

China as a market for Latin American dairy
and beef : *a supply and demand outlook with
a food security perspective*

FAO

September 27-28, 2011

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- Drivers of China's demand
 - The Chinese diet
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 - Competing for land versus crop farming
- Sources of food insecurity
- Future supply of dairy and animal proteins in China
 - Alternative sources
 - Securing foreign procurement of soybean and dairy?
 - Government and industry perspectives
 - Implications for S.A.
- Conclusions and recommendations

Drivers of China demand

- Population growth
- Income
- Diet

Changes in diet in China

Urban household annual consumption of food products, 1981-2006

Product	1981	2006	Change	
	<i>kg per person</i>		<i>kg</i>	<i>Percent</i>
Grain	145.4	75.9	-69.5	-48
Edible vegetable oil	4.8	9.4	4.6	95
Pork	16.9	20.0	3.1	18
Beef and mutton	1.7	3.8	2.1	125
Poultry	1.9	8.3	6.4	334
Fresh eggs	5.2	10.4	5.2	99
Aquatic products	7.3	12.5	5.2	71
Milk	4.1	18.3	14.2	343

Note: Table shows averages from national household surveys.

Source: Economic Research Service calculations based on China's National Bureau of Statistics (NBS) data.

How has China been feeding its growing livestock production?

Urban household annual consumption of food products, 1981-2006

Product	1981	2006	Change		
	<i>kg per person</i>		<i>kg</i>	<i>Percent</i>	
Grain	145.4	75.9	-69.5	-48	69,5 kg of Grains from Food to feed
Edible vegetable oil	4.8	9.4	4.6	95	
Pork	16.9	20.0	3.1	18	+ 23 kg of animal proteins
Beef and mutton	1.7	3.8	2.1	125	
Poultry	1.9	8.3	6.4	334	
Fresh eggs	5.2	10.4	5.2	99	
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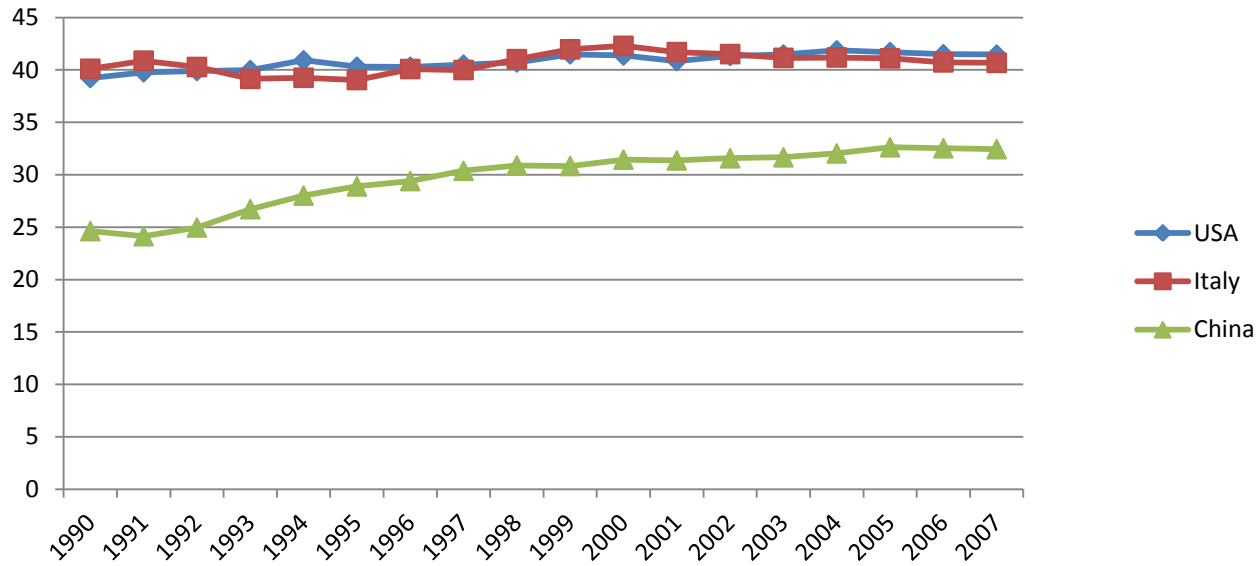
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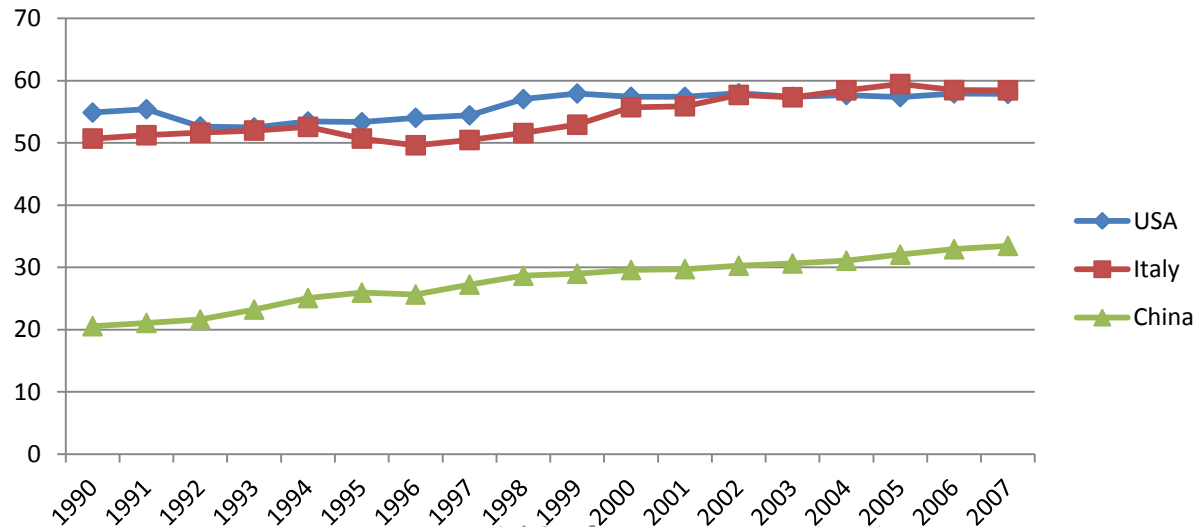
23 kg growth of meat equivalent x 1.3B people = 30 million additional tons. of meat equivalent

69,5x 1.3B people = 91 million tons. of grain from food to feed plus 50 million tons. of additional oilseed cakes supply = 120 million tons. of additional feedstuffs; A FEED/MEAT CONVERSION RATIO OF 4/1

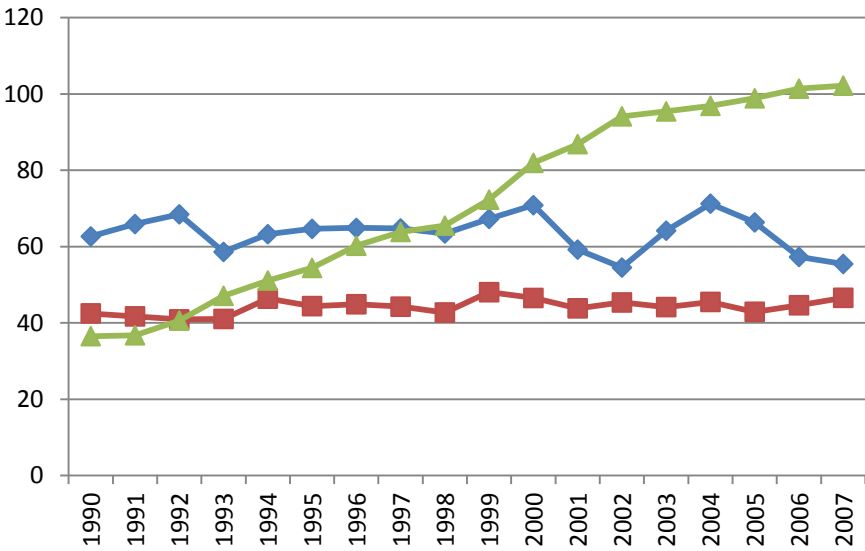
ANIMAL PROTEINS KG/CAP.



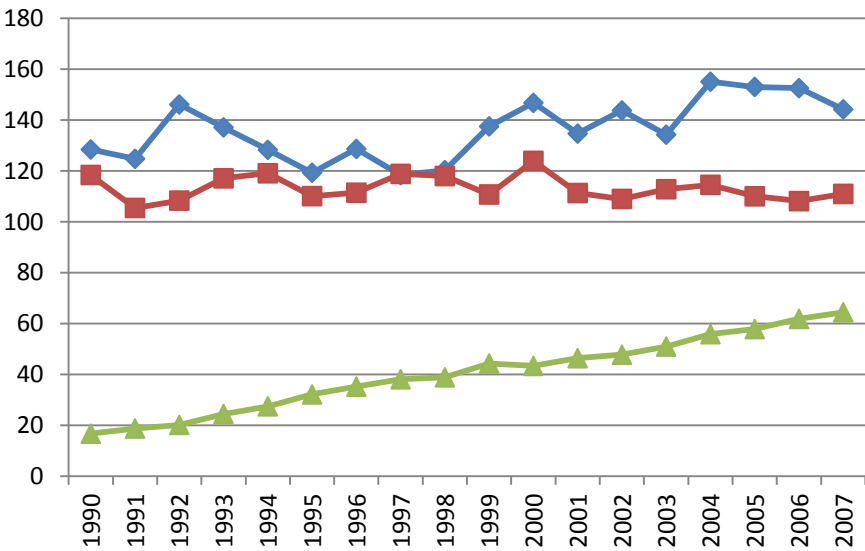
ANIMAL FATS KG/CAP.



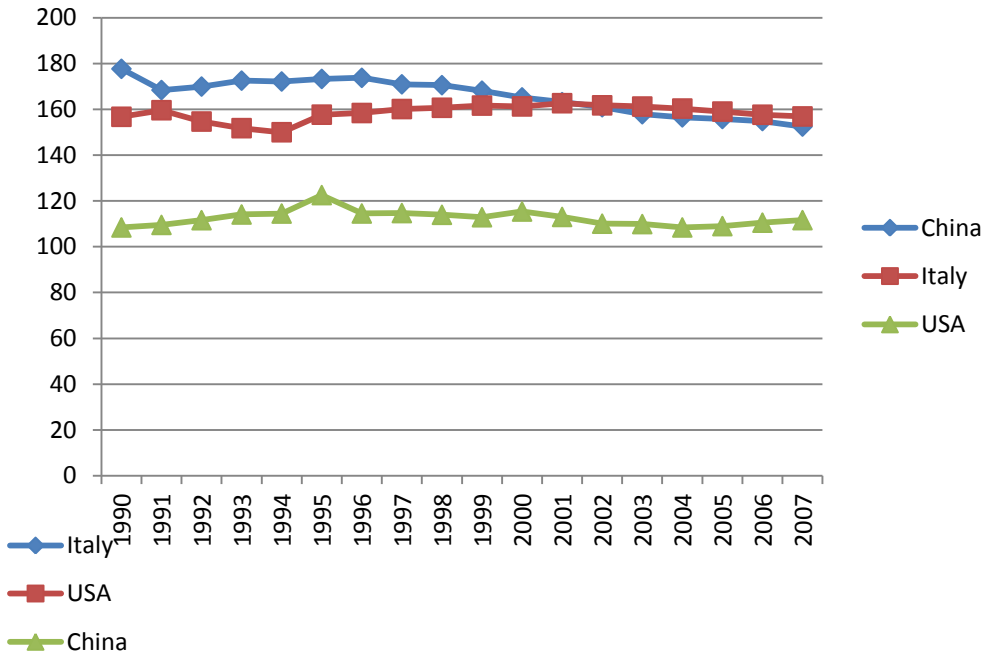
VEGETABLES KG/CAP.



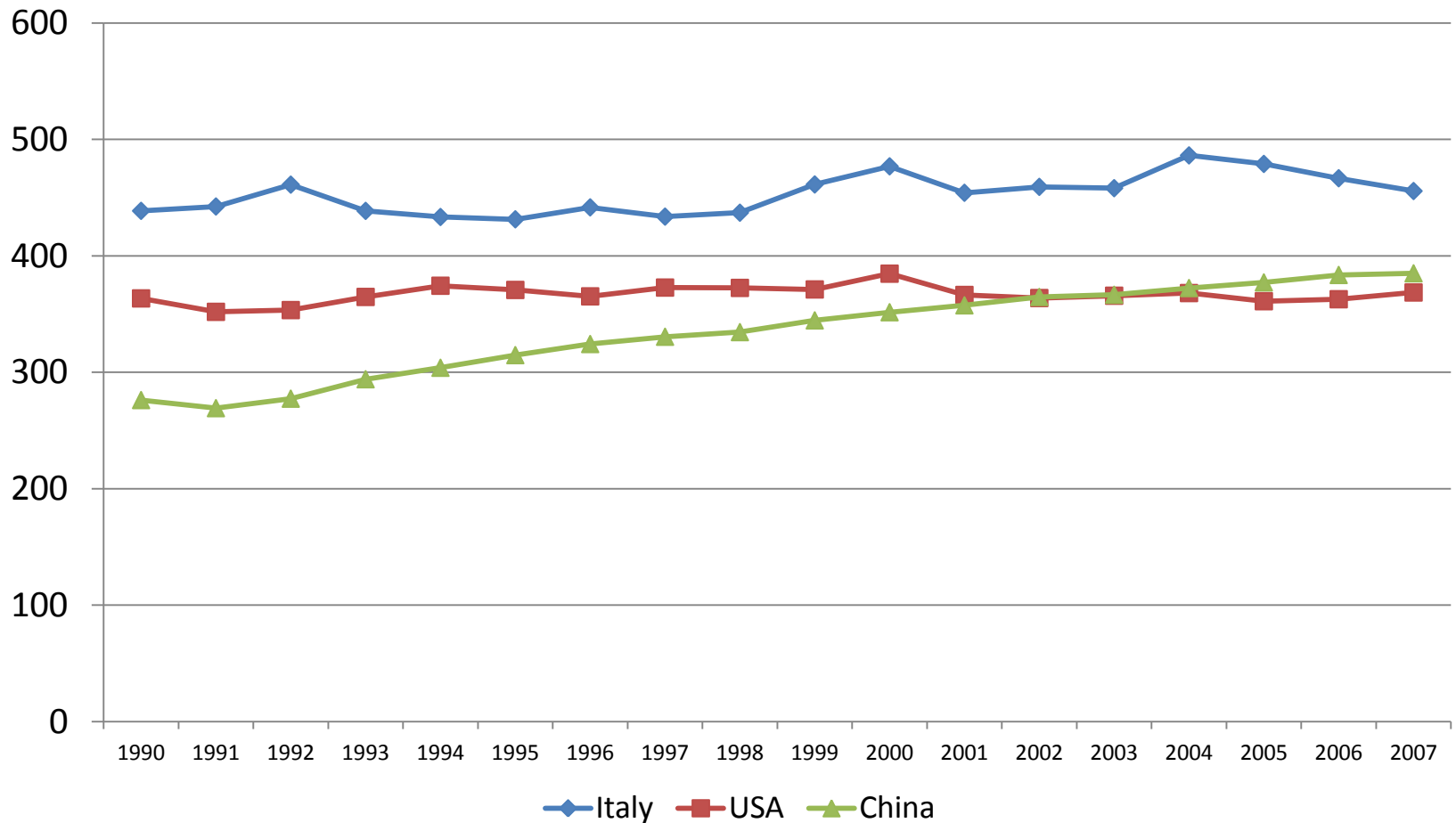
FRUITS KG/CAP.



