

# 4. Growth and Structural Change

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## Topics

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## 1 Growth engines

### How to make sense of economic growth data?

- China uses the production approach, while western economies generally use the expenditure approach, so the two kinds of GDP growth are not directly comparable
- Some argue that the official deflator is too small for some periods, especially for the 1980s
- Measuring the fast expanding service sector is difficult (the first national economic census of 2005)
- Local GDP growth estimates have upward bias, the sum of provincial GDP always exceeds the national figure
- The pressure of political correctness: the realized GDP growth is always close to planned GDP growth miraculously
- Ridiculously, China still cannot provide a full set of national income and product accounts, which has remained at half baked level of 1993

## China's GDP growth

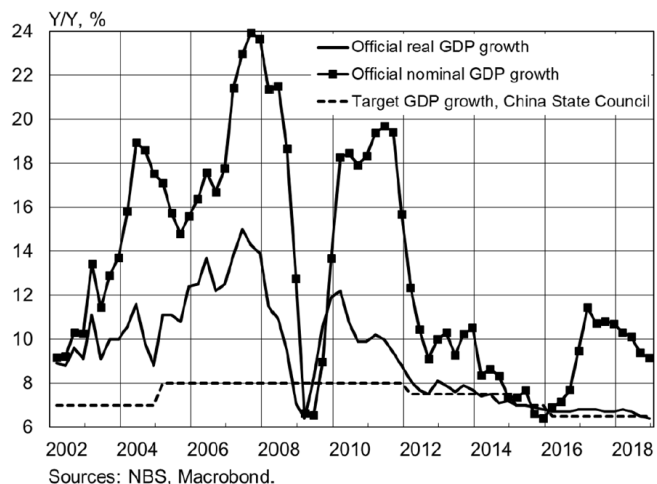


Fig. 1 Nominal and real GDP growth rates, 2002Q1–2018Q3

## Kerola's estimates

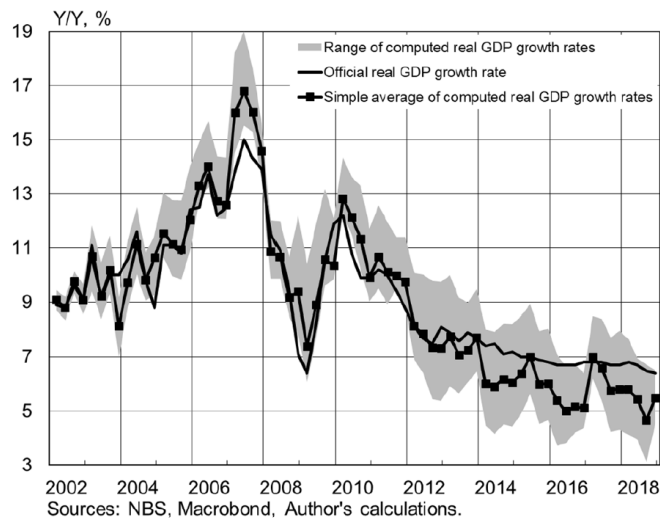


Fig. 5 Range and simple average of all computed real GDP growth rates

## Questions regarding China's GDP growth

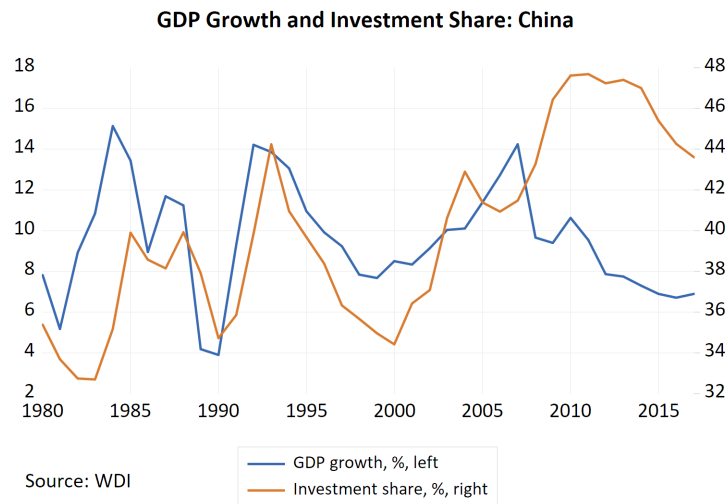
- In comparison with most countries, China's GDP growth looks spectacular
- In recent years, it peaked in 2008 when the global financial crisis occurred, but it has been slowing ever since

