



Asia and Pacific



Department



China's High Saving Rate: Analytics and Prospects

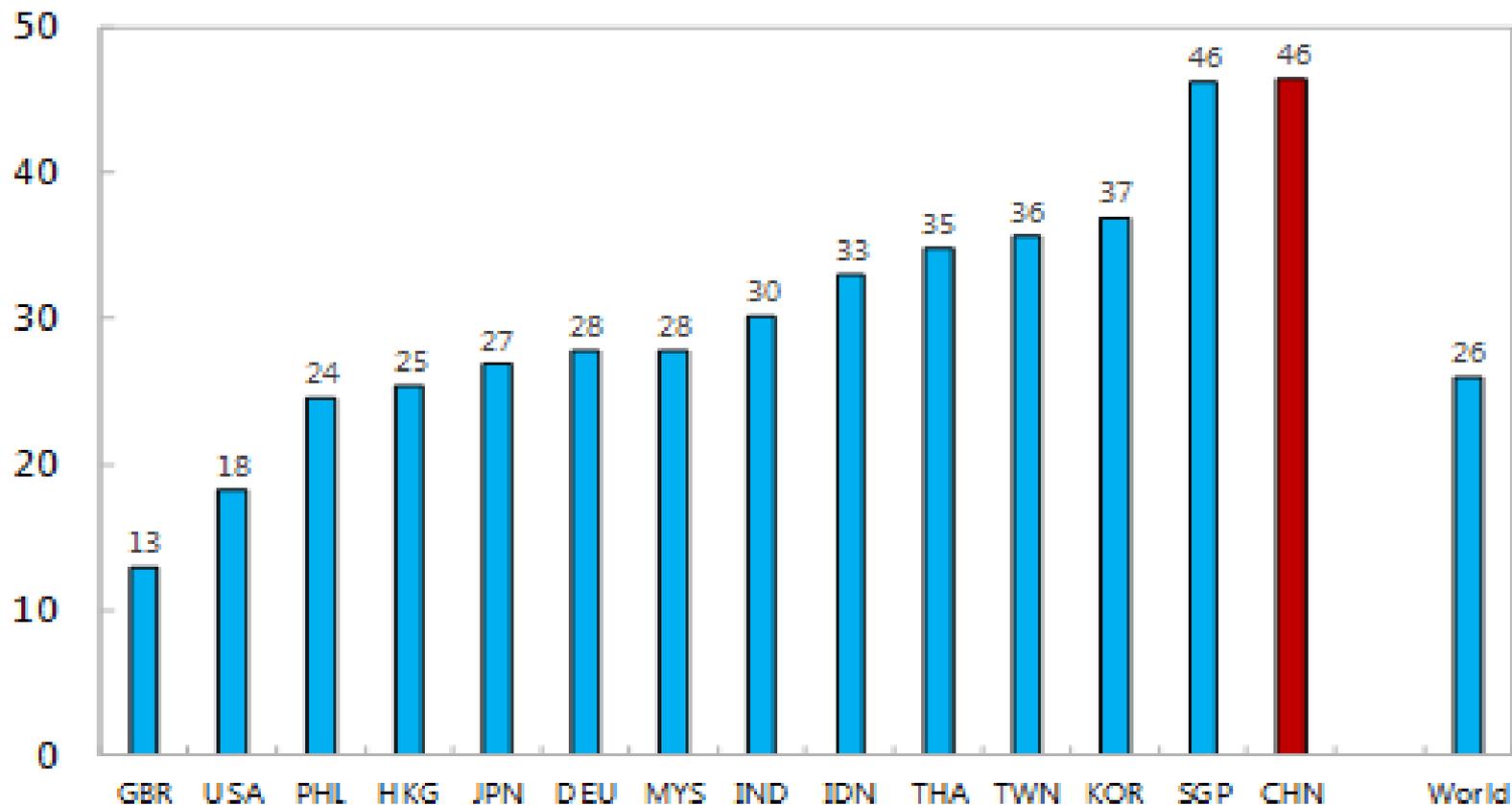


May 18th, 2017

China has one of the world's highest saving rate...

National Saving Rate (2016)

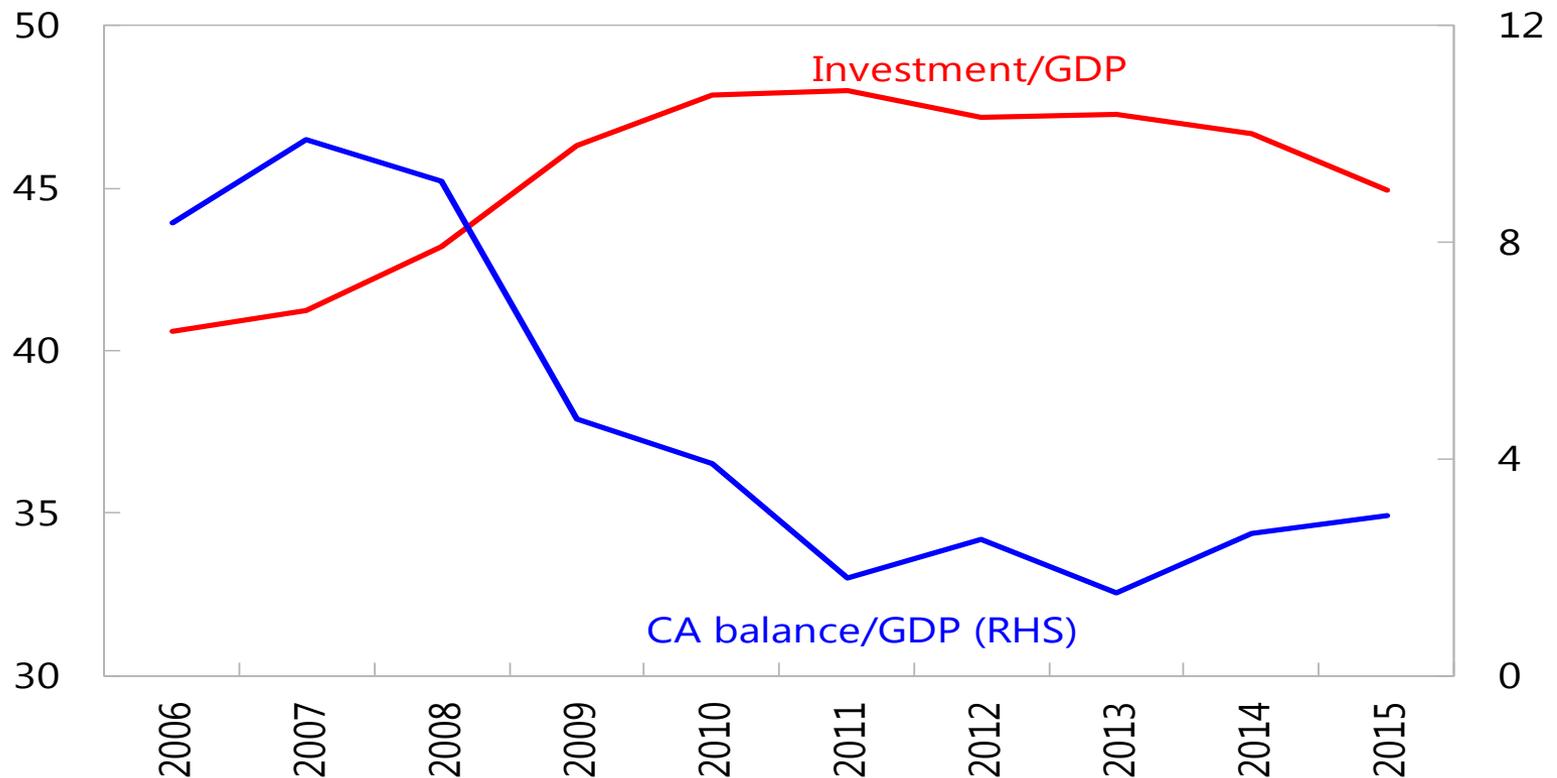
(In percent of GDP)



... which is the crux of external/internal imbalances

Rotation from External to Internal Imbalance

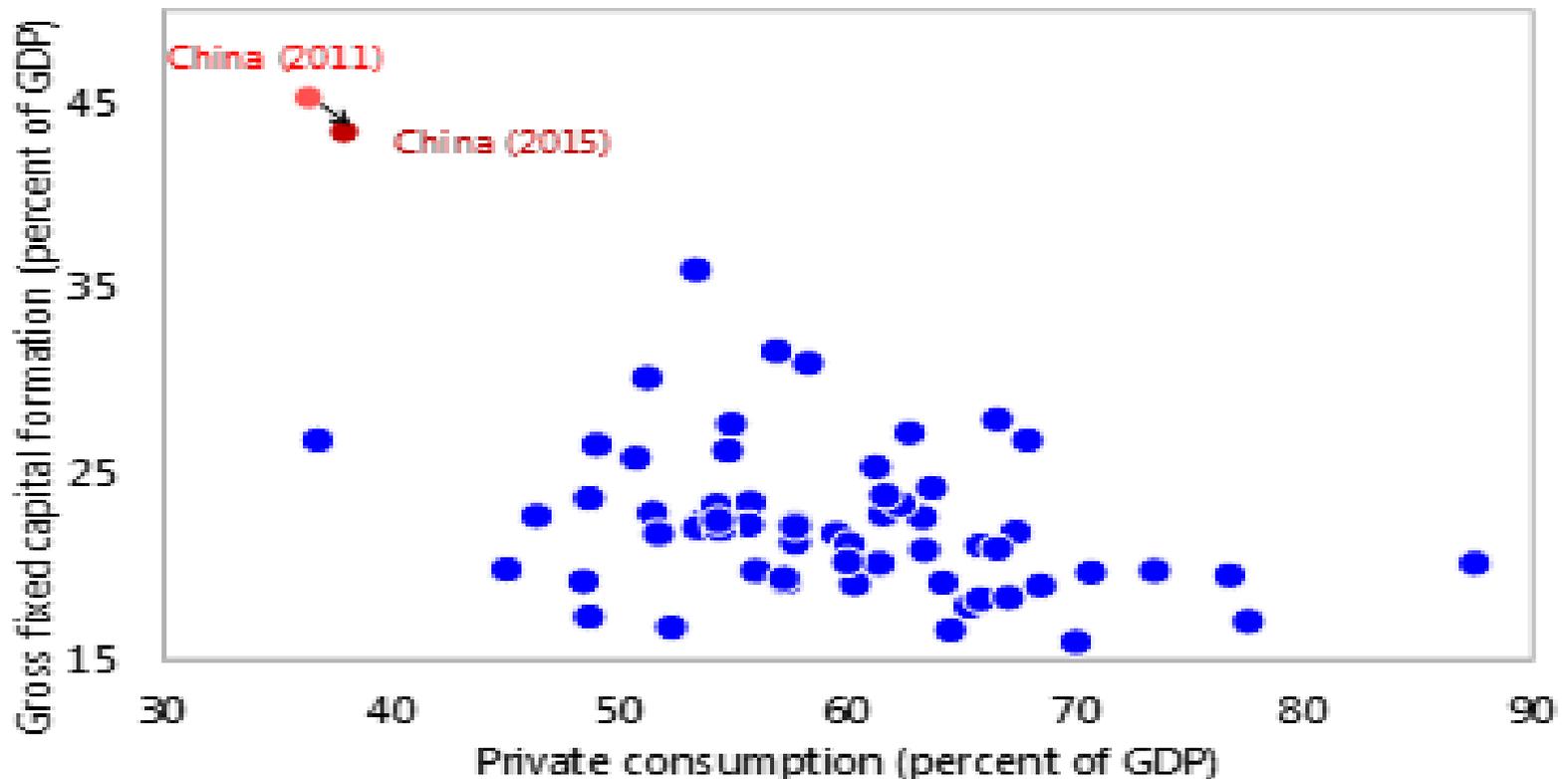
(In percent of GDP)



Sources: CEIC Data Company Ltd.; and IMF staff calculations.

Excessive savings depress consumption and lower welfare

Slowly Switching from Investment to Consumption (Industrial Countries and Emerging Markets; average, 2008-14)



Sources: *World Economic Outlook (WEO)*; and IMF staff estimates.

Questions

- What are the drivers of high national savings?
- What policies could reduce excessive savings?
- What is the likely trajectory of national savings in the medium-term?

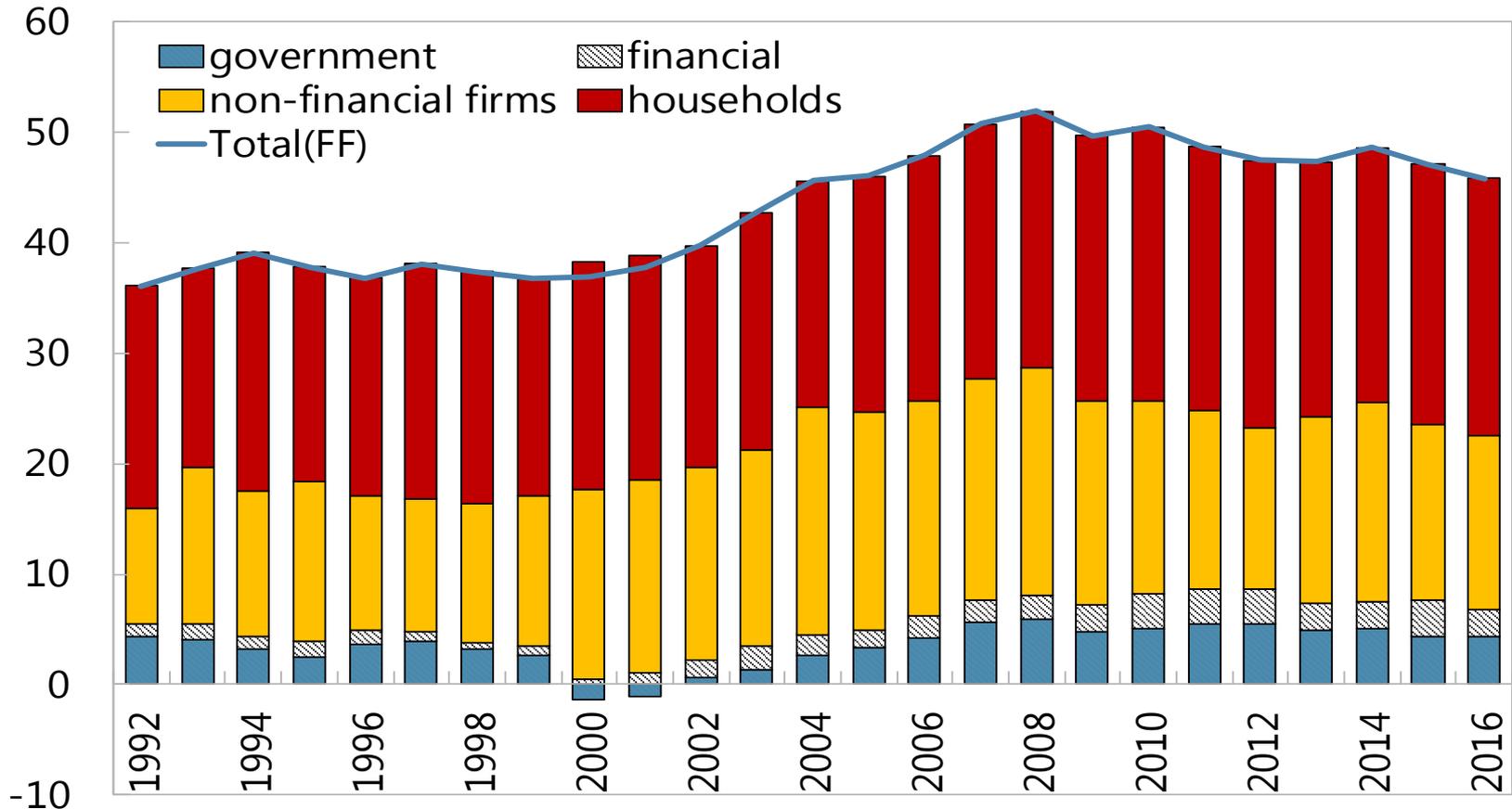
Key Takeaways

- High national savings today mostly emanate from the household sector, though corporate sector was also a main driver in early 2000, partly reflecting under-valued exchange rate.
- Rising household savings mostly reflect the one-child policy induced demographic changes, and the dismantle of social safety net during economic transition. Housing reform and rising income inequality also contributed to the rise in savings.
- The high fiscal saving was driven by low expenditure, reflecting the stage of pension system and insufficient provision of public service, especially health and social security.
- Saving rate to fall substantially in the medium-term with demographic shift and policies to strengthening social safety net and reducing income inequality

Composition of national savings

National Saving Rate

(in percent of GDP)

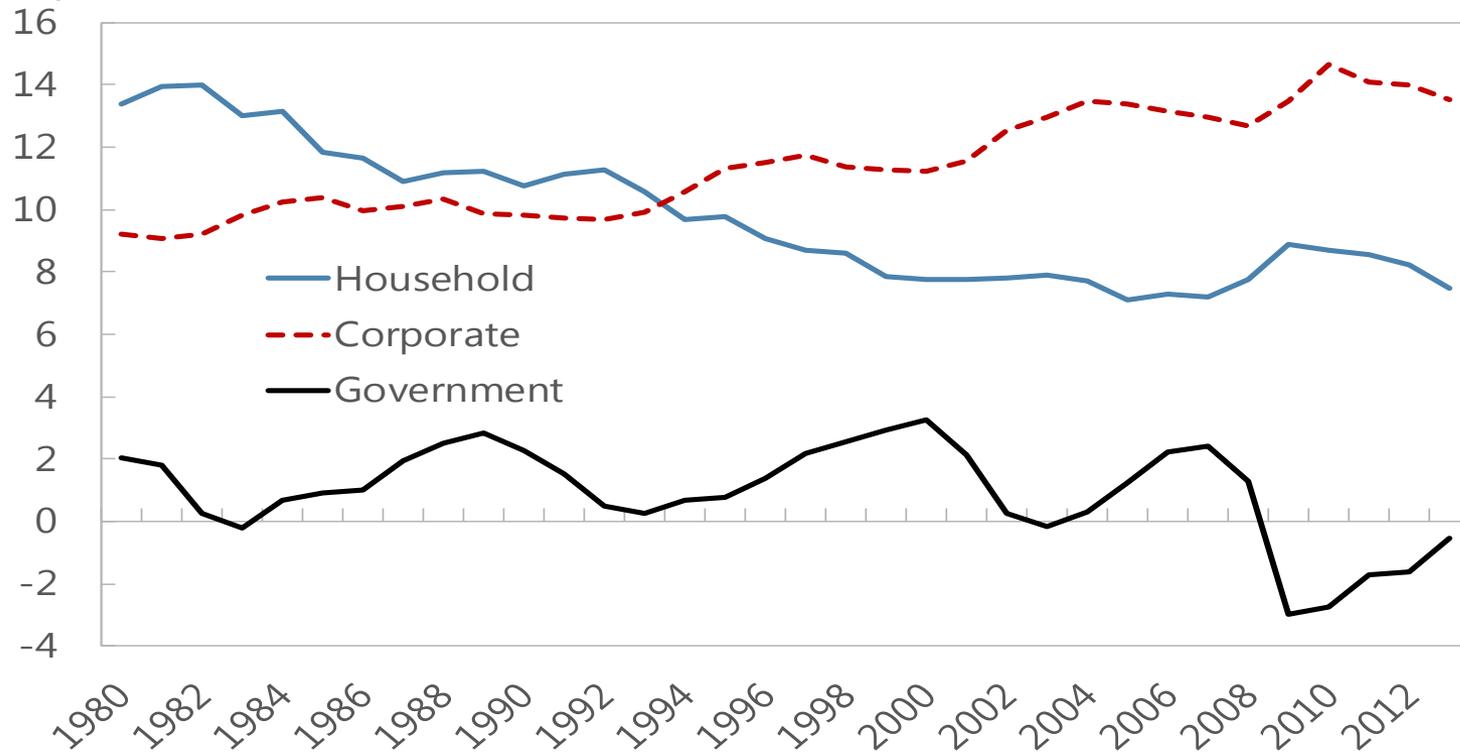


Sources: Flow of funds, IMF staff estimates.