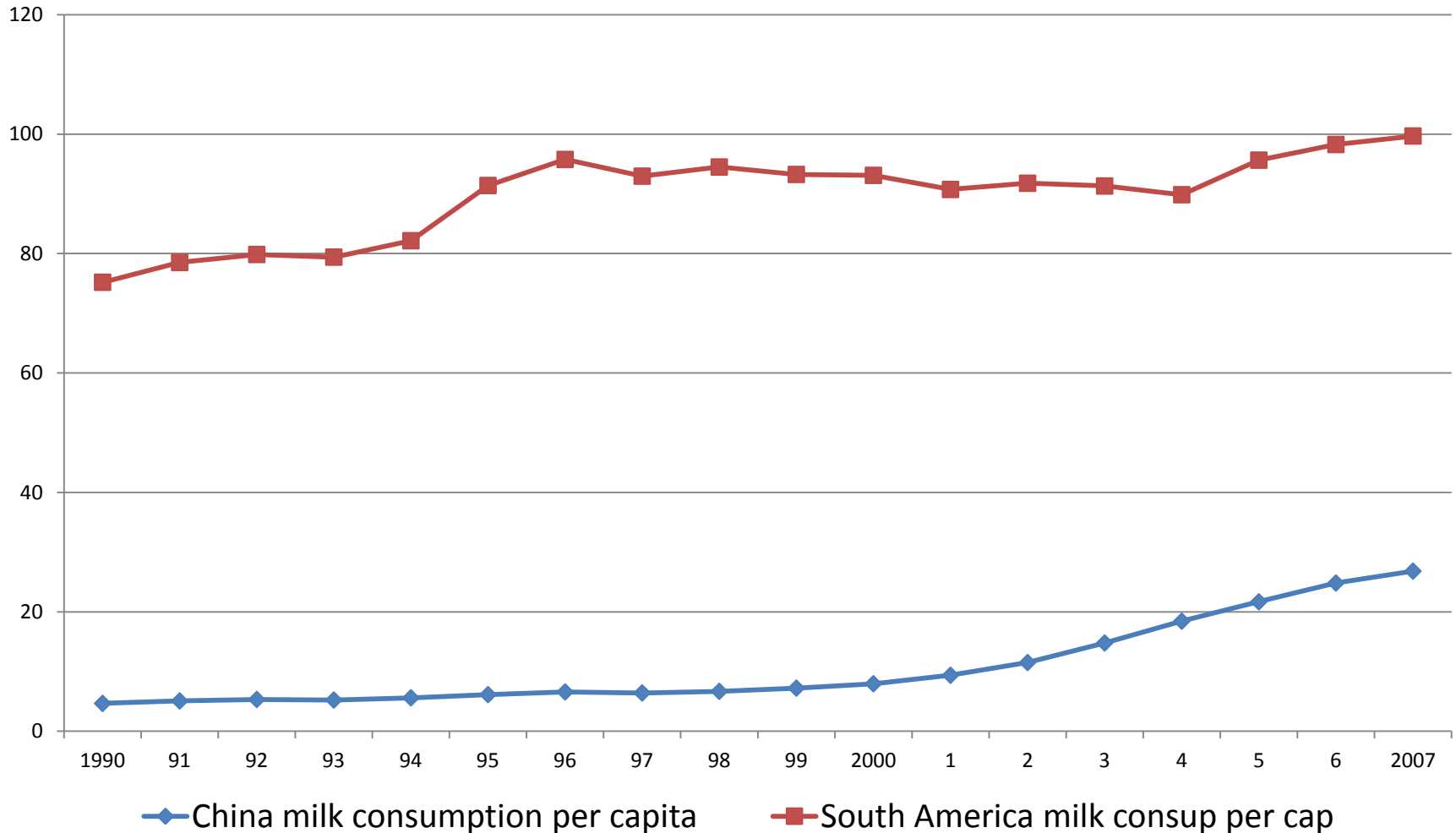
CEREALS KG/CAP.



Total supply of these food items: animals proteins and fats, vegetables, fruits and cereals (kg/cap/year)



Milk consumption per capita

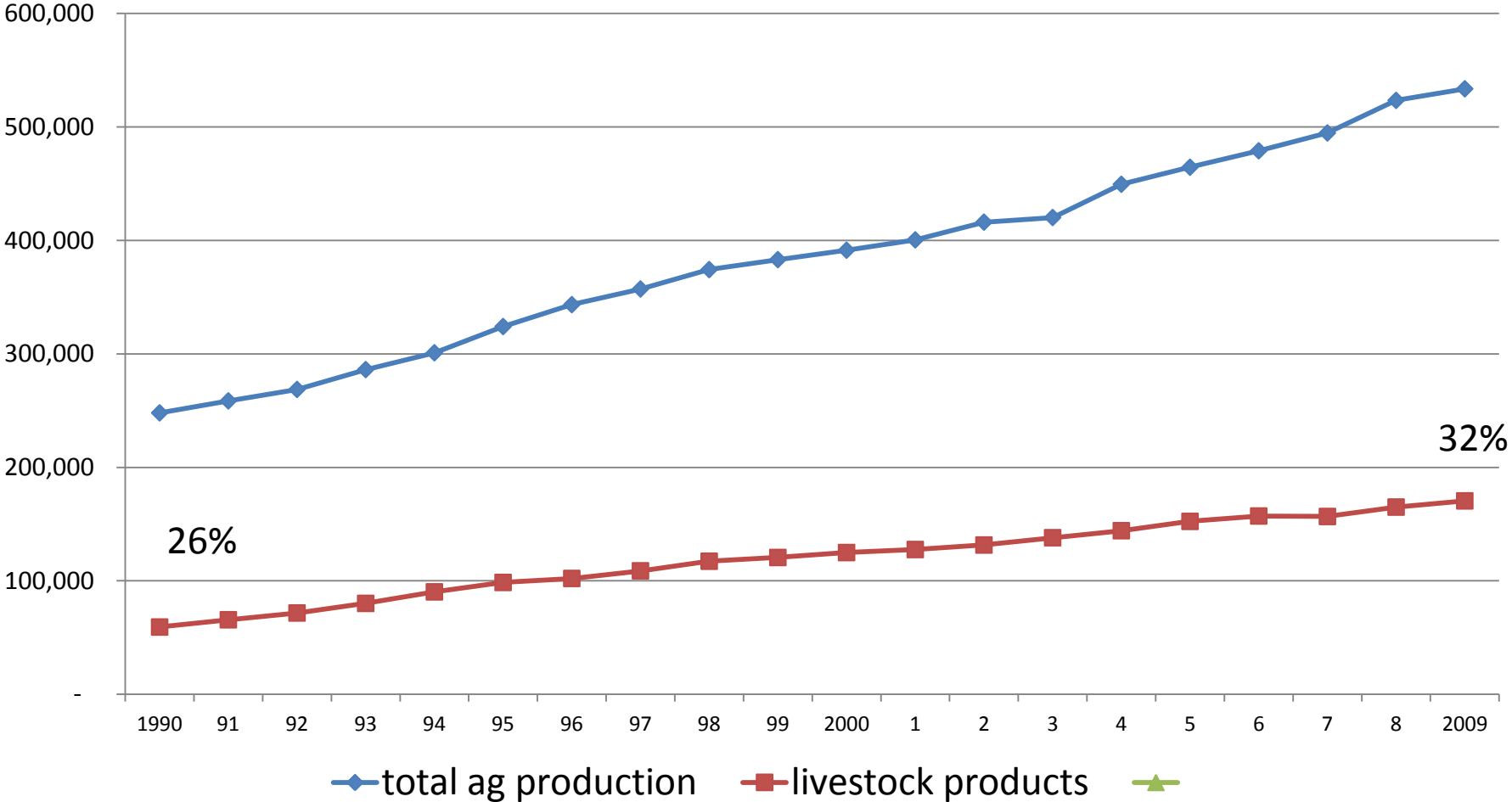


- How China fed itself
 - Dairy and Animal proteins in China
 - Oil cakes and imports of soybeans

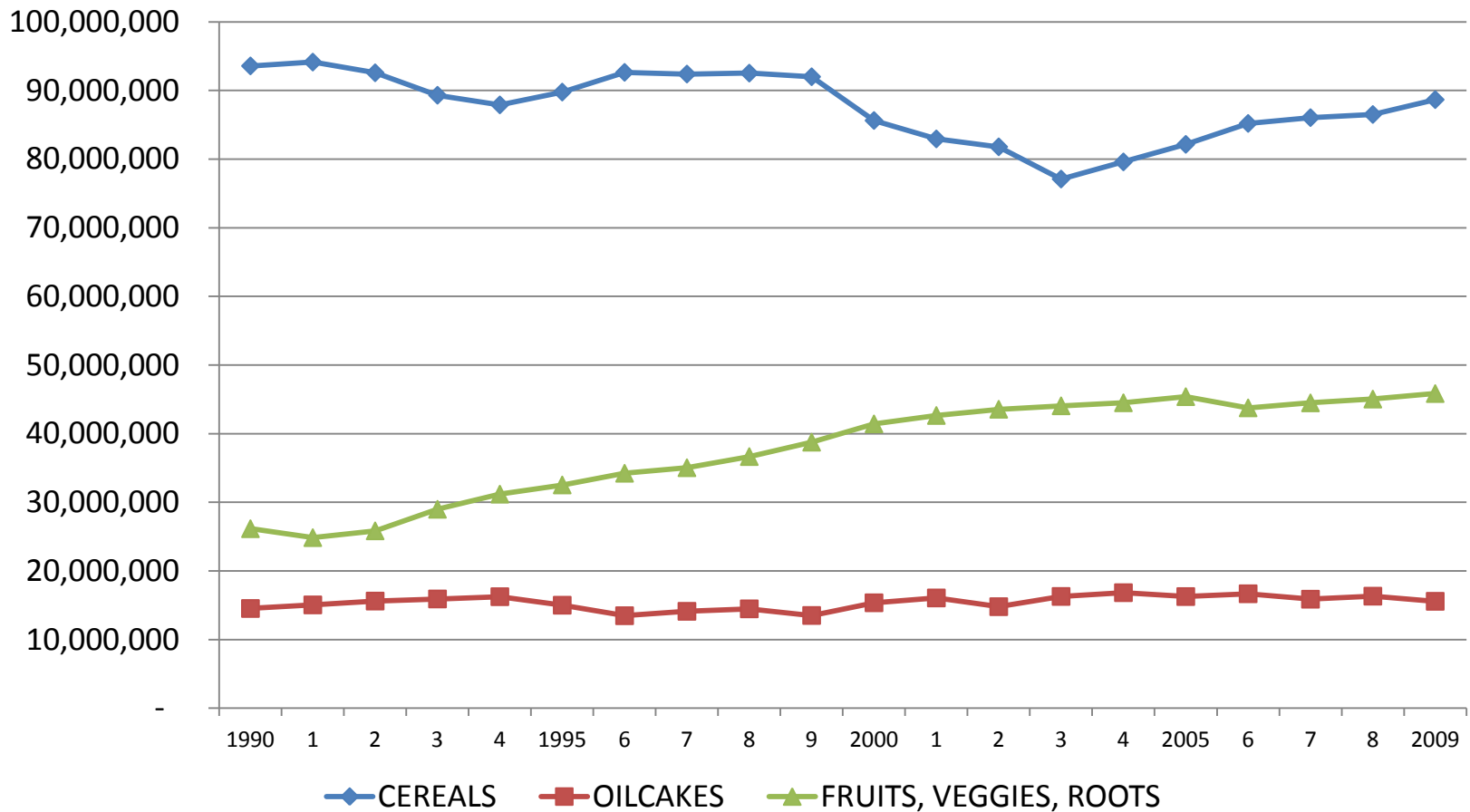
China dairy

China: value of agriculture production

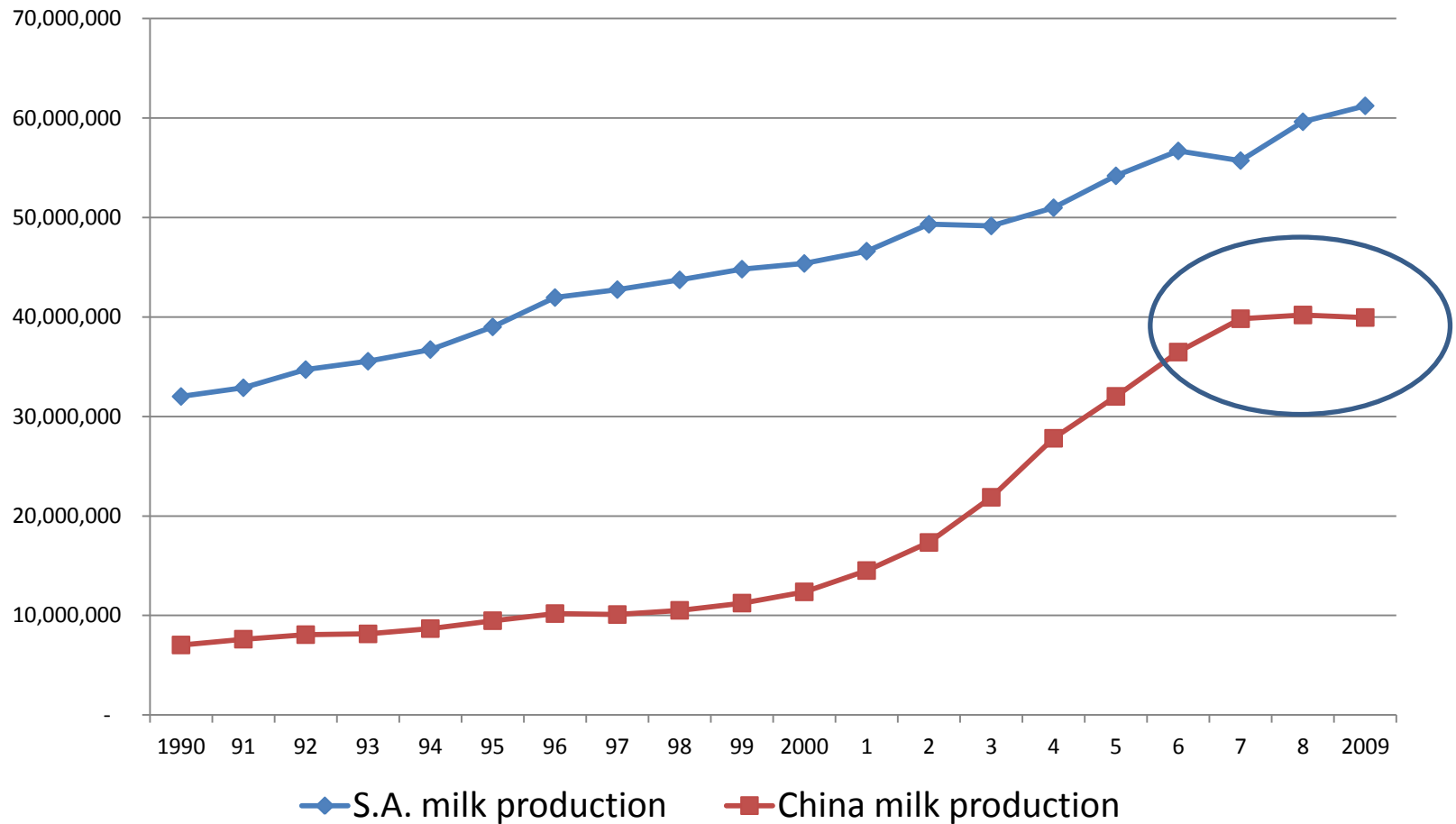
(million constant USD of 2004-2006)



