

East Asia Seminar at Asian Institute, University of Toronto

# Understanding China's Growth: Past, Present and Future

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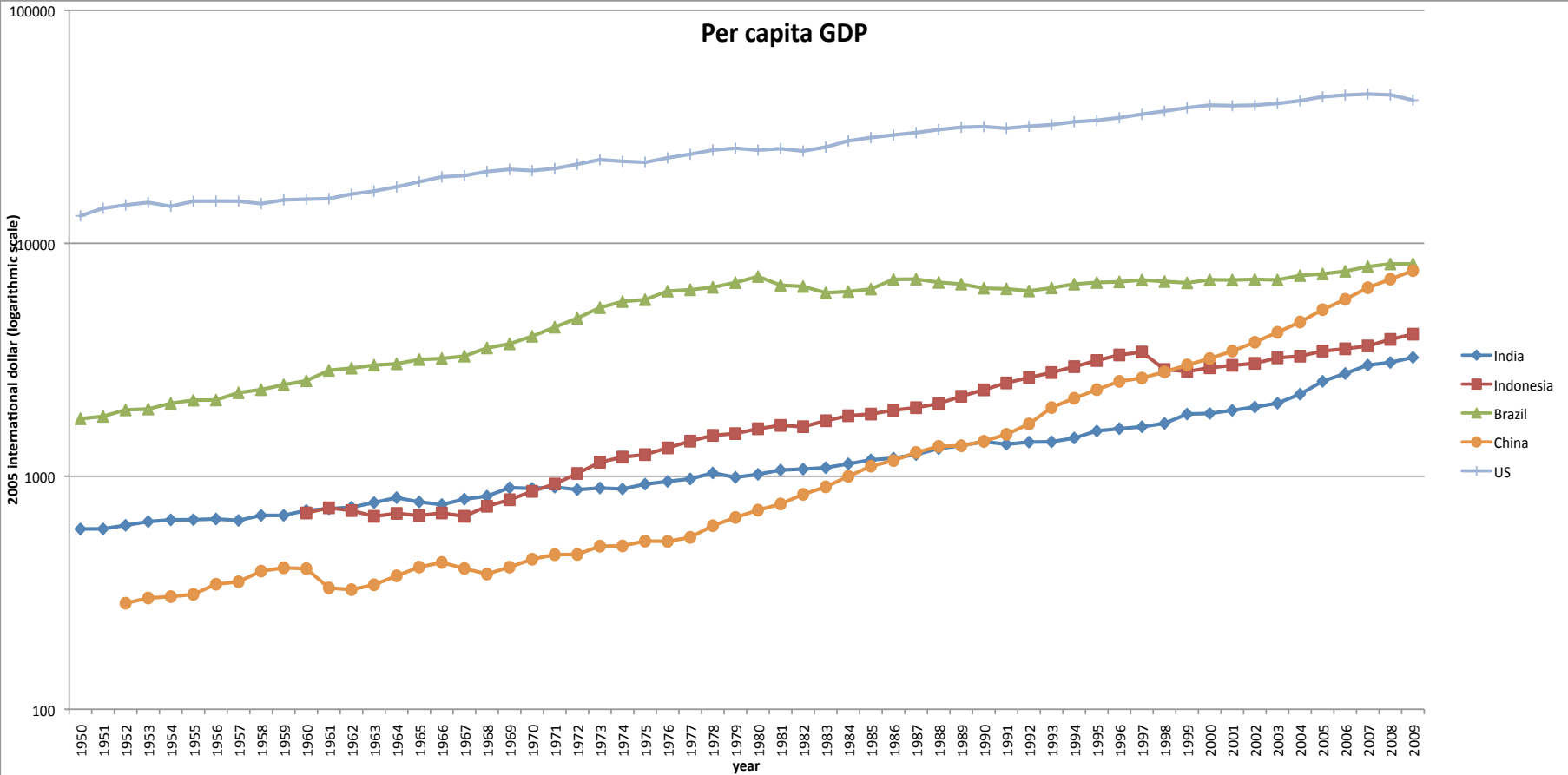
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# China's growth since 1978

- In 1978, per capita GDP in China was 1/40 of that in US and 1/10 of that in Brazil
- Since 1978, per capita GDP in China has grown at 8% a year on average, doubling every 9 years.
- The rapid improvement in average living standard has occurred in a country with about 20% of world's population

# Per capita GDP in China and various countries



# Growing importance of China in the world economy

- China's per capita GDP (PPP measure) is now 1/5 of U.S. level and at the same level as Brazil
- In total size, China is now the second-largest economy in the world
- Imports from China account for at least 10% of total imports for any region in the world

# Questions

- What are the main sources of China's remarkable growth?
- How long can China's rapid growth be sustained?
- What are the main challenges China faces in sustaining high rates of growth?

# Main conclusions

- China's growth has been driven by increases in productivity, not by investment nor by cheap labor
- There is still plenty of room for growth in China, strong growth potential in the next two decades
- However, many challenges in realizing the growth potential

# Outline of the talk

- China's historical economic performance up to 1950
- Accounting for China's modern economic growth: pre-reform (1950-1978) and reform (since 1978) periods
- Sources of productivity growth in China since 1978
- Prospects of China's future growth