Global shift from household to corporate saving

Shifting Pattern of Global Savings

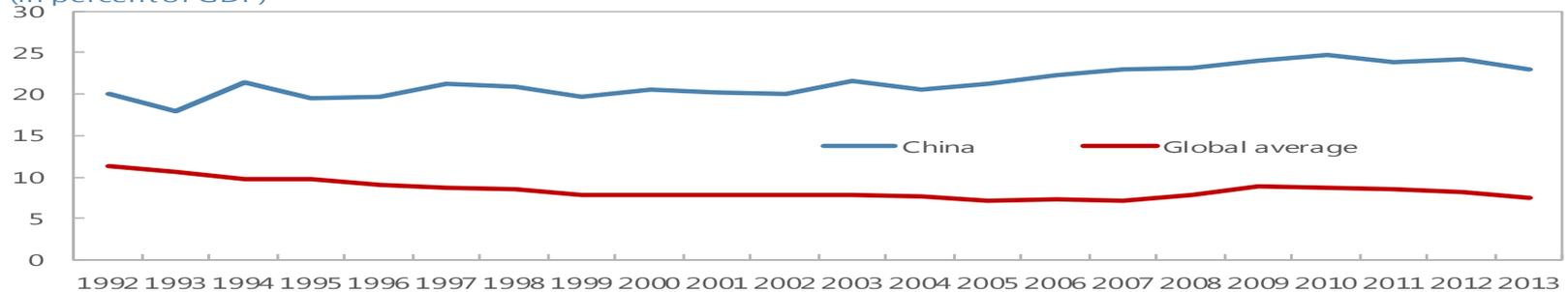
(in percent of GDP)



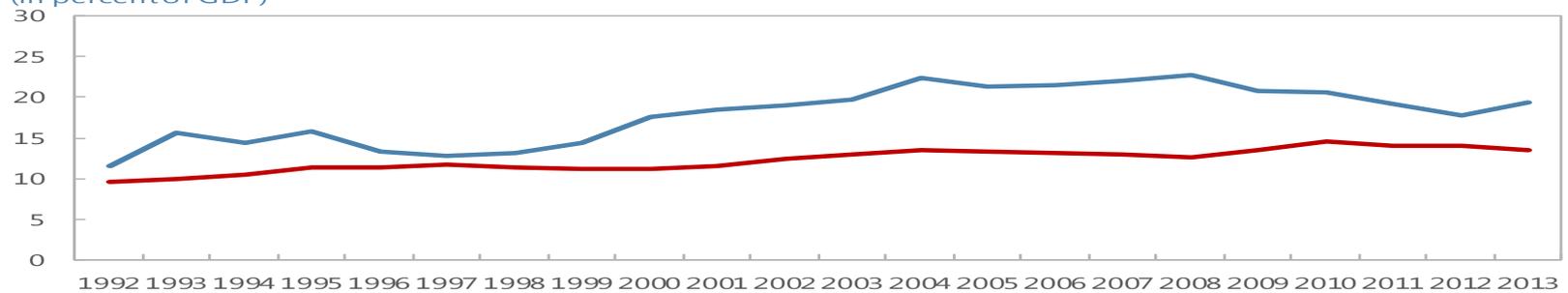
Sources: Chen et al (2017), "The Global Rise of Corporate Saving."

The imbalance today mostly reflects the household sector

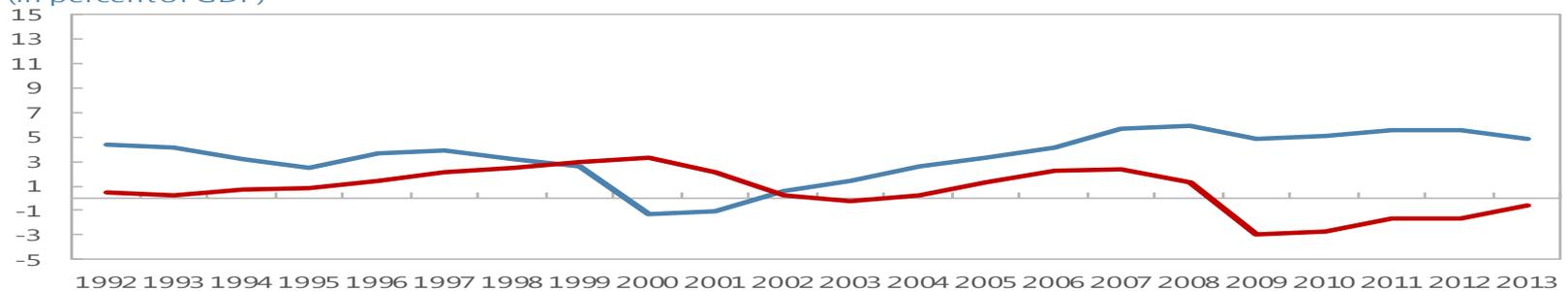
Household Saving
(in percent of GDP)



Corporate Saving
(in percent of GDP)



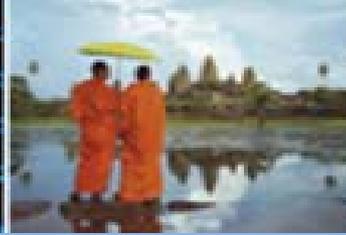
Government Saving
(in percent of GDP)



Sources: CEIC and Chen et al (2017)

Roadmap

- Household saving
- Corporate saving
- Government saving
- The role of State and policy recommendations
- Prospect of Saving

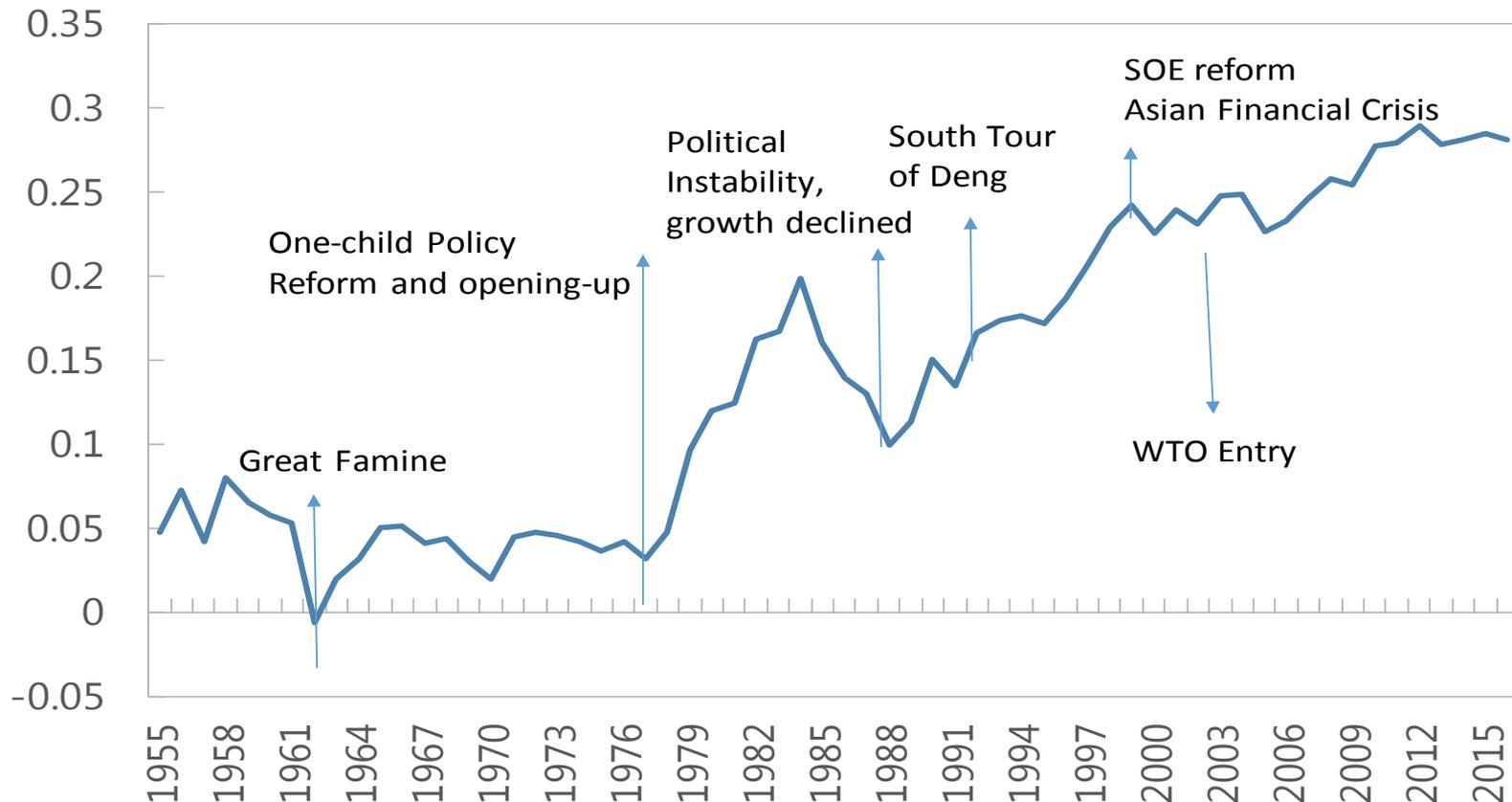


HOUSEHOLD SAVING

Household saving and reform overview

Household Saving Rate

(in percent of disposable income)



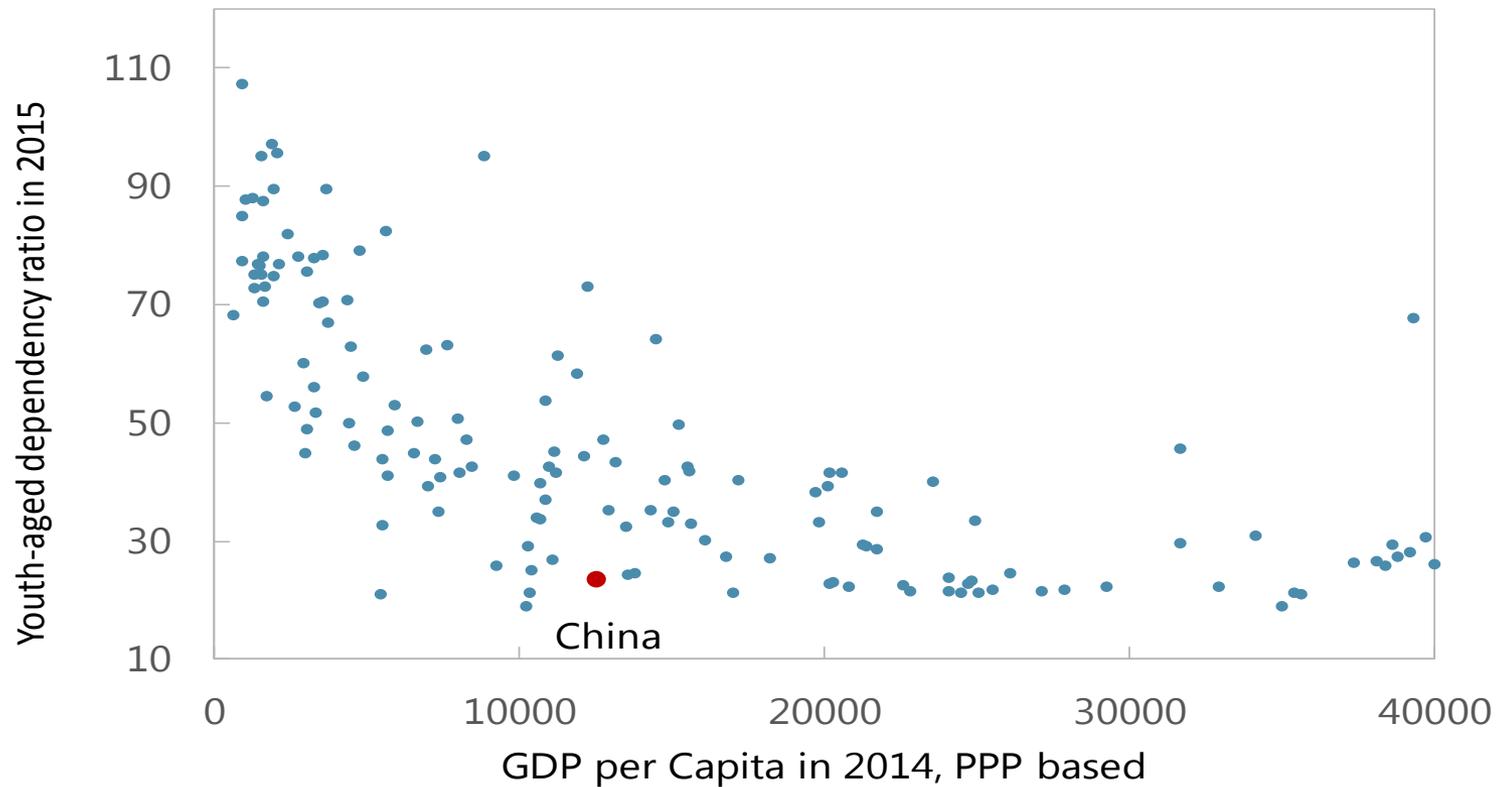
Sources: Household Survey and Modigliani and Cao (2004)

Drivers of Household Savings

- ***Demographics:*** Modigliani and Cao (2004), Choukhmane and others (2013), Curtis, Lugauer, and Mark (2015)
- **Social safety net:** Blanchard (2005), Prasad (2010), and He et al. (2017)
- **Financial repression:** Nabar(2011)
- **Housing:** Li et al(2013)
- **Income inequality**

One-child policy has led to rapid decline in youth-dependence ratio

Youth Dependence Ratio and GDP Per Capita



Sources: United Nations; and Penn World Table.

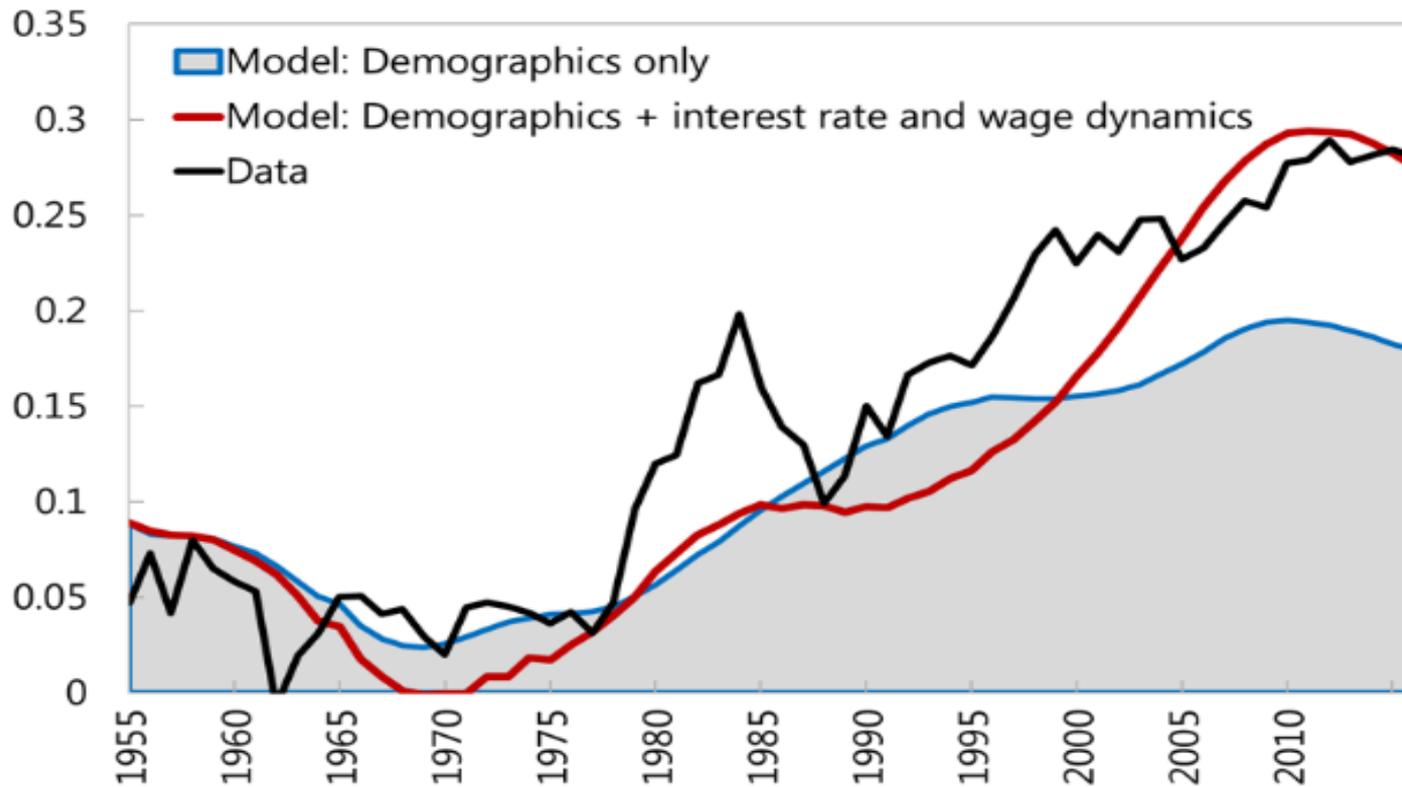
Household saving and demographics

- **OLG Model (Curtis et al 2015)**
- **Main features**
- 95 generations, 20-95 decide consumption, retirement at 64
- Children's welfare in parents' utility function as in Barro and Becker (1989) – fewer children makes you effectively more patient
- Income transfers from working agents to retirees – fewer children means less old-age support
- Demographic composition effect – more people in prime savings age

