



Agriculture and Food Prospects for China in the Decade Ahead: In a Global Context and Opportunities for the U.S.

Presented by
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Chairman of the Board
Chief Executive Officer

California Grain & Feed Association
90th Annual Convention, Maui, HI

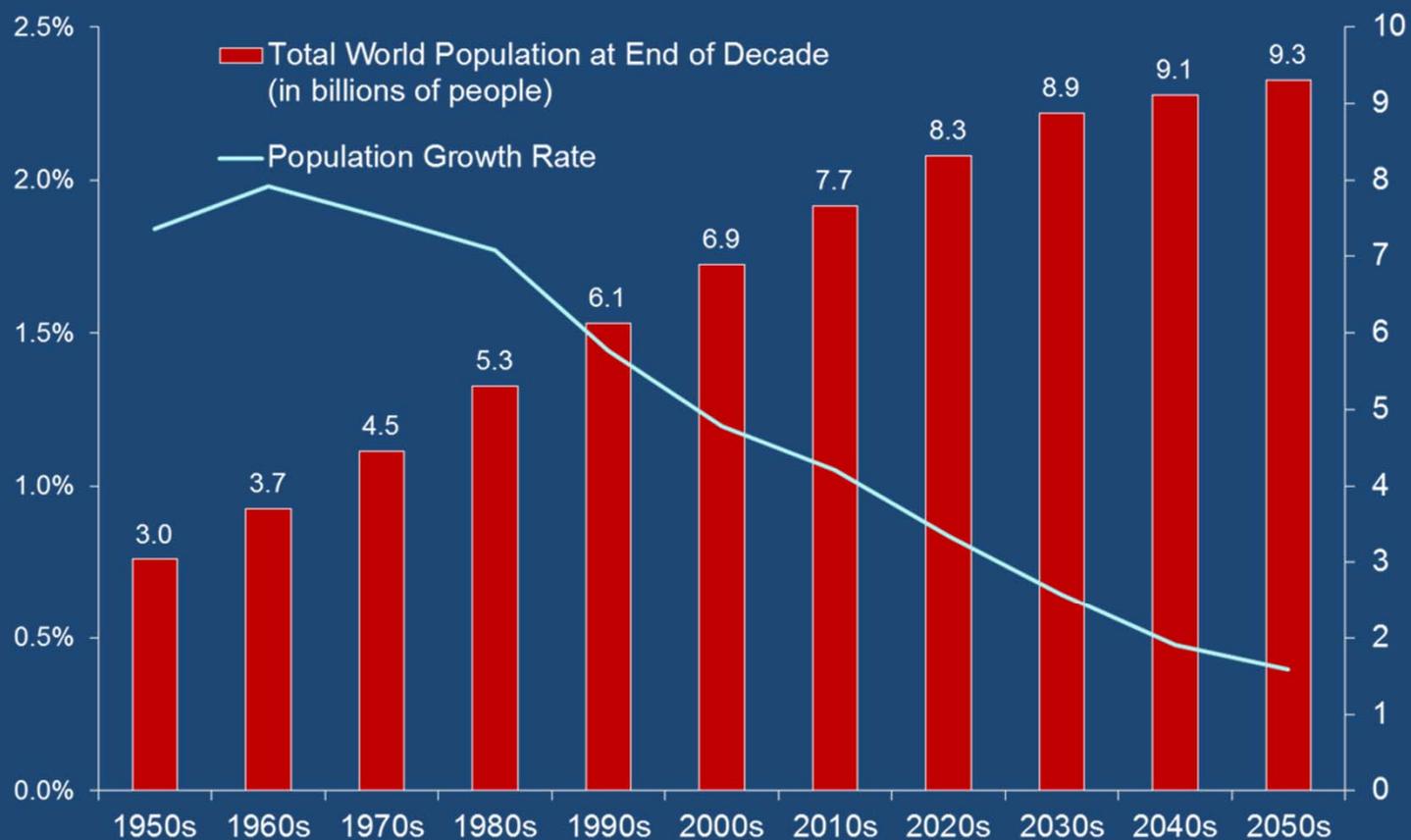
April 24, 2014

Key Topics and Game Changers:

- **Demographics**
- **Culture Clash**
- **Technology: Follow the Cold Chain**
- **Macroeconomics and Infrastructure**
- **U.S. Energy Independence: Impact On China?**
- **Agriculture Policy**
- **Commodity Features**
- **Implications for the U.S.**

Demographics: Countervailing Forces

The world's population is growing more slowly and will peak around mid-century.

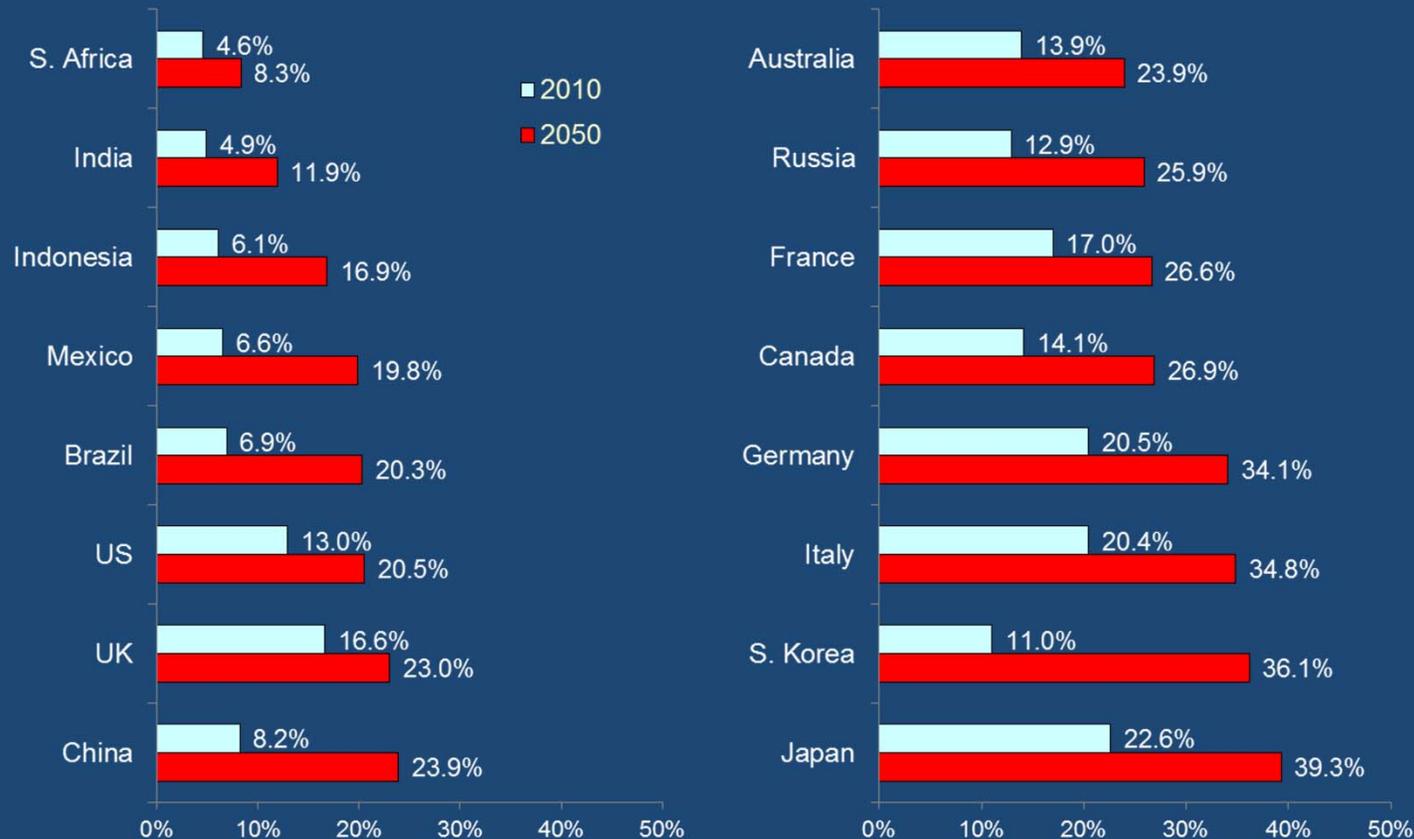


Source: UN (2011)

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The great challenge of the 21st century is population aging, not population growth.

Elderly (Aged 65 and Over), as a Percent of the Population in 2010 and 2050



Behind the Global Age Wave: Falling Fertility

Total Fertility Rate

	Developed Countries				Emerging Markets		
	1960-65	1980-85	2005-10		1960-65	1980-85	2005-10
Australia	3.3	1.9	1.8	Brazil	6.2	3.8	1.9
Canada	3.7	1.6	1.7	China	5.6	2.6	1.6
France	2.8	1.9	2.0	India	5.8	4.5	2.7
Germany	2.5	1.5	1.4	Indonesia	5.6	4.1	2.2
Italy	2.5	1.5	1.4	Mexico	6.8	4.3	2.4
Japan	2.0	1.8	1.3	Russia	2.6	2.0	1.4
UK	2.8	1.8	1.8	S. Africa	6.3	4.6	2.6
US	3.3	1.8	2.1	S. Korea	5.6	2.2	1.3

Source: UN (2009)

Behind the Global Age Wave: Rising Life Expectancy

Life Expectancy at Birth

	Developed Countries				Emerging Markets		
	1950-55	1980-85	2005-10		1950-55	1980-85	2005-10
Australia	69.6	75.1	81.5	Brazil	50.9	63.4	72.2
Canada	69.0	75.8	80.5	China	44.6	67.7	72.7
France	67.3	74.8	81.0	India	37.9	56.2	64.2
Germany	67.5	73.8	79.8	Indonesia	38.8	58.8	67.9
Italy	66.3	74.8	81.4	Mexico	50.7	67.7	76.2
Japan	62.2	76.9	82.7	Russia	64.5	67.4	67.7
UK	69.3	74.1	79.6	S. Africa	45.0	58.1	51.6
US	68.6	74.3	78.0	S. Korea	47.9	67.4	80.0

Source: UN (2009)

The Developed World: A Shrinking Share of Global Population

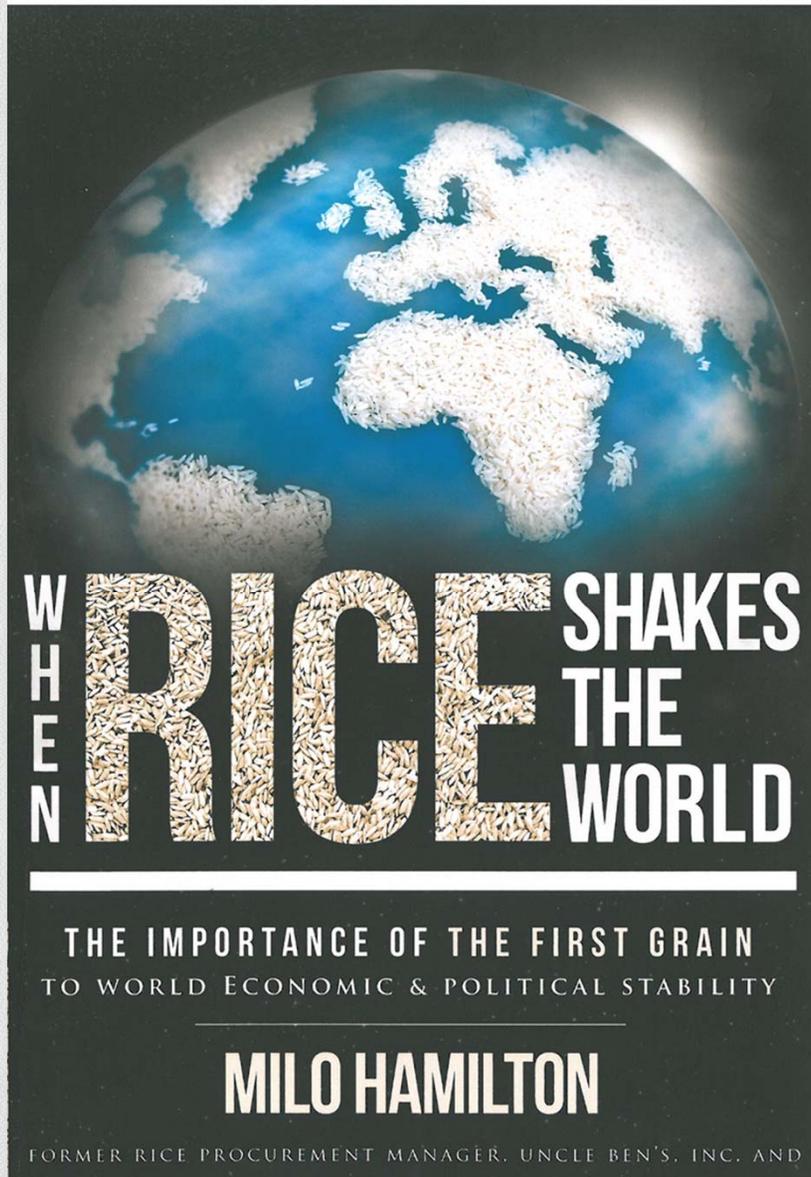
12 Largest Countries Ranked by Population

Ranking	1950	2010	2050
1	China	China	India
2	India	India	China
3	US	US	US
4	Russian Federation	Indonesia	Pakistan
5	Japan	Brazil	Nigeria
6	Indonesia	Pakistan	Indonesia
7	Germany	Bangladesh	Bangladesh
8	Brazil	Nigeria	Brazil
9	UK	Russian Federation	Ethiopia
10	Italy	Japan	Philippines
11	Bangladesh	Mexico	Dem. Rep. Congo
12	France	Philippines	Egypt
		Germany (16)	Russian Federation (16)
		France (21)	Japan (19)
		UK (22)	UK (27)
		Italy (23)	France (29)
			Germany (30)
			Italy (37)

Source: UN (2009)

Note: Rankings for developed countries that have fallen below 12 are in parentheses.

Culture Clash





Long Wall Stats:



The entire wall is cemented together with sticky rice and rice hull ash.



Rice is the cultural cement for Asia



If that cement is cracked apart by poor farm programs, Asian economies will shake.



Asia is aging in Japan and China



Basic Rice Facts of Life I

1) Rice Feeds
3,000,000 people

2) One Asian rice
farmer feeds just
three people.

3) One US
farmer feeds 50-
100 people.

Impressive Facts:

China
expends
70% of its
water to
farm rice

Rice uses
twice the
water of
other row
crops



Basic Facts of Rice Life II

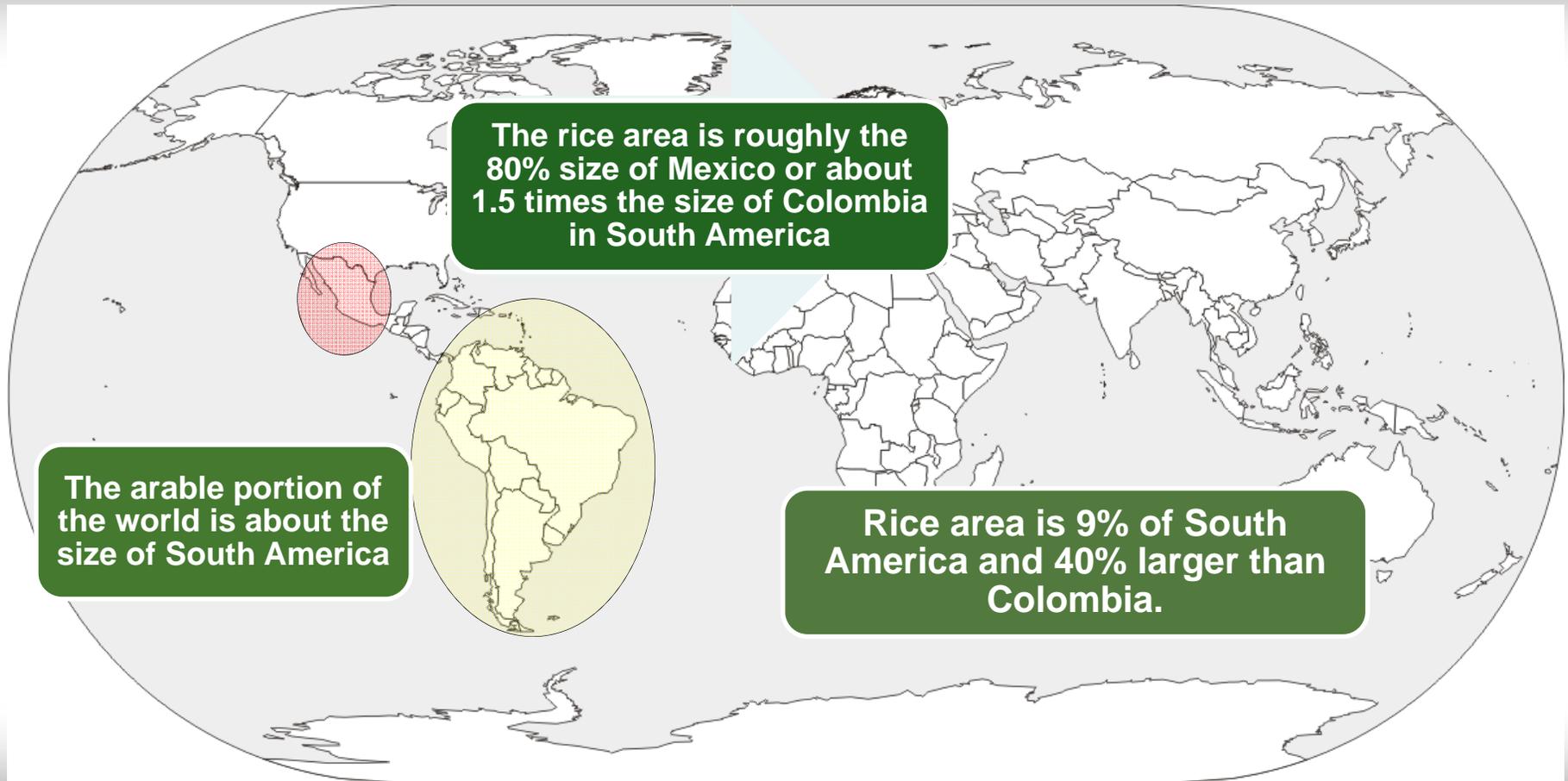


Fact 1:
About 500 to 1,000 million people live on rice farms.

Fact 2:
Average farm, less than 2 hectares, making less than \$2 per day. Feudal serfs.



Rice Area is Relatively Small





Per Capita Rice Consumption is now rising again in Parts of Asia

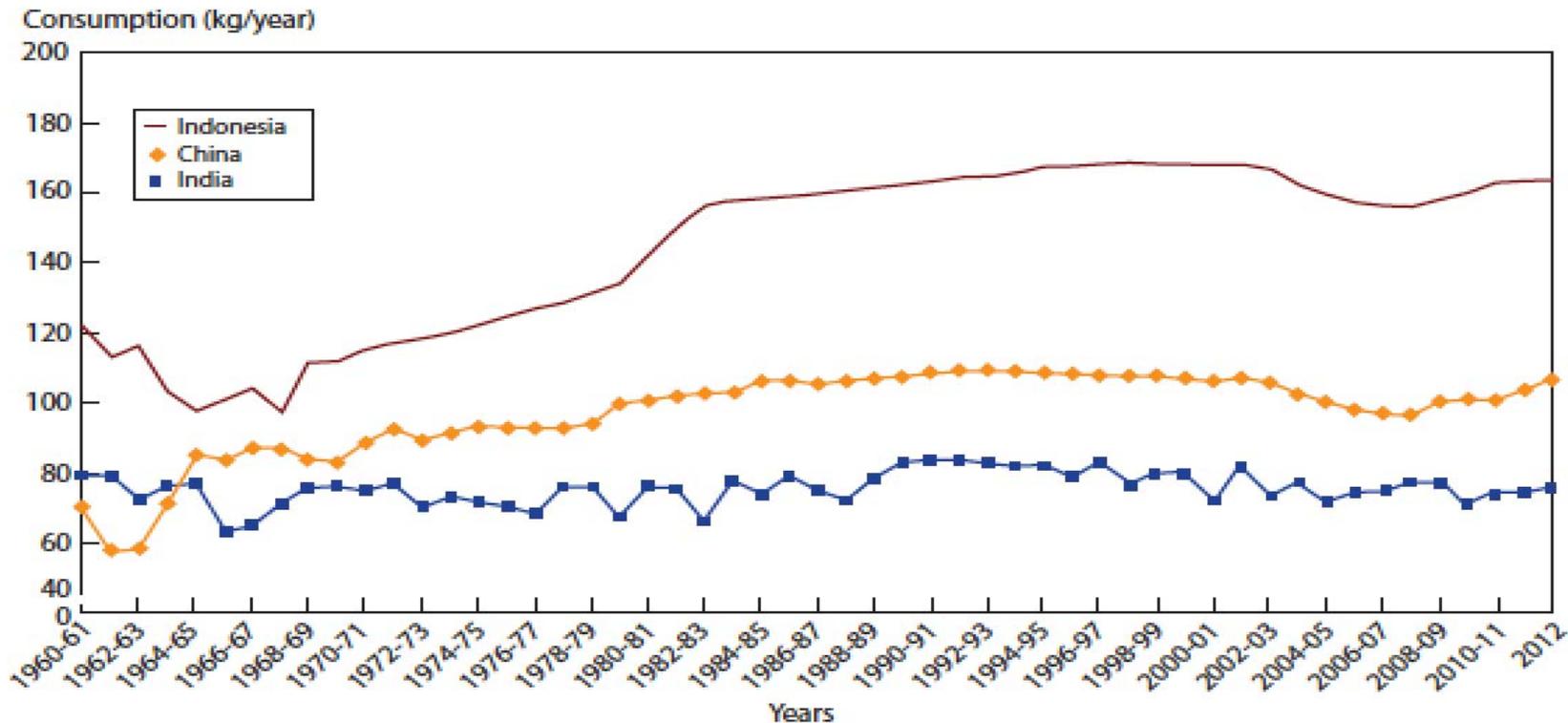


Fig. 6.3. Per capita rice consumption in Indonesia, China, and India.

Data sources: PSD online database (USDA) and FAOSTAT population database (FAO).



Rice Constraints

No more rice acreage in Asia

Increase to come from Western hemisphere at much higher prices and higher rice yields in South Asia.

India and China very short of water and yet give it away.

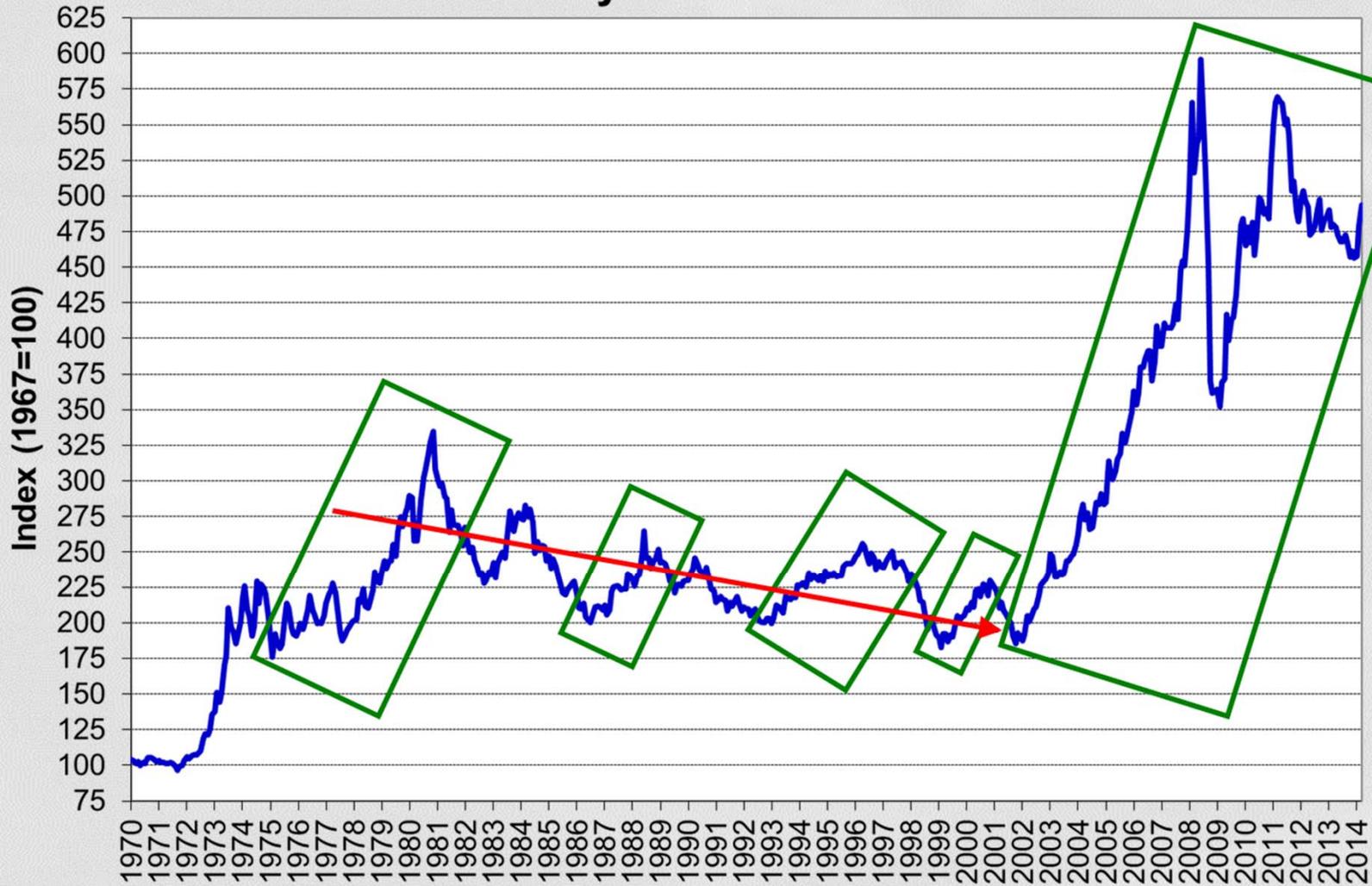
Labor and input costs in China and India rising rapidly.

Simple Technology Transfers: “Follow the Cold Chain” – Goodbye Wet Markets

Macroeconomics and Infrastructure

Commodities As An Asset Class

Monthly CRB BLS Spot Index January 1970 - March 2014



Industrial Vs. Emerging

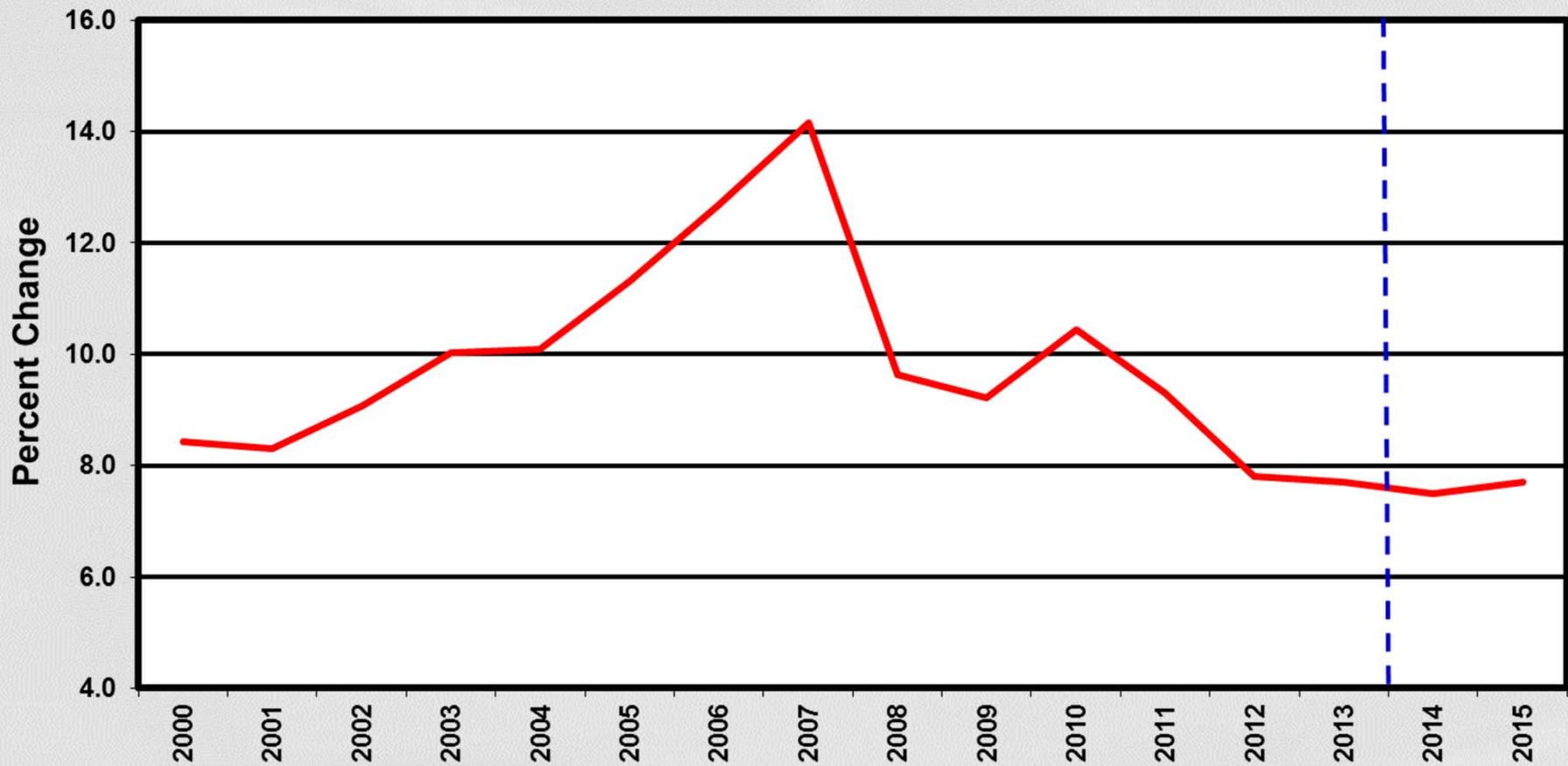
- **China's Transition to a Consumer-Based Economy**

World Macroeconomic Indicators

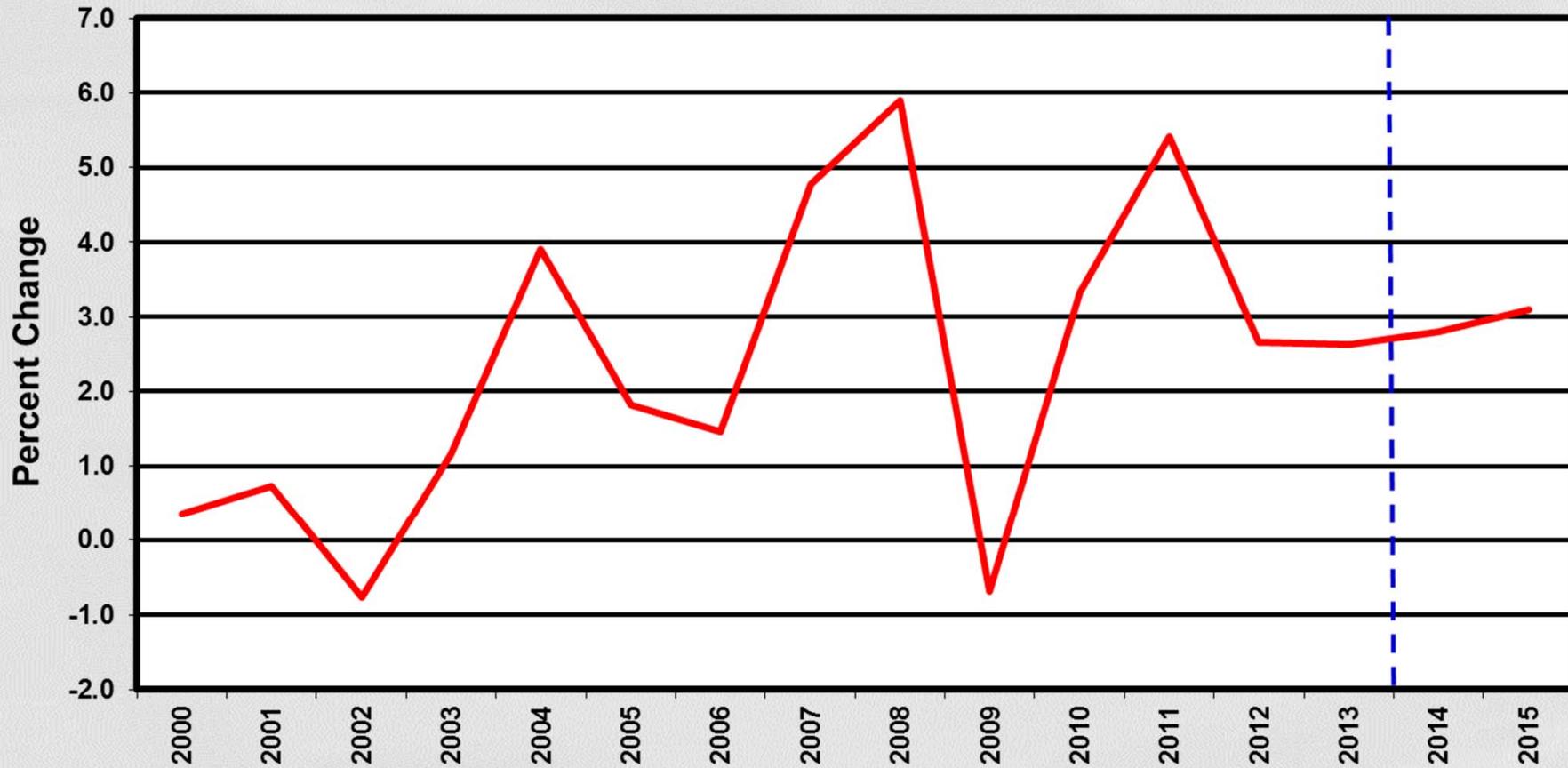
Indicator	2012	2013	2014	2015
Real Growth (% Chg.)				
World	2.6	2.4	3.0	3.3
OECD	1.5	1.3	2.2	2.6
Asia/NIC/Emerging *	6.3	6.2	6.1	6.3
Latin America	2.5	2.3	1.6	2.2
Eurozone	-0.5	-0.4	1.2	1.7
Country Specific				
United States	2.8	1.9	3.0	3.1
Canada	1.7	2.0	2.1	2.7
United Kingdom	0.3	1.8	2.4	2.6
Japan	1.4	1.6	2.2	2.6
China [Inflation Rate '14 2.8%]	7.8	7.7	7.5	7.7
India	4.7	4.6	4.3	4.7

* Note Asia/NIC: Korea, Taiwan, Hong Kong, Singapore;
Emerging: China, India, Indonesia, Malaysia, Thailand.

