

# The Chinese Agricultural Sector after Admittance to the WTO

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# Objective of this Study

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- # To analyze the impact of China's accession to the World Trade Organization (WTO) on Chinese agricultural production, consumption, and trade. Special attention is given to the Chinese wheat industry under the WTO.
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# Organization

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- # Overview of Chinese agricultural and industrial sectors
  - # Changes in Chinese agricultural production, consumption, and trade during the past two decades
  - # Impact of entering the WTO on the Chinese wheat industry
  - # Expected structural changes in Chinese agriculture under the WTO
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# Overview of Chinese Economic Development

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- # Close interdependence between the agricultural and industrial sectors
    - Agricultural sector has made a *limited* contribution to the development of the industrial sector
    - Industrial sector has made a *large* contribution to the development of the agricultural sector
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# Agricultural growth rate is much slower than industrial growth rate—more resources used in industrial sector

- Average labor productivity:
    - 7,700 yuan in industrial sector
    - 1,700 yuan in agricultural sector
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# GDP in the Agricultural and Industrial Sectors (1978-2000)

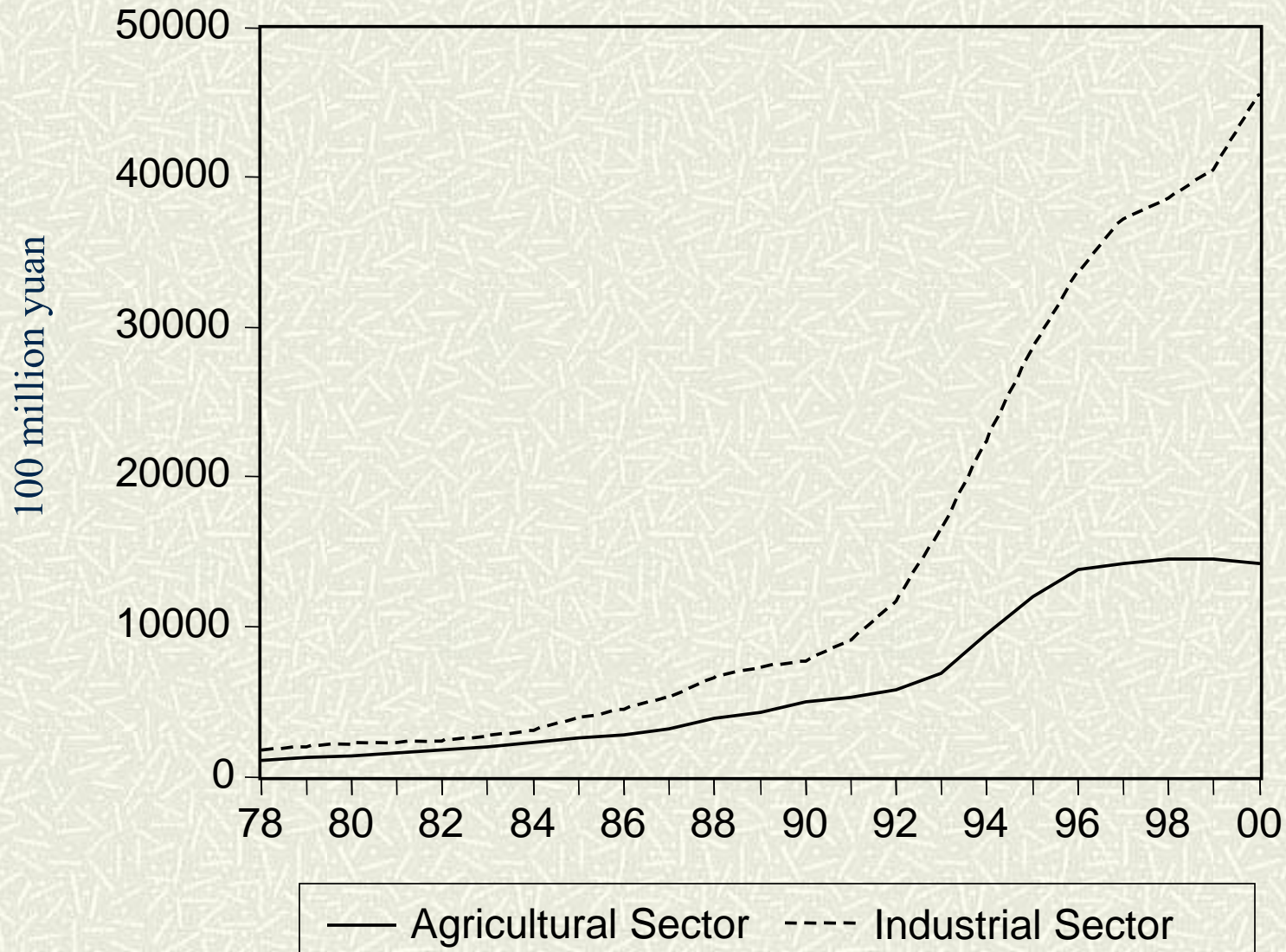


Table 1. Characteristics of Chinese Agricultural and Industrial Sectors

	unit	1980	1990	2000
<b><i>Industrial Sector</i></b>				
labor	10,000 persons	7707	13654	16009
labor (% of total)	%	18.19	21.36	22.50
GDP	100 million yuan	2192.0	7717.4	45487.8
share of total GDP	%	48.52	41.61	50.88
GDP per ind labor	yuan/person	2844.17	5652.12	28413.89
capital investment	100 million yuan	401.79	1618.18	7467.249

Table 1. Characteristics of Chinese Agricultural and Industrial Sectors  
(continued)

	unit	1980	1990	2000
<b><i>Agricultural Sector</i></b>				
labor	10,000 persons	29122	38428	35575
labor (% of total)	%	68.75	60.13	50.00
GDP	100 million yuan	1359.4	5017.0	14212.0
share of total GDP	%	30.09	27.05	15.90
GDP per ag labor	yuan/person	466.79	1305.56	3994.94
arable land	1,000 hectares	99305	95670	95400
arable land per capita	hectare/person	0.101	0.084	0.075



Table 1. Characteristics of Chinese Agricultural and Industrial Sectors  
(continued)

	unit	1980	1990	2000
<b><i>International Trade</i></b>				
exports	100 million yuan	271.2	2985.8	20635.2
imports	100 million yuan	298.8	2574.3	18639.0
FDI (actually used)	100 million US\$	2.60	34.87	407.15

Table 1. Characteristics of Chinese Agricultural and Industrial Sectors  
(continued)

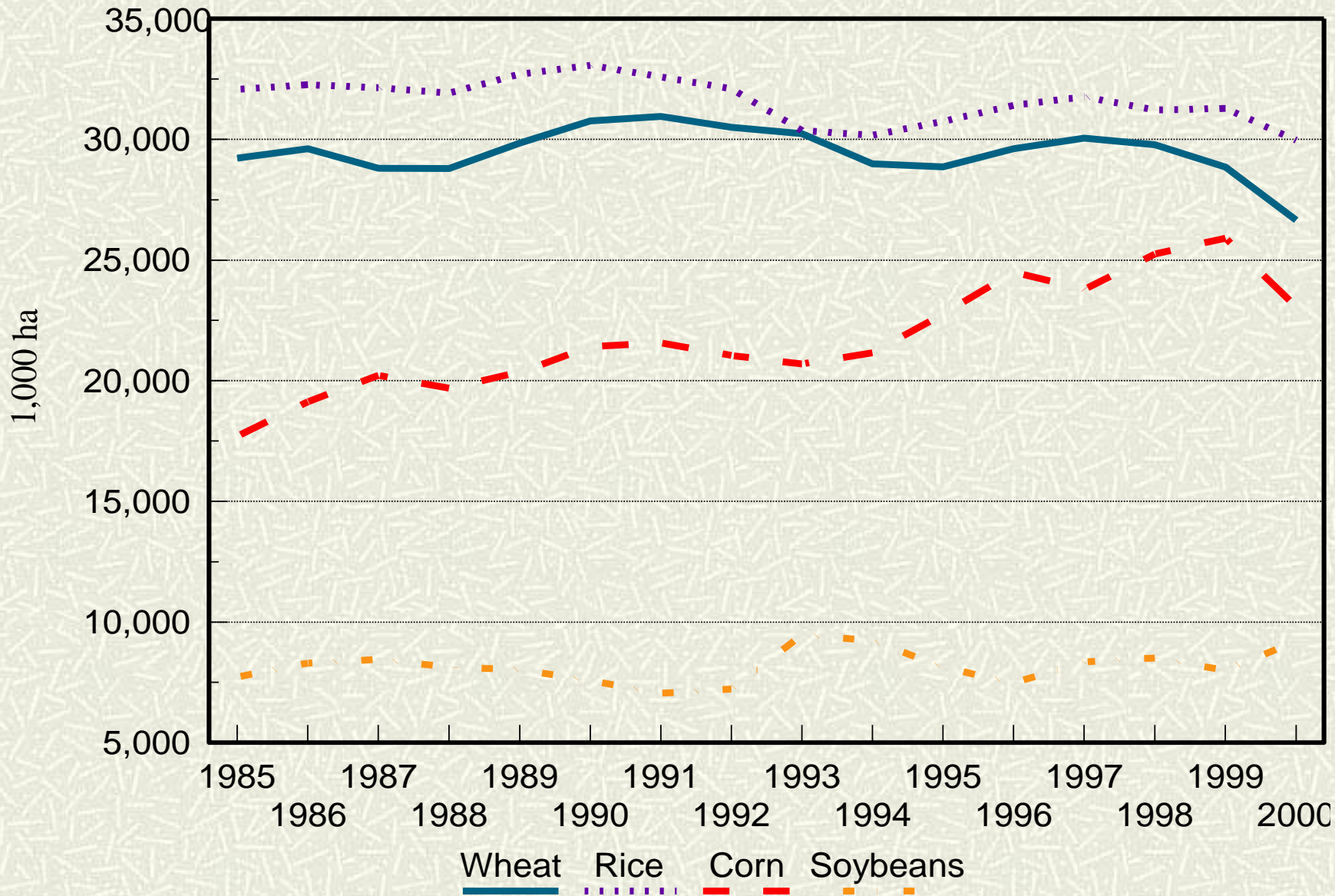
	unit	1980	1990	2000
<b><i>National Economy</i></b>				
labor	10,000 persons	42361	63909	71150
population	10,000 persons	98705	114333	126583
GDP	100 million yuan	4517.8	18547.9	89403.6
per capita GDP	yuan	460	1634	7078
GDP growth rate (last year = 100)	%	7.80	4.20	8.30