- At first, it was thought to be temporary and cyclical, but it appears that the slowing down is structural and permanent
- A current policy question is where the floor for GDP growth is: 6%, 5% or 4%

### The role of investment

- A basic model of economic growth:  $Y = F(K, L) = AK^\beta L^{1-\beta}$ .
- With surplus labor, employment depends capital,  $L = \lambda K$ . Accordingly,  $Y = AK$ , where  $A$  is called incremental output-capital ratio (IOCR).
- Let  $g$  be output growth rate,  $s$  be investment rate,  $s = \Delta K/Y = I/Y$ . Then,  $IOCR = g/s$ . Alternatively,  $g = IOCR \cdot s$ .

### The role of investment



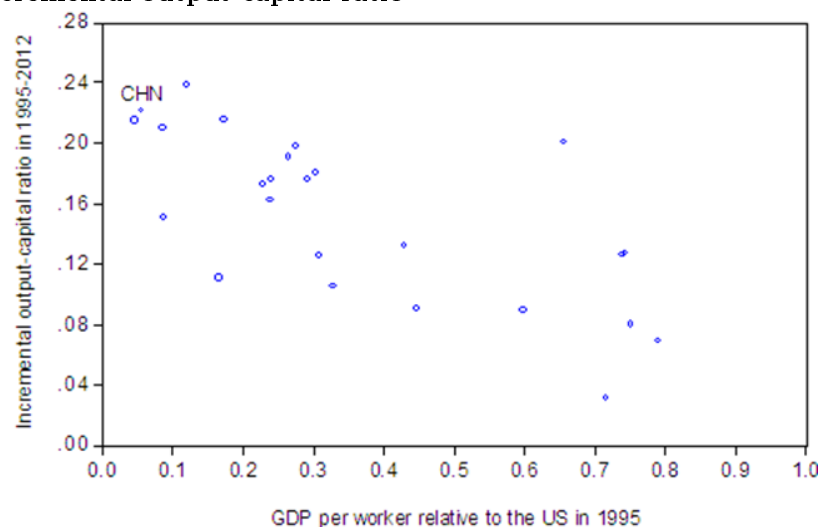
### A regression model of the investment role

- The model regresses GDP growth (5 year average) on investment rate (5 year average) and initial relative per capita income.
- Sample period: 1985-2012; economies included: China, India, Thailand, South Korea.
- The pool model:  $\ln(y_{it}/y_{i,t-5})/5 = -0.0650 - 0.0671\ln(y_{i,t-5}/y_{us,t-5}) + 0.310s_{it} + \delta_t$
- $R^2 = 0.680$ ,  $SD = 0.027$ ,  $SE = 0.015$ .

### Why is China's investment share so high?

- The cycle of investment is the main cause of economic fluctuation.
- The main causes for high investment rate:
  - Strong export demand
  - Strong demand for urban infrastructure and housing construction
  - A very accommodating supply of money and credit.
- The fundamental cause: low wage rate and large income share of capital, which give rise to high return on capital.

### Incremental output-capital ratio



### What explains China's high return on capital?

- The institutional change of reform and opening is fundamental.
- The ample supply of cheap migrant labor plays a critical role.
- Artificially low costs of land and environmental controls also play a significant part.
- Interestingly, the Communists-led government, especially at the local levels, has been extremely business-friendly.

### Decompose the growth of labor productivity

The growth of labor productivity in the context of cross-country regression is:

$$\ln(y_{iT}/y_{i0})/T = [\beta_0 + \beta_2 \bar{s}] + \beta_1 [\ln(y_{i0}) - \ln(y_0^P)] + \beta_2 (s_i - \bar{s}) + \epsilon_i$$