Demographic changes account for half of increase in household saving

Household savings rate: model, historical data

(percent of disposable income)



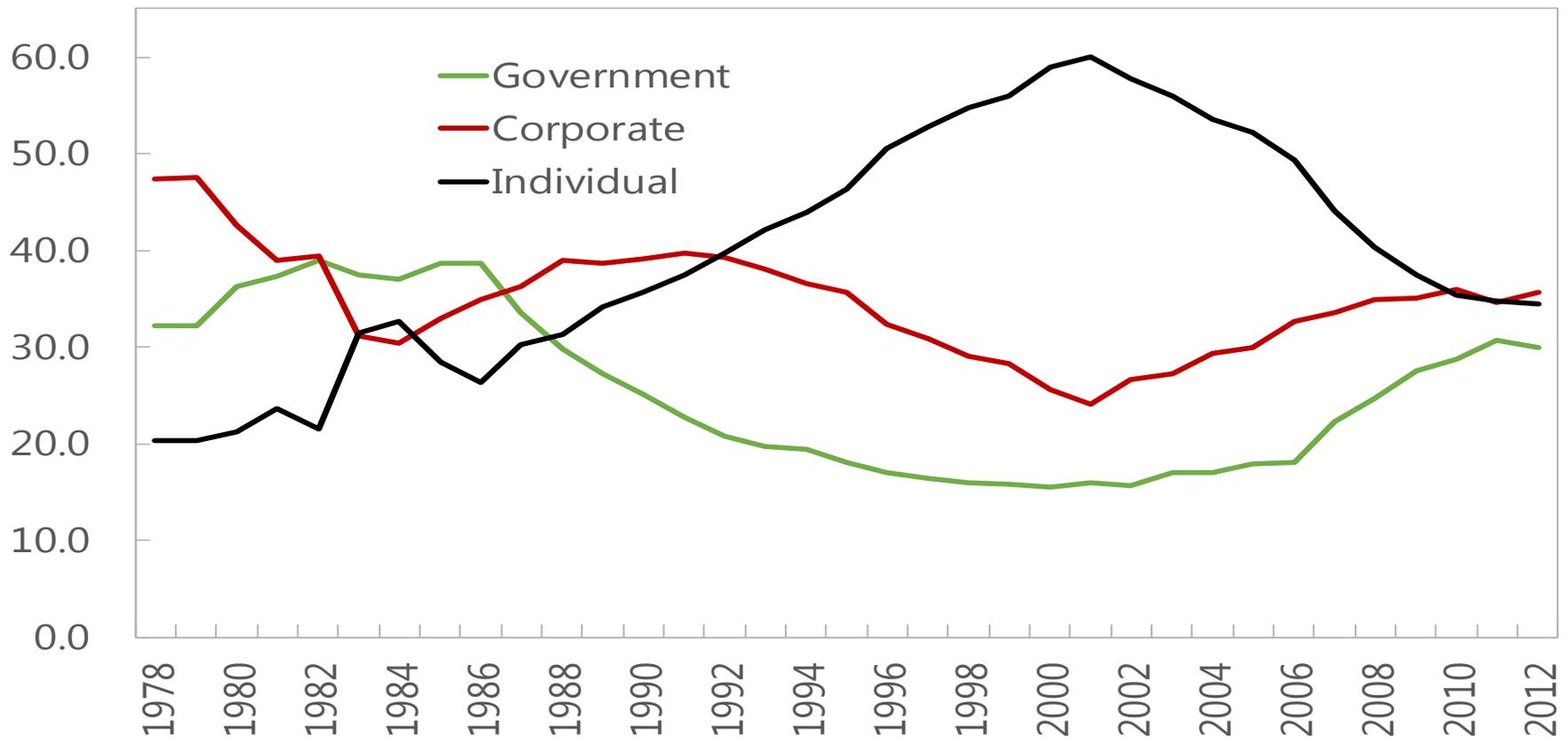
Sources: Following Curtis and others (2017), CEIC, staff estimates.

Household saving and social safety net

- Transition in the 80s and 90s from a central planned system to market economy has led to dismantle of social safety net:
 - Break of the “ iron rice bowl”, no more job security with large SOE layoffs (He et al. 2017).
 - Individual bears increasing share of healthcare and education expenditure
 - Housing reform has eliminated subsidized housing for employees provided by SOEs.

Historical health care cost allocation

Share in total health expenditure
(in percent)



Sources: China Health Statistics Yearbook.

Empirical estimation

- Regression at prefecture level
(287 prefectural-level municipalities, data available since 2013 for rural households)
- Regression at provincial level
(31 provinces, data available from 1995, with structural break in 2013)

Pension spending most effective for urban households

Table 1. Urban Households: Consumption and Government Spending, Prefecture Level Cross-Sectional Analysis

	2013		2014	
	(1)	(2)	(1)	(2)
Disposable Income	0.94	0.93	0.99	1.00
(Standard error)	(0.04)	(0.04)	(0.05)	(0.04)
[P-val]	[0.00]	[0.00]	[0.00]	[0.00]
Gov. Social Security Spending	0.07	0.06	0.08	0.08
(Standard error)	(0.02)	(0.02)	(0.02)	(0.02)
[P-val]	[0.00]	[0.00]	[0.00]	[0.00]
Gov. Health Spending	0.01	...	-0.07	...
(Standard error)	(0.04)	...	(0.06)	...
[P-val]	[0.85]	...	[0.27]	...
Gov. Education Spending	-0.02	...	0.03	...
(Standard error)	(0.04)	...	(0.05)	...
[P-val]	[0.52]	...	[0.50]	...
Constant	0.21	0.34	0.0	-0.38
R-squared	0.76	0.77	0.87	0.86
Jarque-Bera test of normality	0.44	0.26	2.65	2.72
[P-val]	[0.80]	[0.88]	[0.26]	[0.26]
# Obs.	217	217	103	121
Sources: CEIC database				

Note: All variables are in logs. The dependent variable is household expenditure per capita, and government

spending variables are expressed per capita. The 2013 sample excludes 6 outliers, while the 2014 sample excludes 2 outliers.

Healthcare Spending most effective for rural households

Table 2. Rural Households: Consumption and Government Spending, Prefecture Level

	2013		2014	
	(1)	(2)	(1)	(2)
Disposable Income	0.86	0.87	0.75	0.76
(Standard error)	(0.05)	(0.03)	(0.04)	(0.04)
[P-val]	[0.00]	[0.00]	[0.00]	[0.00]
Gov. Social Security Spending	-0.01	...	0.08	0.08
(Standard error)	(0.04)	...	(0.03)	(0.03)
[P-val]	[0.87]	...	[0.01]	[0.01]
Gov. Health Spending	0.20	0.11	0.18	0.19
(Standard error)	(0.08)	(0.04)	(0.06)	(0.05)
[P-val]	[0.01]	[0.00]	[0.00]	[0.00]
Gov. Education Spending	0.00	...	0.02	...
(Standard error)	(0.06)	...	(0.03)	...
[P-val]	[0.95]	...	[0.60]	...
Constant	1.13	0.97	2.15	2.09
R-squared	0.80	0.83	0.86	0.86
Jarque-Bera test of normality	1.26	0.17	0.99	0.94
[P-val]	0.53	0.91	0.61	0.62
# Obs.	118	167	104	104

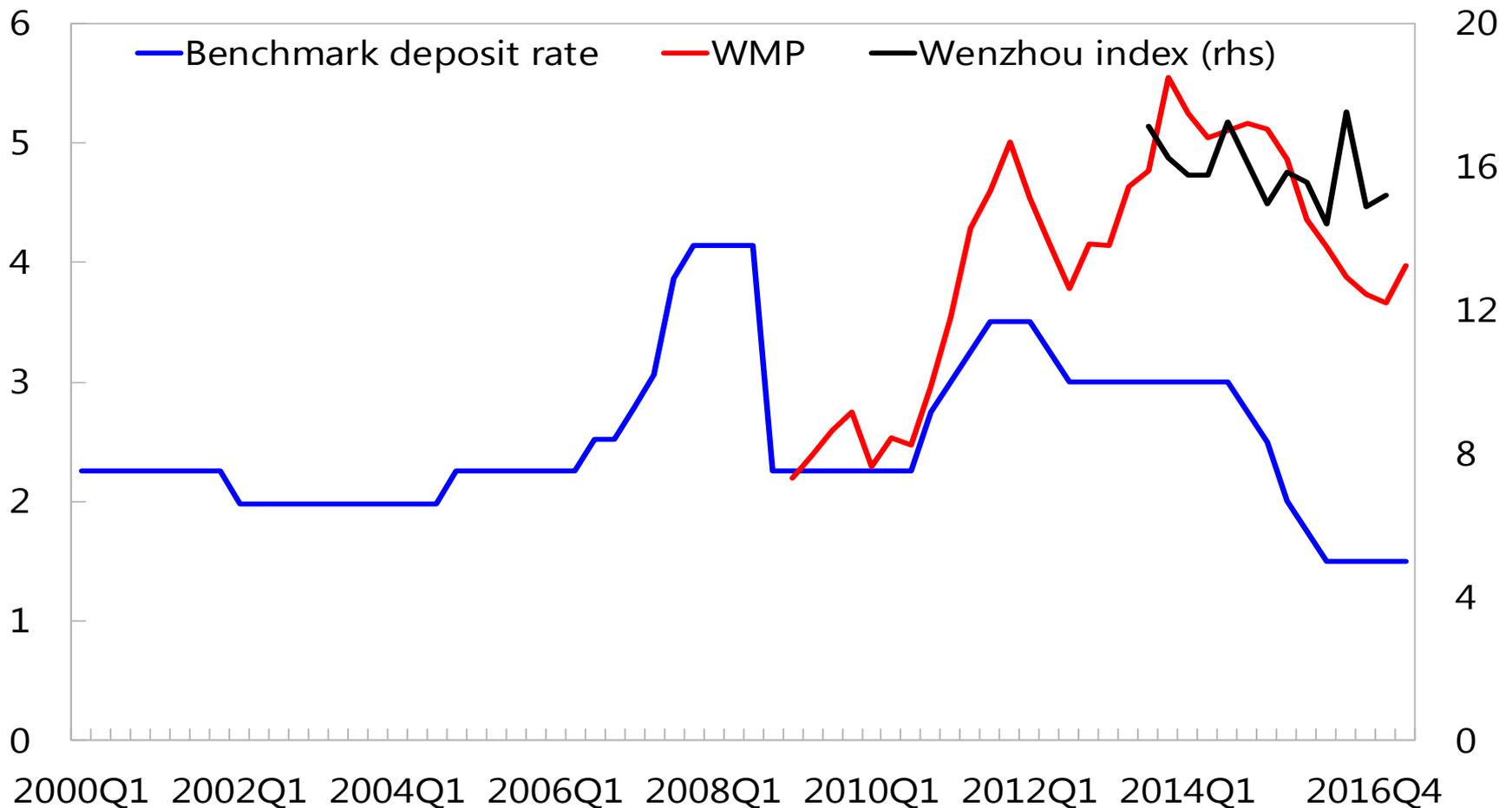
Sources: CEIC database

Note: All variables are in logs. The dependent variable is household expenditure per capita, and government spending variables are expressed per capita. 2013 sample excludes 3 outliers; 2014 sample excludes 5 outliers

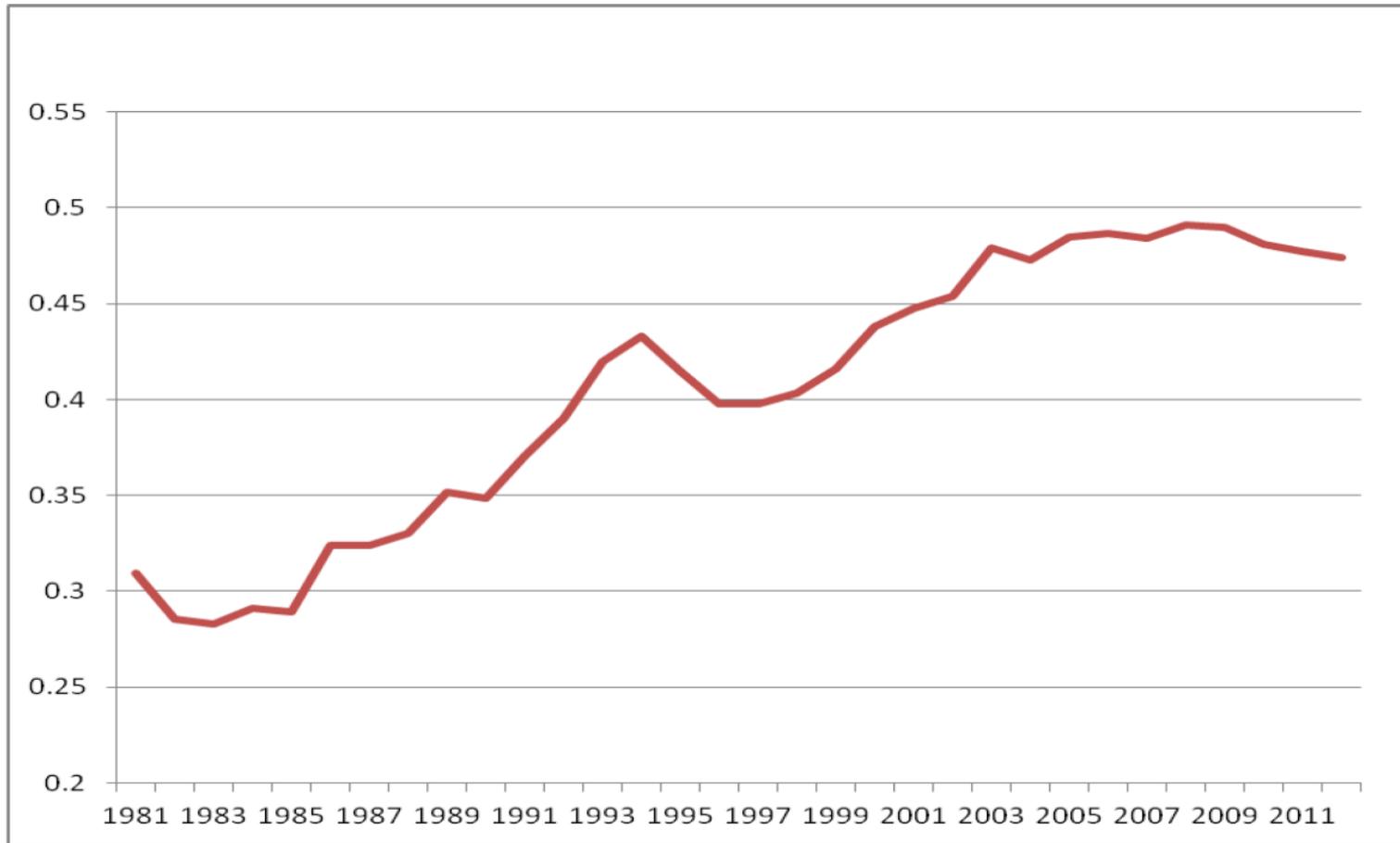
Financial repression less relevant with interest rate liberalization.

Interest Rates

(In percent, period average; 1 year)



Rising income inequality in China

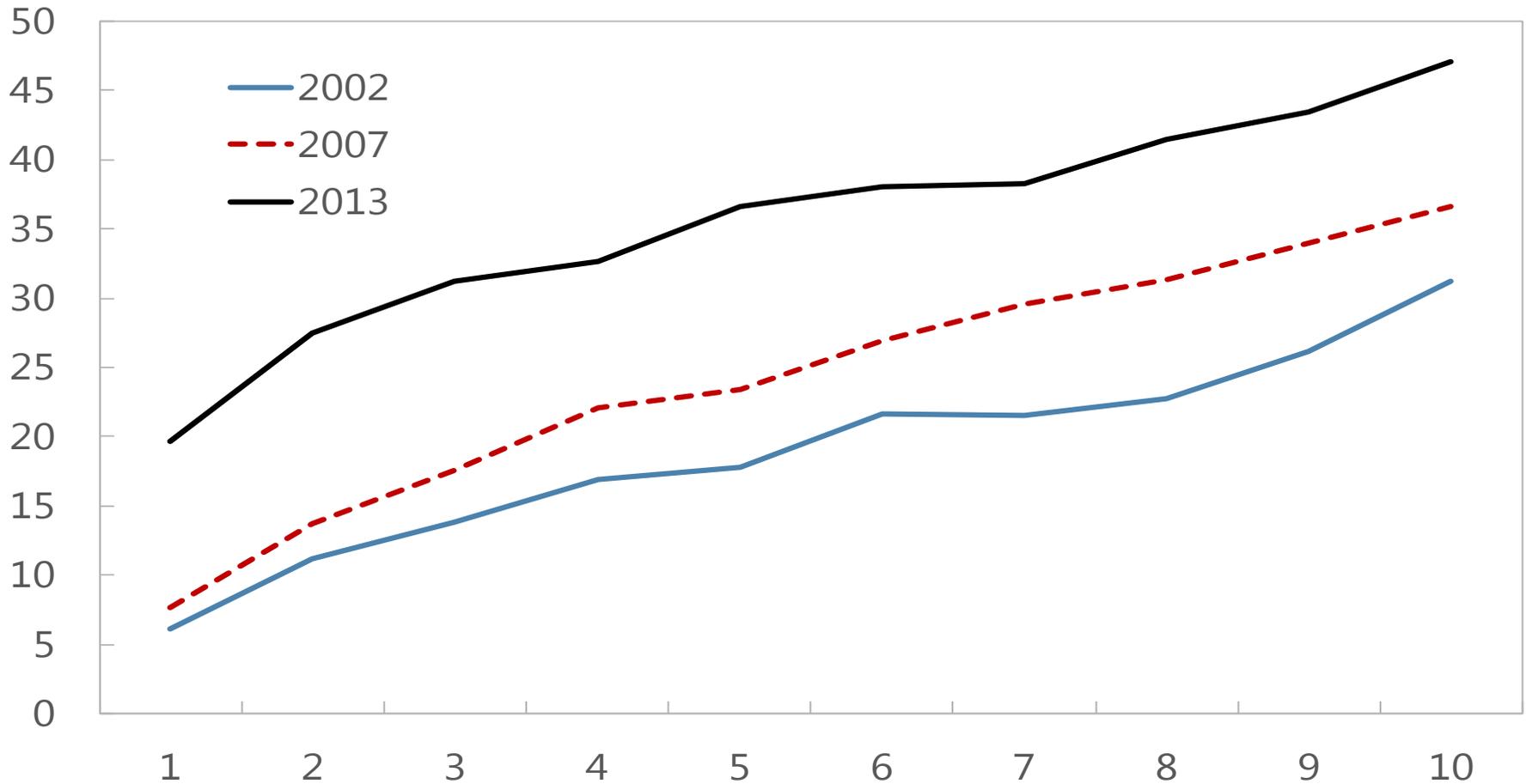


Sources: Li (2013)