# Changes in Chinese Agriculture

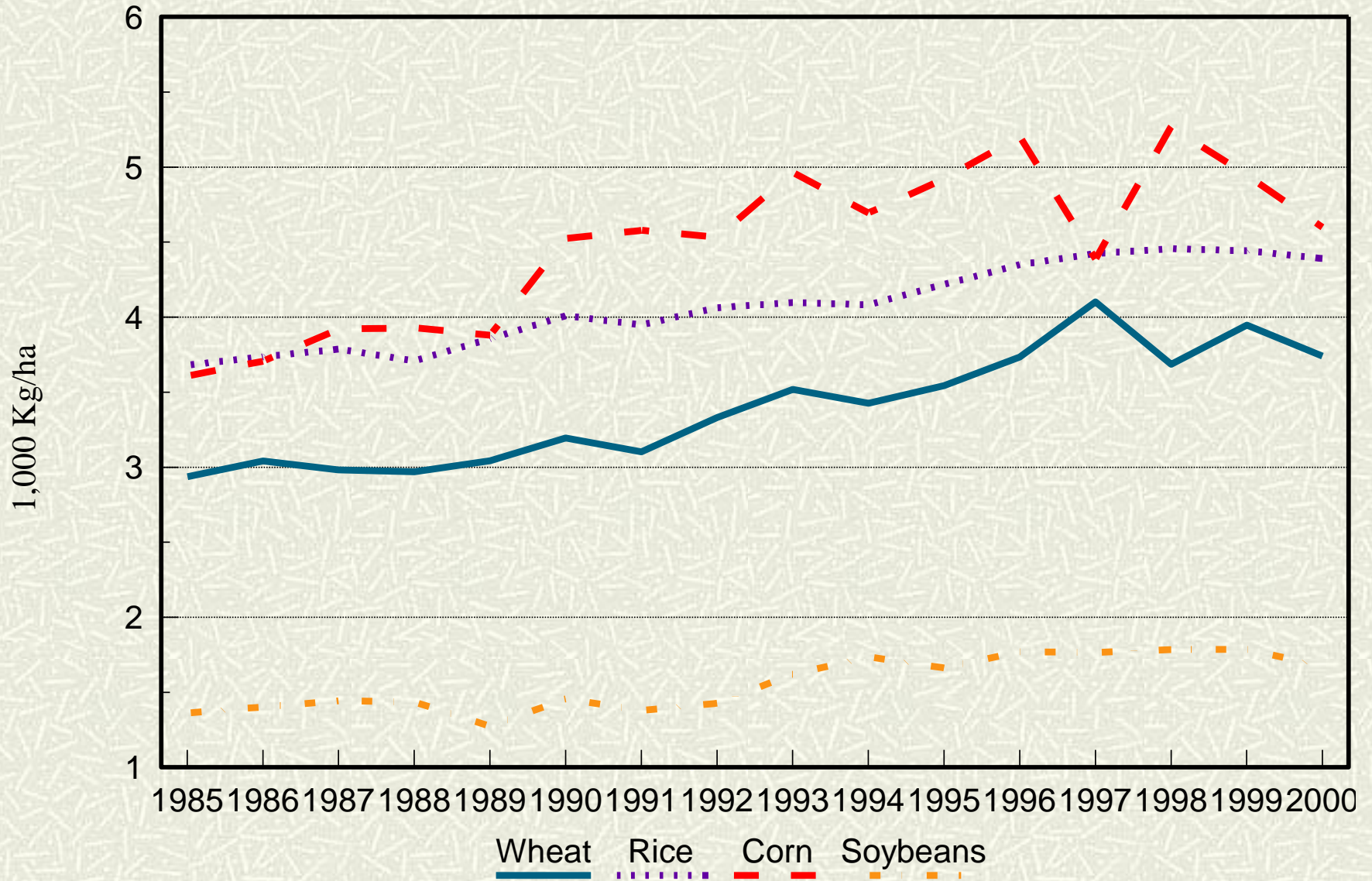
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- # China is the largest grain-producing and -consuming country in the world
  - # Total arable land = 130 million hectares (about 13% of total land)