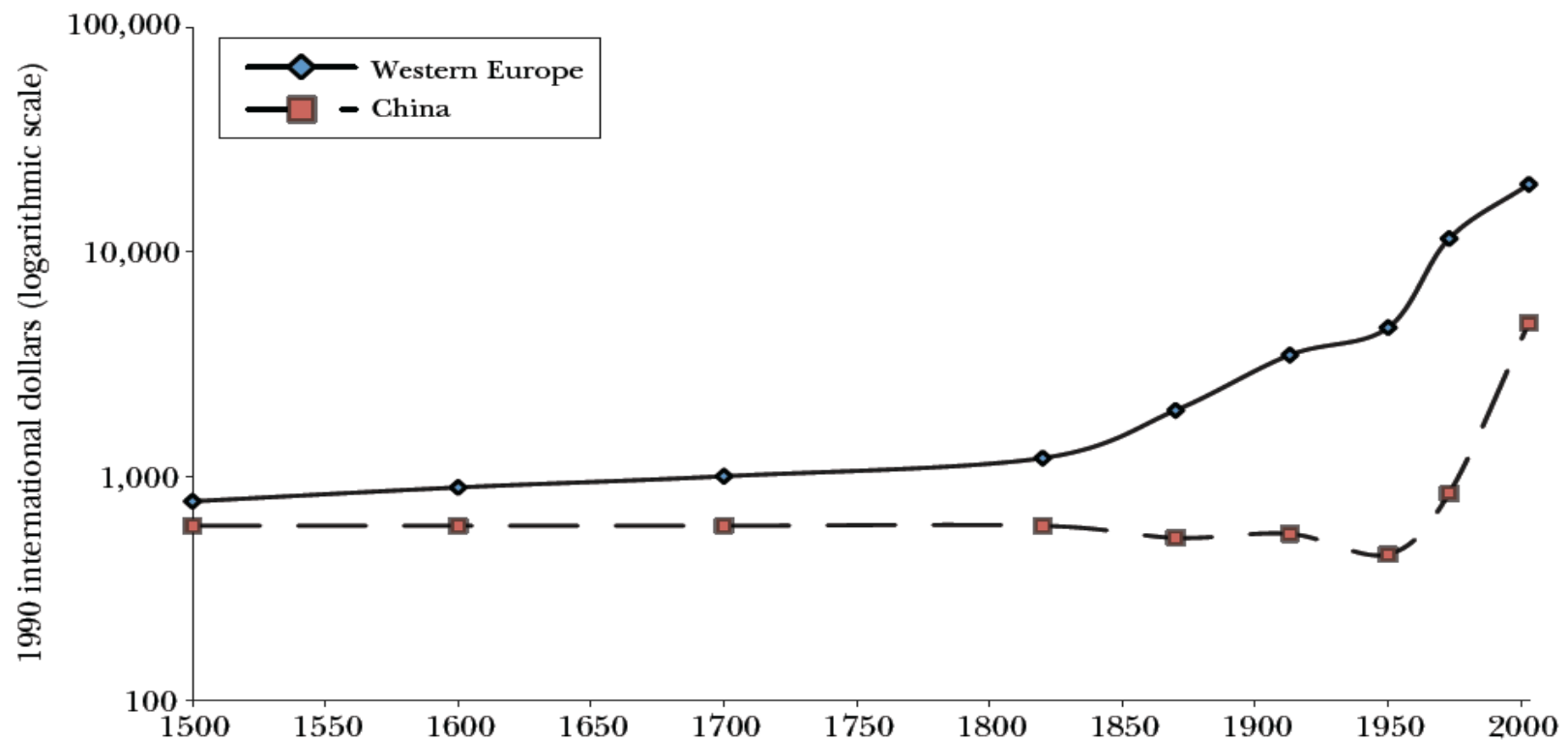
# China in pre-modern period

- During the Song dynasty (circa 1200), China is thought to have had
  - the most advanced technologies
  - the highest iron output
  - the highest urbanization rate
  - the world's largest economy
- However, China fell behind the west around 1500



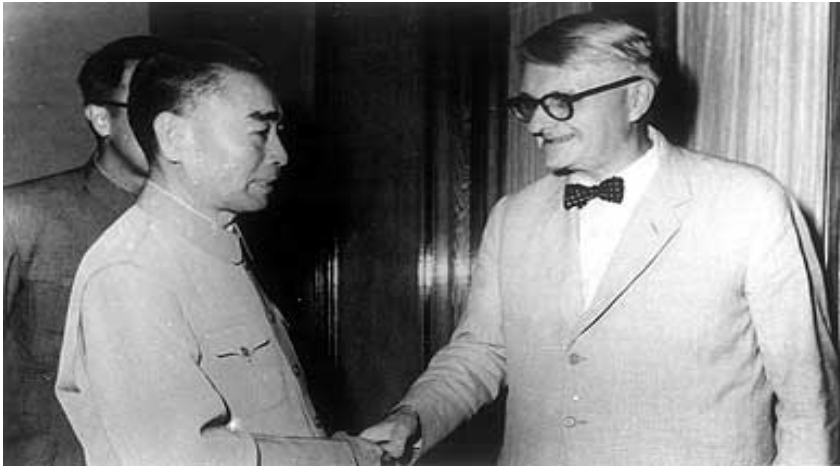
# China's historical economic performance

*Figure 1*  
**Per capita GDP of China and Western Europe**



Source: Madison (2007)

# Needham puzzle



Questions raised by Joseph T.M. Needham:

- How did China maintain its technology advantage over Europe in the pre-modern period?
- Why didn't the Industrial Revolution occur in China