income inequality associated with saving inequality

Urban Household Saving Rate by Income Percentile

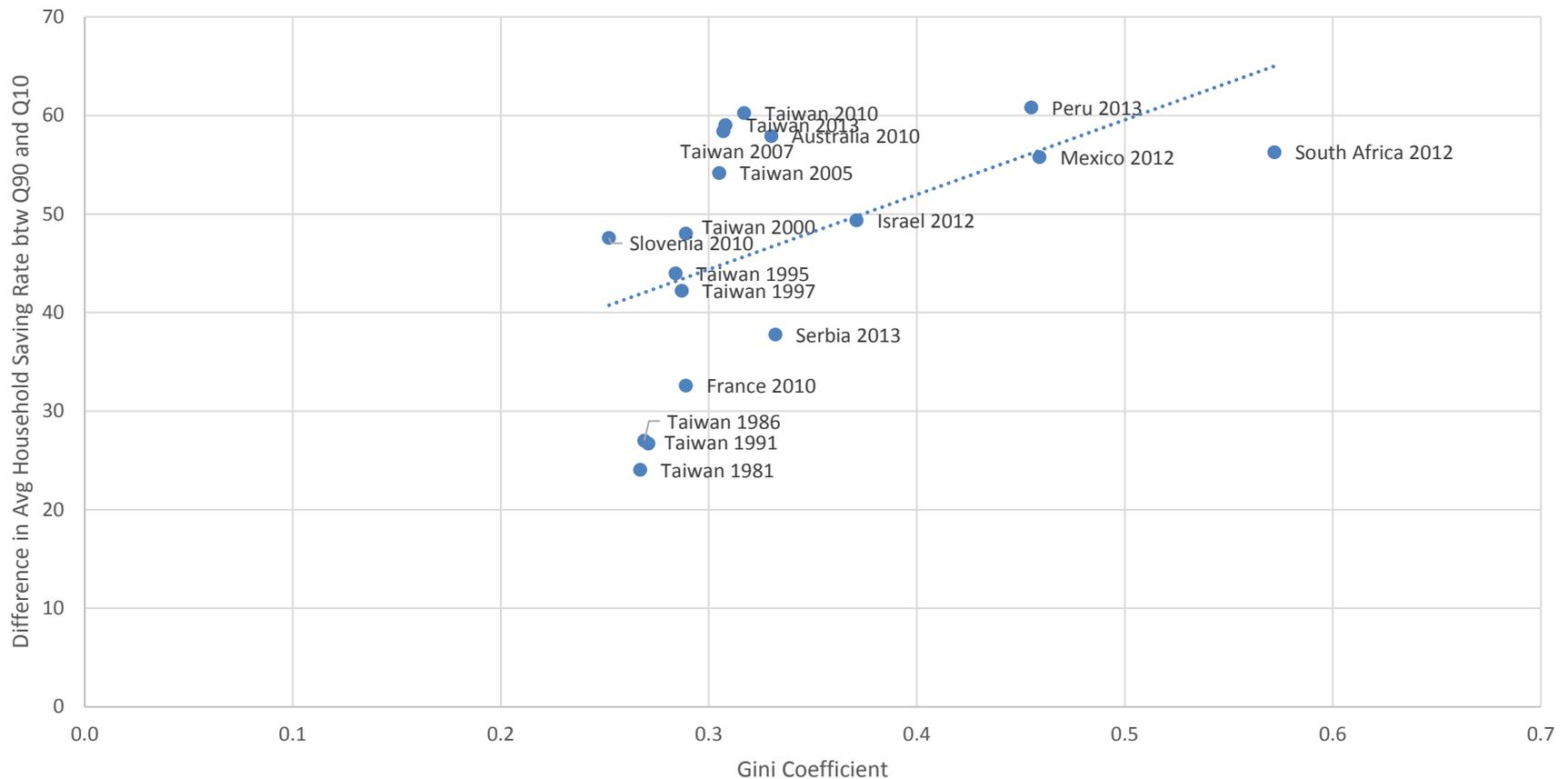
(saving in percent of disposable income)



Sources: CHIP.

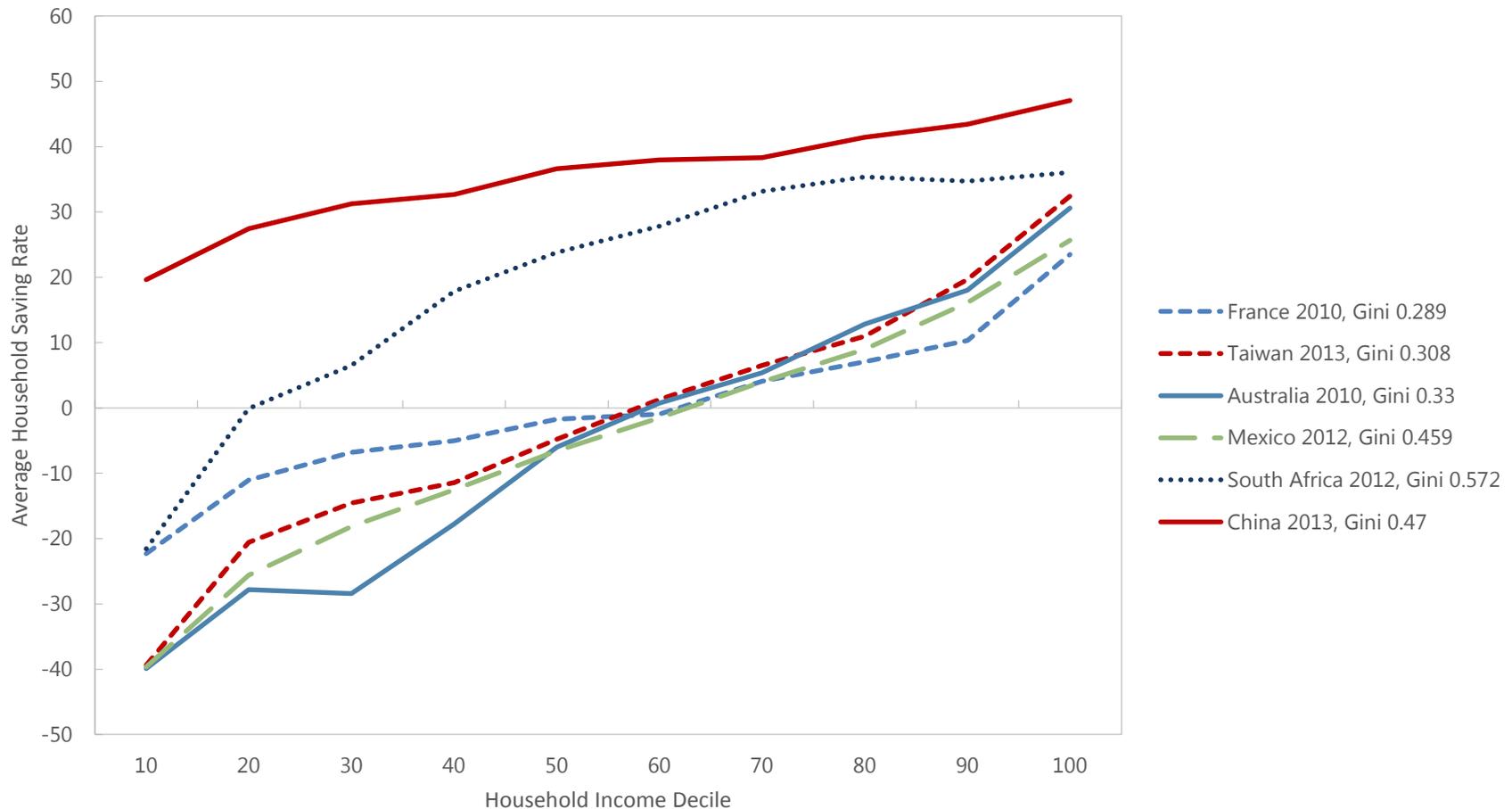
Higher Gini associated with steeper saving curve

Gini Coefficient VS Average Household Saving Rate Difference btw P90 and P10



Chinese save more at any income decile, but larger gap at the bottom

Average Household Saving Rate by Income Decile
(in Percent)

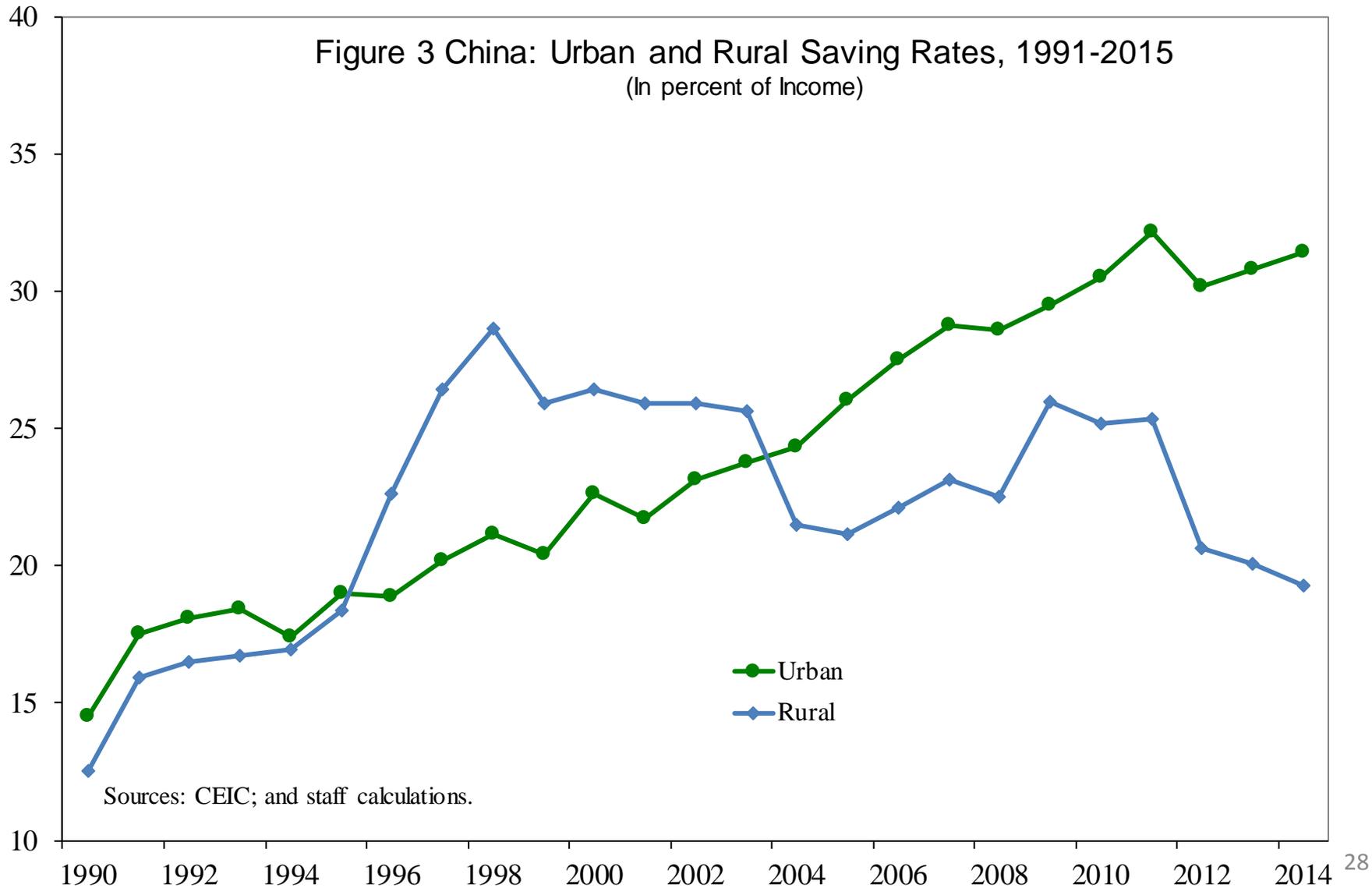


Sources: Luxembourg Income Studies (LIS) for other countries. China 2013 from CHIP.

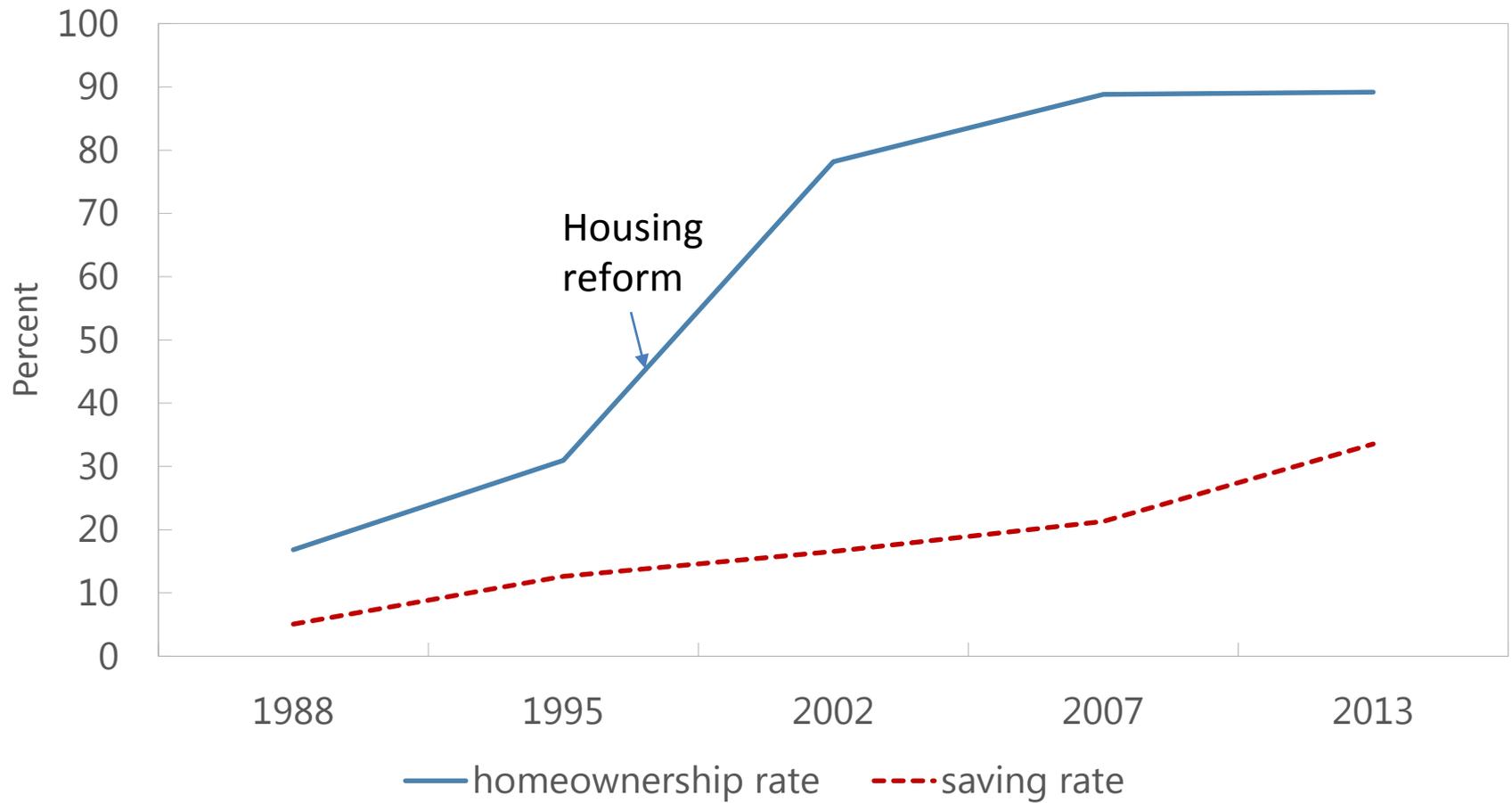
Household saving and public transfer

- Negative saving rate at bottom income percentiles reflects government transfer to poor households
- Poor in China also save high, reflecting the possible lack of transfer and social safety net for poor
- The introduction of health care (New Rural Cooperative Medical Scheme, NRCMS, 2003) and pension system (New Rural Social Pension Scheme, NRSPS, 2009) in rural area could be the driving force behind the declining HH saving rate in rural China, in a sharp contrast to urban China

Household saving rate: rural vs. urban

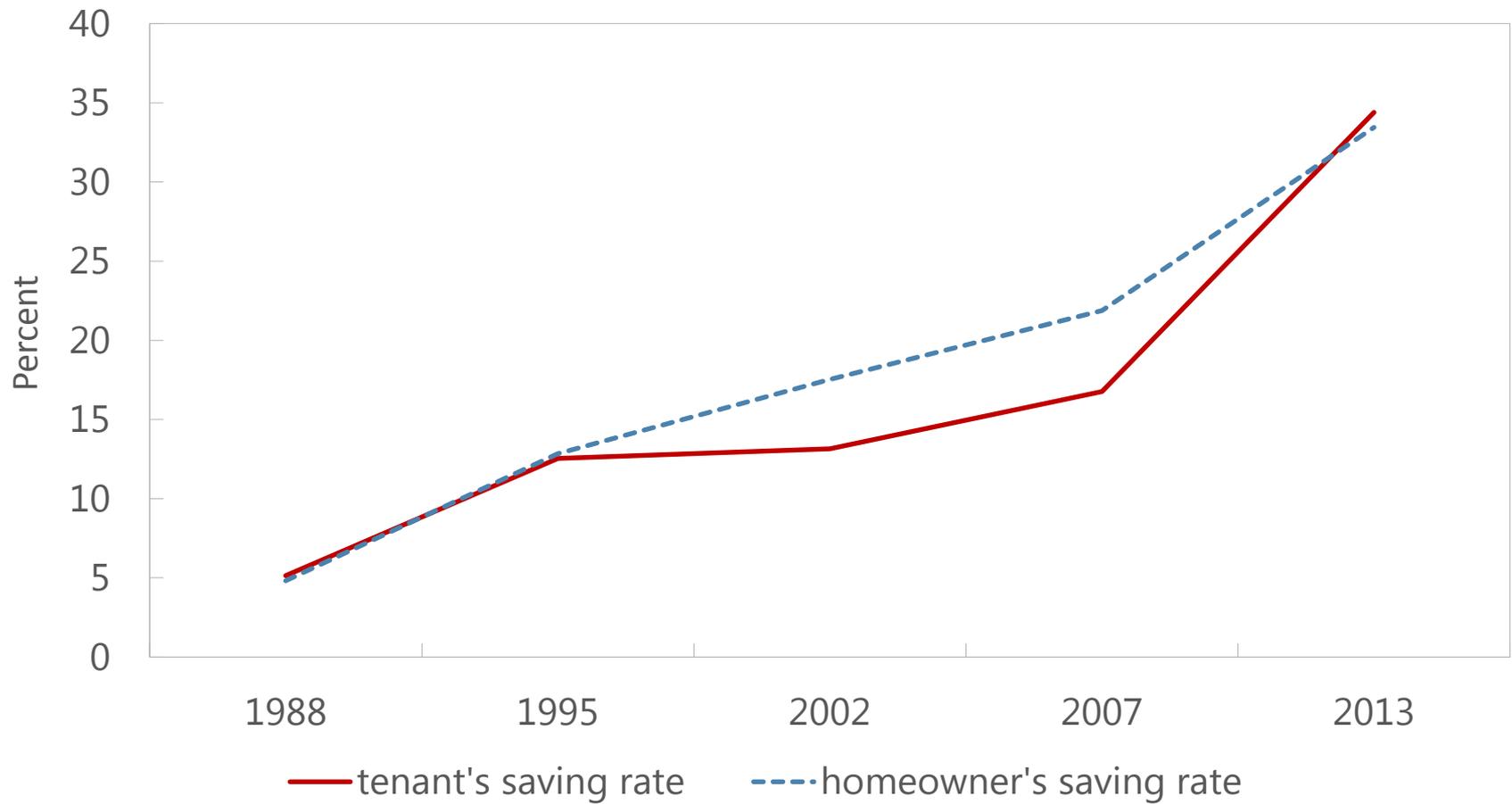


Household saving and homeownership



Sources: 1988, 1995 UHS; 2002, 07, 13 CHIP

Household saving and homeownership



Sources: 1988, 1995 UHS; 2002, 07, 13 CHIP

Household saving, homeownership, and housing reform

- DiD regression to estimate impact of housing reform (late 1990s-early 2000s) on HH saving rate
- Explanatory variables: homeownership dummy and other controls (HH head's age, sex, edu, occupation, income, HH size,...)
- Data: Urban household survey (UHS): 1988, 1995; CHIP: 2002, 2007, 2013.

