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Urban rural household savings in China: determinants and policy implications

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Workshop "The Chinese Economy"
San Servolo 25/27 November 2010

- Domestic saving in China is very high, both *historically* and *internationally* (above 50% of GDP).

- **Reflects the development strategy**

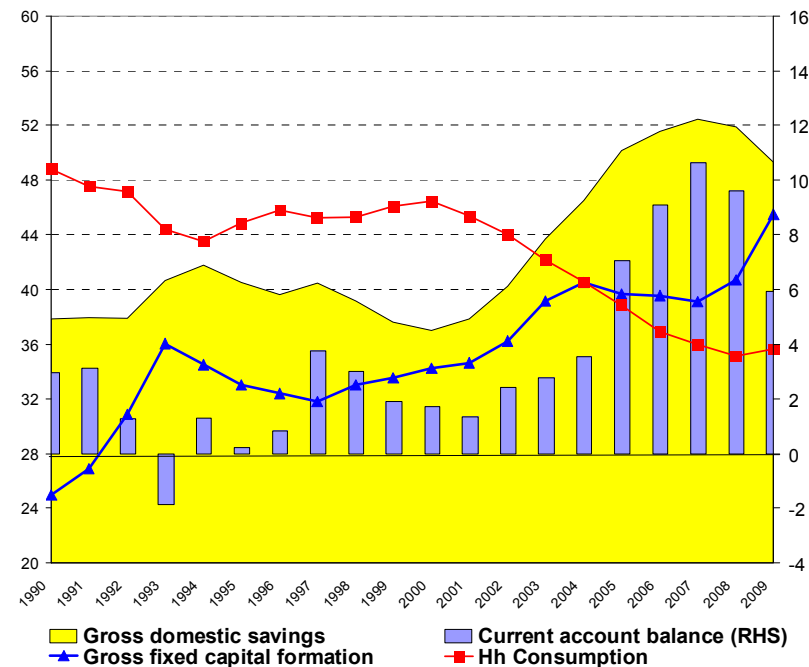+ Investment
– Consumption

➔ **growing internal imbalances**

- Despite high investment rates, excess saving grew steadily since 2000

➔ **large external imbalances**: CA surplus 11% of GDP (in 2007)

China: internal and external imbalances
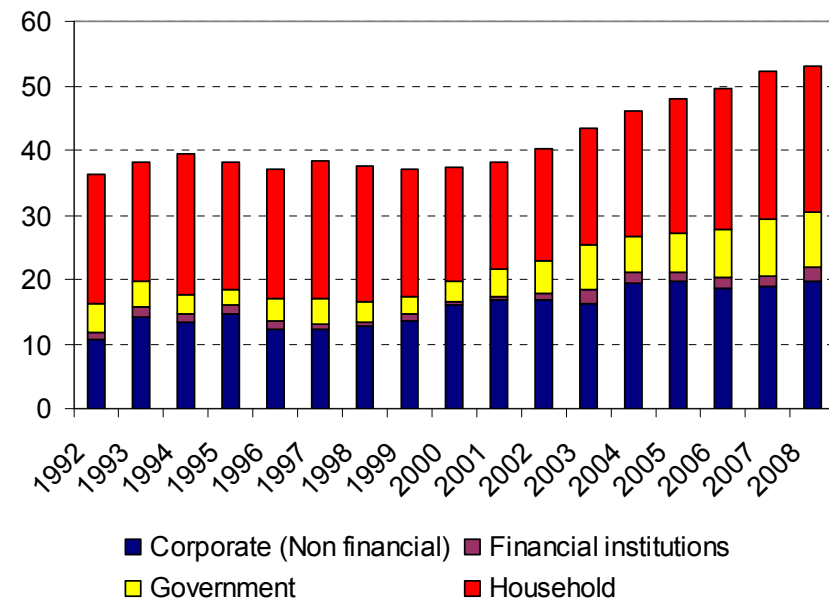*(values in % of GDP)*

Source: CEIC and IMF

So, who's saving in China?