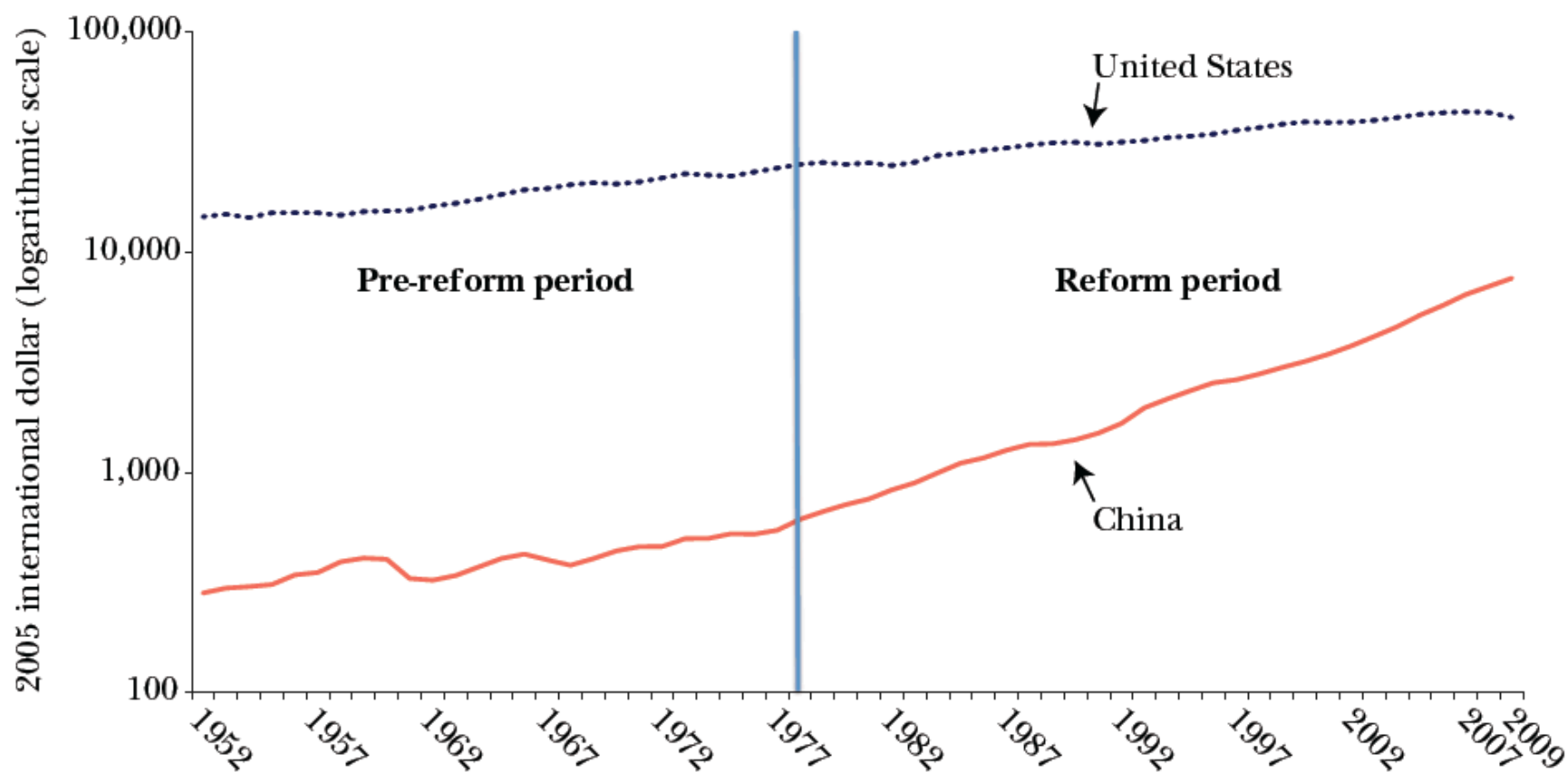
# Reasons for the great divergence

- Ongoing debate about why England was the first to industrialize
  - Kenneth Pomeranz (2000) *Great Divergence: China, Europe and the Making of Modern World Economy*
- Some consensus that, after England's Industrial Revolution, institutions play a significant role in determining the timing of a country's industrialization
  - Acemoglu et. al. (2001) *The colonial origins of comparative development: An empirical investigation*

# China's modern growth before and after 1978

Figure 2

GDP per capita of China and US: 1952–2009



# Growth Accounting

Two methods of decomposing the sources of GDP growth:

- standard method
- alternative method based on growth theory

## Standard method:

$$\begin{aligned} \text{Growth of GDP} = & \\ & \alpha \text{ growth of labour} + \alpha \text{ growth of average human capital} \\ & + (1-\alpha) \text{ growth of capital} + \text{growth of productivity} \end{aligned}$$

## Alternative method based on growth theory:

$$\begin{aligned} \text{Growth of per capita GDP} = & \\ & \text{growth of labour participation rate} + \text{growth of average} \\ & \text{human capital} \\ & + \alpha / (1-\alpha) \text{ growth of capital-output ratio} \\ & + 1 / (1-\alpha) \text{ growth of productivity} \end{aligned}$$

*Table 1***Decomposing China's Growth: 1952–2007**

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<i>Average annual growth rates (%)</i>					
<i>Period</i>	<i>GDP per capita</i>	<i>Labor participation rate</i>	<i>Capital/output ratio</i>	<i>Average human capital</i>	<i>TFP</i>
1952–1978	2.97	0.11	3.45	1.55	–1.07
1978–2007	8.12	0.57	0.04	1.18	3.16

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<i>Contributions to per capita GDP growth</i>					
<i>Period</i>	<i>GDP per capita</i>	<i>Labor participation rate</i>	<i>Capital/output ratio</i>	<i>Average human capital</i>	<i>TFP</i>
1952–1978	100	3.63	116.15	52.25	–72.03
1978–2007	100	7.05	0.51	14.55	77.89

