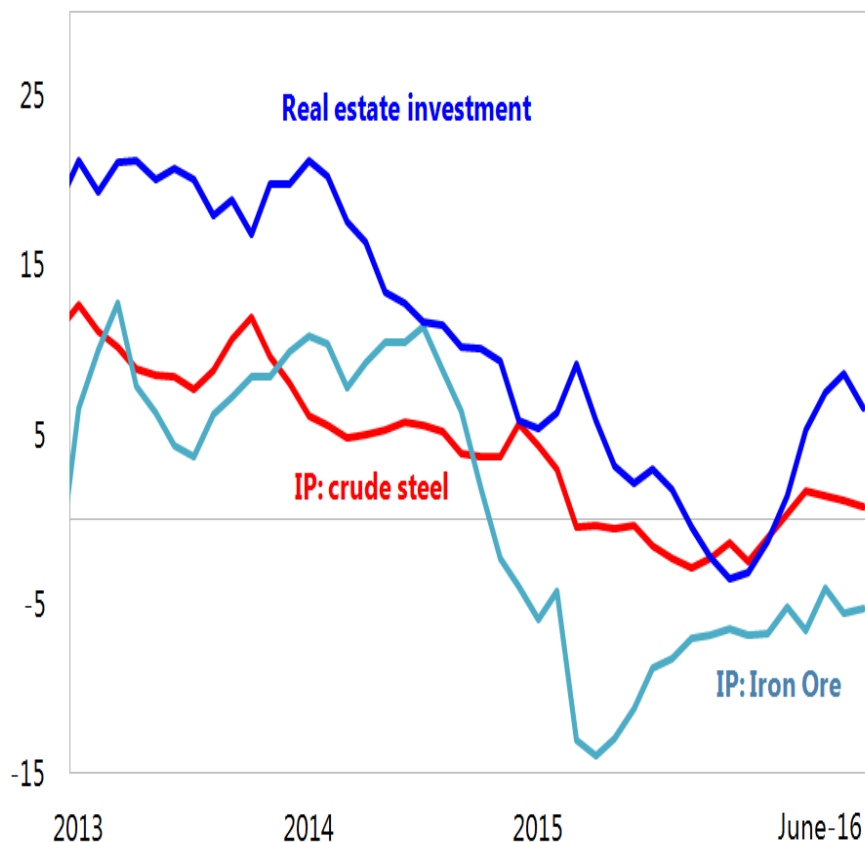Sources: CEIC; Haver Analytics; and IMF staff calculations.

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2. Data on China's real estate markets are scattered

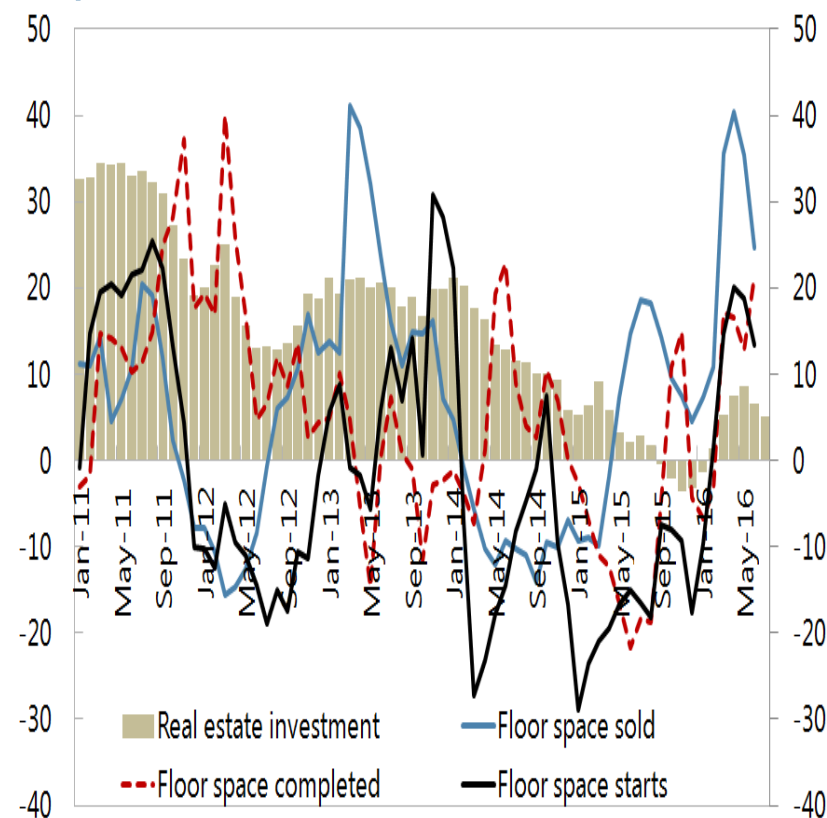| Sources	Data
National Bureau of Statistics	- Average selling prices for commodity building residential units - transaction data: floor space sold, starts, and completed - don't cover secondary markets and only at provincial levels.
Local Housing Bureaus (FangGuanJu地方房管局)	- covers 134 cities across the country, including price indices, transaction data on sales and completed.
National Development and Reform Commission (NDRC)	- covers the prices of small set of cities (36 main cities)
Private proprietary data: Soufun and Vanke	- price indices and sales including secondary market transactions in selected cities. - proprietary data and not directly comparable

3. Real estate cycles closely related to other sectors

Real Estate Investment and Commodities

Real estate investment

IP: crude steel

IP: Iron Ore

25
15
5
-5
-15

2013 2014 2015 June-16

Sources: CEIC Data Company Ltd.; Haver Analytics; and IMF staff estimates.

Real Estate Indicators Starting to Slow after Temporary Pickup (in percent y/y based on 3-month moving average)

50
40
30
20
10
0
-10
-20
-30
-40

Jan-11 May-11 Sep-11 Jan-12 May-12 Sep-12 Jan-13 May-13 Sep-13 Jan-14 May-14 Sep-14 Jan-15 May-15 Sep-15 Jan-16 May-16

Real estate investment   —— Floor space sold
- - - Floor space completed   —— Floor space starts

Sources: National Bureau of Statistics and IMF staff estimates.
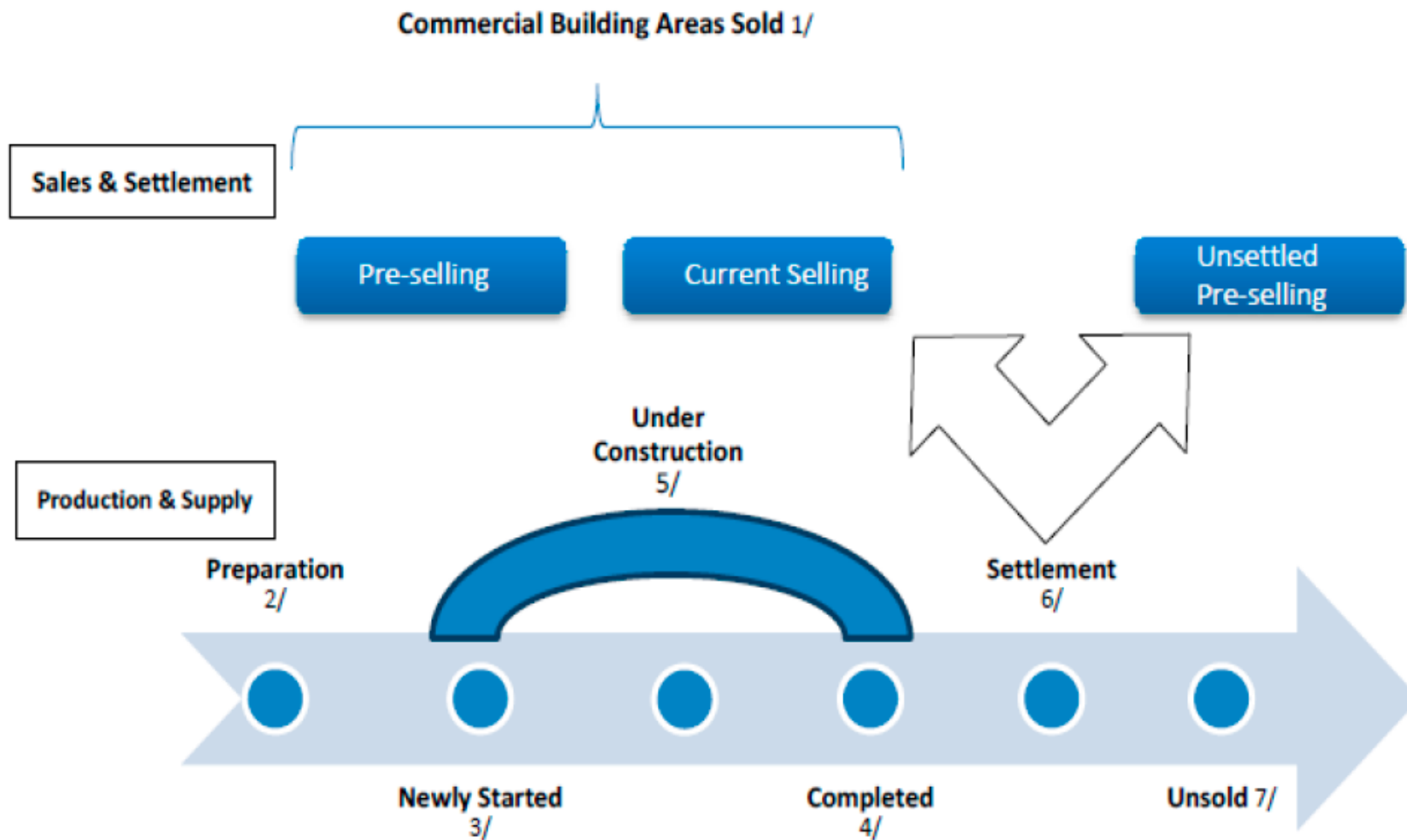
China: Residential Real Estate Development

