

China's Agricultural Development and Policies:

**Are There Lessons for Africa
and Other Developing Countries?**

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What is the ultimate goal?
Development / Growth

Become a modern, rich,
industrialized nation

But, one of the main lessons of the past 50 years is that “development starts with agriculture”

Schultz / Mellor and Johnston / Others

- Agriculture provides income for farm households:
 - To build housing
 - To invest in education for kids
 - To finance move off the farm (and move into the city)
 - For starting self-employed enterprises
 - It is a source of demand ... in the early stages of industrialization

What has African agriculture (until recently) looked like over the past three decades

Almost no agricultural growth

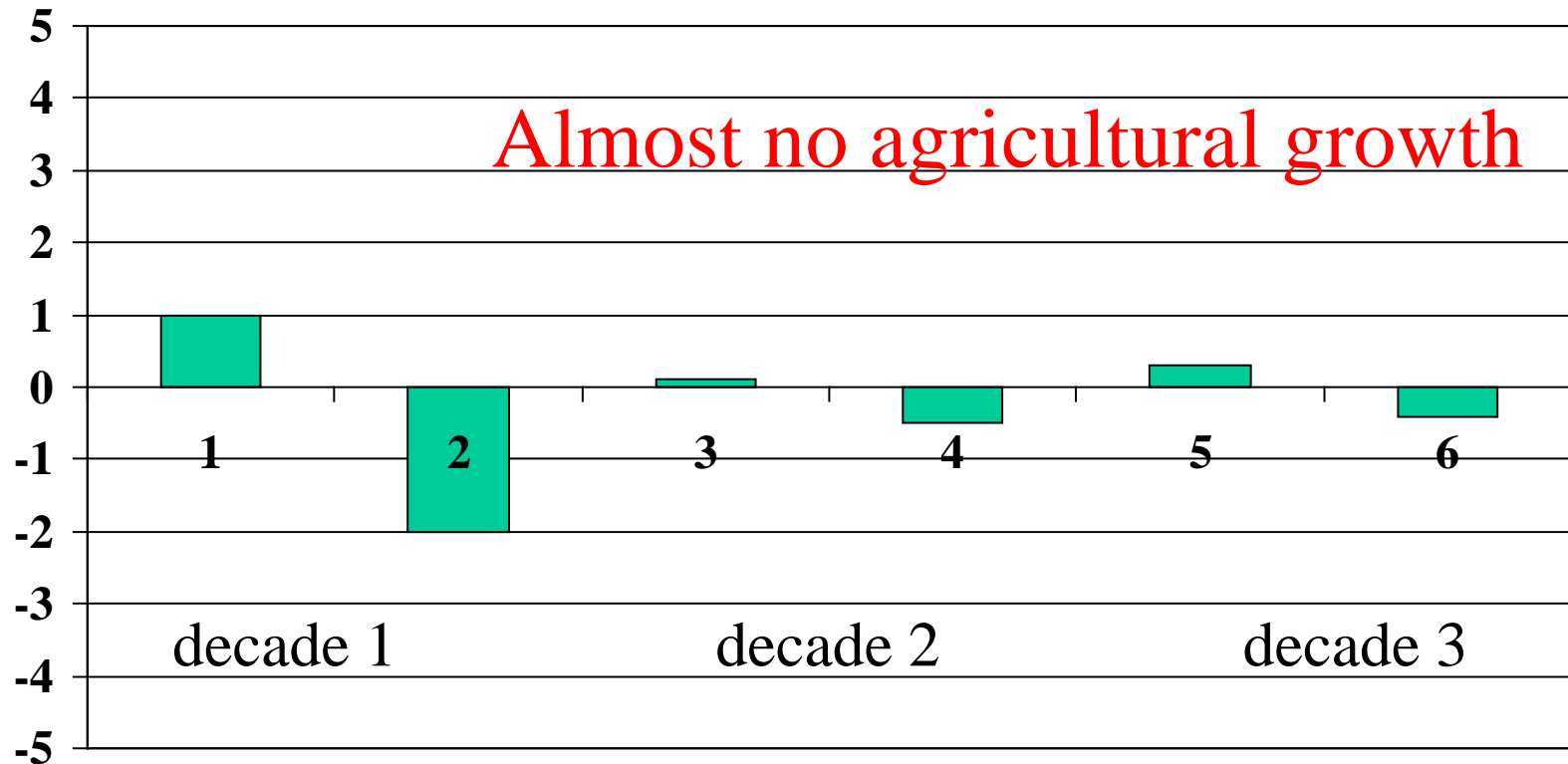
Almost no off-farm employment
growth

Almost no income growth

(lets look at some pictures of “some lost
decades”)

Agricultural TFP

Accumulated Five-Year Growth Rates



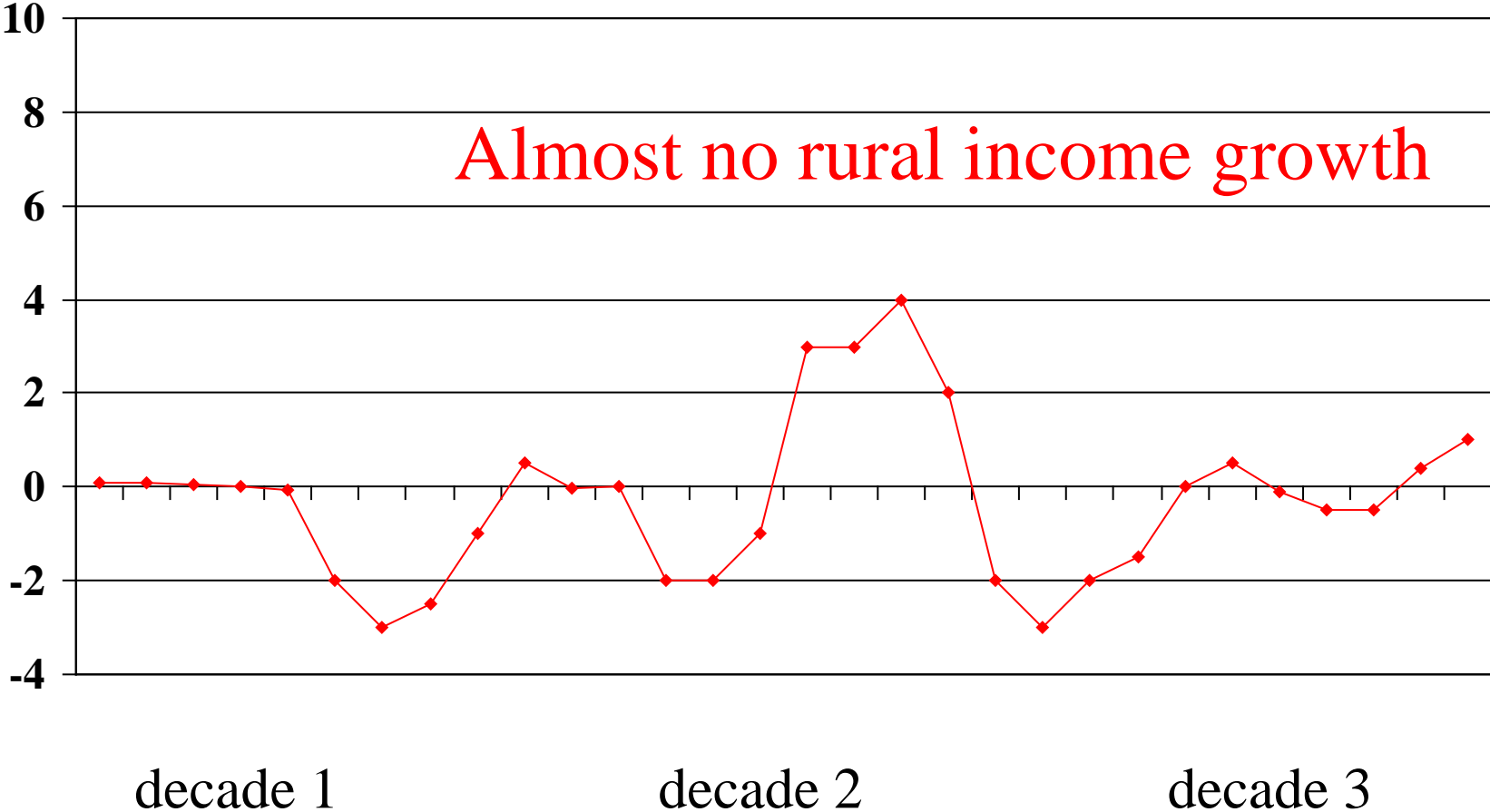
6 Five Year Periods during the Dark Decades

New off farm employment (share of rural population)



6 Five Year Periods during the Dark Decades

Annual Growth Rates Rural Income

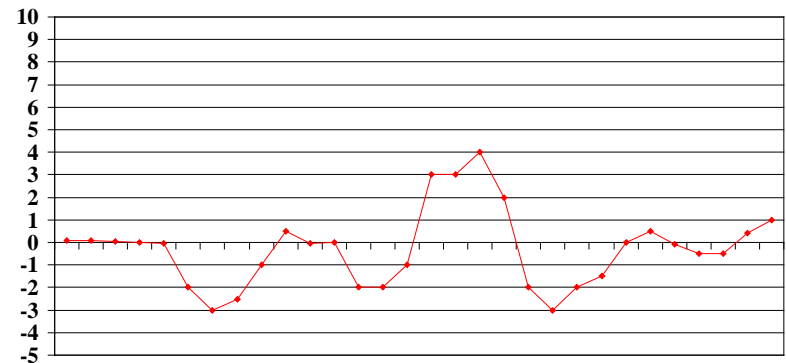
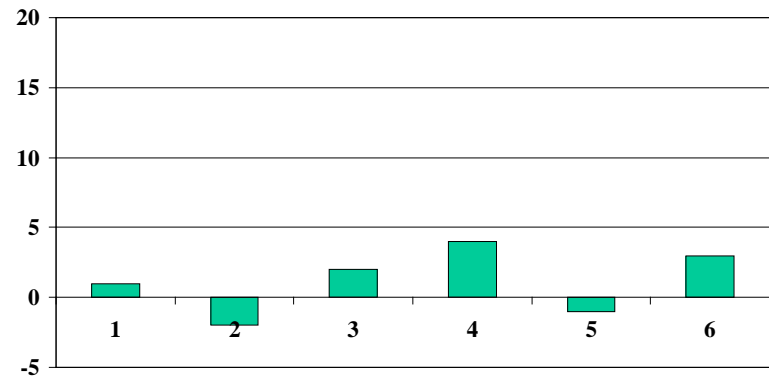
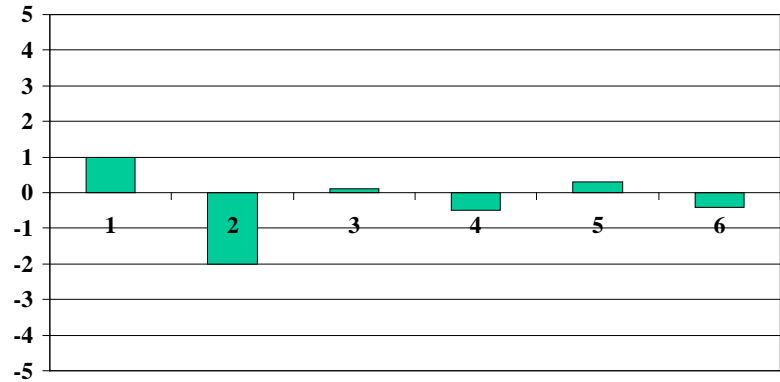


The summary of the record of these lost decades

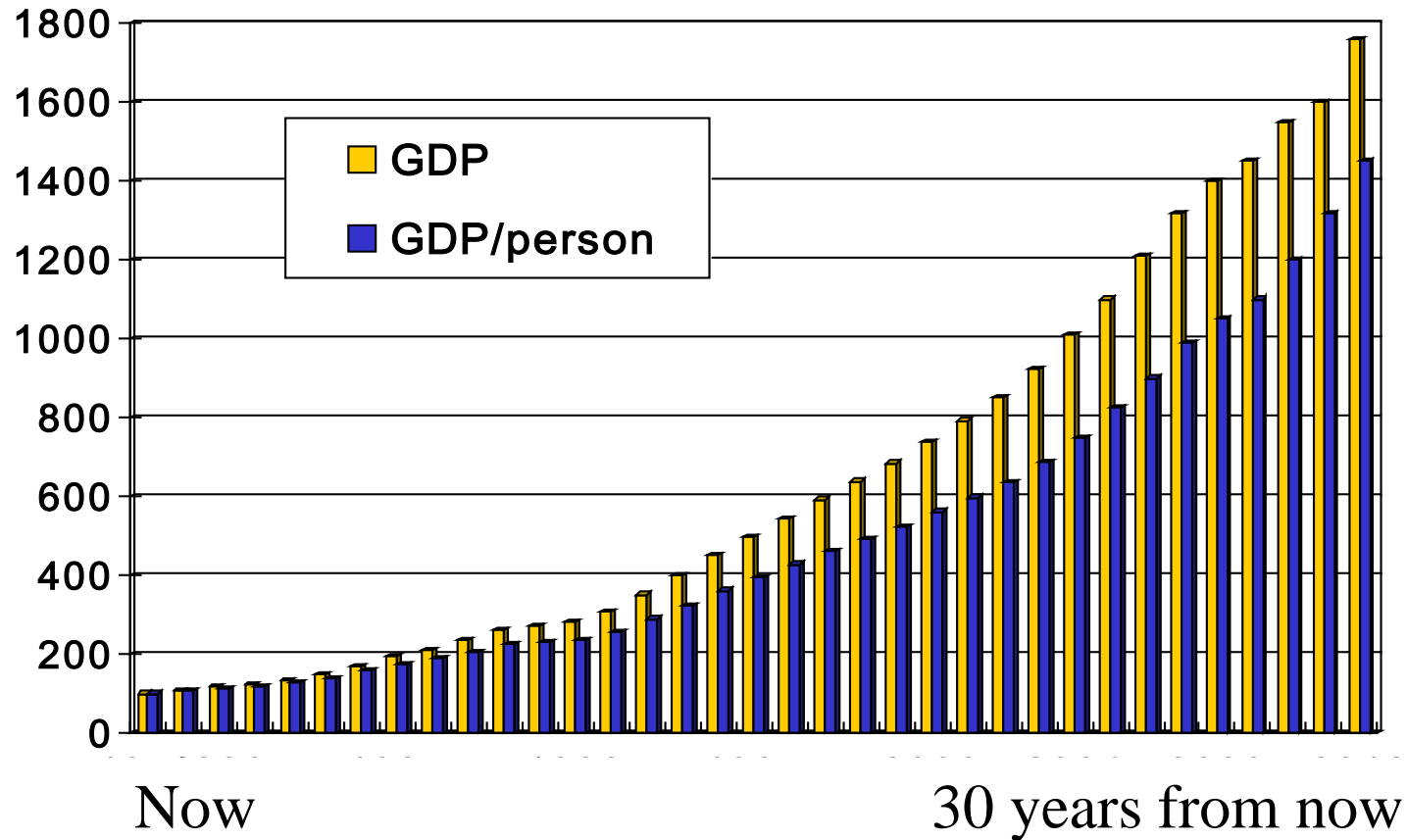
- Almost no agricultural growth
- Almost no off-farm employment growth
- Almost no income growth

So: This is the problem that “we” (the world, the USAID’s and DFID’s and GTZ’s, the Gates Foundations, the African Governments themselves, academics in the US and Europe, Africa, elsewhere) are working on:

we want to take these anemic results and turn them into ...