  - # Per capita arable land = 0.1 hectare
  - # Major grains produced: wheat, corn, rice, and soybeans
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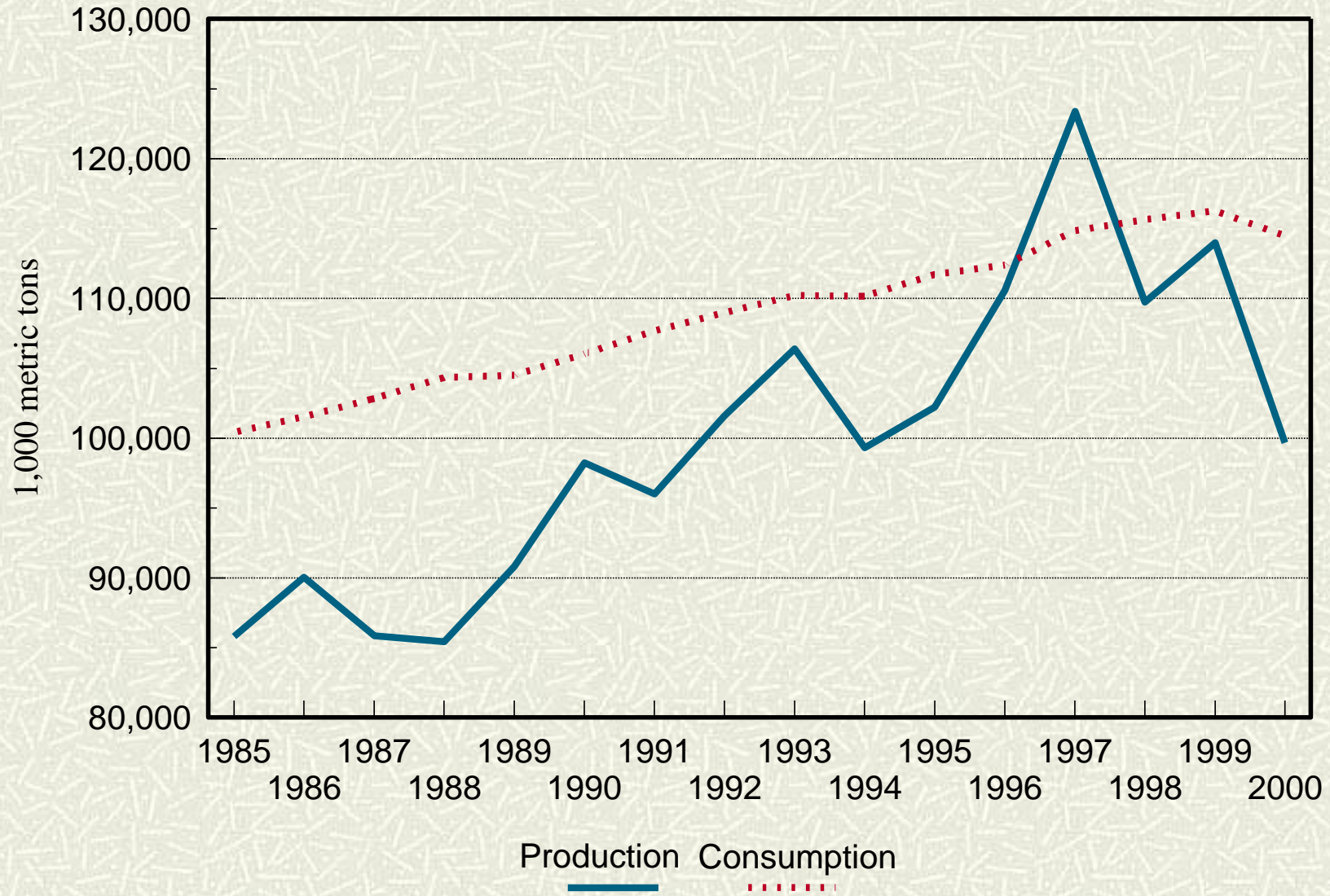
# Harvested Areas of Selected Crops in China, 1985-2000