China Residential House Price Index

(Jan-2012=100, 3mma)

- NDRC: 36 cities
- NBS: selling price
- NBS: 70 cities
- Fangguanju
- CREIS: 100 Cities
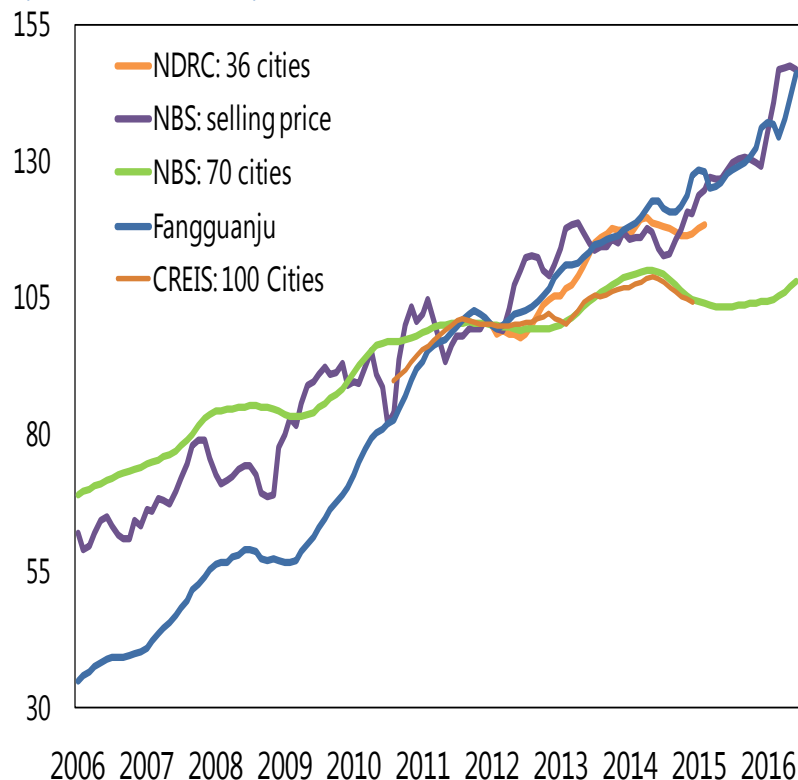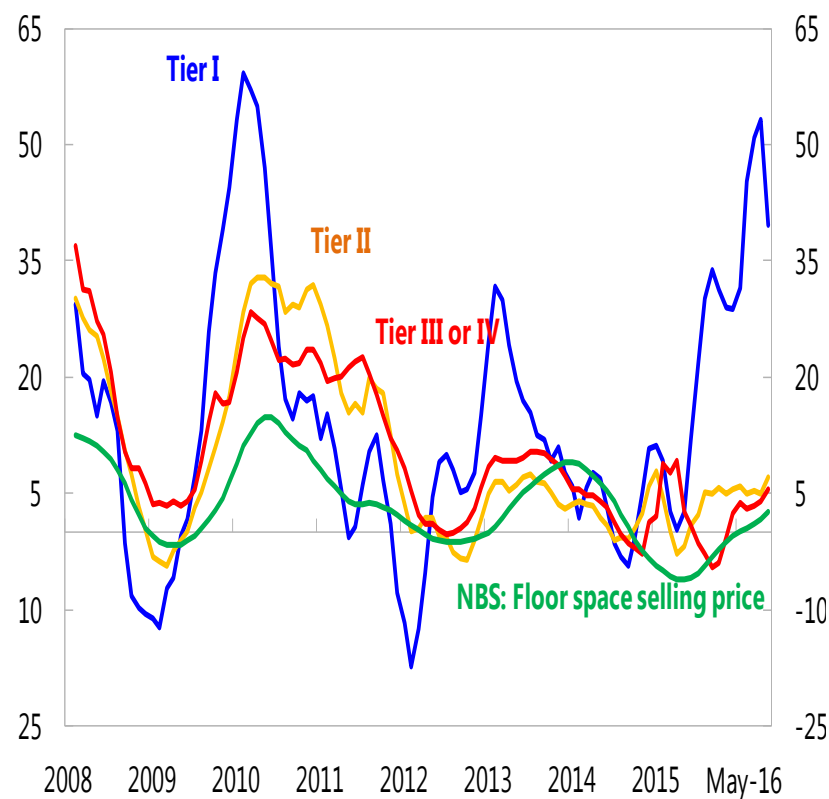
Sources: CEIC; Local Housing Administrative Bureau (Fangguanju); and IMF staff calculations.

Booming Tier 1 House Prices
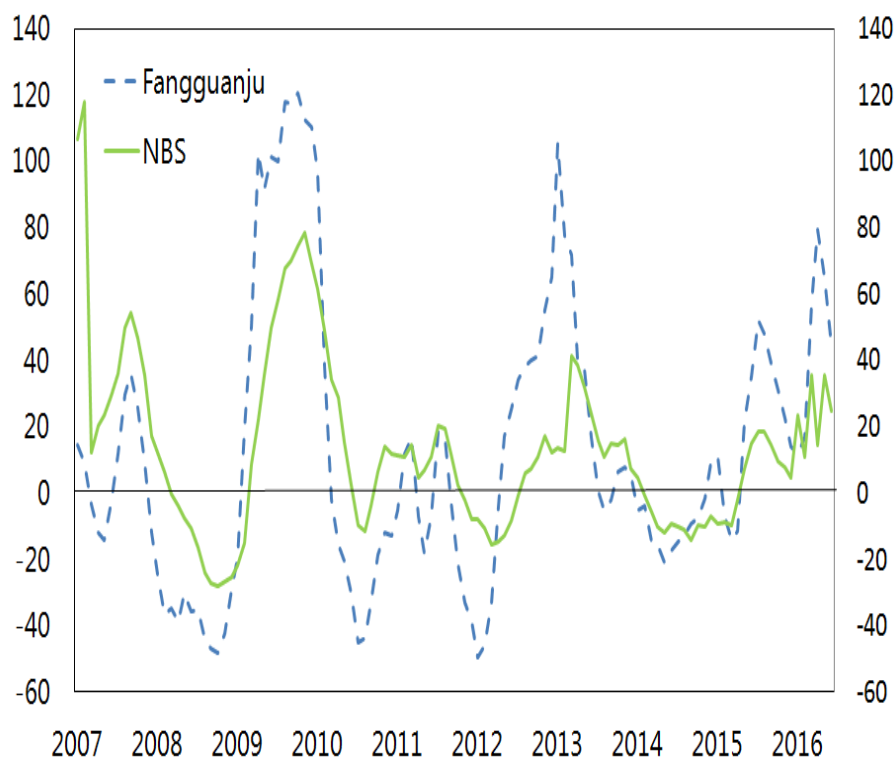
(In percent, year-on-year growth, 3mma)