Regression results

Year	Homeownership	Obs	P_value
1988	-0.0010	12852	0.886
1995	0.0060	5906	0.511
2002	0.0283	6835	0.009
2007	0.0319	9998	0.019
2013	-0.0299	6255	0.104

Household saving, home ownership, and housing reform

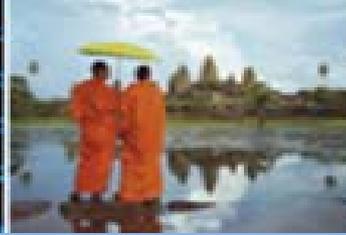
- Home ownership has a significant impact on saving rate after the housing reform.
- The transmission channels include: down payment effect, mortgage effect and wealth effect
- Further controlling mortgage dummy (WIP) and interaction term shows some evidence that paying mortgage induced HH to save more
- Overall, given homeownership in China has plateaued, housing factor not likely a significant driver of household saving going forward.



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CORPORATE SAVING

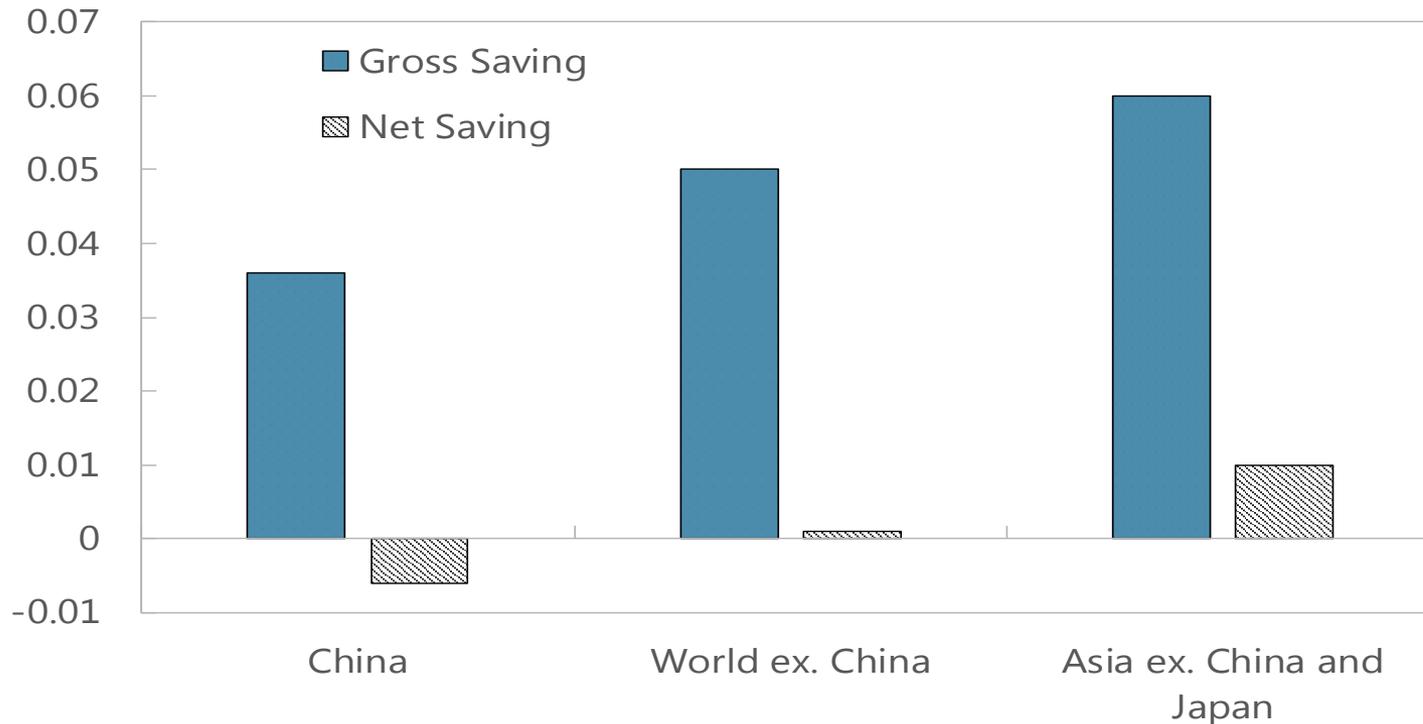
Corporate savings

- Main conclusions:
 - At the firm level, Chinese firms do not have significantly higher savings than the global average
 - SOEs tend to save less in gross terms but more in net terms, reflecting their lower profits and lower capex.
 - Exchange rate has a significant impact on corporate saving for both SOE and private firms

Firm Level Summary Statistics

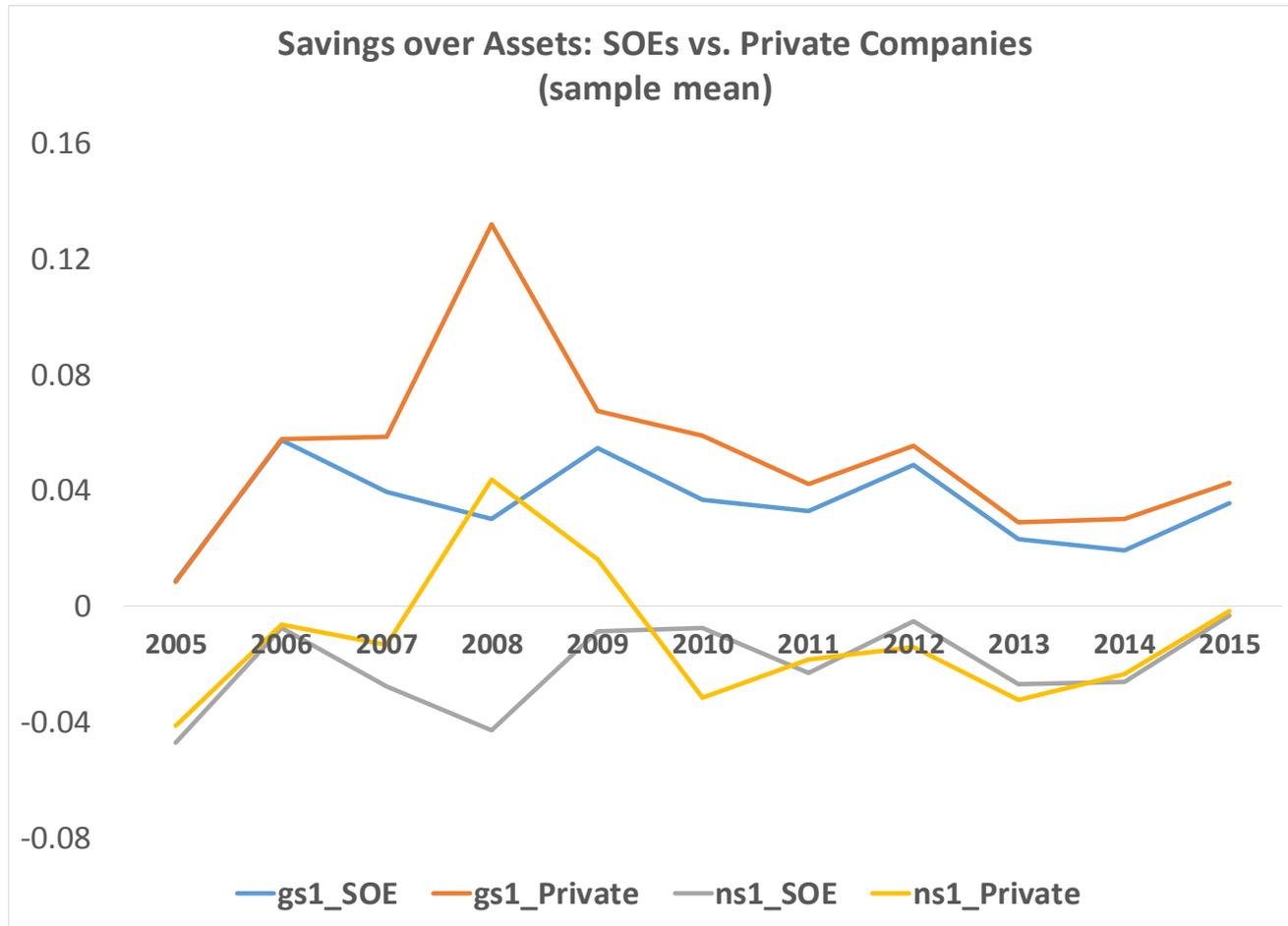
Corporate Saving Rate

(in percent of assets)



Sources: Worldscope.

Saving ratios on downward trend after the GFC



Regression Results

- Following Bayoumi et al 2010, firm level regression controlling for size, q ratio, sector, year, exchange rate and lending rate
- SOEs tend to save **less** in gross terms (profits minus dividend)
 - *SOEs make less profits and pay less dividend*
- But SOEs tend to save **more** in net terms (gross saving minus capex)
 - *SOEs spend less on capex*

Regression Results

	Gross saving ratio	Net saving ratio	Profit ratio	Dividend ratio	Capex ratio
Exchange Rate depreciation	0.0965*	0.522***	1.65	-6.47**	-47.6***
Interest rate	0.0086*	0.039***	0.27	-0.47*	-3.48***
SOE dummy	-0.0043***	0.0075***	-0.634***	-0.21**	-1.07***
Size	0.0046***	0.0012	0.55***	0.067	0.47***
Q ratio	0.0079***	0.0058***	1.05***	0.255***	0.31***
Constant	-0.097***	-0.266***	-6.77*	2.32	17.0***
Observations	12,246	12,236	12,252	23,509	23,492
R-squared	0.14	0.076	0.16	0.068	0.095

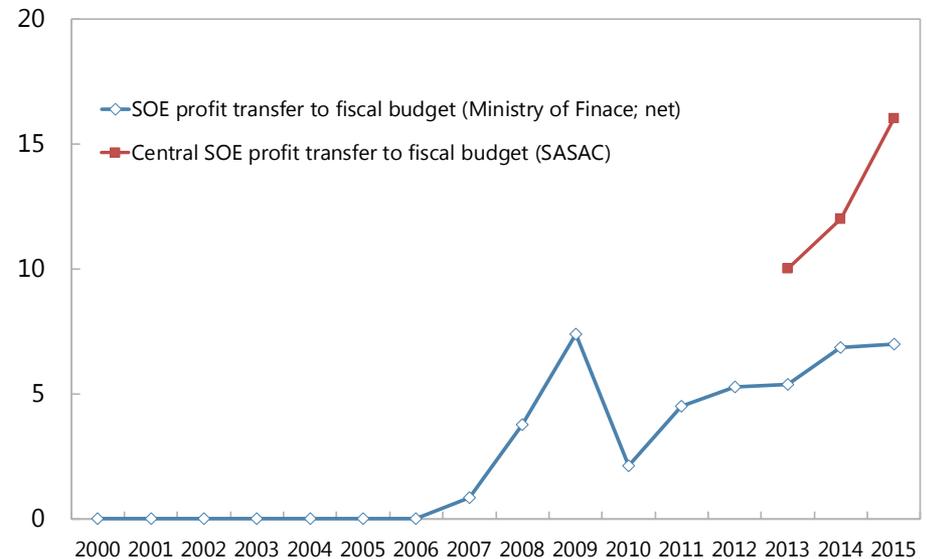
- The interaction terms of exchange rate and tradable sectors, and interest rate and SOEs are not significant.

Policy Issues: SOE dividend

- SOE dividend payment should increase.

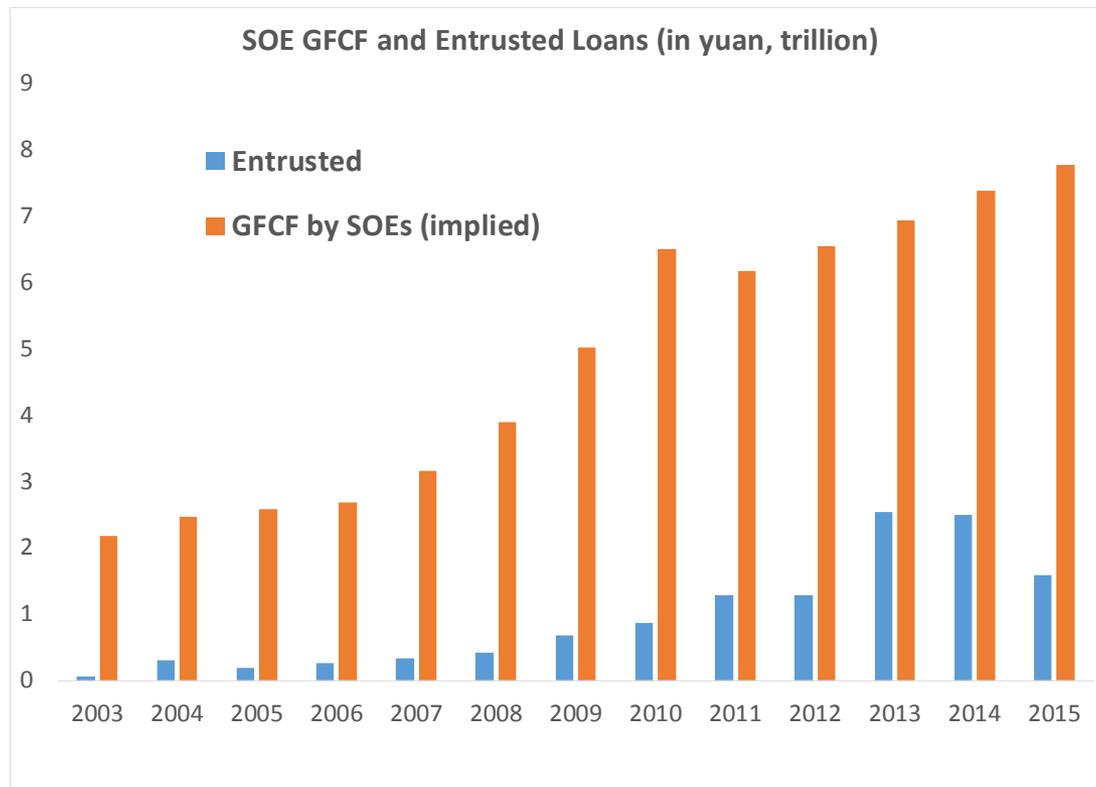
	SOEs	Private Companies
Dividend/ Profit	0.22 (mean)	0.31 (mean)
Observa- tions	7,362	6,802

Transfer of SOE Dividend to Fiscal Budget
(Percent of aggregate SOEs' profit)



Policy Issues: SOE entrusted lending

- Why do SOEs invest less than private firms—the role of entrusted loans?

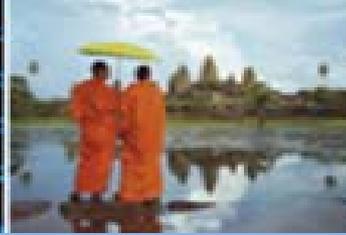




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GOVERNMENT SAVING

Government savings volatile over time...

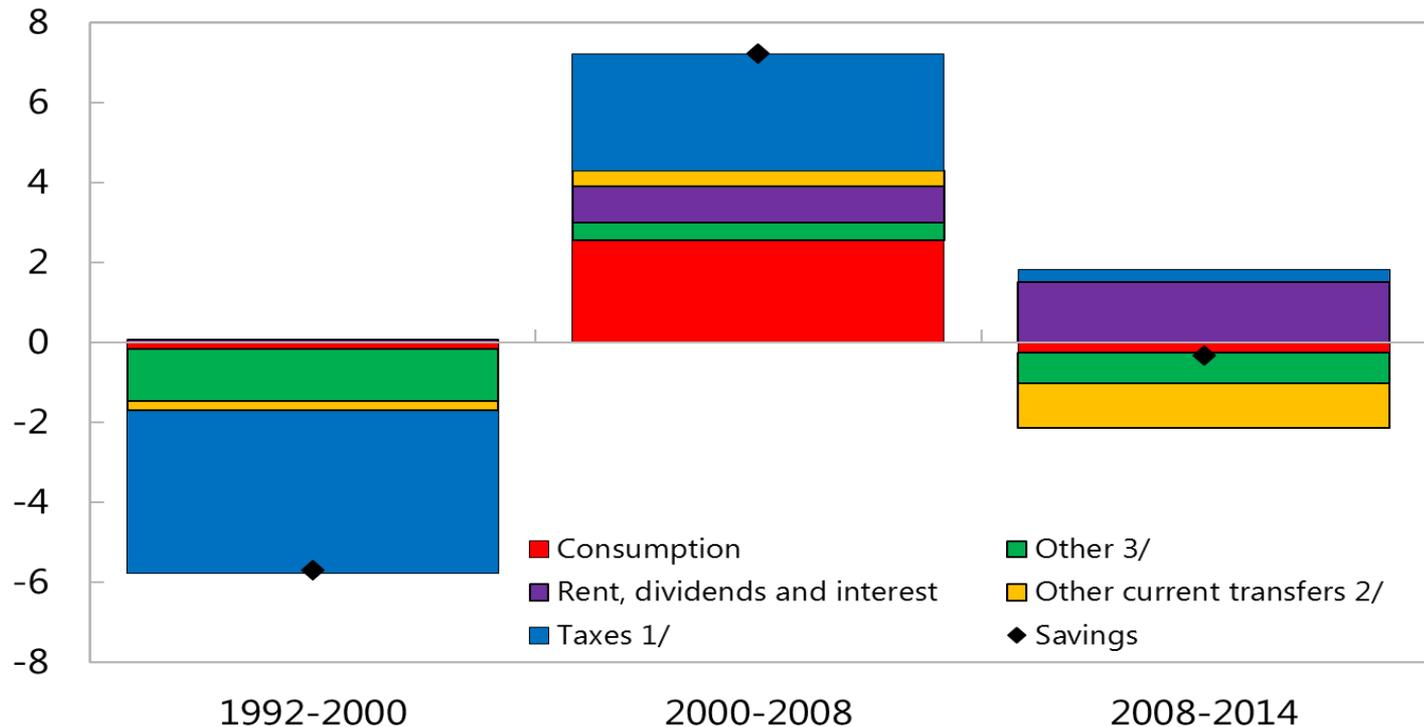


Sources: FFA.