- All sectors in China contribute to the high level of saving.

- Household and gov't savings have become major drivers since 2005.

China: domestic saving by sector
(% of GDP)

Legend:
- Corporate (Non financial)
- Financial institutions
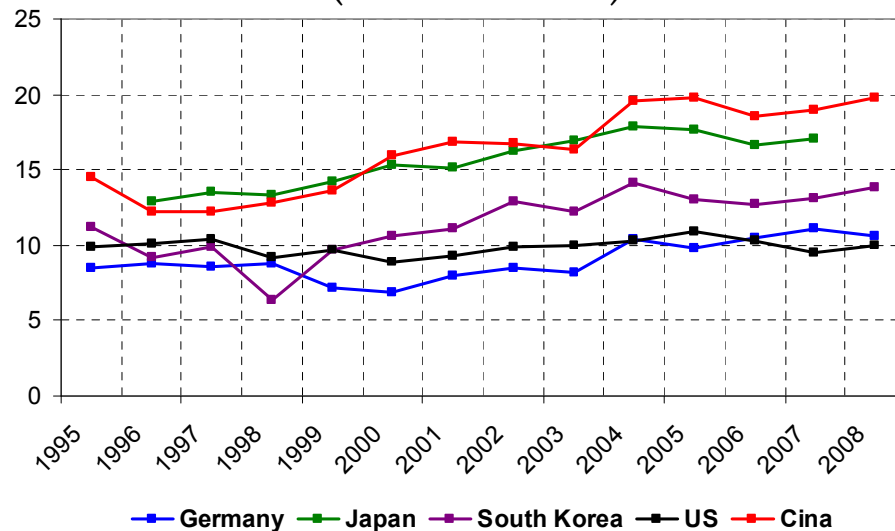- Government
- Household

Source: CEIC and authors' computations

Corporate sector

• Corporate <u>gross savings</u> have increased since mid-90's peaking at 20% in 2004. It followed a global trend, stronger in Asia (high profits + underdeveloped financial markets)

• Corporate <u>savings-investment balance</u> largely negative in China (-11% of GDP in 2008).

Corporate gross saving
(as % of GDP)

Corporate saving-investment balance
(as % of GDP)
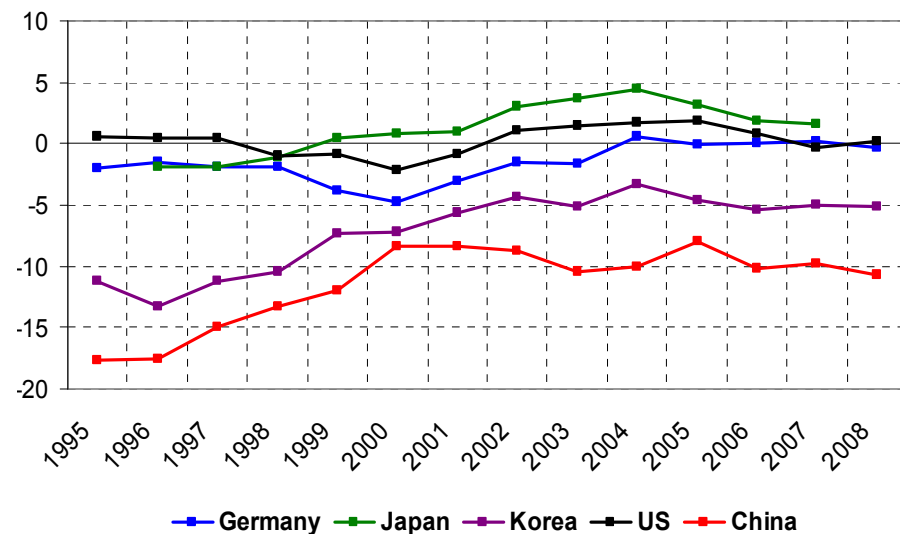
Source: CEIC and OECD

➔ corporate sector does not explain why excess saving in China is so high

Government sector

- Government savings are high by international comparison. Since mid- '90s gov't revenues in China increased faster than GDP (red line; 1994 tax reform, rapid income growth, and land sales)

  - While gov't consumption from 2002 onwards increased systematically less than GDP (blue line, right panel).