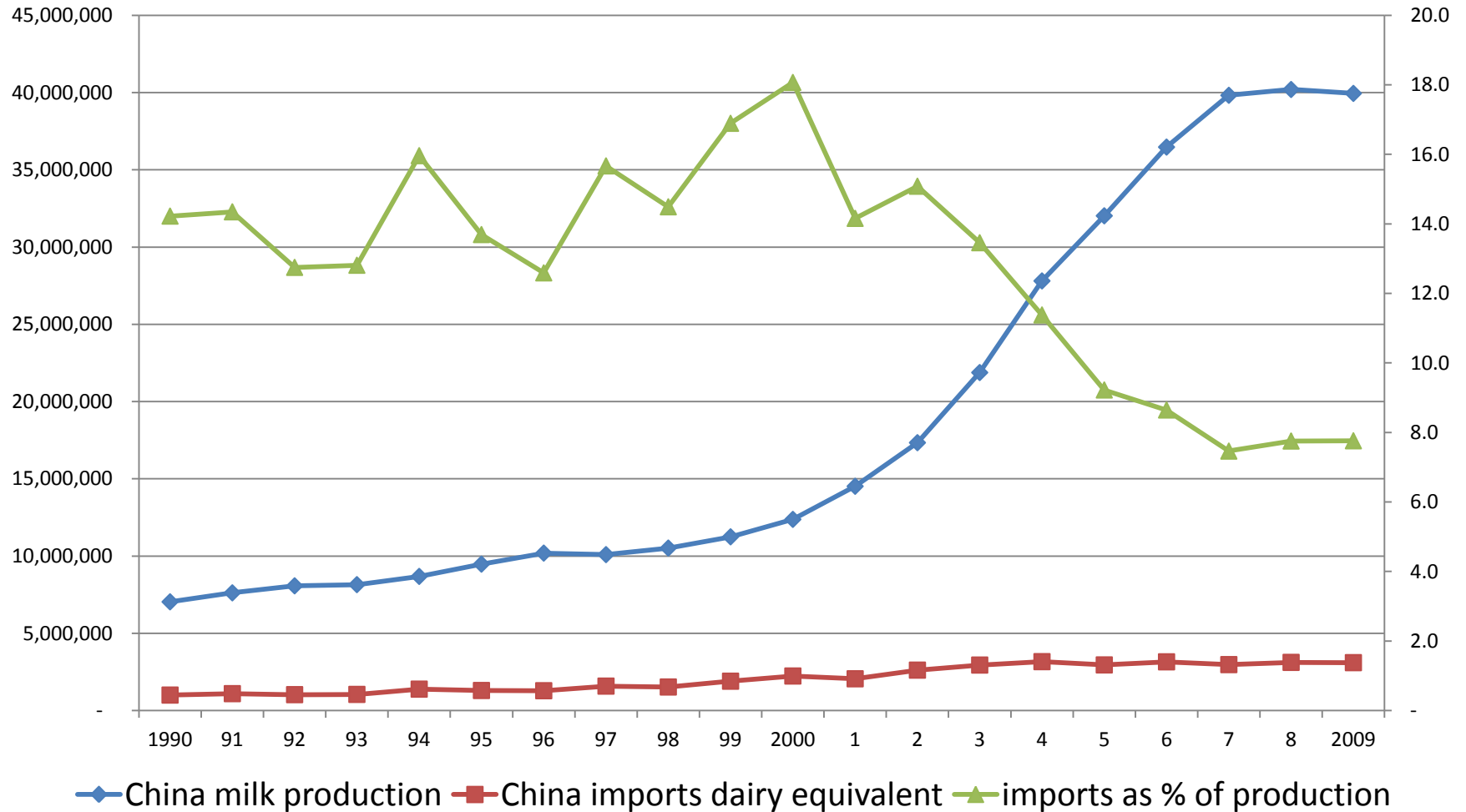
China: area planted (hectares)



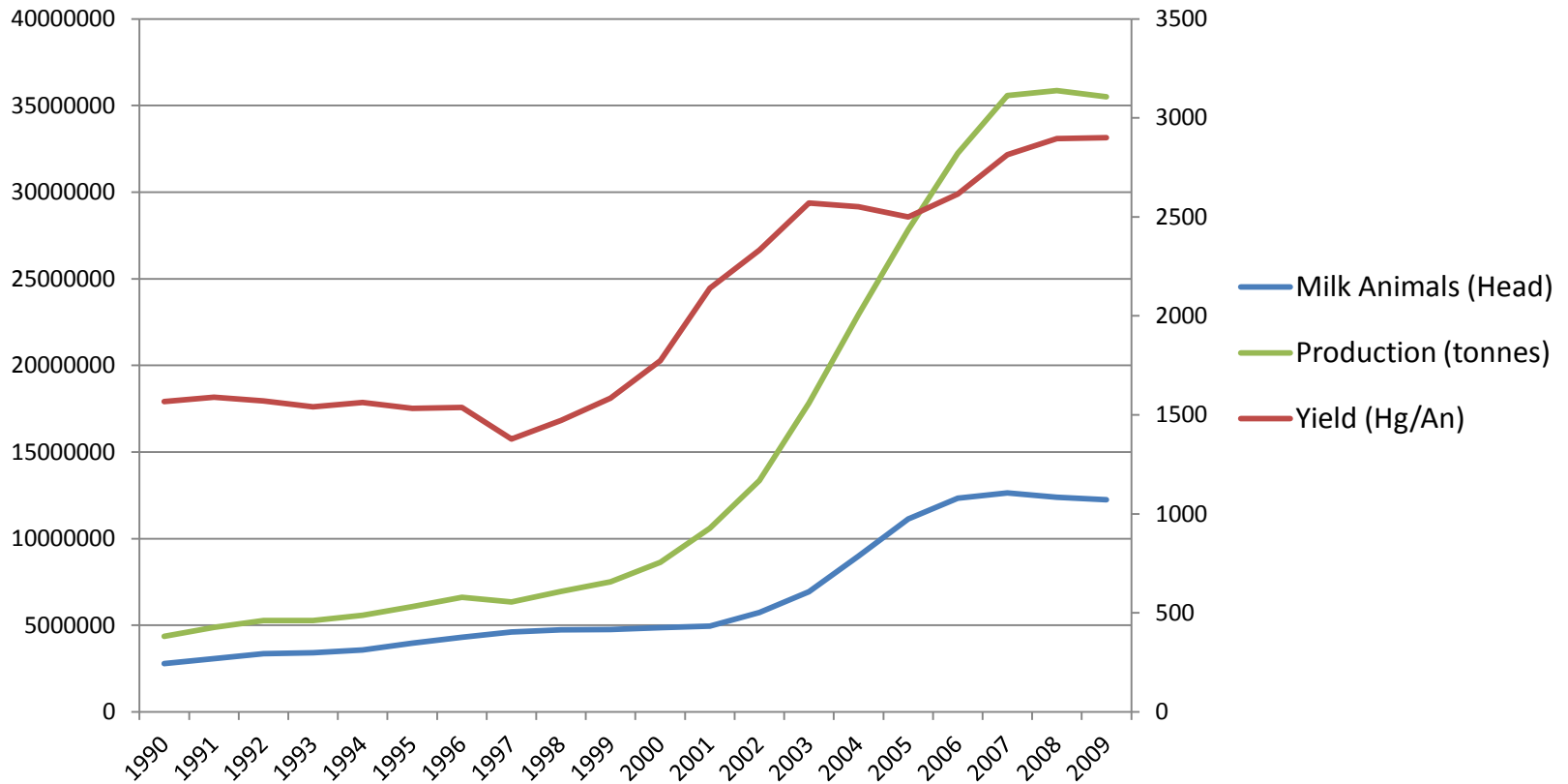
S.A and China milk production (tonnes)



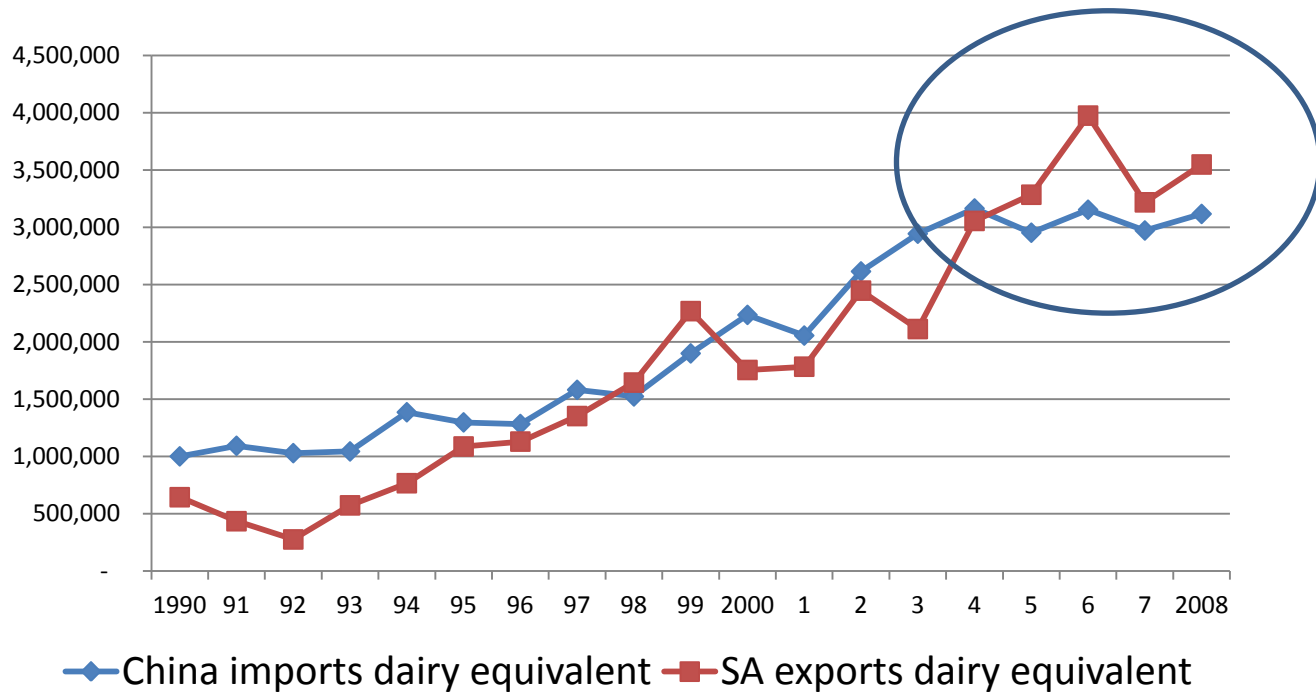
China: milk production and imports (tones)



China: milk production, herd, and yield



China dairy imports vs. S.A. Dairy exports (tones)