... driven mostly by revenue

Decomposing the changes in government savings

(percent of GDP)



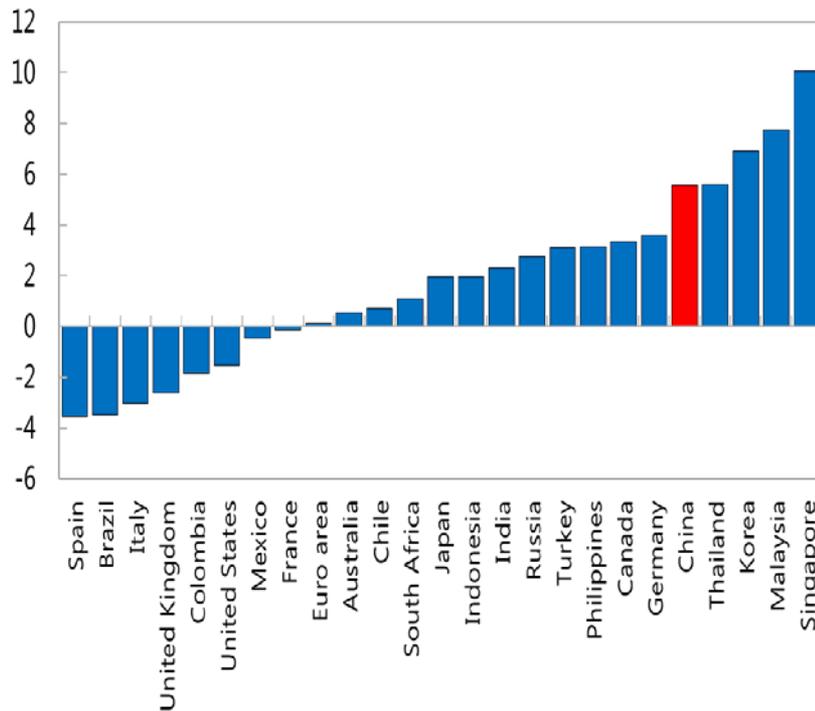
1/ Net taxes on production and current taxes. 2/ Incl. net social security payments and allowances. 3/ Value added and compensation. Sources: Flow of Funds, staff estimates.

high fiscal savings driven by low consumption

Relatively high savings in China...

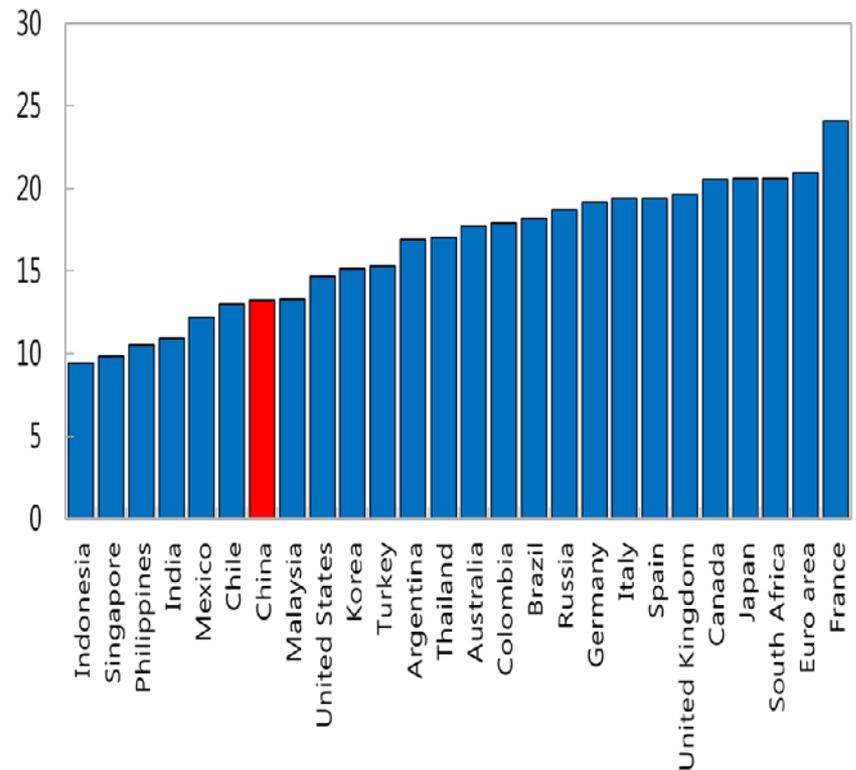
...due to low consumption, not high income

Government gross savings for major economies and other select asian economies in 2014 (percent of GDP)



Sources: WEO.

Government final consumption for major economies and other select Asian economies in 2014 (percent of GDP)

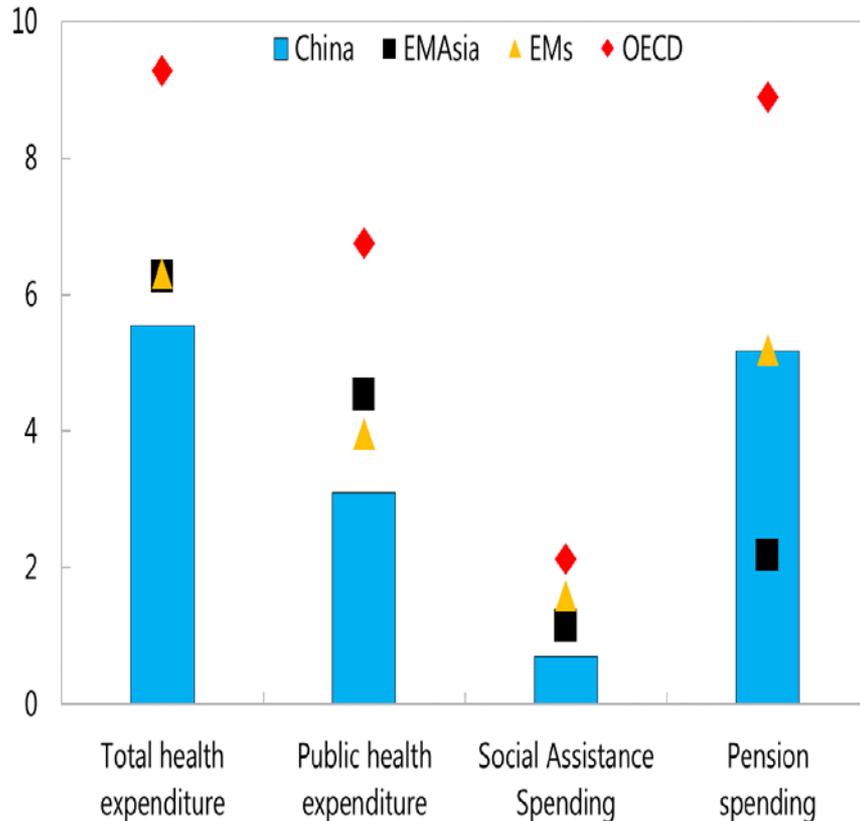


Sources: WEO.

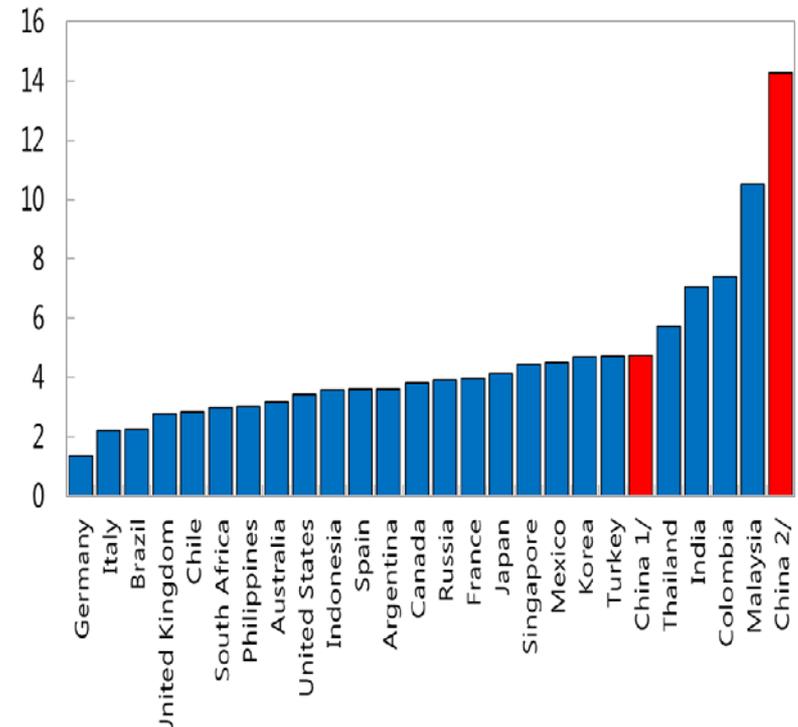
reflecting policy focus on investment and insufficient social spending

China Spends Less On Consumption-enhancing Areas

(In percent of GDP)



Government investment for major economies and other select asian economies in 2013 (percent of GDP)



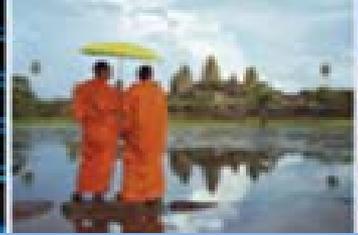
1/ On-budget only. 2/ Also incl. off-budget and investment financed by land sales.
Source: "Estimating Public, Private, and PPP Capital Stocks", IMF board paper, staff.



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THE ROLE OF STATE

High Saving and the role of State

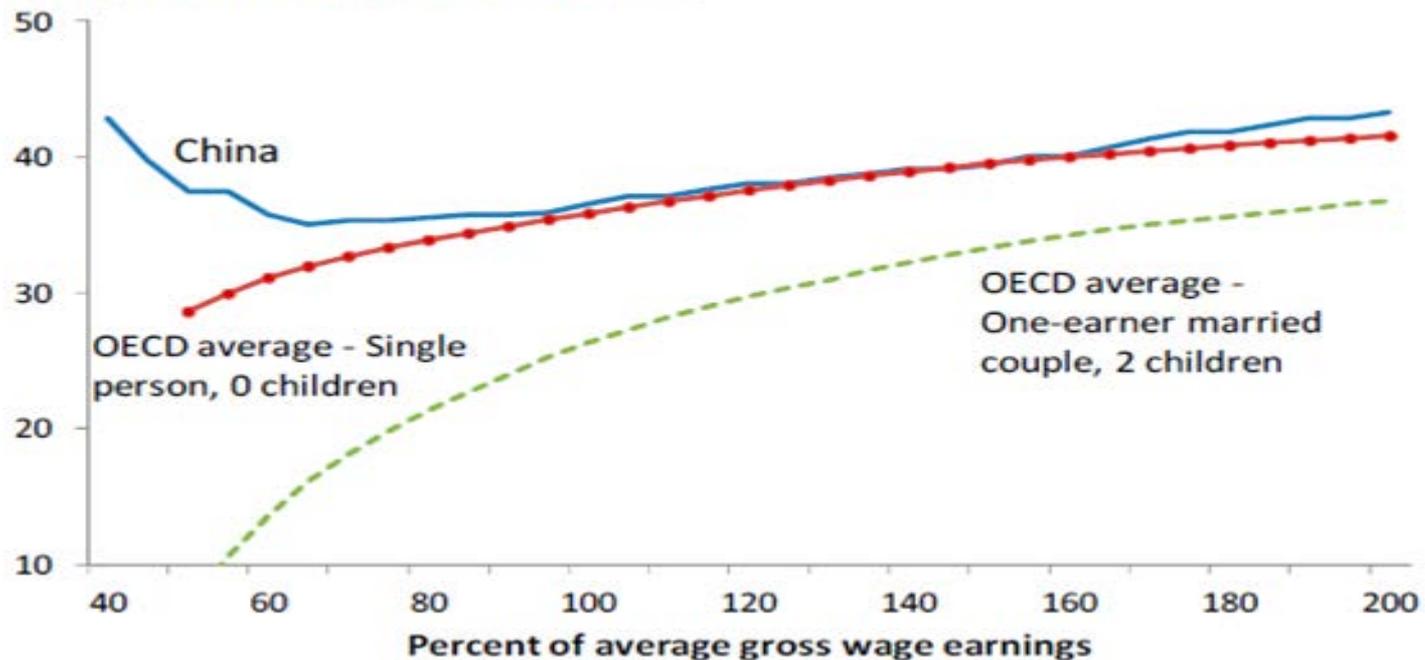
- While increasing saving is often observed in economies where growth take off, policy has played an important role in shaping China's extreme high savings.
- One-child policy implemented in late 70s has drastically reduced fertility rate and raised saving rate.
- The transition in the 90s from a planned economy to market economy has dismantled social safety net, and led to higher precautionary savings of households.
- WTO entry has led to export-oriented growth surge, with significant rise in corporate saving as ER undervalued, and higher government saving from corporate income tax. Household savings also increased with rapid income growth and widening income inequality.

Policy Recommendation

- Fiscal Policy
 - Making income tax more progressive and more family friendly
 - Increasing expenditure on social safety net, including health care, pension, and targeted transfer to poor households.
 - Increasing spending on general public service, e.g. staffing shortage in NBS
 - Increasing public spending on childcare to boost fertility rate
 - [Limit potential burden on households from bank recapitalization]
- Hukou reform to give migrants equal access to education and social safety net
- SOE reform
 - Increasing dividend payment to budget
 - Hardening budget constraint
- Improve access to formal financing of private firms
- Ensure exchange rate in line with fundamental

Make income tax more progressive

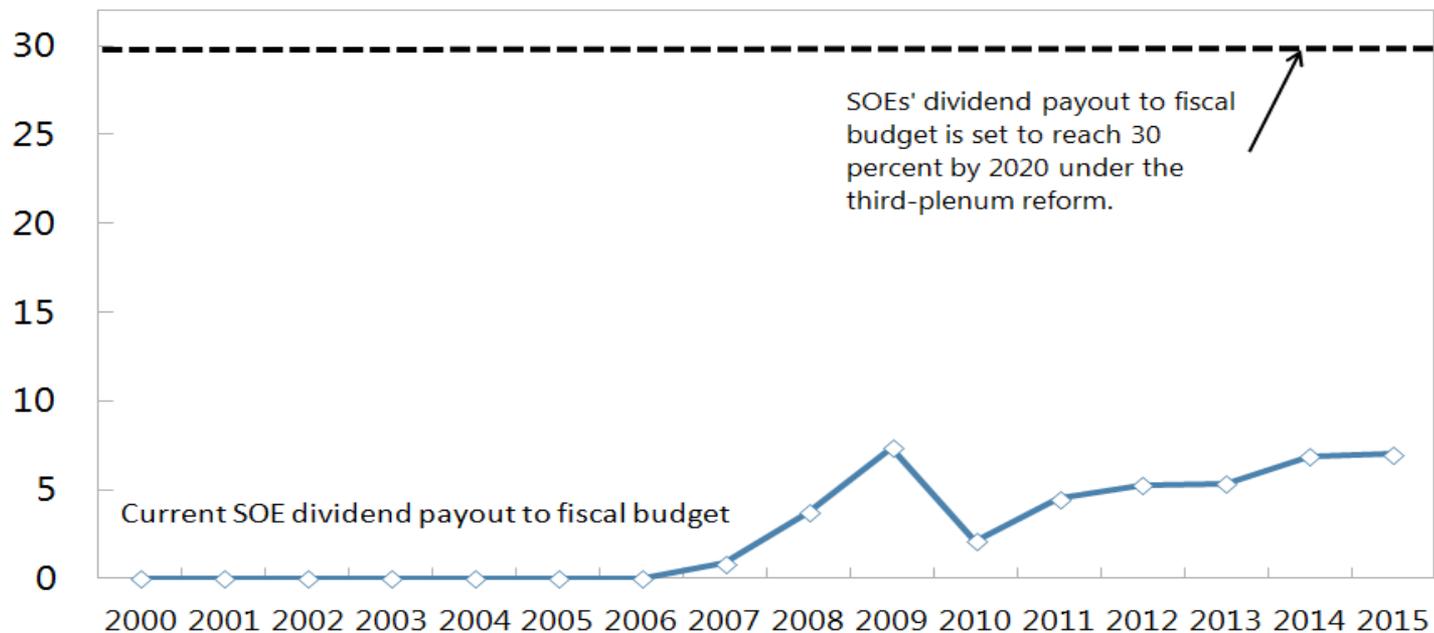
Comparison of Average Tax Wedge by Income Level
(In percent of gross income)



Increasing SOE dividend payment to government

SOE Dividend Payout to Fiscal Budget

(in percent of aggregate SOEs' profit)



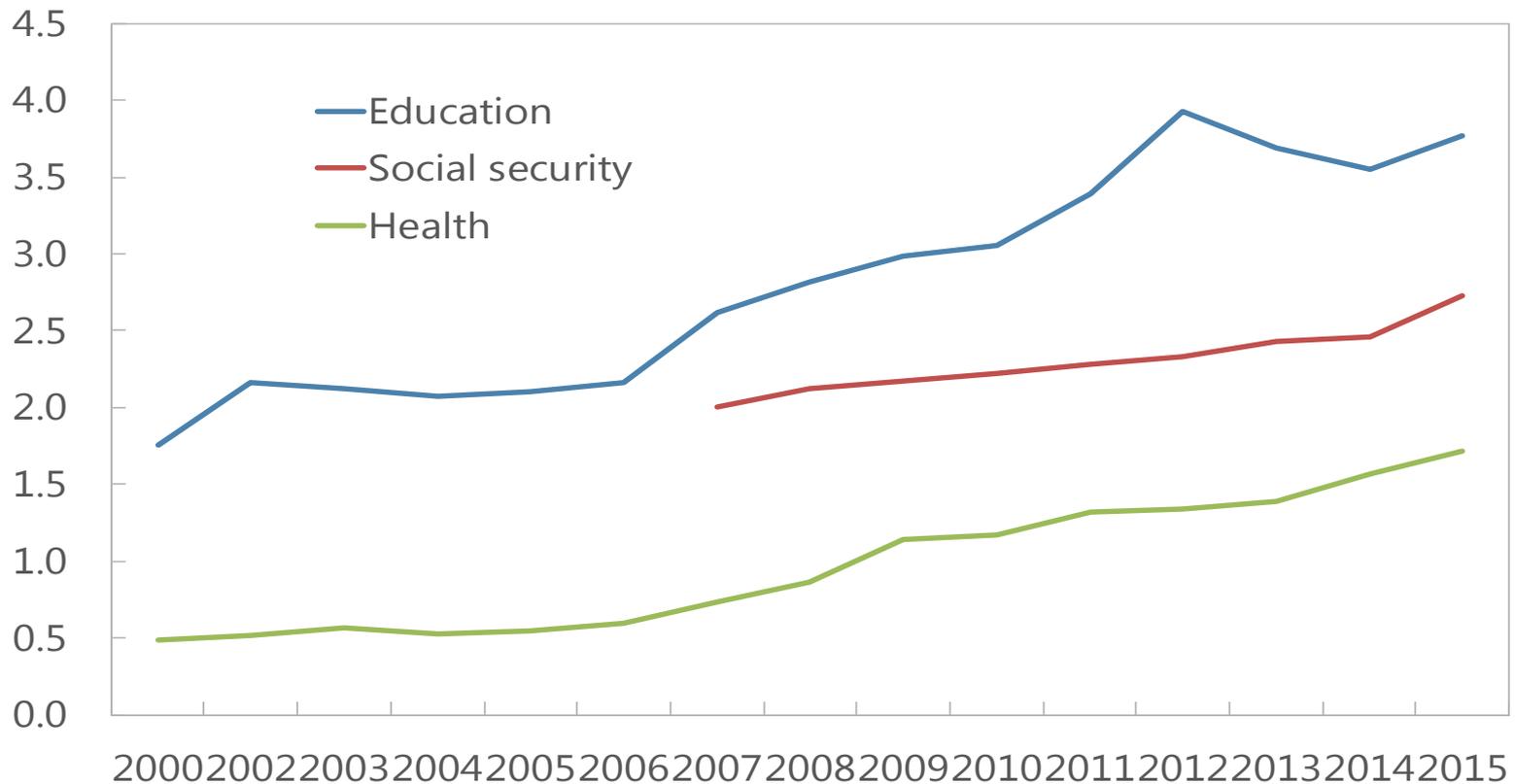
Sources: MOF, Unirule Institute of Economics, and staff estimates.