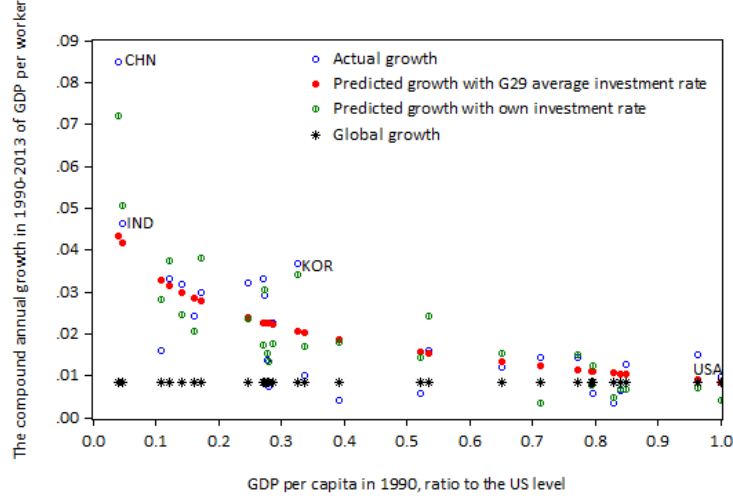
**Global growth effect:**  $[\beta_0 + \beta_1 \bar{s}]$  is the same as  $\eta$ , the growth of the steady-state path

**Catching-up effect:**  $\beta_1 \ln(y_{i0}/y_0^P)$  is a function of the *income gap* from the steady-state path

**Investment effect:**  $\beta_2 (s_i - \bar{s})$  is a function of the *deviation* from group average

**Residual effect:**  $\epsilon$  is the effect of all excluded factors to the extent that they are not correlated with income gap and investment rate

### Catching-up in 1990-2013: G29



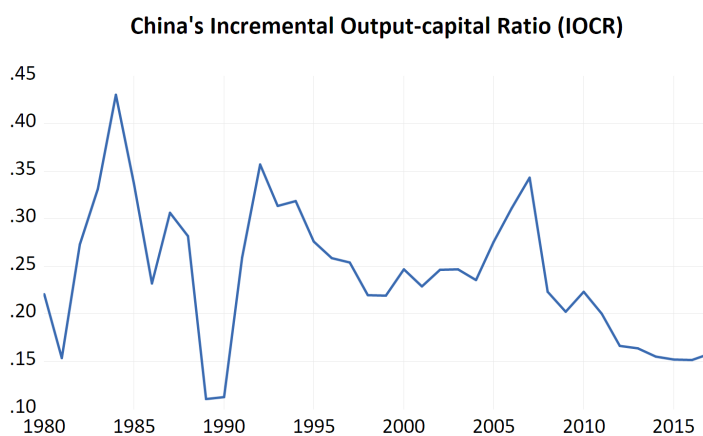
### Decomposition of the compound annual growth in 1990-2013 of GDP

	China	India	US	Japan	Korea
Global growth effect	0.009	0.009	0.009	0.009	0.009
Catching-up effect	0.035	0.033	0.000	0.002	0.012
Investment effect	0.029	0.009	-0.004	0.001	0.013
Residual effect	0.013	-0.004	0.005	-0.006	0.003
Labor growth effect	0.012	0.017	0.015	0.004	0.013
GDP growth	0.097	0.064	0.024	0.009	0.050

## Projected compound annual growth in 2016-2029 of China's GDP

	Actual value in 1990-2013	Project value with 25.3% investment rate	Projected value with 40% investment rate
Labor growth	0.012	-0.004	-0.004
Catching-up effect	0.035	0.015	0.015
Investment effect	0.029	0.002	0.026
Residual effect	0.013	0.013	0.013
Global growth effect	0.009	0.009	0.009
GDP growth	0.097	0.035	0.059

## China's IOCR



Source: WDI

## Key points

- Economic growth can be driven by:
  - Capital accumulation / investment;
  - Human capital accumulation / technological advance
- In the past 35 years, the main growth engine is investment that expands China's production capacity and infrastructure
- High investment rate is encouraged by high return on capital, which is, in turn, due to low wages and an enabling policy environment

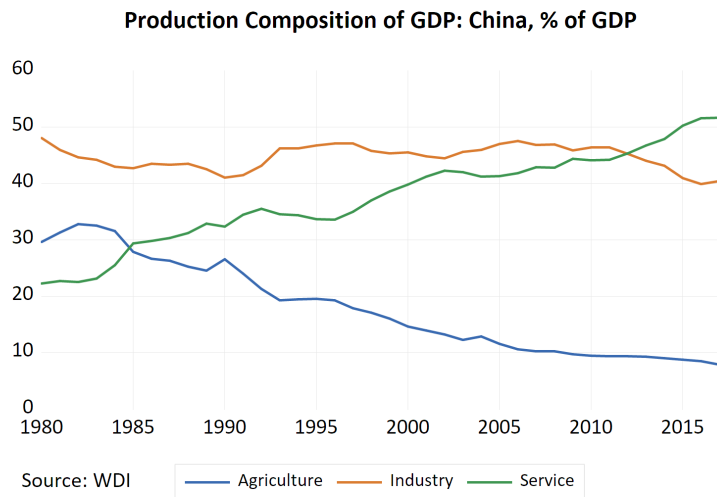
- But since 2008, return on capital has declined markedly and excess capacity and housing have appeared extensively, and the limit on infrastructure investment has also surfaced
- Hence the imperative to switch to a new growth engine, based on technological progress, human capital and institutional reform