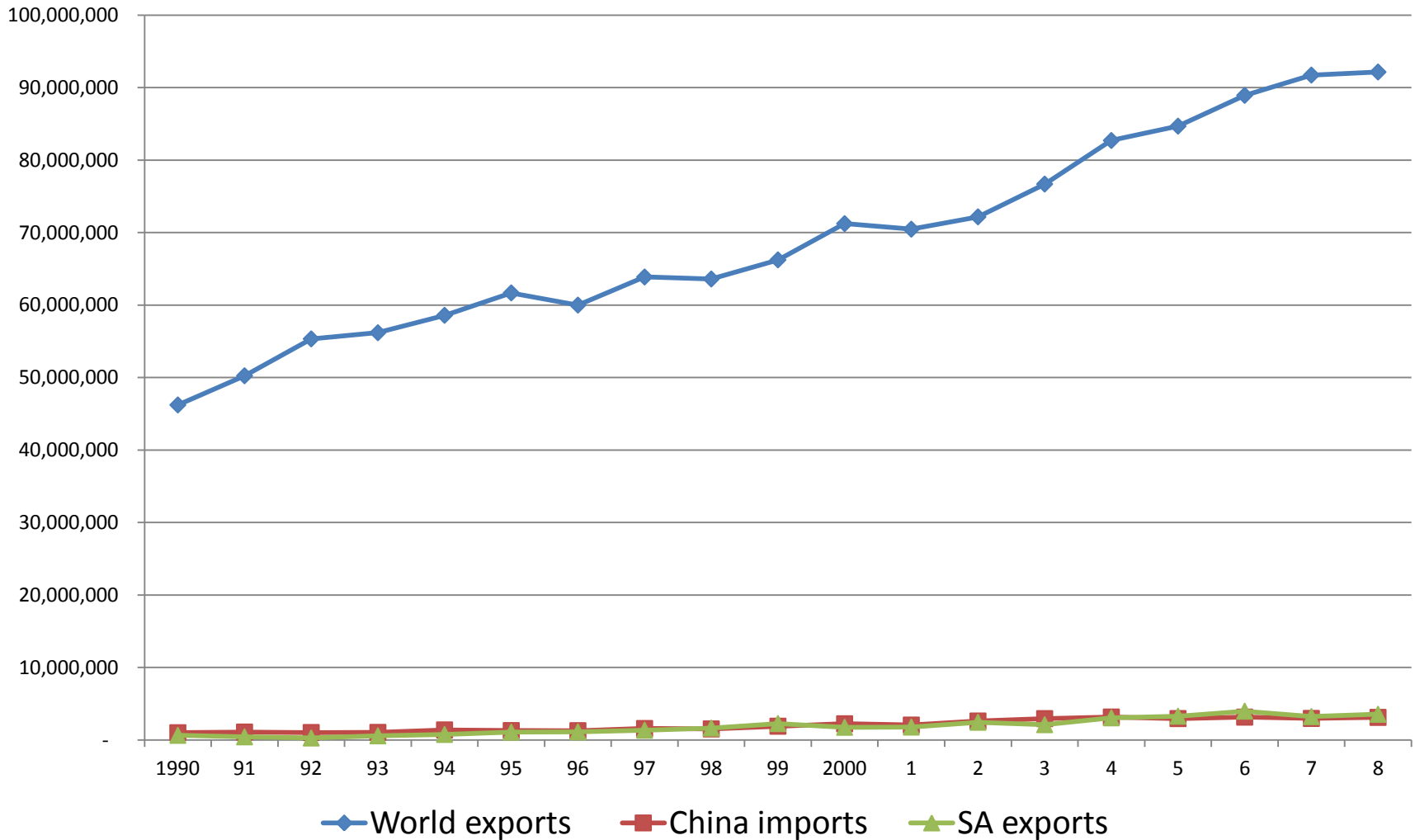


(000 METRIC TONES) 2006 2007 2008 2009 (p) 2010

CHINA WMP CONSUMPTION	1,071	1,137	954	1,064	1,337
CHINA WMP IMPORTS	74	59	46	177	320

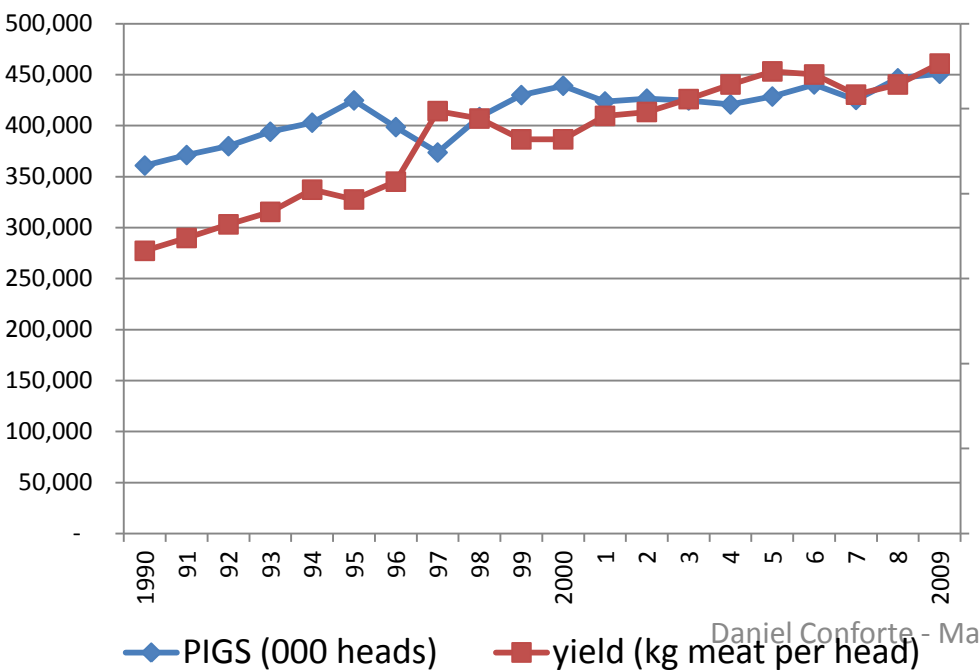
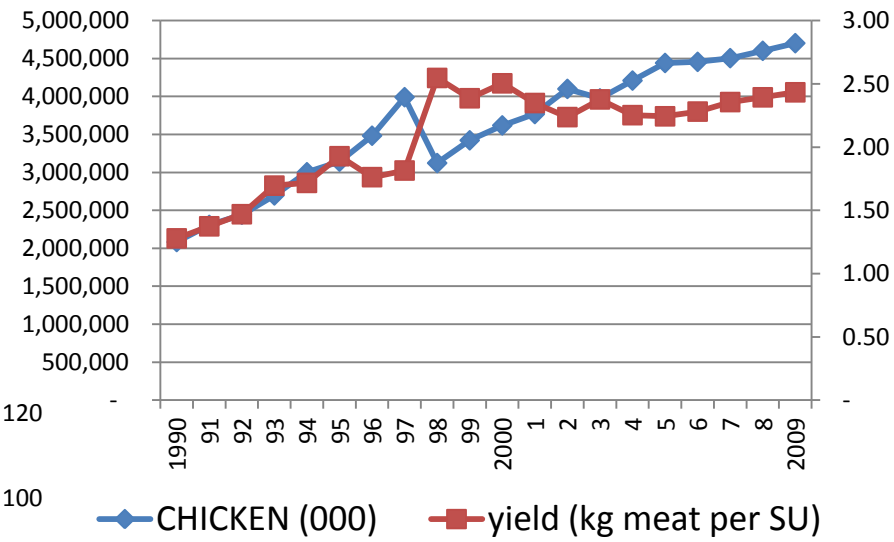
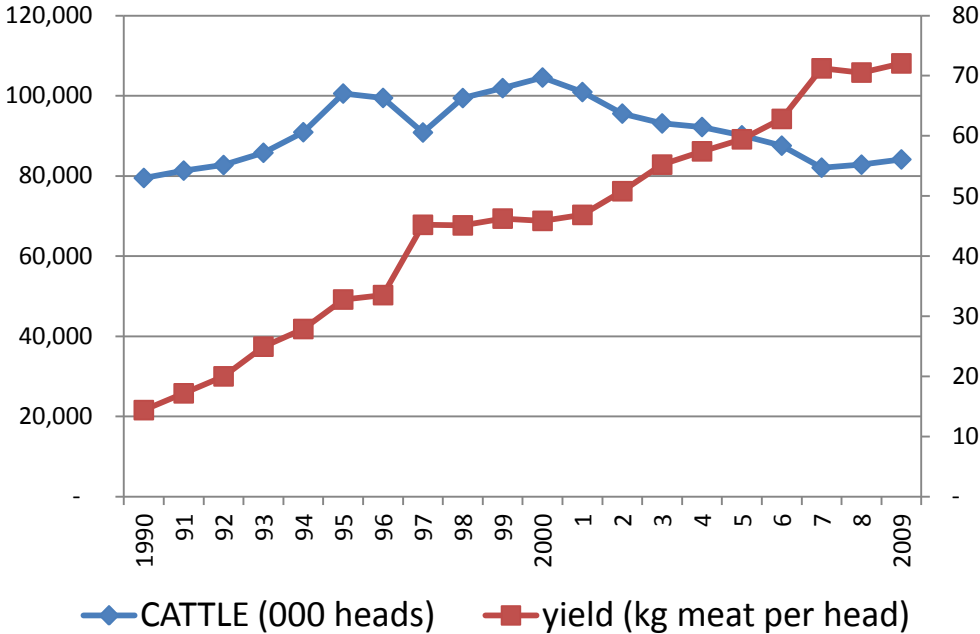
320,000 tons of WMP aprox. = to 3,200,000 tons of dairy equivalent

World dairy trade vs. China imports and S.A. exports (tonnes dairy equivalent)

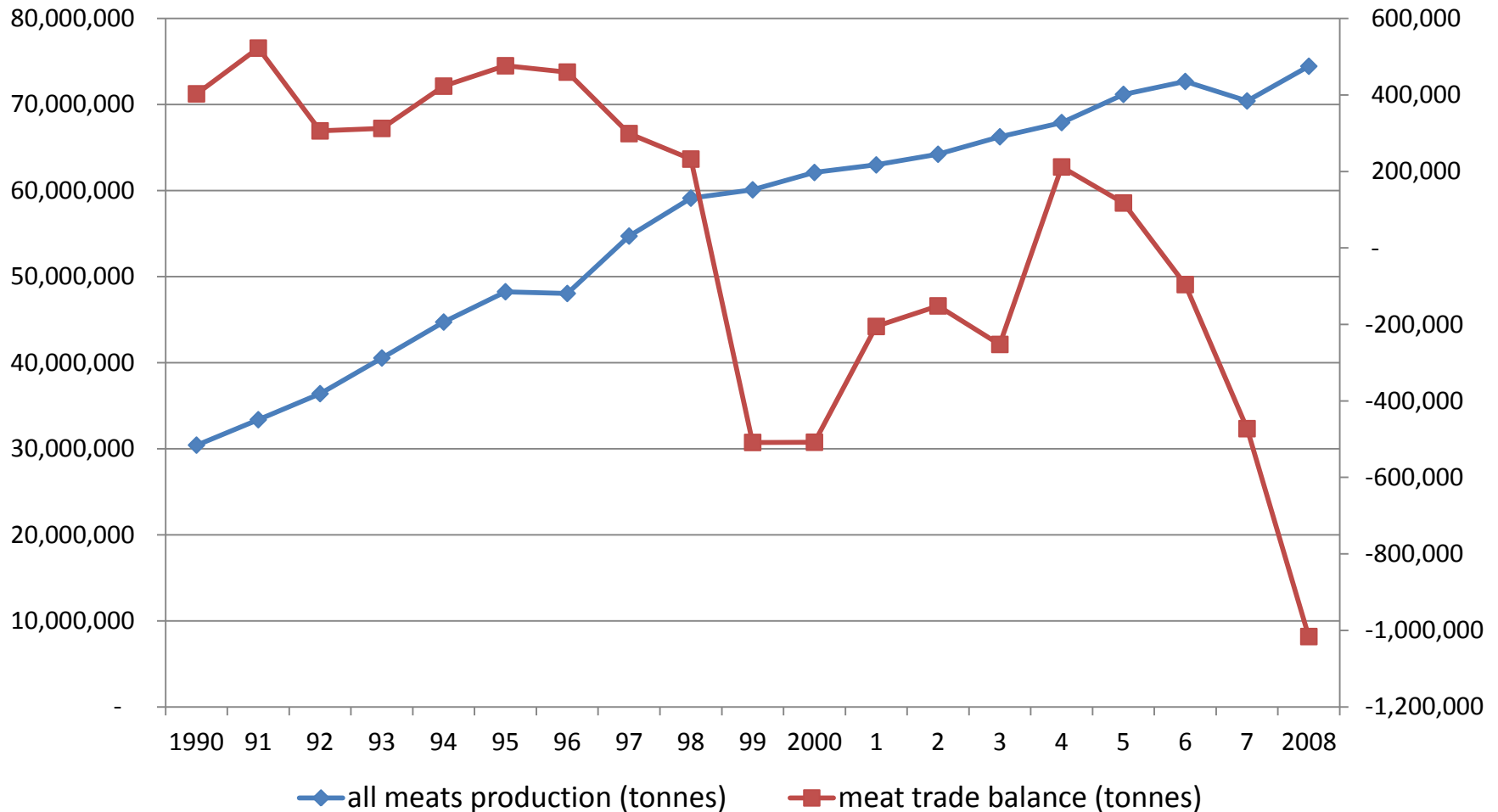


China meats

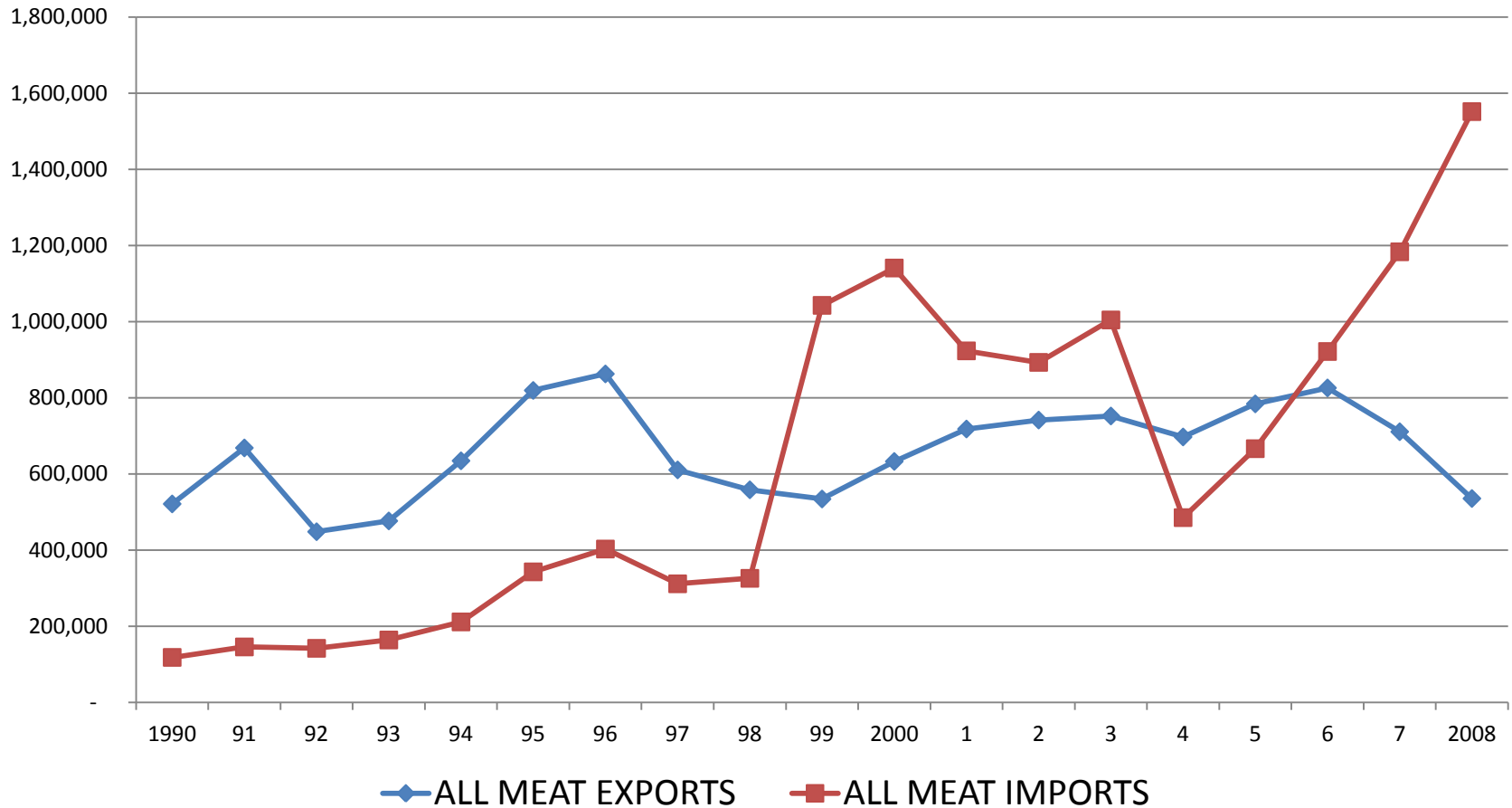
China: livestock number and yields



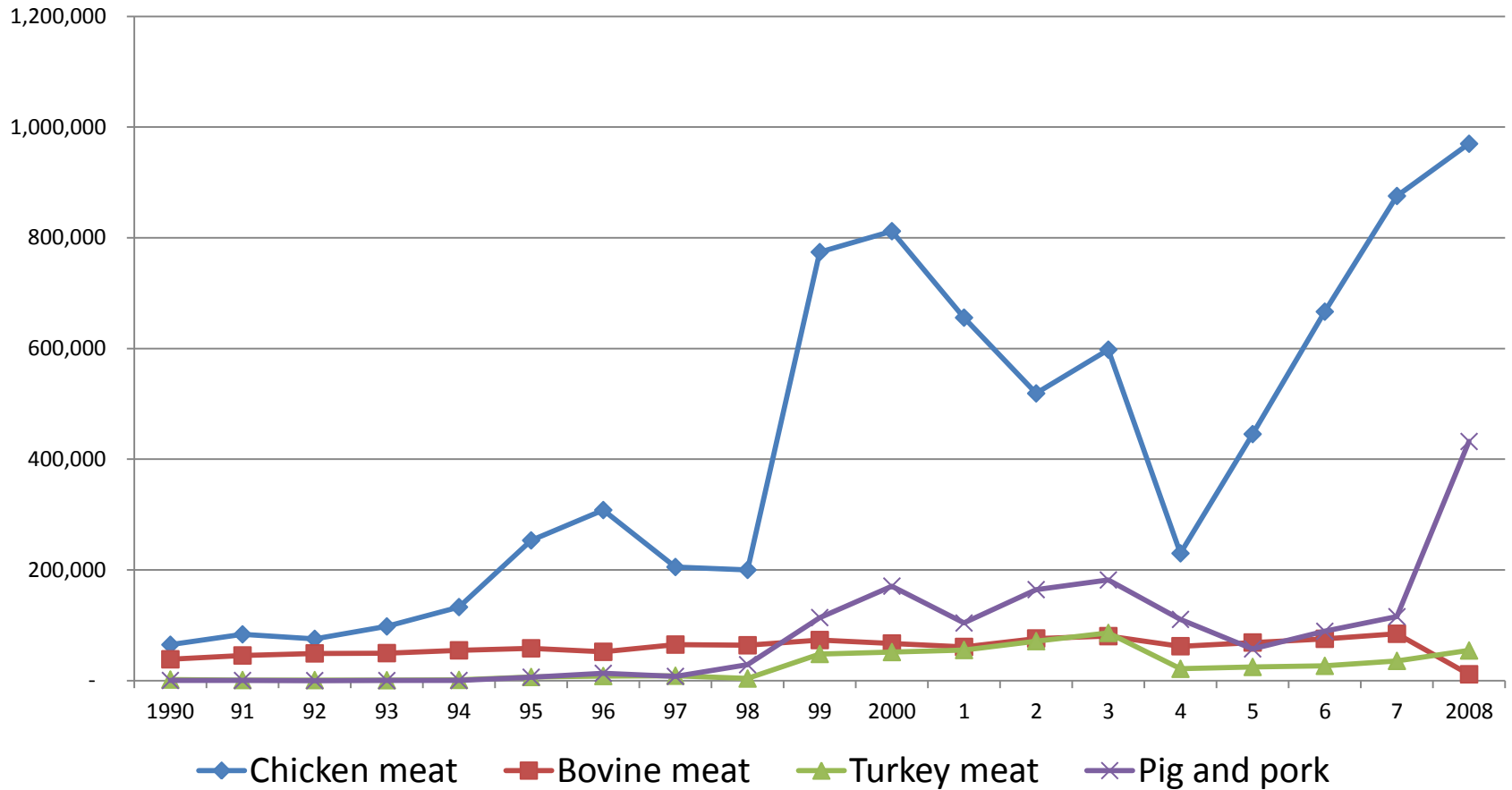
China: meat production and trade



China: meat exports and imports (tonnes)