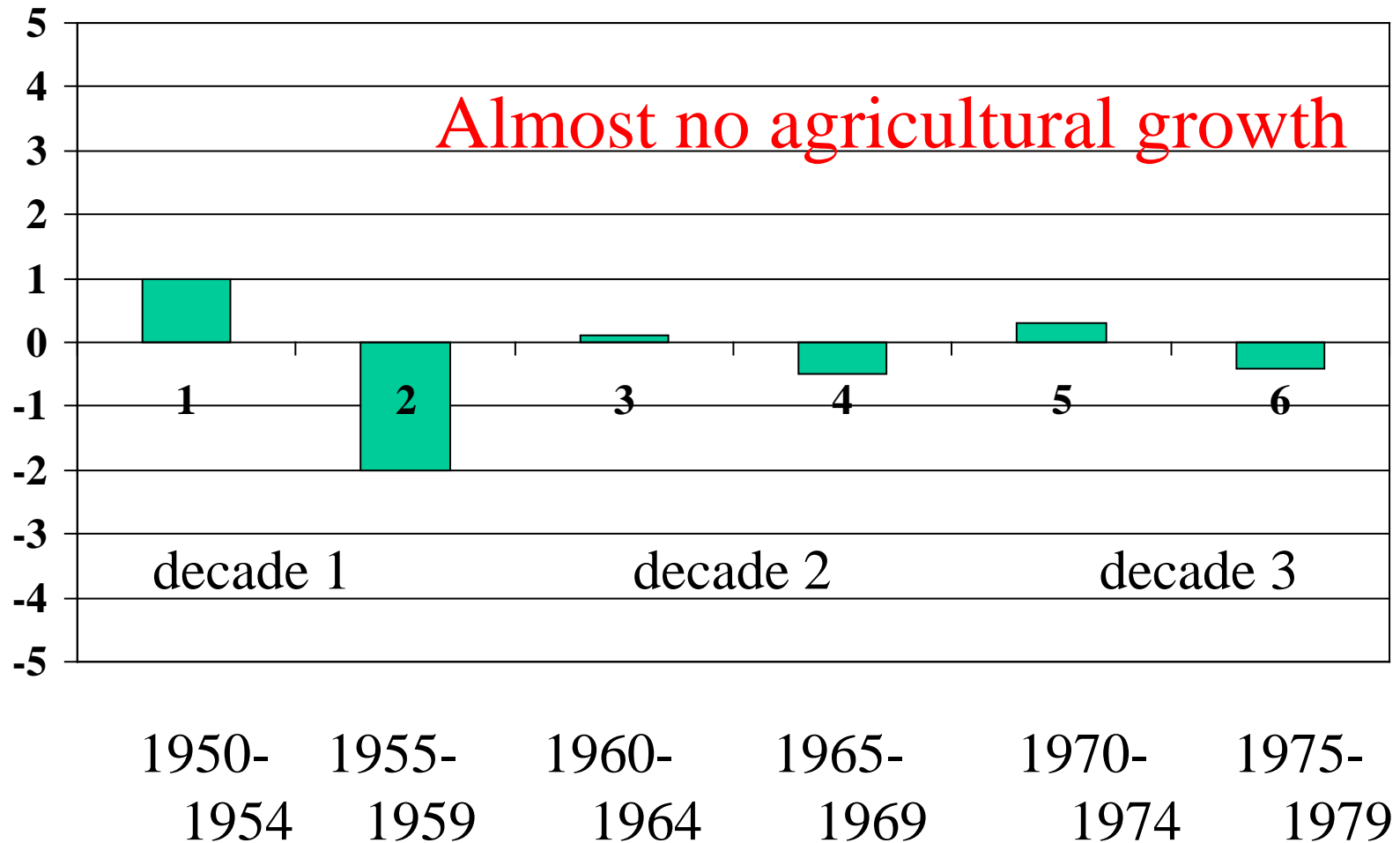
... 30 years of 10% growth



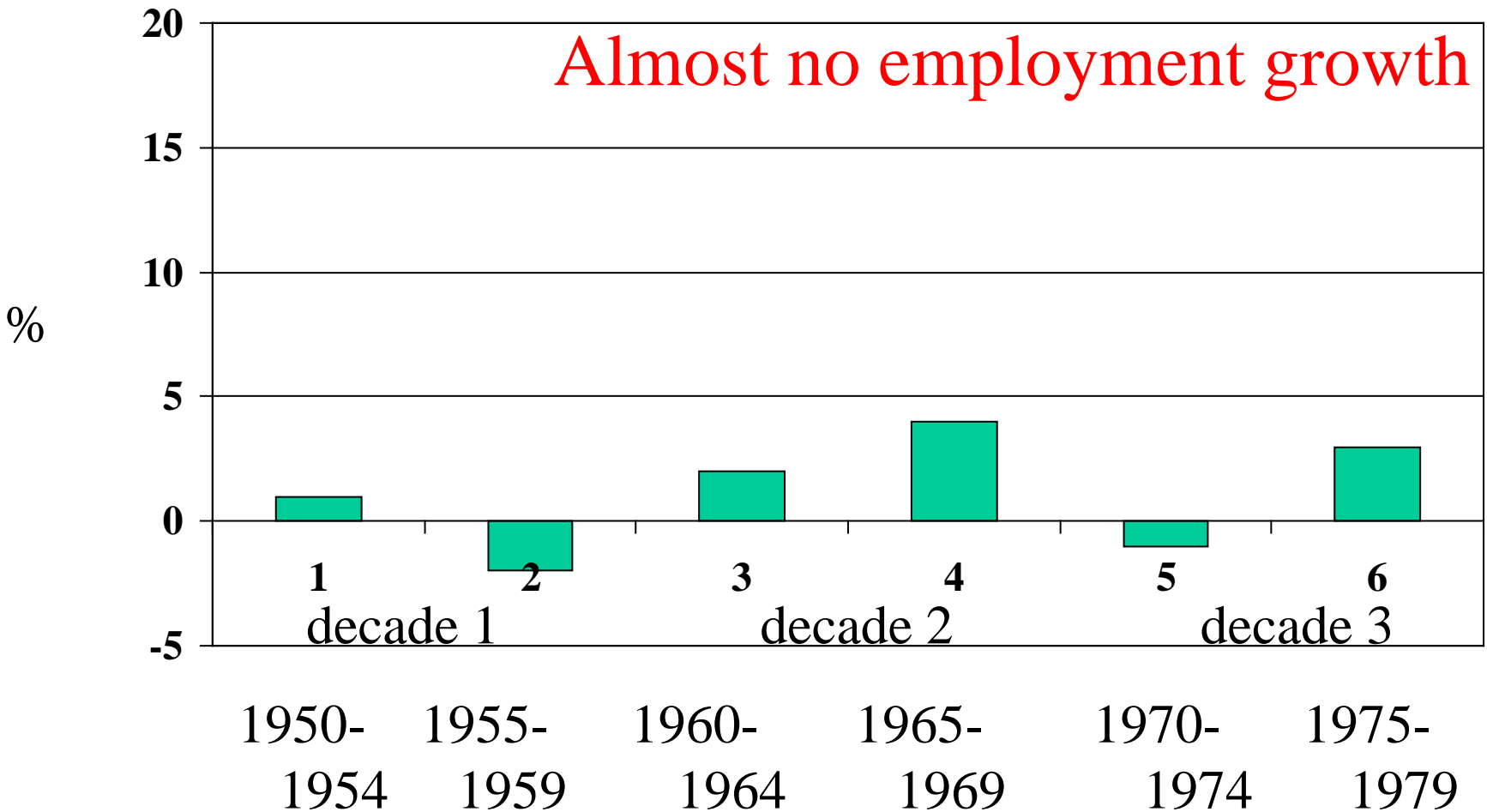
Is it possible?

China's Agricultural TFP 1950 to 1979

Accumulated Five-Year Growth Rates

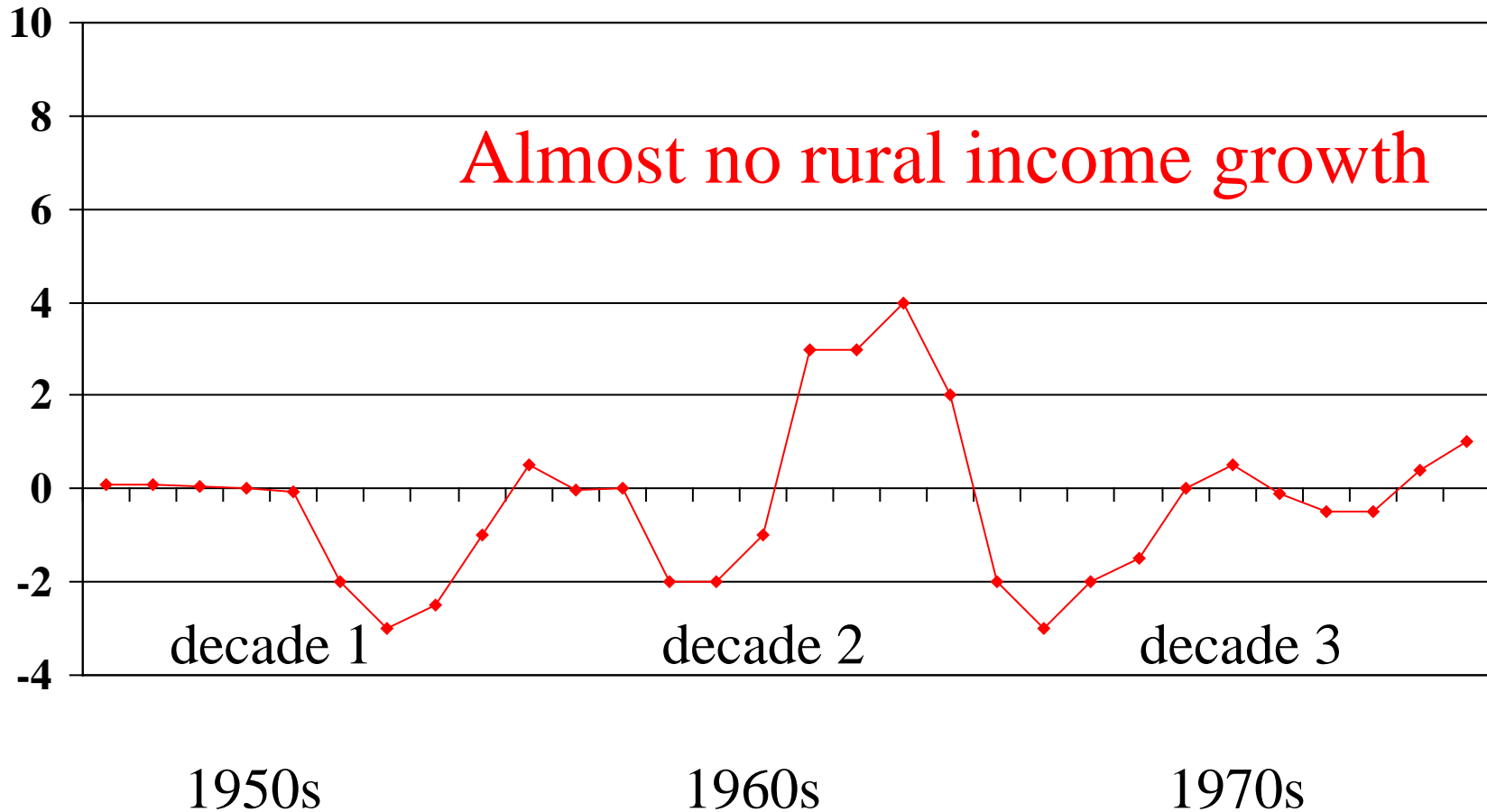


China's new off farm employment (share of rural population) 1950 to 1979



China's Rural Income Growth 1950 to 1979

Annual Growth Rates Rural Income



The summary of the record of China during the 1950s, 1960s and 1970s

- Almost no agricultural growth
- Almost no off-farm employment growth
- Almost no income growth

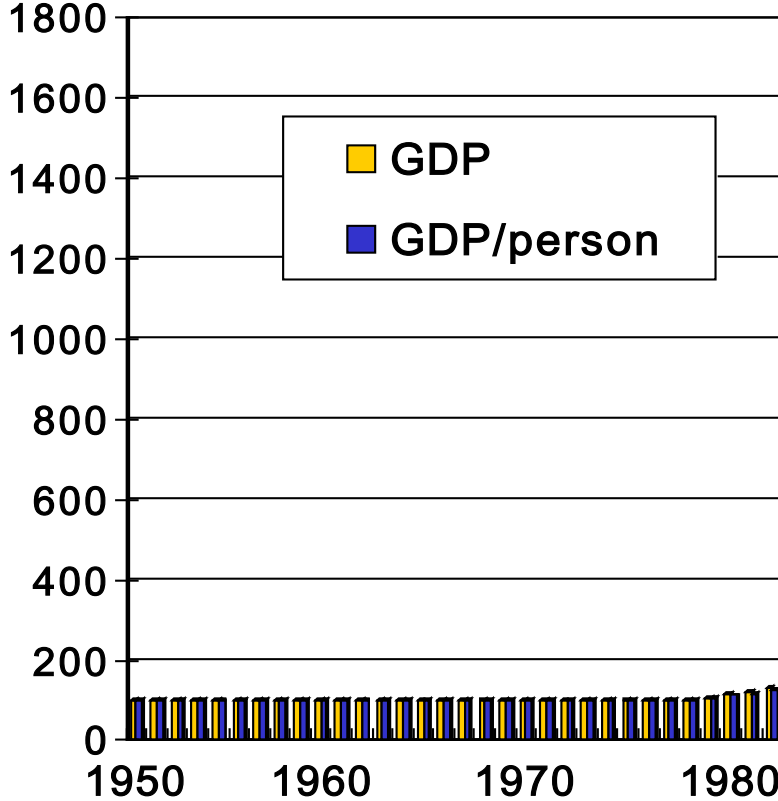
These were China's Lost Decades

Is it possible after three decades of
NO GROWTH to launch a miracle?