  - Gov't surplus has been partly invested and largely saved: the saving-investment balance became increasingly positive (yellow area, right panel).

General government gross saving
(as % of GDP)

Germany — Japan — South Korea — US — Cina
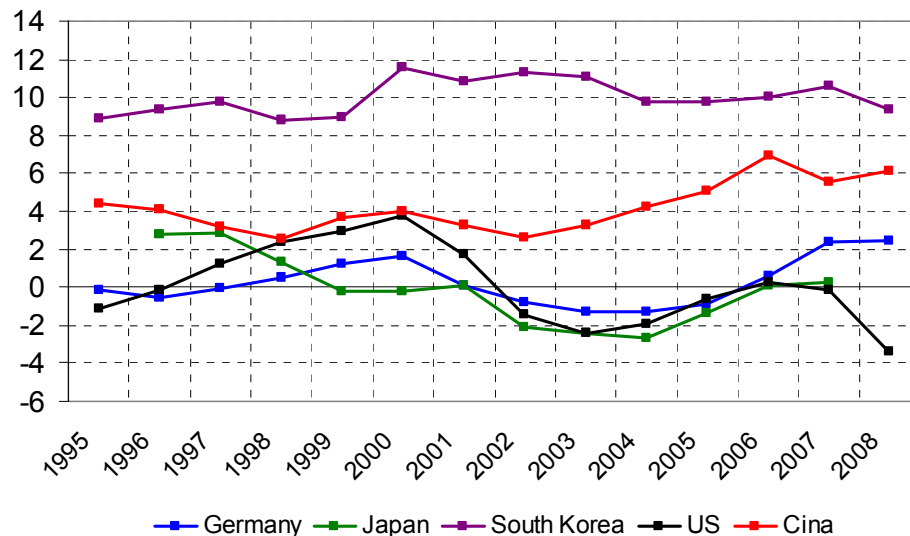
China: government revenues, consumption and saving-investment balance
(% of GDP)

- saving-investment (rhs)
- government consumption
- government revenues
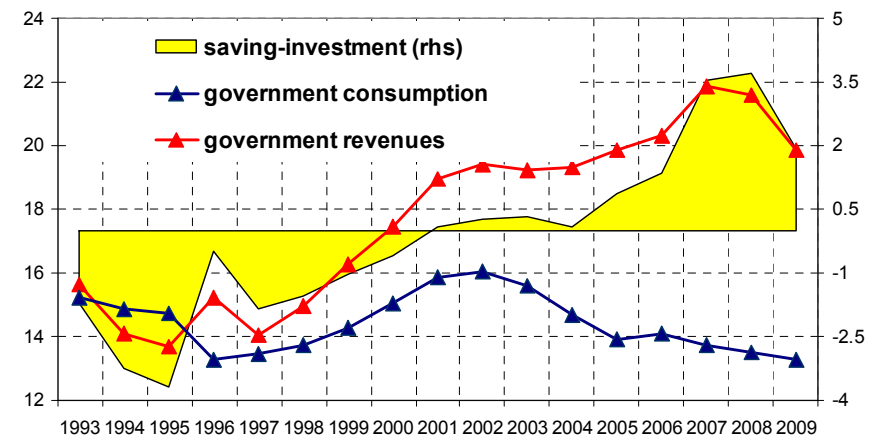
Source: CEIC and OECD

Household sector

The saving behavior of this sector is harder to explain

- Since 2002 household saving in China has been growing steadily in terms of GDP (chart on lhs: red line) while disposable income continued to decline (chart on rhs: red line).
- Household saving rate reached 39% of disposable income in 2008 (chart on rhs: blue line).