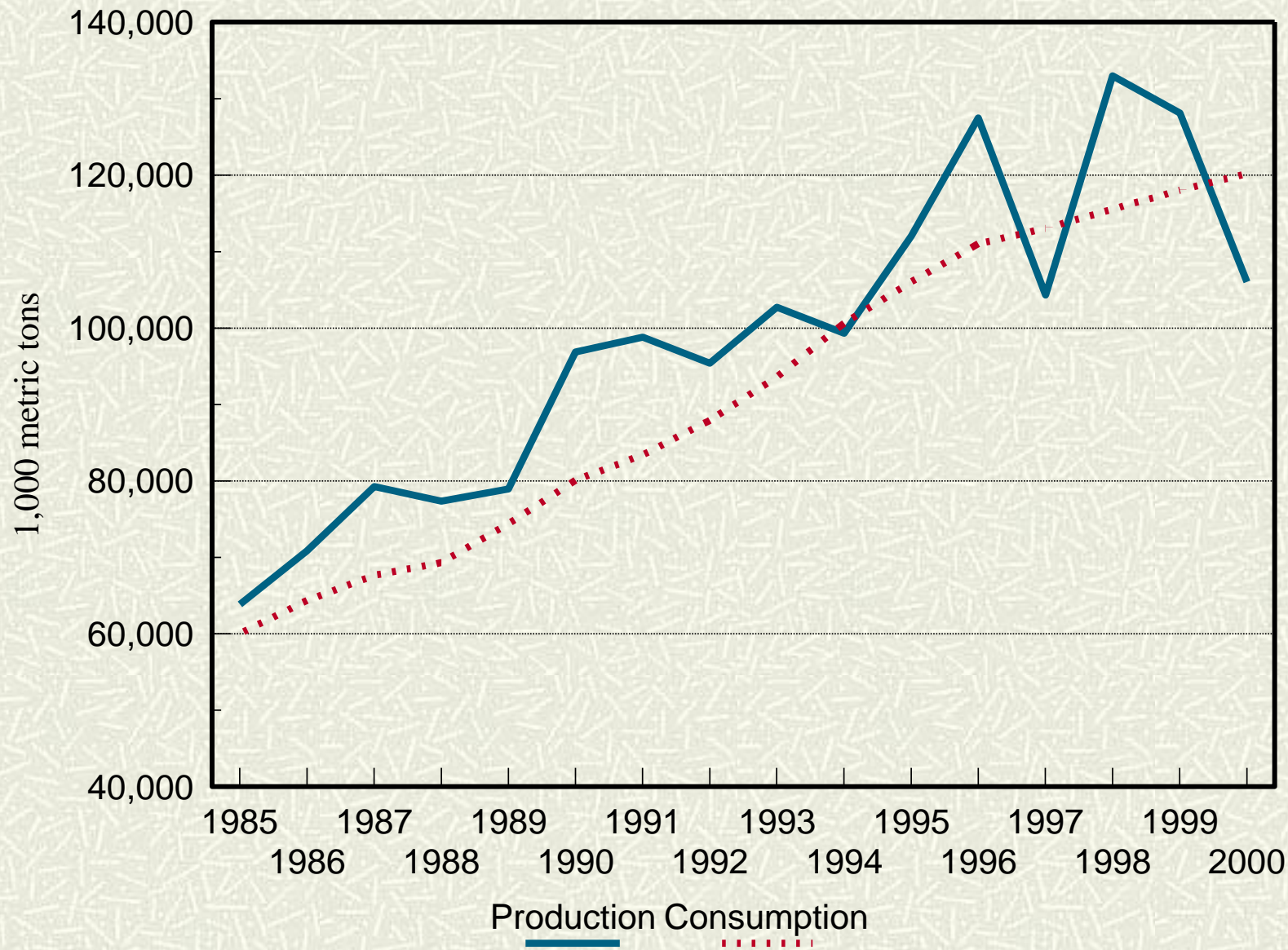
# Yields for Selected Crops in China, 1985-2000