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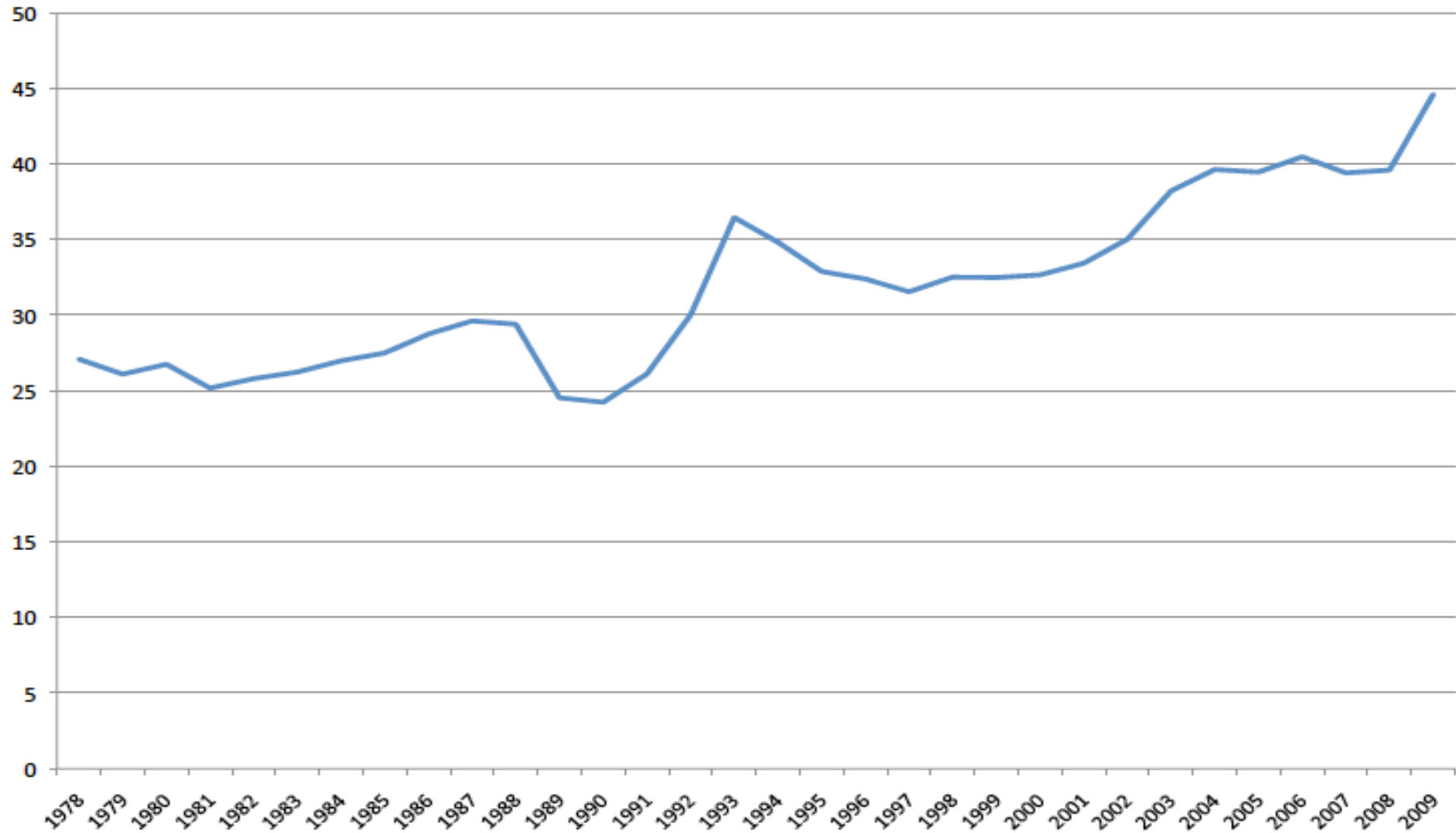
## Different growth patterns before and after 1978

- In the pre-reform period, accumulation of both physical and human capital is the main source of growth
- During the reform period, productivity growth is the main source of growth



# Has China's growth been driven by investment?

**Investment Rates in China**



# Standard growth accounting

	GDP	Contributions from		
	Growth	Capital	Labor	TFP
1978-2009	9.48	4.51	0.82	4.14
1978-1988	9.43	3.94	1.42	4.07
1988-1998	7.75	3.87	0.63	3.25
1998-2009	11.09	5.62	0.45	5.02

# Accounting based on growth theory

	GDP		Contributions from	
	Growth	Capital/Output Ratio	Labor	TFP
1978-2009	9.48	-0.45	1.64	8.29
1978-1988	9.43	-1.55	2.84	8.14
1988-1998	7.75	-0.02	1.27	6.50
1998-2009	11.09	0.15	0.90	10.04

## China's growth has not been driven by investment

- Despite rising rates of investment, returns to investment remain to be the highest in the world
- This would not be possible without high productivity growth
- High investment rates are the result of high productivity growth, not the cause of high GDP growth rates

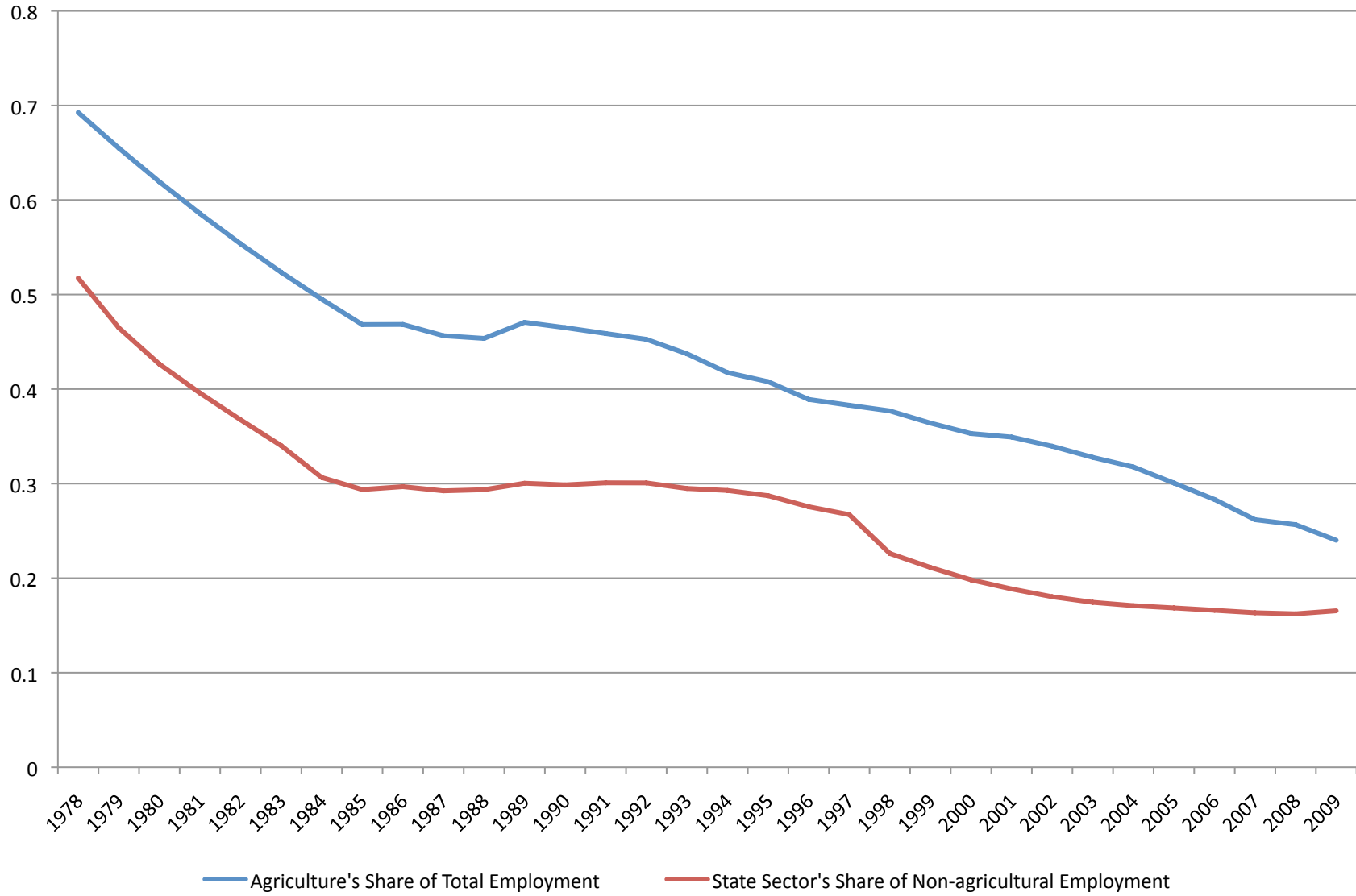
# What are the sources of productivity growth after 1978?