1/ SOEs were required to contribute their profits to fiscal budget since 2007. Data for 2007 did not cover all SOEs. The third plenum reform in late 2013 required SOEs to pay out 30 percent of profits to fiscal budget by 2020.

Increasing expenditure on social safety net

Government Spending

(in percent of GDP)



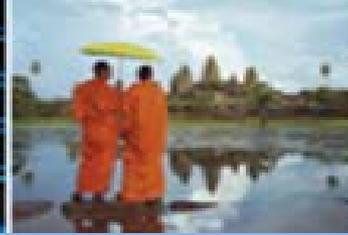
Sources: CEIC and IMF staff estimates.



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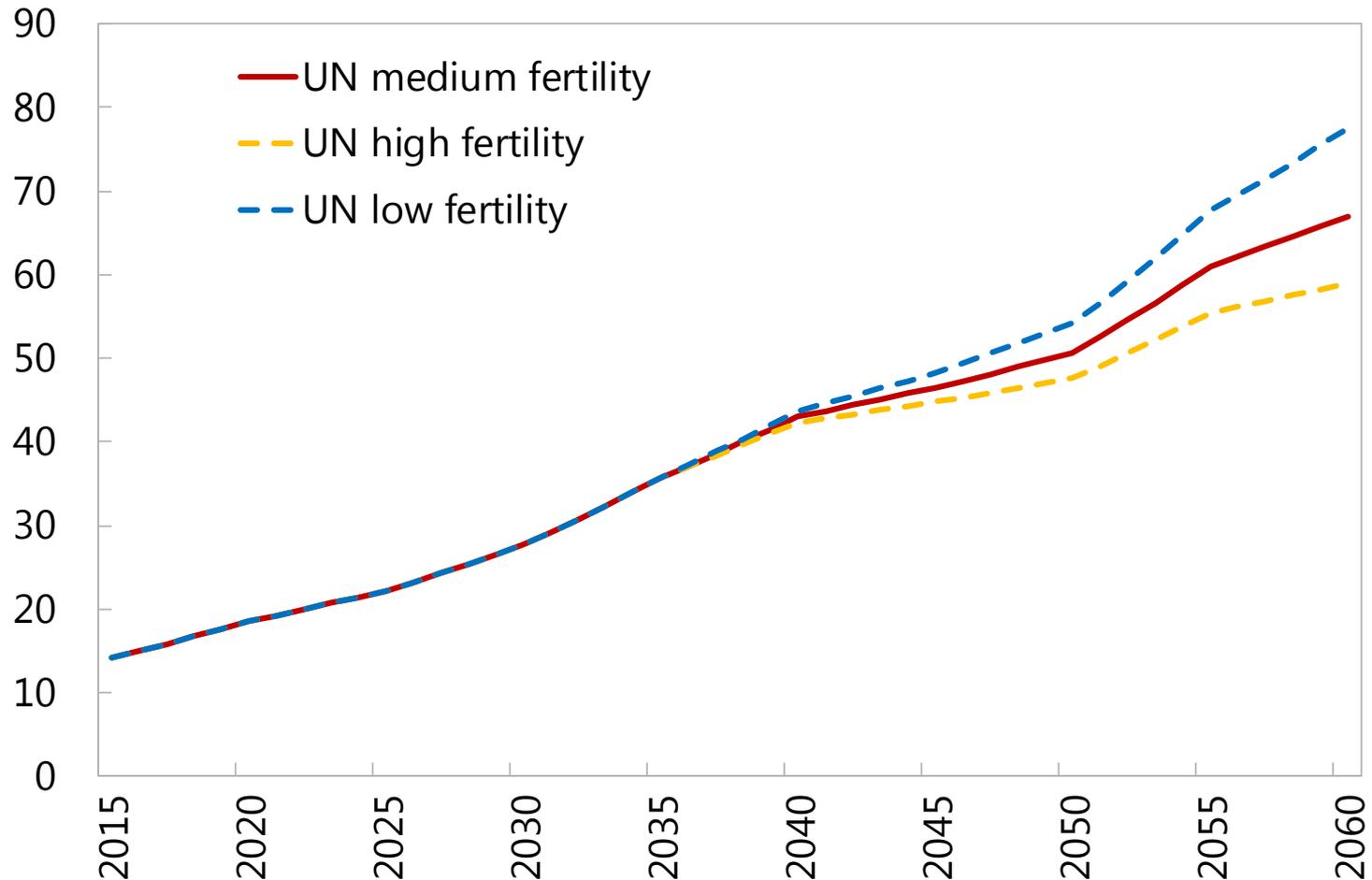


PROSPECT OF SAVING RATE

Ageing to accelerate

Old age dependency ratio across UN scenarios

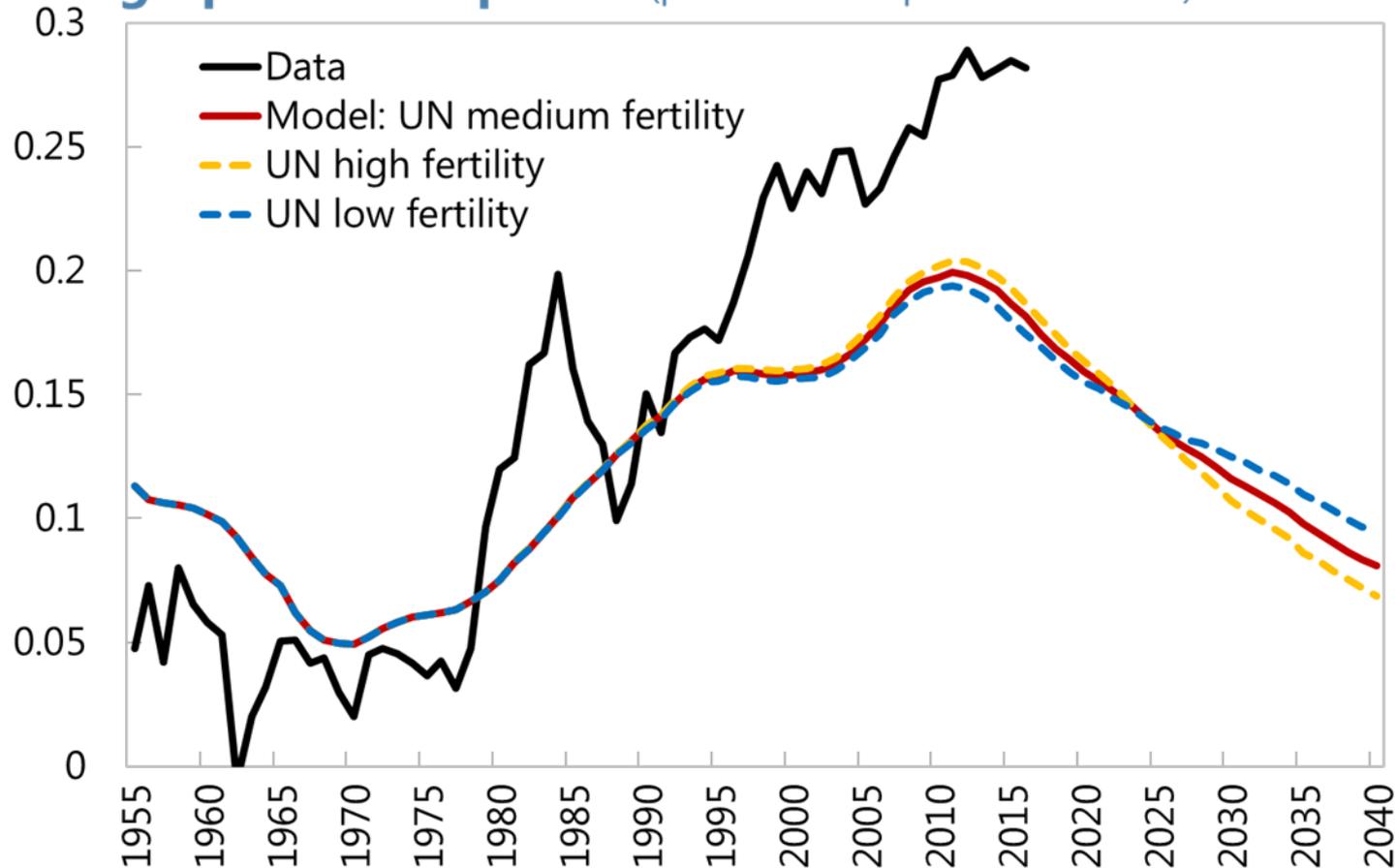
(65+ over 20-64 population, percent)



Sources: UN, staff estimates.

Saving rate to fall with rapid-ageing

Household savings rate: Projection sensitivity to demographic assumptions (percent of disposable income)

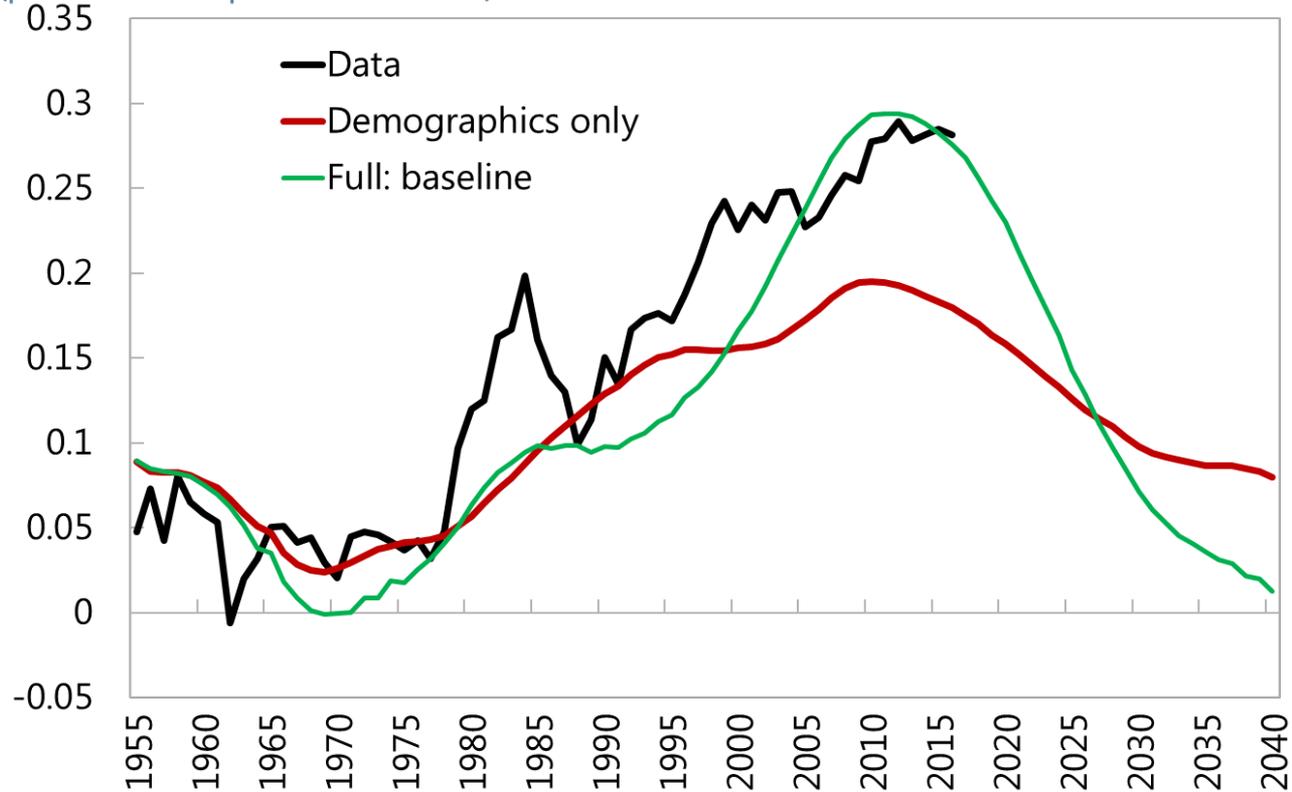


Sources: CEIC, staff estimates.

Saving to fall further with lower wage growth and interest rate

Household savings rate: Projections

(percent of disposable income)

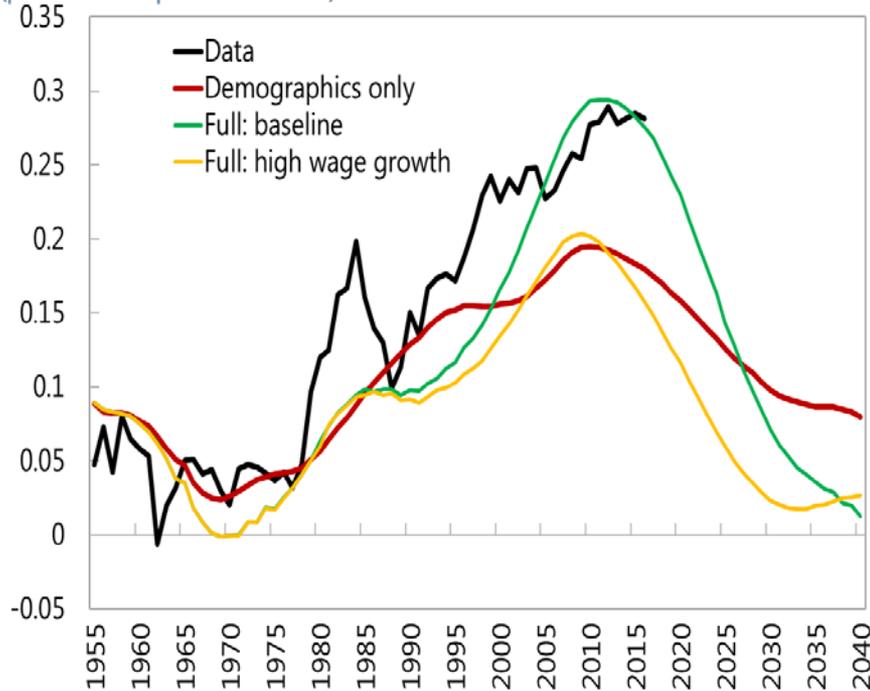


Sources: CEIC, staff estimates.

But results sensitive to assumptions

Household savings rate: Projections

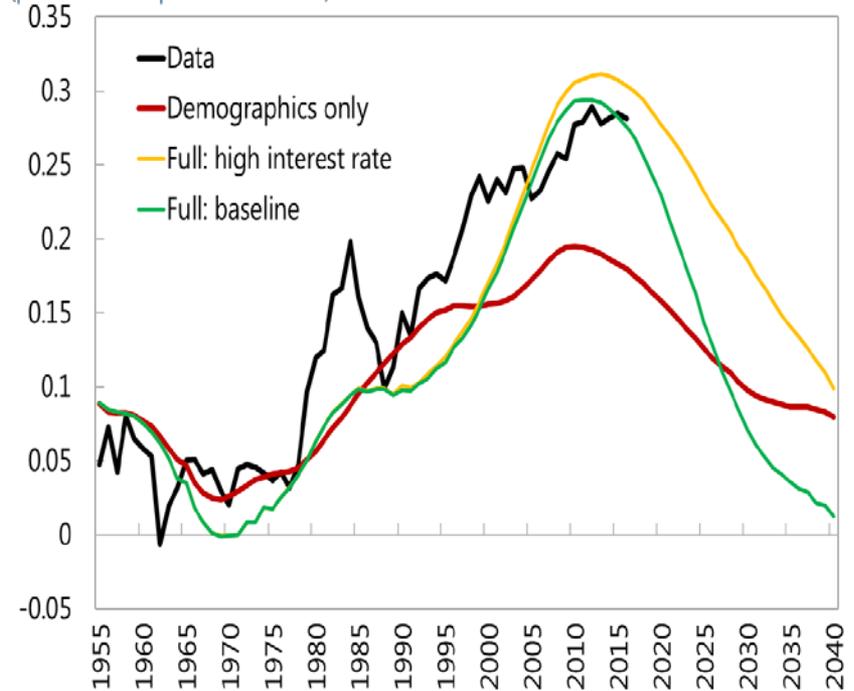
(percent of disposable income)



Sources: CEIC, staff estimates.