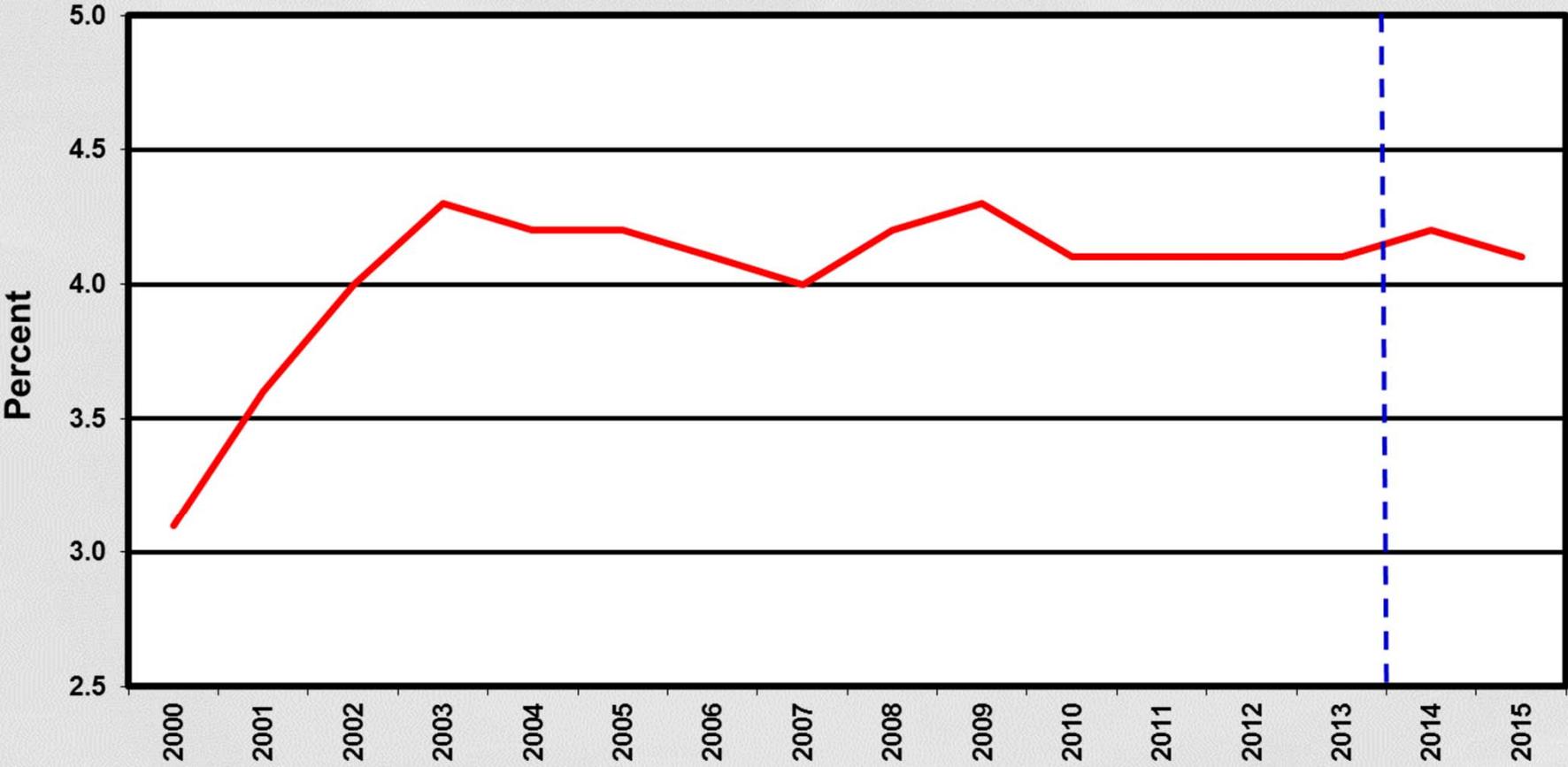
China Real GDP Year/Year



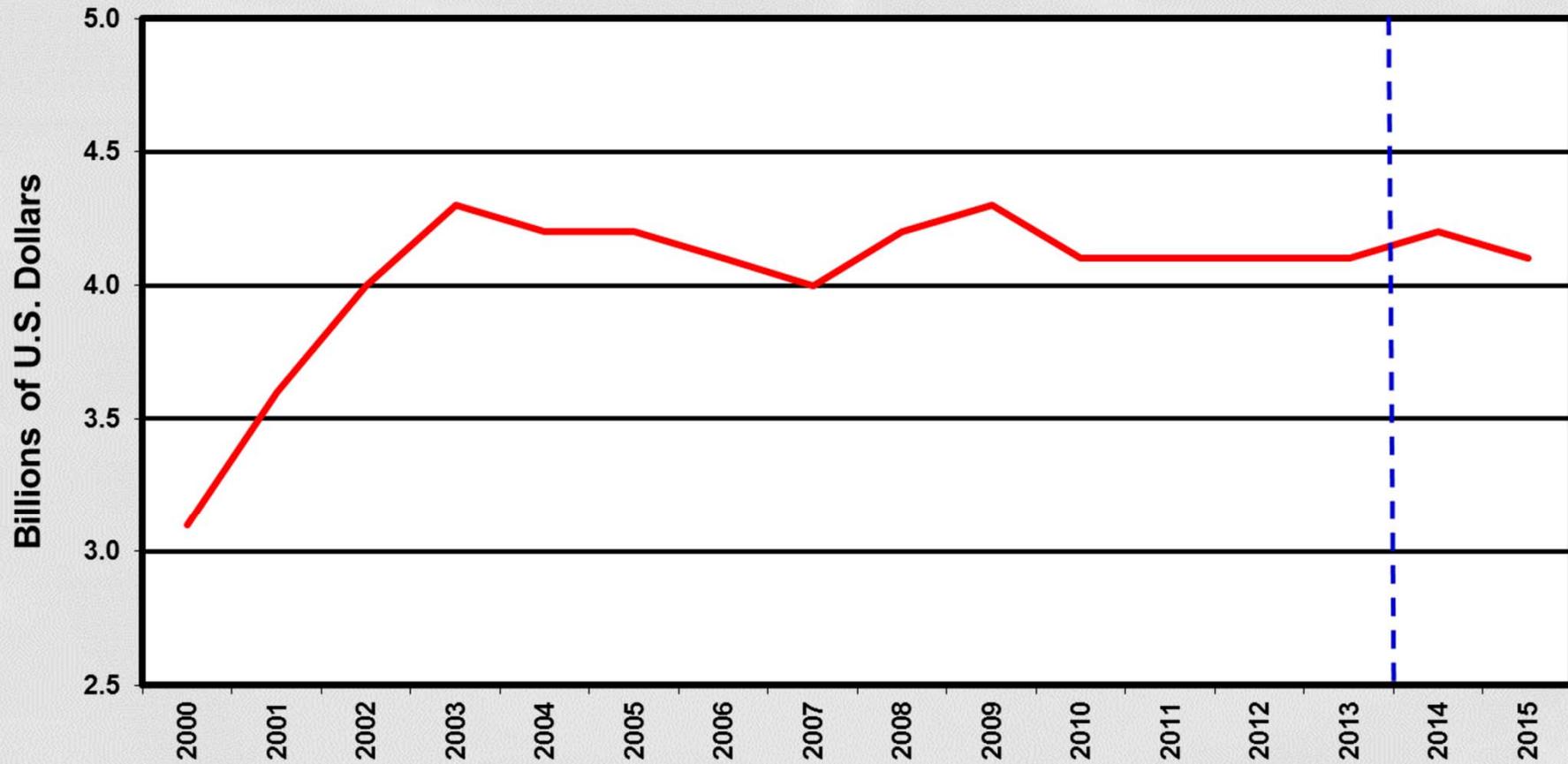
China Inflation - Consumer Prices Annual Average



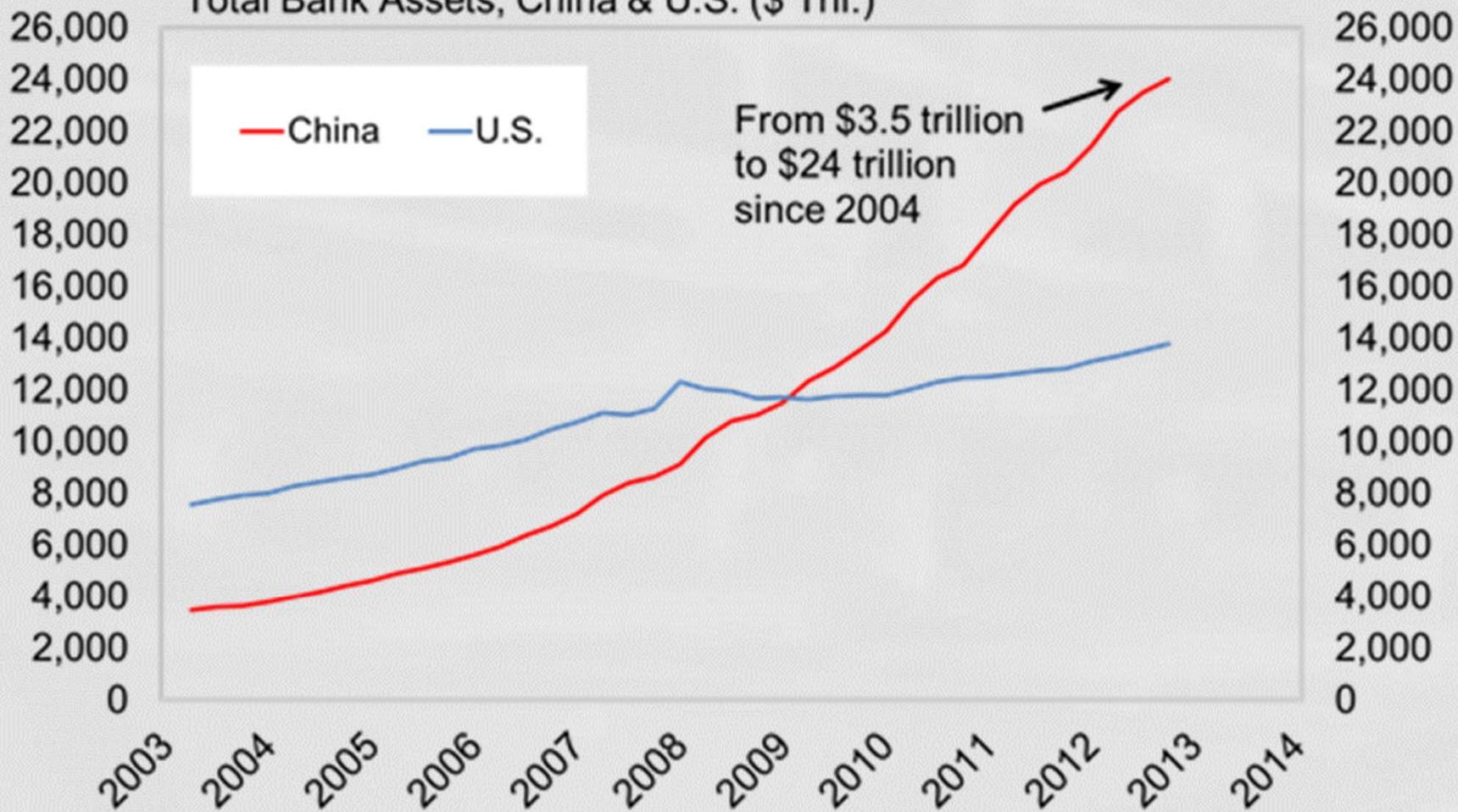
China Unemployment Rate



China Current Account

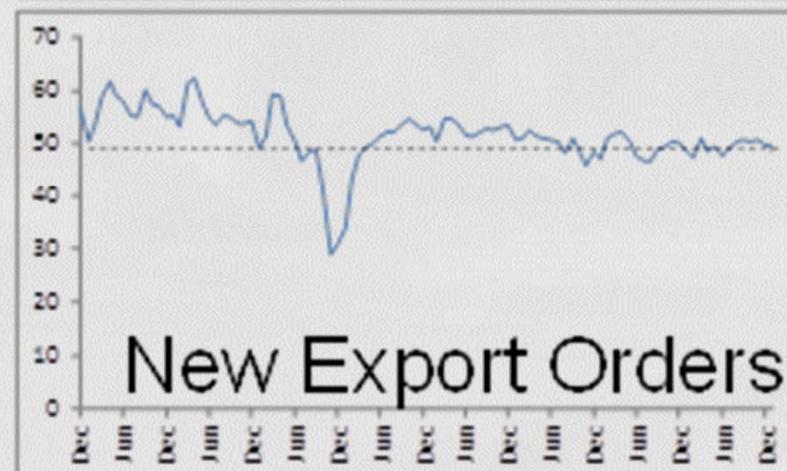
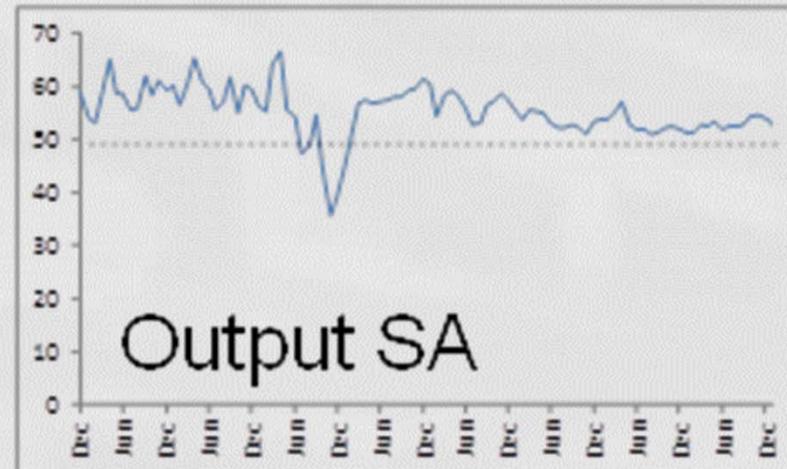
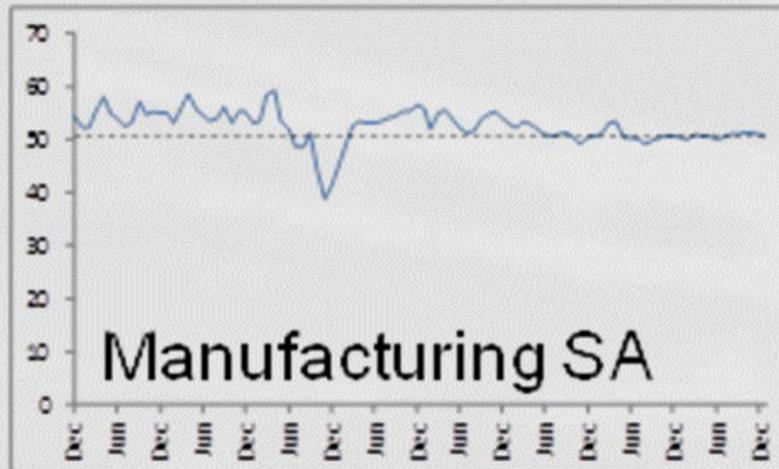


Total Bank Assets, China & U.S. (\$ Tril.)



Source: Bloomberg, ZeroHedge, BMO Global Asset Management Strategy
File #1672.0

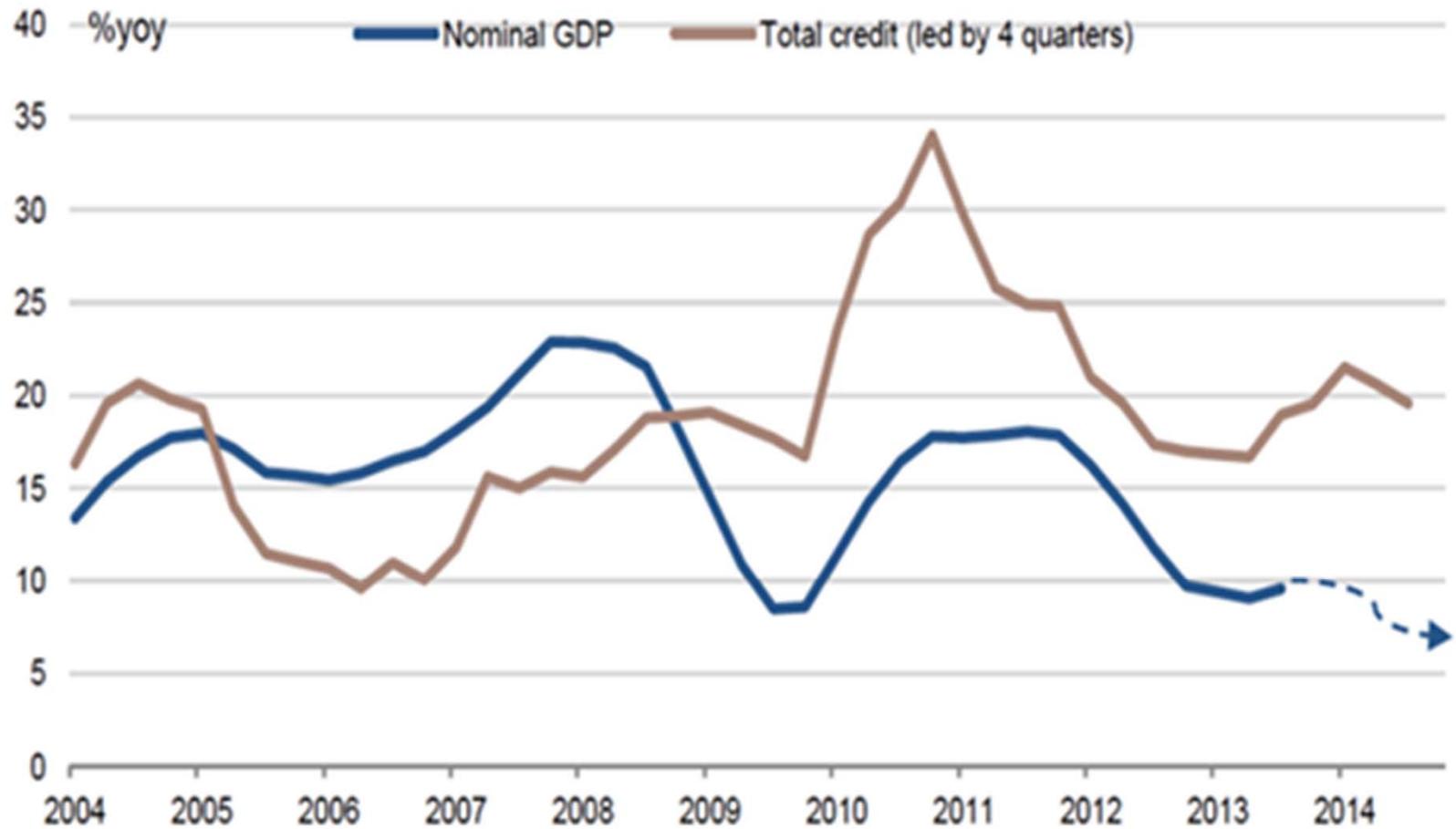
China Manufacturing Dashboard



Source: Bloomberg; BMO Private Bank Strategy

Chart #0652

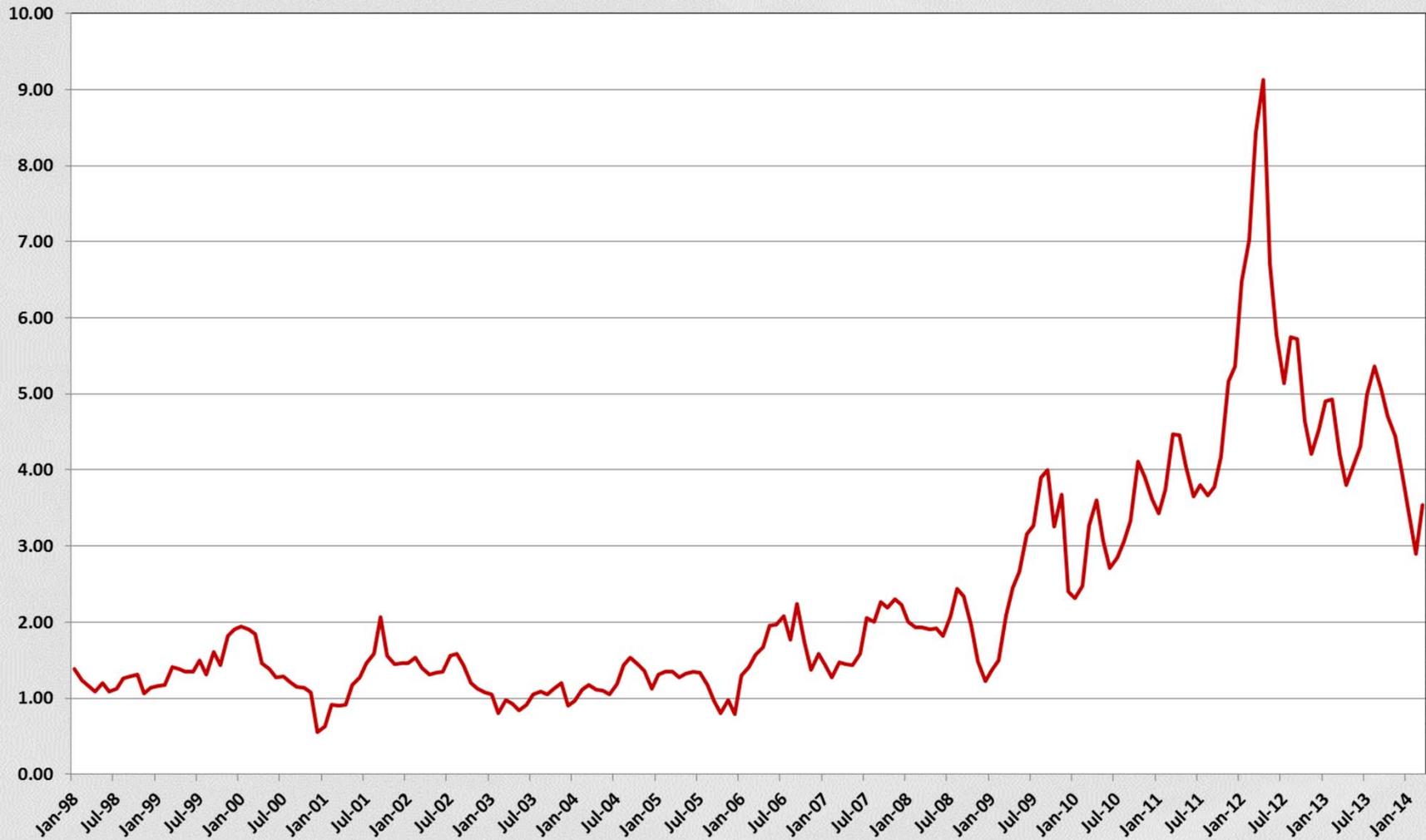
Growth deceleration to follow deleveraging



Source: PBoC, NBS, CEIC, SG Cross Asset Research/Economics

U.S. Energy Revolution: Impact On China

Ratio Between WTI Crude and Henry Hub Spot Price (Dollars per million btu)



Geopolitical Implications of U.S. Energy Independence: OPEC and China/Broader Asia

Agriculture Policy: More Questions than Answers

**Collaboration: Jay Lou
PolySource International
Beijing, China**

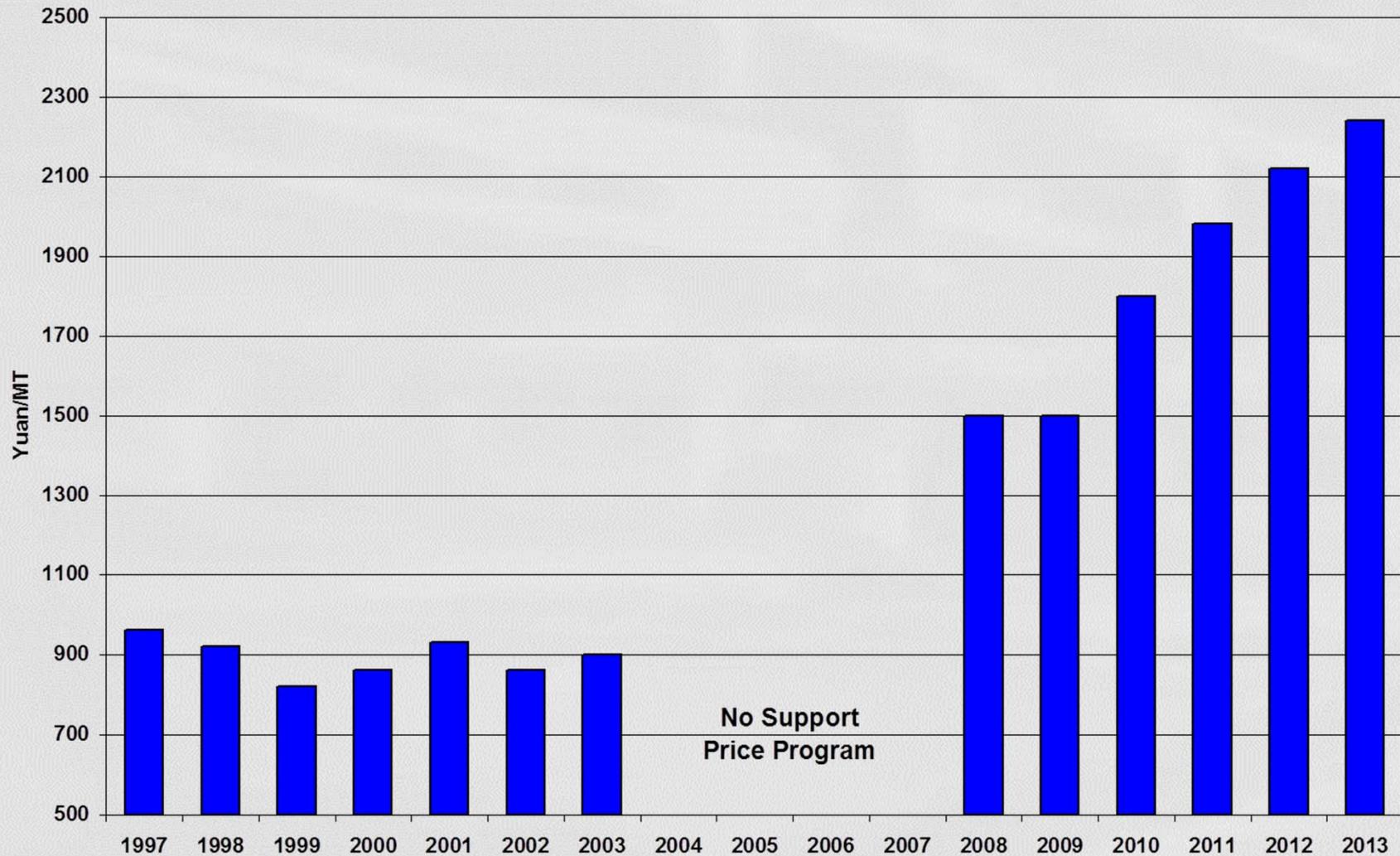
New Agricultural Policy Initiations:

- **At the beginning of 2014, the Chinese central government issued its major agricultural policy initiations for 2014 and beyond.**
- **The core agricultural policy initiations include: enhancing the national food grain supply security; introducing pilot programs for target price mechanism; speeding up the land use rights transfer to maintaining long-term sustainability of China's agricultural production.**
- **Unlike the policies issued in the past, the new Chinese government leadership this time emphasized more on the actual implementation rather than more policy initiations, which means that the policy could be implemented much faster.**
- **Though detailed implementation measures are still under development, early indicators are available for our assessment.**

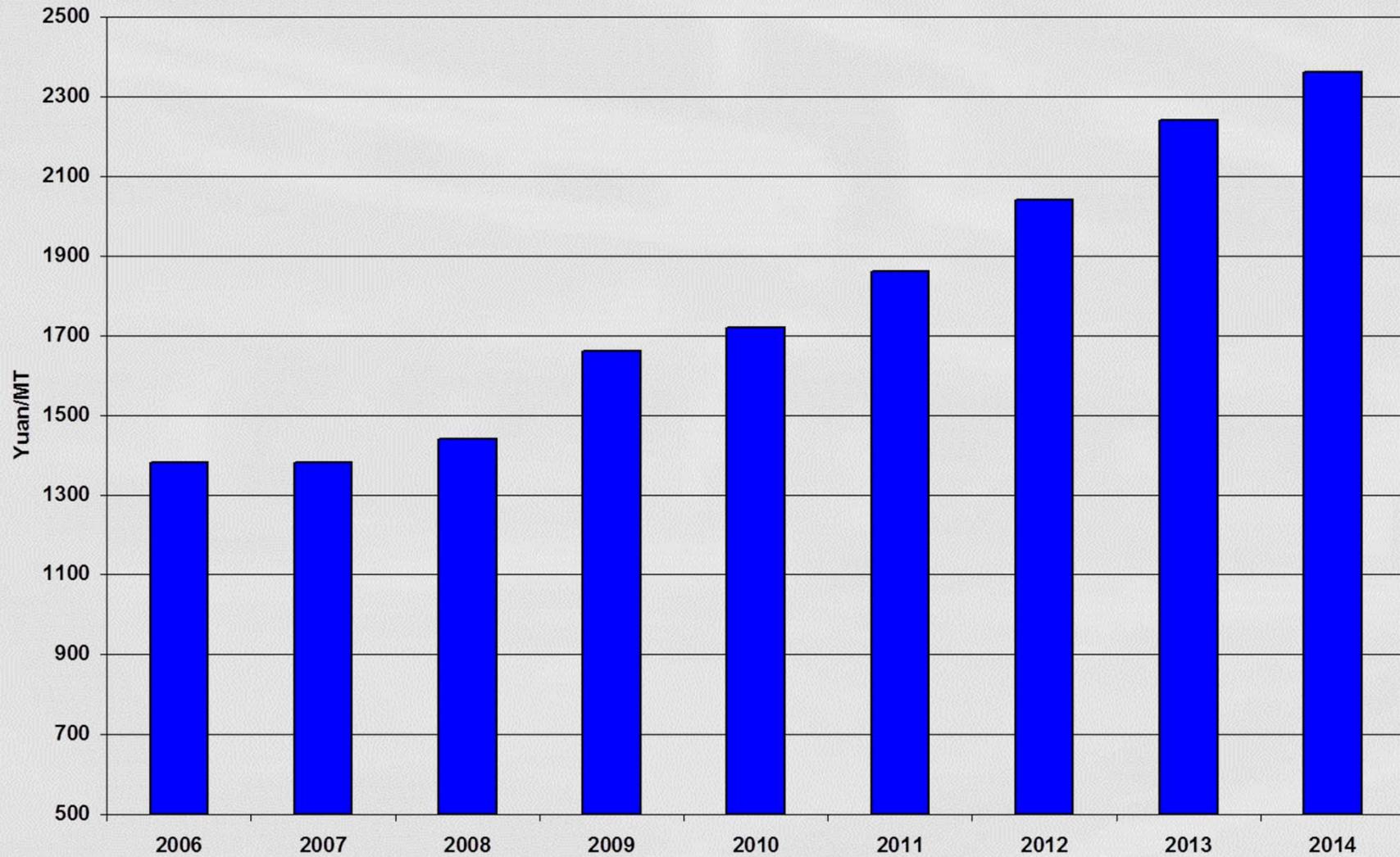
Backdrop of the New Agricultural Policy Initiations:

- **Increasing pressures to meet domestic food demand with rising incomes.**
- **Domestic prices are so high making domestic production less competitive against imports.**
- **Farm size is so small, hindering agricultural modernization. Lack of agricultural modernization impedes agricultural productivity improvement.**

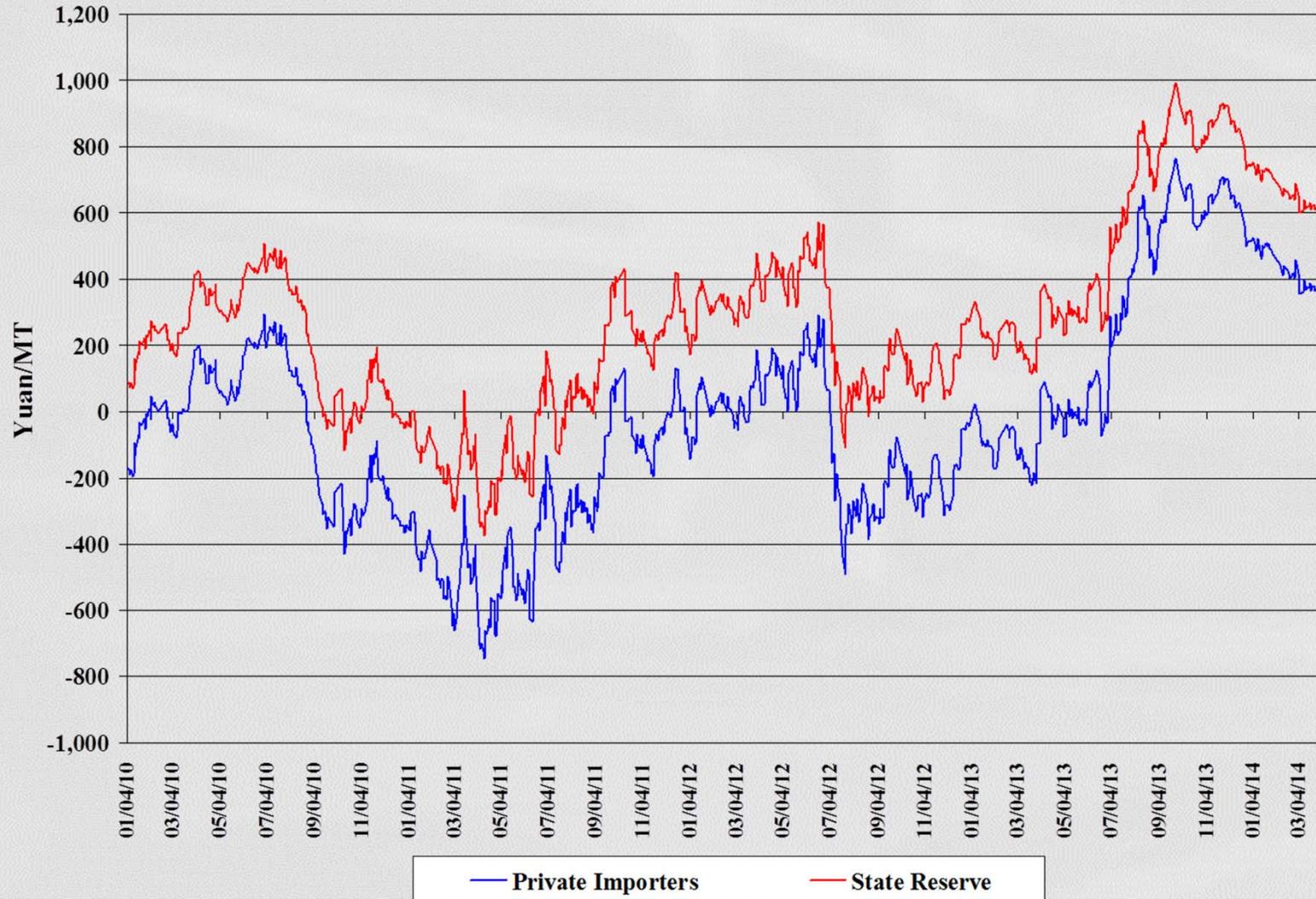
Corn Government Support Prices



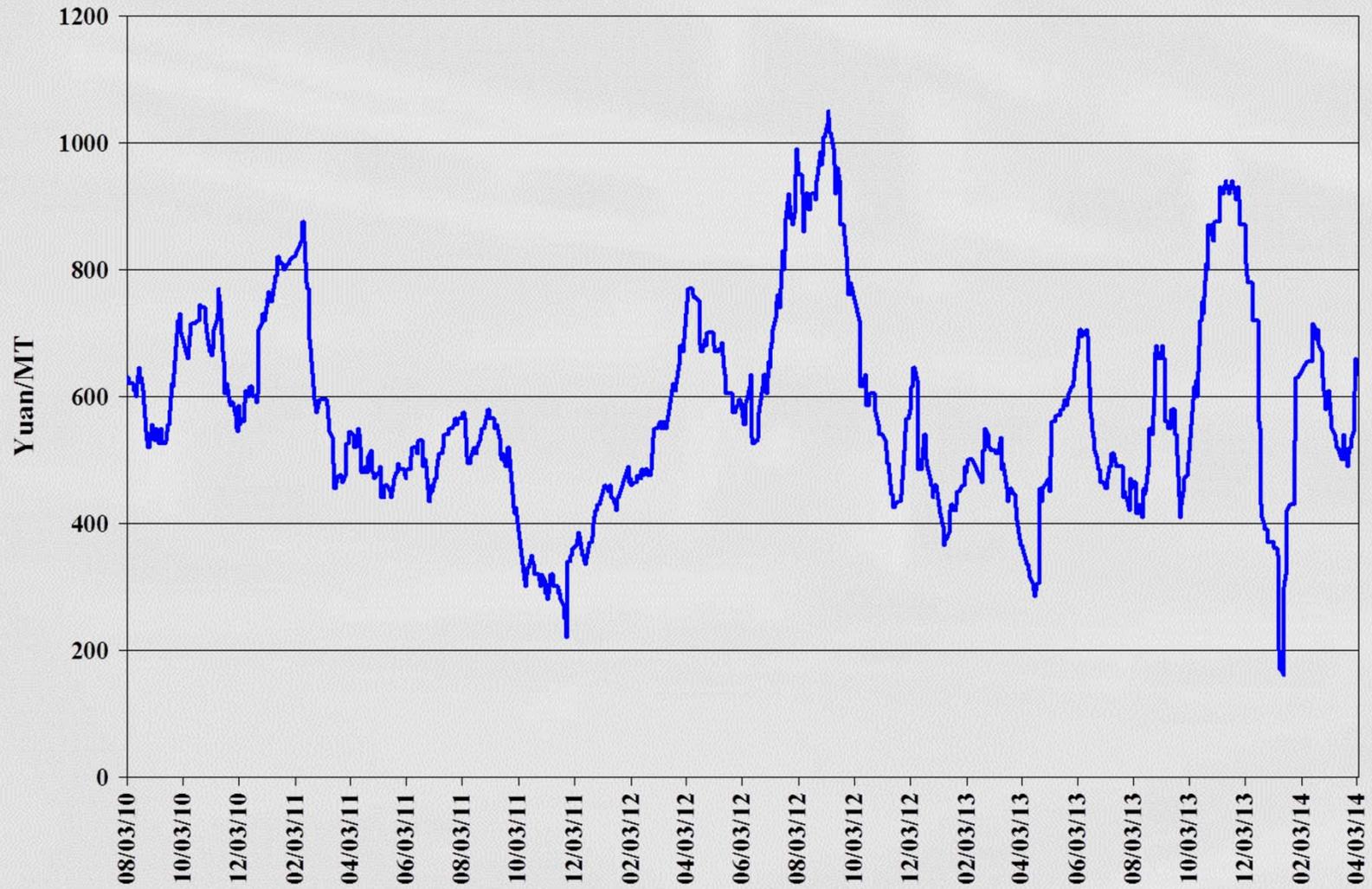
Wheat Government Support Prices



Chinese Corn Import Margins



Chinese DDGs Import Margins



Enhancing the National Food Grain Supply Security:

- **In order to secure national food grain supply in the long term, the government's policy emphasized that China will have to mainly rely on itself to feed the domestic population through provision of more price incentives, improving technology, and increasing production efficiency.**
- **However, the Chinese government has also called for actively utilization of the world agricultural market and agricultural resources to fill the gap of domestic food supply and demand, which suggests that China will increasingly rely on the world market in the future.**

Strategies to Secure Supplies From the World:

- **Diversification of its import variety sources.**
 - **Corn imports => Sorghum and DDGs imports.**
 - **Feed imports => Meat product imports.**
- **Investment in the overseas farmland – Brazil, Russia, Ukraine, Australia etc. Chinese companies are growing crops in those countries and shipping the output back to China.**
- **Acquisition of international trading companies to gain direct accesses to the supply sources – COFCO's 51 percent stake in Nidera (direct access to South American's grain and oilseeds); COFCO's majority stake in Noble's agribusiness arm; Shuanghui's acquisition of Smithfield.**
- **Food security is the No. 1 priority for China, and one should expect to see China pursuing more acquisitions internationally in the future.**

Switch From Price Support to Target Price Mechanism:

- **At present, the Chinese government supports domestic production through a domestic price support program – a minimum purchasing price program. When the domestic prices are low, the State Reserve steps into the market to buy from farmers at the support price.**
- **The shortcomings of the current price support program:**
 - **Domestic prices run significantly above the world prices.**
 - **Excessive stockpiling from time to time.**
 - **Domestic prices are so high that imports become a better option.**
- **A target price program will be introduced for cotton and soybean crop in 2014 to displace the existing support program. The concept is the government will set a target price. When market prices move below target price, the government will subsidize farmers for the price differences. When market prices rise above target price, the government will subsidize urban low-income families.**

Implications of the New Target Price Program:

- **The success of new soybean and cotton program will determine how soon the Chinese government will introduce a target price program for corn, wheat and rice. The intention is to introduce target price program for corn in 2015 and for wheat and rice in 2016 if the cotton and soybean pilot program is successful.**
- **The new target price program could be dicey for the Chinese government as well. Though the intention is to encourage production, farmers may choose to cut the area due to the uncertainty of the program. Early indications coming out of China is that Chinese farmers plan to reduce 2014 cotton and soybean area due to the new program.**
- **While transitioning to the target price system, the State Reserve's large-scale stockpiling of domestic grain and oilseed products will end as well. In order to be able to carry a comfortable stocks level to regulate the domestic market like it used to, the state reserve may have to buy more grains from the world market.**

Land Use Rights Transfer and Land Consolidation:

- **Chinese farmers do not own land. It is the Chinese government who owns all of the land in China. The government contracts the farm land use rights to each farm family for up to 50 years and they are extendable.**
- **Arable land is limited in China and the only way to keep up with the growing food demand is through increasing land productivity.**
- **Chinese farmlands are very fragmented with average farm size around 3.7 acres per farm family. Rapidly rising income from outside farms and limited income from farming had discouraged farmers from increasing land productivity. The fragmentation of crop land becomes the largest obstacle to agricultural modernization.**
- **As a result, the land use rights transfer becomes a major policy to consolidate 100 millions of small farms into large farms in order to generate economies of scale.**

Arable Land by Rural Household

Province	Region	Major Crops	Arable Land Acre/Person	Family Size Person/Household	Arable Land Acre/Household
National	--	--	0.37	3.76	1.40
Heilongjiang	Northeast	Corn, Soybean	1.93	3.88	7.50
Jilin	Northeast	Corn, Soybean	1.26	3.76	4.73
Hebei	North	Wheat, Corn, Cotton	0.33	3.74	1.22
Shandong	North	Wheat, Corn, Cotton	0.26	3.43	0.88
Henan	North	Wheat, Corn, Cotton	0.27	3.95	1.08
Anhui	North	Wheat, Corn, Cotton	0.30	3.89	1.16
Hubei	Central	Rice, Rapeseed	0.27	3.93	1.06
Hunan	Central	Rice, Rapeseed	0.20	3.67	0.74
Sichuan	Southwest	Rice, Rapeseed	0.17	3.49	0.59
Xinjiang	Northwest	Cotton	0.76	4.42	3.35

Note: Average US Farm Size = 418 acres

Implications of Farmland Consolidation:

- **Farmland consolidation will require a large number of farmers to be absorbed by the urban expansion. Their consumption is expected to gradually rise toward the urban residents' level, which means more supplies and stocks are needed to facilitate this transition.**
- **Farmland consolidations will open up a huge Chinese market for agricultural machinery and equipment import opportunities.**
- **Farmland consolidations also will open up the Chinese market for GMO seeds, agricultural inputs and advanced farming technologies.**
- **Transportation and logistic infrastructure will have to be built to handle bulk commodity shipments in the future.**

Policy Conclusions:

- **The new policy change could mean that China will import more agricultural commodities in the future.**
- **Chinese agricultural imports could be more diversified in the future rather than mainly grain and oilseeds.**
- **The dicey policy outcome could send a shock to the domestic supply system, which could ripple throughout the world market as well.**
- **Modernization of the Chinese agricultural production may open up a huge market for agricultural machinery, equipment, seed technology, agricultural inputs, and transportation, storage and handling equipments.**

Commodity Features

- **Corn**
- **Soybeans**
- **Wheat**
- **Rice**

Major Crop Production

China: Area (thousand hectares)

	2008	2009	2010	2011	2012	2013	2014
Corn	29,864	31,180	32,500	33,150	34,300	35,800	36,600
Sorghum	490	559	548	500	623	650	650
Barley	794	626	580	620	490	450	500
All Wheat	23,617	24,290	24,257	24,270	24,268	24,000	24,250
Rice	29,240	29,627	29,873	30,057	30,137	30,430	30,700
Soybean	9,127	9,190	8,516	7,889	6,800	7,000	7,000
Rapeseed	6,594	7,278	7,370	7,347	7,300	7,400	7,500
Sunseed	964	959	984	943	947	965	950
Cotton	6,050	5,300	5,250	5,500	5,300	4,850	4,000
Major Crop Total	106,740	109,009	109,878	110,276	110,165	111,545	112,150

China: Yields (tons/hectare), except cotton kilos lint/hectare

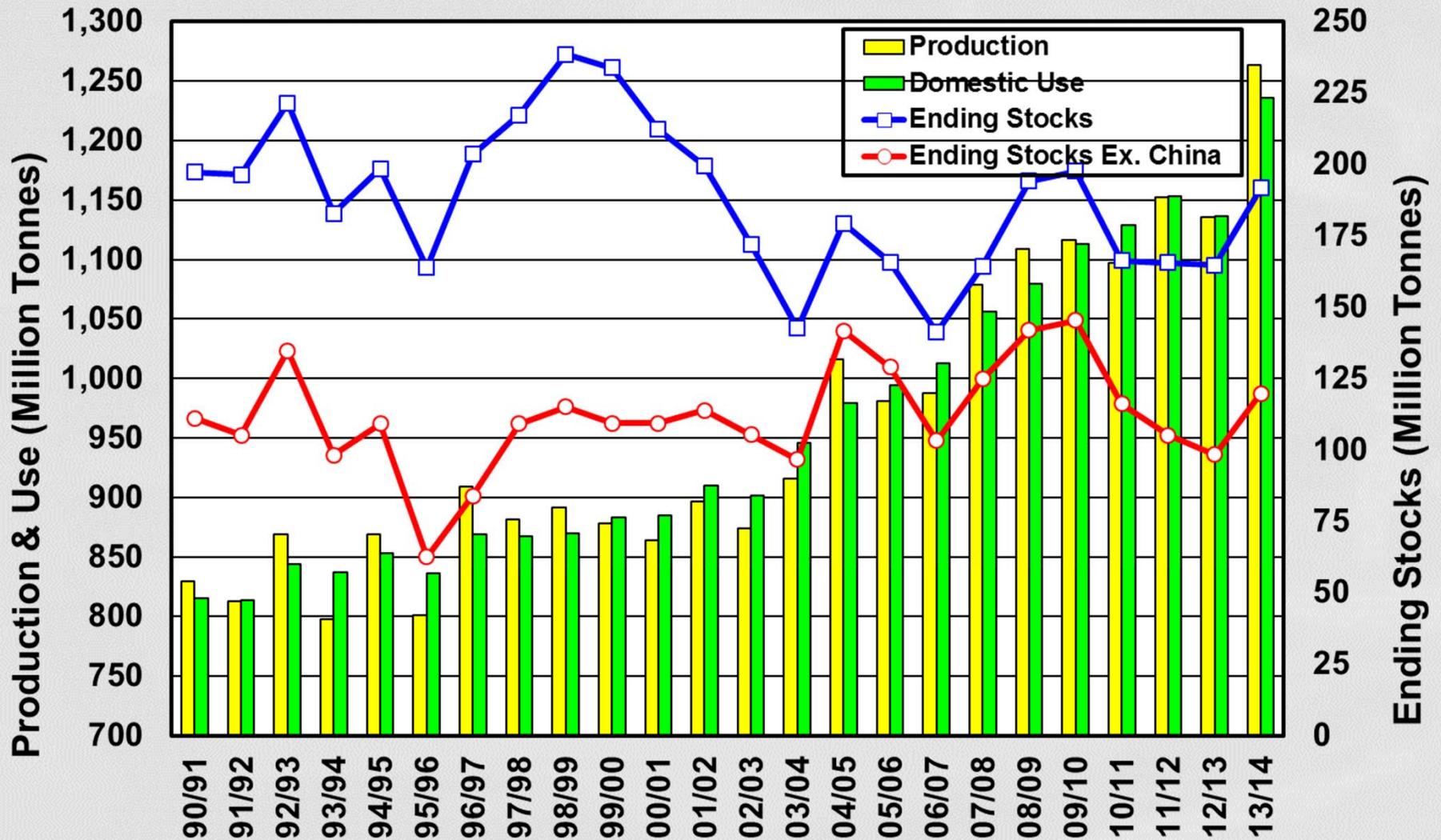
	2008	2009	2010	2011	2012	2013	2014
Corn	5.56	5.26	5.45	5.82	5.99	6.08	5.96
Sorghum	3.75	3.00	4.48	4.10	4.10	4.15	4.15
Barley	3.56	3.70	3.40	3.71	3.32	3.33	3.30
All Wheat	4.76	4.74	4.75	4.84	4.99	5.09	5.03
Rice	4.59	4.61	4.59	4.68	4.74	4.68	4.70
Soybean	1.70	1.63	1.77	1.84	1.92	1.71	1.85
Rapeseed	1.84	1.88	1.78	1.83	1.92	1.95	1.93
Sunseed	1.86	2.04	2.34	2.46	2.54	2.54	2.50
Cotton	1321	1315	1265	1346	1438	1414	1442

China: Production (thousand metric tons), except cotton in 480 lb.bales

	2008	2009	2010	2011	2012	2013	2014
Corn	165,914	163,974	177,245	192,780	205,614	217,730	218,000
Sorghum	1,837	1,677	2,456	2,051	2,556	2,700	2,700
Barley	2,823	2,318	1,972	2,300	1,626	1,500	1,650
Wheat	112,464	115,120	115,180	117,400	121,023	122,170	122,000
Rice (Milled)	134,330	136,570	137,000	140,700	143,000	142,300	144,300
Soybean	15,540	14,980	15,080	14,485	13,050	12,000	12,950
Rapeseed	12,102	13,657	13,082	13,426	14,007	14,400	14,500
Sunseed	1,792	1,956	2,298	2,317	2,406	2,450	2,375
Cotton	36,700	32,000	30,500	34,000	35,000	31,500	26,500

Corn

World Coarse Grains Production, Use & Ending Stocks



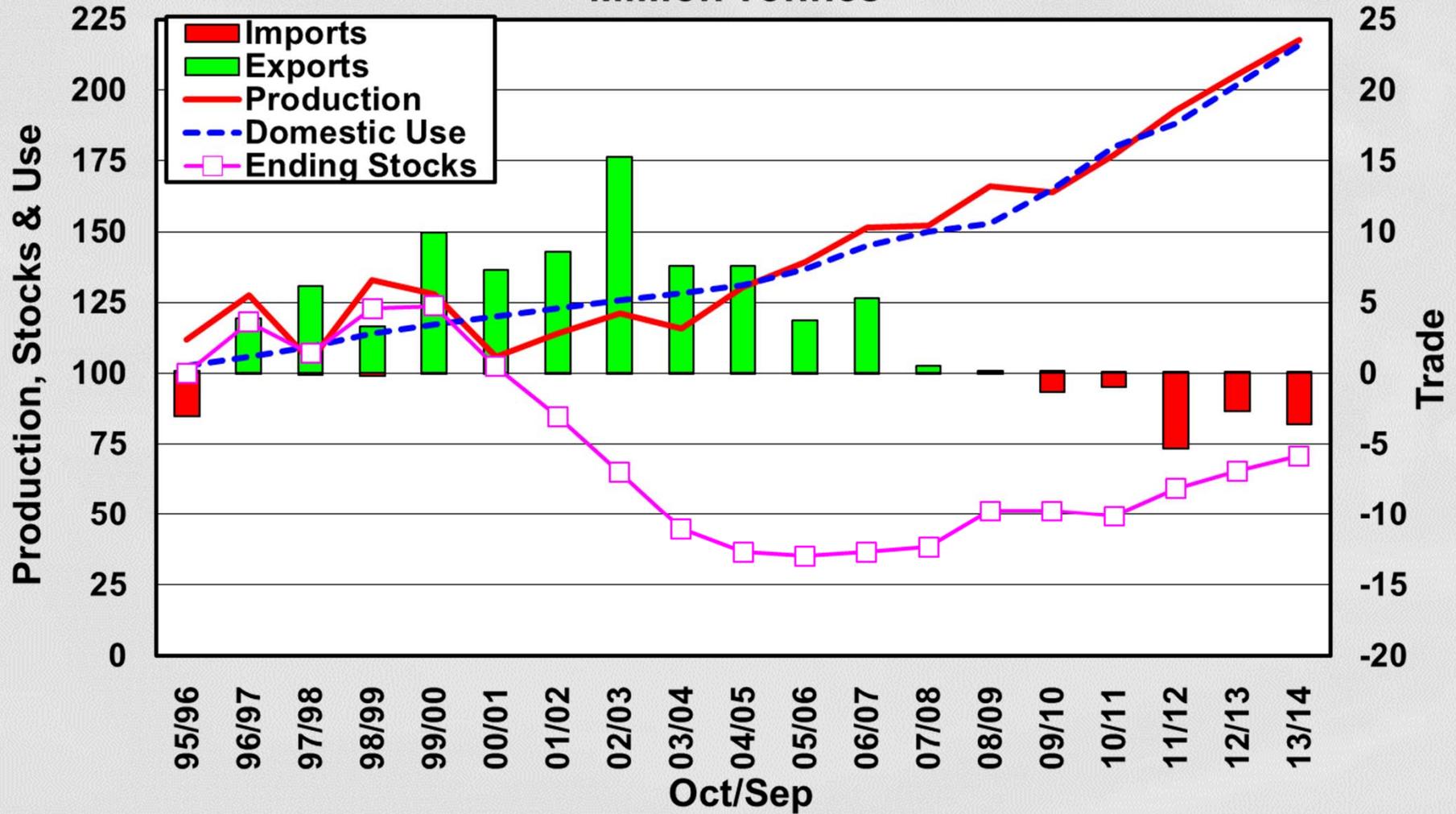
China Corn Supply and Demand

(Million Tonnes/Million Hectares)

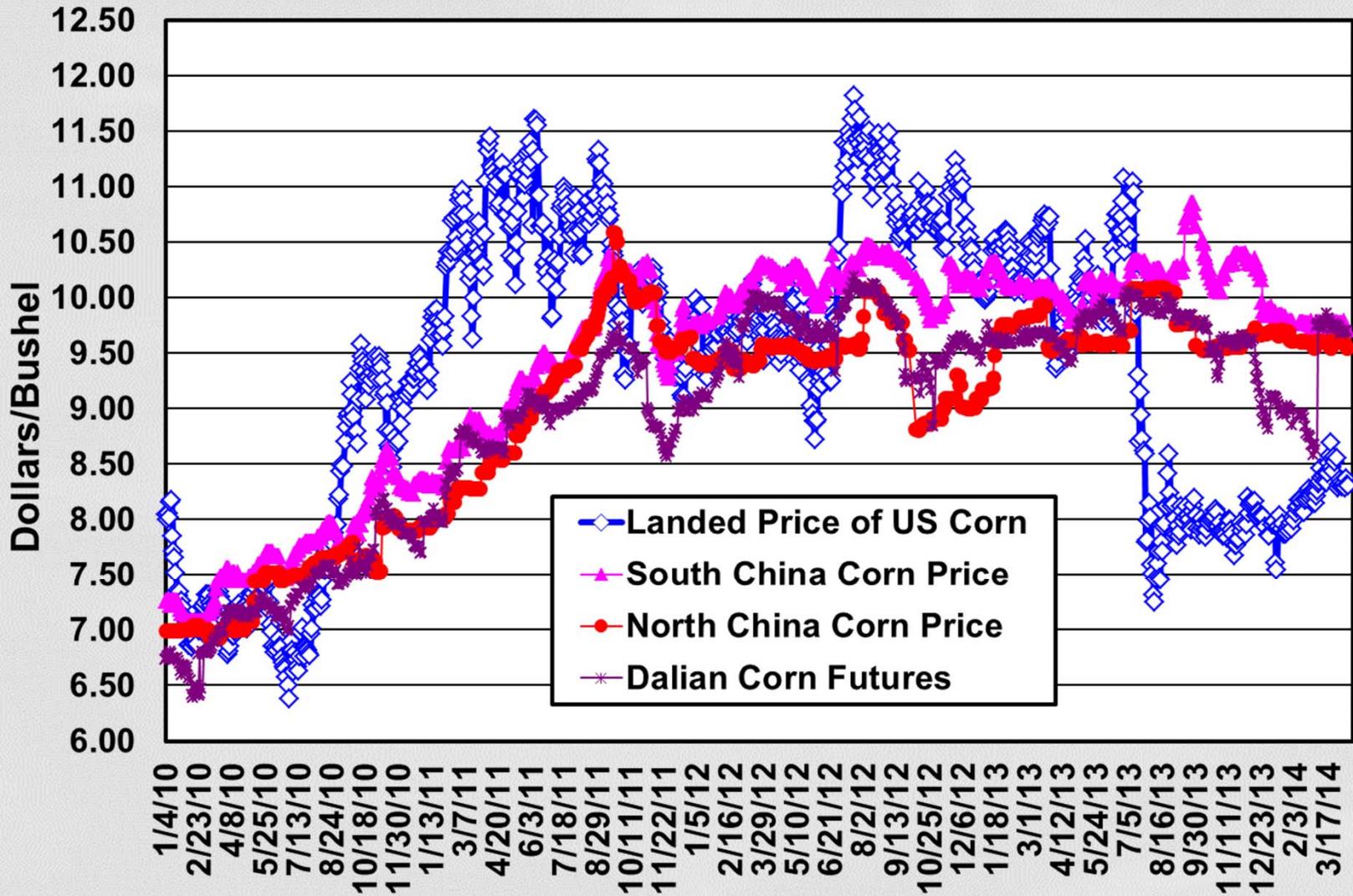
	2009/10	2010/11	2011/12	2012/13	2013/14
Harvested Area	31.2	32.5	33.2	34.3	35.8
Yield	5.26	5.45	5.82	5.99	6.08
Carryin (Oct 1)	51.2	51.3	49.4	59.3	65.6
Production	164.0	177.2	192.8	205.6	217.7
Imports	1.3	1.0	5.3	2.7	3.6
Total Supply	216.5	229.5	247.5	267.7	286.9
Feed & Residual	118.0	128.0	131.1	144.0	156.0
Food/Seed/Ind	47.0	52.0	57.0	58.0	60.0
Domestic Use	165.0	180.0	188.1	202.0	216.0
Exports	0.2	0.1	0.1	0.1	0.0
Total Use	165.2	180.1	188.2	202.1	216.0
Carryout (Sep 30)	51.3	49.4	59.3	65.6	70.9
Growth in Usage	8%	9%	4%	7%	7%