*Of course, this is what we are hoping for in the case of
Africa and other places in the developing world!*

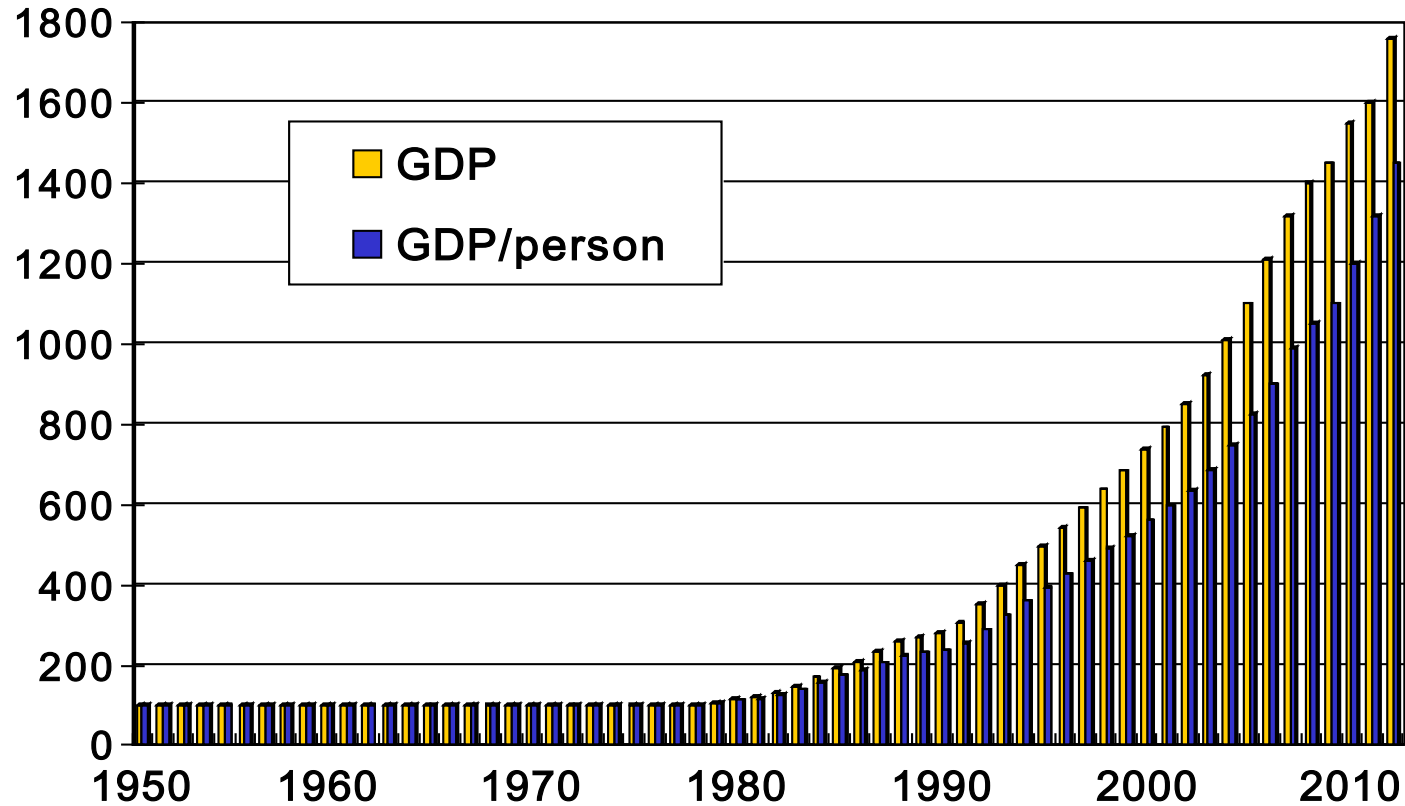
30 year of stagnation → 30 years of 10% growth

Income / capita



30 year of stagnation → 30 years of 10% growth

Income / capita

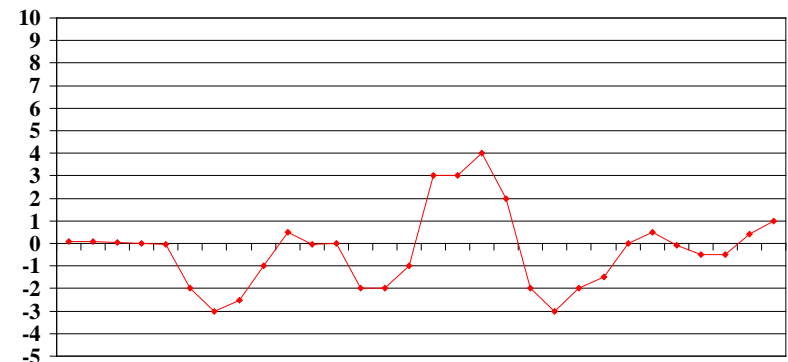
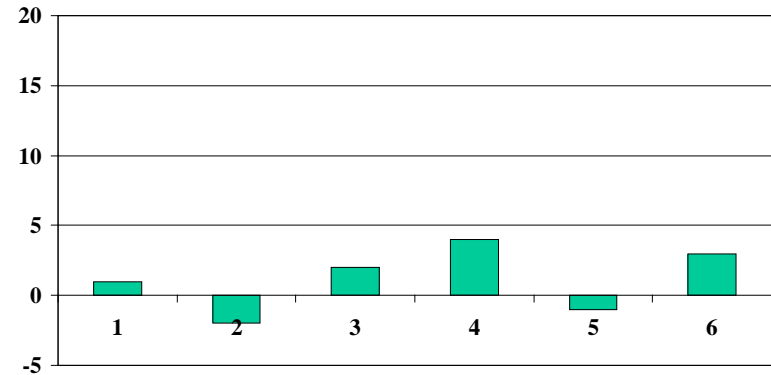
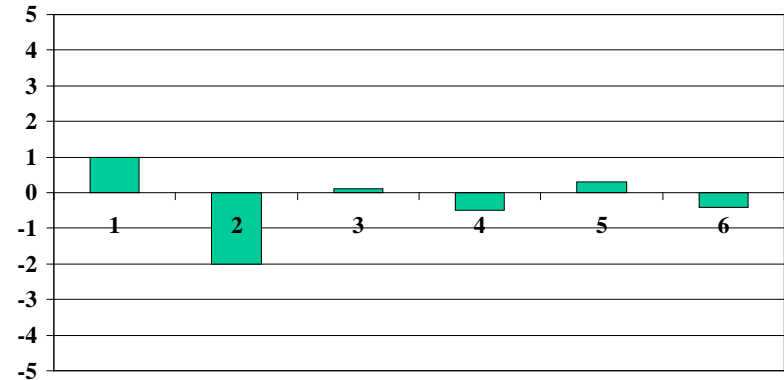


Today's presentation is about how China took:

zero growth in TFP ...
zero transformation &
zero growth in income

... and made it into
what China is today ...

And think about some of the lessons ... if there are any ... for Africa

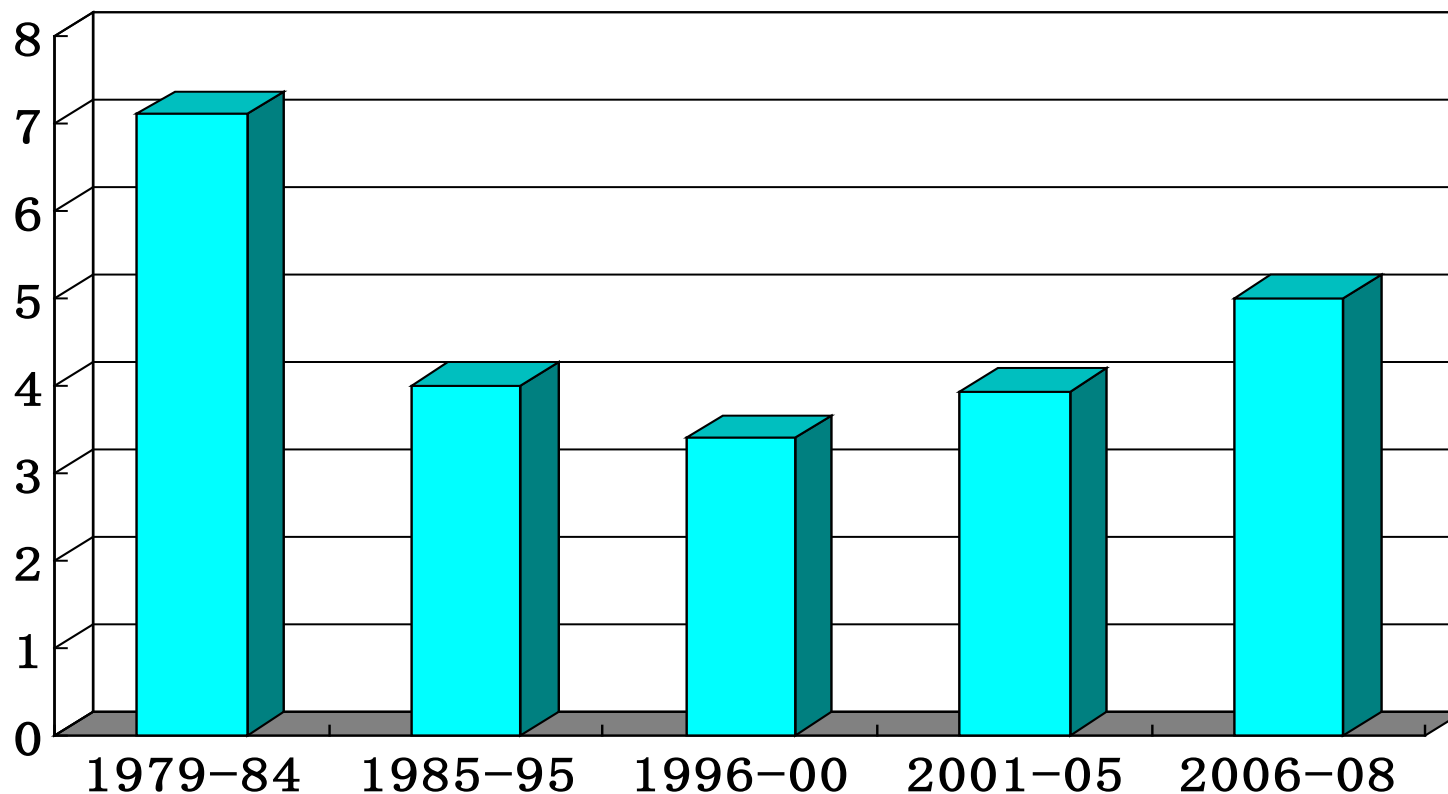


Strategy of the Presentation

1. The Record of the China's Past
2. Driving Forces: China's Policy Menu & Impacts
3. What China Did NOT Do
 - Some lessons to learn to follow
 - Some lessons to learn to avoid
4. Policy Lessons for Africa?

Part 1. The Record of China in 1980s, 1990s and 2000s

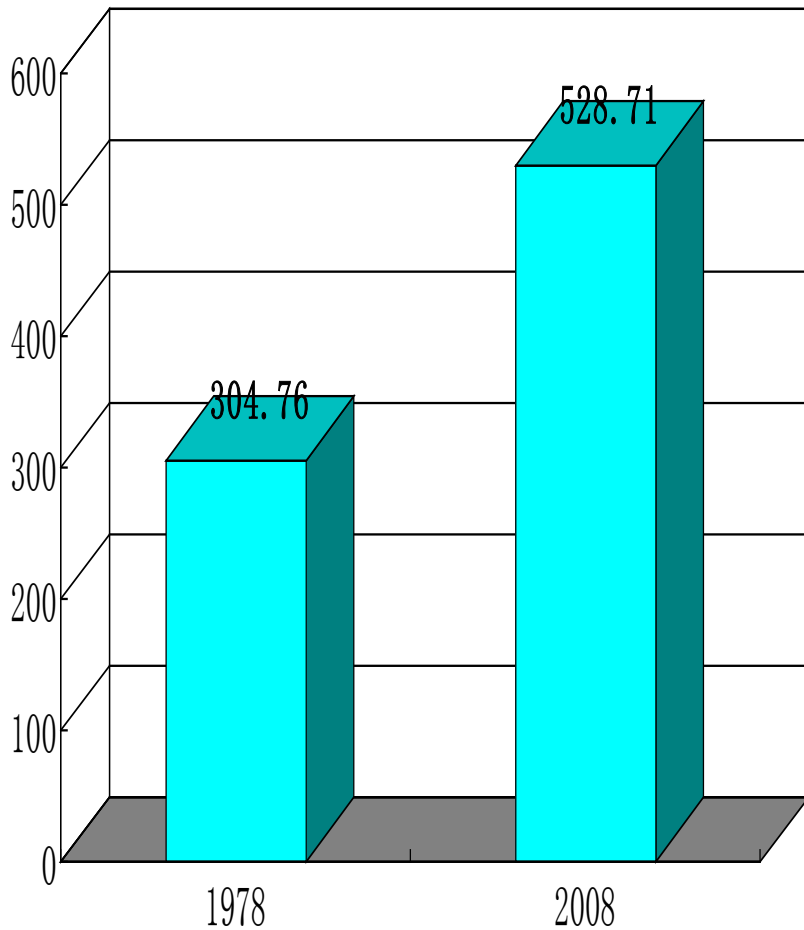
Average annual growth rate (%) of agricultural GDP



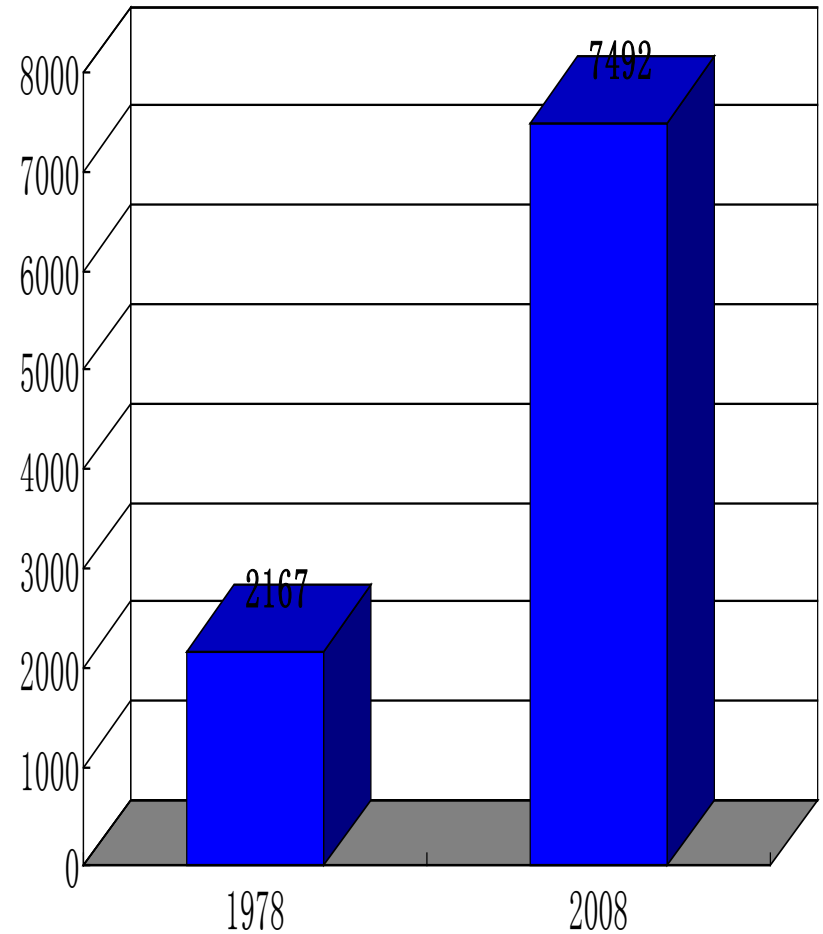
Average annual growth rate in agricultural GDP was about 4 times of population growth rates.