Tier I

Tier II

Tier III or IV

NBS: Floor space selling price

Sources: Fangguanju; and IMF staff estimates.
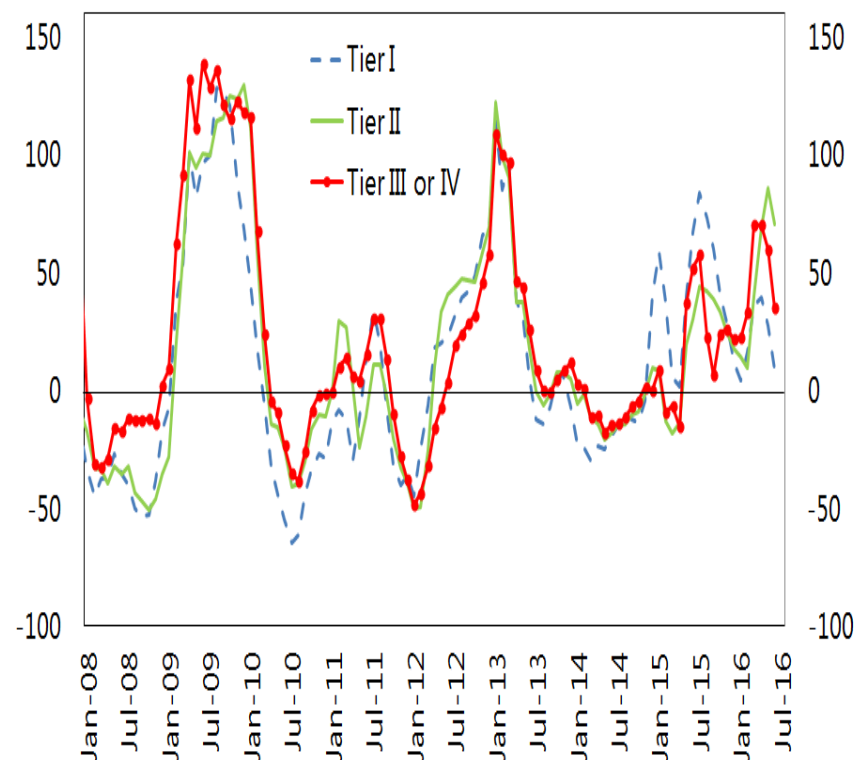
Residential Real Estate: Floor Space Sold
(in percent y/y based on 3-month moving average, seasonally adjusted)

Sources: Local Housing Administrative Bureau (Fangguanju), NBS, Wigram Capital Advisors, IMF staff calculations.

Residential Real Estate: Floor Space Sold by Tier
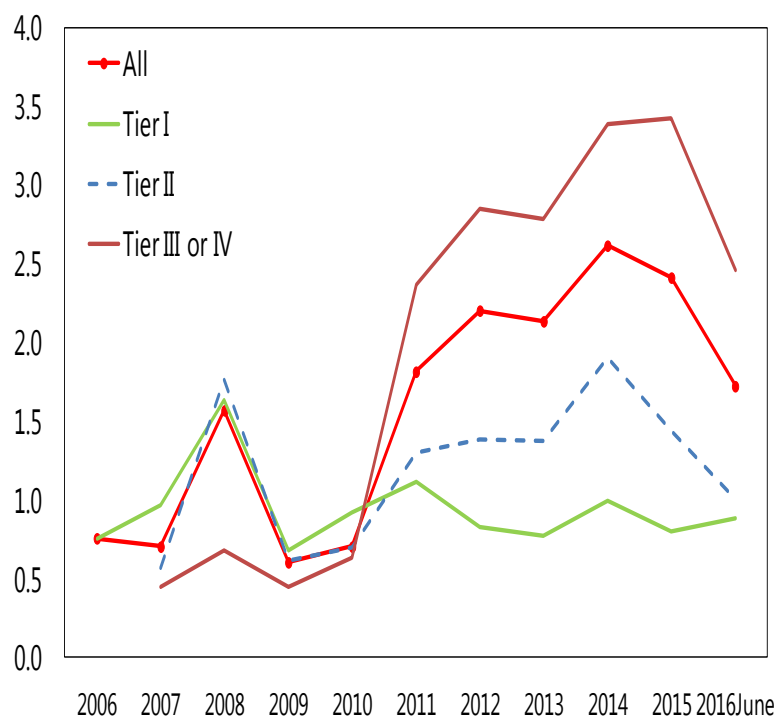(In percent y/y based on 3-month moving average, seasonally adjusted)

Sources: Local Housing Bureau (Fangguanju), IMF staff calculations.

Residential Real Estate Inventory Ratio by Tiers
(In years)

Sources: Local Housing Administrative Bureau (Fangguanju), Wigram Capital Advisors, IMF staff calculations.
1/Inventory is measured as floor space unsold; inventory ratio is measured as floor space unsold/sold.

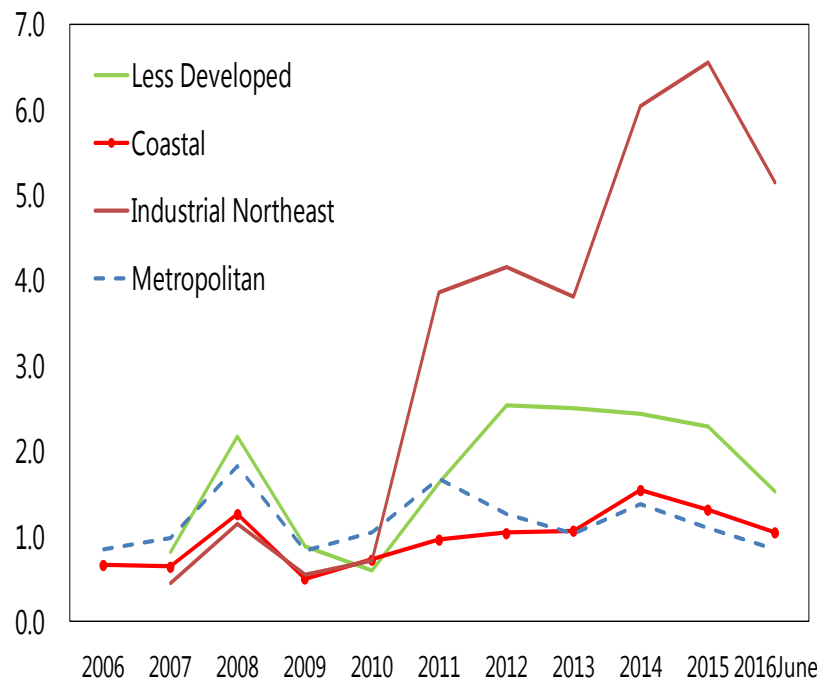## Residential Real Estate Inventory Ratio by Areas
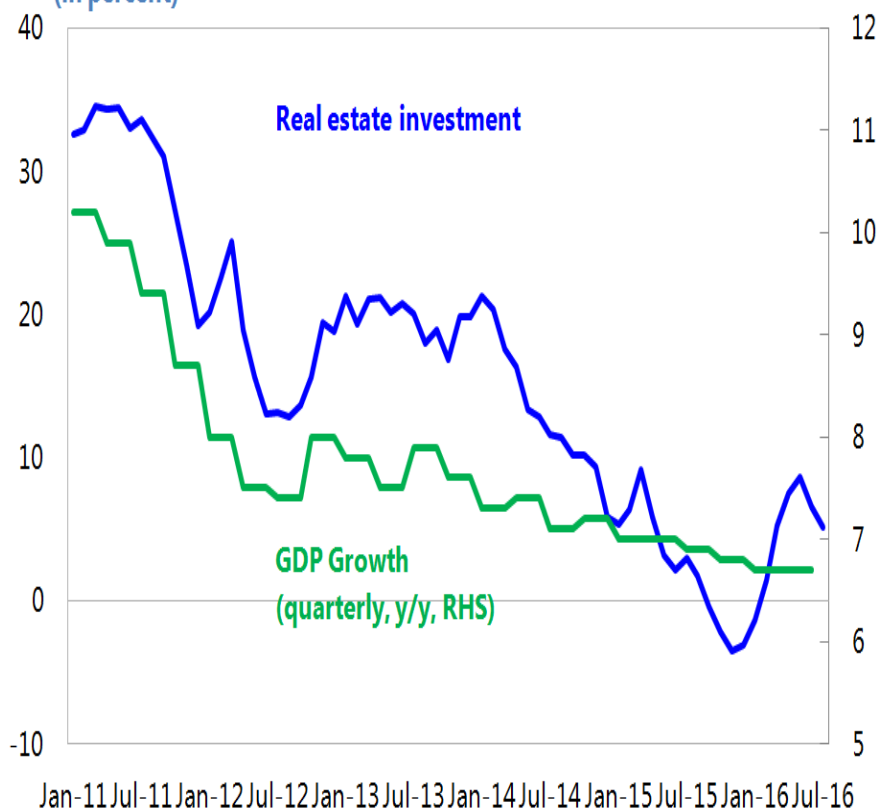(In years)