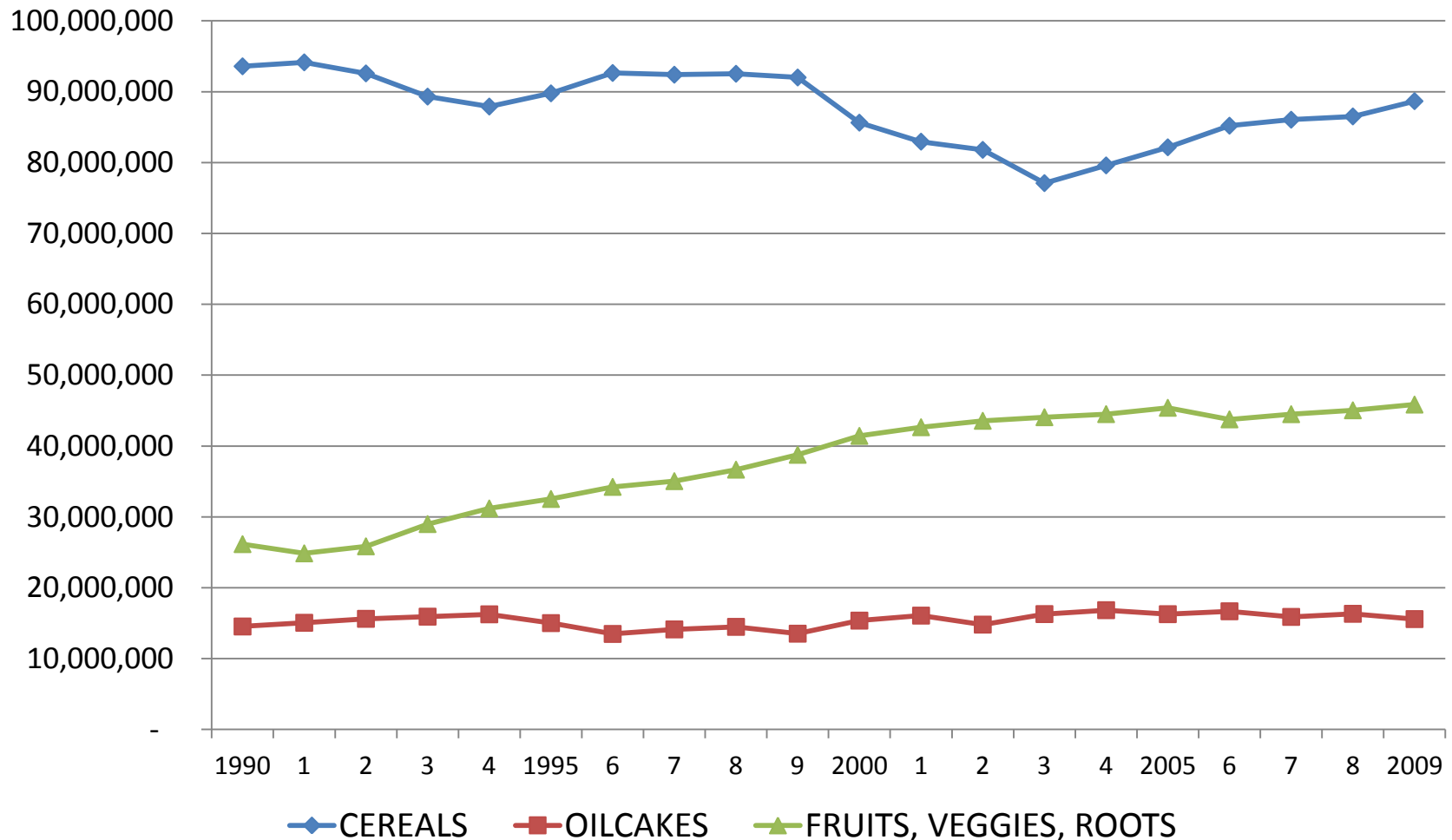
China: meat imports (tons)



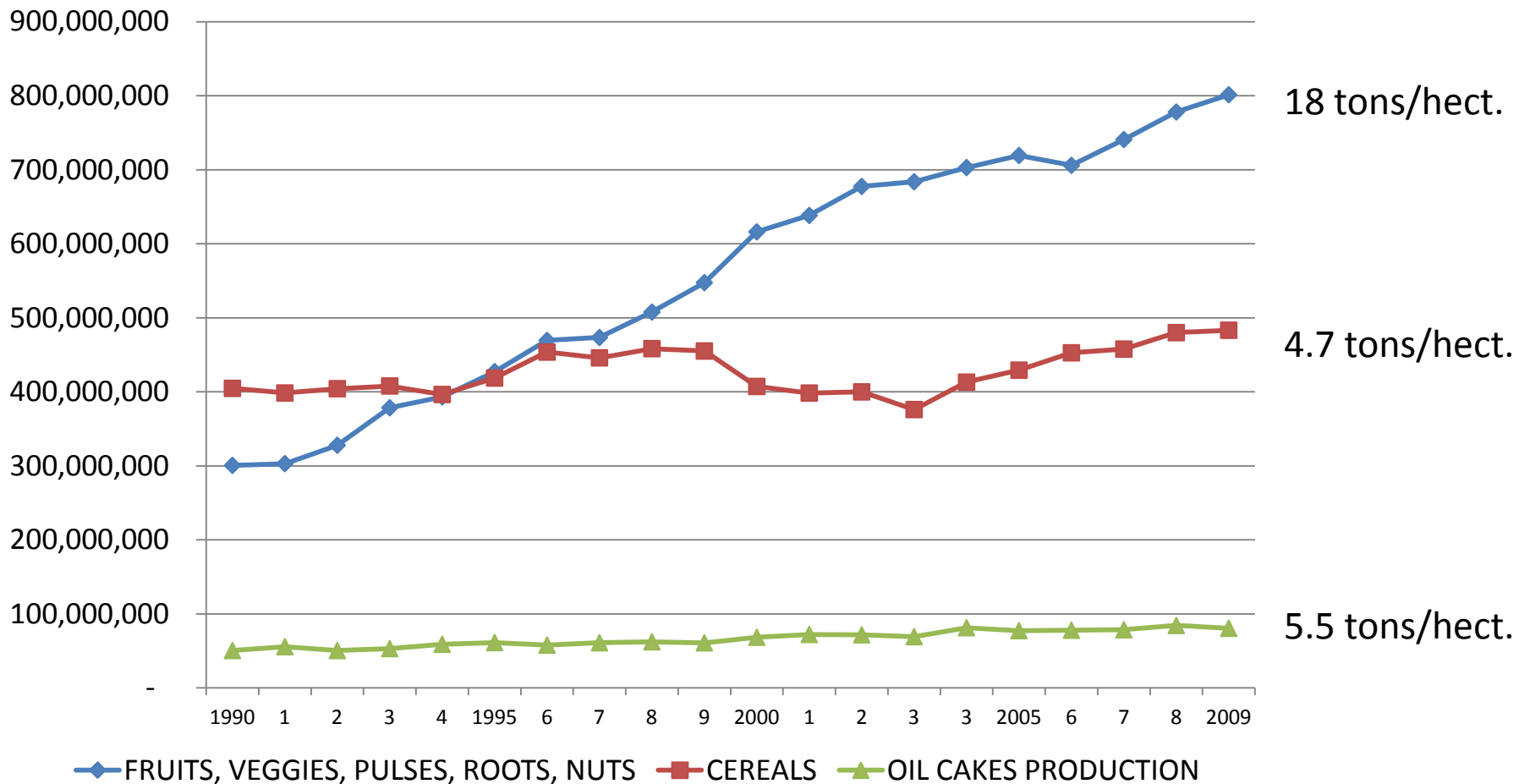
- How China fed itself
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China feed stuffs

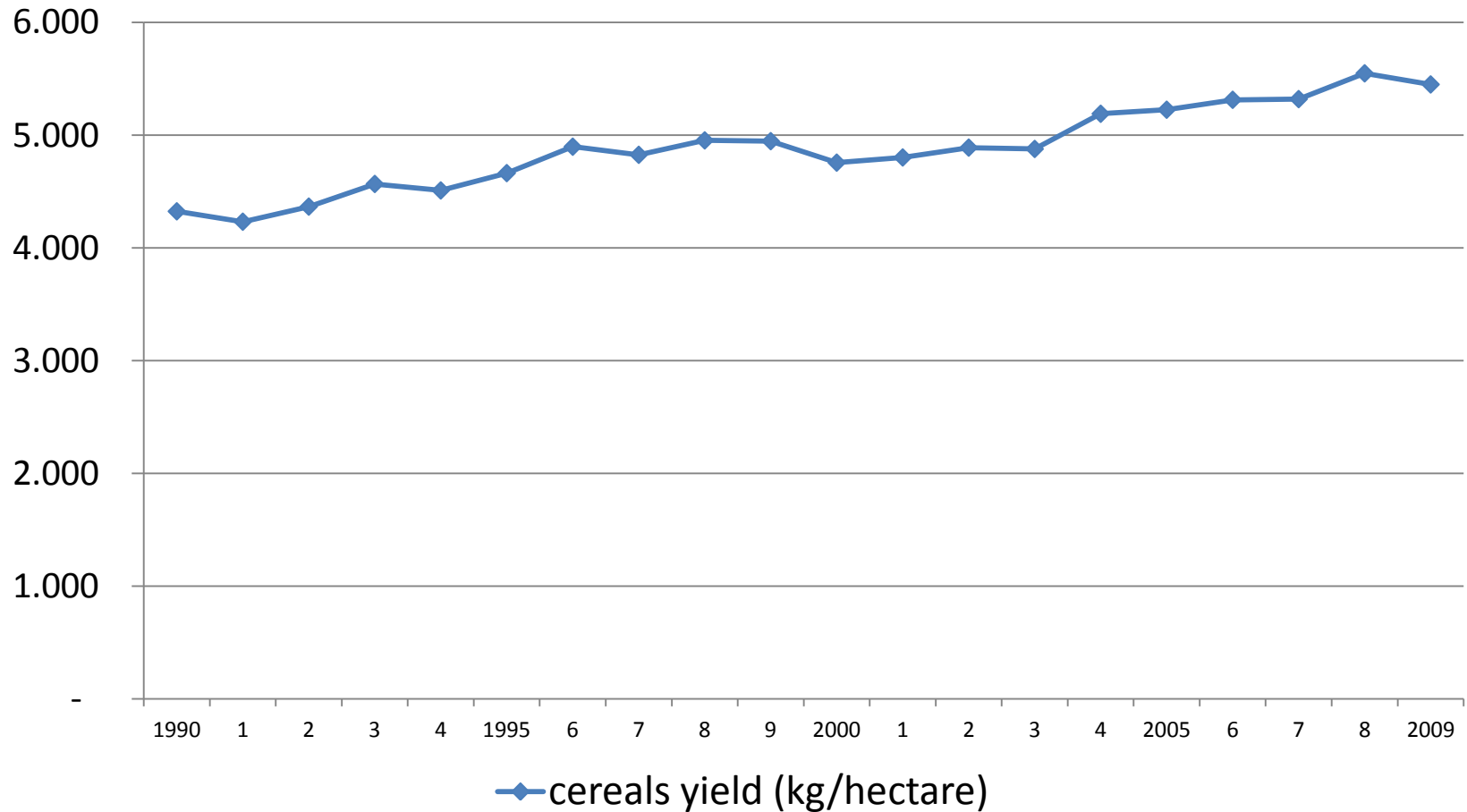
China: area of agriculture (hectares)



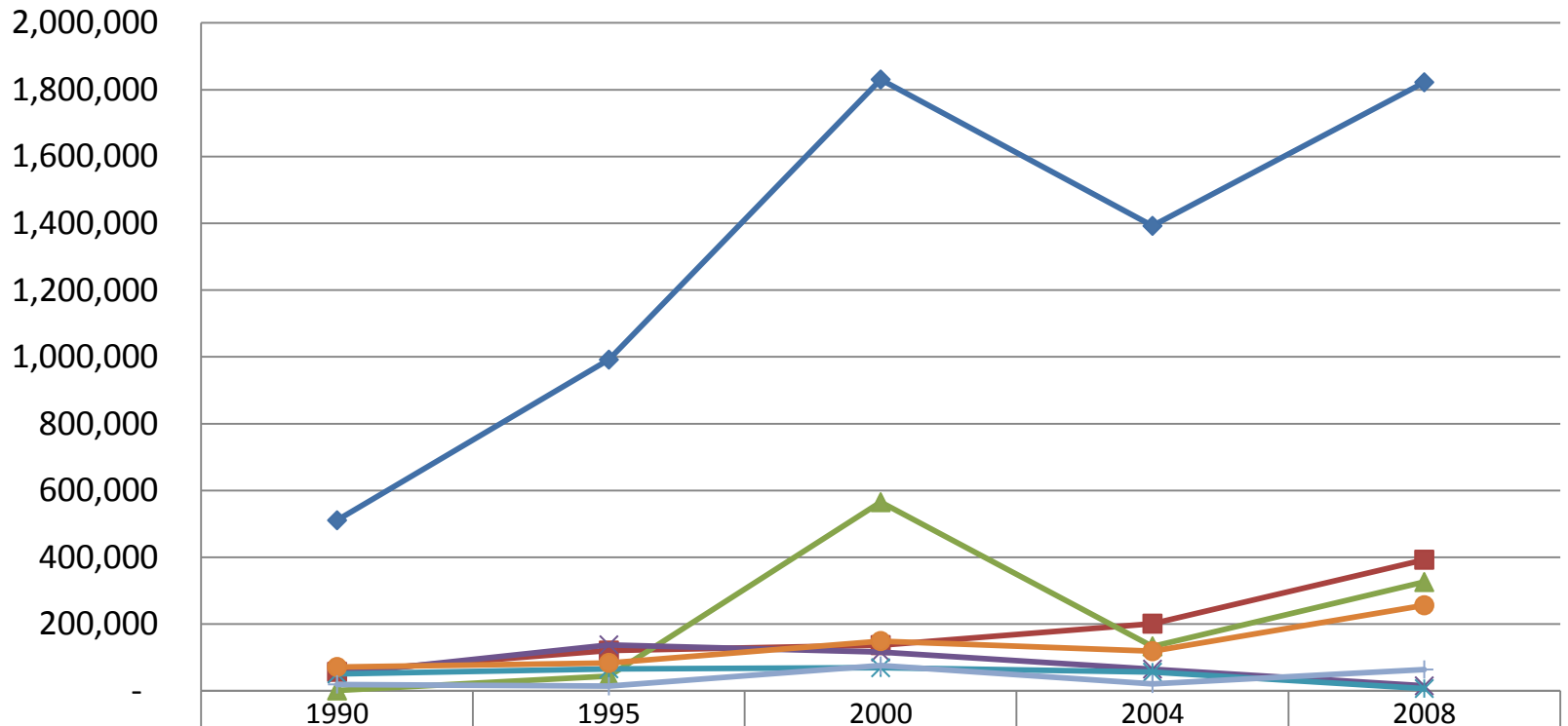
China: production of cereals and oilcakes