Household gross saving (as % of GDP)

Legend: Germany, Japan, South Korea, US, Cina
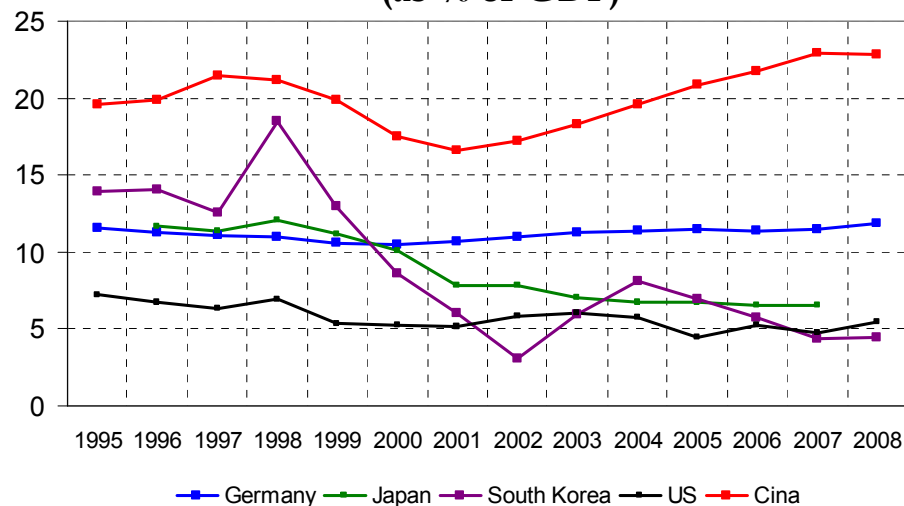
China: Household saving-investment balance, saving rate and disposable income

Legend: Saving-investment (% of GDP); Saving rate (% of disposable income); Disposable income (% of GDP; rhs)
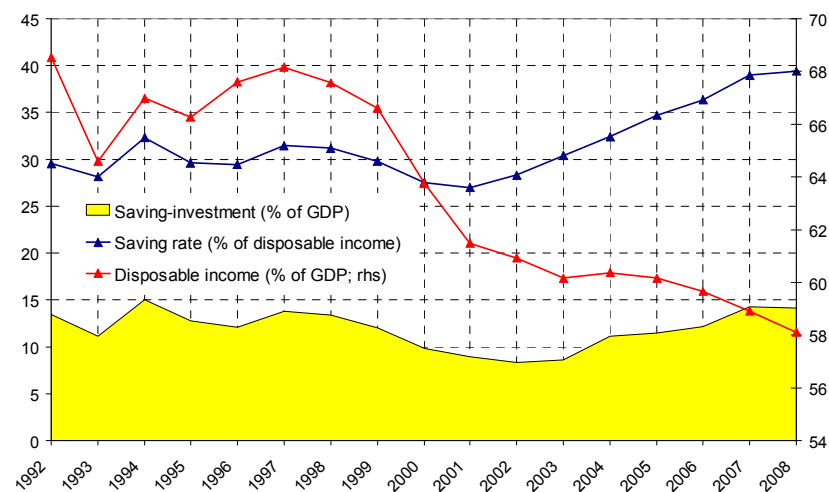
Source: CEIC and OECD

Why are Chinese households saving so much?

Macroeconomic trends

According to LCH, Modigliani and Cao (2004) indicate as main determinants:

income growth and demographic changes

China: households savings and long term income growth

(annual data, share of disposable income and percentages)
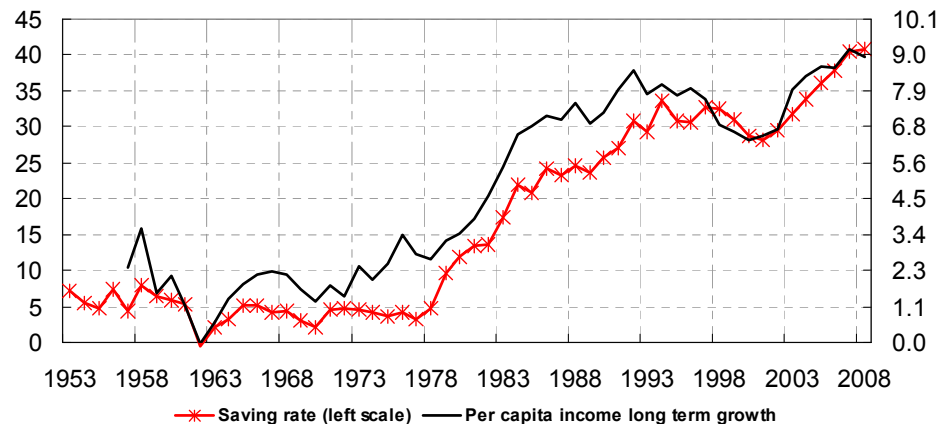
China: households savings and emplyees to minors ratio

(annual data, share of disposable income and percentages)
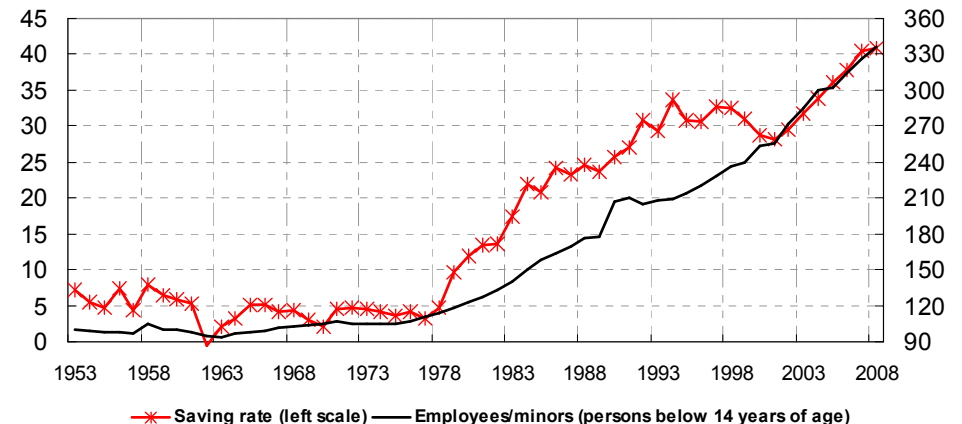
Source: Modigliani and Cao (2004) and author's calculations

Modigliani and Cao regressions
on the original (1953-2000) period

	Constant (a0)	Long term income growth (a1)	E/M (a2)	Deviation from long term income growth (a3)	inflation (a4)
	I. 1953-2000 (all years)				
R^2 = 0.98	0.1	2.07	0.1	0.1	0.26
tvalue	-11	8.85	9.04	2.08	3.78
	II. 1953-1985				
R^2 = 0.92	-0.13	1.52	0.14	0.14	0.74
tvalue	-3.23	3.5	3.04	1.95	1.79
	III. 1978-2000				
R^2 = 0.96	-0.1	2.52	0.09	0.13	0.18
tvalue	-6.22	8.8	7.9	2.23	2.81

Source: Modigliani and Cao 2004

Modigliani and Cao regressions on the "extended" (1953-2008) period

	Constant ($a0$)	Long term income growth ($a1$)	E/M ($a2$)	Deviation from long term income growth ($a3$)	inflation ($a4$)
I. 1953-2008 (all years)					
R^2 = 0.98	-0.09	2.49	0.08	0.05	0.12
DW = 0.74	-11.98	9.46	8.94	0.78	2.05
II. 1953-1985					
R^2 = 0.92	-0.14	1.49	0.15	0.14	0.18
DW = 0.93	-2.75	2.57	2.53	1.85	1.75
III. 1978-2008					
R^2 = 0.96	-0.07	2.75	0.07	0	0.05
DW = 0.76	-4.67	6.5	6.37	0.02	0.72

Source: Modigliani and Cao 2004, CEIC and author's elaborations

However one size does not fit all China

Microeconomic evidence does not confirm the validity of the LCH for China

- **Provincial-level data**: large differences between urban and rural households; mixed support for LCH and highly persistent saving rates (Horioka and Wan, 2007)

- **Household-level** data: U shaped pattern of savings; savings rates have increased across all demographic groups (Chamaon and Prasad, 2008; Brugiavini et al. 2010).