Grain and cotton production in 1978-2008

Grain (million tons)

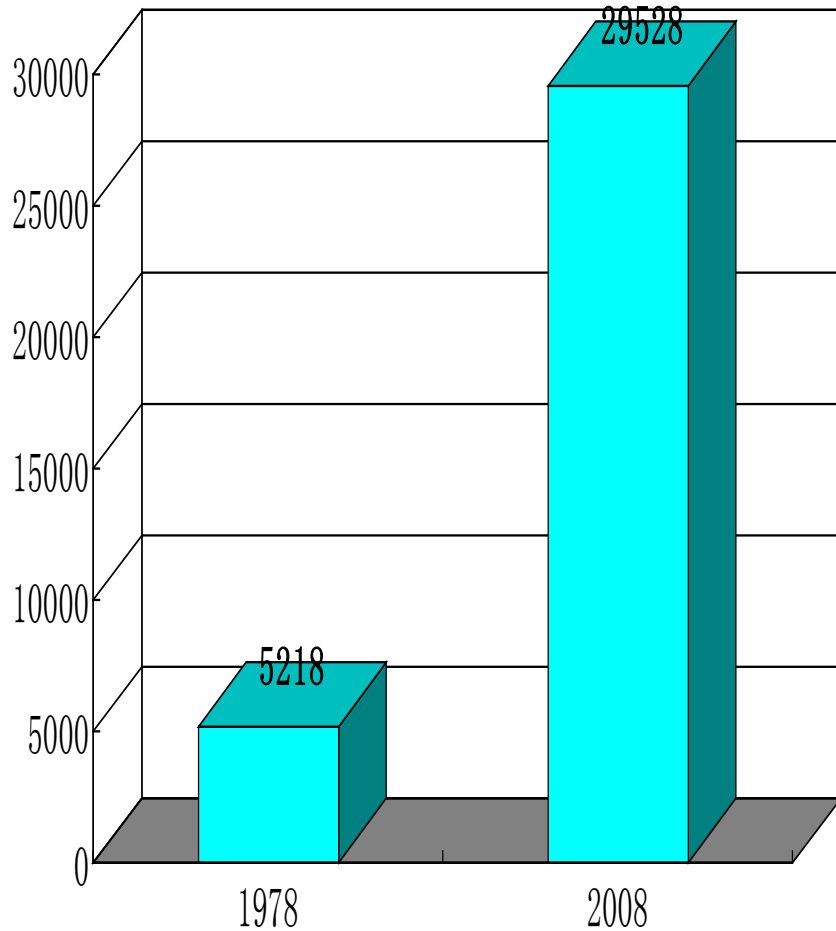


Cotton (1000 tons)

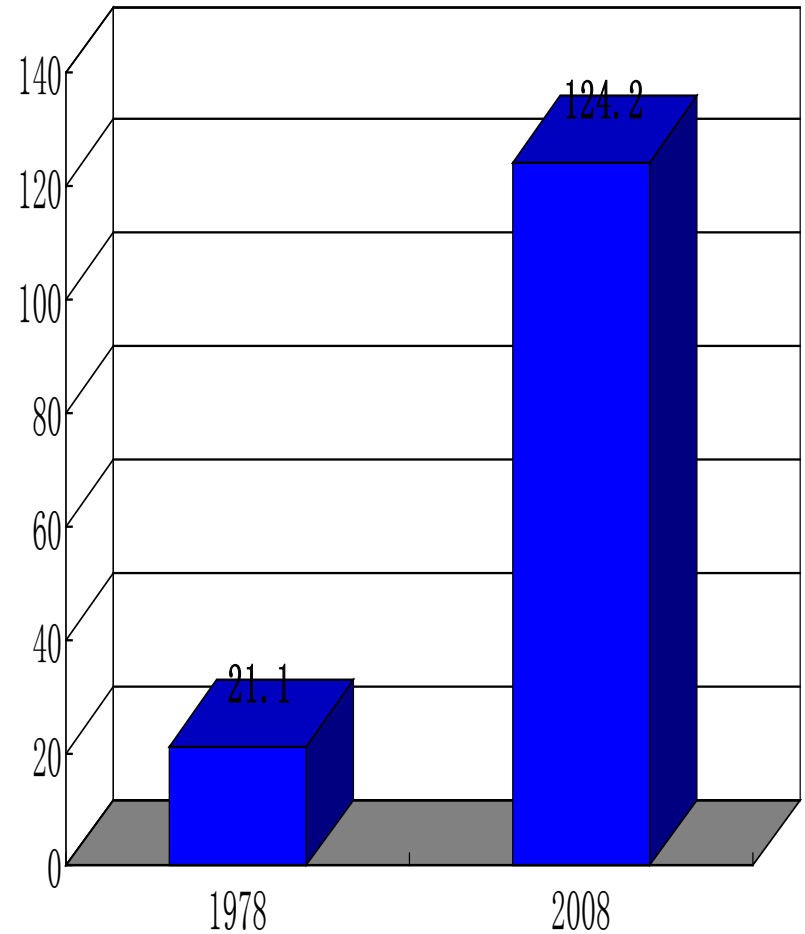


Production of oil and sugar crops

Oil crops (1000 tons)

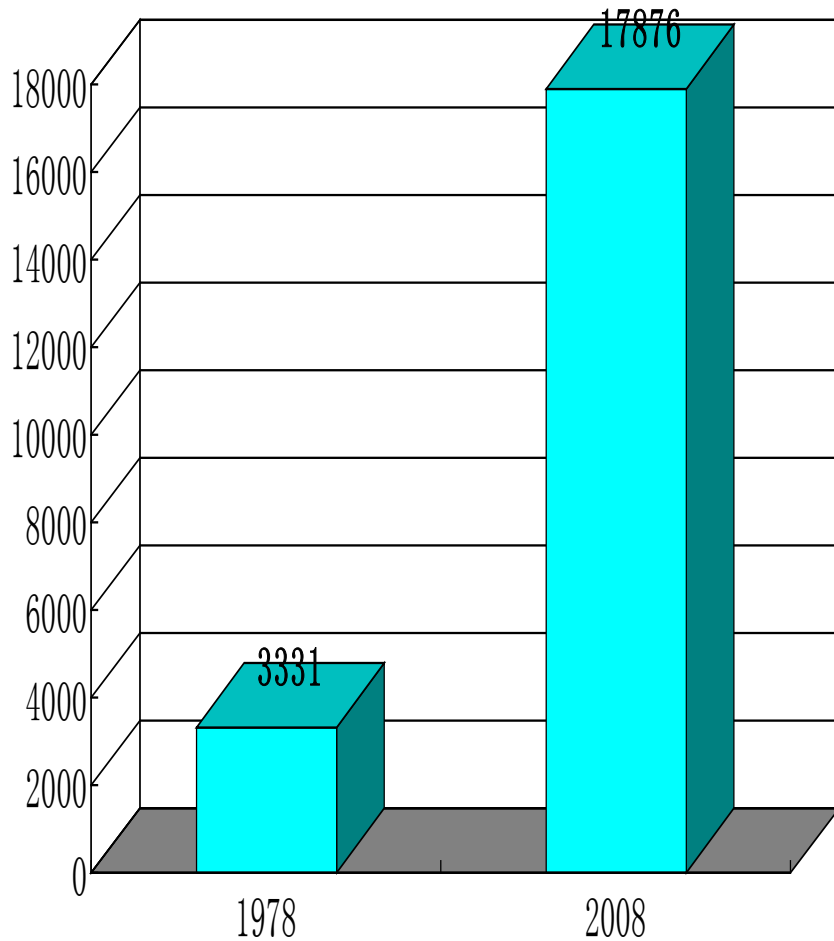


Sugar crops (million tons)

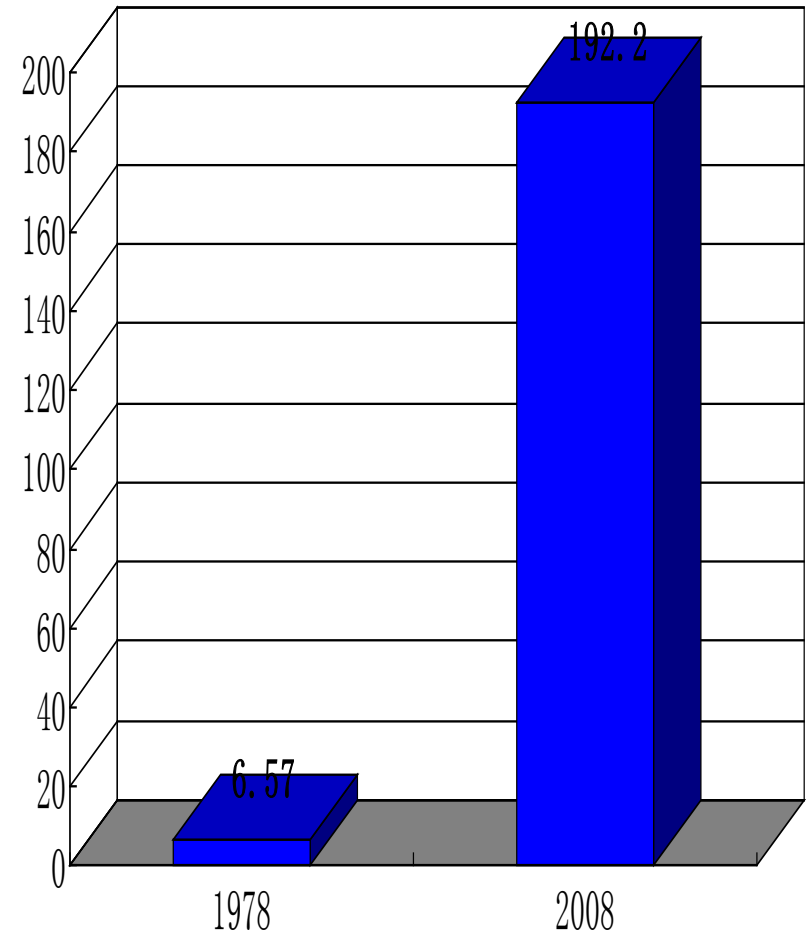


Vegetables and fruit

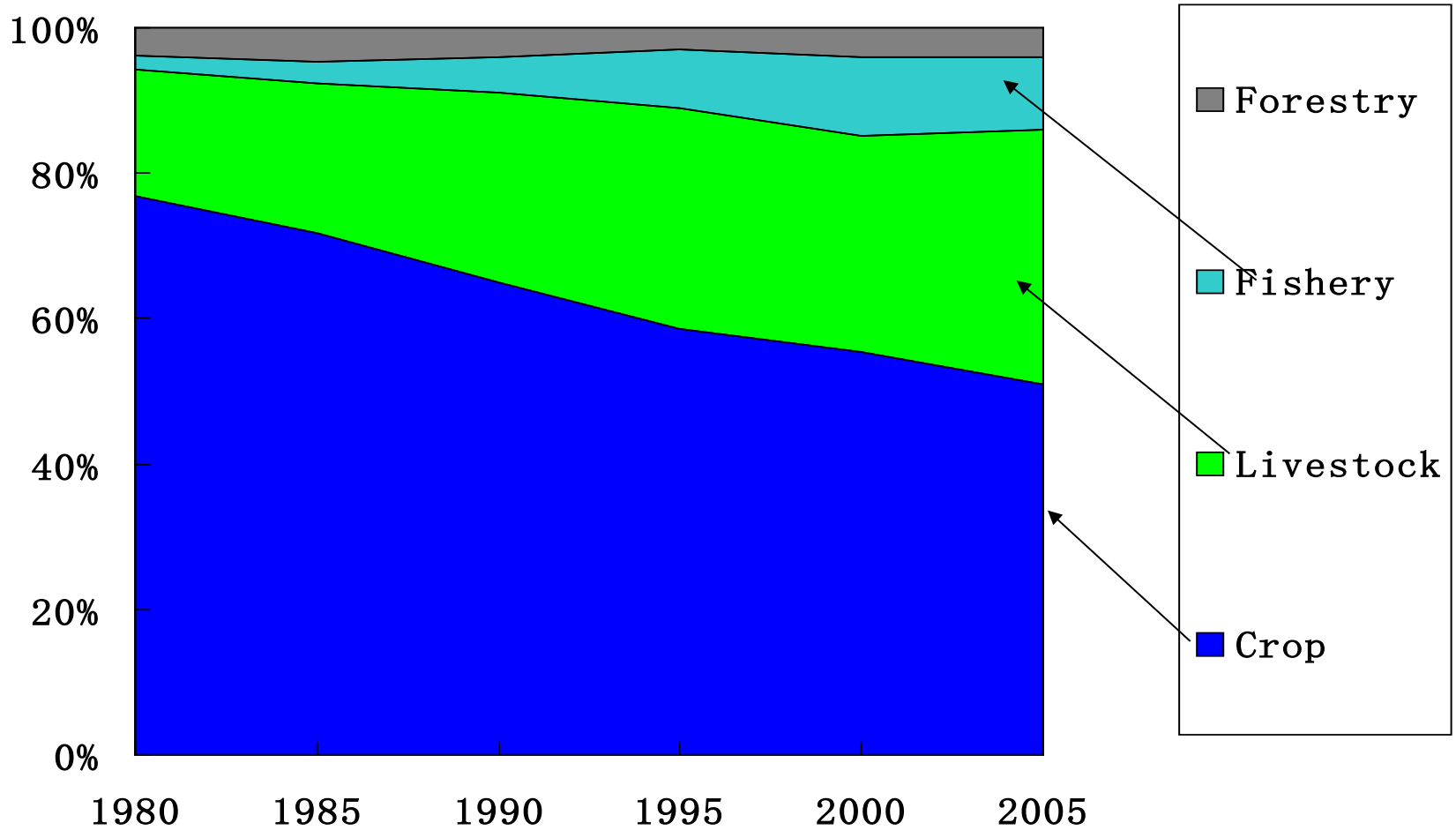
Vegetable area (1000 ha)



Fruit outputs (million tons)

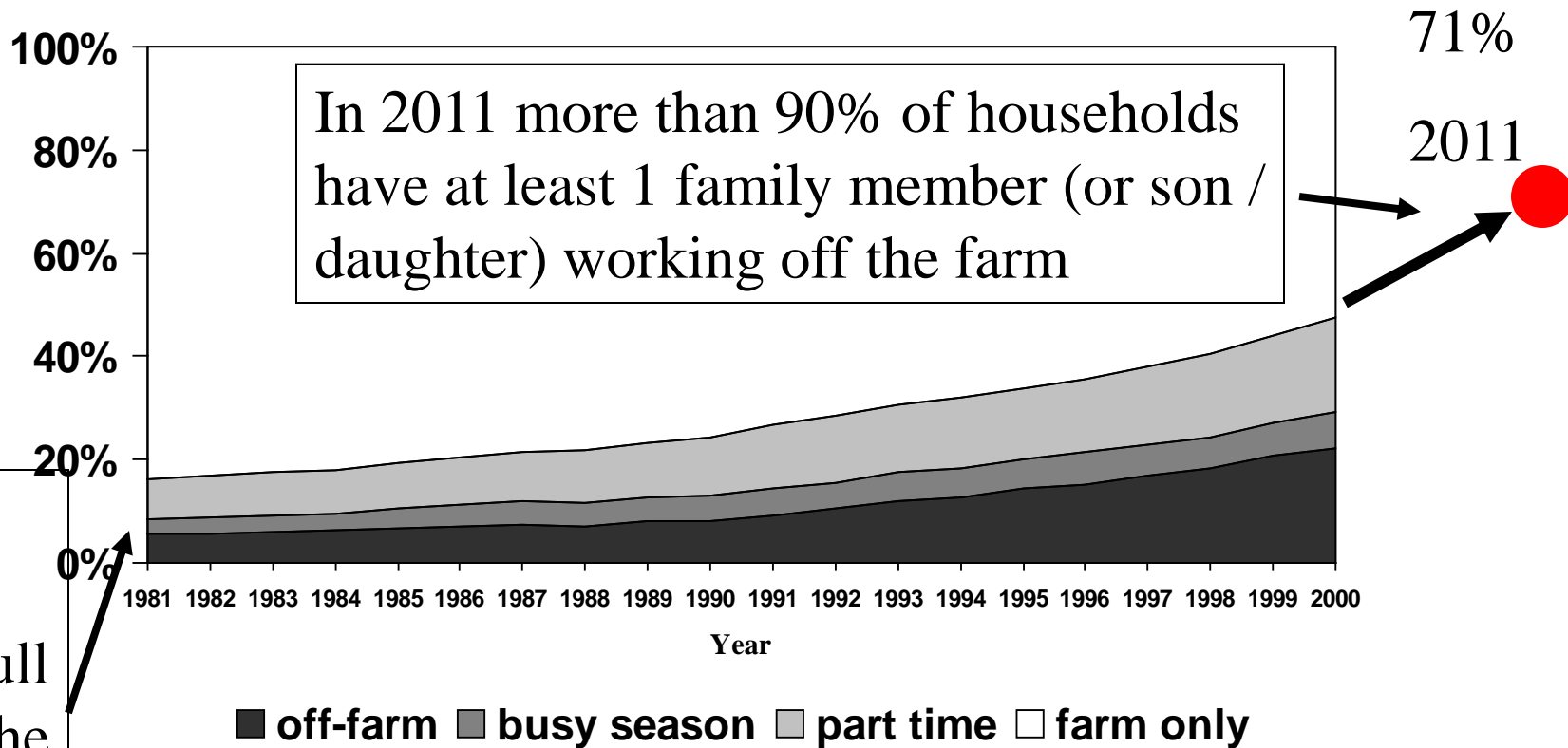


Shares of output values within agricultural sector, 1980-2005, (%)