Sources: Local Housing Administrative Bureau (Fangguanju), Wigram Capital Advisors, IMF staff calculations.
1/Inventory is measured as floor space unsold; inventory ratio is measured as floor space unsold/sold.

Real Estate Investment and GDP Growth (in percent)

Sources: CEIC Data Company Ltd.; Haver Analytics; and IMF staff estimates.

Residential Real Estate Inventory: A Lower Bound Estimation
(In millions of square meters)
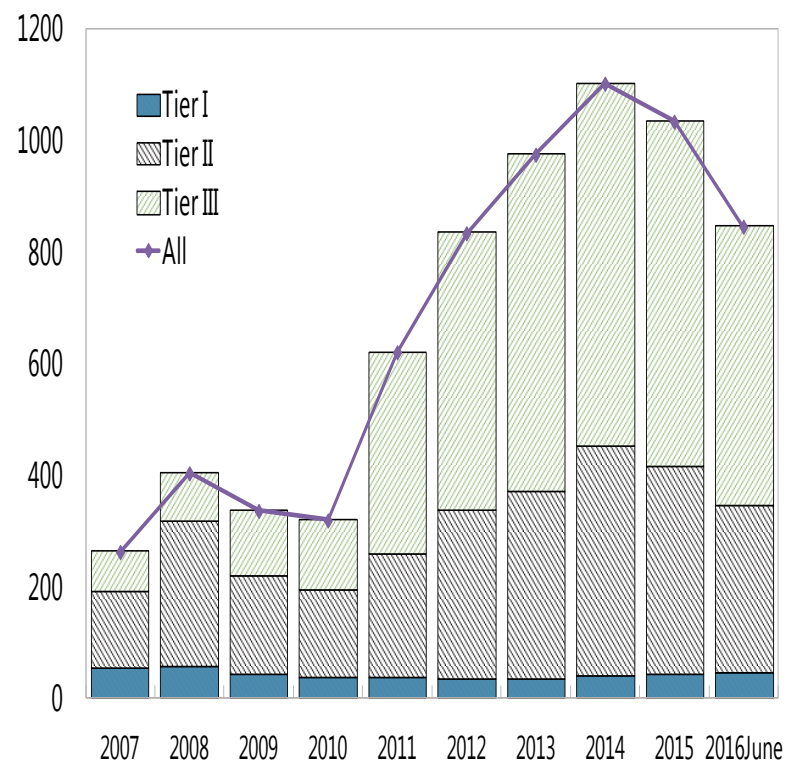
Sources: Local Housing Administrative Bureau (FangGuanJu), Wigram Capital Advisors, IMF staff calculations.

• **High and rising leverage**, high by international standards.

• **Household credits** (mainly mortgages) contribute about 30 percent of the new bank credit.

Fast Credit Growth and Wide Credit Gap 1/
(In percent of GDP)
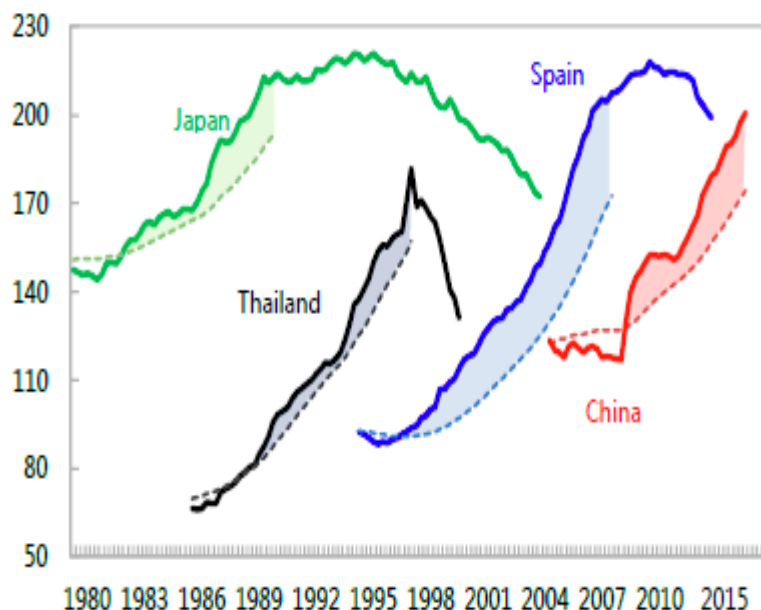
Sources: Bank for International Settlements (BIS); and IMF staff estimates.
1/ Total credit to the private nonfinancial sector. Dotted lines represent the credit trend.

Share of New Mortgage loan in total loan
(in percent)

Sources: CEIC

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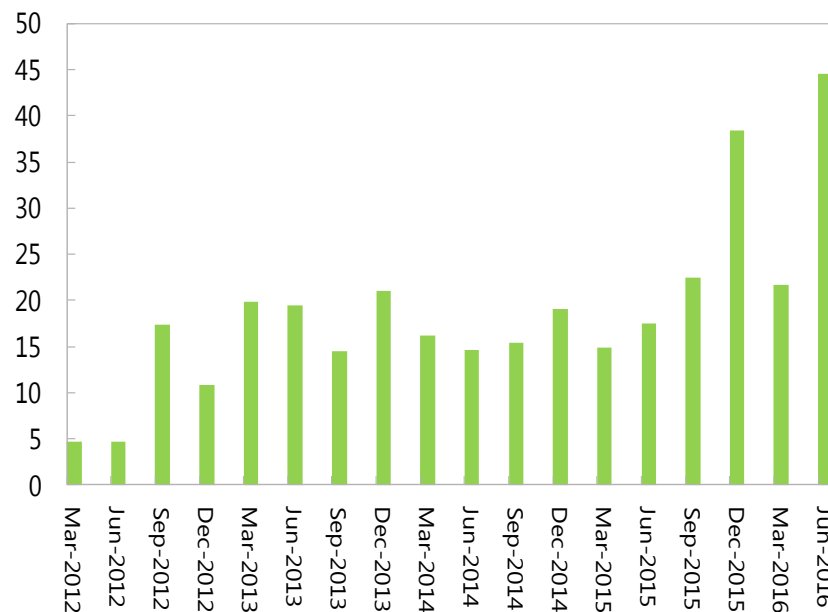
China: Outlook on Real Estate Markets