China Corn Production, Use, Stocks & Trade

Million Tonnes



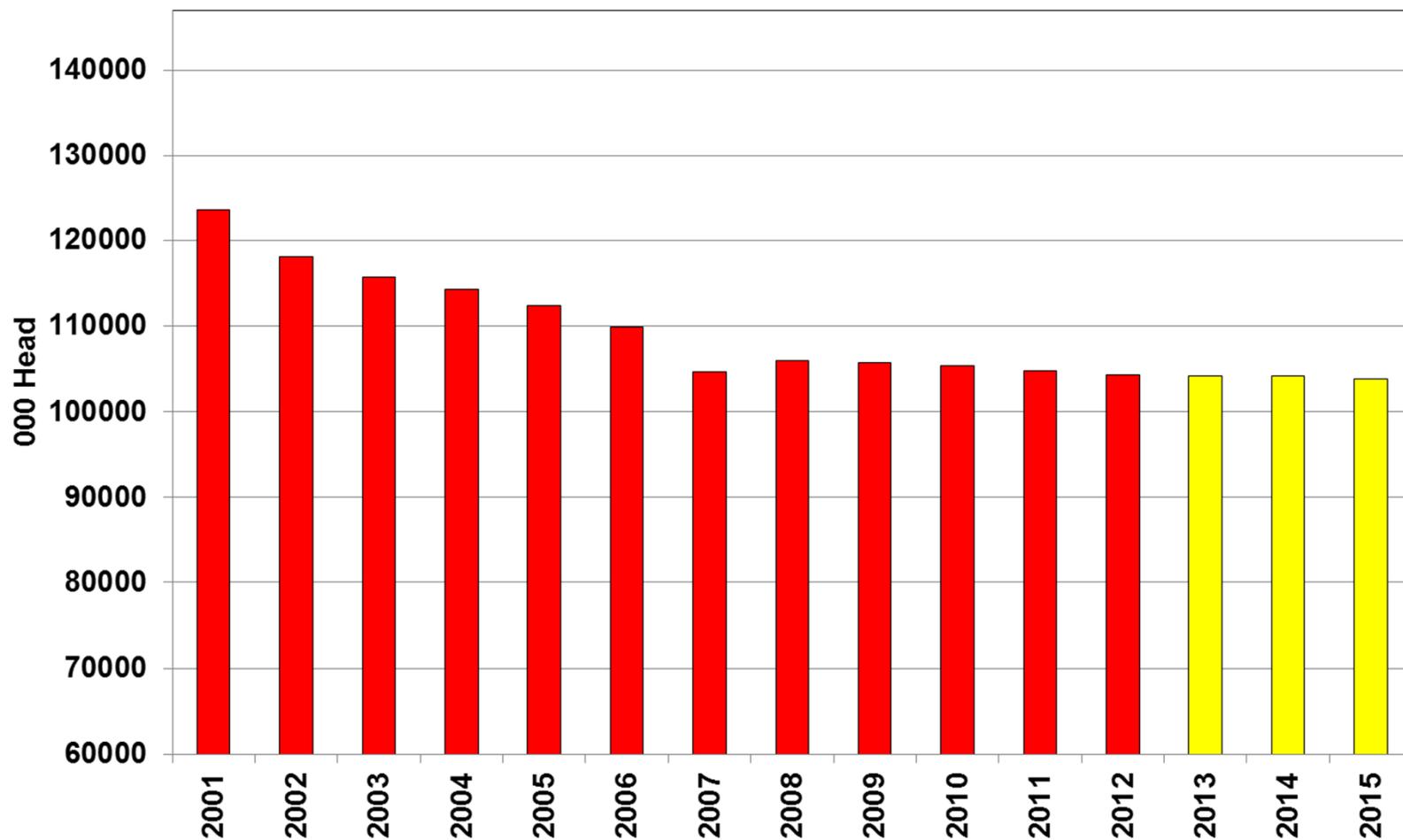
China Corn Prices



Livestock

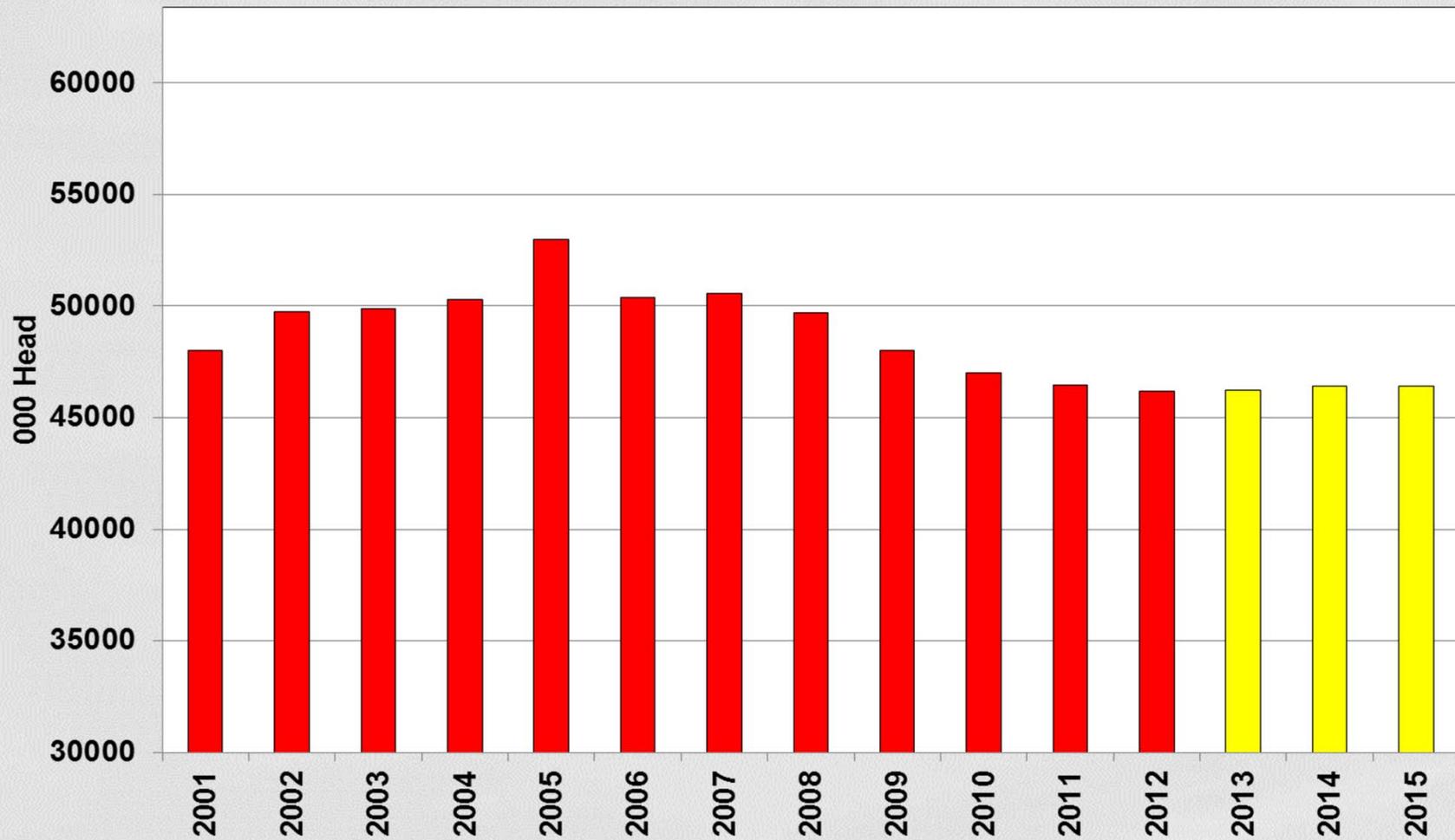
China

Total Cattle Inventory



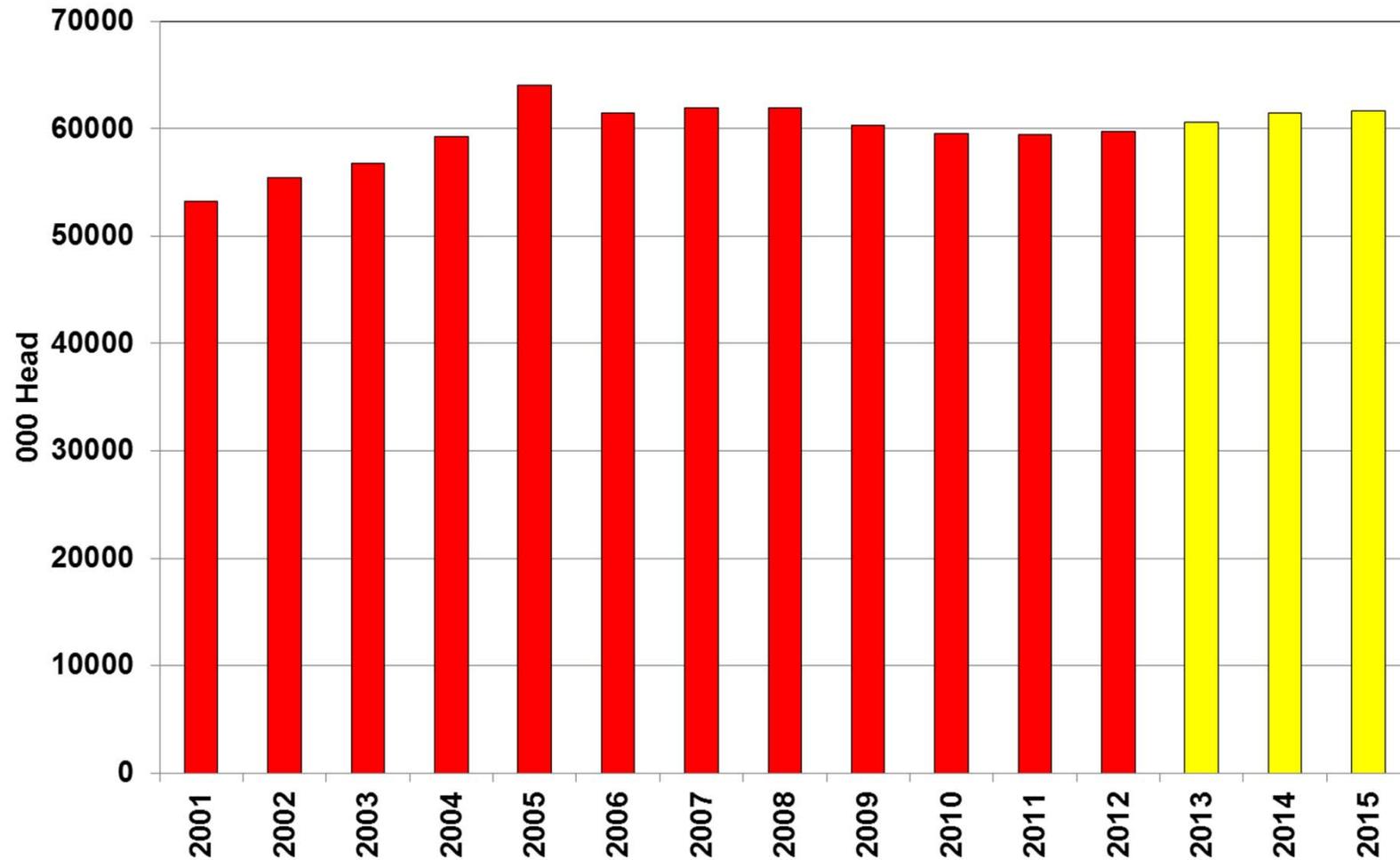
China

Beef Cow Inventory



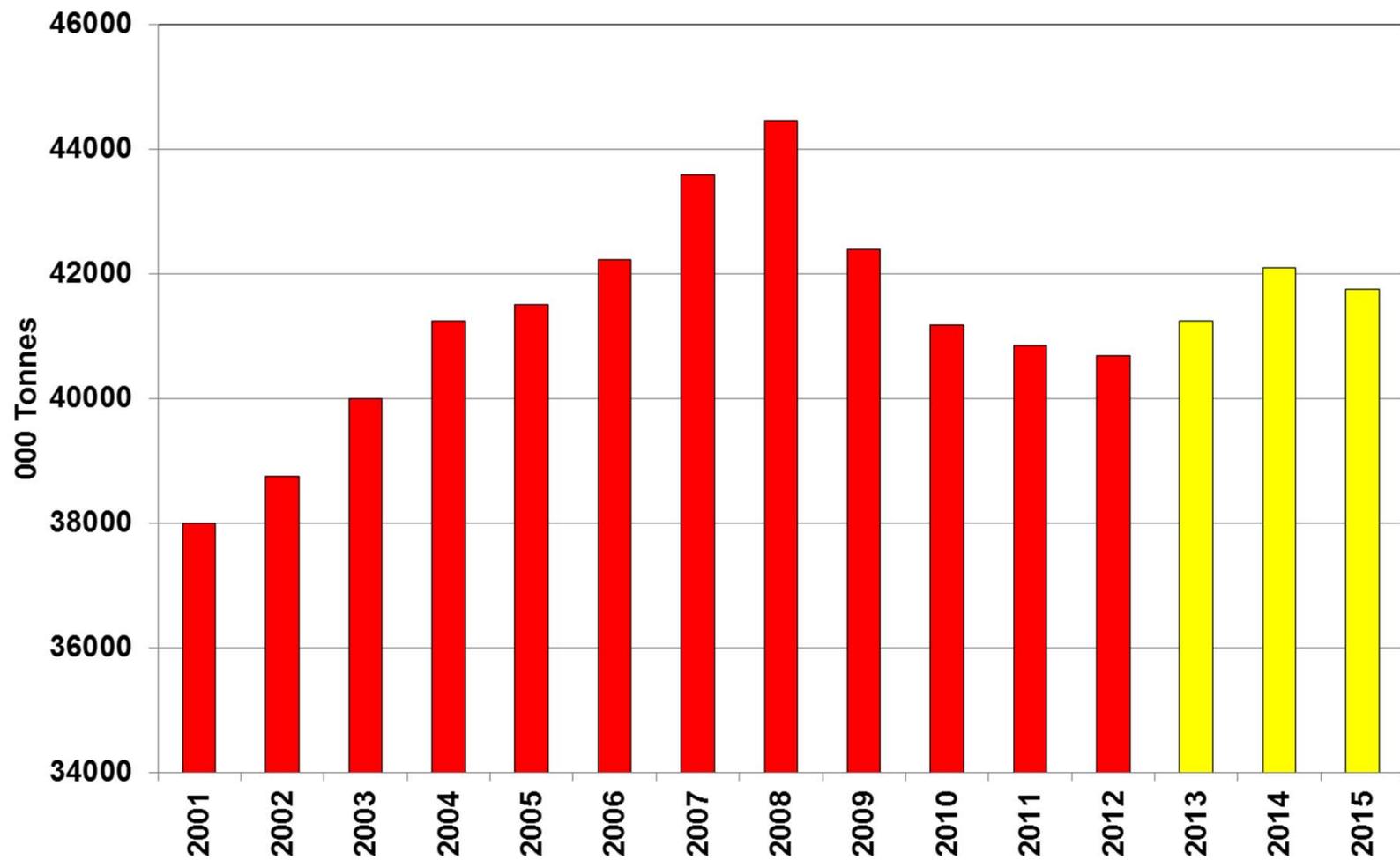
China

Total Cow Inventory



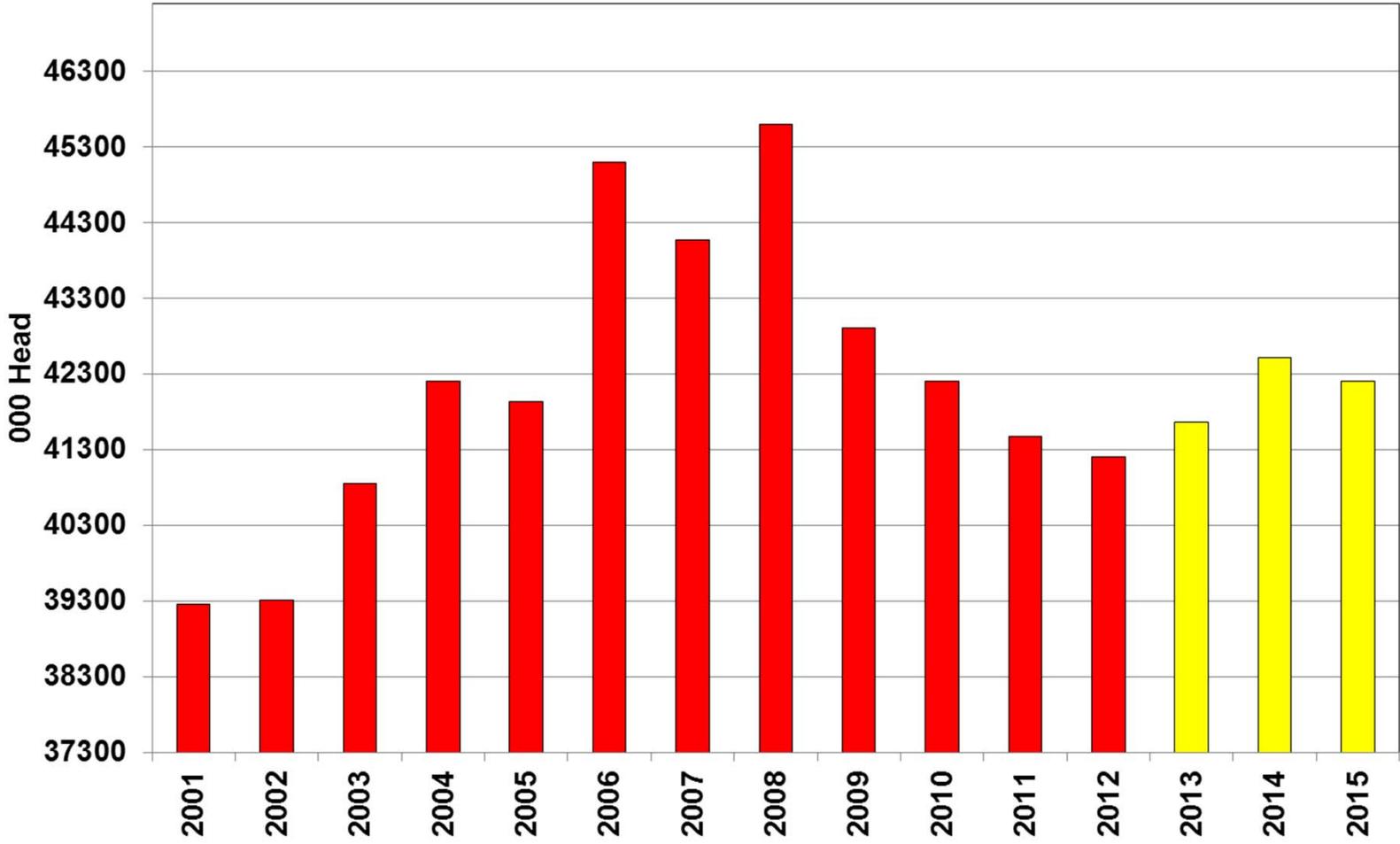
China

Total Cattle Slaughter



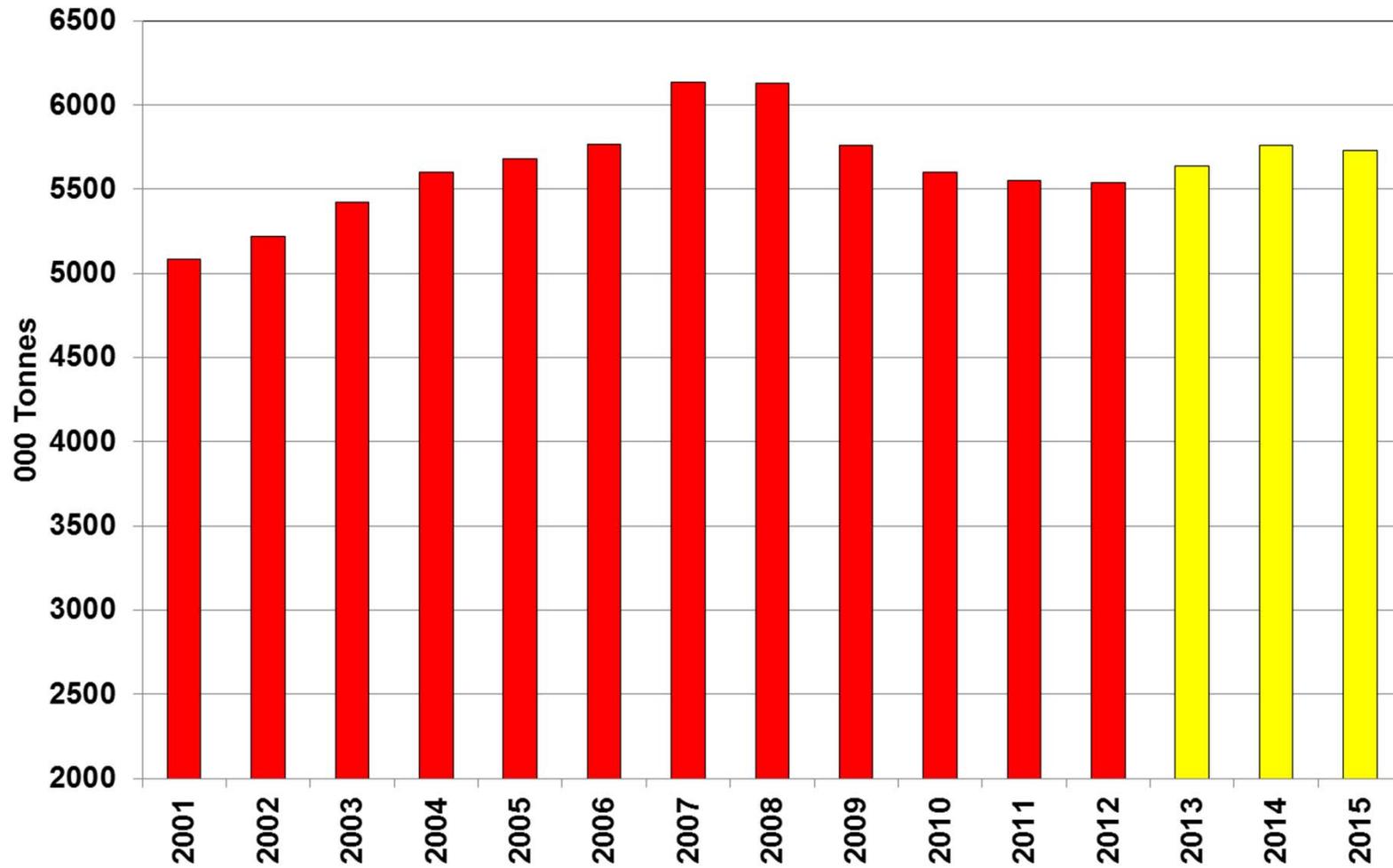
China

Disappearance



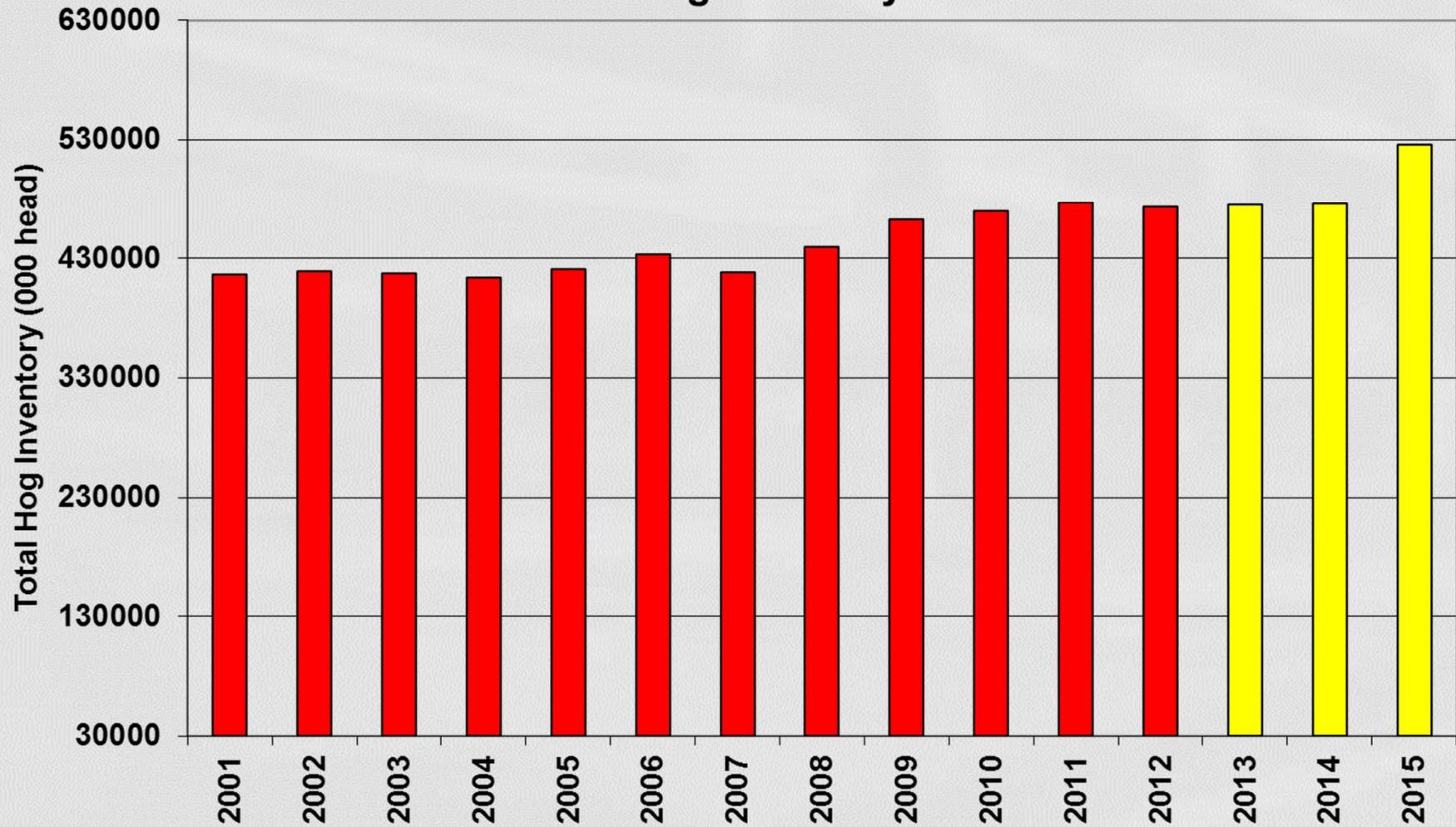
China

Beef Production



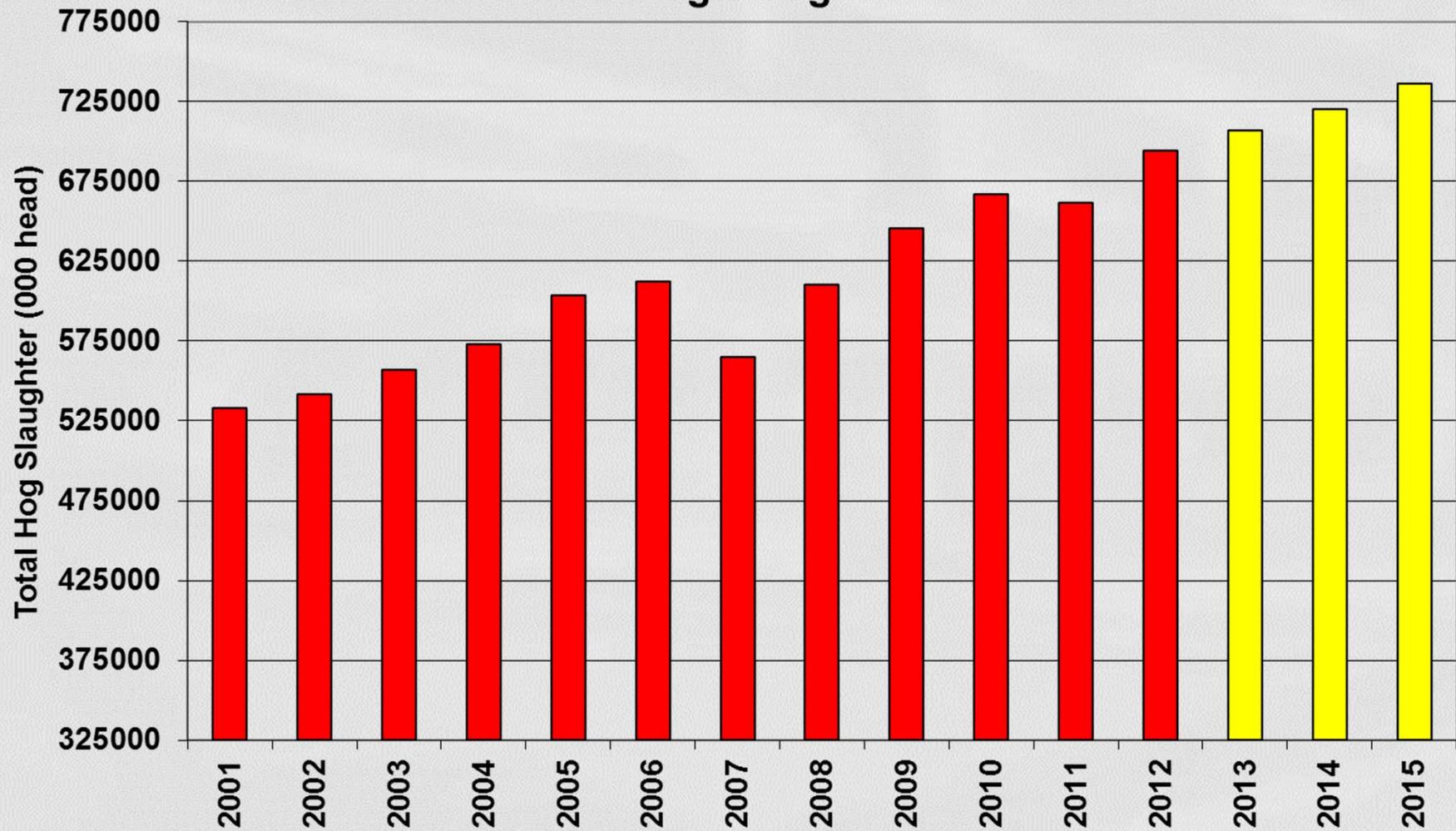
China

Total Hog Inventory



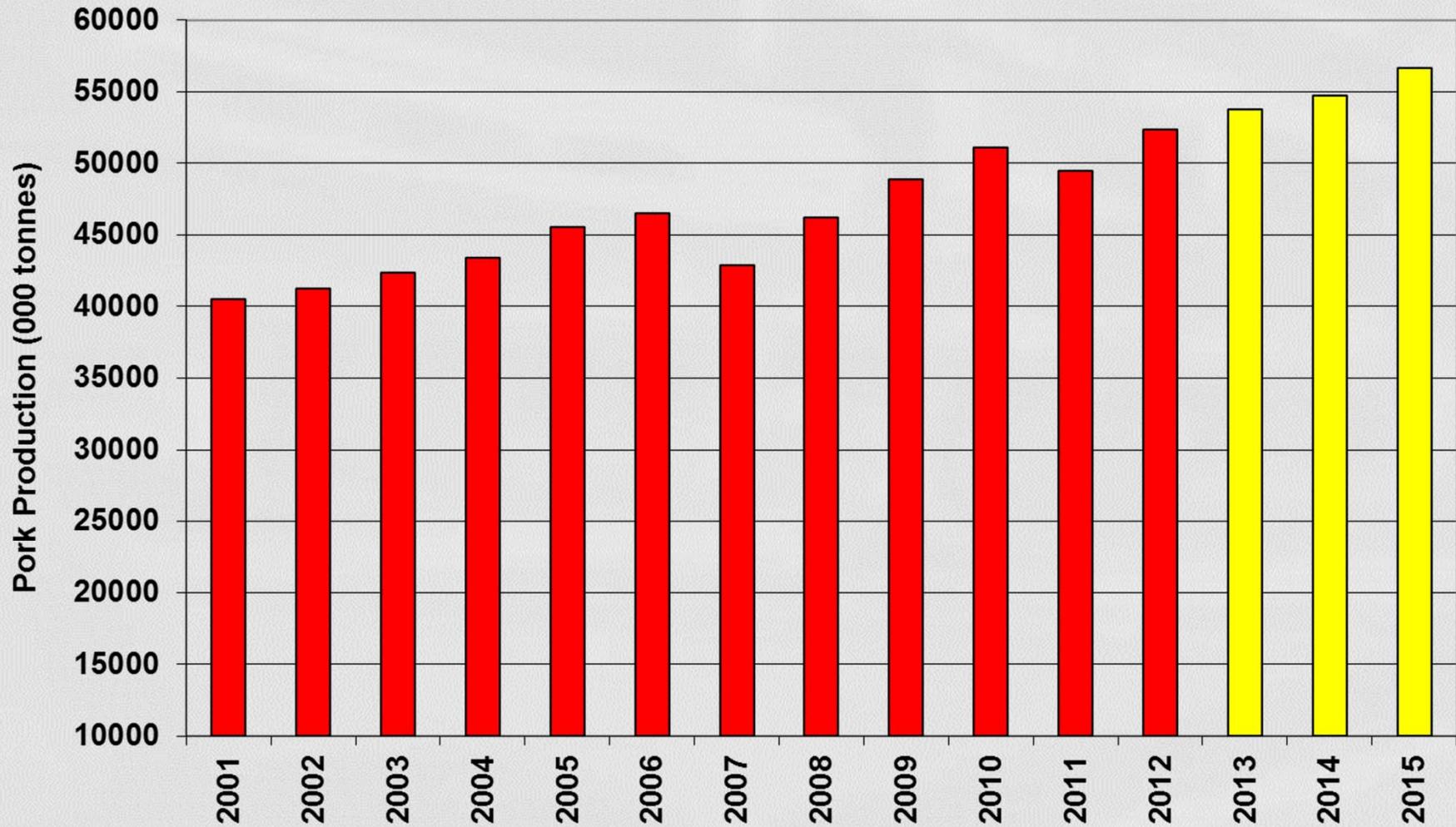
China

Total Hog Slaughter



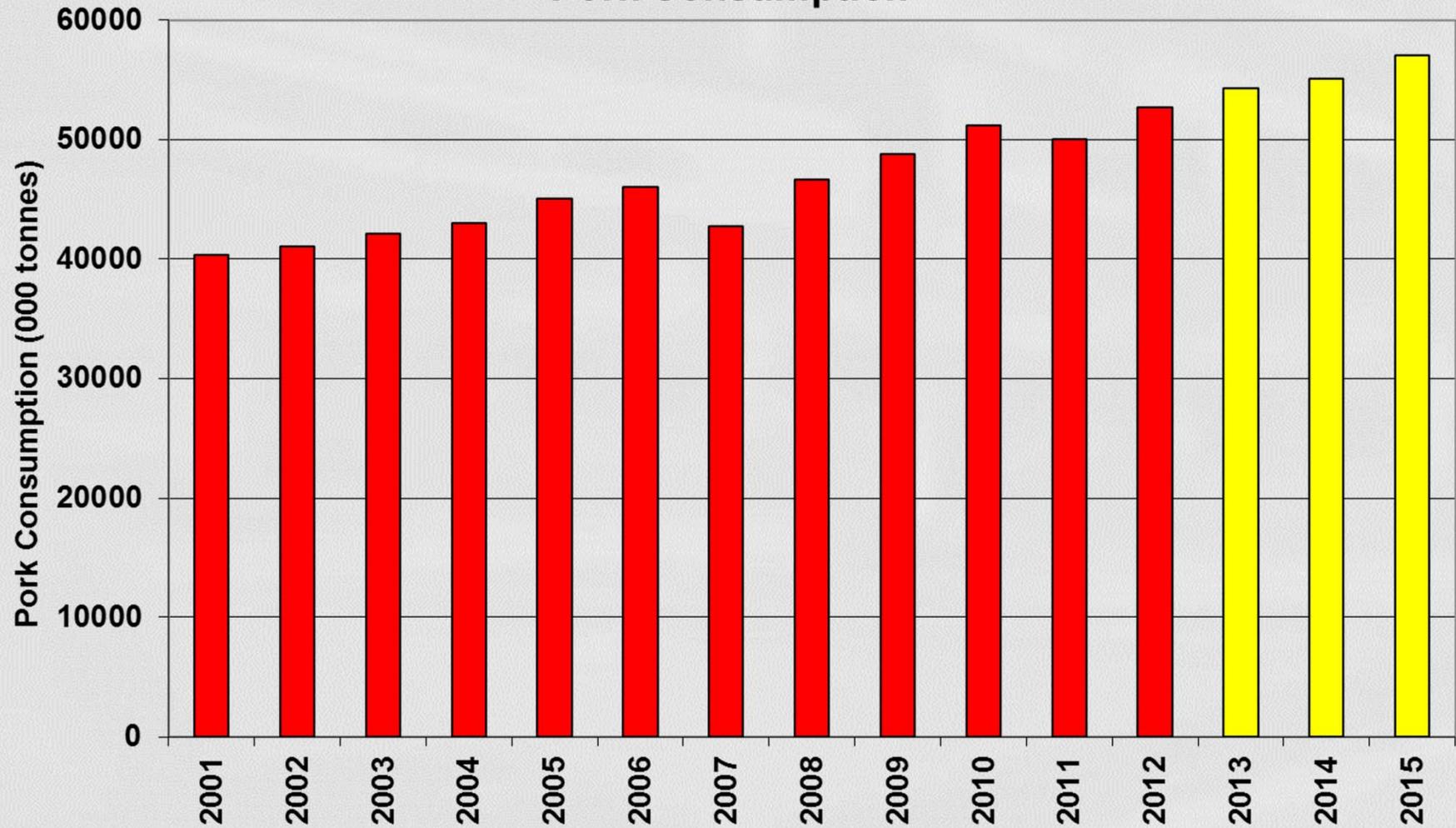
China

Total Pork Production



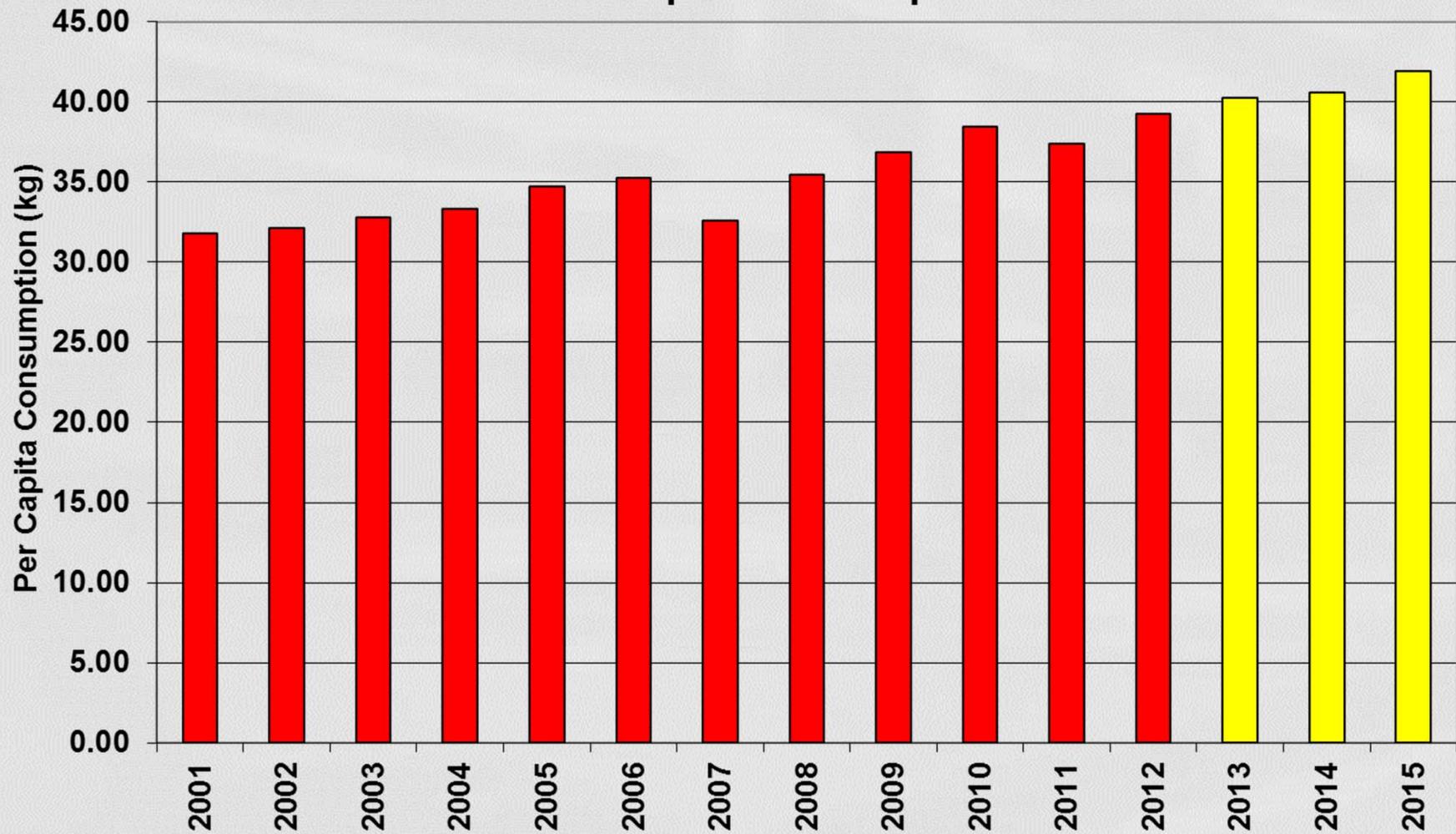
China

Pork Consumption