Factors to take into account:

- Precautionary motives: poor social safety nets and insufficient provision of public goods.

- Credit constraints

The increasing rural-urban divide

Since 2000 the increase in household saving rate has been driven by *urban* households

Year	Urbanization rate	Urban to rural disposable income ratio	Urban household saving rate	Rural household saving rate	Average household saving rate
1990	26.4	2.2	15.3	14.8	15.0
1995	29.0	2.7	17.4	16.9	17.2
2000	36.2	2.8	20.4	25.9	22.5
2005	43.0	3.2	24.3	21.5	23.5
2009	46.6	3.3	28.6	22.5	27.0

Large differences across provinces

Region	geo	Real disposable income (RMB)		Household saving rate		Dependency ratios (% total population)		Government spending % of regional GDP			Share of urban employment in SOE
		Urban	Rural	Urban	Rural	young (0-14)	old (65+)	total (ex. education & health care)	education & health care	social security [1]	
Beijing	East	20467	8705	28.3	31.6	12.3	13.3	13.7	3.9	2.0	23.3
Fujian	East	14082	4922	29.3	25.5	24.5	13.5	7.4	2.5	1.0	22.9
Guangdong	East	16119	5156	20.9	24.2	26.3	10.0	7.9	2.2	1.0	19.1
Hainan	East	9826	3405	24.7	32.8	31.2	12.7	16.1	4.3	3.4	41.4
Hebei	East	10186	3708	30.2	34.8	22.0	11.6	8.3	2.6	1.7	47.3
Jiangsu	East	14298	5745	34.0	27.8	19.3	15.2	7.8	2.2	0.8	18.2
Liaoning	East	10974	4276	22.8	28.7	16.2	14.2	13.1	2.7	3.5	33.3
Shandong	East	12469	4374	31.8	27.7	20.6	12.9	6.6	2.0	0.9	30.4
Shanghai	East	21565	9340	27.6	15.2	10.2	17.8	15.1	3.0	2.4	21.5
Tianjin	East	14810	6263	27.8	49.2	14.7	14.5	10.4	2.7	1.7	32.6
Zhejiang	East	18277	7378	30.6	17.9	19.4	13.9	7.2	2.6	0.7	15.5
Eastern regions average		**14825**	**5752**	**28.0**	**28.7**	**19.7**	**13.6**	**10.3**	**2.8**	**1.7**	**27.8**
Anhui	Central	9918	3104	25.9	21.0	30.2	15.3	13.2	3.7	2.6	35.2
Heilongjiang	Central	9038	3650	26.6	23.9	17.0	11.2	13.6	3.4	2.8	45.2
Henan	Central	9684	3244	32.3	31.3	28.4	10.9	9.2	2.9	1.8	41.5
Hubei	Central	9697	3398	25.6	21.4	21.3	13.4	11.1	3.0	2.5	38.3
Hunan	Central	10435	3363	25.7	13.4	23.7	14.5	11.9	3.0	2.8	36.3
Jiangxi	Central	9993	3600	31.5	26.1	34.2	12.6	12.9	3.8	2.8	38.9
Jilin	Central	9818	3696	24.4	27.6	16.3	11.1	13.9	3.4	3.1	42.0
Shanxi	Central	10062	3173	30.4	26.8	26.3	10.1	14.9	3.9	3.1	52.8
Central regions average		**9831**	**3404**	**27.8**	**23.9**	**24.7**	**12.4**	**12.6**	**3.4**	**2.7**	**41.3**
Gansu	West	8429	2024	22.5	12.8	29.6	11.0	20.0	6.2	4.8	52.7
Guangxi	West	10312	2759	32.2	15.6	32.0	13.3	12.5	4.0	1.8	41.7
Guizhou	West	9002	2037	27.1	20.0	41.3	12.6	21.5	7.7	3.2	49.8
Inner Mongolia	West	10665	3429	25.3	19.0	20.4	10.5	14.7	3.1	2.5	41.9
Ningxia	West	9315	2722	25.2	18.3	33.4	8.9	22.1	5.8	3.4	39.6
Qinghai	West	8412	2205	28.0	7.3	31.4	9.6	29.0	6.7	6.8	39.8
Shaanxi	West	9606	2349	21.4	3.9	23.8	12.8	15.2	4.3	3.6	51.4
Sichuan	West	9199	2966	21.5	22.3	26.9	16.1	15.1	3.5	3.6	35.9
Xinjiang	West	8791	2706	24.0	25.0	30.3	9.6	18.2	5.1	2.6	49.9
Yunnan	West	9963	2284	29.8	2.0	32.1	10.9	18.4	5.6	3.9	37.9
Western regions average		**9369**	**2548**	**25.7**	**14.6**	**30.1**	**11.5**	**18.7**	**5.2**	**3.6**	**44.1**