China: average cereals yield

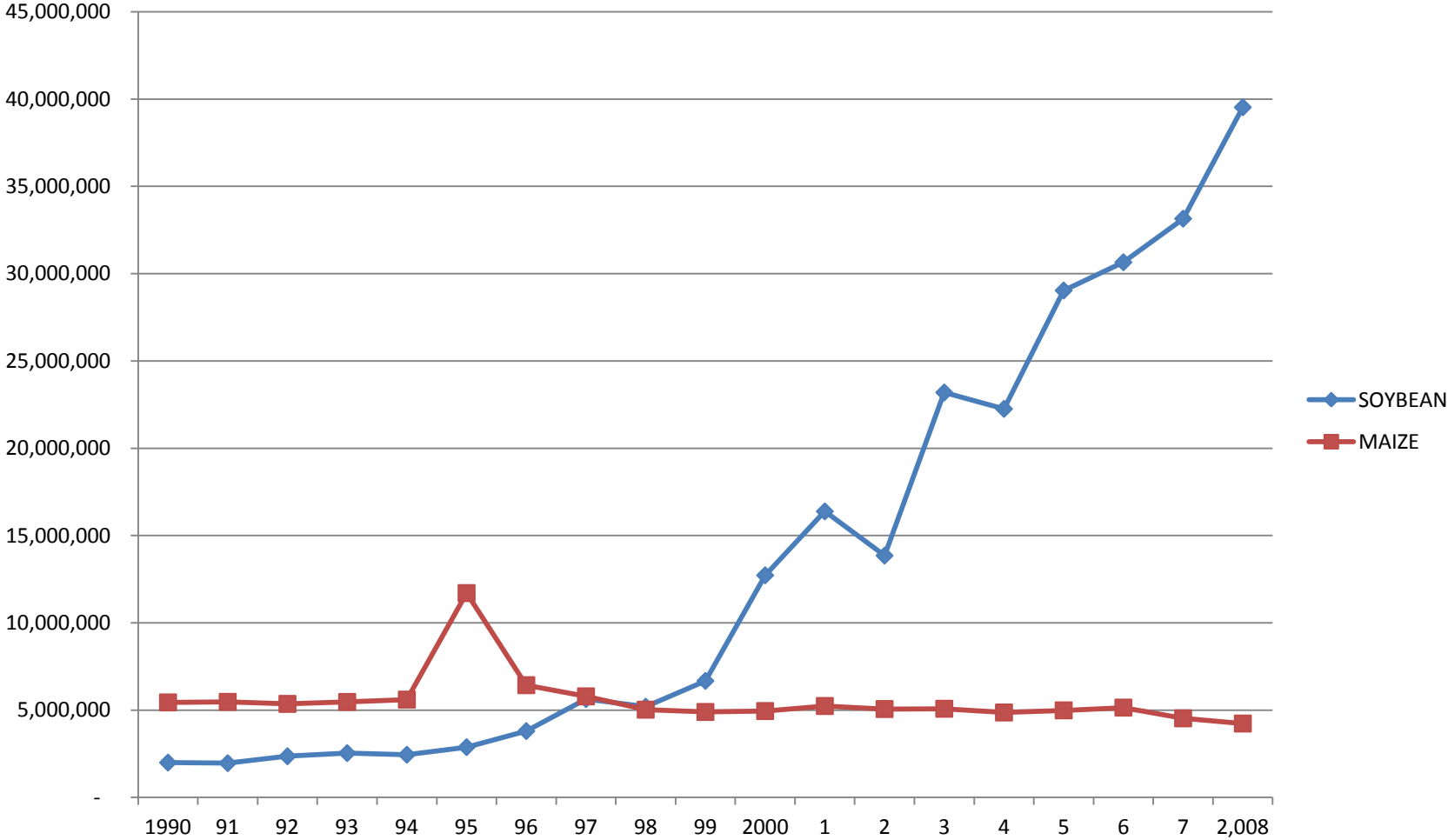


China: imports of feed stuffs (tons.)

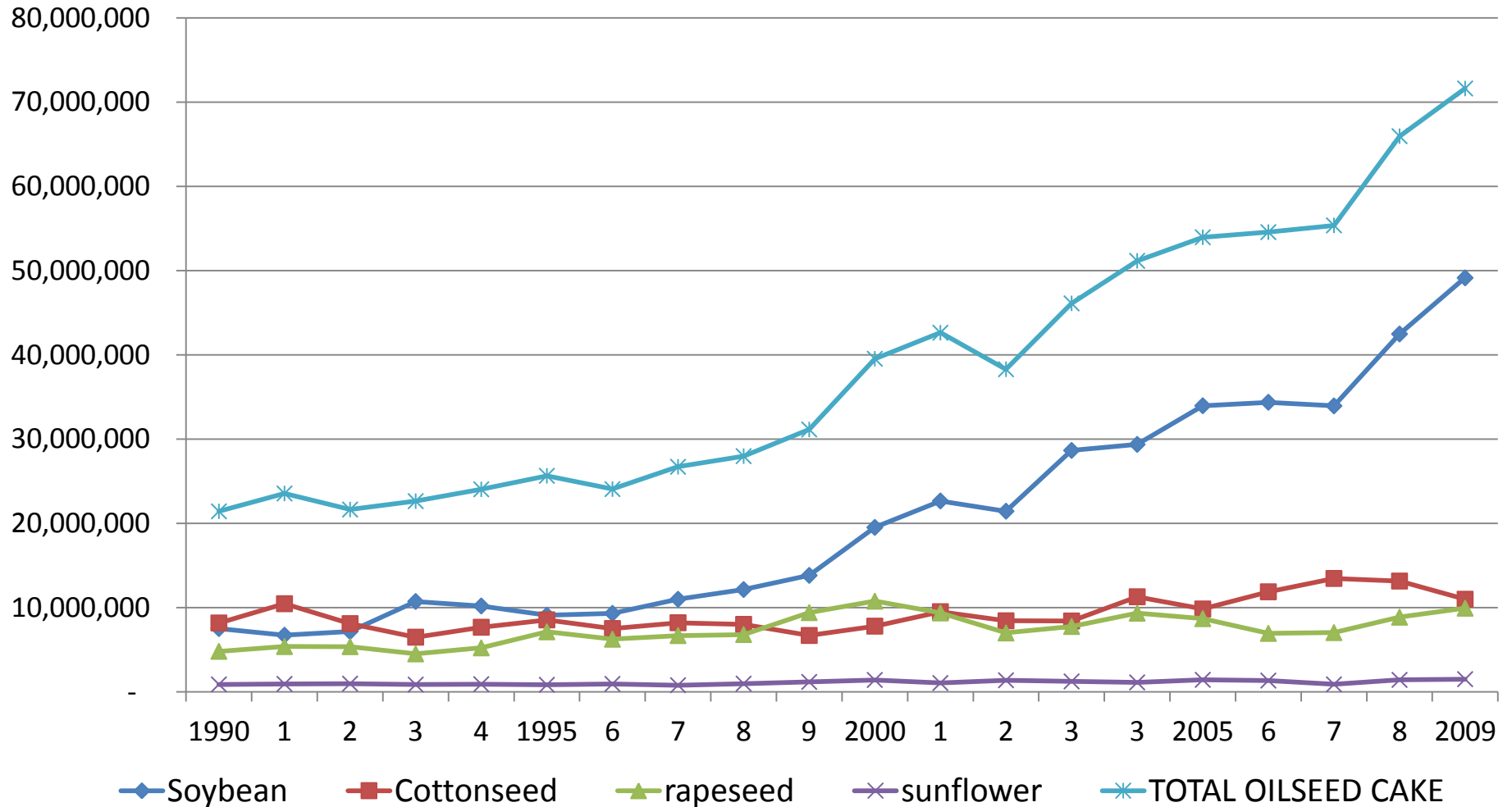


	1990	1995	2000	2004	2008
◆ All feed stuffs	510,744	991,743	1,830,611	1,392,268	1,822,333
■ Cake of Rapeseed	56,920	120,616	136,946	201,181	392,730
▲ Cake of Soybeans	1,244	43,930	565,016	133,339	325,868
✕ Alfalfa Meal and Pellets	50,792	137,921	116,150	65,106	15,113
✱ Bran of Maize	50,811	65,788	69,138	55,957	6,898
● Food Wastes	71,419	83,721	149,187	118,737	256,317
+ Meal Meat	19,430	13,849	75,599	21,080	63,932

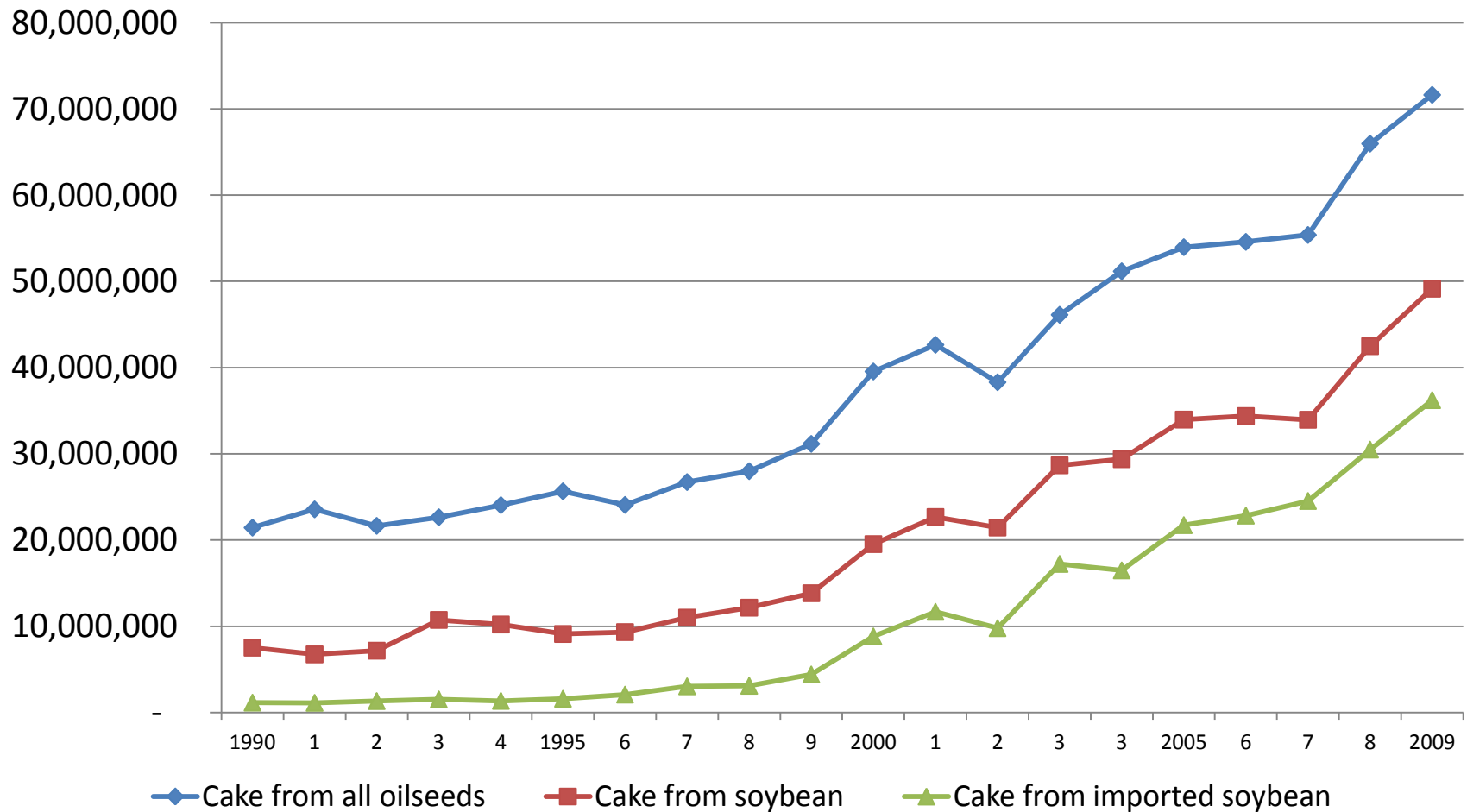
China: imports of soybean and maize (tonnes)



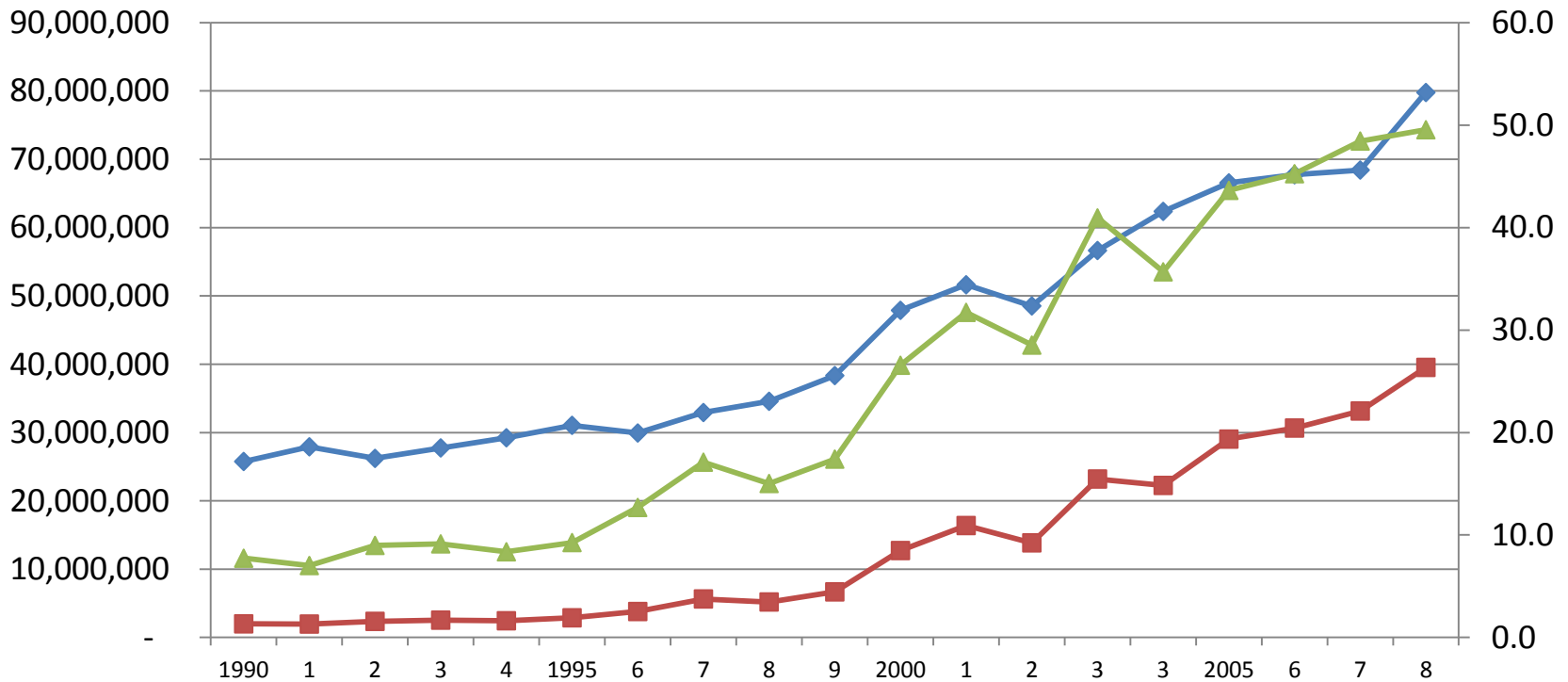
China: oilseeds cake domestic production (tonnes)



China: share of cakes from imported soybean vs. all oilseed cakes (000 tons)