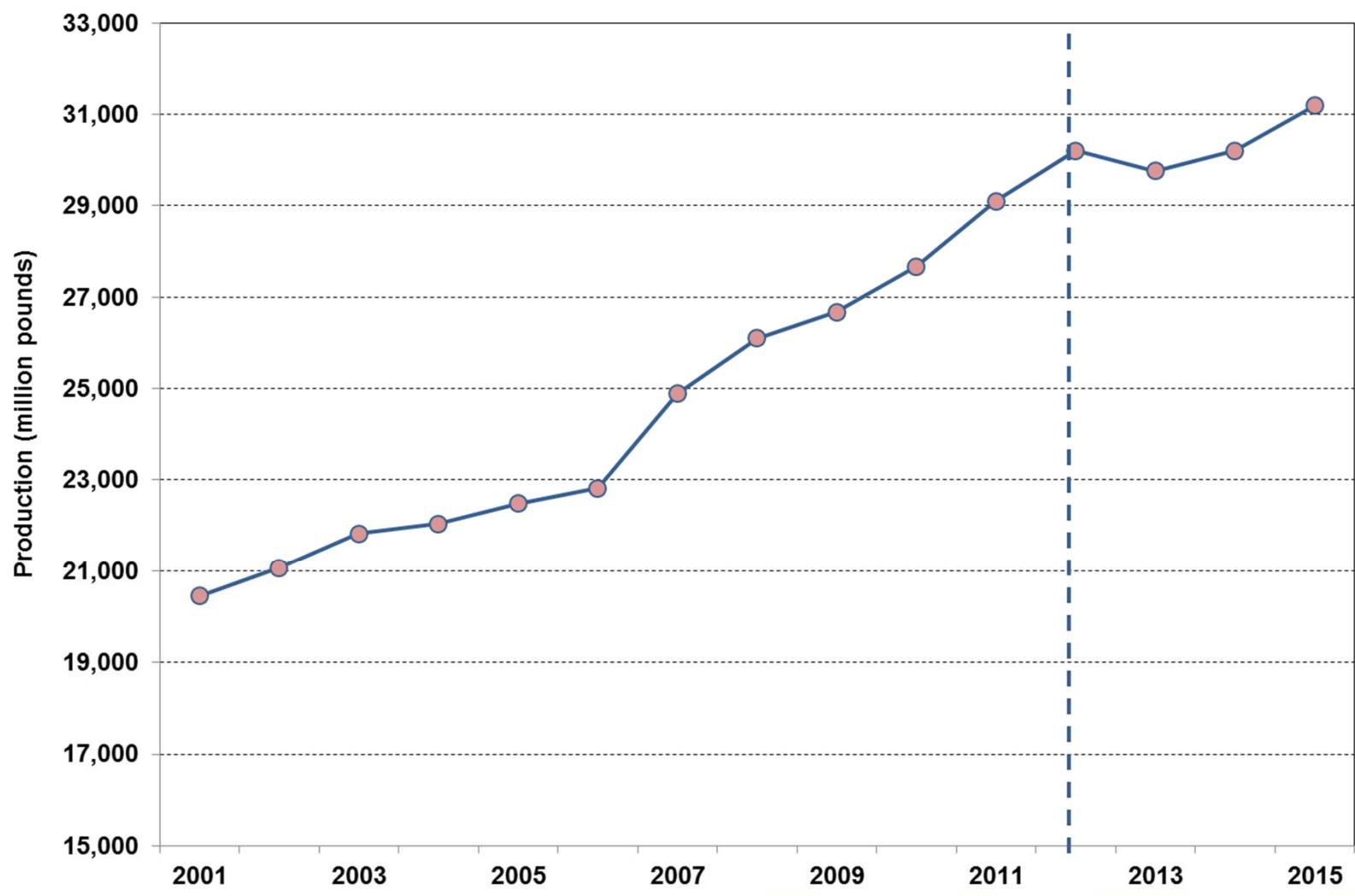
China

Pork Per Capita Consumption



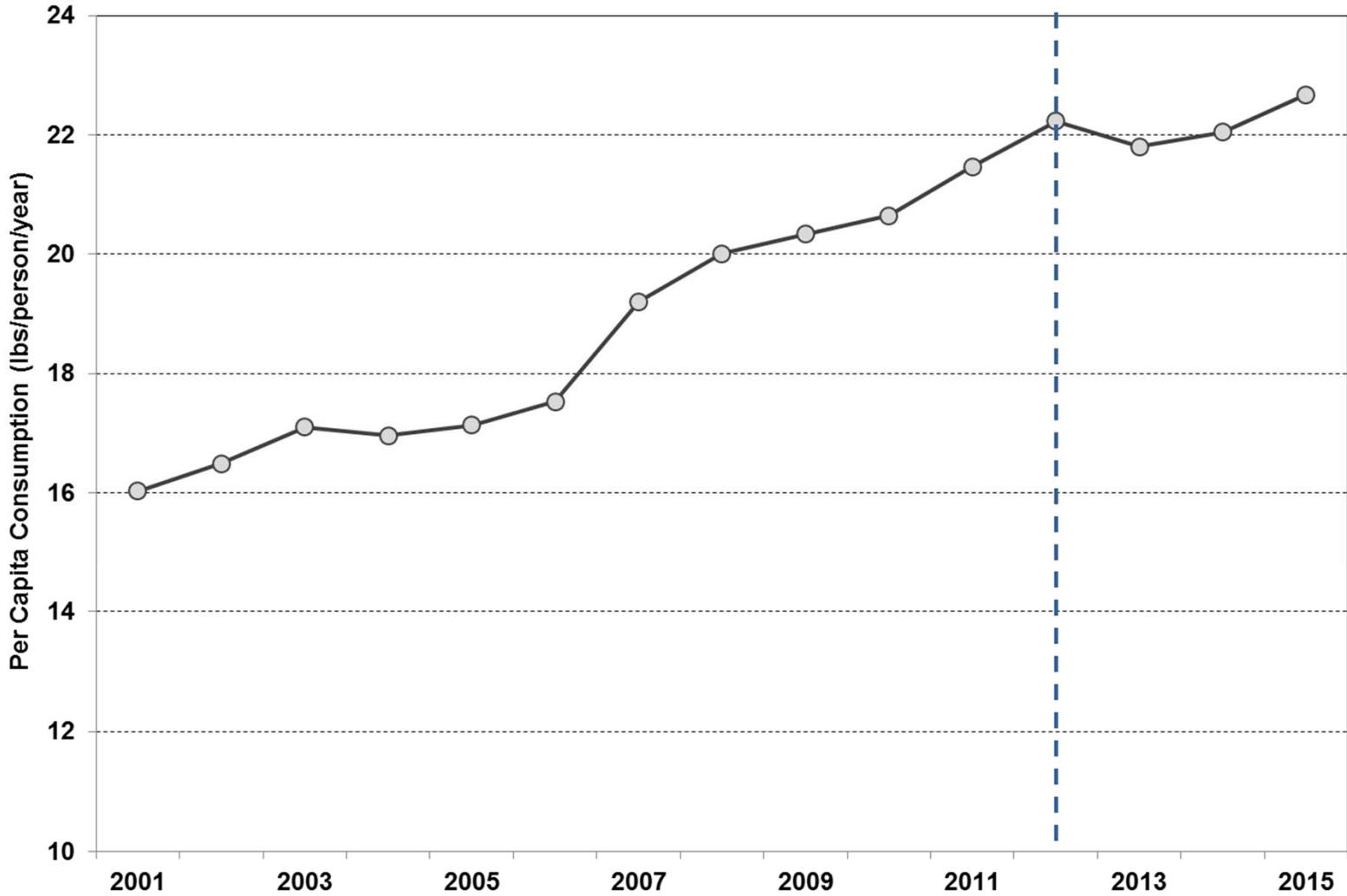
CHINA

BROILER PRODUCTION AND OUTLOOK



CHINA

PER CAPITA BROILER CONSUMPTION AND OUTLOOK



CHINA

BROILER IMPORTS AND OUTLOOK

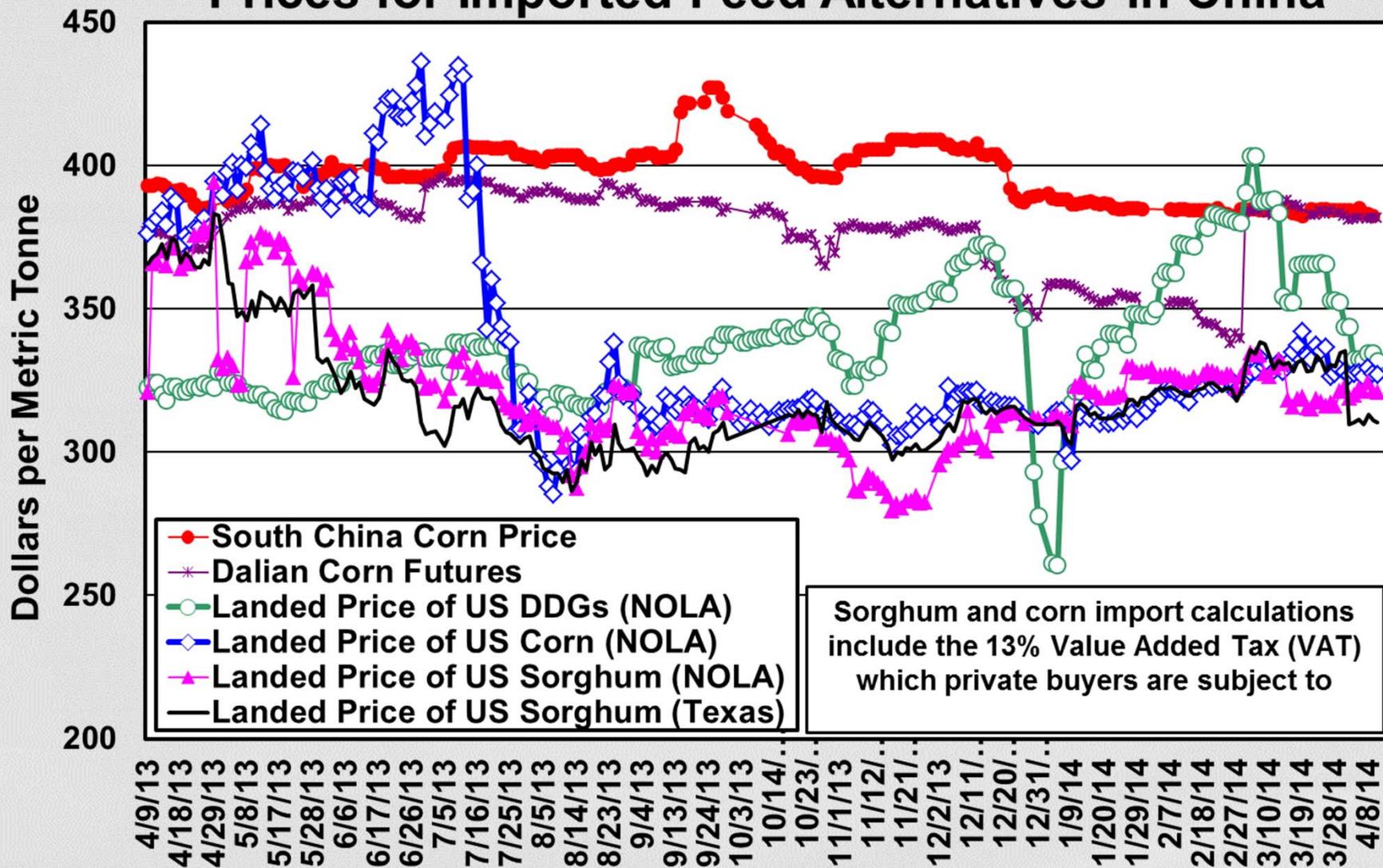


CHINA

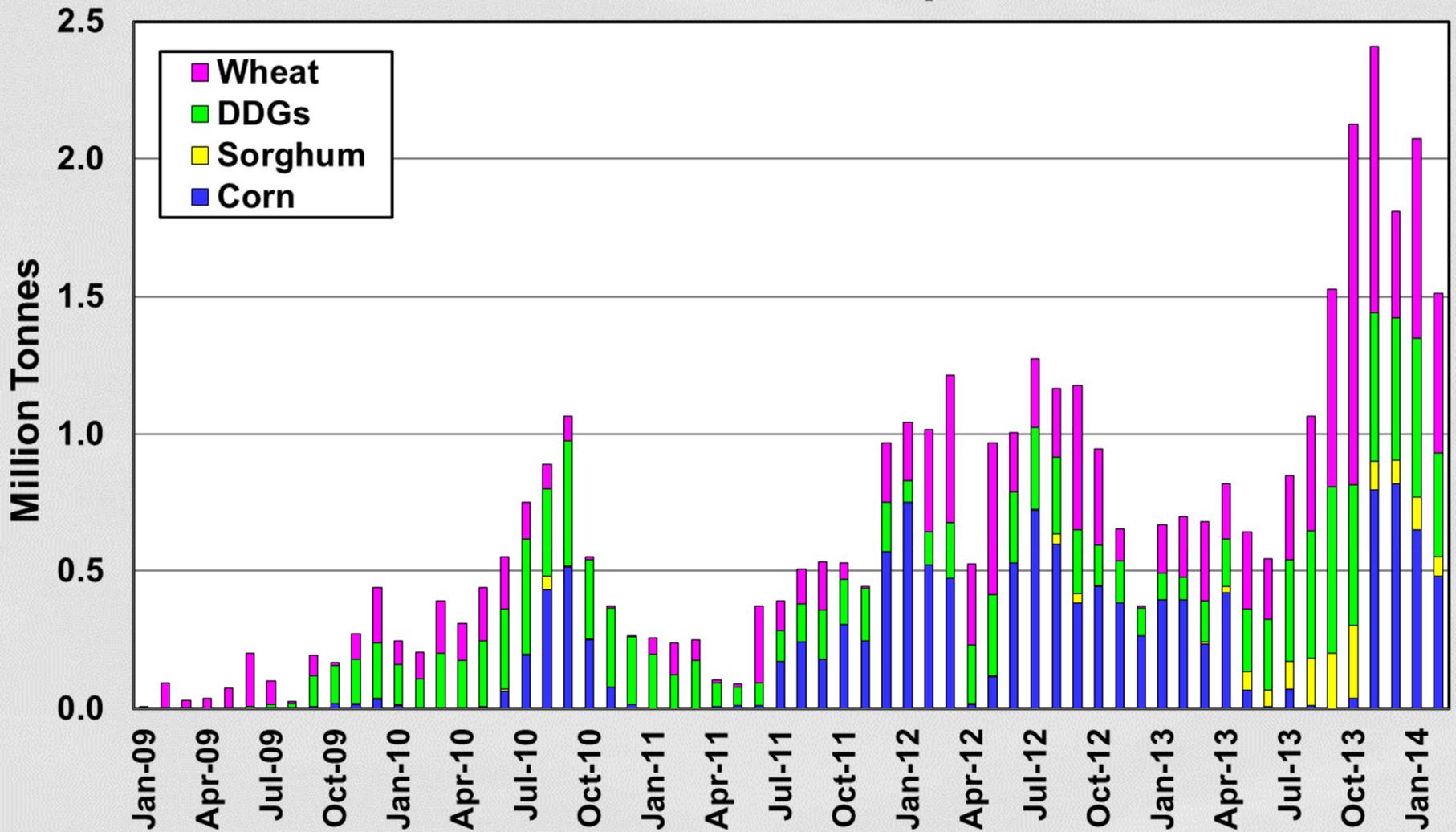
BROILER EXPORTS AND OUTLOOK



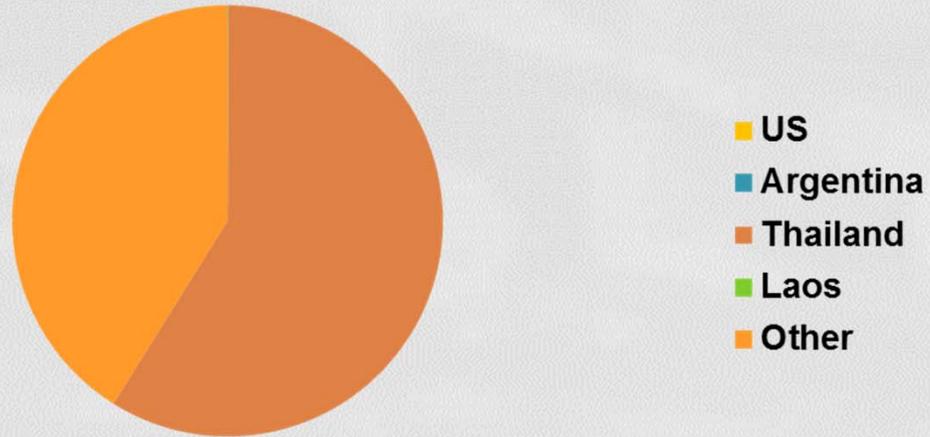
Prices for Imported Feed Alternatives in China



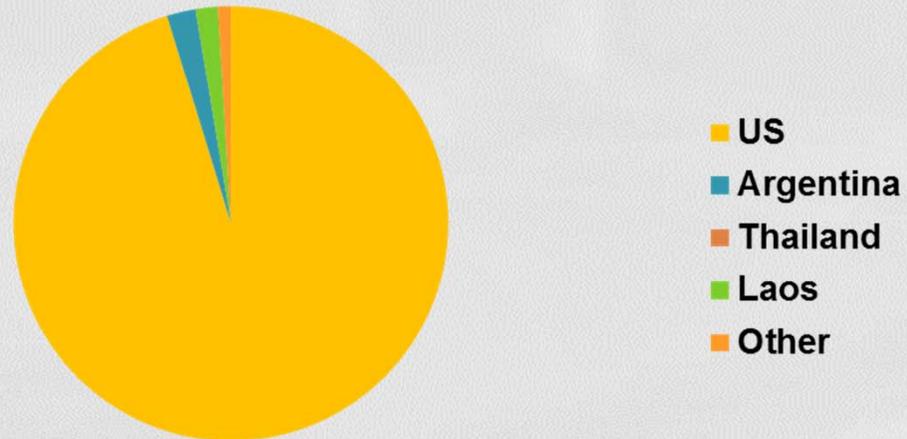
China Grain Imports



China Corn Imports 2000/01



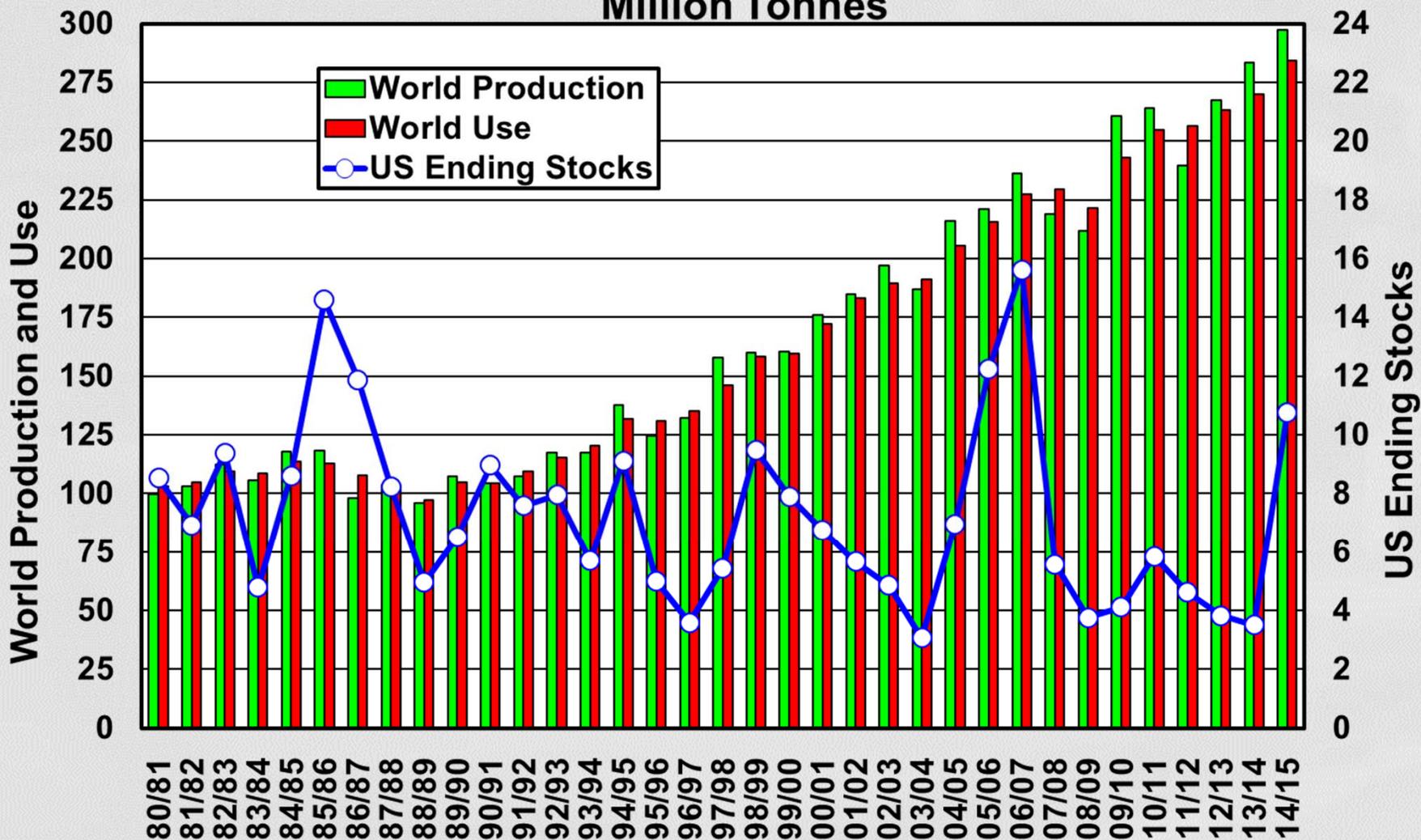
China Corn Imports 2012/13



Soybeans and Products

Soybean Supply and Demand

Million Tonnes

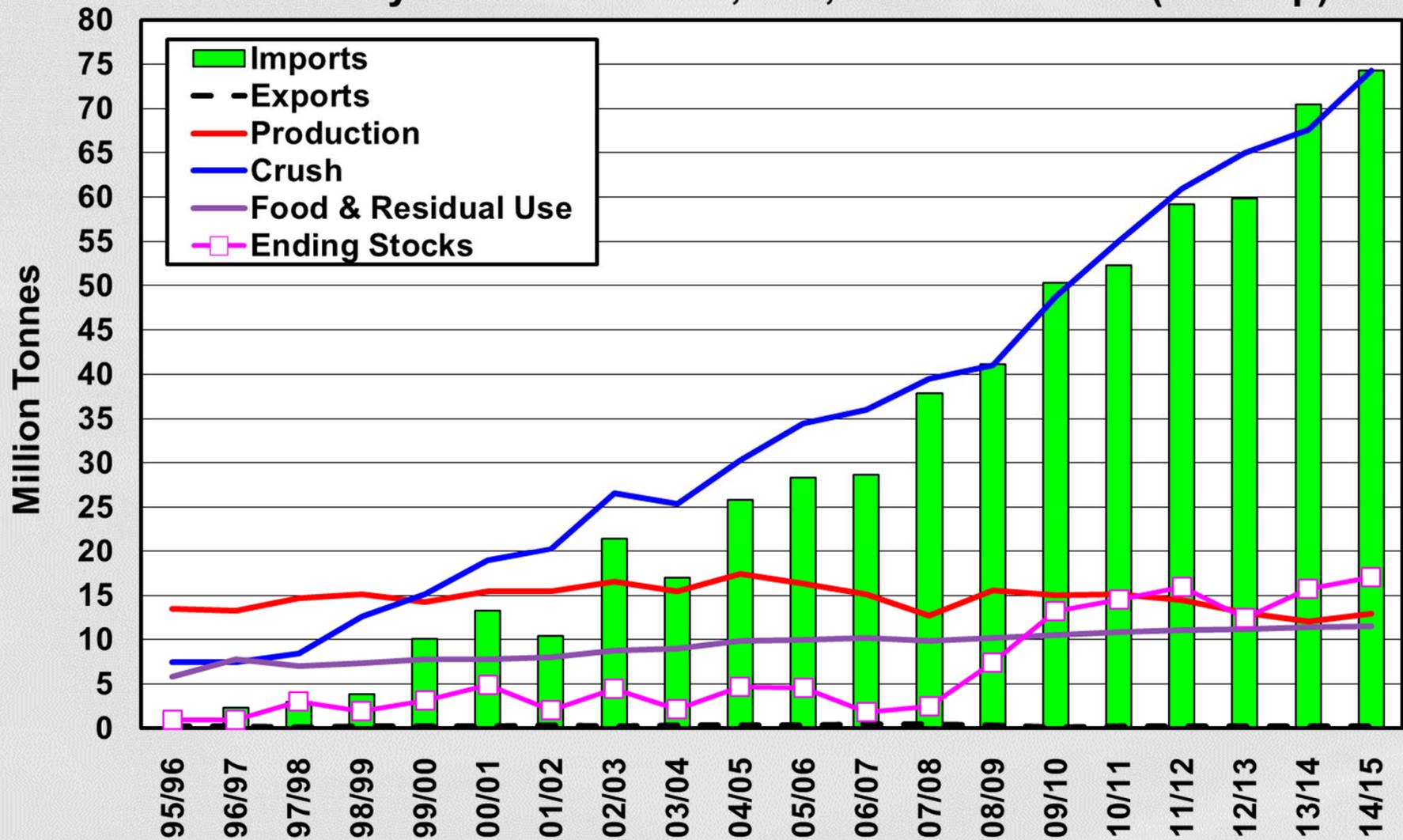


China Soybean Complex

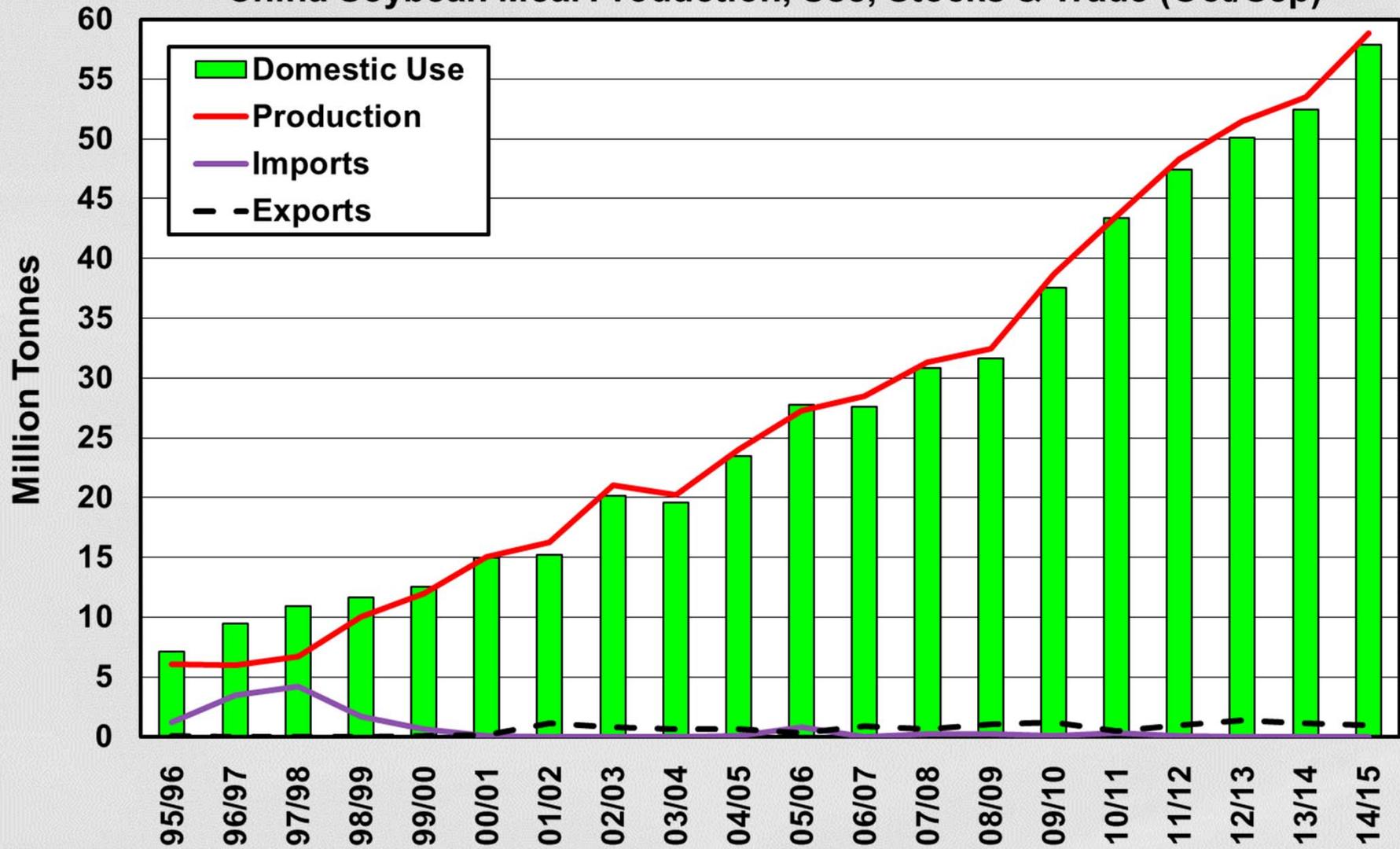
(1,000 Tonnes/1,000 Hectares)