## 2 Structural change on the supply side

### Structural change on the supply side

- Economic growth has been accompanied by fundamental structural changes.
- The first wave of growth involves a shift of employment from farms to factories: the share of agriculture falls and that of industry rises.
- The second wave of growth involves a shift from industry to service.

### Supply-side structure

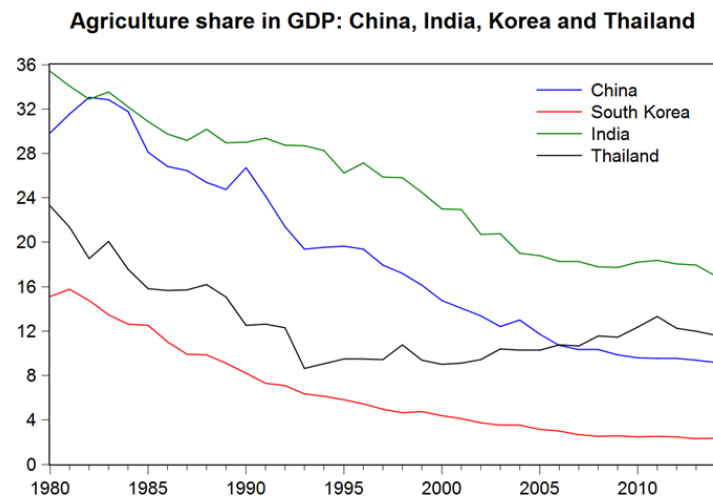


### Production by sector in 2016, % of GDP

	Agriculture	Industry	Service
China	8.6	39.9	51.6
United States	1.0	18.9	77.0
Germany	0.6	27.5	62.1
Japan	1.2	29.3	68.8
South Korea	1.9	35.1	53.7
Thailand	8.5	35.8	55.7
India	16.3	26.6	47.9