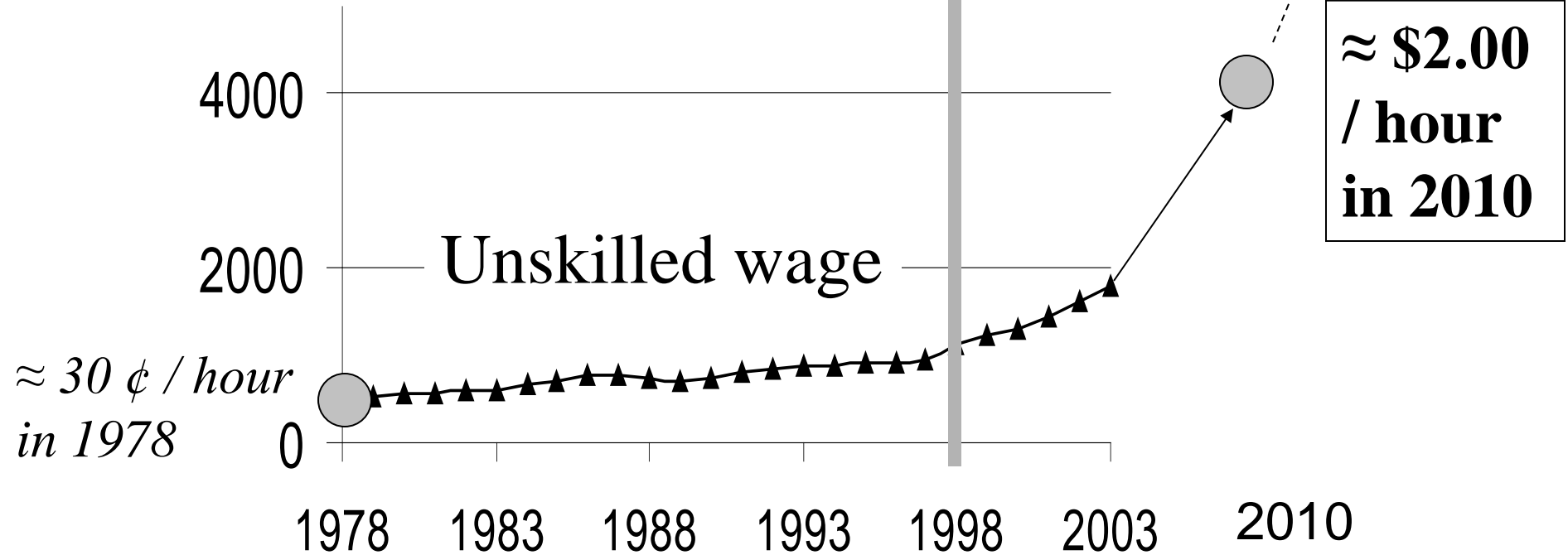
Livestock and fishery have grown even faster...

Overall Increase in Off-farm Work

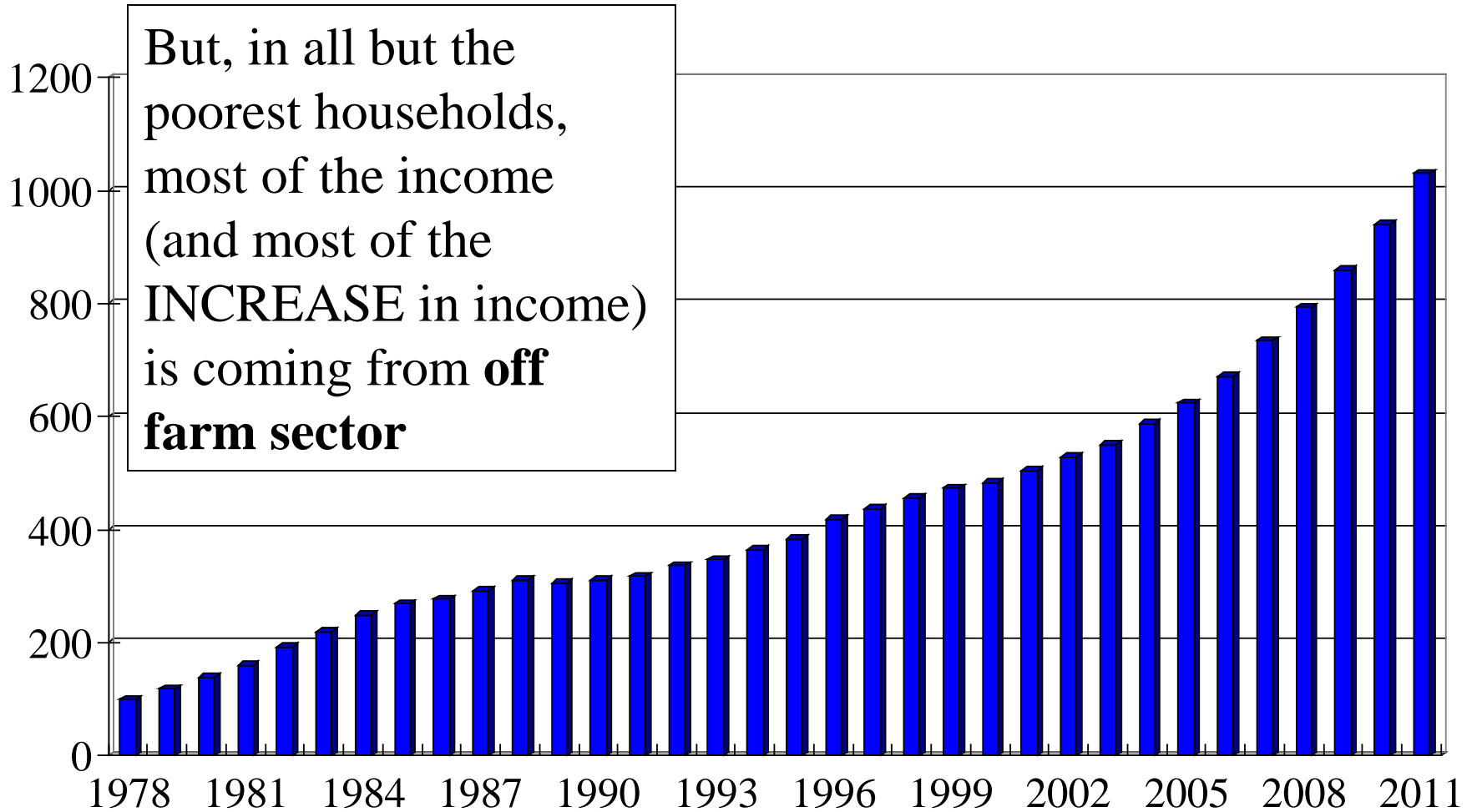




Annual Real Hourly Wage (1978 dollars)



Per capita income in real term (1978=100)



Part 2: Driving Forces: China's Policy Menu & Impacts

- What are major driving forces of success of China's agriculture in the past?
- What role did policy play?

Major driving forces (in past three decades—1980 to today)

- Institutional reform
- Market liberalization
- Investment into agricultural sector
 - Irrigation
 - Technology
 - Other

2a. Institutional reform (incentives)

Nature of Reforms (1)

1950s / 1960s / 1970s → China's Farmers in
Communes ... Land belongs to “others”

- 40,000 communes [before]
-

Decollectivization (1978 to 1984)

- 200,000,000+ million farms [after]

[Every rural resident (900,000,000 of them) has land]

- Almost all farms are “family farms”
- Farm size: “1 mu per person”

Nature of Reforms (1)

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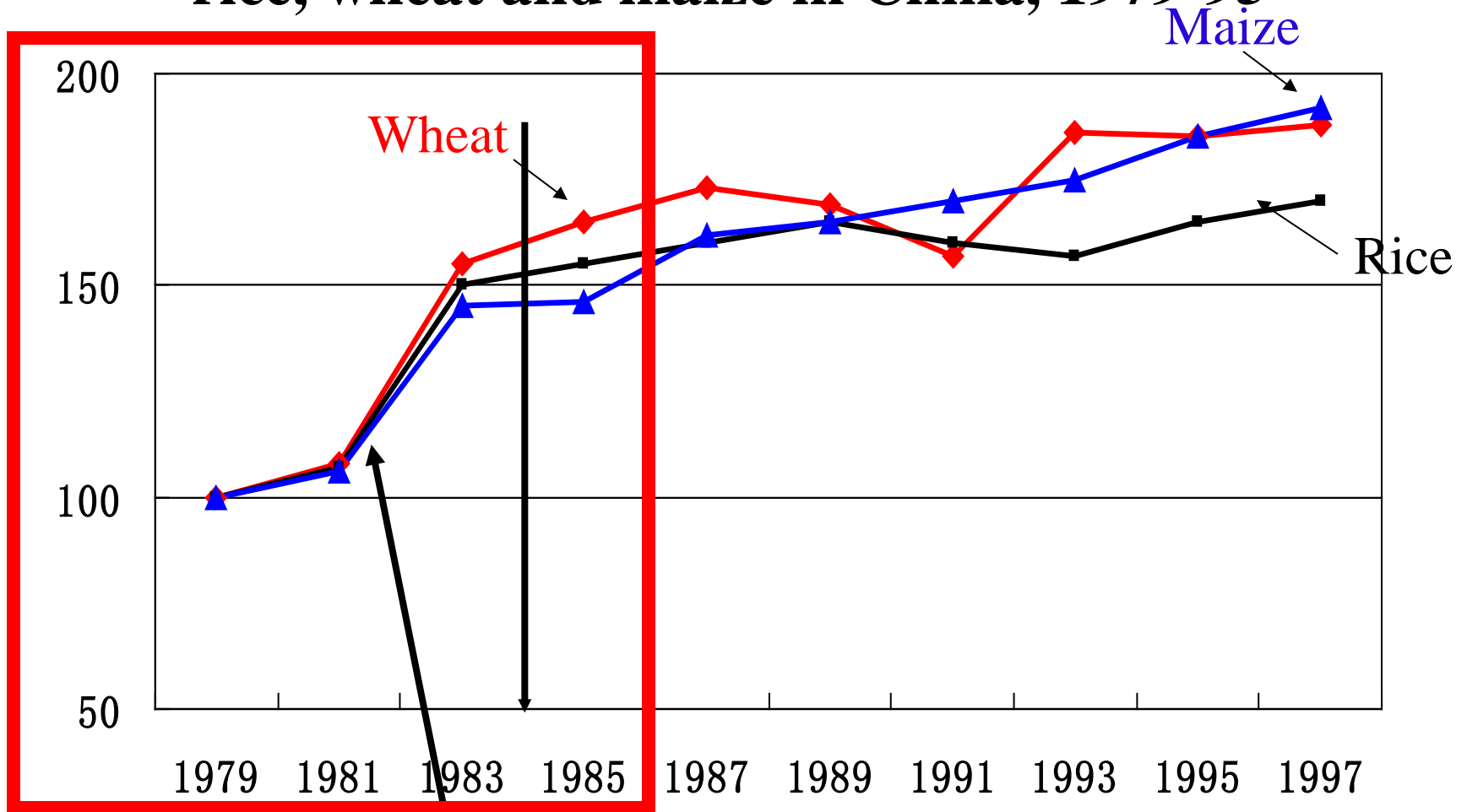
Decollectivization or HRS (1978 to 1984)

- 200,000,000+ million farms [after]

[Every rural resident (900,000,000 of them) has land]

- Almost all farms are “family farms”
- Although farm size was small: “1 mu per person”

IMPACT of HRS on Total Factor Productivity for rice, wheat and maize in China, 1979-95



Institutional change (HRS) was major source of TFP growth in 1979-84

2b. Market liberalization

2b. Market liberalization

Market support policies

POLICY AGENDA:

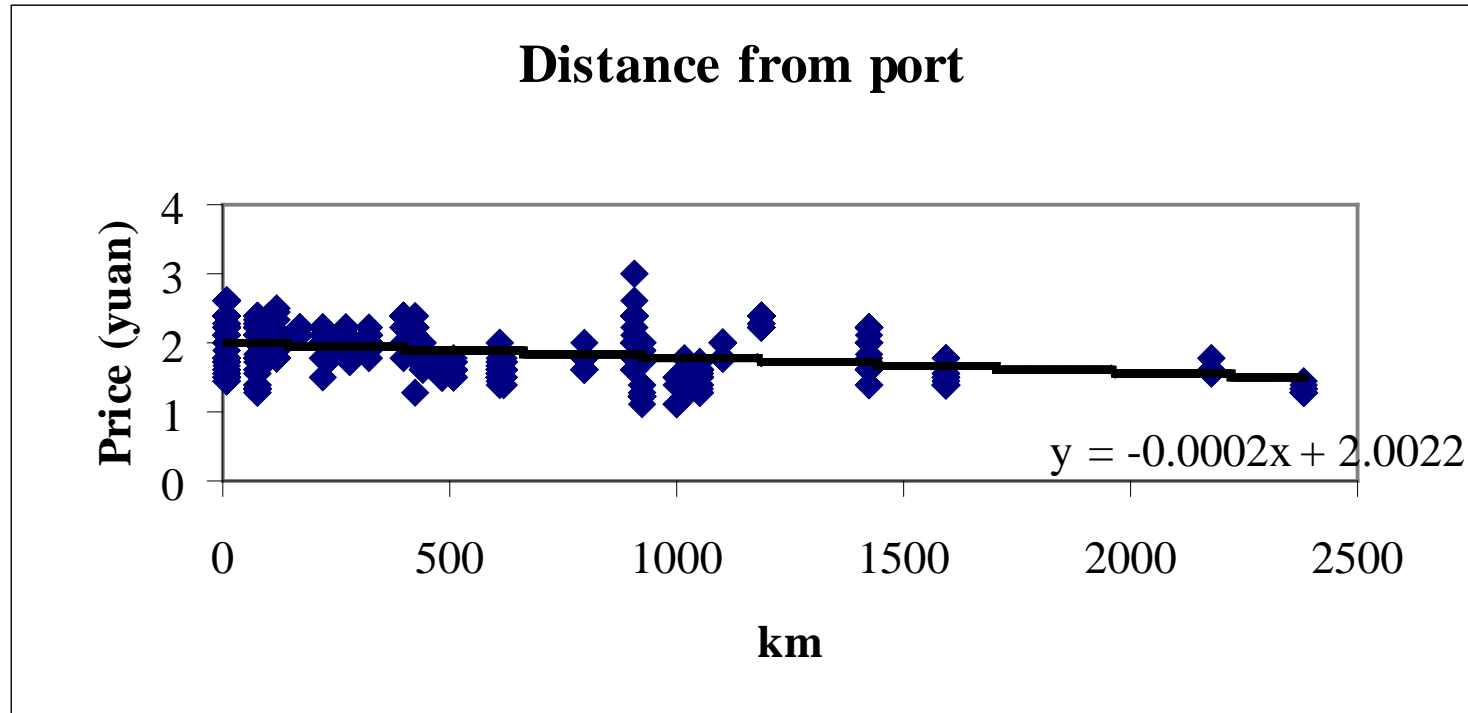
- Dismantled Parastatals (State-owned trading companies)
- Deregulated trading rules
- Invested in Roads
- Invested in Communications

Did China's Markets Integrate?