- **Factors to consider**

- **Empirical assessment**

House price to income Ratio
(100 Sqm house price of annual disposable income per capita)
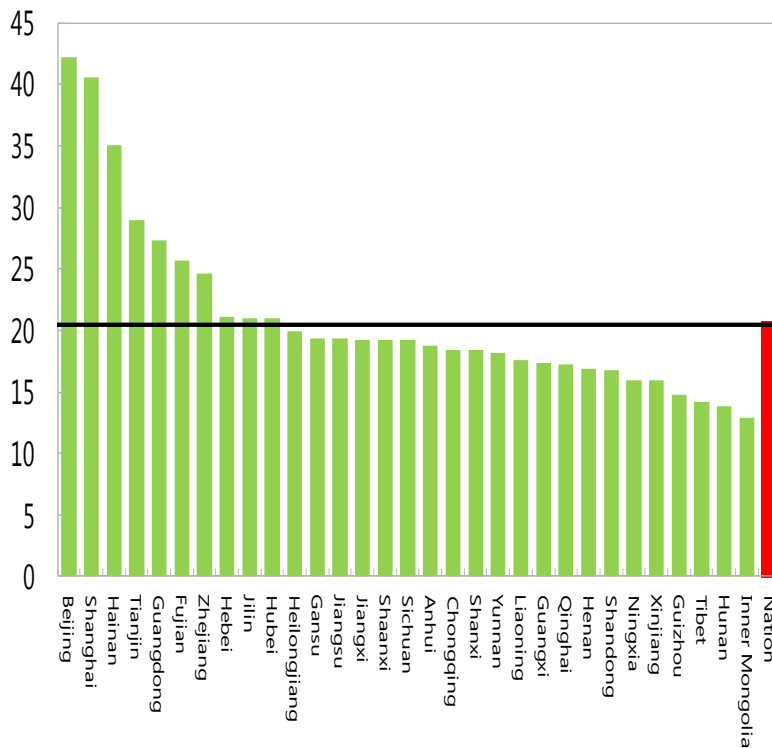
Sources: CEIC

House price to income ratio
(in years)

China | Other country

Sources: NUMBEO, and staff estimates

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Excess Supply and Real GDP Growth by Provinces

Sources: NBS, IMF staff calculations.

Impacts on GDP Growth from Overbuilding Adjustment by Provinces

Sources: NBS, IMF staff calculations.

2. Policy Measures to Support Real Estate and Contain Financial Risks

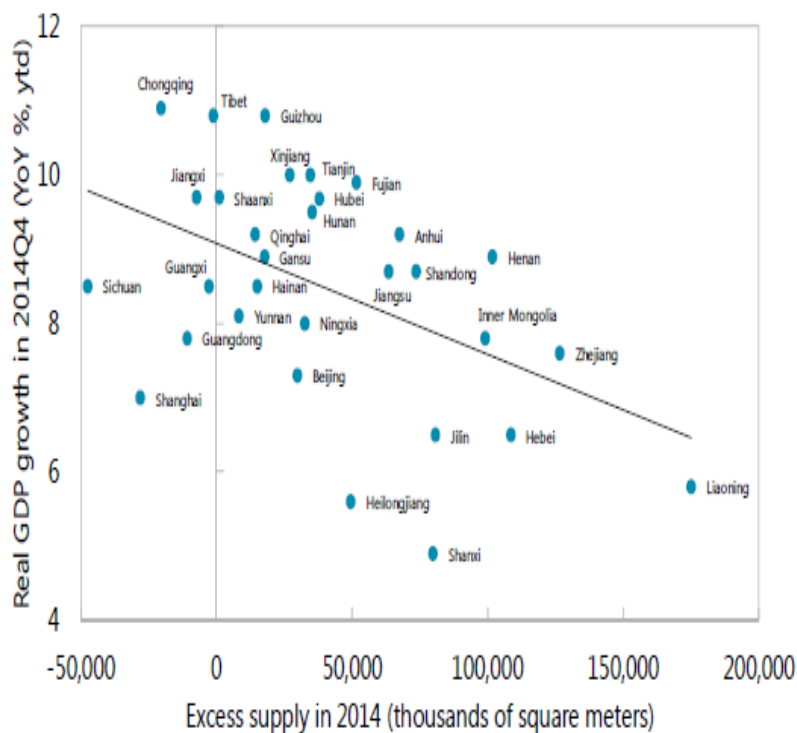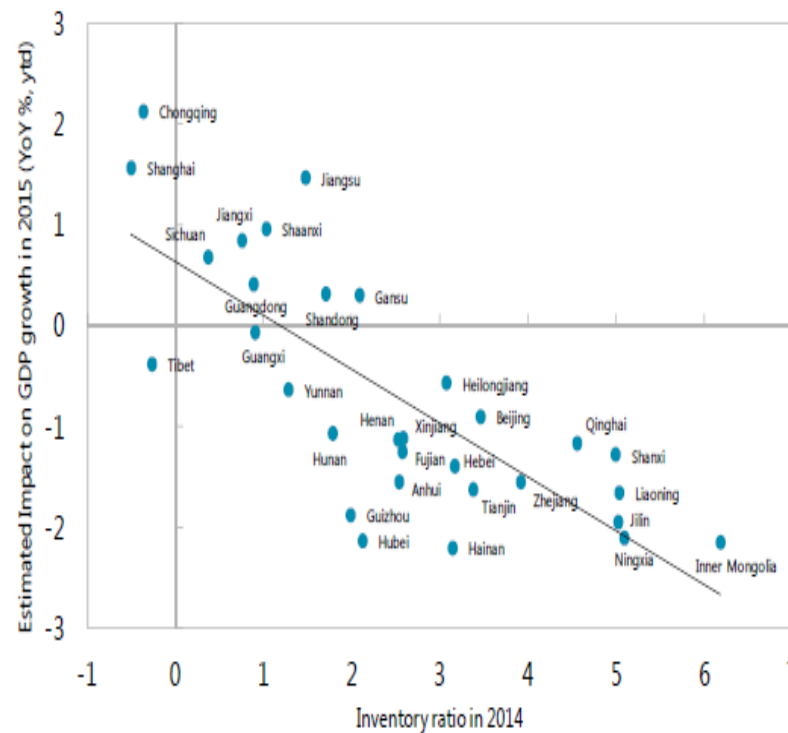| Measures	Remarks
Introduction and relaxation of purchase restrictions	- Some cities have maintained purchase restrictions; often used as macroprudential measures to contain pricing pressures.
Down payment restrictions	- down payment ratio was reduced to about 20-25 percent for first home purchases; higher for second homes and vary across cities
Taxation	- Effective taxes were reduced in property transactions (e.g., tax exemption if holding for more than 2 years (previously 5 years).
Social housing policy and urbanization	- Government provides subsidies to households / rural residents or directly purchases unsold properties from developers for social housing purposes.
Land sale auctions	- The local government has incentives to control land sales to stabilize real estate markets.

Real Estate Inventory Development Across Cycles

(Build-up of inventory from starts to peaks, index with Jan2007=100)
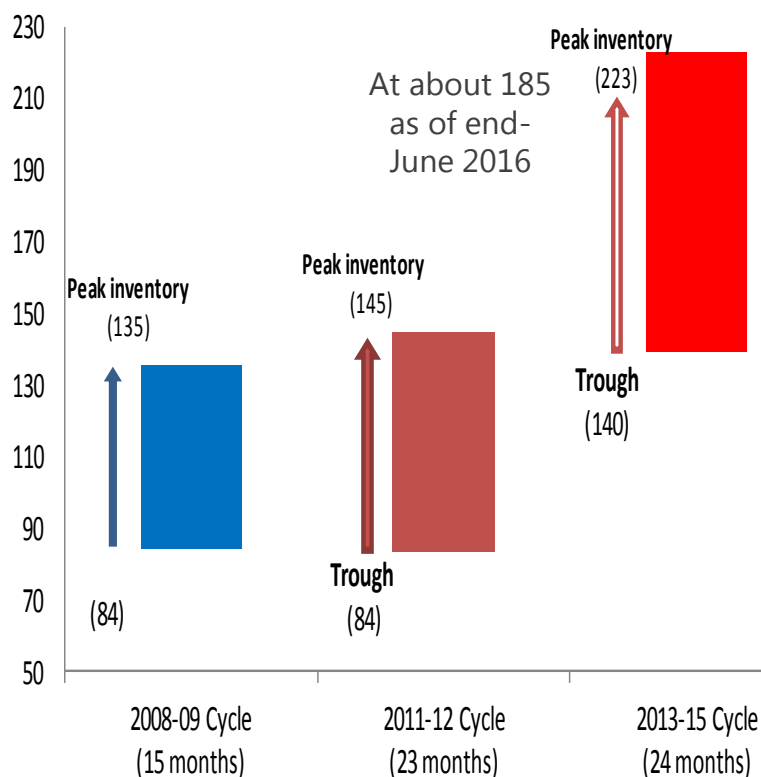
Sources: Fangguanju, and IMF staff calculations.