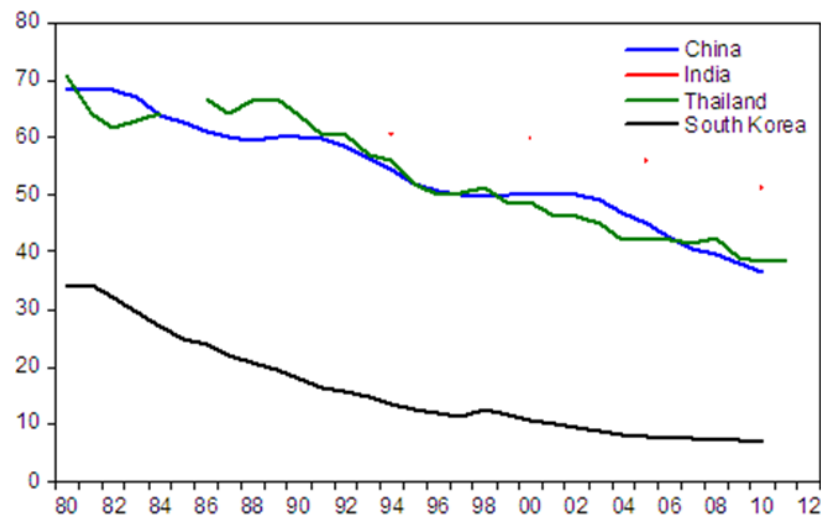
Source: WDI

### Compare the share of agriculture



### Employment share of agriculture

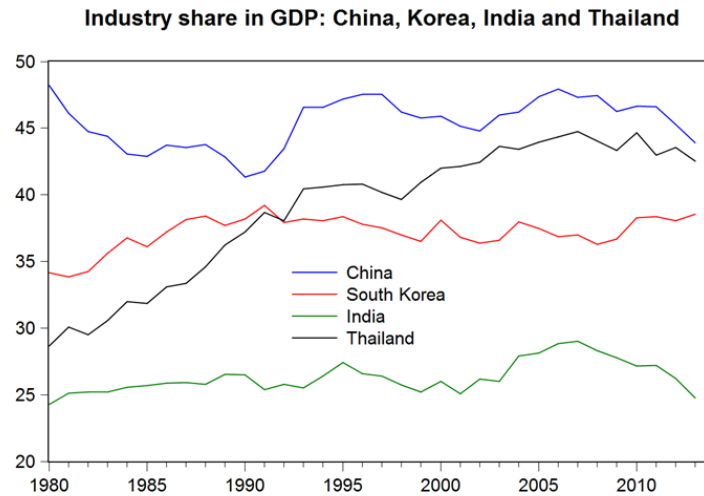




### Major questions on agriculture

- How much rural surplus labor is still left and could be tapped for export production as in the past?
  - Many argue that rural surplus labor is already be exhausted
- How much rural labor is really needed to feed the Chinese people and be secure in food supply?
  - This issue is related to opening to international trade in food
- How high can rural labor productivity and income reach in relation to urban levels?

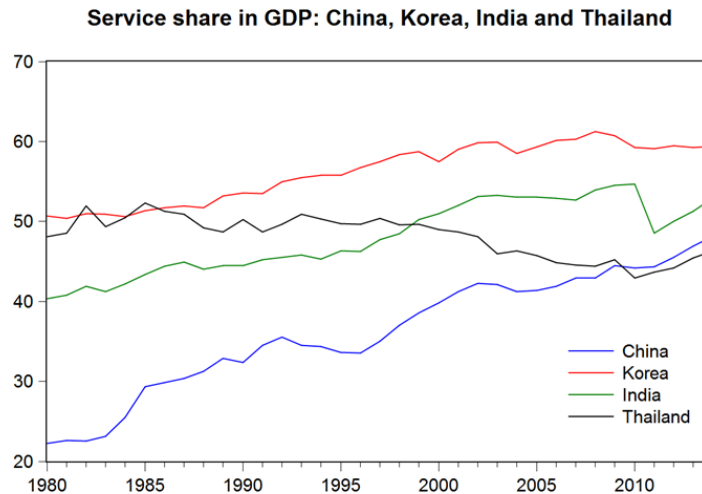
### Industry share



### Why is China's industry share so large?

- It is a consequence of the policy bias in favor of export drive
- It reflects an income distribution that is in favor of profits and against wages
- It is a consequence of under-pricing the costs of land, environmental degradation and resource depletion
- Partly, it is due to under-reporting of services, many of which are related to consumption

### Service share



### Where is the room for expanding service employment?

- Moving into high-end business services such as product development, design and architecture, which are globally competitive
- An intriguing question is the global potential for media and entertainment
- Expand financial and real estate services, but only up to a point
- At high end, financiers and lawyers are in demand
- Expand consumption-related services, especially education and health, as urban population rises

### Key points

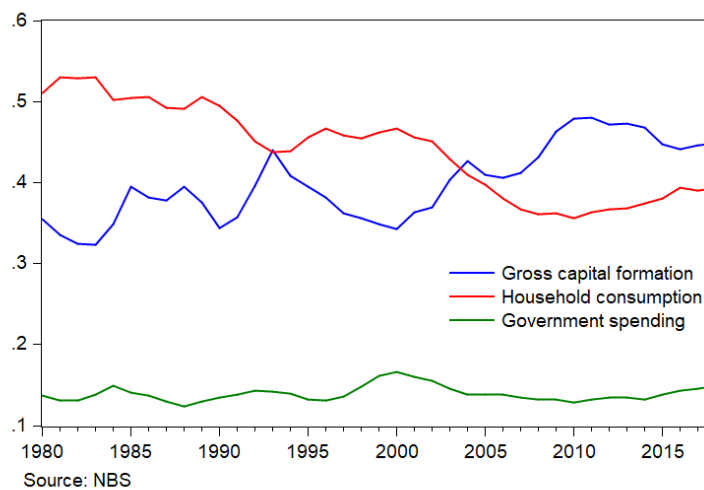
- Modernization of agriculture has not been achieved due to small-scaled farming, peculiarity of land ownership and the rural-urban divide
- Too many factories:
  - use too much energy and pollute the environment
  - instead of being a source of rising wages, existing pattern of industrial production depresses wage growth and dumping invites retaliation from trading partners
  - however, new network-based high tech industries present thought-provoking challenges
- Services remain underdeveloped because of:

- too many get locked on the social floor, depressing private consumption
- too much Party control constrains the expansion of many business services such as finance, legal service