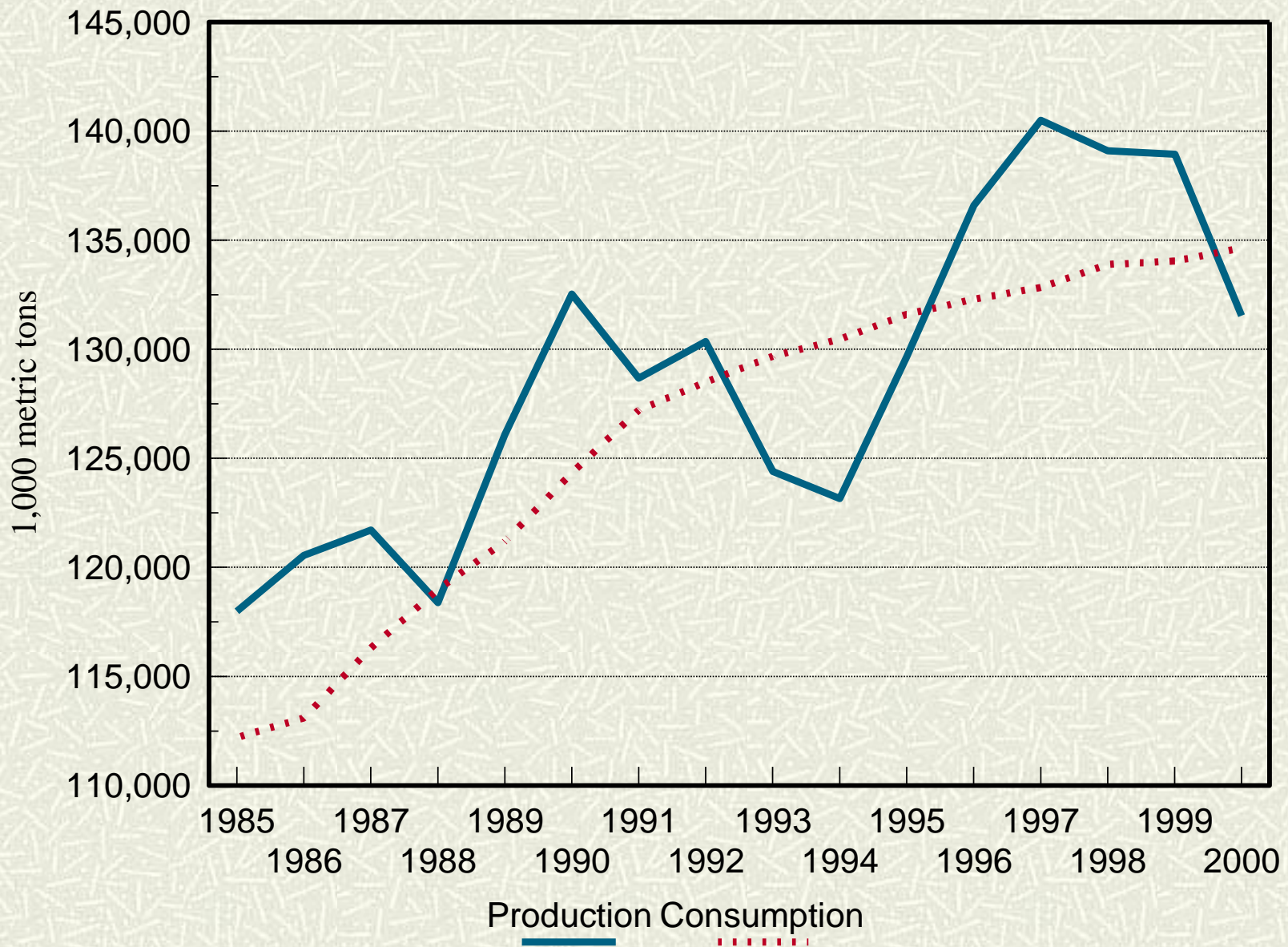
# Total Production and Consumption of Wheat in China, 1985-2000