Gross Land Sale Revenue

(in RMB billion and in percent)
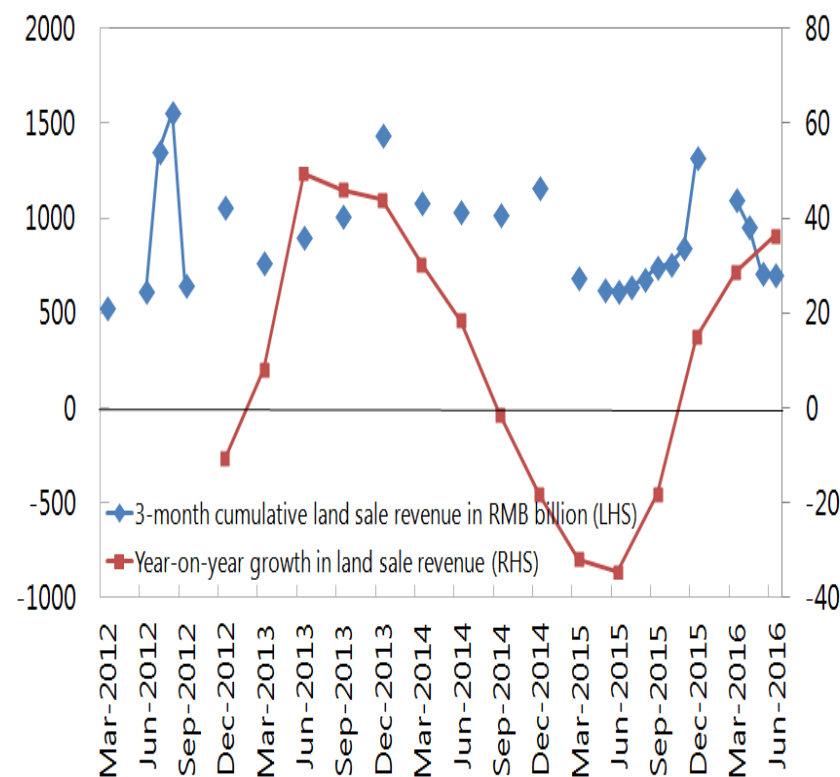
Sources: MOF.

Empirical Assessment on Real Estate Adjustments

Real Estate Adjustment: How Severe and How Long?

- Assess how the oversupply comes about and how it may get back to an equilibrium level.

- Scenario analysis
  - Baseline scenario
  - Stronger demand scenario
  - More gradual adjustment

- Impact on real estate investment and growth

Real Estate Adjustment: How Severe and How Long?

- Estimates real estate demand conditions based on fundamentals *(i = cities; t = year)*.

  Floor space per capita (*i,t*) = *f*(household income, residential property prices, urbanization rate, demography, city tiers)

  Floor space stock (i,t) = floor space per capita (i,t) x urban population growth (i,t)

  Floor space sold (i,t) = g(floor space sold (i,t-1), Δ floor space stock (i,t), demolition rate (i,t))

Explanatory Variables	Dependent Variable: Log Floor Space Per Capita			
	(1)	(2)	(3)	(4)
Log per capita household income	0.170***	0.269***	0.296***	0.299***
	(0.0236)	(0.0353)	(0.0409)	(0.0397)
Log residential property prices		-0.0794***	-0.0603***	-0.0568***
		(0.0191)	(0.0228)	(0.0213)
Urbanization rate			-0.497***	-0.454***
			(0.0393)	(0.0389)
Log nonagricultural population				-0.0417***
				(0.0115)
Dummy_tier 1	-0.109***	-0.0804**	-0.0768*	-0.0502
	(0.0289)	(0.0319)	(0.0428)	(0.0474)
Dummy_tier 3	0.166***	0.136***	0.0746***	0.0373*
	(0.0116)	(0.0131)	(0.0166)	(0.0201)
Constant	1.366***	1.076***	0.906***	1.169***
	(0.223)	(0.242)	(0.268)	(0.266)
Year effect	Yes	Yes	Yes	Yes
Observations	1,800	1,748	1,175	1,175
R squared	0.471	0.476	0.508	0.516

1/ Robust standard errors in parentheses; "***", "**", and "*" refer to 1 percent, 5 percent, and 10 percent statistical significant levels.

B. Measuring oversupply in real estate

- **Severity:** Cumulative stock of real estate floor space built vs sold nationwide and across cities
- **Adjustment duration:** Based on assumptions on fundamentals, project medium-term real estate adjustment and assess how the inventory cycle changes.

Measuring Excess Supply of Residential Real Estate
(in million squared meters)
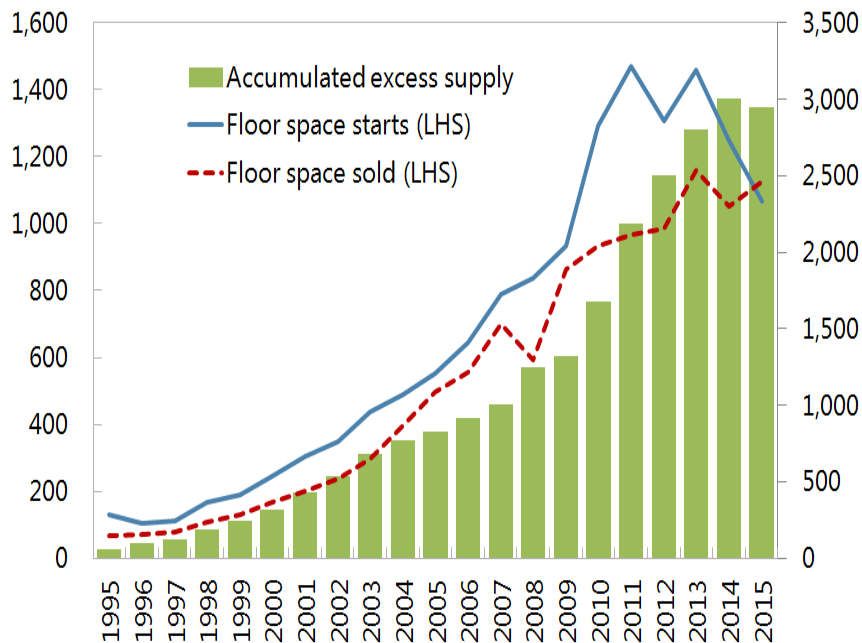
Sources: National Bureau of Statistics and IMF staff estimates.

Residential Market Overbuilding and Adjustment Scenarios
(In years)

Sources: NBS, IMF staff calculations.