	08/09	09/10	10/11	11/12	12/13	13/14	14/15
SOYBEANS							
Harvested Area	9,127	9,190	8,516	7,889	7,172	7,000	7,000
Yield	1.70	1.63	1.77	1.84	1.82	1.71	1.85
Production	15,540	14,980	15,080	14,485	13,050	12,000	12,950
Imports	41,098	50,338	52,339	59,231	59,865	70,500	74,250
Crush	41,035	48,830	55,000	60,970	64,950	67,550	74,250
Food Use	8,640	8,850	9,100	9,300	9,450	9,550	9,650
Carryout	7,455	13,209	14,538	15,909	12,378	15,750	17,000
SOYBEAN MEAL							
Production	32,475	38,644	43,560	48,288	51,440	53,520	58,829
Imports	215	83	294	113	16	25	25
Domestic Use	31,674	37,550	43,391	47,436	50,091	52,445	57,854
Exports	1,017	1,177	463	966	1,365	1,100	1,000
SOYBEAN OIL							
Production	7,325	8,726	9,840	10,914	11,626	12,103	13,303
Imports	2,494	1,514	1,319	1,502	1,409	1,225	1,400
Domestic Use	9,485	10,435	11,109	11,944	12,545	13,264	14,603
Carryout	477	205	203	615	1,021	1,000	1,000

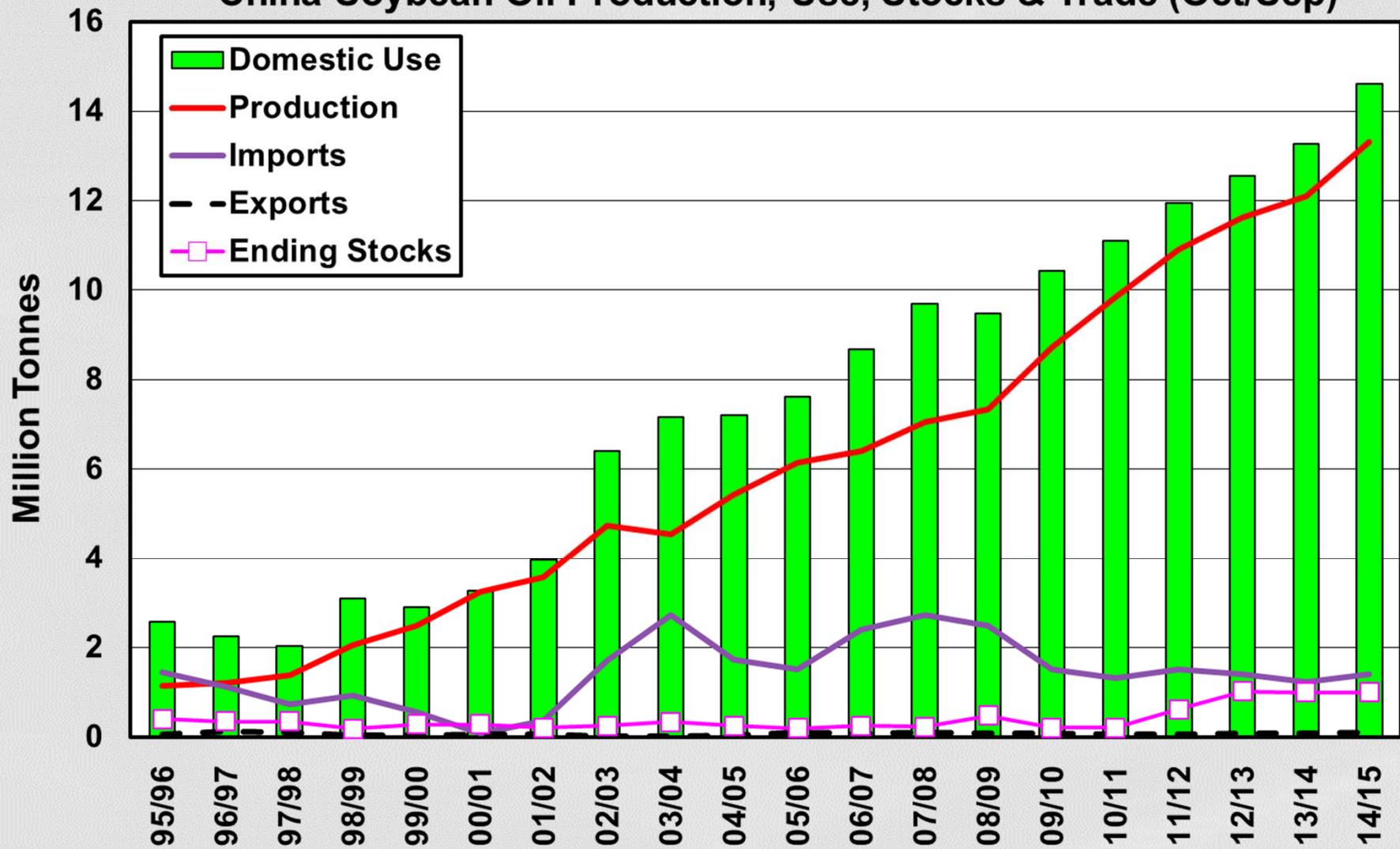
China Soybean Production, Use, Stocks & Trade (Oct/Sep)



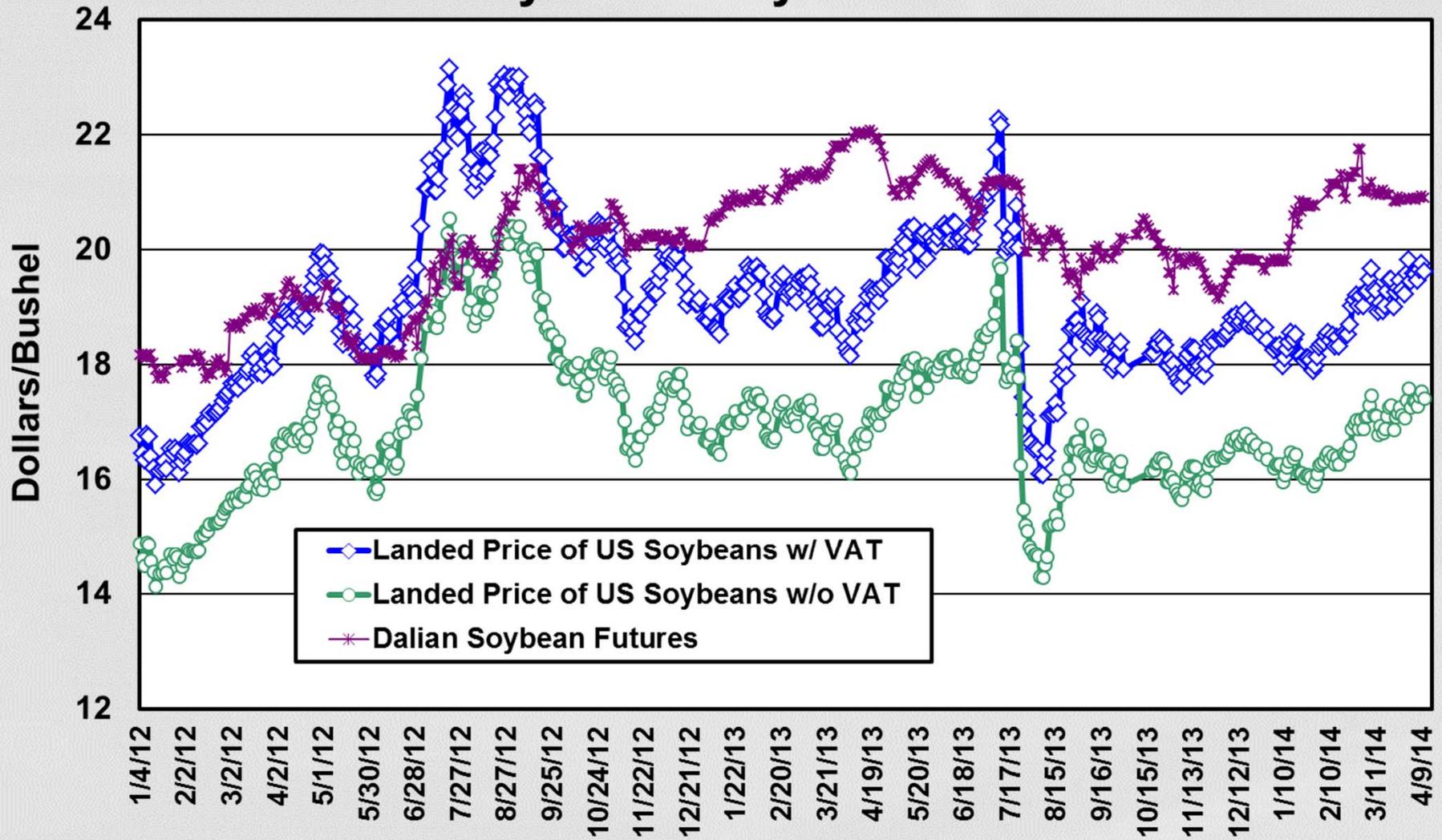
China Soybean Meal Production, Use, Stocks & Trade (Oct/Sep)



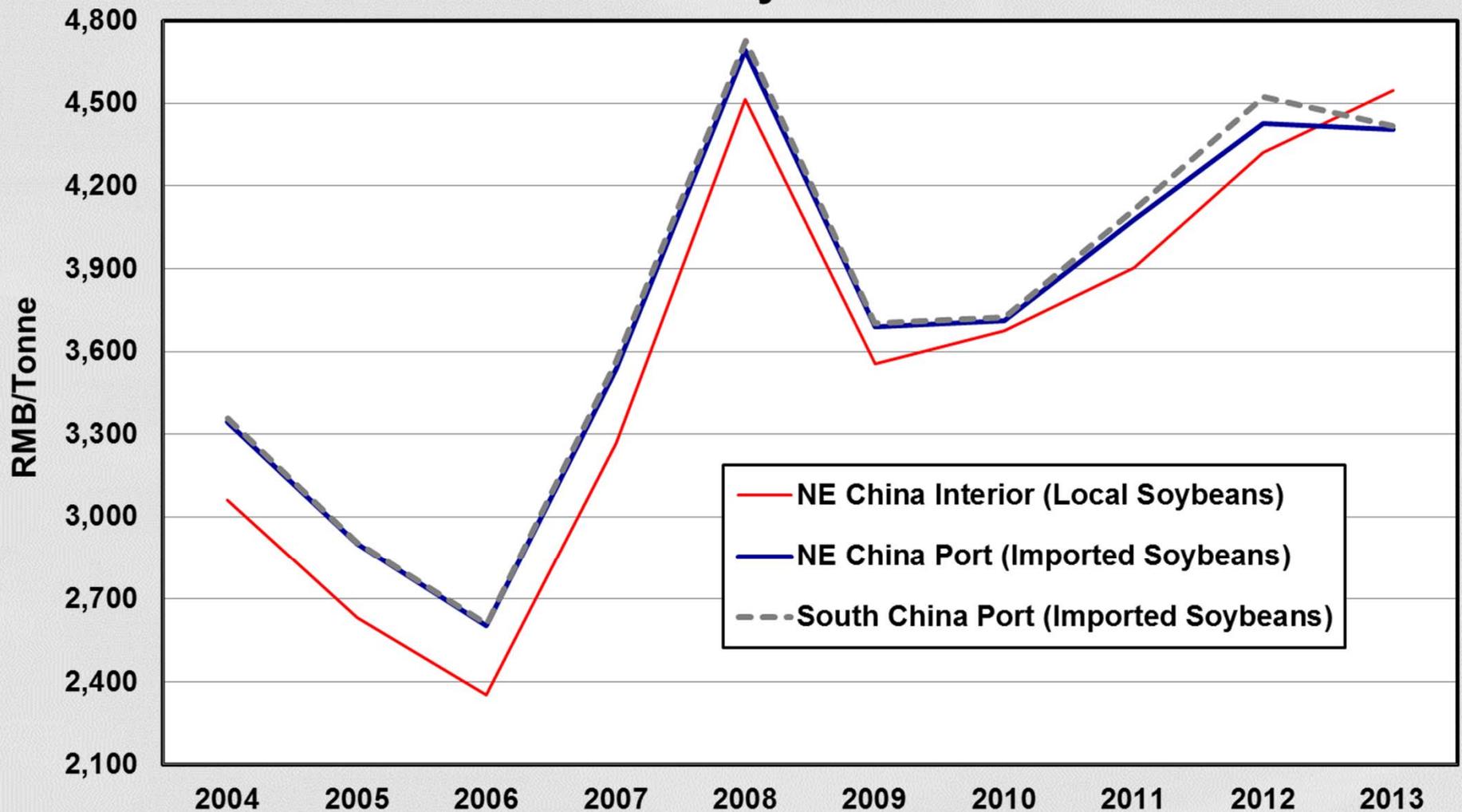
China Soybean Oil Production, Use, Stocks & Trade (Oct/Sep)



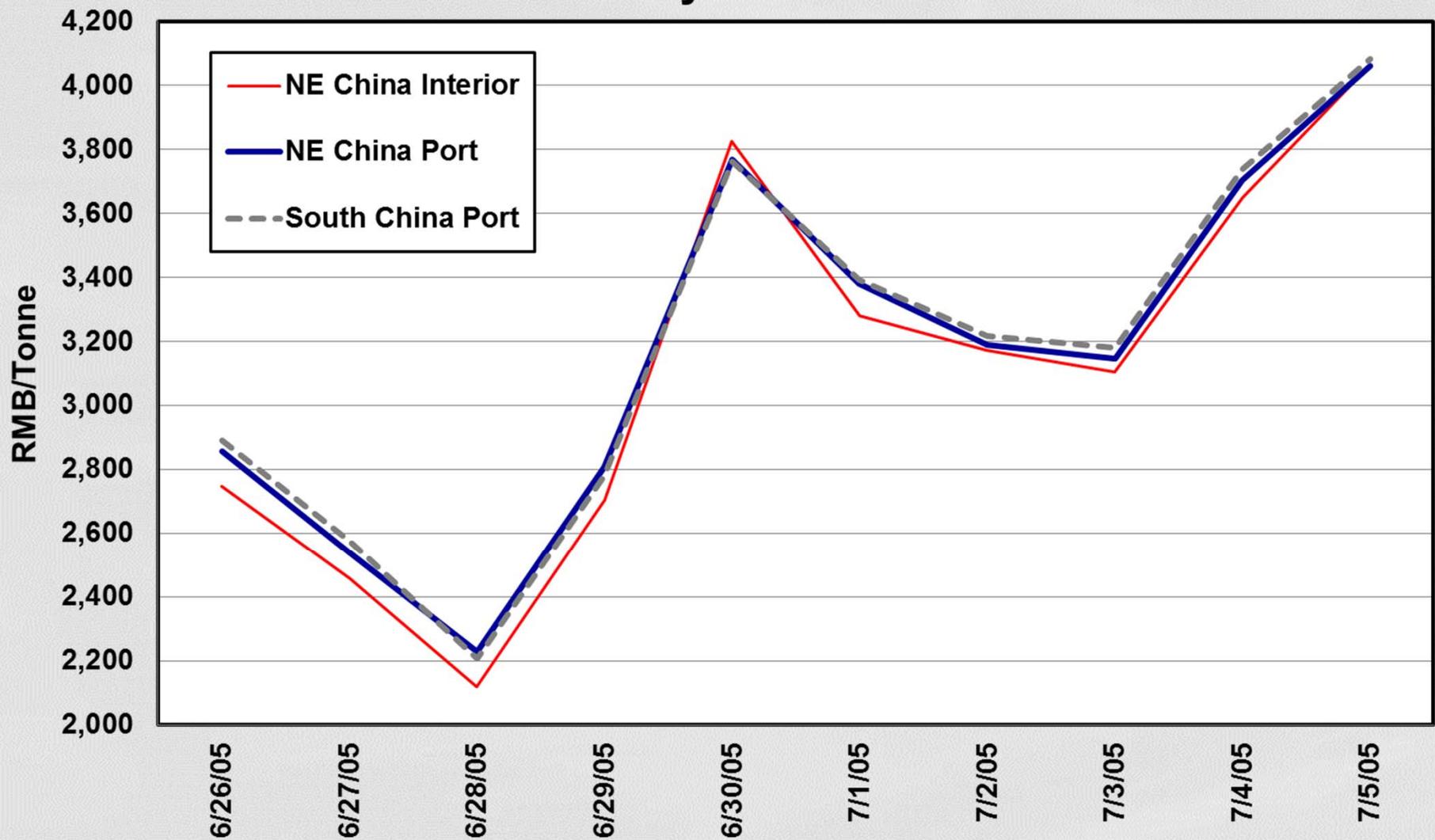
Nearby China Soybean Prices



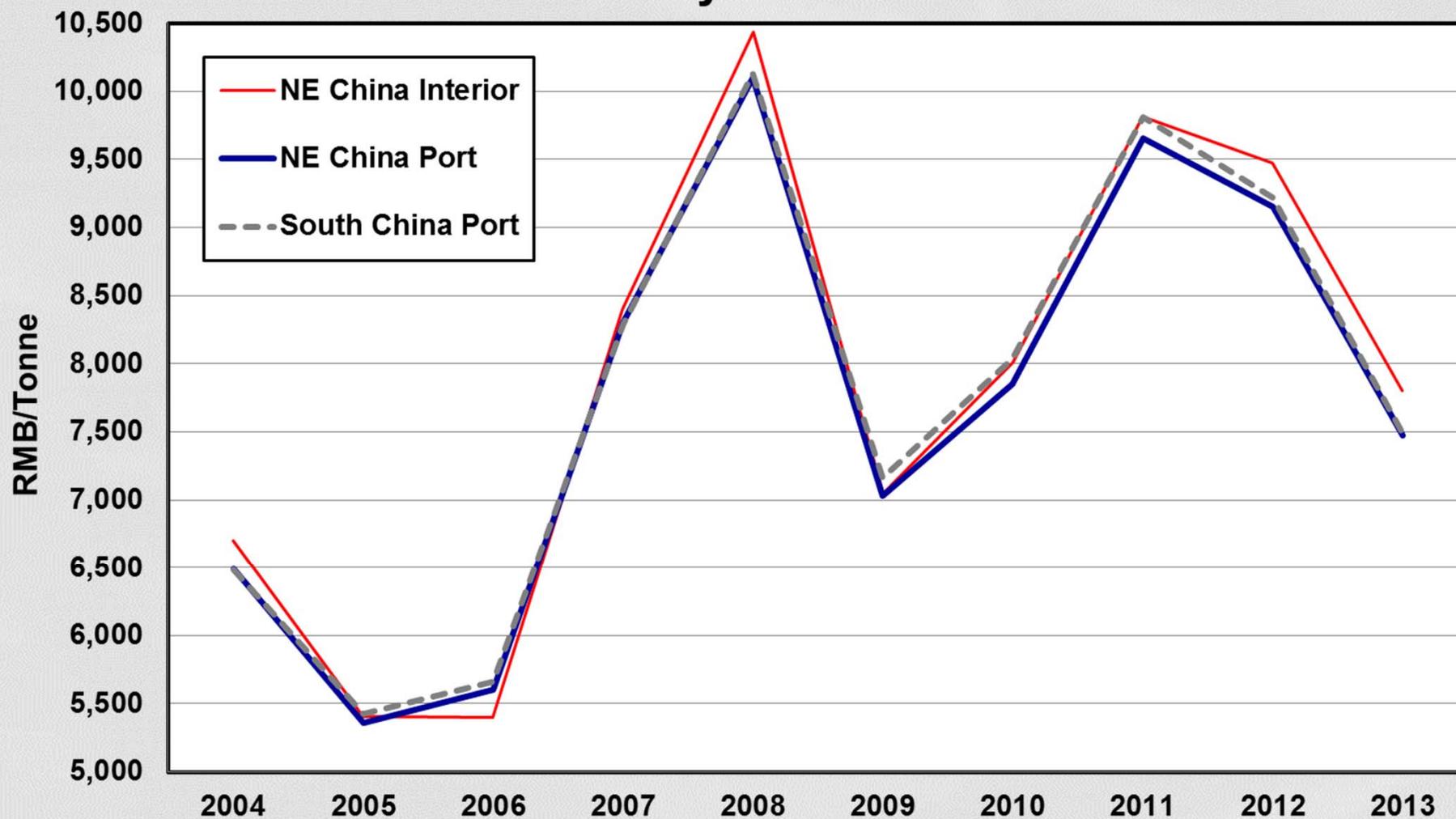
China Soybean Prices



China Soybean Meal Prices

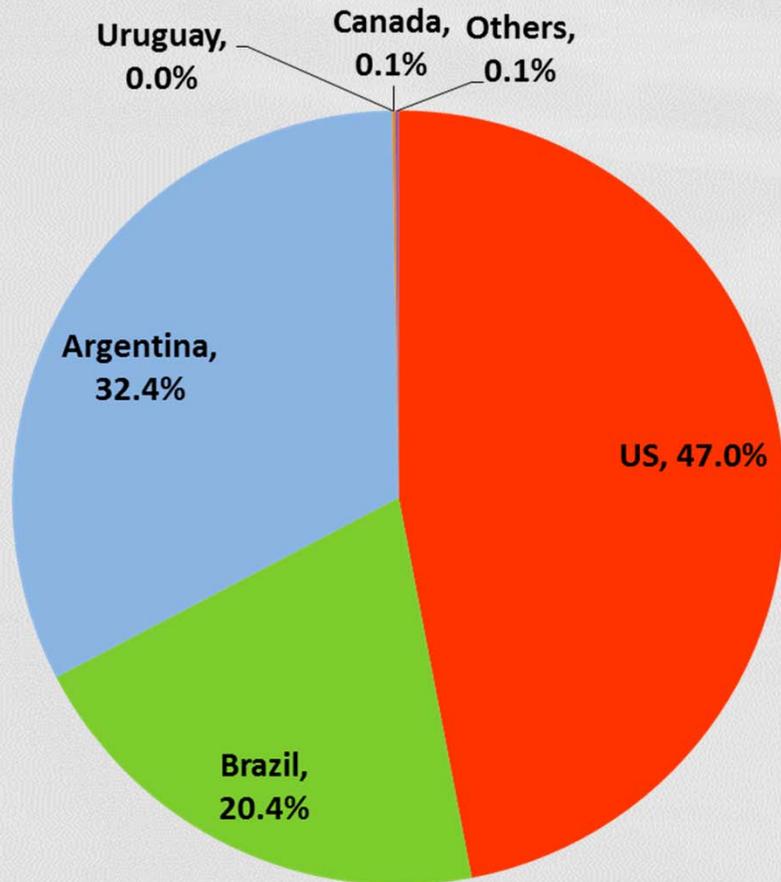


China Soybean Oil Prices

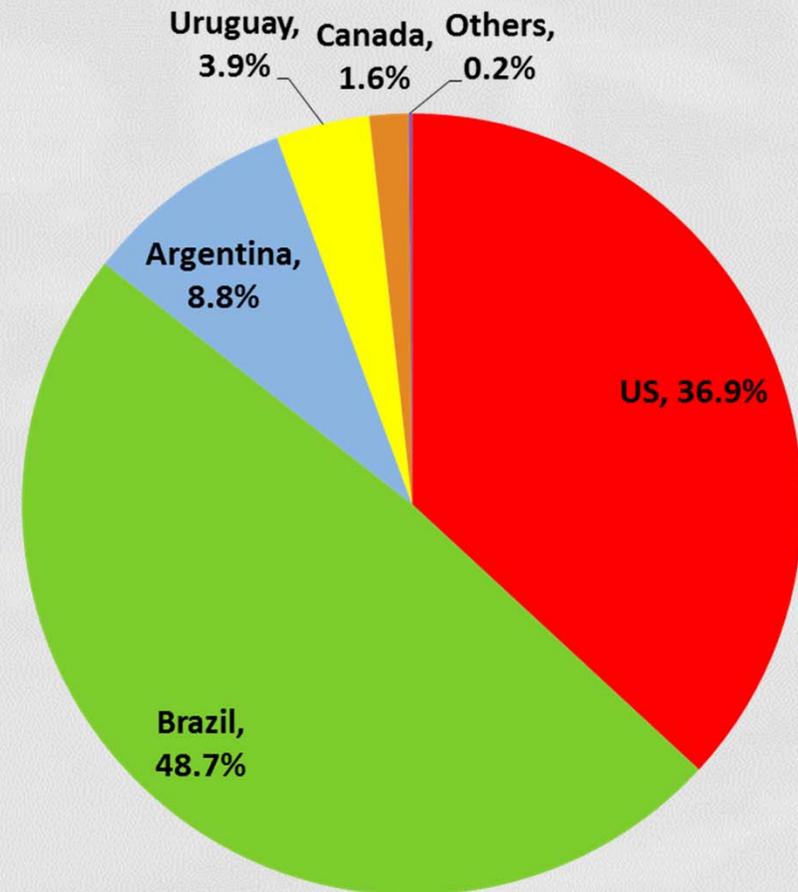


China Soybean Imports by Origin

2000/01

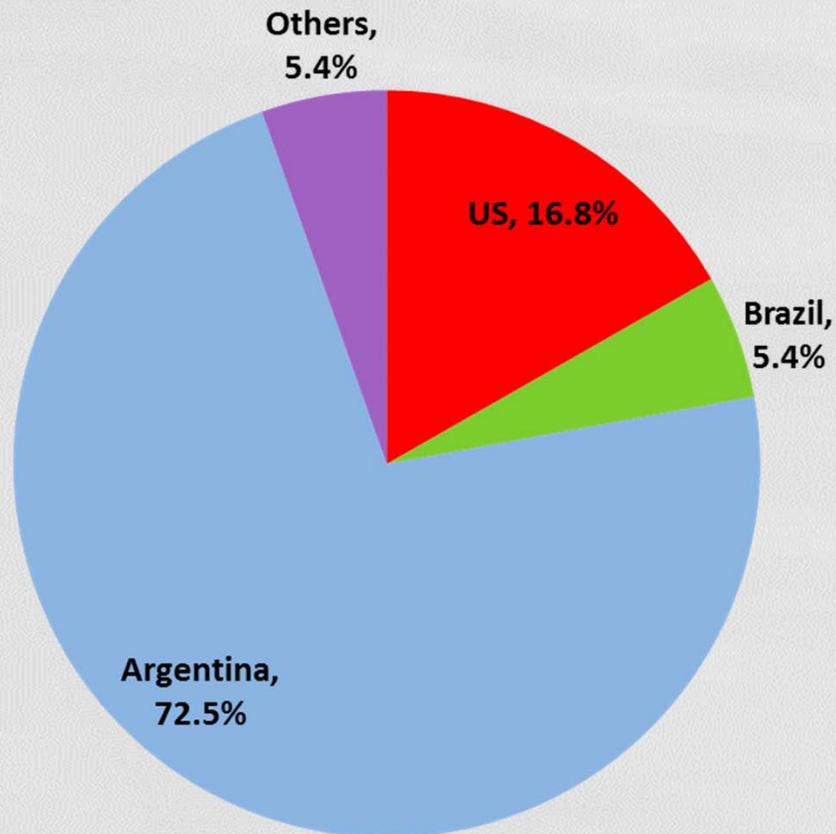


2012/13

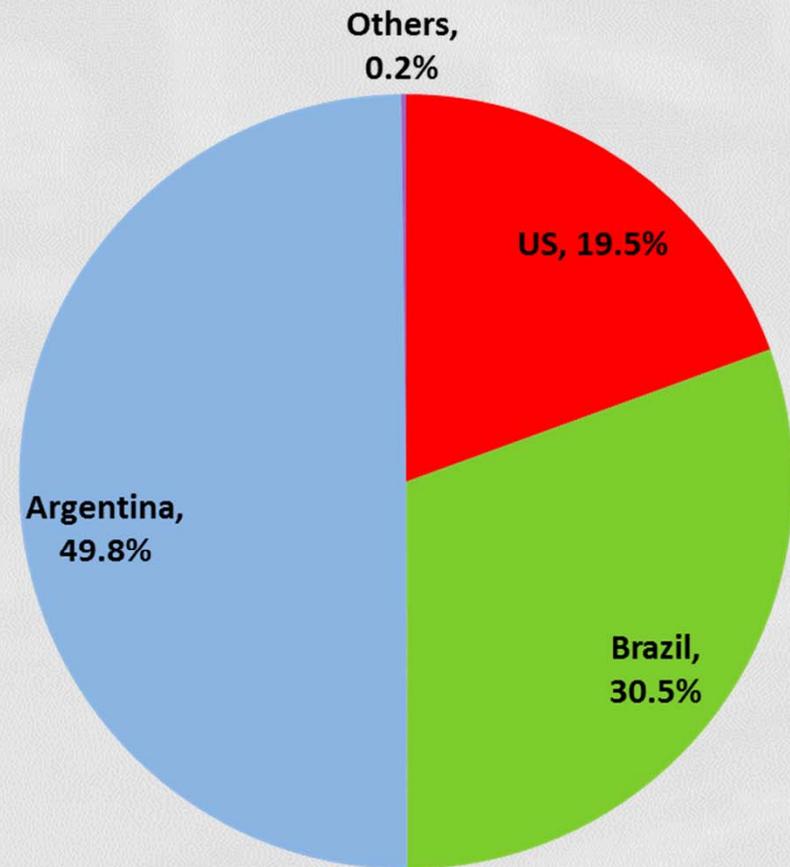


China Soybean Oil Imports by Origin

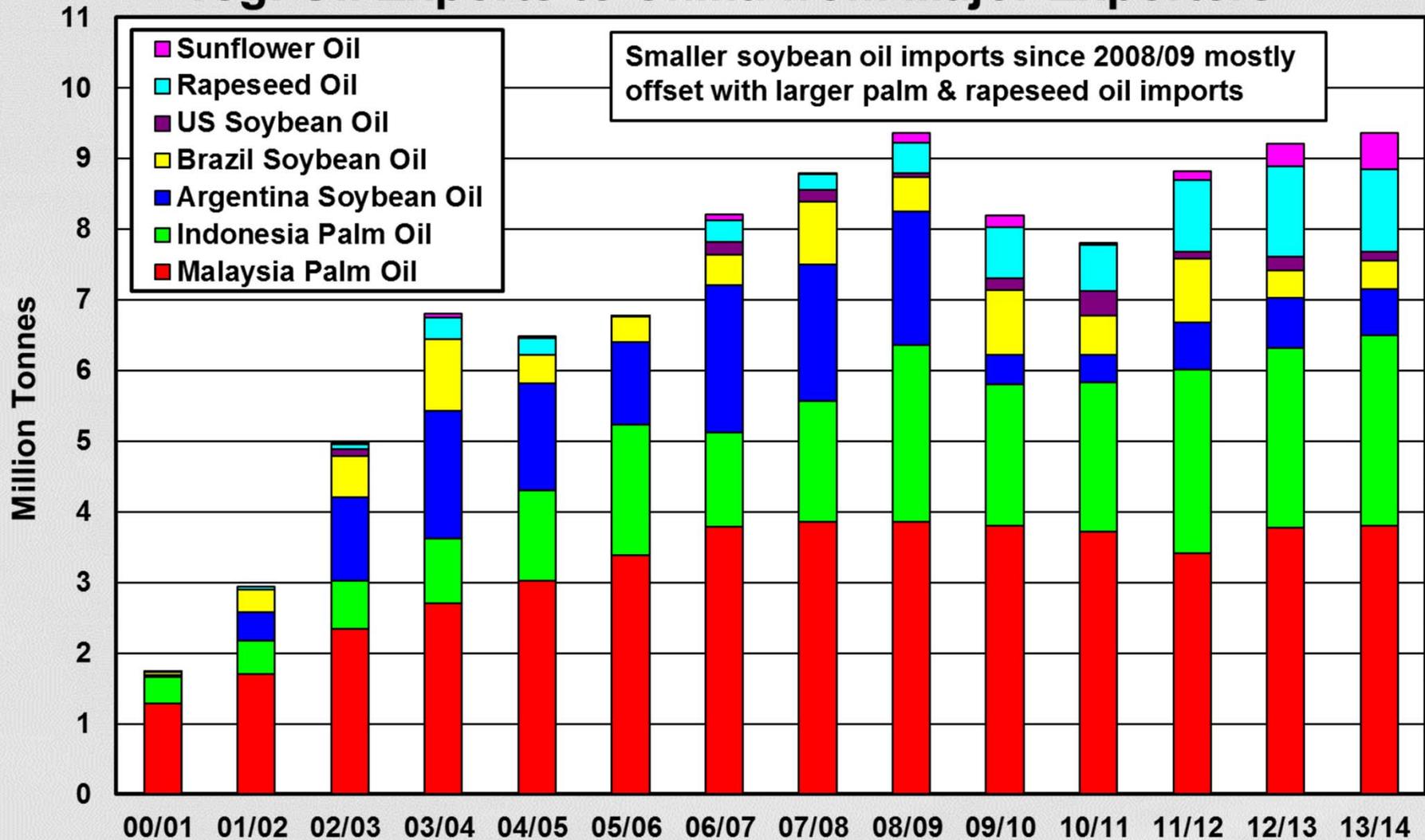
2000/01



2012/13



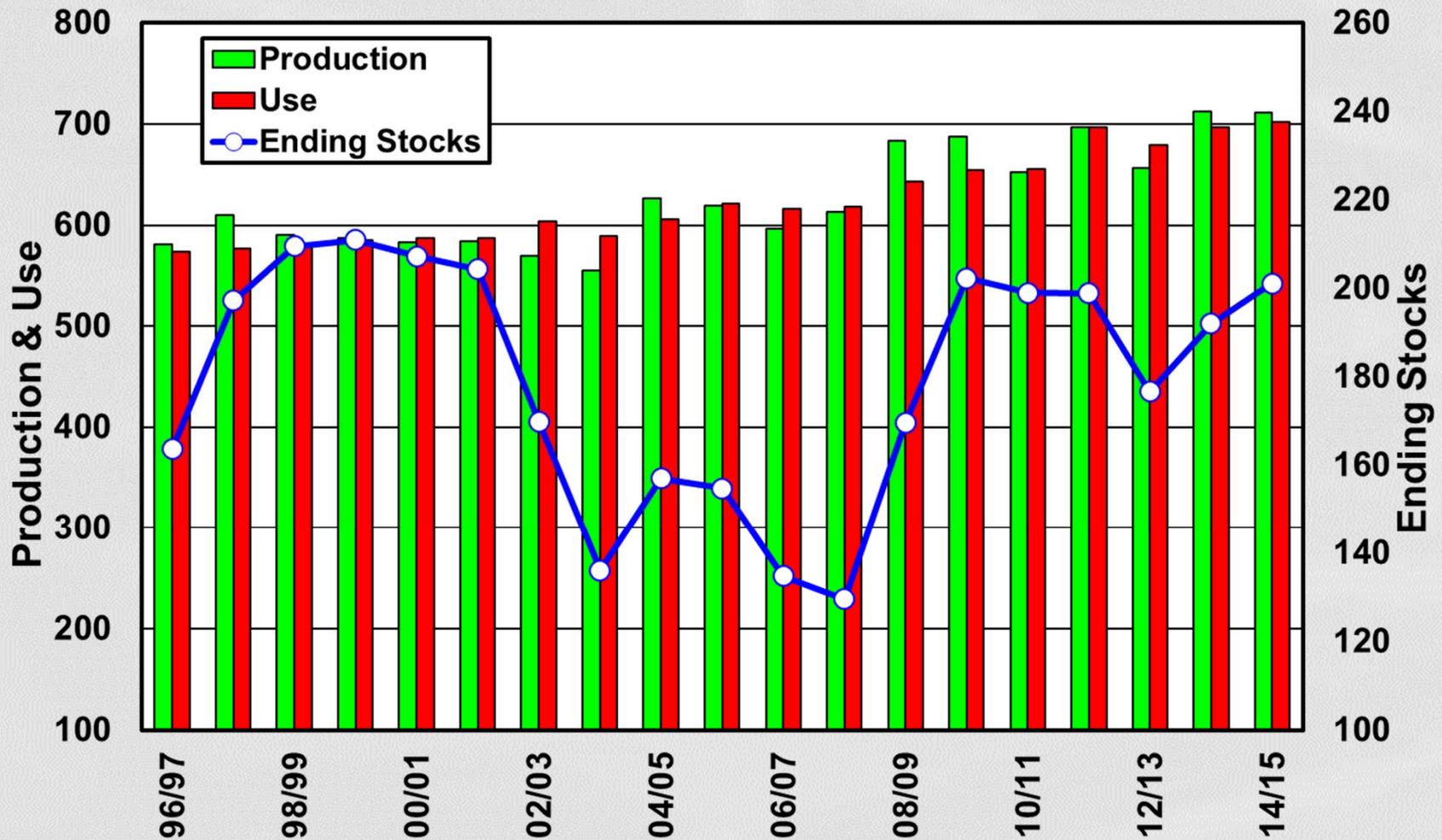
Veg. Oil Exports to China from Major Exporters