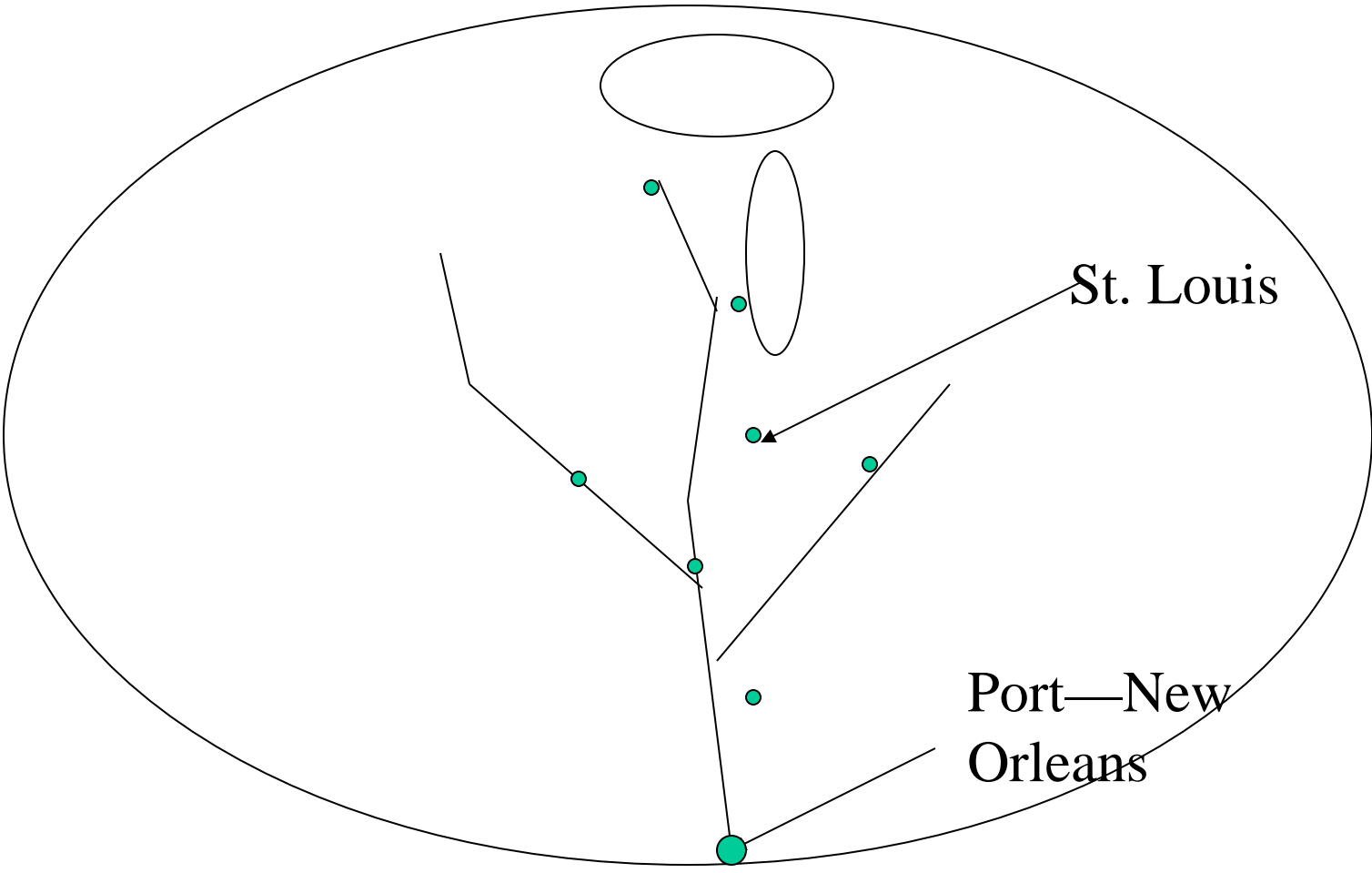
Use Corn and Soybean Marketing Regions and Flows as an example

county
city
Prov

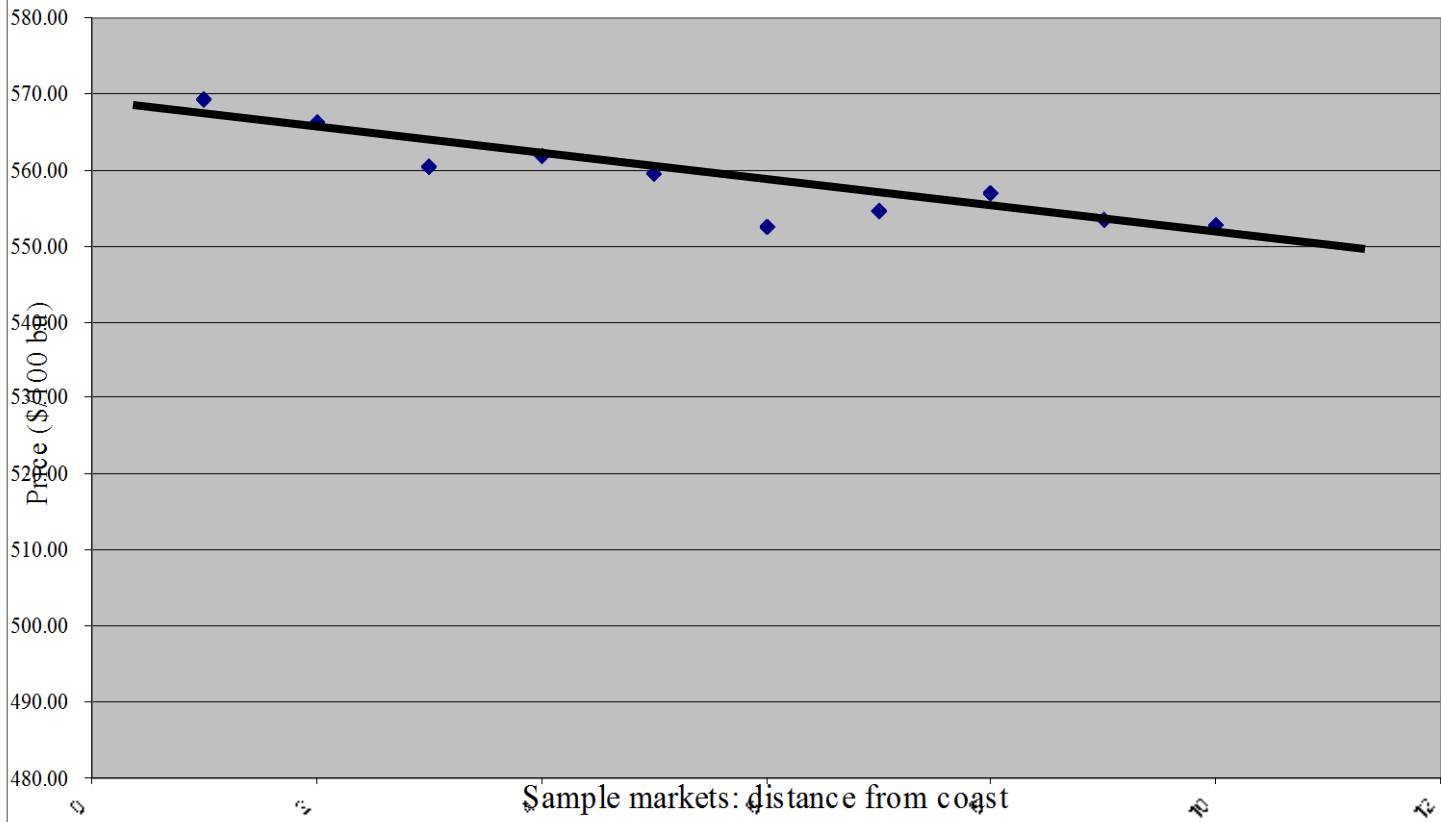


Changes in corn price across China as markets increase its distance from port, 2000

Location of Major Corn Markets in Greater Mississippi Valley



US Corn Prices



Percentage change in price for every 1000 kilometers of distance from port

	Corn	Soybean	Rice
China 1998	-4%	-10%	-10%
1999	-4%	-9%	-9%
2000	-3%	-4%	-7%
US – 1998	-5%	-3.5%	8%

Integration in China's Markets (percent of market pairs that have integrated price series)

	1991-92	1997-00	2001-2003
Corn	46	93	100
Soybean	56	95	98

When using statistical tests (on more than 800 pairs of markets), almost all markets move together in an integrated way, up from less than $\frac{1}{2}$ in the early 1990s (when markets were NOT integrated)

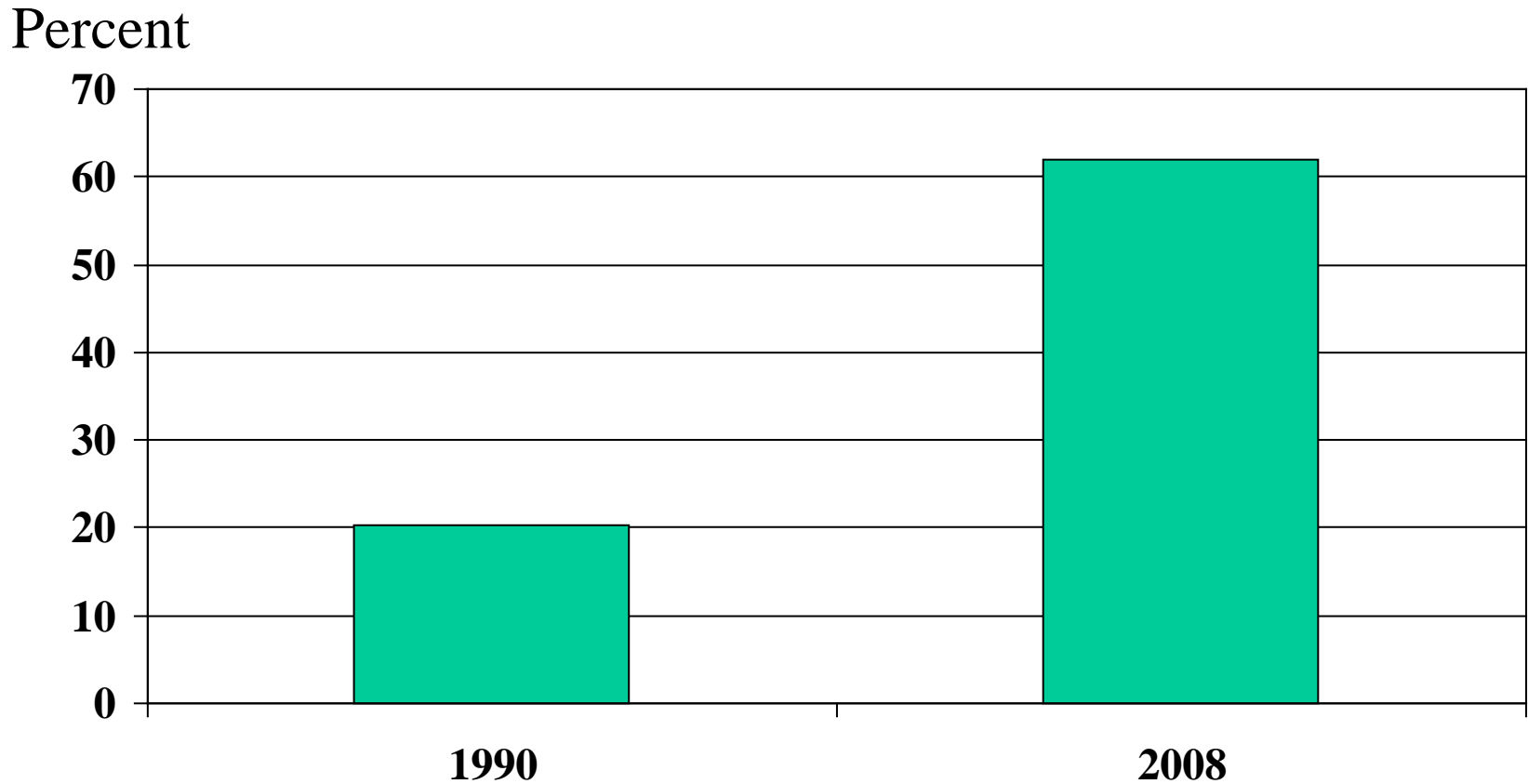
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What is the Impact of Rise of Markets

Rise of Specialization



Share of villages reporting they specialize in a crop/livestock

What is impact on the poor?

$$\text{Area_cash crops} = a_0 + a_1 * \text{Poor} + a_2 * Z + e$$

$$\text{Output_cash crops} = a_0 + a_1 * \text{Poor} + a_2 * Z + e$$

$$\text{Income_cash crops} = a_0 + a_1 * \text{Poor} + a_2 * Z + e$$

All things equal, do the poor benefits in this highly marketized world?

Is “a1” + or - ?

In four different studies (Hebei dairy; Shangdong apples; Shandong tomatoes; Shaanxi walnuts) →

$a_1 > 0$ → the poor have benefited in this super marketized world?

Why? Millions of traders willing to go to furthest most remote places to make a sale ...