- Policy and institutional reforms
- Structural transformations
  - From agriculture to manufacturing and services
  - From state sector to non-state sector

# Policy and institutional reforms

- General policy of “Reform and Opening Up” (*Gaige Kaifang*) is decided in December 1978
- Agriculture:
  - Implemented Household Responsibility System and price reform in agriculture in the early 1980s
  - Further market reforms in 1990s
  - Relaxation of restrictions on non-farm activities:
    - rise and expansion of TVEs
    - structural transformations

## Two Structural Transformations



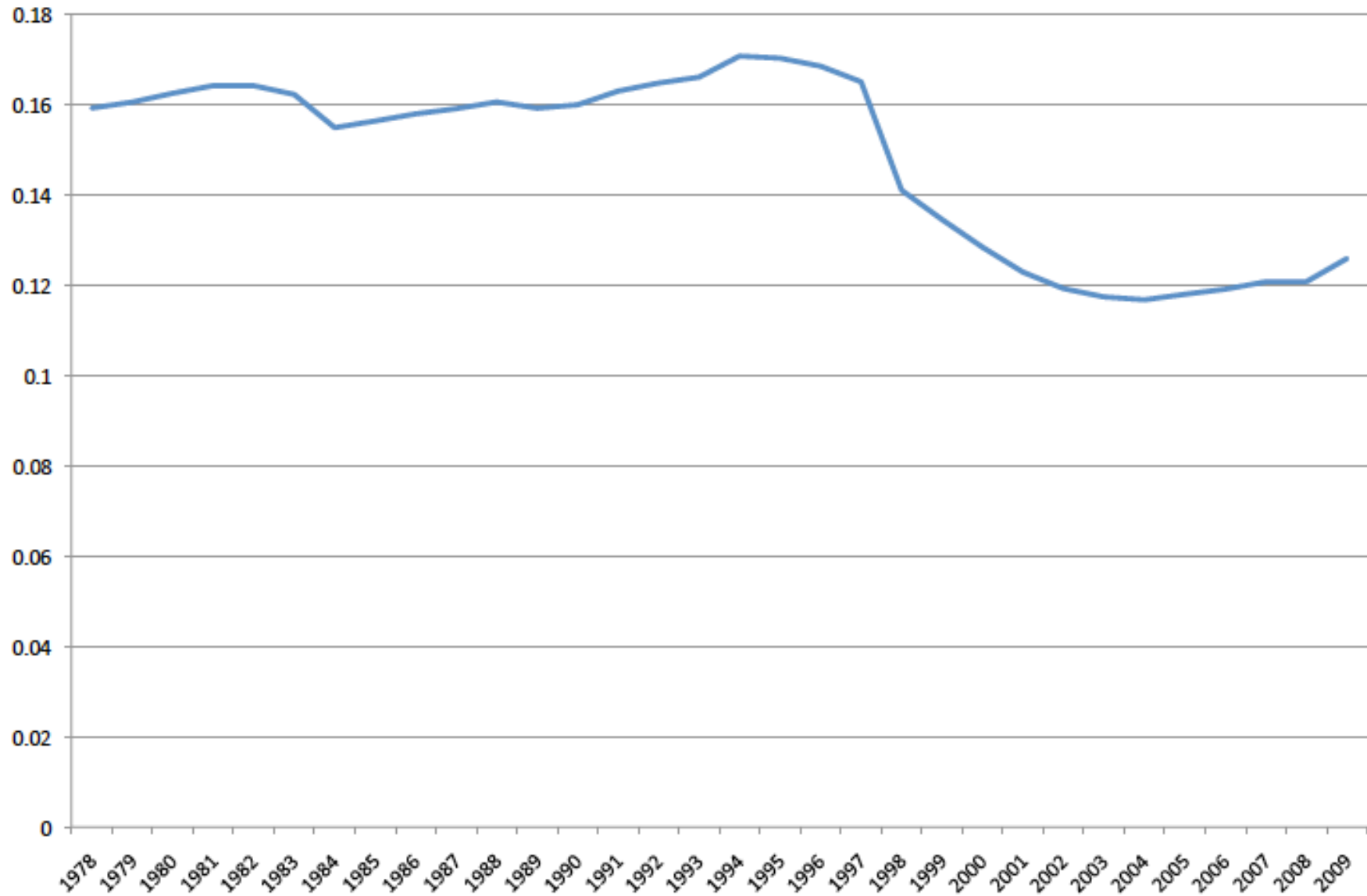
# Policy and institutional reforms

## Outside agriculture: A tale of two sectors

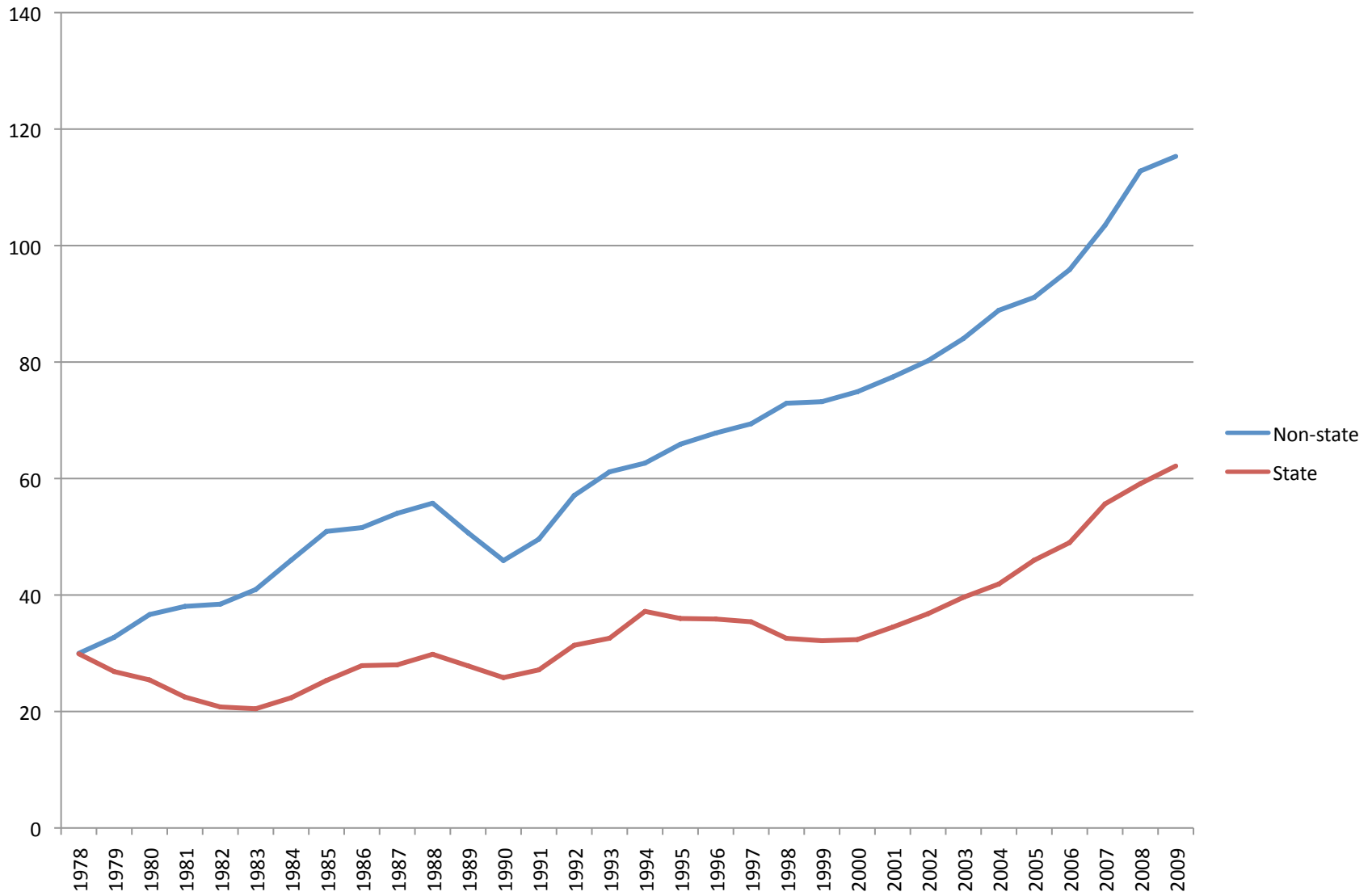
- 1978-1988: Rise of the non-state sector
- 1988-1998: From reform without losers to inevitable tradeoffs
- 1998-2007: Privatization and trade liberalization



## State Sector's Share of Total Employment



## TFP of State and Non-State Sectors



*Table 2*

## Employment Share, GDP Share, and Total Factor Productivity Growth by Sector

<i>Average annual total factor productivity growth (%)</i>				
<i>Period</i>	<i>Agriculture</i>	<i>Nonagricultural sector</i>		<i>Aggregate</i>
		<i>Nonstate</i>	<i>State</i>	
<b>1978–2007</b>	<b>4.01</b>	<b>3.91</b>	<b>1.68</b>	<b>3.61</b>
1978–1988	2.79	5.87	–0.36	3.83
1988–1998	5.10	2.17	0.27	2.45
1998–2007	4.13	3.67	5.50	4.68
<i>Year</i>	<i>Employment share (%)</i>			
1978	69	15	16	100
2007	26	62	12	100
<i>Year</i>	<i>GDP share (%)</i>			
1978	28	27	45	100
2007	10	70	20	100