# Total Production and Consumption of Corn in China, 1985-2000

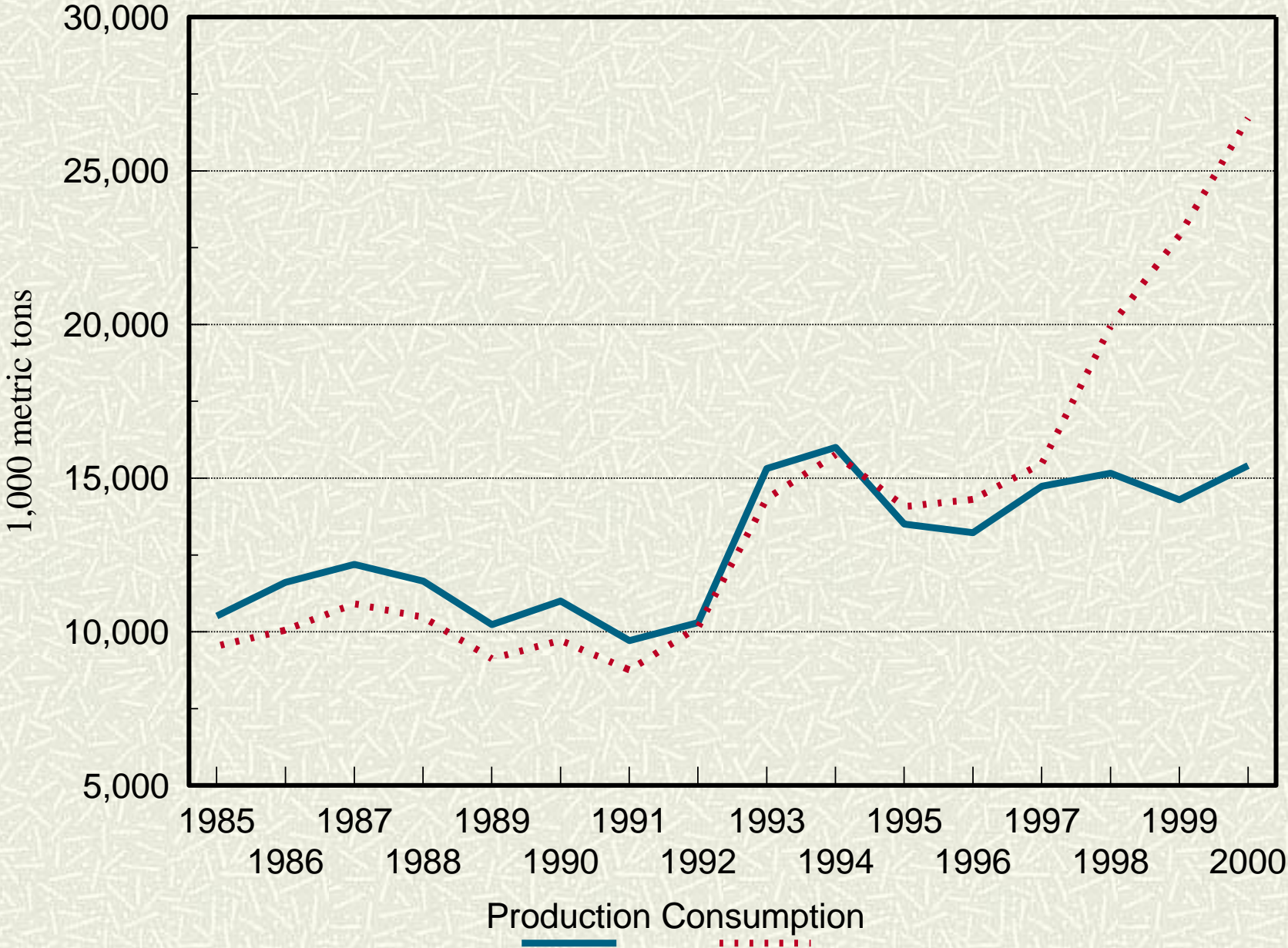


# Total Production and Consumption of Rice in China, 1985-2000





# Total Production and Consumption of Soybeans in China, 1985-2000



# China's Efforts to Gain Membership in the WTO

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- # U.S.-China Bilateral Trade Agreement in November 1999
  - # China becomes a member of the WTO in November 2001
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**Table 2. China's TRQ under the U.S.-China Bilateral Trade Agreement**

	Quota		Private Share	Average Imports (1997-1999)
	2000	2004		
	--thousand metric tons--		(%)	thousand metric tons
Wheat	7,300	9,636	10	2,000
Corn	4,500	7,200	25(40) <sup>a</sup>	250
Rice	2,660	5,320	--	250
#Short/medium grain	1,330	2,660	50	—
#Long grain	1,330	2,660	10	—

<sup>a</sup>40% is private share of the total import quota in 2005.