Household savings rate: Different interest rate projections

(percent of disposable income)

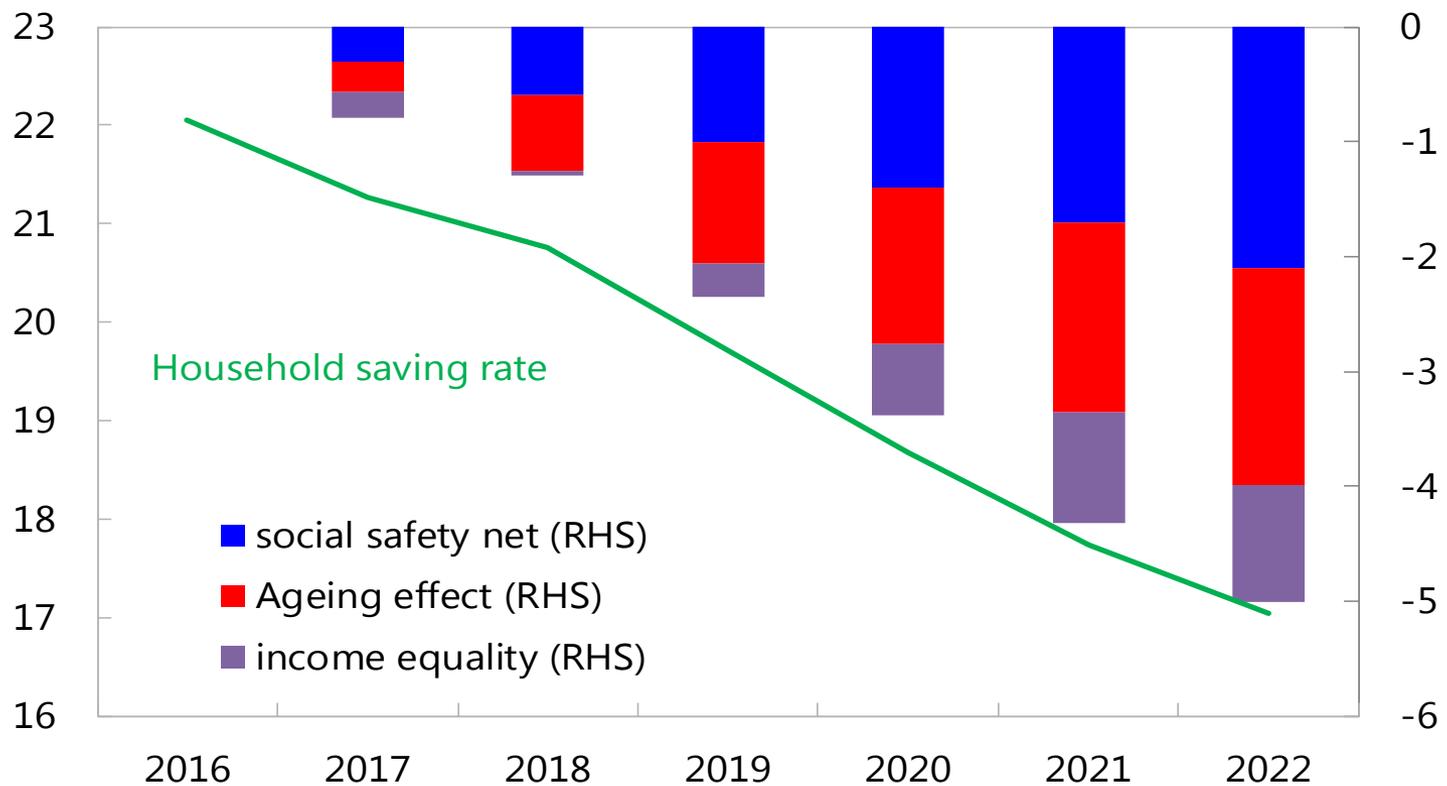


Sources: CEIC, staff estimates.

Higher social spending and lower income inequality also help reduce household saving

Household Saving Rate to Fall -- Proactive

(In percent of GDP)

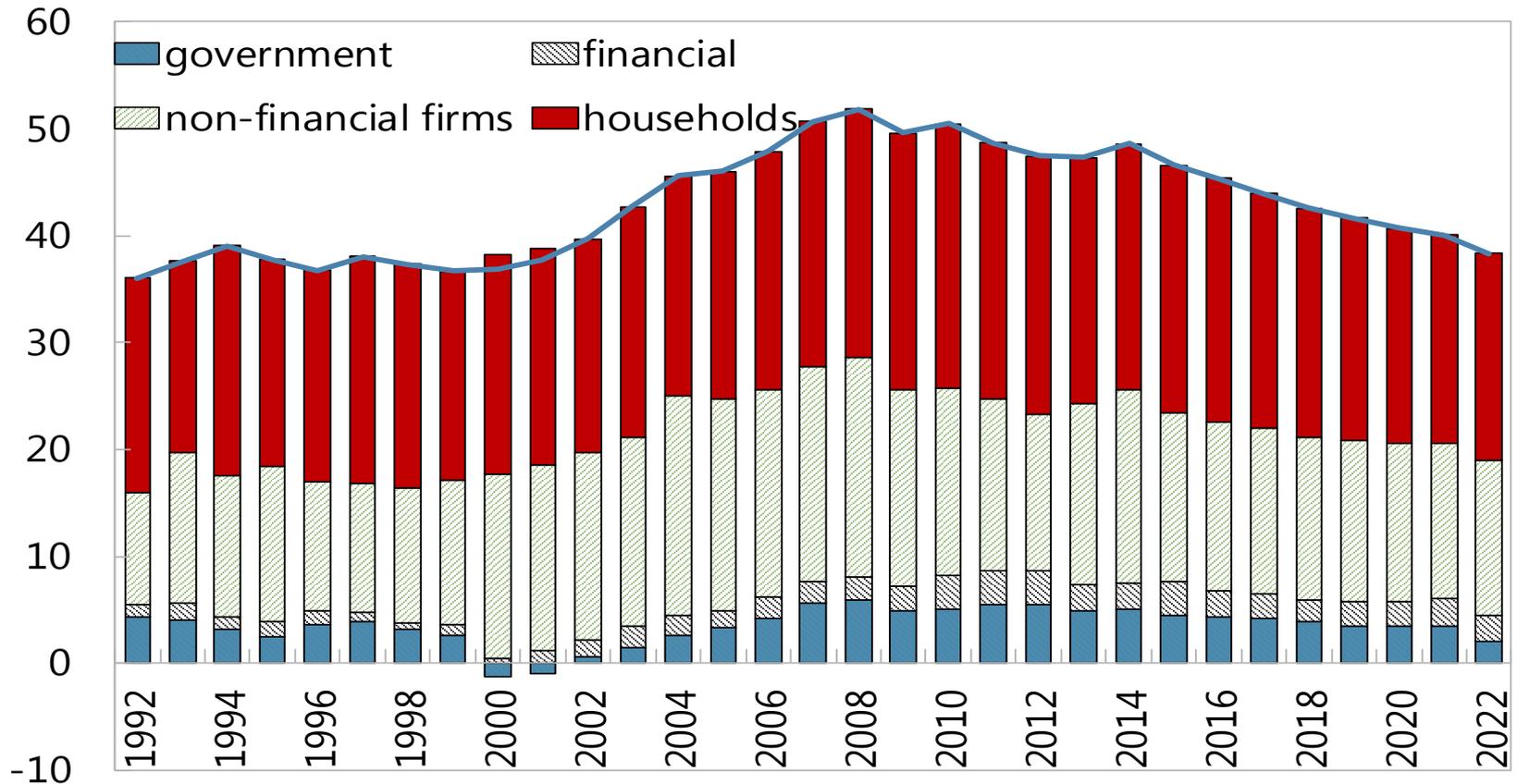


Source: IMF staff estimates and projections.

Government and corporate saving to fall with changing policy and declining capital return

National Saving Rate to Fall

(in percent of GDP)



Sources: Flow of funds, IMF staff estimates and projections.

International experience: Household Savings

Table: Peak of household saving rate

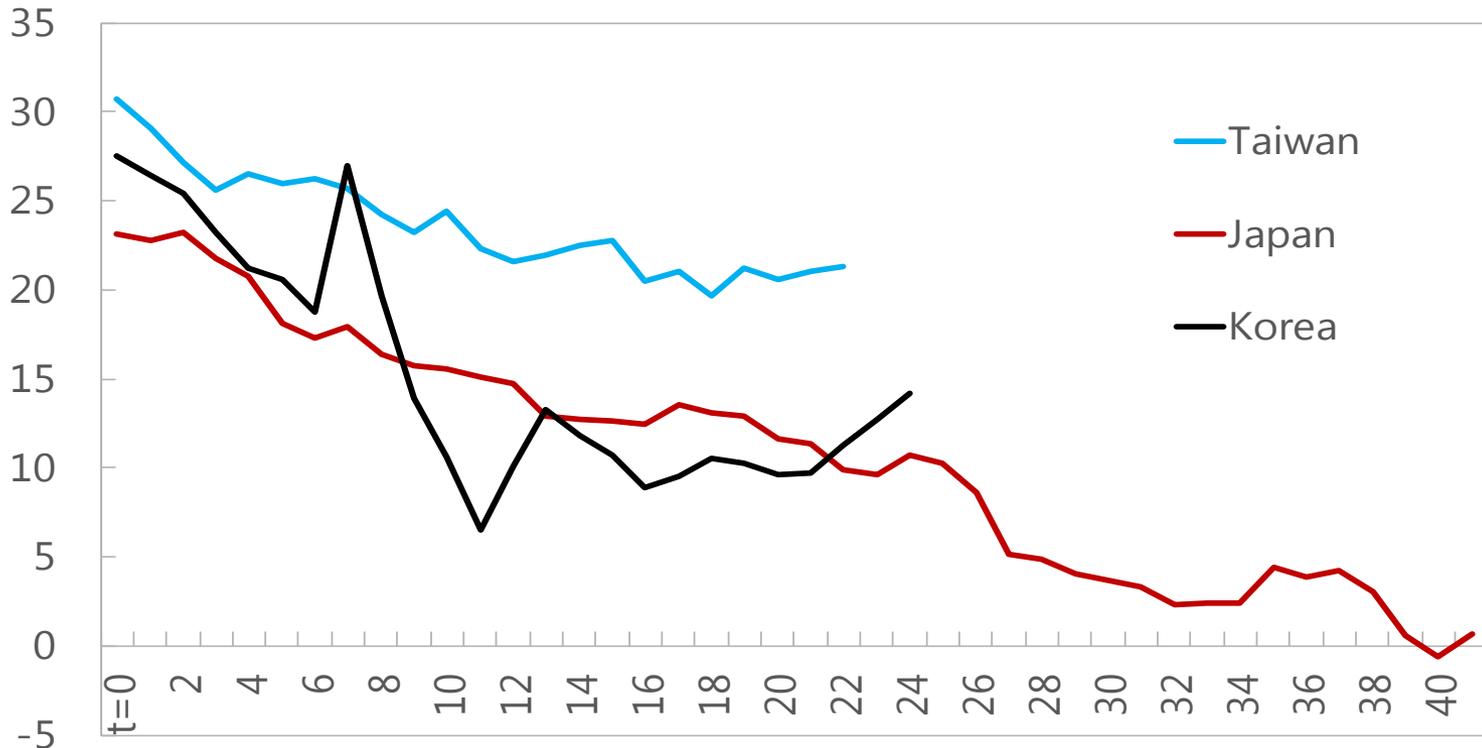
	year	income level (1990 US\$)
Taiwan POC	1993	11950
Japan	1974	11145
Korea	1991	10610
China	2010	9558

Sources: Haver and Madison Database.

International experience: Household Savings

Household Saving Rate

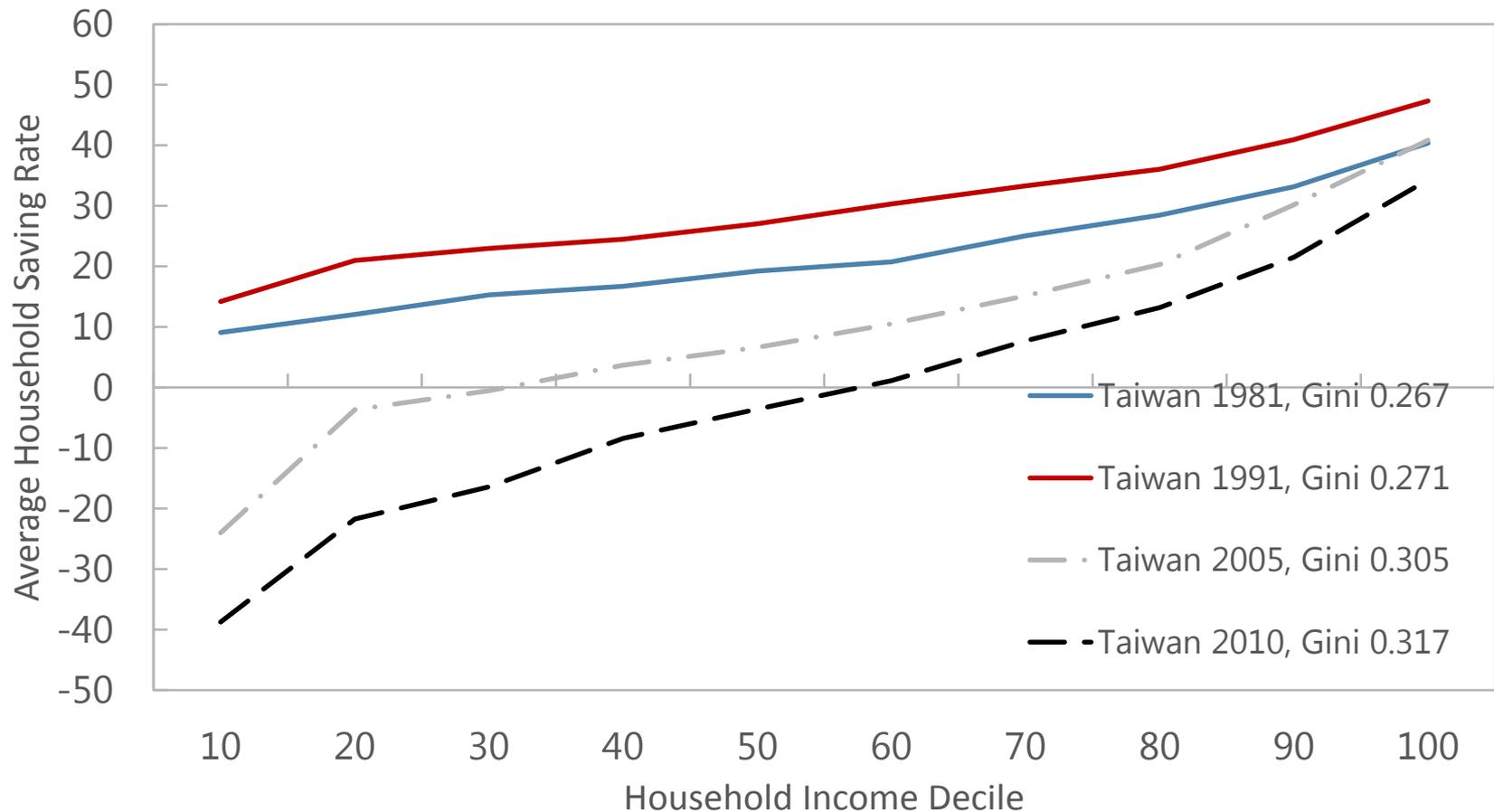
(in percent of disposable income)



Sources: t=0 is defined as the year when household saving rate peaked, 1974 for Japan, 1991 for Korea and 1993 for Taiwan.

International experience: Taiwan

Average Household Saving Rate by Income Decile, Taiwan
(in Percent)



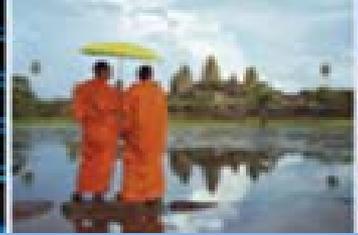
Sources: Luxembourg Income Studies (LIS)



Asia and Pacific



Department



THANK YOU!

Interaction of saving across sectors

- Globally, the increase of corporate saving was largely offset by falling household saving.
- In China, corporate saving and household saving tend to move together, likely reflecting common income effect and limited household ownership of corporates.
- Government saving increases with higher corporate saving reflecting tax revenue, while insufficient government expenditure on social safety net also increase household saving.

Similar results from recent provincial data

Table 3. Households: Consumption and Government Spending, Provincial Level, 2013-15			
	Urban	Rural	Total
Disposable Income	0.92	0.76	0.92
(Standard error)	(0.05)	(0.05)	(0.03)
[P-val]	[0.00]	[0.00]	[0.00]
Gov. Social Security Spending	0.07	...	0.10
(Standard error)	(0.03)	...	(0.03)
[P-val]	[0.04]	...	[0.00]
Gov. Health Spending	...	0.22	...
(Standard error)	...	(0.03)	...
[P-val]	...	[0.01]	...
Gov. Education Spending	0.11
(Standard error)	(0.07)
[P-val]	[0.03]
Constant	-0.23	0.45	-0.13
R-squared	0.95	0.92	0.83
# Obs.	30	30	30
Sources: CEIC database			

Note: All variables are in logs, and are an average for the period 2013-15. The dependent variable is household expenditure per capita, and government spending per capita.

Provincial regression before data revision

Table 4. Households: Consumption and Government Spending, Provincial Level, 1995-2012

	Urban 2007-12	Urban 1995-2012	Rural 2007-12	Rural 1995-2012
Disposable Income (real 1/)	0.96	0.76	0.55	0.31
(Standard error)	(0.12)	(0.05)	(0.17)	(0.14)
[P-val]	[0.00]	[0.00]	[0.00]	[0.03]
Gov. Social Security Spending (real 1/)	-0.03	... 2/	-0.07	... 2/
(Standard error)	(0.02)	...	(0.03)	...
[P-val]	[0.12]	...	[0.04]	...
Gov. Health Spending (real 1/)	0.05	0.02	0.12	0.03
(Standard error)	(0.01)	(0.01)	(0.02)	(0.02)
[P-val]	[0.00]	[0.04]	[0.00]	[0.21]
Gov. Education Spending (real 1/)	-0.05	...	-0.05	...
(Standard error)	(0.01)	...	(0.01)	...
[P-val]	[0.00]	...	[0.00]	...
Population growth	1.72	...	1.72	...
(Standard error)	(0.45)	...	(0.45)	...
[P-val]	[0.00]	...	[0.00]	...
Lagged dependent	-0.03	-0.11	-0.03	-0.11
(Standard error)	(0.06)	(0.03)	(0.06)	(0.08)
[P-val]	[0.56]	[0.00]	[0.56]	[0.15]
Constant	-0.02	0.01	0.01	0.05
R-squared	0.64	0.59	0.58	0.53
# Obs.	151	458	151	458

Sources: CEIC database

Note: All variables are in logs change terms. The dependent variable is household expenditure per capita, and government

spending variables are expressed per capita.

1/ In real terms, deflated by the provincial consumers' price index

2/ Social security spending data is not available prior to 2007 with a coverage consistent with post 2007 data.