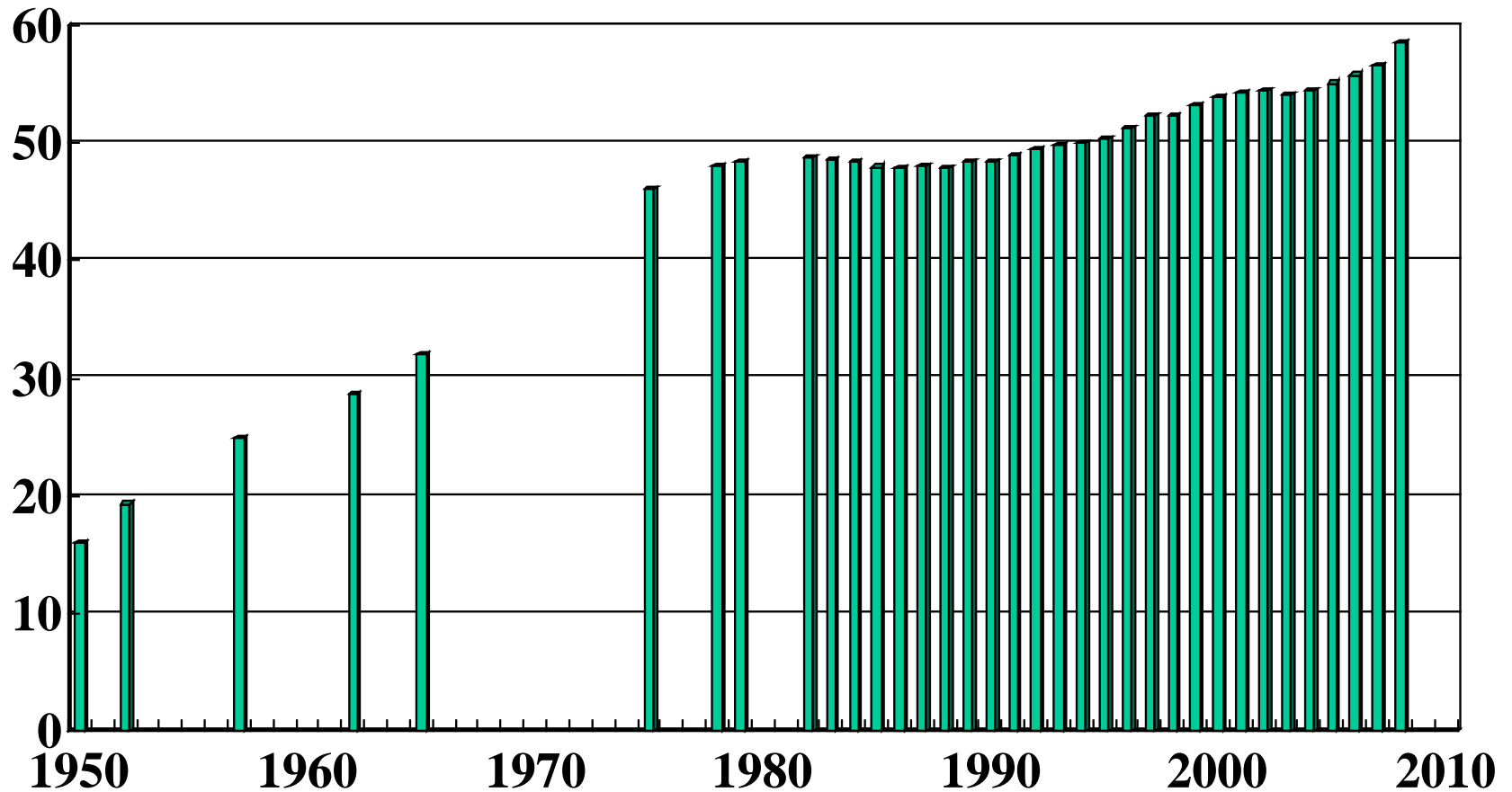
2c. Investment into agricultural sector

- **Irrigation**
- **Technology**
- **Other**

Expansion of irrigated land in China

Nearly 50% of cultivated land

Million ha



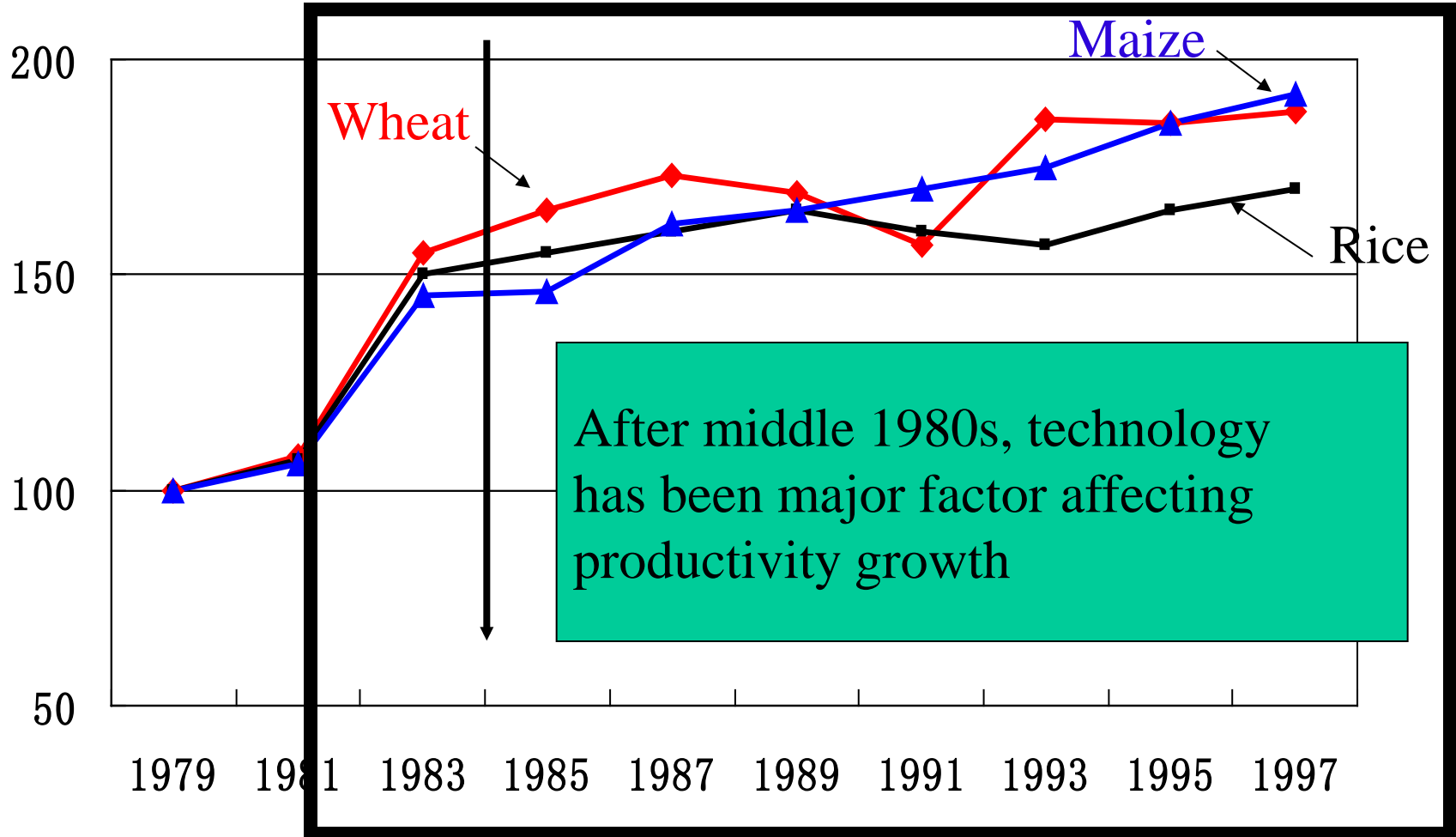
Surface irrigation



And investment into Agricultural
Research and Development (R&D)

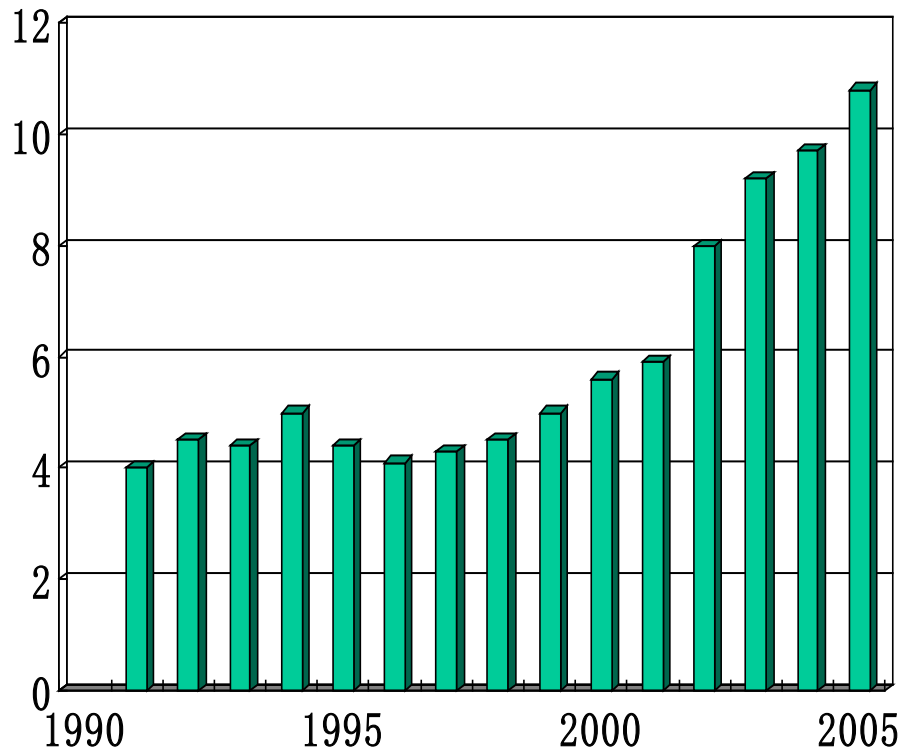
Most all PUBLIC

Impact of Investment and R&D on Total Factor Productivity for rice, wheat and maize in China, 1979-94

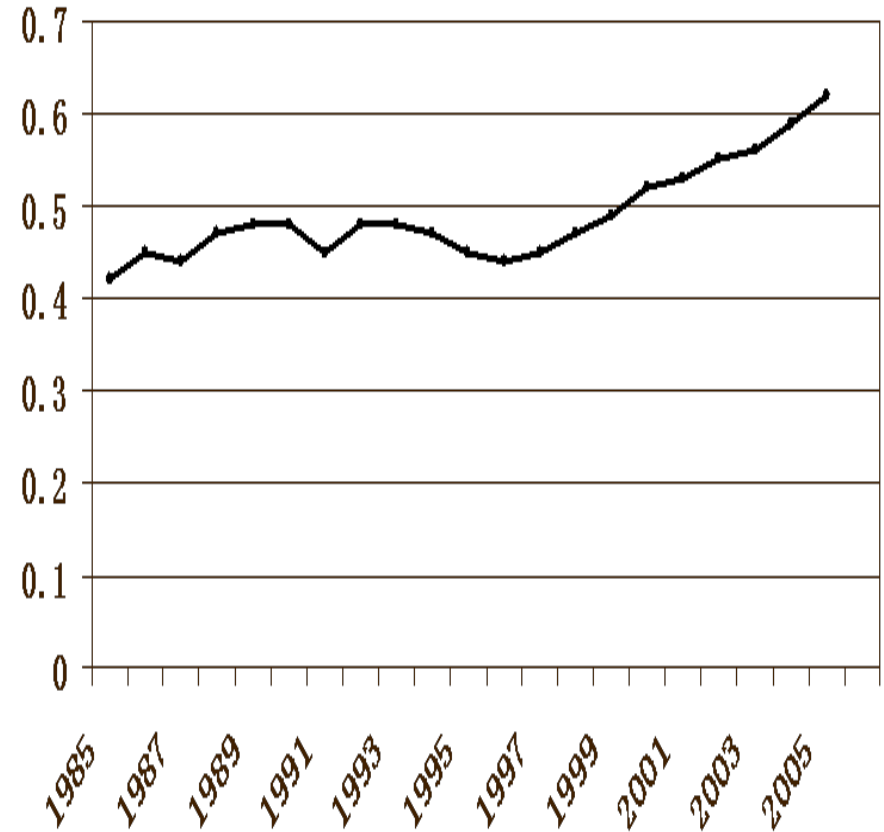


What is policy initiative?

**Government fiscal
investment in
agricultural research
(billion yuan in 2005 price)**



**Agricultural research
investment intensity (%)
in China**

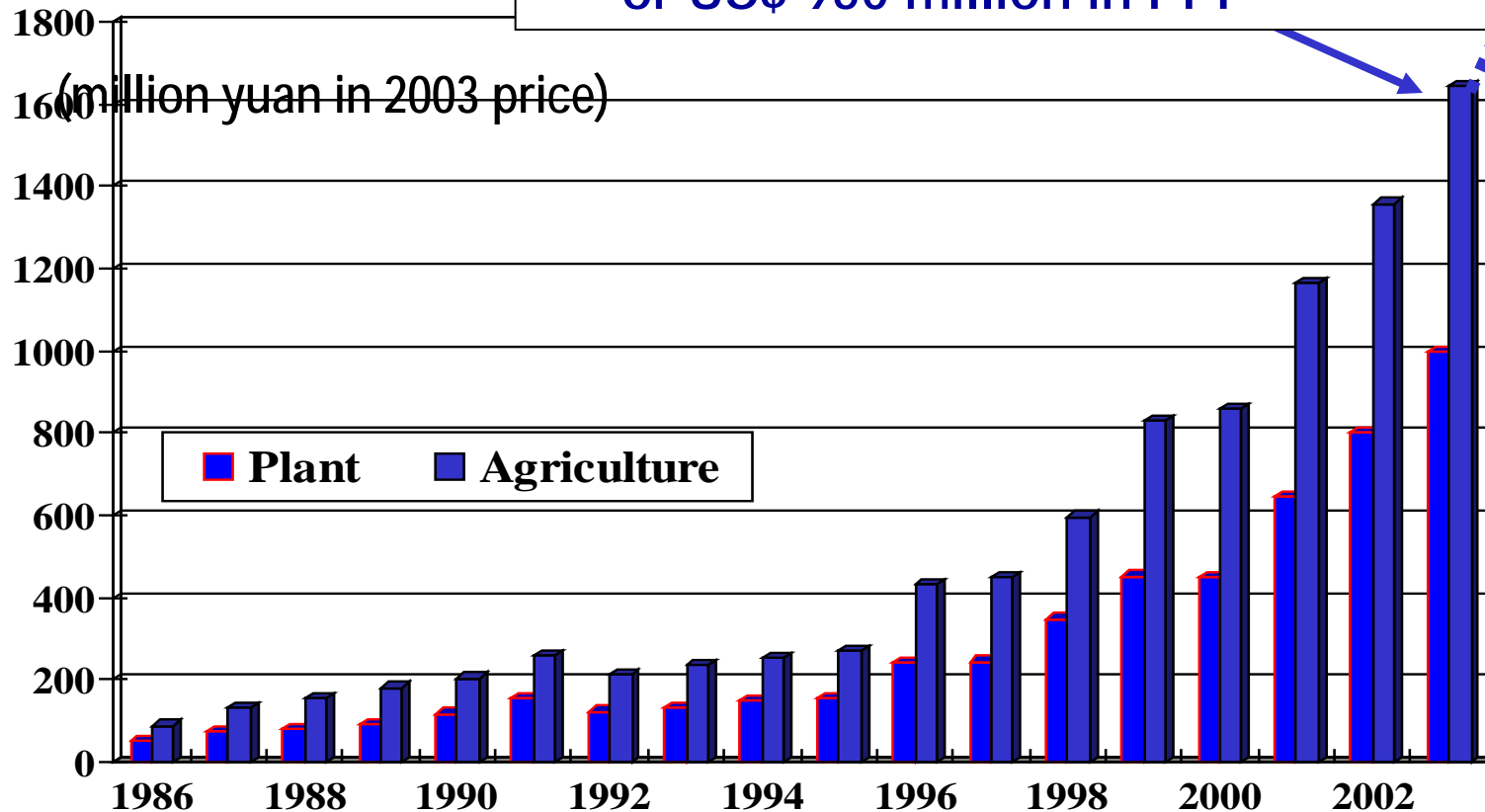


Since 2000, the rise in research investment has been higher in China than any other country in the world ...

Agricultural biotech research investment

2003: 1.65 billion yuan = US\$ 200 million
or US\$ 950 million in PPP

More than
doubled since
then ... largest
public
investment into
plant
biotechnology
in the world!