Source: U.S. Trade Representative.

# Impact of China's Accession to the WTO on the Chinese Wheat Industry



# Global Econometric Policy Simulation Model

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- # 5 exporting countries
  - # 13 major importing countries/regions
  - # Wheat classes: durum and common wheat
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# Behavioral Equations in the Countries

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- # Area harvested in equations
  - # Yield equations
  - # Carry-over stock equations
  - # Domestic consumption equations
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# Equilibrium Condition

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Aggregate Excess Demand = Aggregate Excess Supply

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# Base and Alternative Scenarios

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- # Base scenario assumes that China will import wheat from major exporting countries based on the U.S.-China Bilateral Agreement
  - # Scenario 1 assumes that China's import tariffs remain at the 2001 level
  - # Scenario 2 assumes that China will import the maximum levels of wheat allowed by the TRQ (7.3 million metric tons in 2002 and increasing to 9.5 million metric tons by 2006)
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**Table 3. Demand, Supply, and Income Elasticities for Common Wheat**

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<u>Country/Region</u>	<u>Demand</u>	<u>Supply</u>	<u>Income</u>
United States	-0.059	0.209	0.359
Canada	-0.125	0.106	0.390
EU	-0.083	0.025	0.138
Australia	-0.302	0.074	0.471
Argentina	-0.179	0.165	0.433
Algeria	-0.165	0.000	0.686
Brazil	-0.148	0.385	0.297
China	-0.072	0.037	0.232
Egypt	-0.050	0.206	0.433
Japan	-0.005	0.000	0.378

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**Table 3. Demand, Supply, and Income Elasticities for Common Wheat (continued)**

<u>Country/Region</u>	<u>Demand</u>	<u>Supply</u>	<u>Income</u>
S. Korea	-0.090	0.000	0.323
Mexico	-0.034	0.059	0.883
Morocco	-0.073	0.035	0.105
FSU	-0.214	0.130	0.527
Tunisia	-0.035	0.000	0.543
Taiwan	-0.162	0.000	0.645
Venezuela	-0.077	0.000	0.682
ROW	-0.100	0.062	0.458

**Table 4. China's Wheat Industry under the Base and Alternative Trade Scenarios**

	<u>Base</u>		<u>Scenario 1</u>		<u>Scenario 2</u>	
	2001	2005	2005	Change (%)	2005	Change (%)
Carry-in	50,475	22,919	22,970	0.2	22,723	-0.8
Production	94,996	115,307	116,973	1.4	110,352	-4.3
Imports	1,085	4,278	2,615	-38.9	9,427	120.3
Consumption	114,085	117,909	116,982	-0.8	118,808	0.8
Carry-out	31,475	24,596	25,576	0.2	23,694	-3.7

**Table 5. Changes in Wheat Exports in 2005 in the Base and Alternative Scenarios**

	Base	Scenario I	Scenario II
<b><u>Export quantity</u></b> <b><u>(1,000 metric tons)</u></b>			
<i>United States</i>			
#Exports to China	0	-915	2,218
#Exports to ROW	0	333	-514
#Net change	0	-582	1,704
<i>Major exporting countries</i>			
#Exports to China	0	-748	1,816
#Exports to ROW	0	342	-635
#Net change	0	-406	1,181


**Table 5. Changes in Wheat Exports in 2005 in the Base and Alternative Scenarios (continued)**

	Base	Scenario I	Scenario II
<b><u>Export Values</u></b>			
<b><u>(million U.S. dollars)</u></b>			
<i>United States</i>			
#Exports to China	0	-126	323
#Exports to ROW	0	46	-75
#Net change	0	-80	248
<i>Major exporting countries</i>			
#Exports to China	0	-103	264
#Exports to ROW	0	47	-93
#Net change	0	-56	171

# Expected Changes in Chinese Agriculture

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- # Trade liberalization under the WTO will decrease domestic prices of major crops produced in China, leading to reductions in the net farm income
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# Gradual movement of agricultural labor to the industrial sector because of higher labor productivity in the industrial sector than in agriculture

- Example: Korea's farm population was over 60% of the total population in 1960 but was less than 10% in 2001
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# Larger farm size, which increases efficiency in farm operation

- Example: Korea's farm size increased from 0.7 hectares in 1960 to over 2.5 hectares in 2001

# Changes in agricultural production due to external competition and changes in consumption patterns

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- # Farming technology encourages move from traditional labor-intensive agriculture to capital-intensive agriculture
    - Example: agricultural sectors in Korea, Japan, and Taiwan
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