Analysis on provincial-level data

- Provincial-level data (panel of 29 provinces); period 1995-2008

- We run a separate set of regressions for urban and rural households considering: all regions; Eastern and Central provinces; Western provinces

- **Dependent variable**: household saving rate

- **Explanatory variables**: long-run growth (average growth in the last 15 years of per capita GDP); deviations from long-run growth; young dependency ratio; inflation rate; reciprocal of per capita real disposable income (keynesian hyp.); employment share in SOEs; employment share in urban areas.

Urban household regressions

Household saving in urban China: FE regressions on a panel of 29 provinces 1995-2008

dependent variable: saving rate

Explanatory variables	Urban total		Urban East and Central		Urban West	
Long term income growth	0.24	0.12	0.13	-0.04	0.54	0.48
Deviation from long term income growth	-0.28**	-0.33***	-0.30***	-0.36***	-0.23	-0.29
M/E (young dependency ratio)	-0.17**	-0.13	-0.15*	-0.09	-0.16	-0.14
Reciprocal of current real disp. income	-5.07***	-5.00***	-5.74***	-5.62***	-4.22*	-4.10*
Inflation	0.08***	0.08***	0.10**	0.11*	-0.04	-0.04
SOEempsh		-0.05***		-0.06***		-0.03
No. Obs	377	377	247	247	130	130
R^2	0.65	0.67	0.73	0.75	0.52	0.53

Note: Regional dummies included in all regressions; standard errors are robust to heteroskedasticity and serial correlation; *** $p<0.01$; ** $p<0.05$; * $p<0.1$. All the variables are at provincial-level. For each geographic group we run two regressions: the first replicate exactly MC's regressions on provincial-level data, the second includes the variable SOEempsh, not considered by MC.

Rural household regressions

Household saving in rural China: FE regressions on a panel of 29 provinces 1995-2008

dependent variable: saving rate

Explanatory variables	Rural total		Rural East and Central		Rural West	
Long term income growth	-1.46**	-1.36**	-1.09	-1.02	-2.21	-1.85
Deviation from long term income growth	-0.07	-0.07	-0.43	0.04	0.04	-0.33
M/E (young dependency ratio)	0.14	0.16	0.13	0.13	0.28	0.42*
Reciprocal of current real disp. income	-1.52*	-1.45**	-1.50	-1.28	-2.04	-2.38**
Inflation	-0.57***	-0.49***	-0.59***	-0.53***	-0.49*	-0.33
URBempsh		-0.36***		-0.29***		-1.12
No. Obs	377	319	247	209	130	110
R^2	0.4	0.42	0.39	0.43	0.41	0.53

Note: Regional dummies included in all regressions; standard errors are robust to heteroskedasticity and serial correlation; *** $p<0.01$; ** $p<0.05$; * $p<0.1$. All the variables are at provincial-level. For each geographic group we run two regressions: the first replicate exactly MC's regressions on provincial-level data, the second includes the variable URBempsh, not considered by MC.