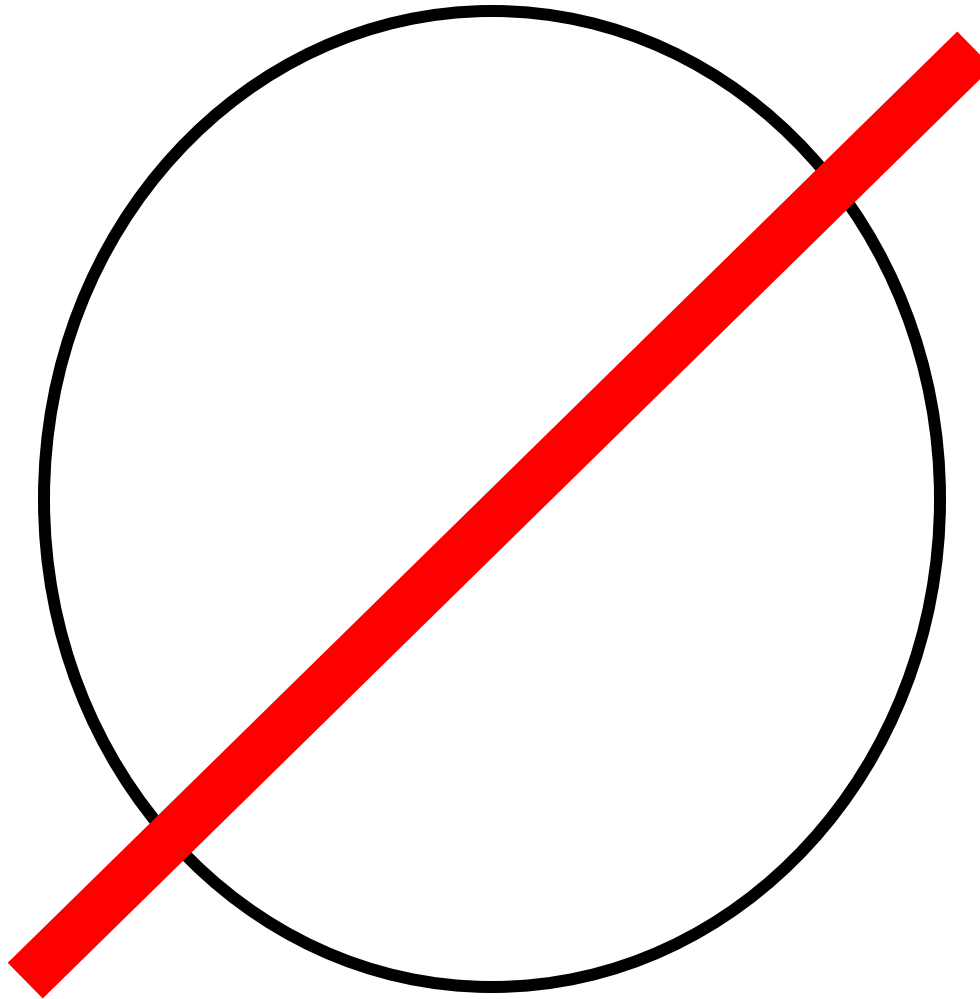
Summary of China's Ag Development and Status of Its Food Economy

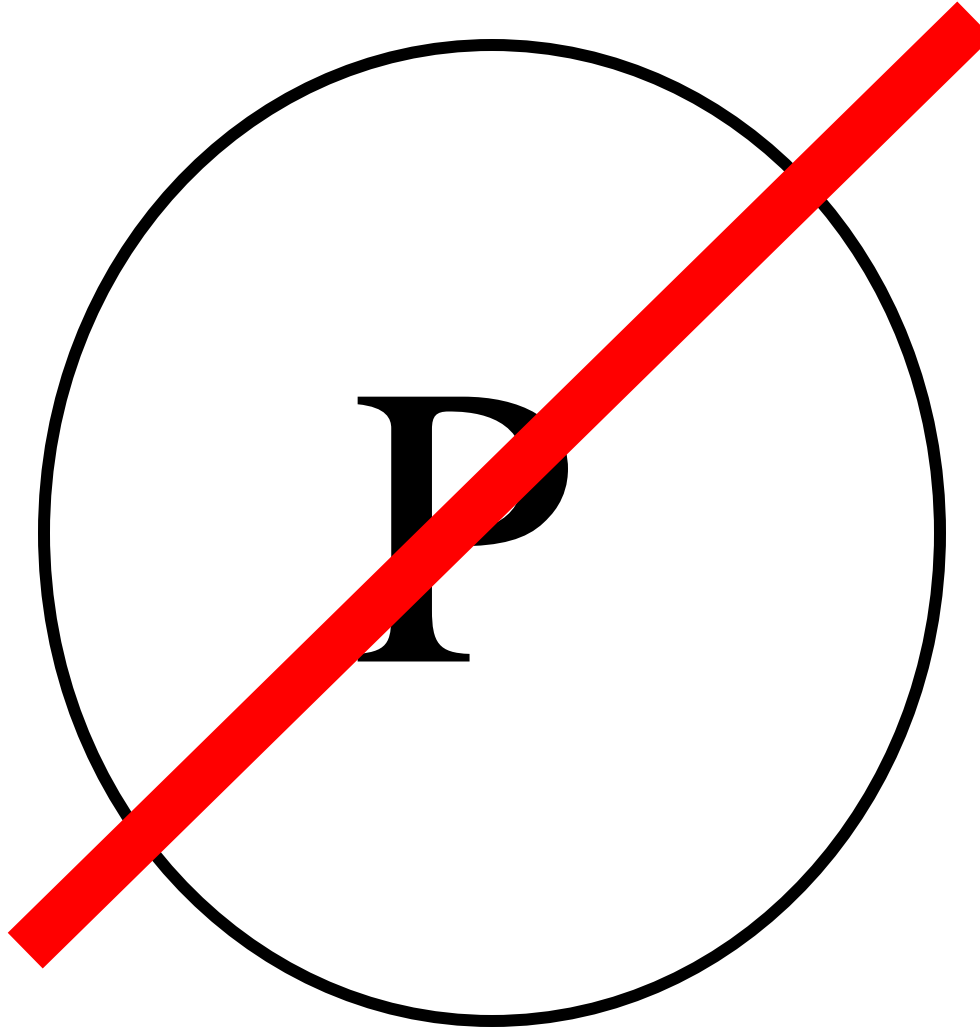
China's success in a “word”

- Land to all (incentives to farmers)
- Foster Markets
 - Do not over regulate markets
 - Key: do not distort
- Invest heavily in:
 - Water
 - Agricultural R&D

*Invest in roads
and
communications*

3. What China did NOT do

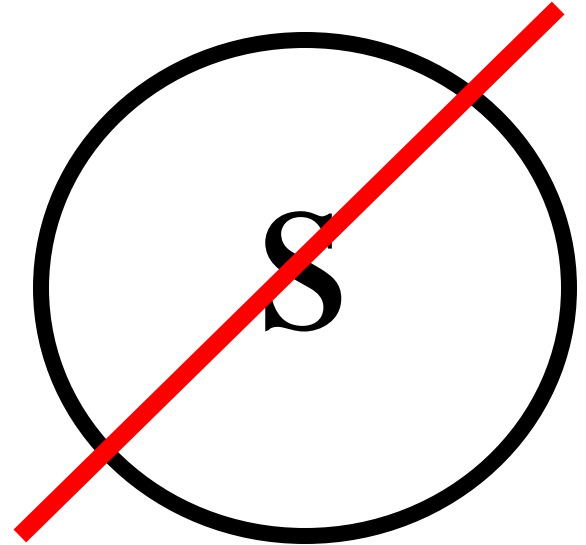




*They have not privatized cultivated
land → part of large urban/rural
inequality*

No subsidies of inputs (in 1980s or 1990s)

- No fertilizer subsidies
- No pesticide subsidies

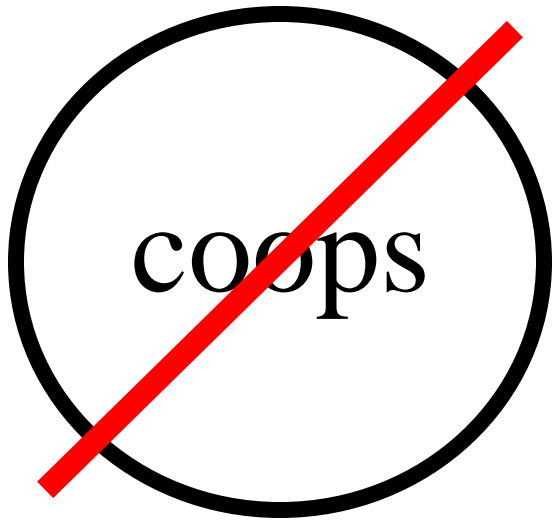


→ High incentives to suppliers / no barriers in the market ...

- No water subsidies

Organization of production

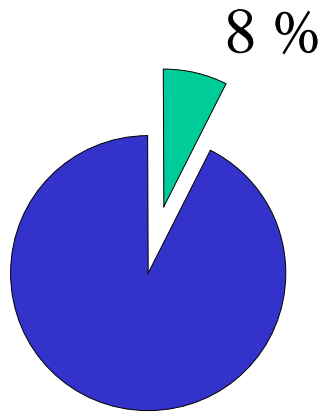
- Have not used Coops ... Farmer organizations



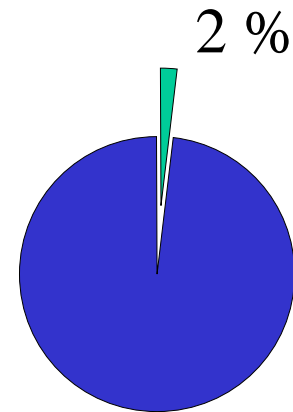
The government is afraid the a national system of coops might become focus of an opposition political party

And, these small farmers are mostly
“on their own”

Cooperative movement still small



Percent of villages with
Cooperatives / FAs



Percent of households that
belong to Cooperatives / FAs

SUMMARY: Investment into agriculture played key role in this transformation → created a virtuous cycle

- Agriculture provided income for farm households:
 - To build housing
 - To invest in education for kids
 - To finance move off the farm
 - For starting self-employed enterprises
 - It was a source of demand ... in the early stages of industrialization (in fact, early factories were set up in the rural areas)
- Off farm remittances and earnings from self-employed enterprises in turn financed agriculture at the household level:
 - High rates of fertilizer use in the world (no credit needed)
 - Investment by households in groundwater / pumps
 - Investment by households into vegetable and fruit production
 - Investment by entrepreneurs into custom plowing / harvesting /
- High earnings from agriculture allow additional push off the farm ...

4. What are the lessons for Africa and other developing countries?

1. Incentives are important ...

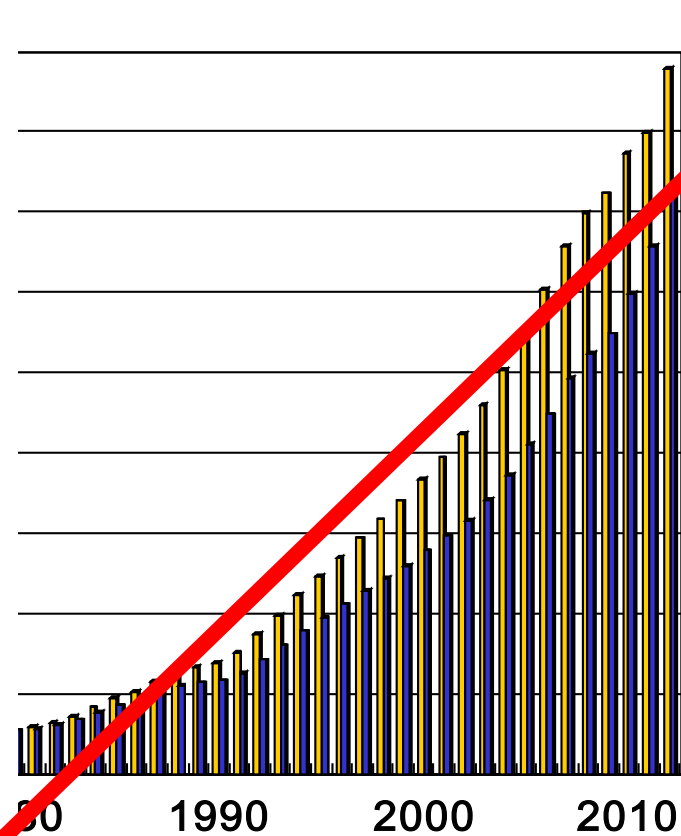
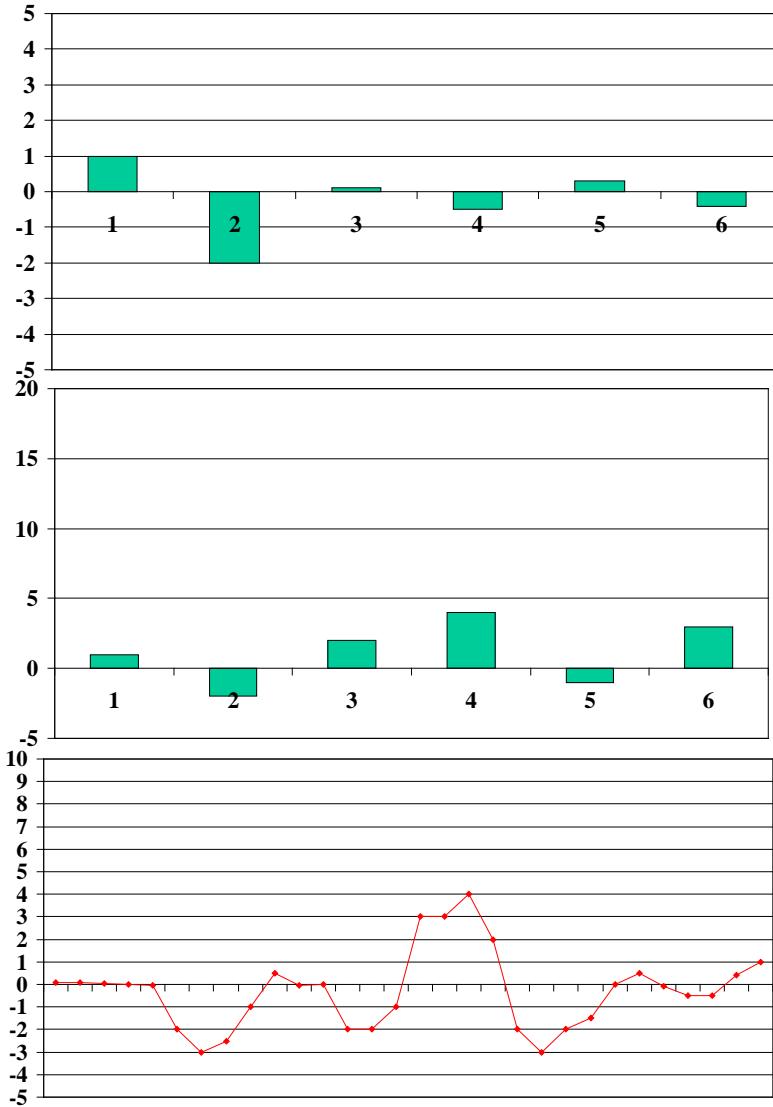
- Providing incentives are more important than formal property rights ... as long as farmers can be assured of the return to the effort, they will invest in farming activities ...
- Of course, more secure rights are better ... and will be needed to encourage investment in land-specific investments ... if State helps out in that (invest in irrigation / invest in rural roads), maybe can do without private land ...
- But, this can lead to equity problems.

2. Markets can be an effective tool of development. Markets can be pro-poor.

- Markets have integrated China's food economy. This has increased efficiency and has increased the income of the poor.
- What was the role of the government?
 - Mostly Nothing:
 - They got out of the way (shut down parastatals) ...
 - They let private sector emerge without regulation
 - No subsidies ... provided incentives for traders
 - Actually the government was involved in indirect way:
 - Investing in roads
 - Investing in communications
 - Enforcing free inter-province marketing

3. Greatest role for state: investment into public goods, especially into agricultural R&D ... however, state did not interfere (very much) into investments that could be (should be) made by households;
- China's government invested heavily into:
 - Roads
 - Water control—surface systems
 - Afforestation Projects
 - Agricultural technologies
 - Agricultural extension
 - Households took responsibility for investing into:
 - Groundwater
 - Orchards and Vegetable Production
 - Machinery/Mechanization
 - Input supply

Final message: With a good policy package (mix of “do’s” and “don’ts”) → it is possible to turn 30 years of sustained stagnation into 30 years of sustained growth!!



Thank you

What countries can learn about what China's government did NOT do

- Setting up artificial barriers between rural and urban is extremely inefficient and creates high rates of inequality. This has not been a problem as long as there is growth. There are concerns that when growth slows, the high levels of inequality could lead to instability.
- Investment into rural health, nutrition and health is far from sufficient → China got basic education done (taught rural individuals to read, write and be disciplined) ... but, there are high barriers keeping rural individuals now from getting the education that they will need as China tries to move from middle to high income

4. Getting the incentives right for the government

- Government officials were given incentives to promote growth and structural transformation. They became co-beneficiaries. There was an incentive to promote programs and encourage growth.
- China's system of promotion was based on past performance and education.
- Policies designed to promote younger officials.

[But, are there lessons here? Is this the legacy of a one-party system ... with ambitious leaders at the top that have the goal of China becoming a world power and developed economy]