Wheat

World Wheat Supply and Demand

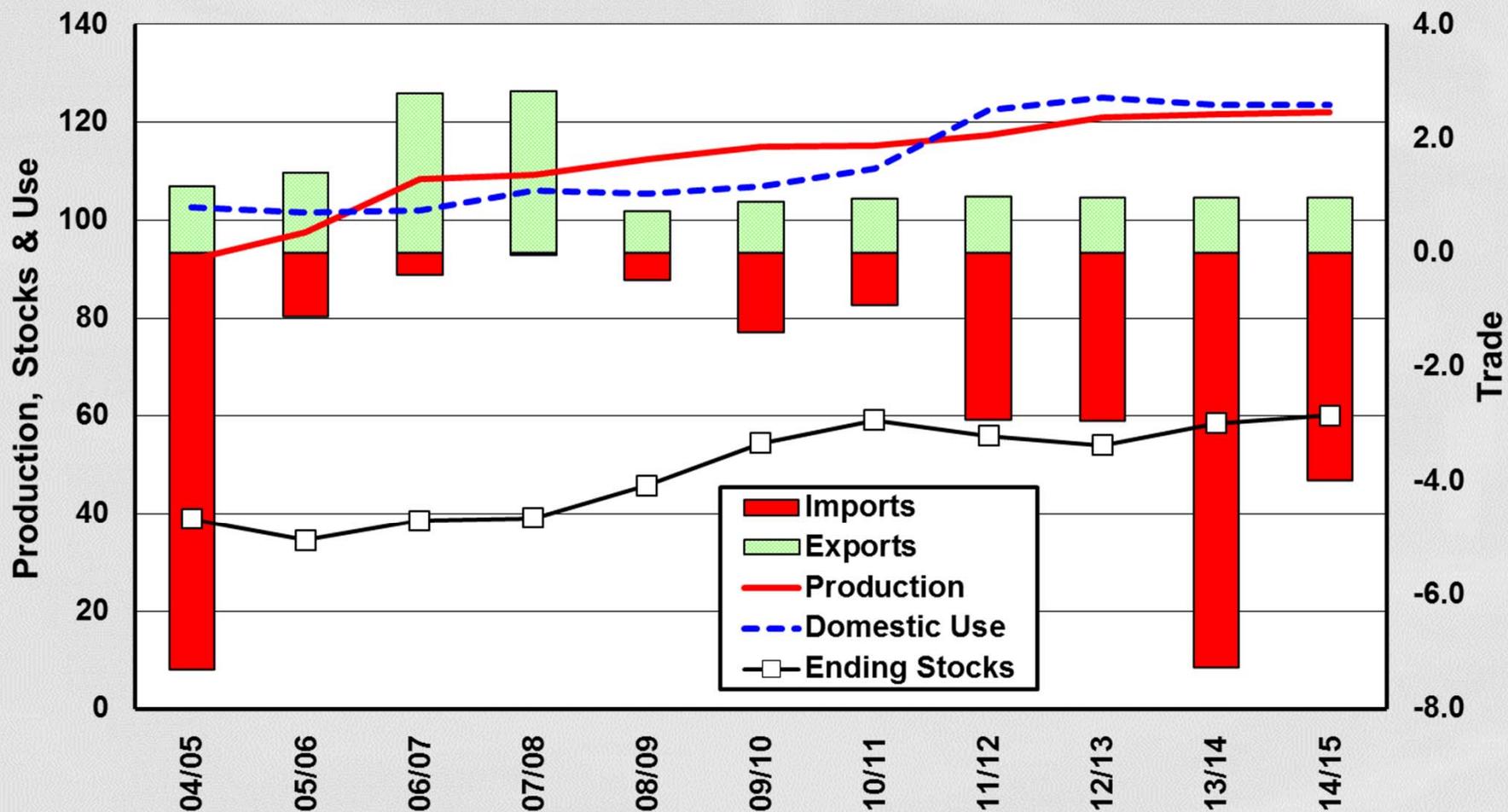
Million Tonnes



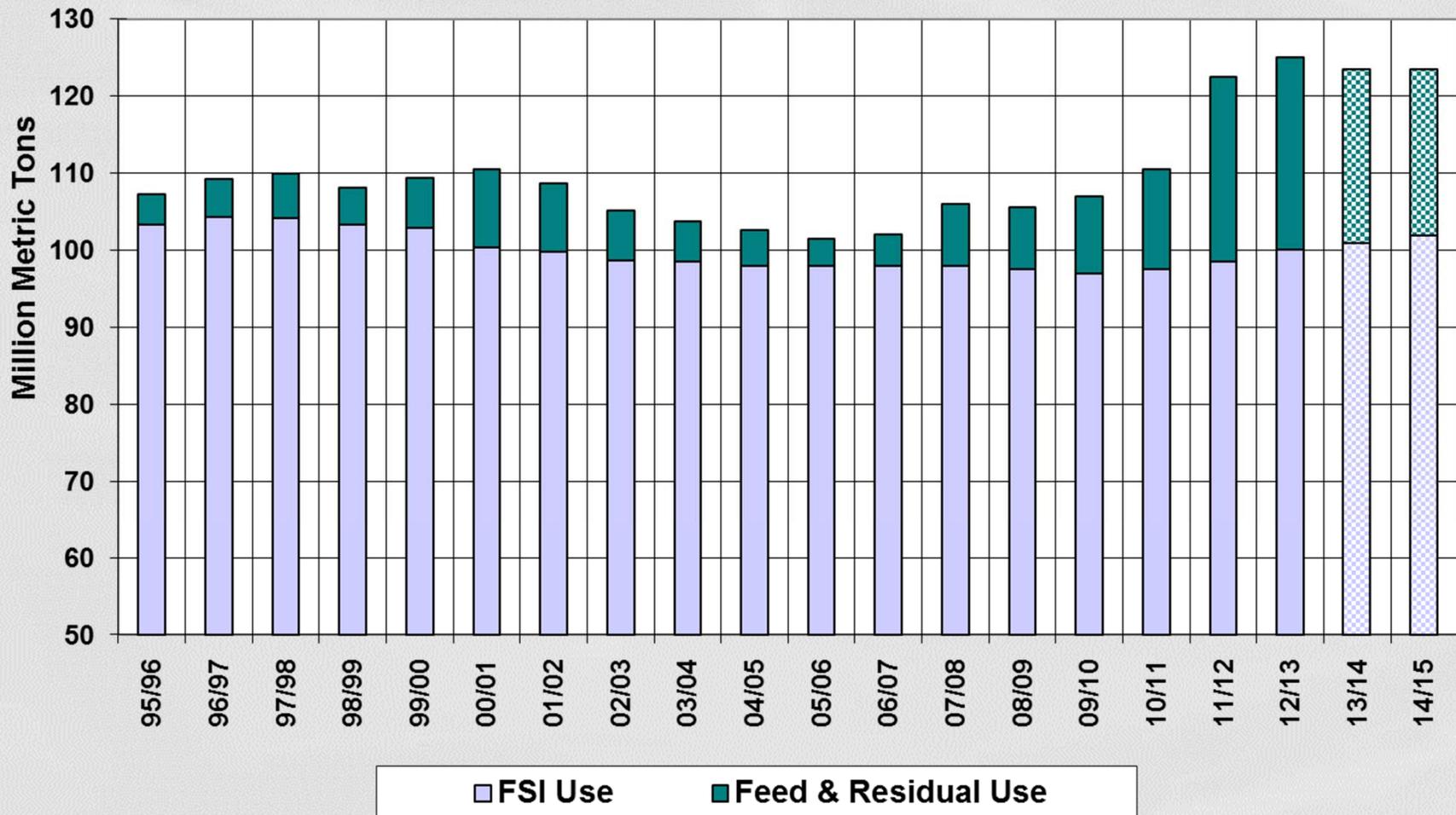
China Wheat (Million Tonnes)

Item	09/10	10/11	11/12	12/13	13/14	14/15
Carryin	45.8	54.4	59.1	55.9	54.0	58.5
Production	115.1	115.2	117.4	121.0	121.7	122.0
Imports	1.4	0.9	2.9	3.0	7.3	4.0
Total Supply	162.3	170.5	179.4	179.9	183.0	184.5
Food, Seed & Ind Use	97.0	97.5	98.5	100.0	101.0	102.0
Feed & Residual	10.0	13.0	24.0	25.0	22.5	21.5
Domestic Use	107.0	110.5	122.5	125.0	123.5	123.5
Exports	0.9	0.9	1.0	1.0	1.0	1.0
Total Use	107.9	111.4	123.5	126.0	124.5	124.5
Carryout	54.4	59.1	55.9	54.0	58.5	60.0

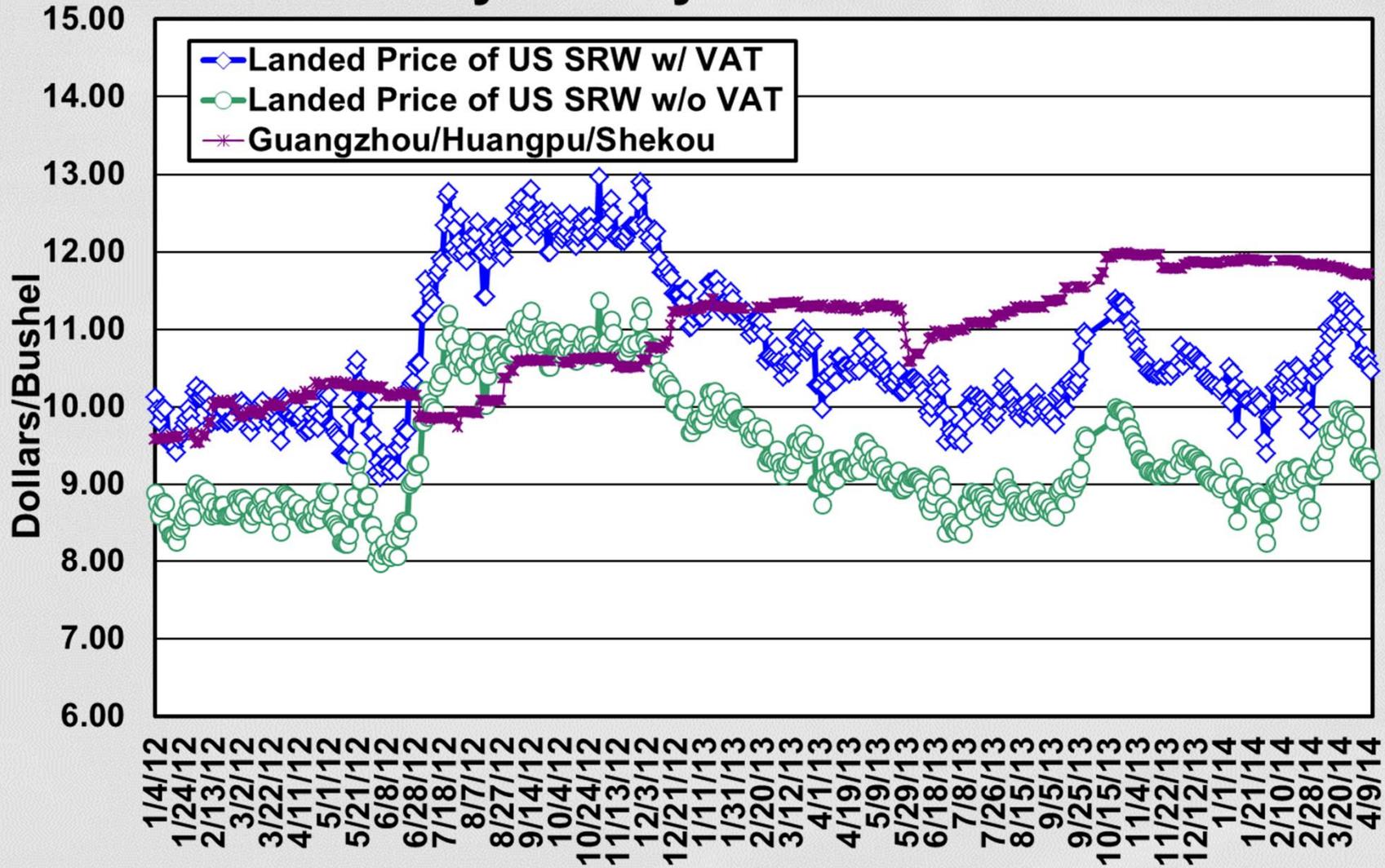
China Wheat Production, Use, Stocks & Trade Million Tonnes



Chinese Domestic Wheat Disappearance

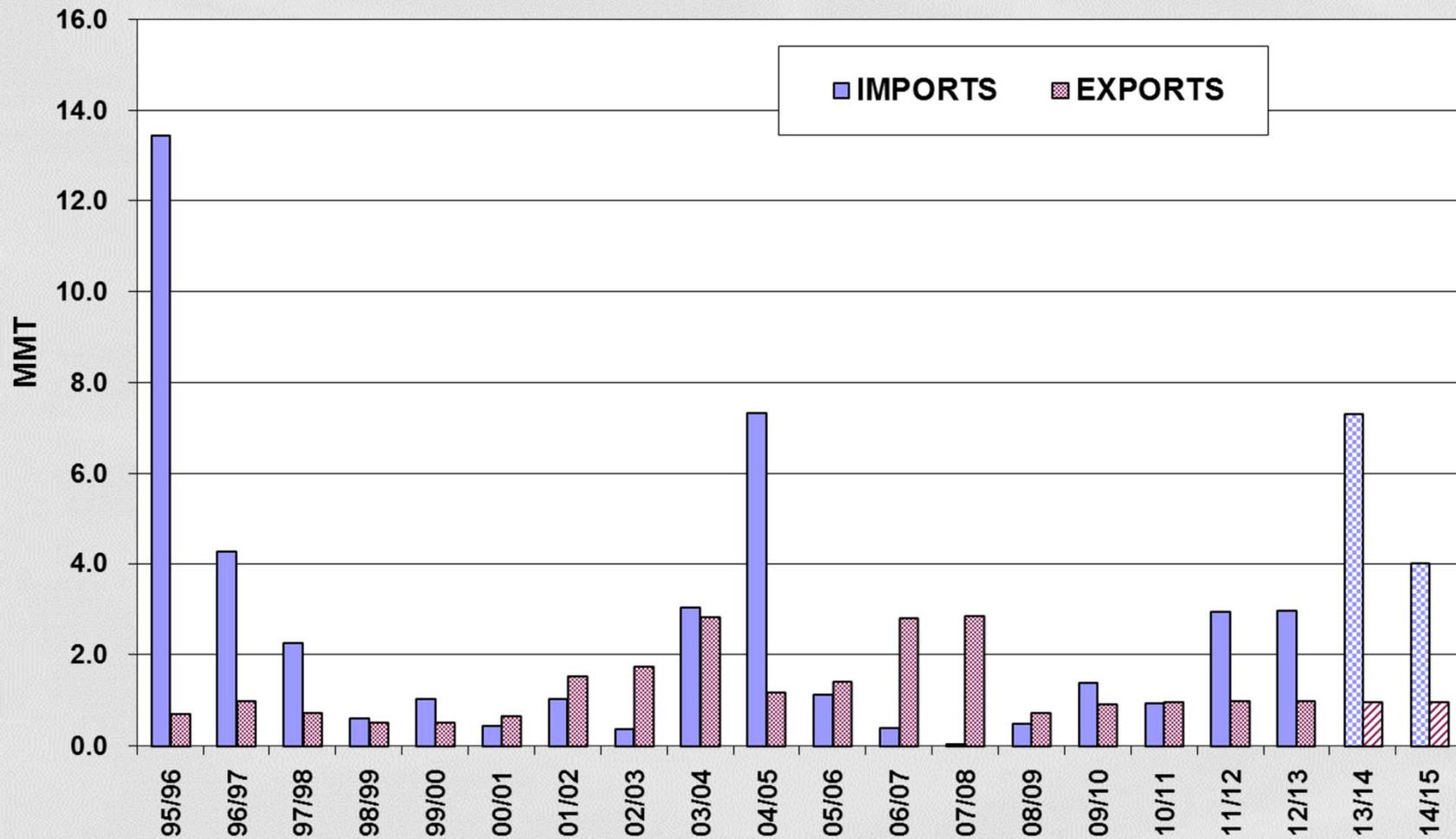


Daily Nearby China Wheat Prices



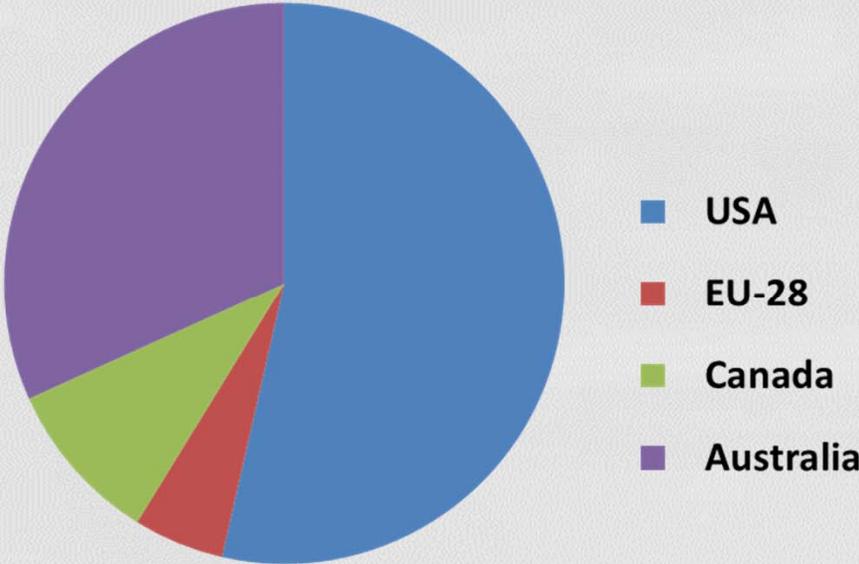
China Wheat Trade

(Includes Grain Equivalent of Flour & Products)

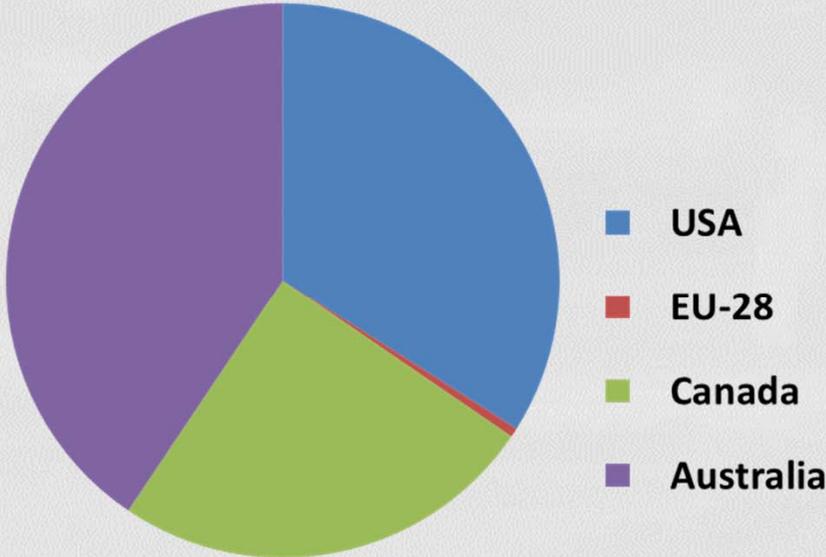


Chinese Wheat Imports

(Jul-Jun 2000/01)



(Jul-Jun 2012/13)



Rice

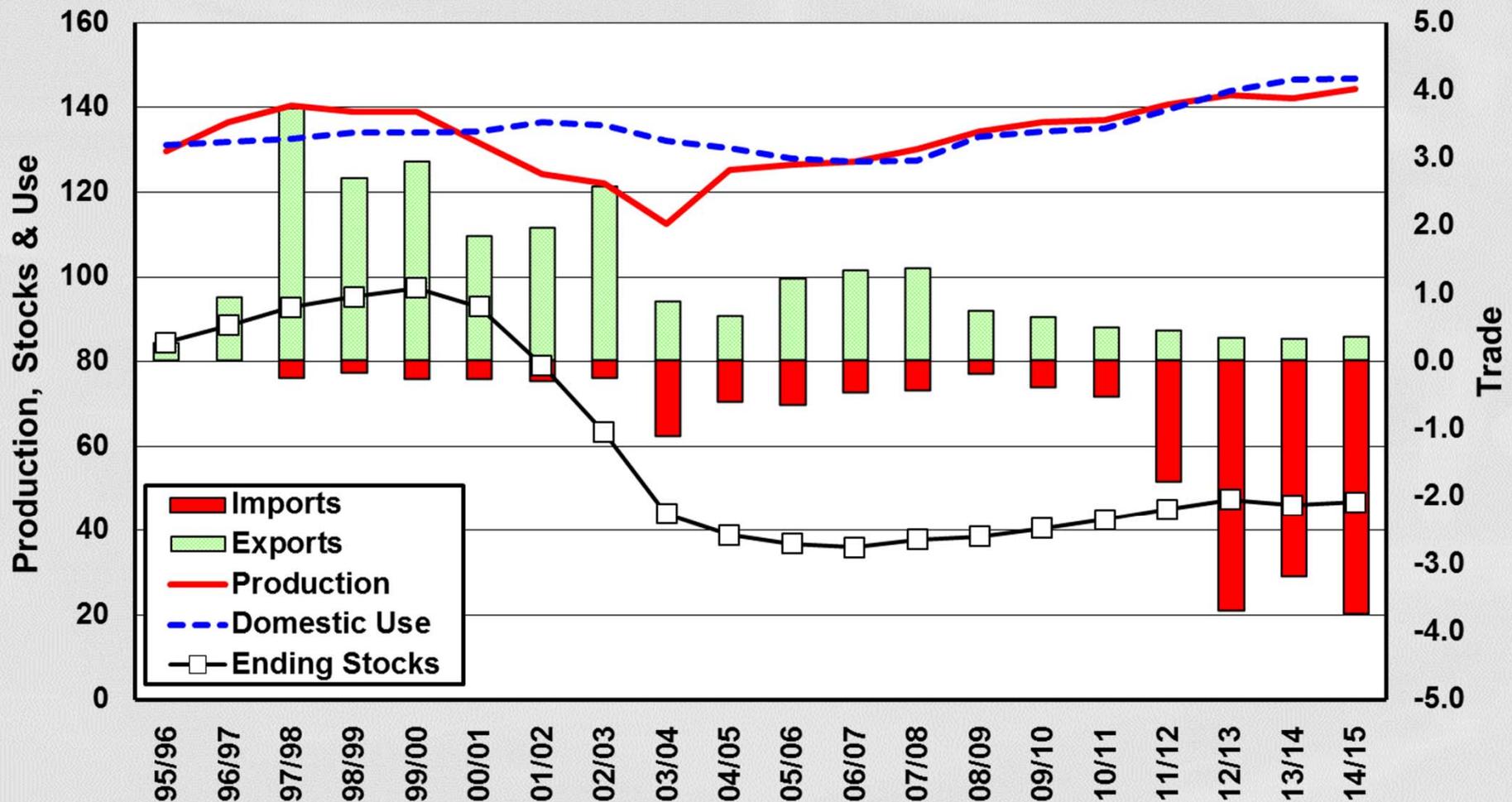
China Rice Supply and Demand

(Million Tonnes/Million Hectares)

	2008	2009	2010	2011	2012	2013	2014
Harvested Area	29.2	29.6	29.9	30.1	30.1	30.4	30.7
Yield	4.6	4.6	4.6	4.7	4.7	4.7	4.7
Carryin	37.8	38.5	40.5	42.6	45.0	47.4	46.0
Production	134.3	136.6	137.0	140.7	143.0	142.3	144.3
Imports	0.2	0.4	0.5	1.8	3.7	3.2	3.8
Total Supply	172.3	175.5	178.1	185.1	191.7	192.9	194.1
Domestic Use	133.0	134.3	135.0	139.6	144.0	146.6	147.0
Exports	0.7	0.7	0.5	0.4	0.3	0.3	0.4
Total Use	133.7	135.0	135.5	140.0	144.3	146.9	147.3
Carryout	38.5	40.5	42.6	45.0	47.4	46.0	46.8
Stocks/Use	28.8%	30.0%	31.4%	32.1%	32.8%	31.3%	31.7%

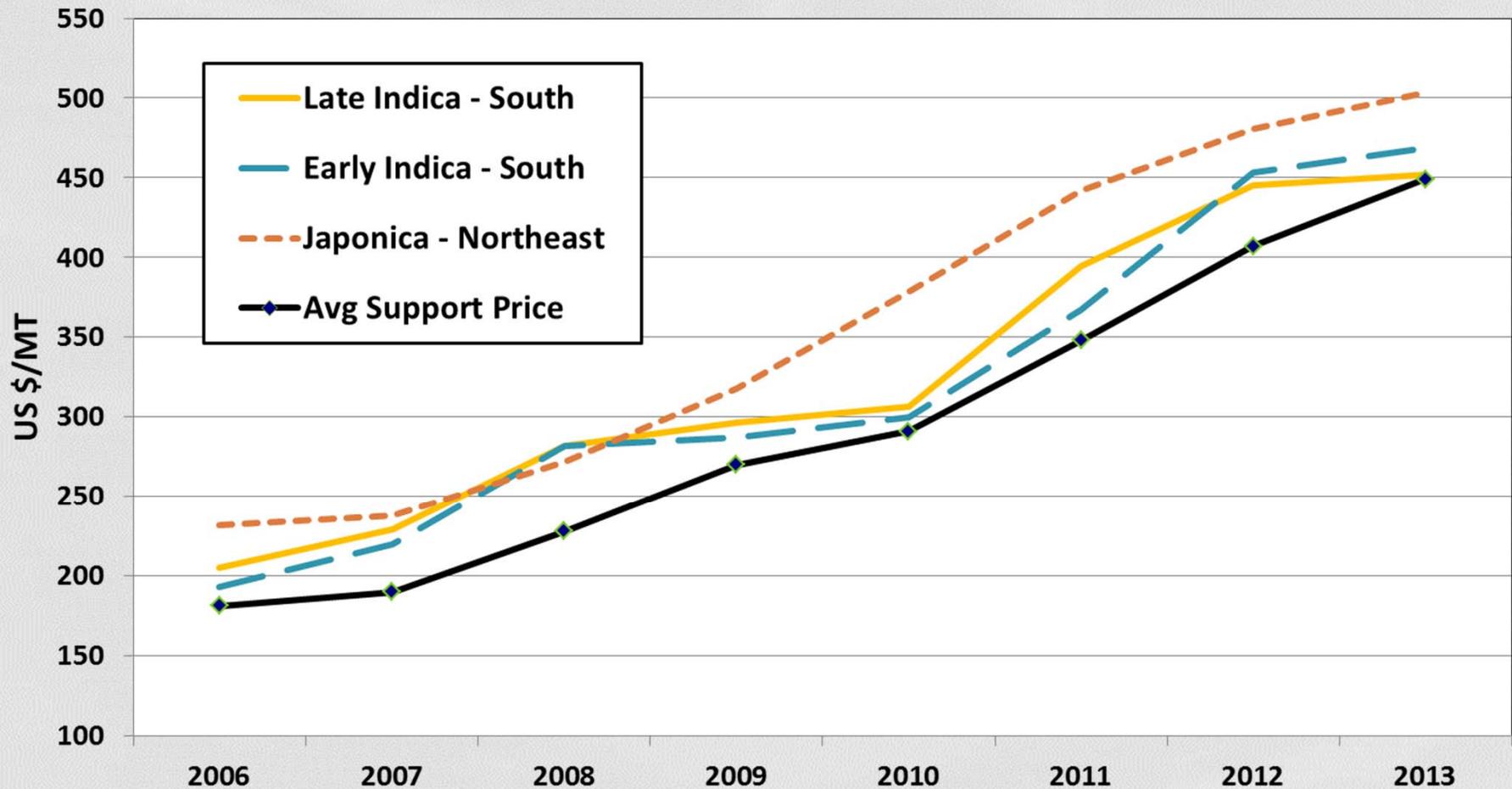
China Rice Production, Use, Stocks & Trade