### 3 Structural change on the demand side

#### Demand structure

China: Composition of Gross Domestic Expenditure, Ratio to GDE

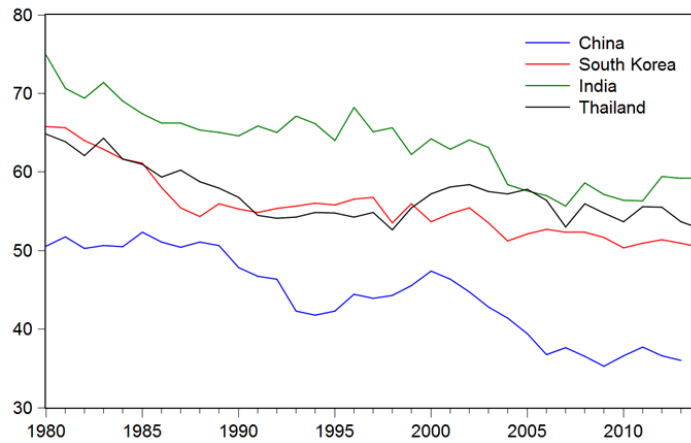


#### Structural change of aggregate demand

- The Chinese economy has become increasingly globalized
- Investment rate has remained high
- This is partly due to China's export competitiveness, partly to infrastructure and housing construction.
- The share of household consumption fell from 65% in 1980 to 38.4% in 2010
- Government share appears to be too small, reflecting an underdeveloped redistributive role of government

## Consumption share

Household consumption: China, India, Korea and Thailand, % of GDP



## International comparison of household consumption share, 2018

Country	% of GDP
United States	68.1
Canada	58.0
Japan	55.6
Germany	52.1
South Korea	48.6
China	38.7

## International comparison of government consumption share, 2018

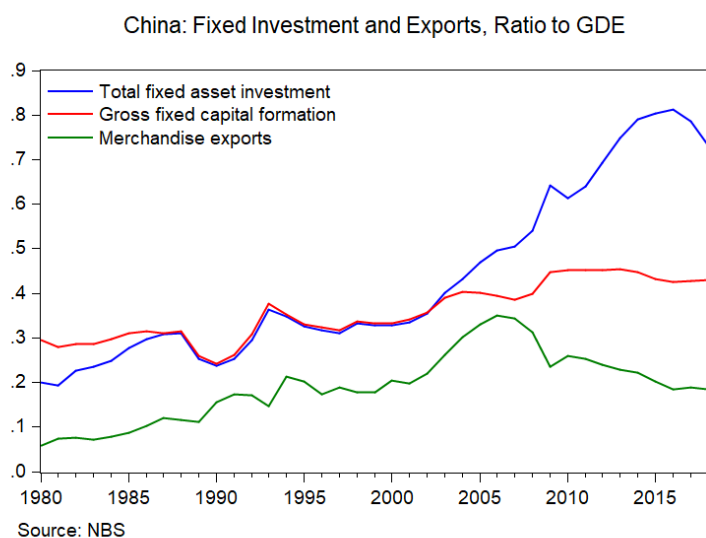
Country	% of GDP
United States	14.1
Canada	21.0
Japan	19.7
Germany	19.9
South Korea	16.1
China	14.7

## The role of household consumption

- Raising the share of private consumption (as well as education and health) in GDP is the key to shift China's growth engine from exports and investment to consumption

- China's share of private consumption is far below that of advanced economies by at least 10 percentage
- How to raise the share of private consumption?
  - Let rural people settle in cities
  - Raise the income on the social floor
  - Equal access to social insurance, education and health care