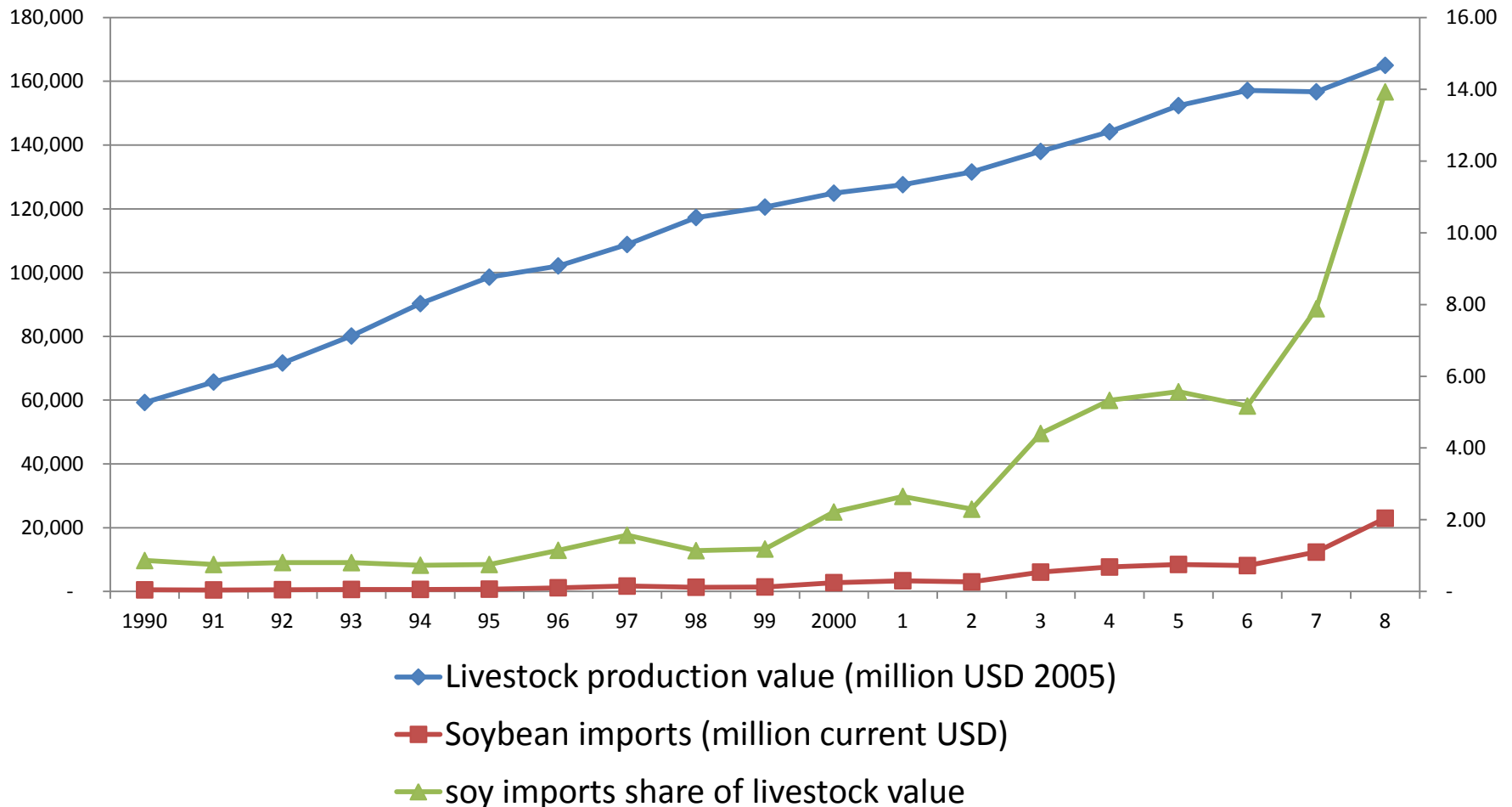


China: soybean imports (tons.) share of total oilseeds supply (%)

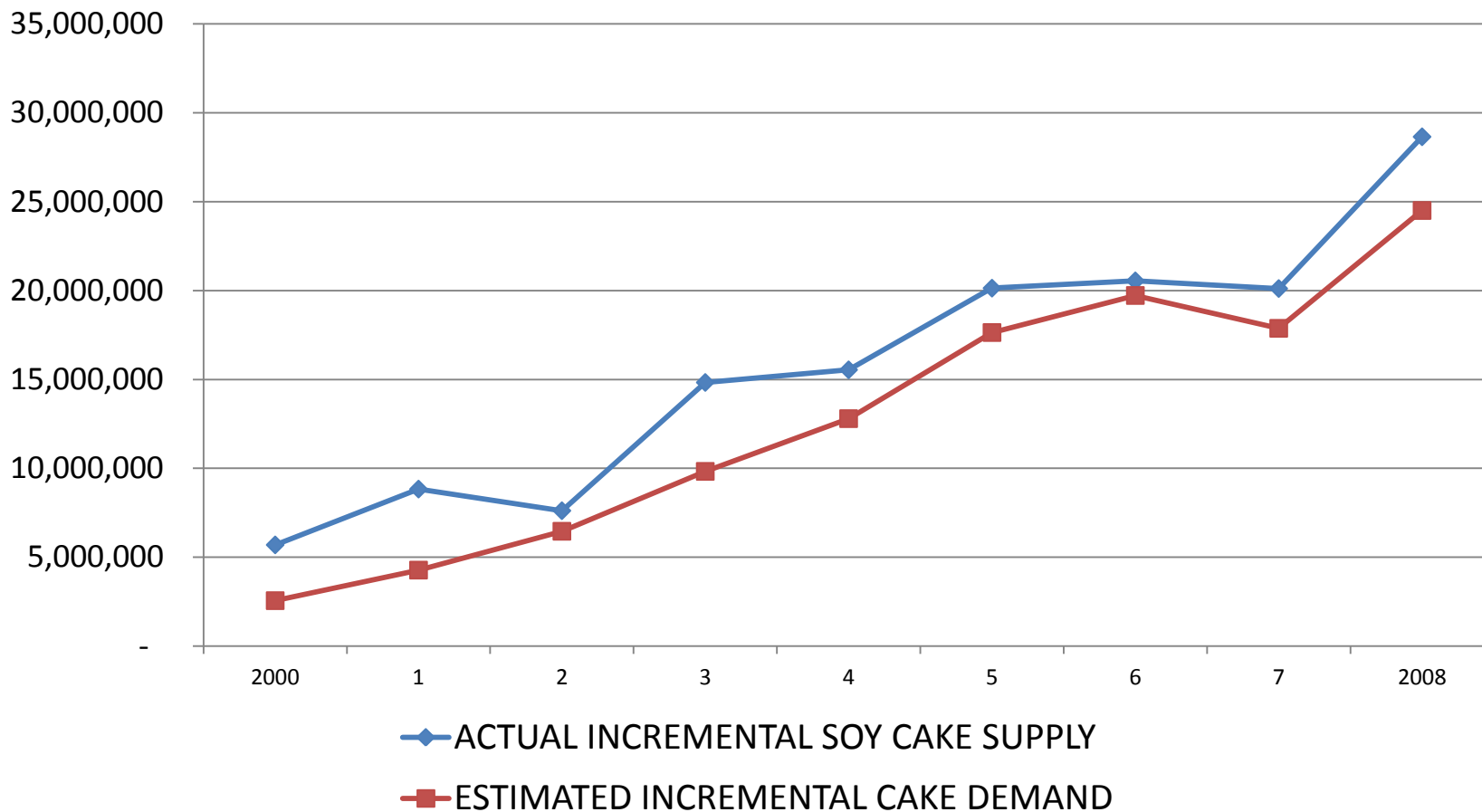


◆ TOTAL PROCESSED OILSEEDS ■ IMPORTS OF SOYBEAN ▲ IMPORTS SHARE OF PROCESSED

China: soybean imports share of livestock production value



Actual soy cake supply vs. modeled demand of cake derived from livestock output growth

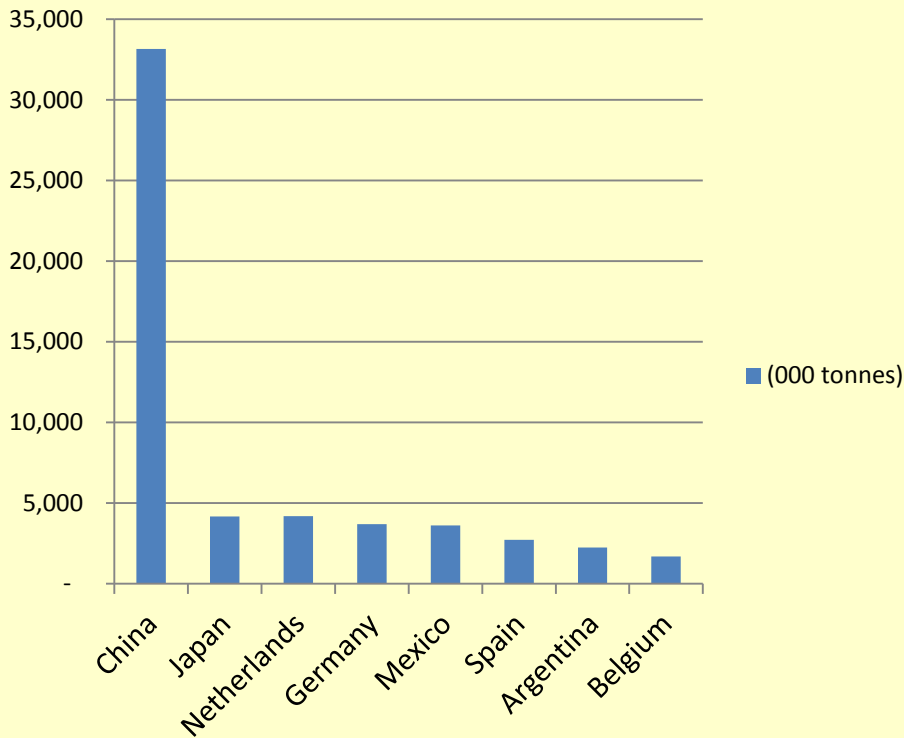


ASSUMPTIONS: PIGS: 4 kg feed per kilo gain, 30% cake; MILK 20 litres per day, 17 kg feed, 8kg concentrate, 50% cake on concentrate= 200 grams per litre; POULTRY: 2 kg feed per kg meat, 40% cake = 800 grs per kg; EGGS: 3kg feed per kg eggs,40% cake, 1,2 kg per kg eggs

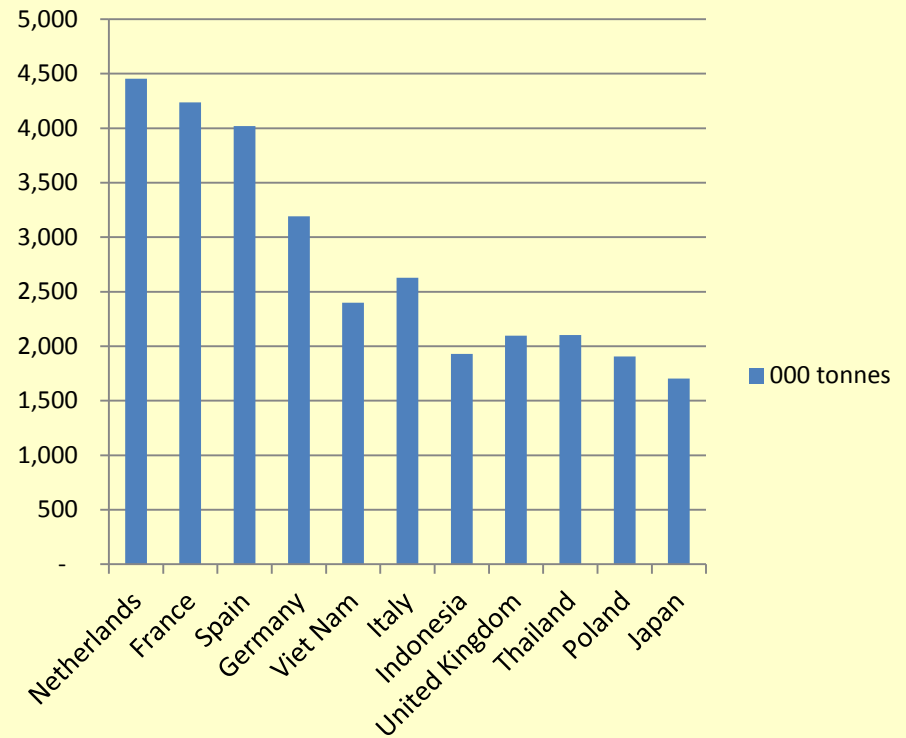
China imports of soybean

Importers of soybean and soycake

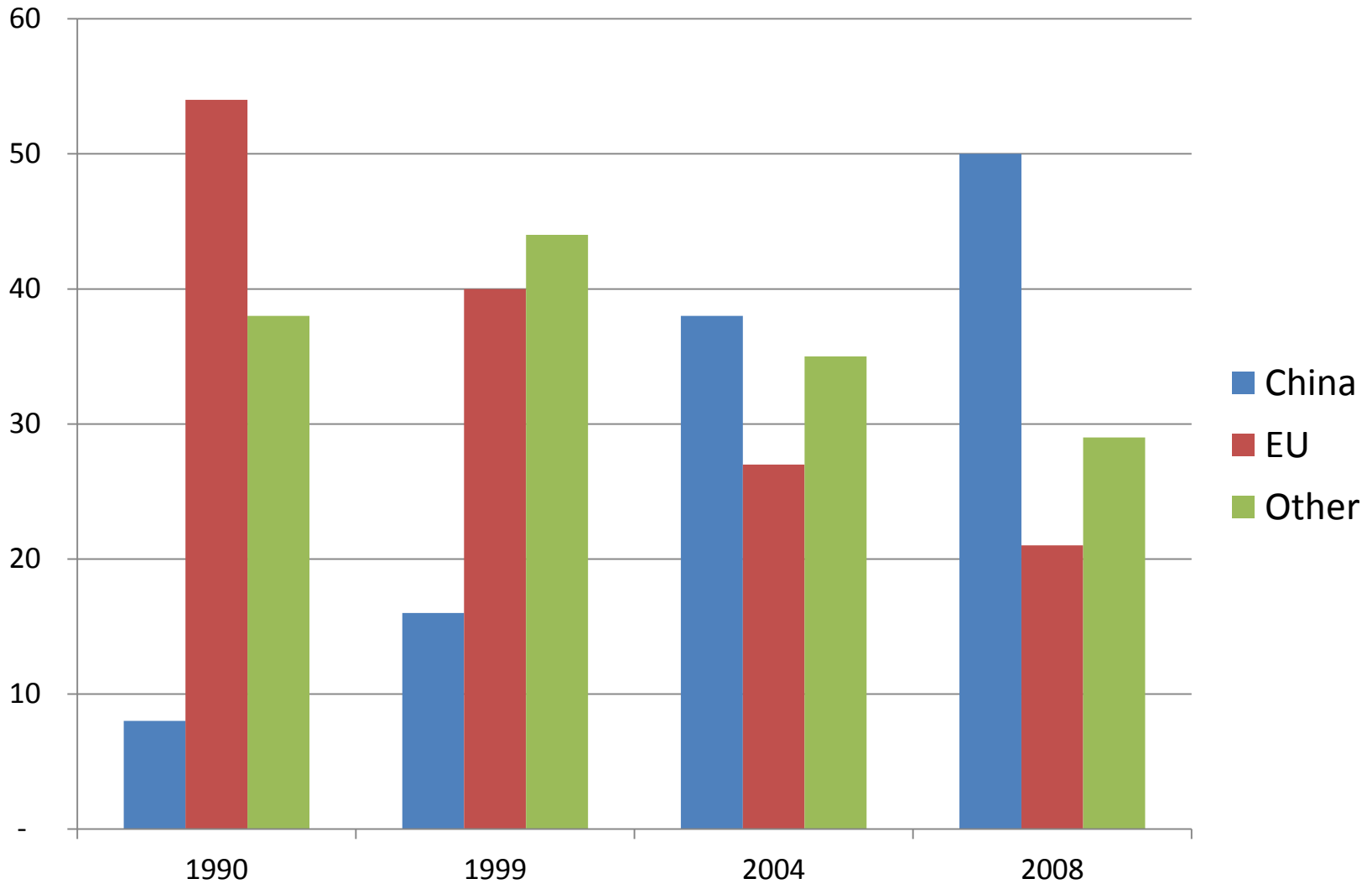
Major soybean importers (2007)