Million Tonnes, Milled Equivalent



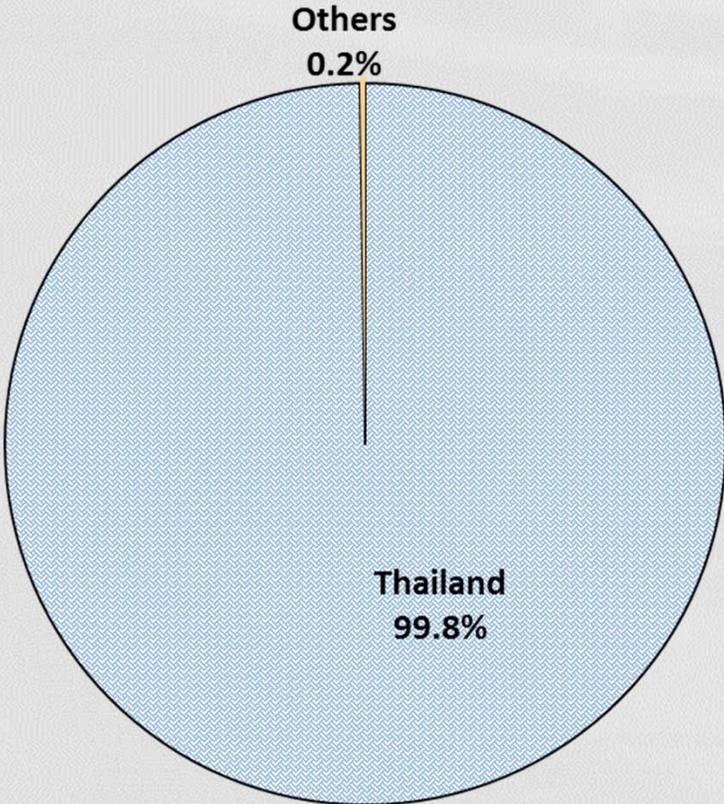
Chinese Domestic Paddy Rice Prices

2006-2013 Annual Averages, US \$/MT

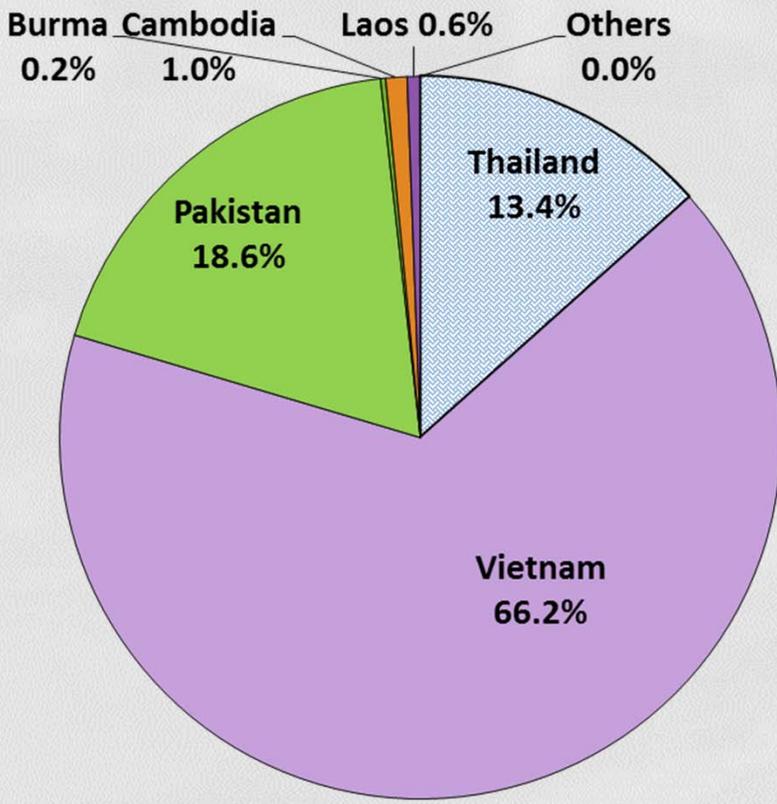


China Rice Import Share by Major Origin

2000

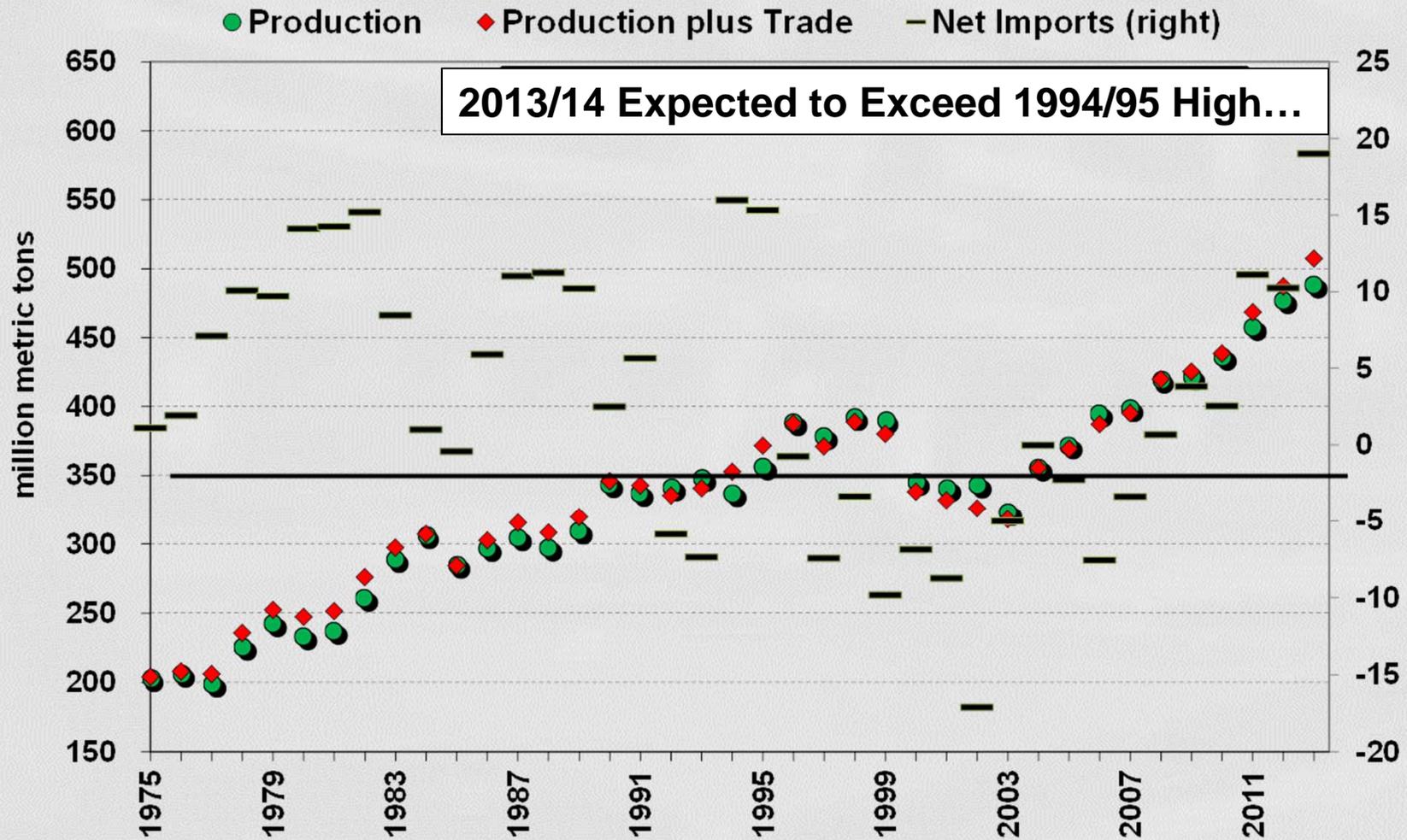


2013

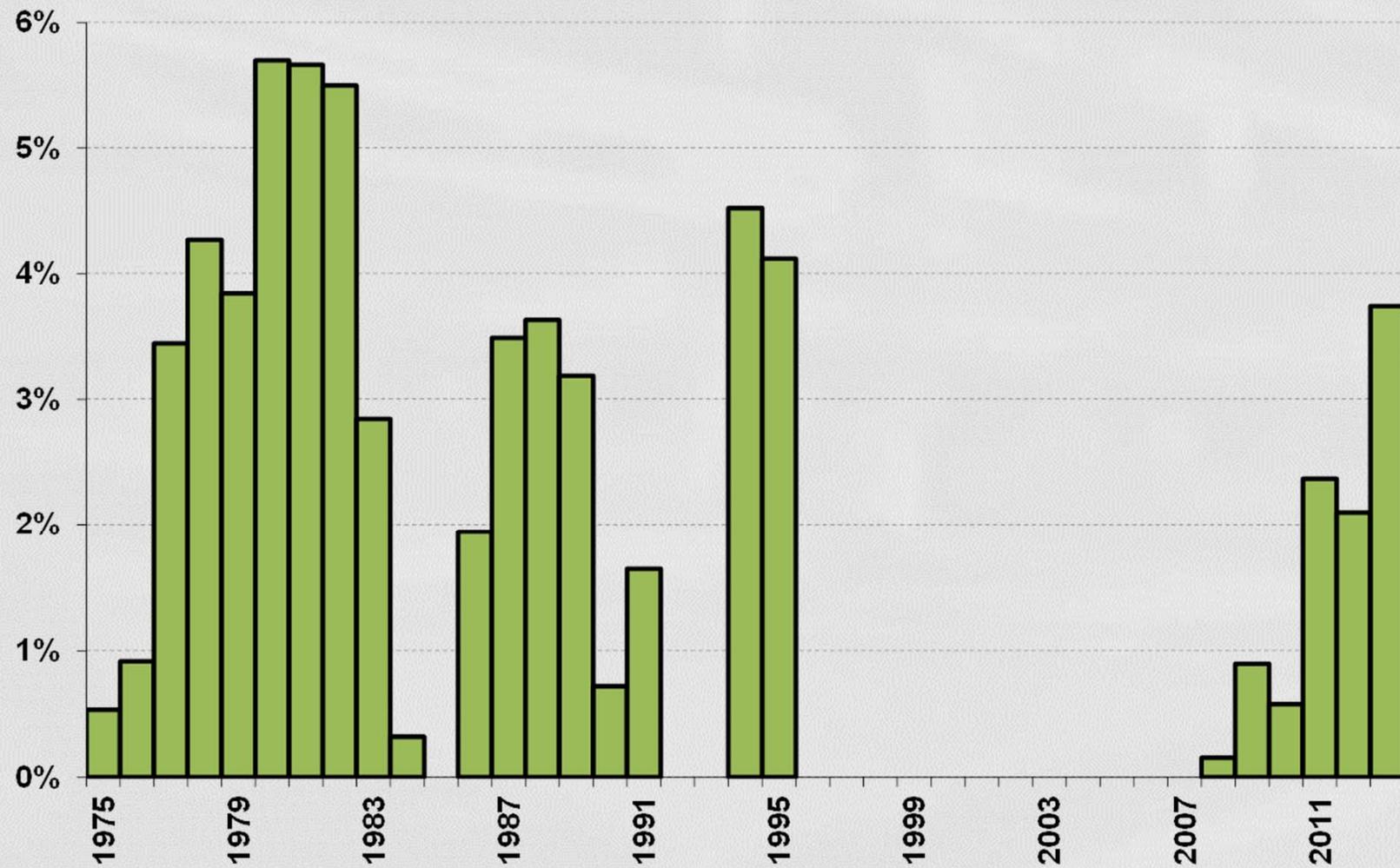


Long Term Considerations: Bringing It All Together

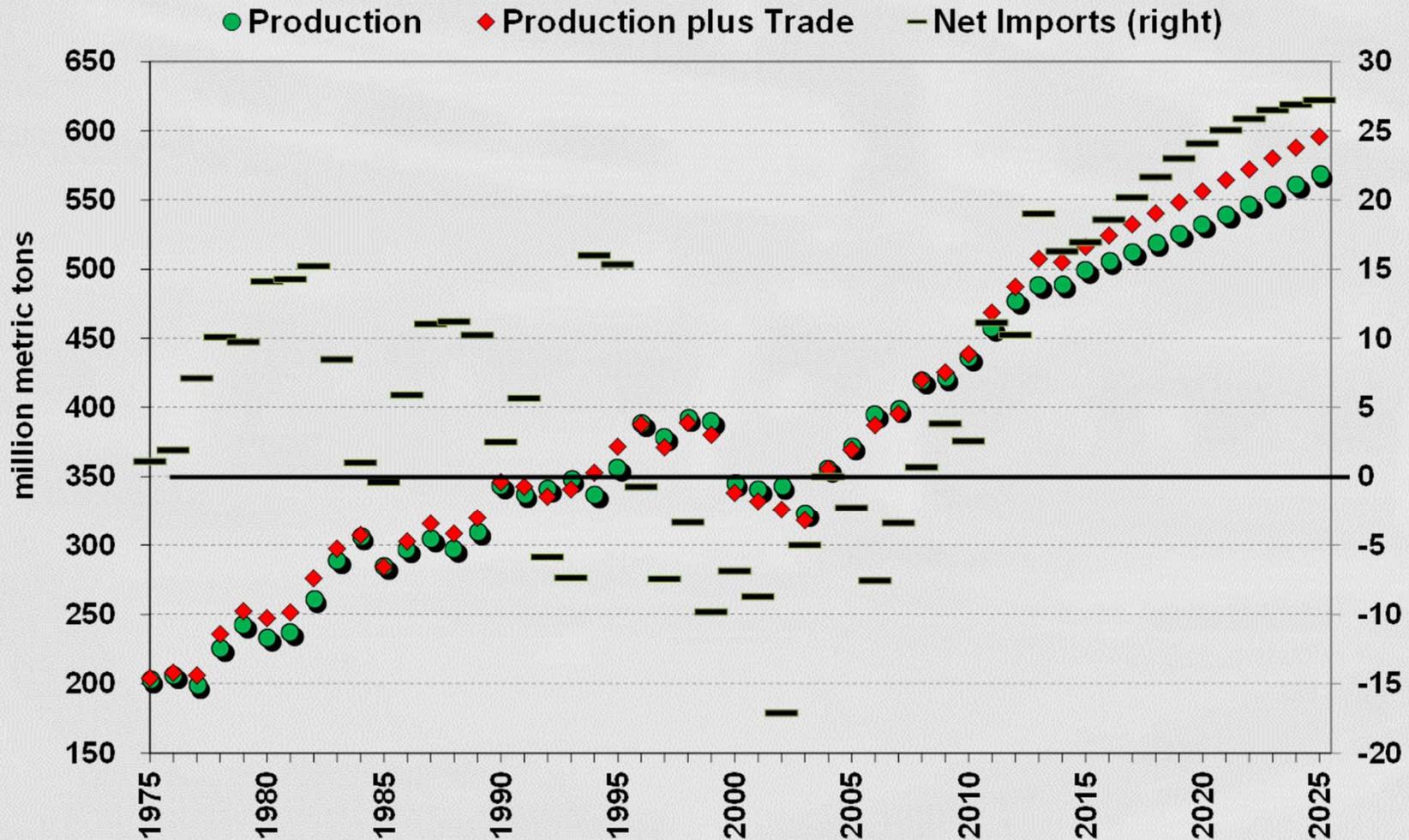
Chinese Major Grain Production and Import HISTORY



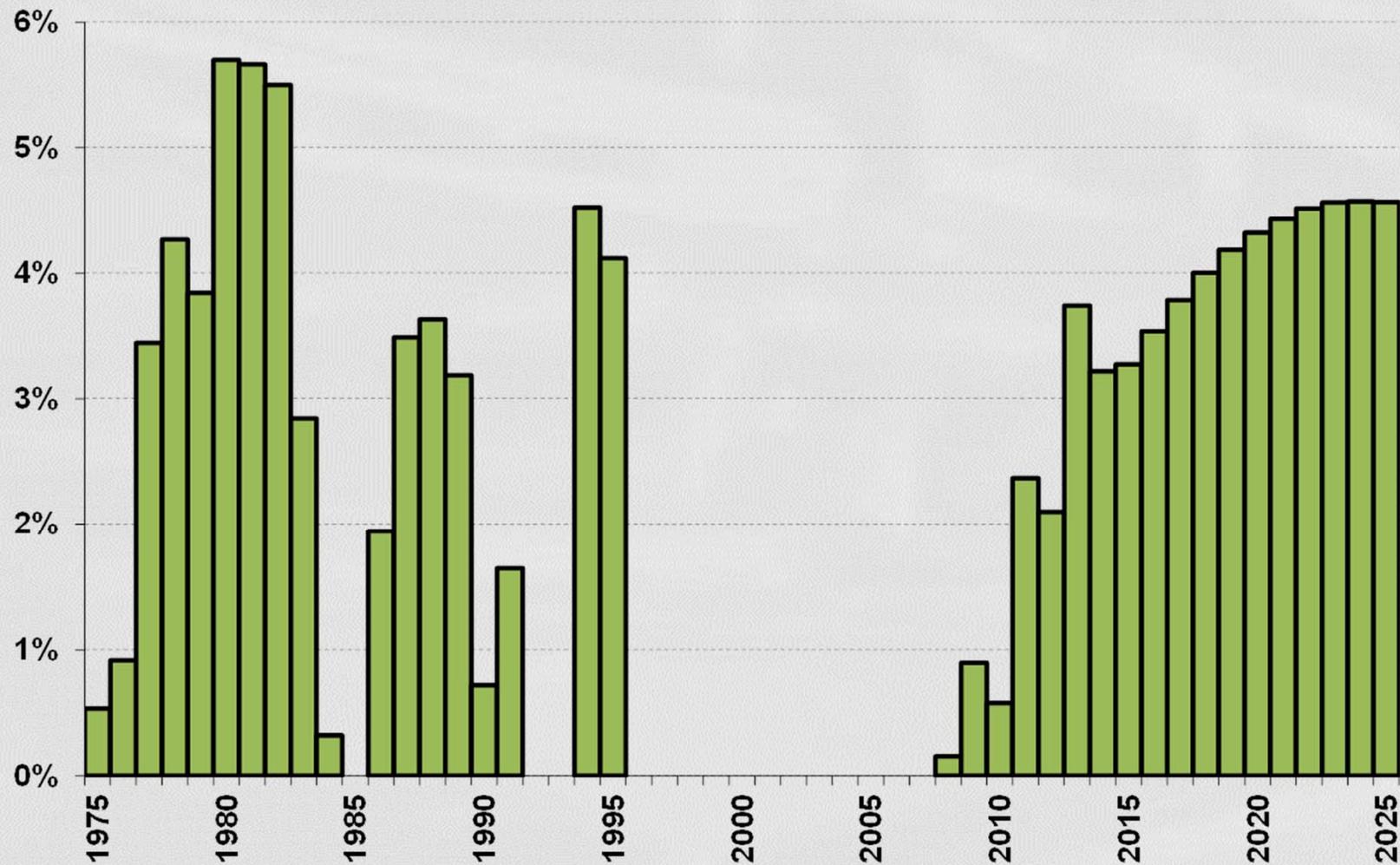
Chinese Major Grain Import Dependence PAST



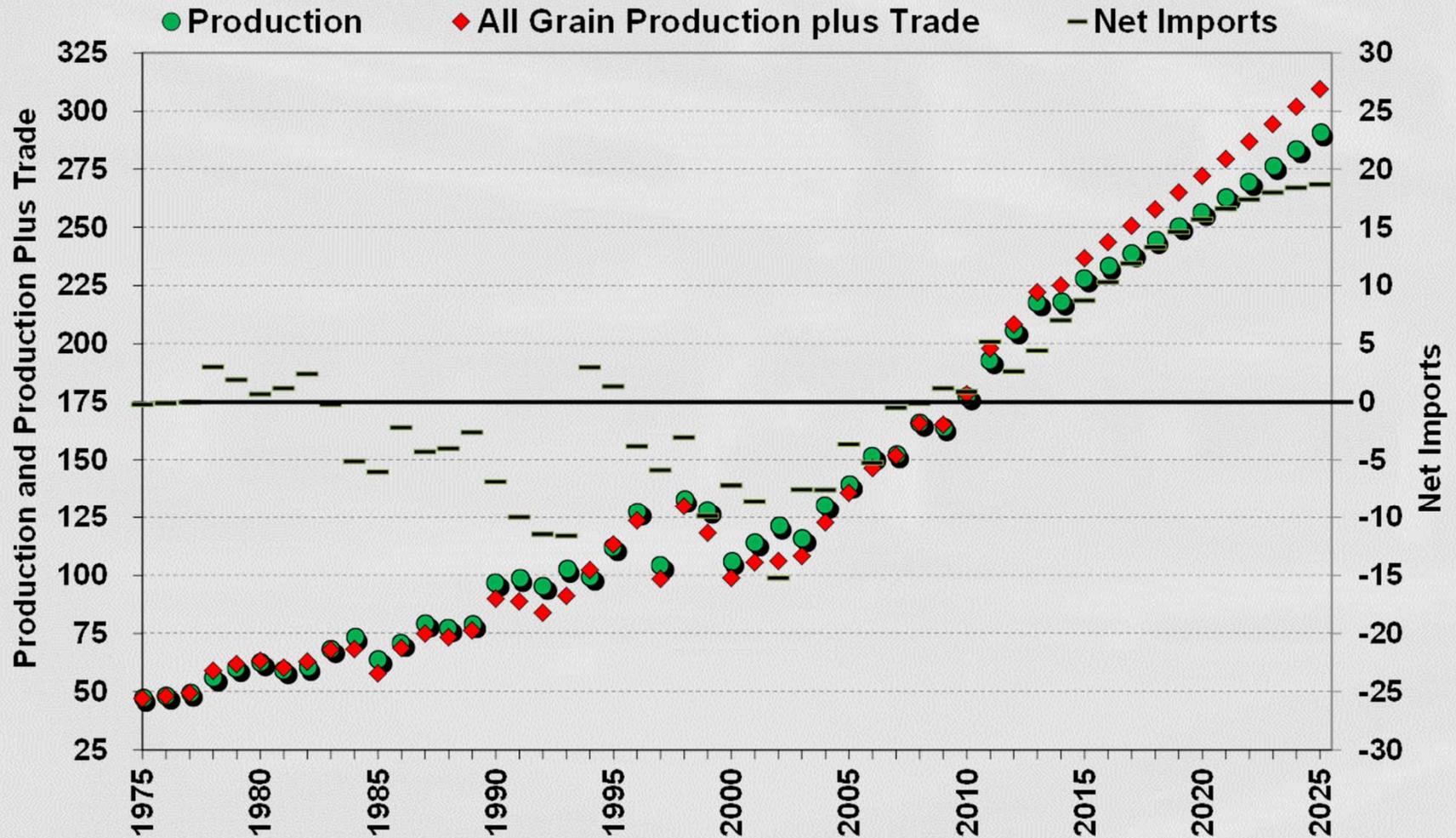
Chinese Major Grain Production and Import FUTURE



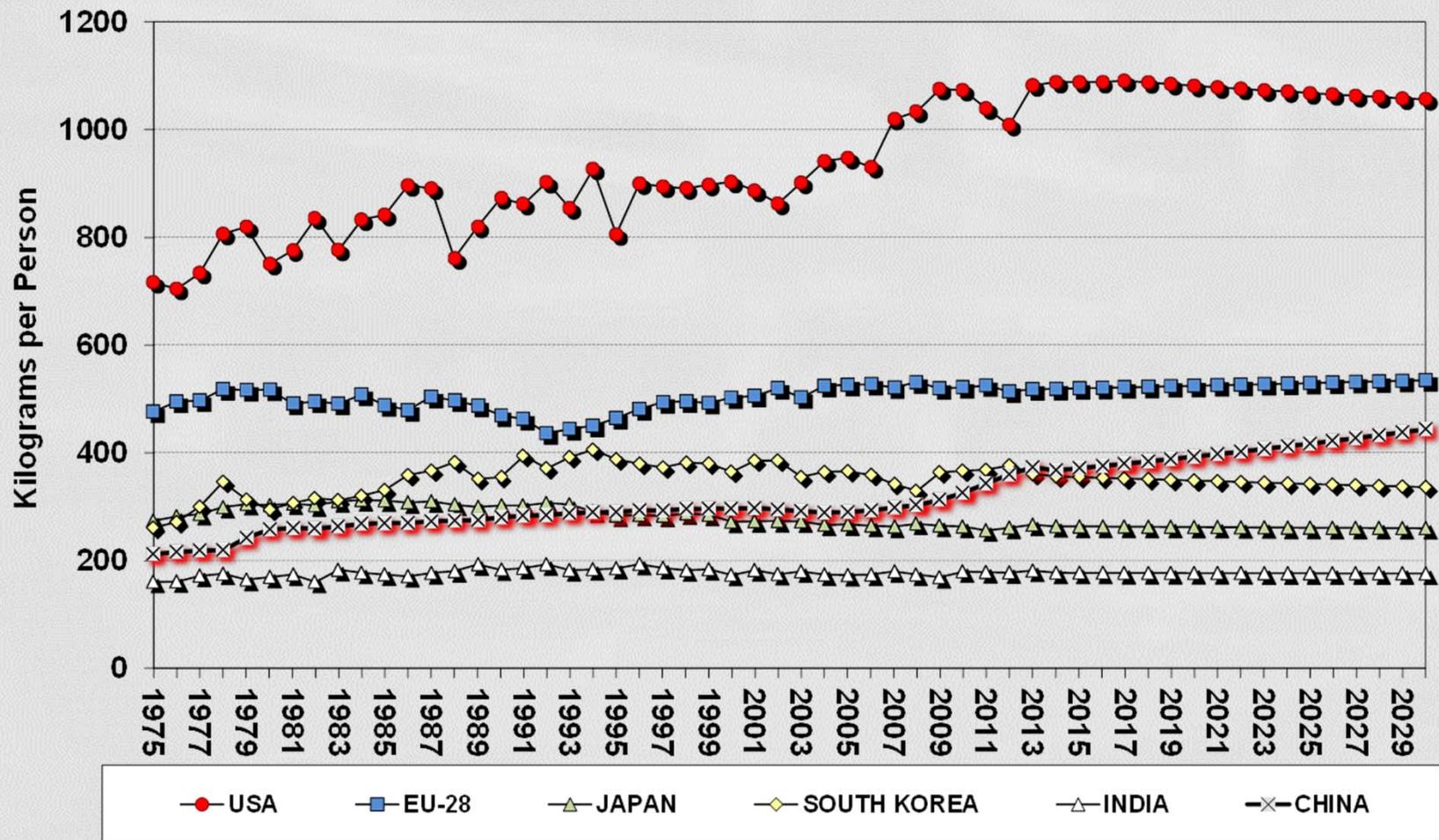
Chinese Major Grain Import Dependence FUTURE



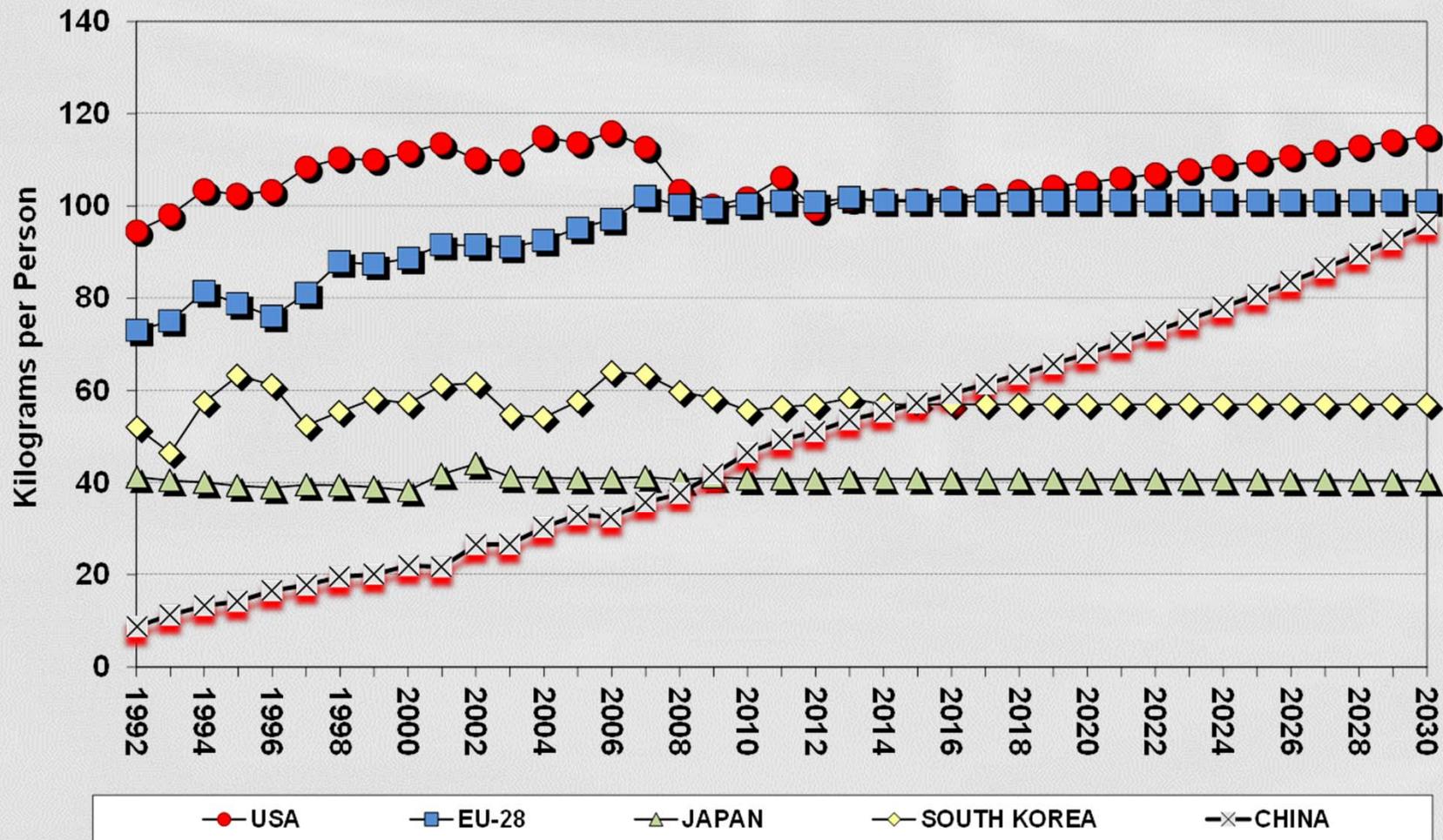
Chinese Corn Production and Imports (MMT)



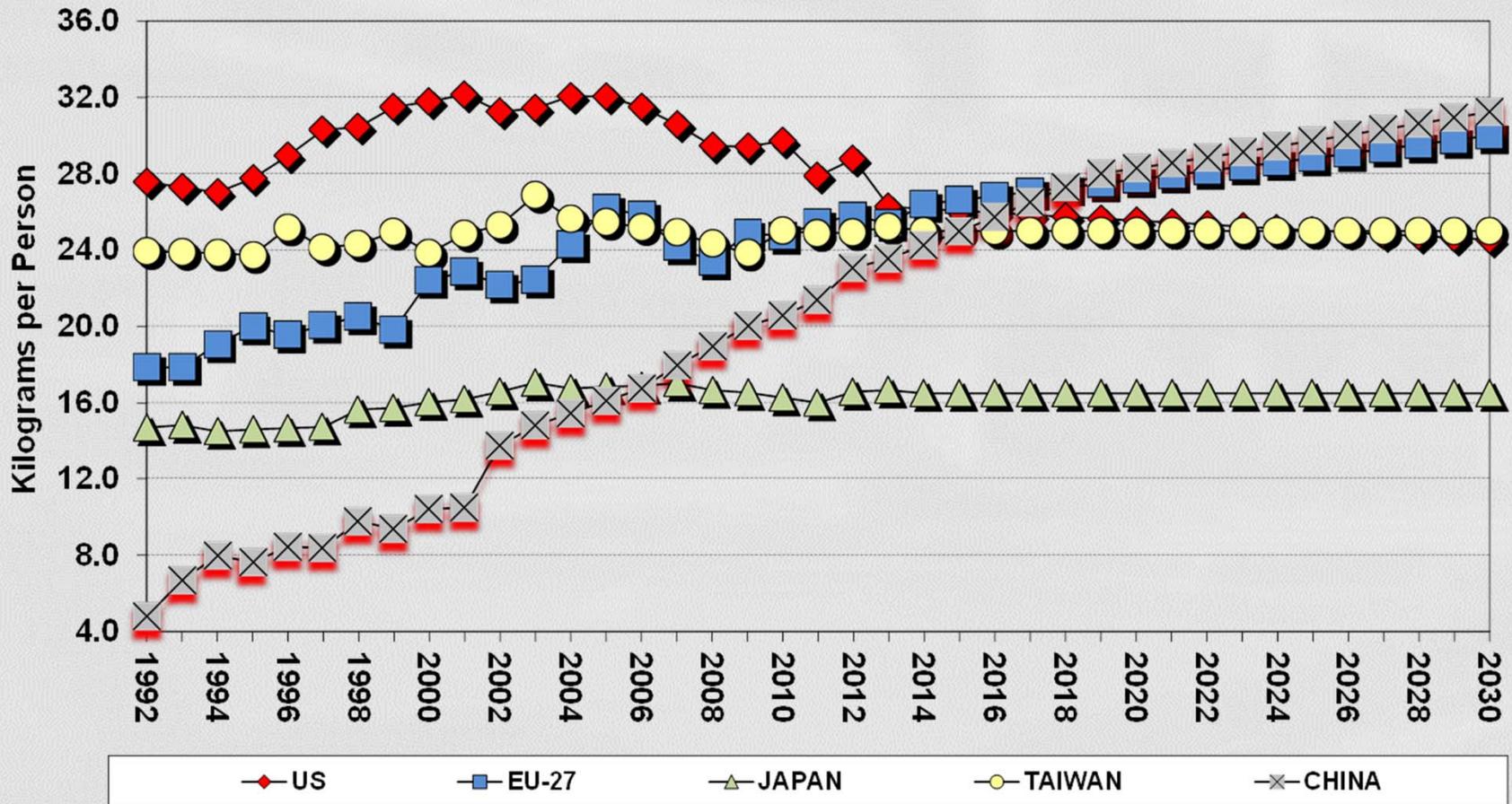
PER CAPITA ALL GRAIN USE



PER CAPITA PROTEIN MEAL USE



PER CAPITA VEGETABLE OIL USE: IN TRADITIONAL USES



Implications for the U.S. and Summary and Questions