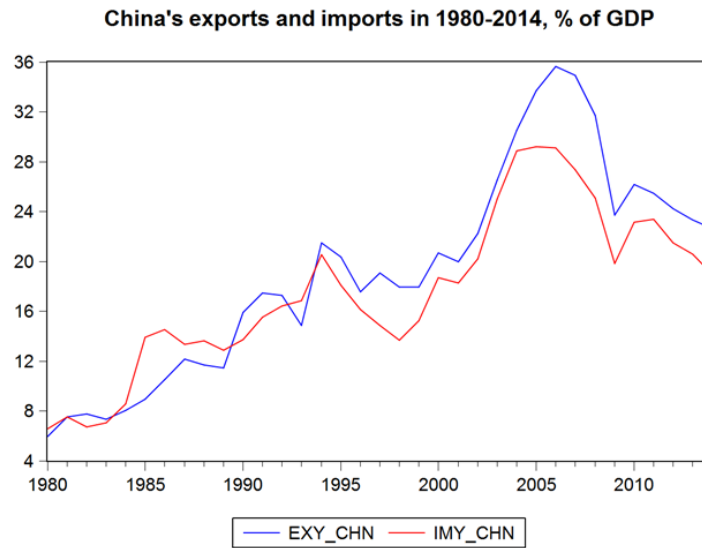
## Two growth engines



## International comparison of export share in GDP in 2018

Country	% of GDP	Billion \$
United States	12.2	2,510
Canada	32.1	551
Japan	18.4	917
Germany	47.4	1,872
South Korea	44.0	713
China	19.5	2,656

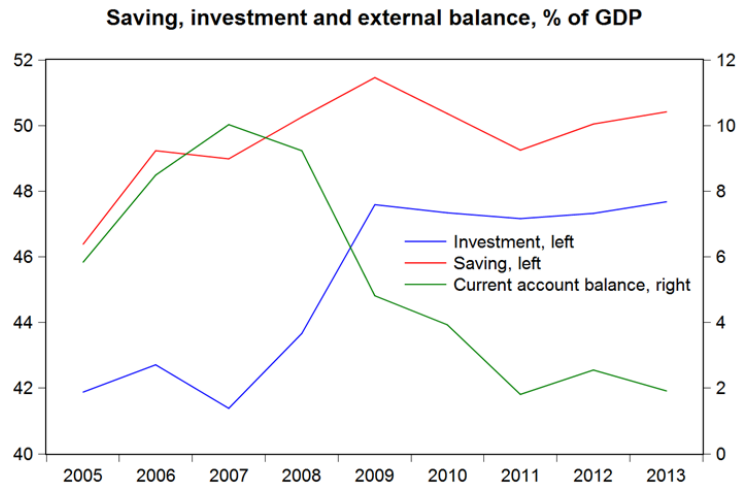
## Trade exposure



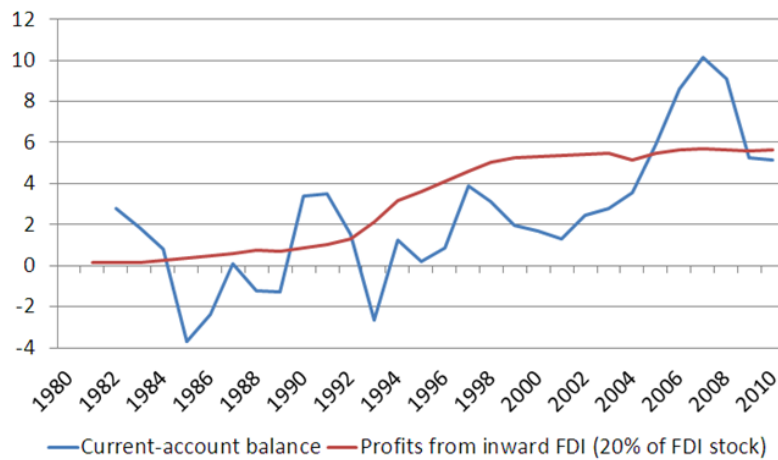
#### **The export engine out of gas**

- The global financial crisis and the collapse in credit-fueled demand for Chinese exports
- Rising labor and environmental costs in China
- The appreciation of the Chinese yuan (CNY) against the US dollar

#### **Saving and investment**



#### What explains China's current-account surplus?



#### Why does China save so much?

- Gross domestic saving rate increased from 37.5% in 2000 to 44.6% in 2006, ranking the highest in the world
- More than half of the saving is made by the business sector, especially for the change since 2000
- Rising profits have played the primary role
- The household saves about 25% of disposable income



- While increased income uncertainties may play a role, a more significant factor is rising income disparities
- And credit constraint may play a role as well

### **Key points**

- China may have exported too much, falling into an immiserizing growth trap
- A better approach is less quantities, but higher quality and prices
- Rates of investment and saving are too high:
  - On one hand, it leads to less productive investment and excess capacity with unsustainable debt
  - On the other hand, it reflects rising income disparities
- Both government and household consumption shares are too low
- Income should shift from companies to households and government

### **Review questions**

- What has been the main driver of economic growth?
- Why does China's service sector look rather small?
- In what ways does the Chinese economy need to be “re-structured or balanced?”