C. Scenario analysis: Baseline

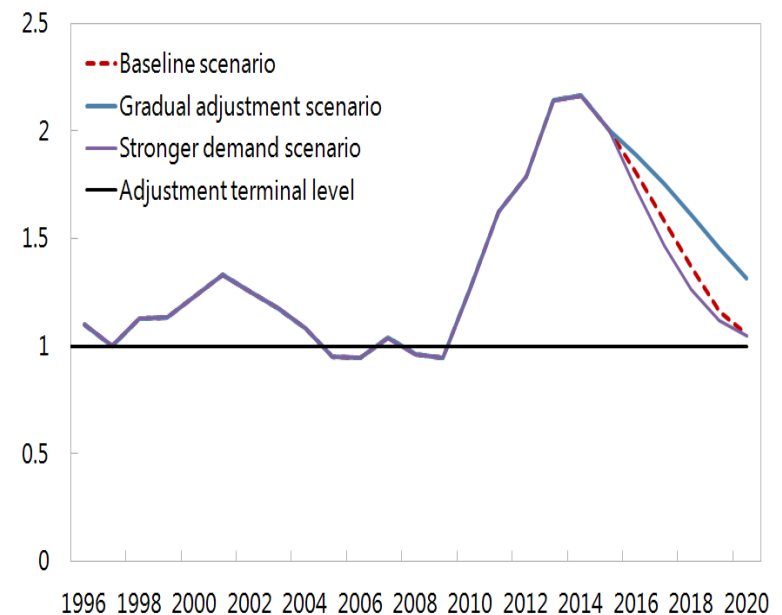**Residential Market Overbuilding and Adjustment Scenario**
(In thousands of square meters)

Legend: Excess supply; Floor space started; Floor space sold (2 years lead)

Sources: NBS, IMF staff calculations.
Note: Excess supply ratio is measured as the ratio of excess supply to floor space sold (2 years lead.)

Anual Growth of Residential Floor Space Newly Started and Sold
(yoy, in percent)

Legend: Floor space started; Floor space sold (2 years lead)

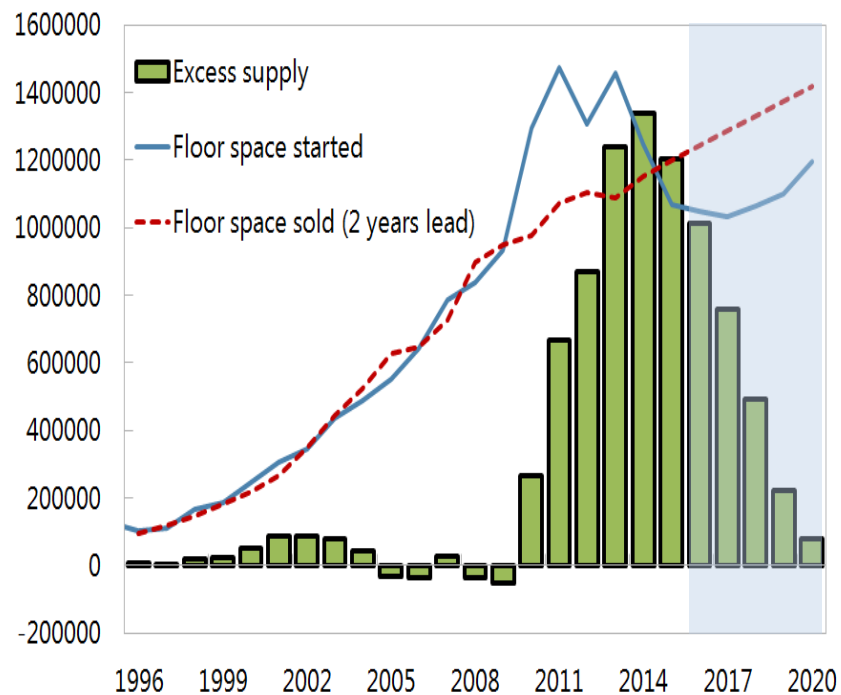Sources: NBS, IMF staff calculations.

Residential Market Overbuilding and Adjustment Scenarios
(In thousands of square meters)

Legend:
- Excess supply (more gradual adjustment)
- Floor space sold (2 years lead)
- Floor Space started (baseline adjustment)
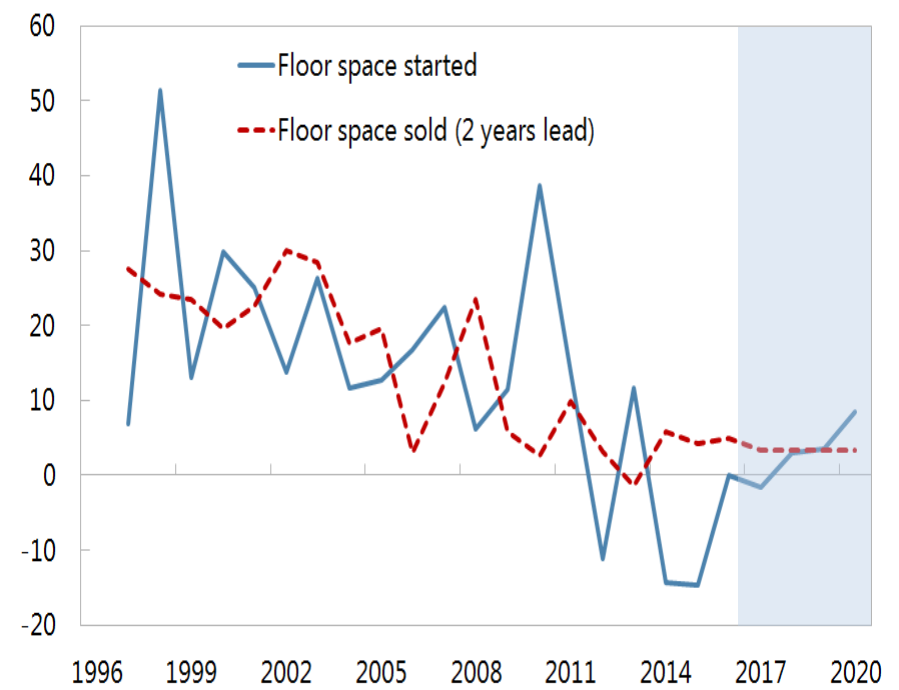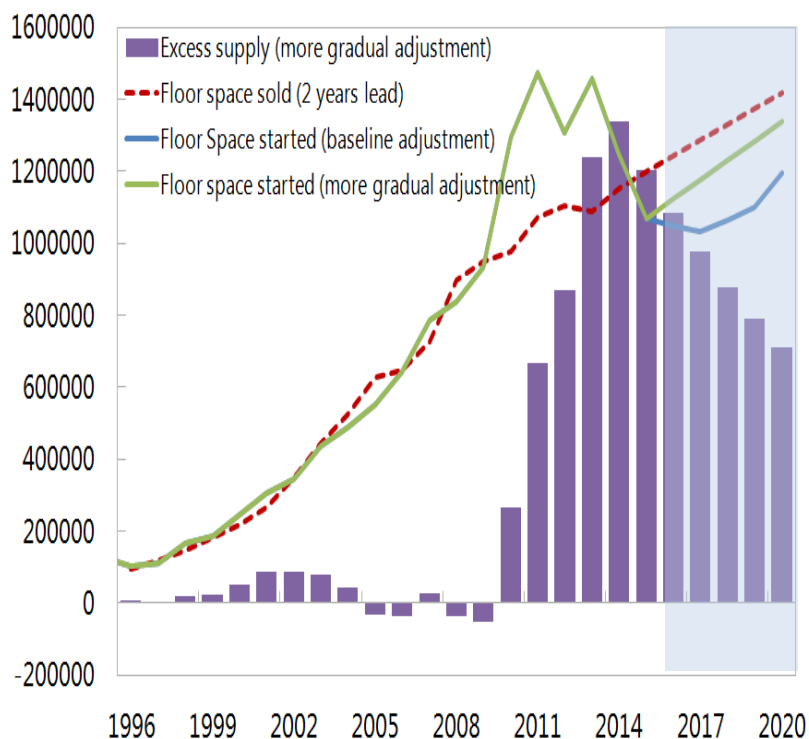- Floor space started (more gradual adjustment)

Sources: NBS, IMF staff calculations.
Note: Excess supply ratio is measured as the ratio of excess supply to floor space sold (2 years lead.)