## Model-Based Growth Accounting for China: 1978-2009

### Labor Productivity Growth

### TFP Growth

	Reduction in Agriculture's Share of Employment	Agriculture	Non-agriculture	Aggregate	Non-agriculture	Aggregate
Benchmark	-0.45	7.13	5.56	7.86	3.49	4.15
No Ag TFP growth	-0.01	-0.79	5.96	<b>5.36</b>	2.93	2.06
No Reallocation from agriculture	0.00	5.42	5.99	5.99	2.90	2.70
No labor market frictions	-0.34	6.49	5.09	7.00	3.17	3.72
No ag-nonstate wedge	-0.35	6.53	5.60	7.50	3.39	3.90
No state-nonstate wedge	-0.45	7.11	5.31	7.62	3.34	4.01
No state sector downsizing	-0.45	7.12	5.30	7.61	3.42	4.10
No Non-state TFP growth	-0.45	7.13	1.11	<b>3.98</b>	0.46	1.83
No State TFP growth	-0.45	7.13	3.37	5.85	1.72	2.62
No increase in investment rate	-0.40	6.79	4.93	7.07	3.44	4.09
but capital allocated efficiently	-0.39	6.92	6.26	8.21	4.14	4.67

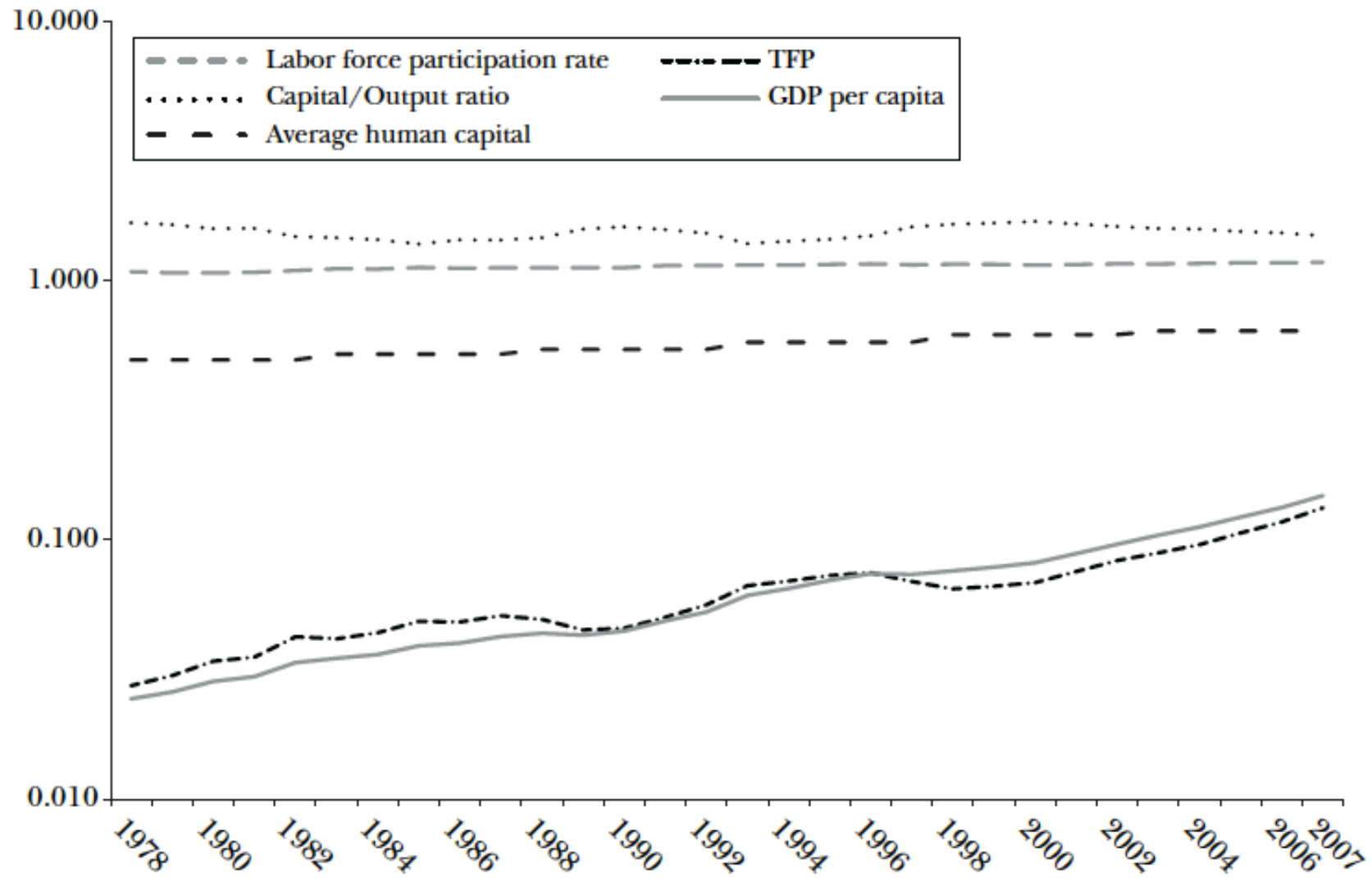
# Summary

- Productivity growth in non-state non-agricultural sector is the most important source of growth
- Contribution of the labor reallocation from agriculture is significant, but modest
- Even smaller direct contribution from downsizing the state sector
  - But significant indirect effect through increases in state sector's productivity

# Future prospects of China's growth

- Productivity growth has been the driving force of China's growth in the last three and half decades
- It will continue to be the key source of China's future growth

*Figure 3*  
**China Relative to the United States**



## Plenty of room for future productivity growth

- In 1978, China's productivity was only 3% of the U.S. level
- After three decades of rapid growth, China's productivity was still only 13% of the U.S. level
- If the rapid growth continues for another two decades, China's productivity level would still be only 40% of the U.S. level



## Comparison: Productivity growth in Japan and Korea

- In contrast,
  - Japan's productivity level was 56% of U.S. level in 1950 and 83% of U.S. level in 1975
  - Korea's productivity level was 43% of U.S. level in 1965 and 63% of U.S. level in 1990

# Where will future productivity growth come from?

- Still plenty of room for adopting and learning best practices and frontier technologies from developed countries
- Further institutional and policy reforms