The determinants of the saving rate are quite different between urban and rural households as well as between Central-Eastern and Western provinces. All in all:

• precautionary motives and liquidity constraints play a significant role in the period 1995-2008 (in particular for urban Hhs in Central-Eastern provinces)

Focus on urban households

credit constraints
Long-run growth is not significant; annual deviations from it and the (reciprocal of) current real disposable income have a negative impact on the saving rate.

Precautionary saving
The young dependency ratio and employment share in SOEs have negative and significant impact on saving rates, they both reduce the need to save for old age.

➔ *Keynesian explanation seems sufficient for the savings in the poorer parts of the Country:*
For urban and rural households living in the West only current disposable income turns out significant.

What's behind

Precautionary motives and **liquidity constraints**:

- *Self-insurance needs* are rapidly rising especially for pension and health care purposes, because:

a) Social spending is very low

b) Fragmentation and non-portability of benefits discourage participation in the pension system

c) Health care services are available (at rising costs) only for residents

- *Liquidity constraints* arise from poor access to credit, particularly for rural migrants, and lack of financial instruments

Policy implications

Such temporary factors may last long➜
government intervention is required

- Plenty of room to increase (and reallocate) spending social security and health care. Public expenditure in these areas is low in terms of GDP and as a share of total government outlays.

- **Central** government intervention should target not only labor market segmentations, but also the enforcement of formal labor contracts ➜ induce employers to contribute to social insurance funds (hence reducing both household and corporate saving).

- In the medium-run government intervention should enhance financial development to facilitate households' access to credit and portfolio diversification.

- As a side effect: advancement of urban workers economic situation reduce the propensity to save in the countryside through remittances.

Thank you
for your attention

China: Gross domestic saving (as % of GDP)
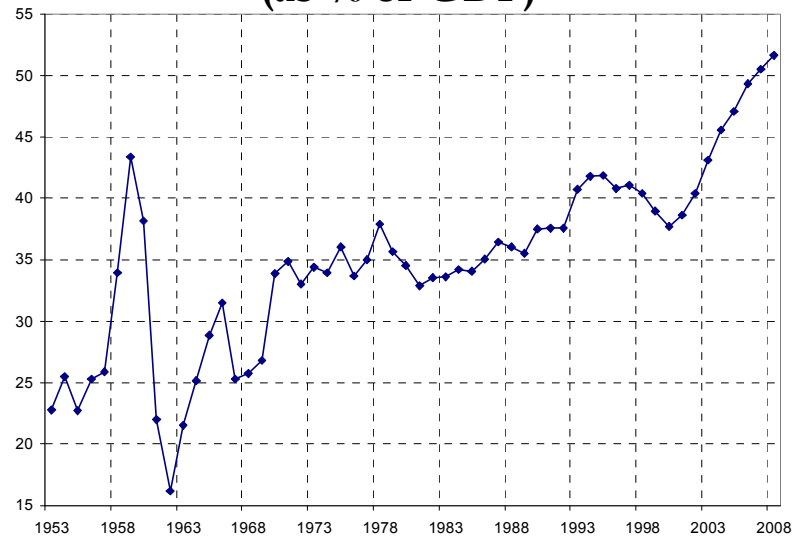
Savings in China are high by historical comparison……….

…………. As well as by international comparison

Country	Period of fast growth	Per capita GDP at beginning of period ($ PPP)	Per capita GDP end of period ($ PPP)	Average GDP growth (%)	National Savings (% of GDP)	Investment (% of GDP)
China	1999-2008	2162	6188	10.4	47.6	38.8
India	1999-2009	1447	2868	7.0	30.4	28.1
Indonesia	1988-1996	1269	2450	7.3	32.0	24.1
Malaysia	1988-1996	4037	8239	9.4	32.7	37.9
Thailand	1988-1996	2207	5018	9.0	33.8	39.5

Source: Modigliani and Cao (2004), CEIC and IMF