Residential Market Overbuilding and Adjustment Scenarios
(In thousands of square meters)

Legend:
- Excess supply (demand pickup)
- Floor space sold (baseline, 2 years lead)
- Floor space sold (demand pickup, 2 years lead)
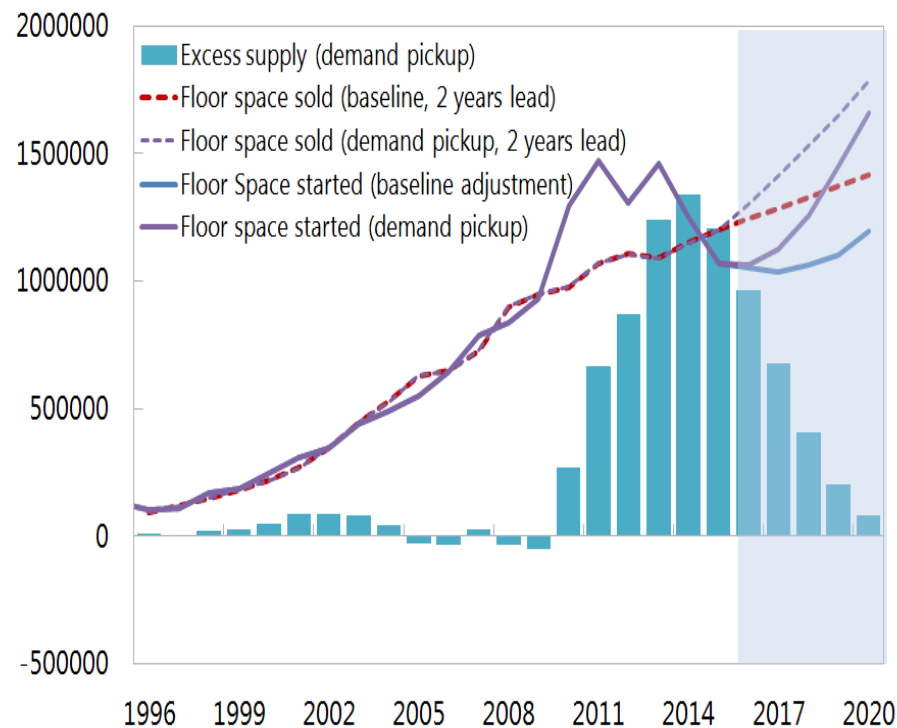- Floor Space started (baseline adjustment)
- Floor space started (demand pickup)

Sources: NBS, IMF staff calculations.
Note: Excess supply ratio is measured as the ratio of excess supply to floor space sold (2 years lead.)

Growth impact across scenarios

Table 3. Scenario Analysis--Impact on Real Estate Investment and Economic Growth

Adjustment Scenario 1/	Duration of Adjustment	Floor Space Starts (y/y growth in percent)	
	Total years	2016-17	2020
Baseline scenario	4	-1.5	8.6
More gradual adjustment	10	5.3	4.2
Stronger demand	4	2.6	14.8
	Implied real estate gross fixed capital formation growth 2/	Impact on GDP growth (in ppt) 3/	
	2016-17	2016-17 (annual)	
Baseline scenario	-3.1	-0.3	
More gradual adjustment	-0.3	0.0	
Stronger demand	-1.4	-0.1	

Sources: NBS, FangGuanJu, and authors' estimation.

1/ Average growth in floor space sold is projected to be 4.3 percent per year between 2016 and 2020 in the baseline and gradual adjustment scenarios. In the stronger demand scenario, the growth increased to 8.6 percent per year, similar to average growth rates after the global financial crisis.

2/ The implied real estate gross fixed capital formation growth is estimated as growth of real estate GFCG(t) = 0.413xgrowth of floor space starts (t) + 0.587 x growth of real estate GFCF(t-1).
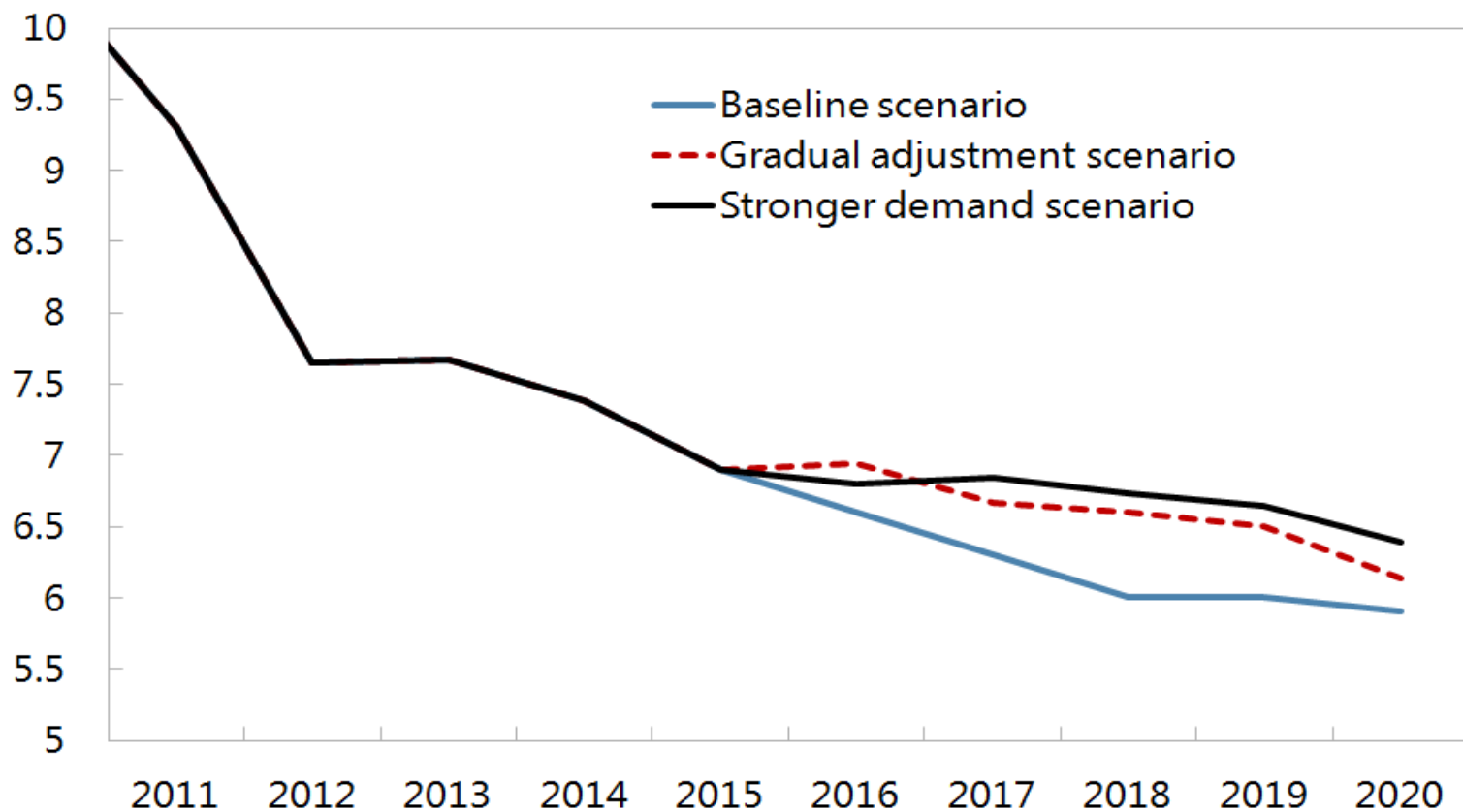
3/ The growth impact is calculated based on the fact that real estate investment contributes to around 9 percent of GDP growth.

Impacts of Real Estate Adjustment on GDP Growth Rates
(in percent)

Legend:
- Baseline scenario
- Gradual adjustment scenario
- Stronger demand scenario

Sources: NBS, IMF staff calculations.

Summary

- Recent stabilization in real estate prices and sales does not appear to come with strong investment

- Diverse developments across the country – implications for adjustment and policy measures

- Real estate adjustment to address oversupply
  - **Severity:** Overbuilding appears to be common in many cities, particularly the tier3/4 cities and in the northeast regions

  - **Duration:** Multi-year adjustment likely to be structural (even with stronger demand) and may be prolonged given growth concerns.

  - **Growth impact:** Real estate activity may continue to face a slowdown on investment and pose pressures to growth.

THANK YOU