# Further institutional and policy reforms

- Reduce capital market distortions

Figure 6a. Returns to Capital

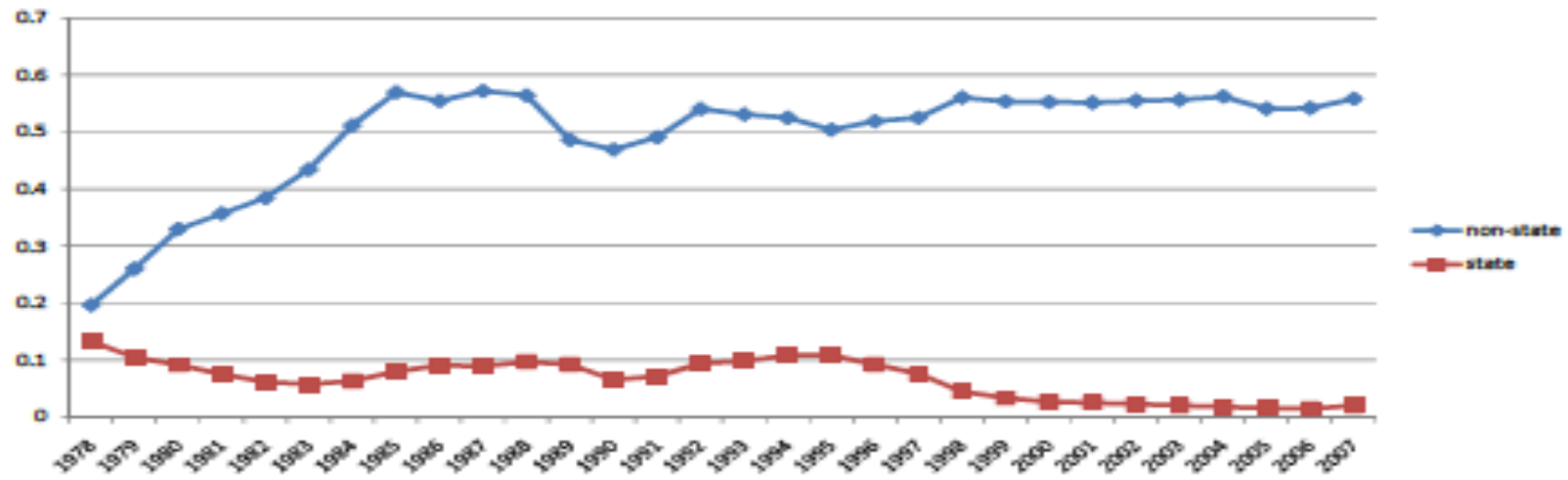
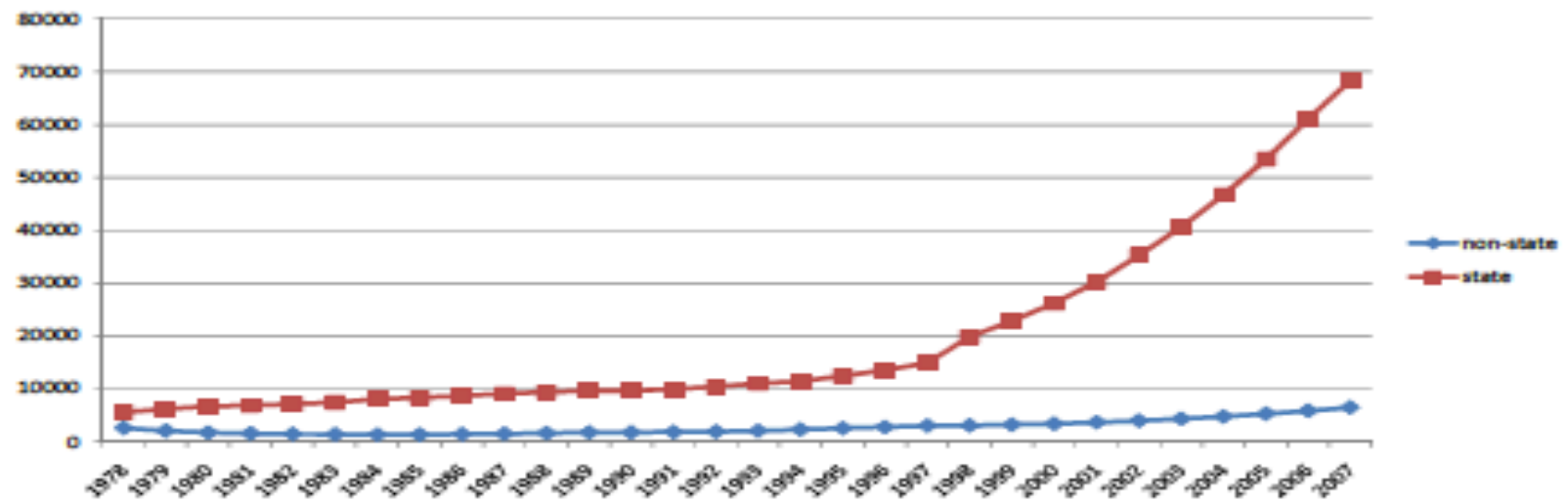


Figure 6b. Capital-labor Ratio



# Further institutional and policy reforms

- Capital market distortions have increased in recent years
- Needs
  - A more decentralized banking system
  - Entry of small private financial institutions

# Further institutional and policy reforms

- Reduce capital market distortions
- Reduce state's monopoly in key industries and services
  - Energy
  - Telecommunication
  - Transportation
  - Banking
  - Health care
  - Education

# Where will future productivity growth come from?

- Further institutional and policy reforms
  - Reduce capital market distortions
  - Reduce state monopoly in key industries and services
  - Reduce barriers to labor mobility
    - Despite 250 million migrant workers, cost of labor market distortions has not declined

# Conclusion

- China's growth has been driven by productivity, not by capital investment
- Lack of capital is still a barrier to growth for the non-state sector
- If capital were allocated efficiently, China could have achieved the same growth performance without any increase in the investment rate
- Reducing capital market distortions should be the focus of China's growth rebalancing strategy
  - but, political constraints