Major soy meal importers (2007)



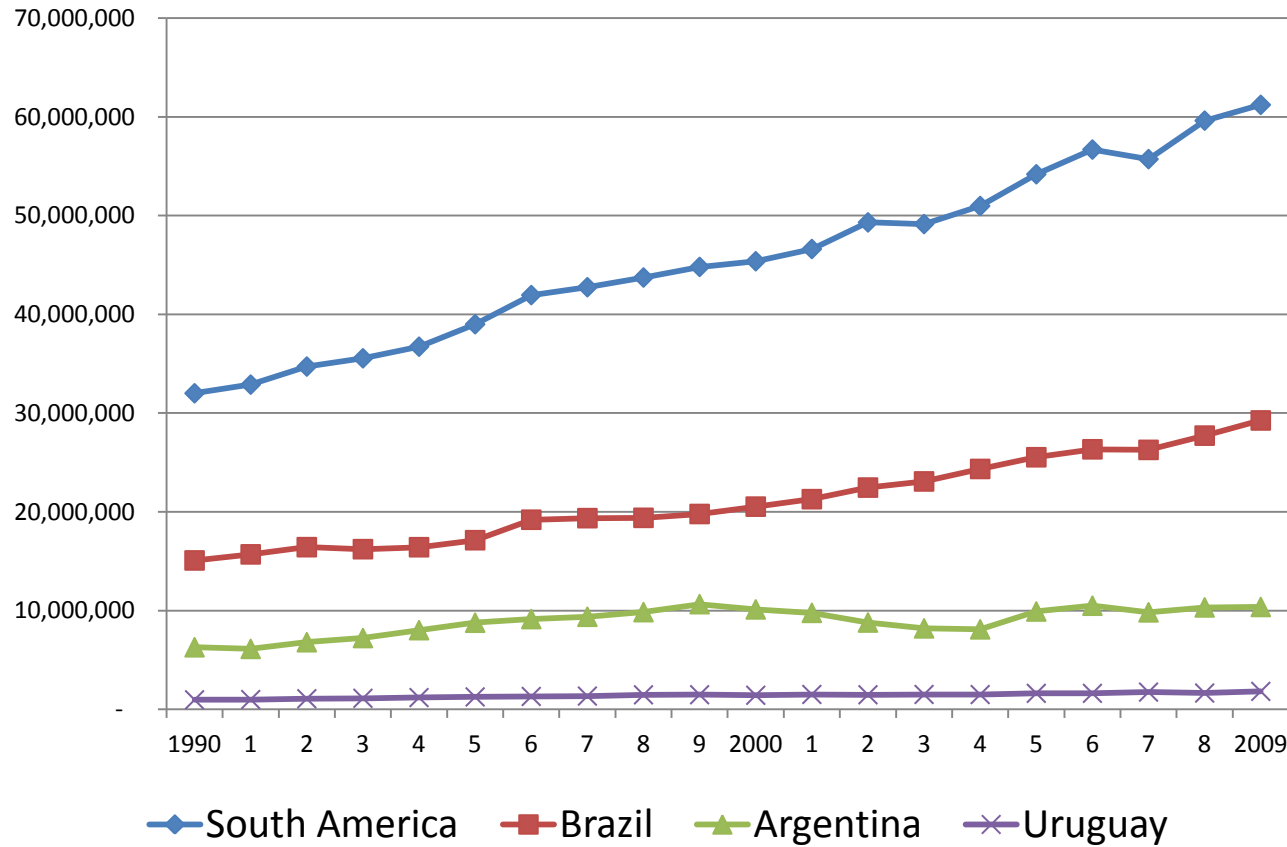
Share of soybean imports



- South America beef and dairy
 - Production and trade
 - Growth restrictions and potential
 - Competing for land versus crop farming

South America dairy

S.A. dairy production (tons)

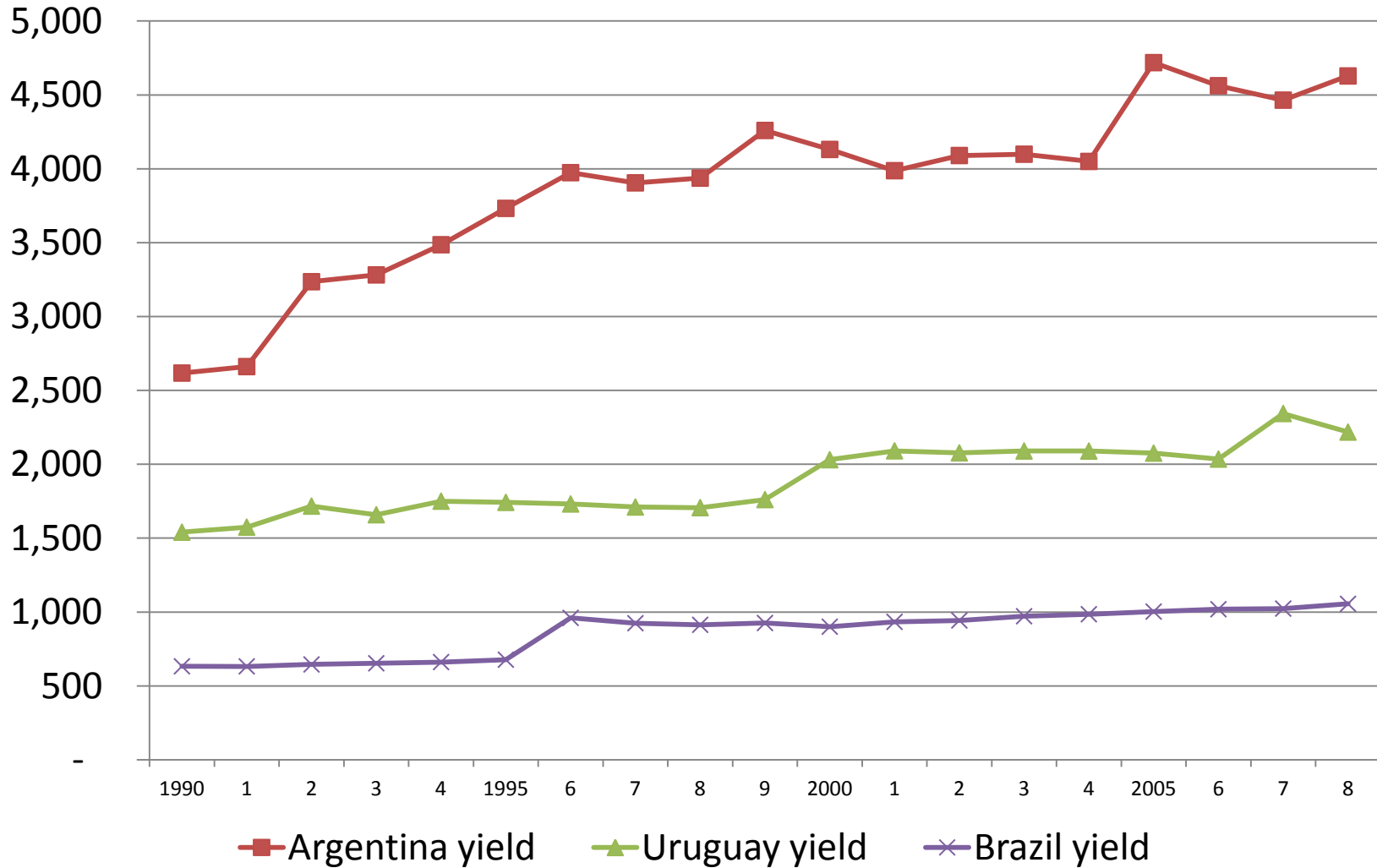


MILK PRODUCTION 000 tons

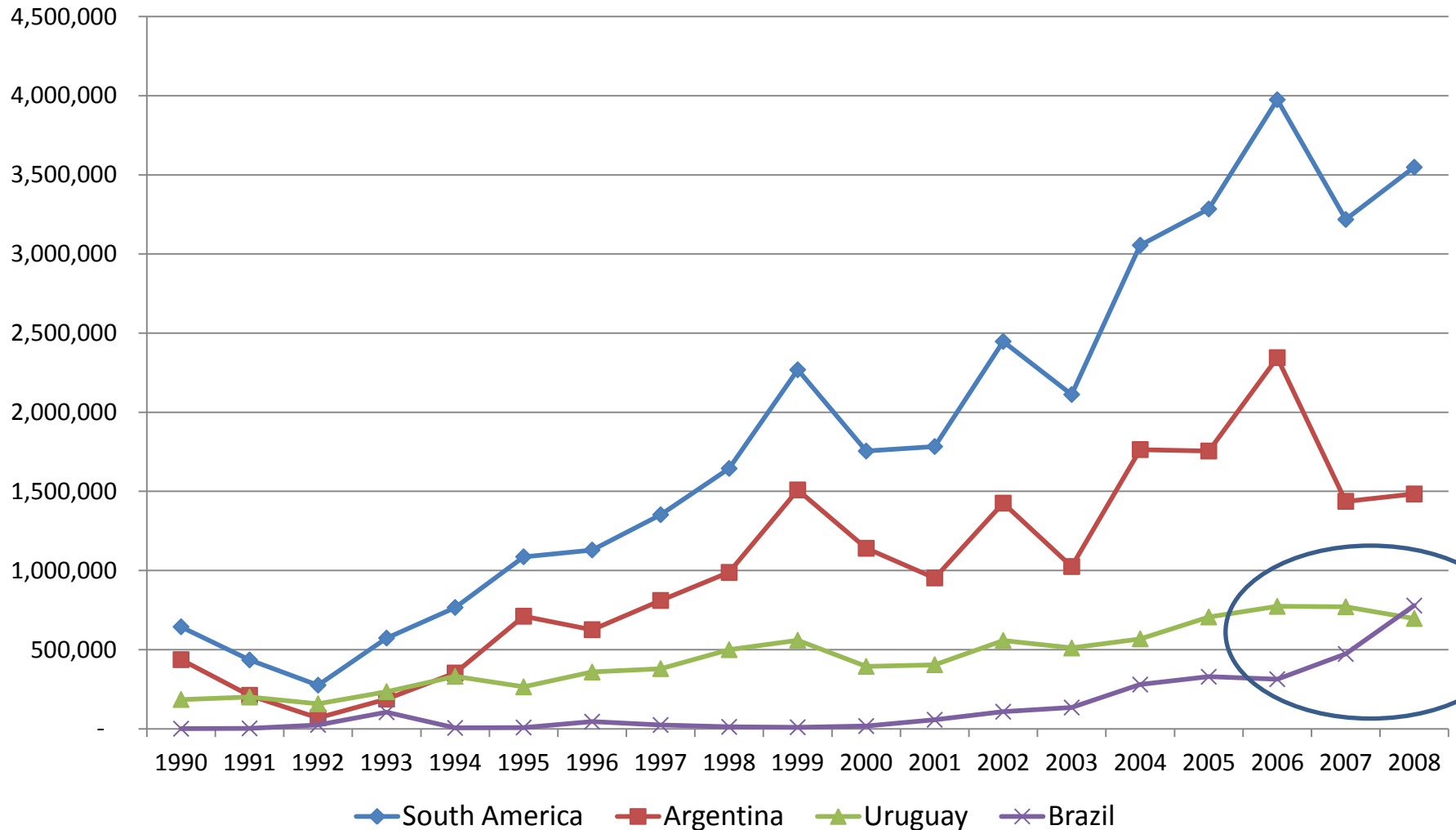
South America

	2006	2007	2008	2009	(p) 2010
Argentina	10,200	9,550	10,010	10,350	10,600
Brazil	25,230	26,750	27,820	28,795	29,948
Sub-total	35,430	36,300	37,830	39,145	40,548
China	13,809	14,820	14,581	11,791	12,010 ₁

Milk yields (kg. per cow)

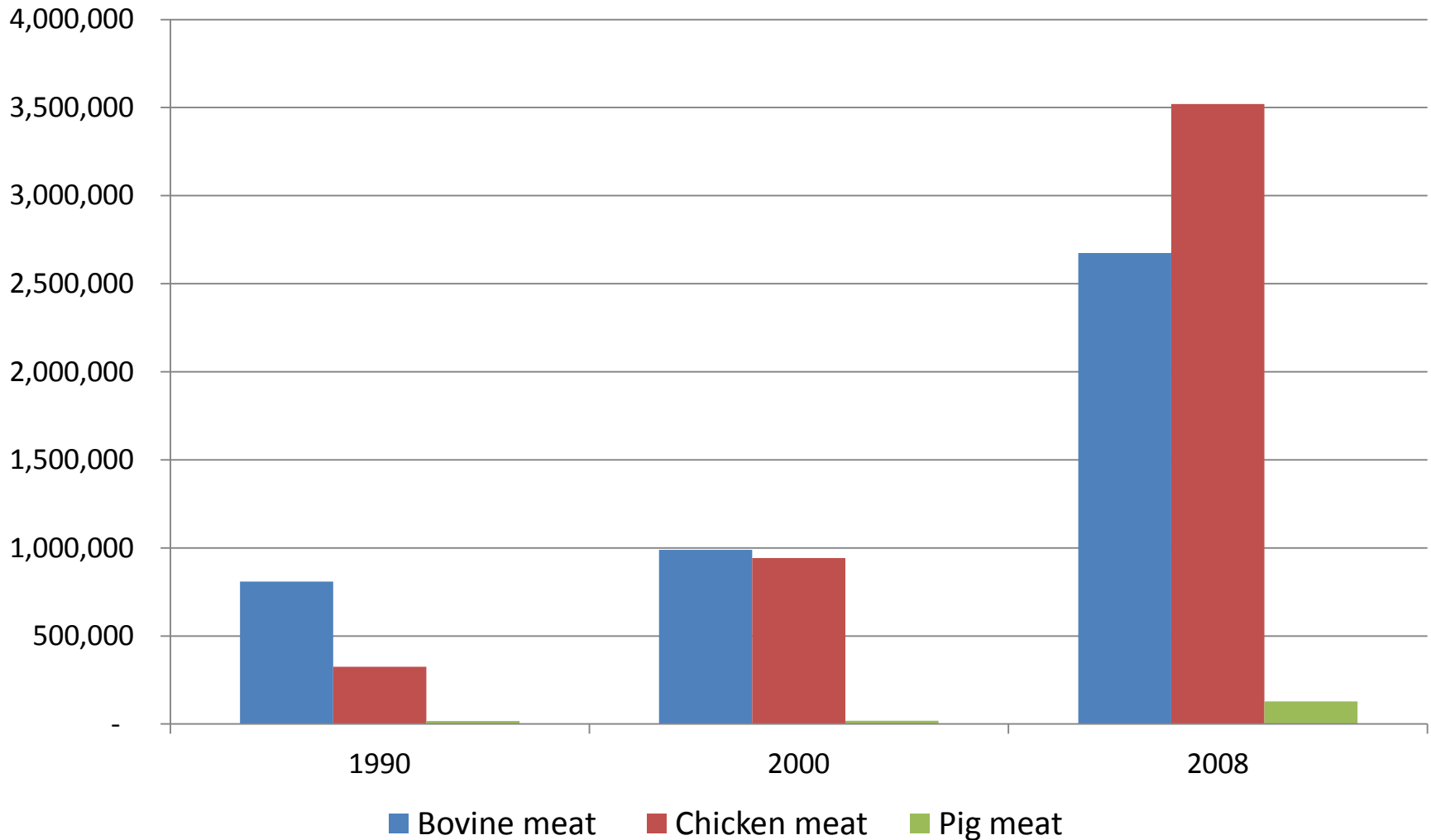


S.A. dairy exports (tonnes)

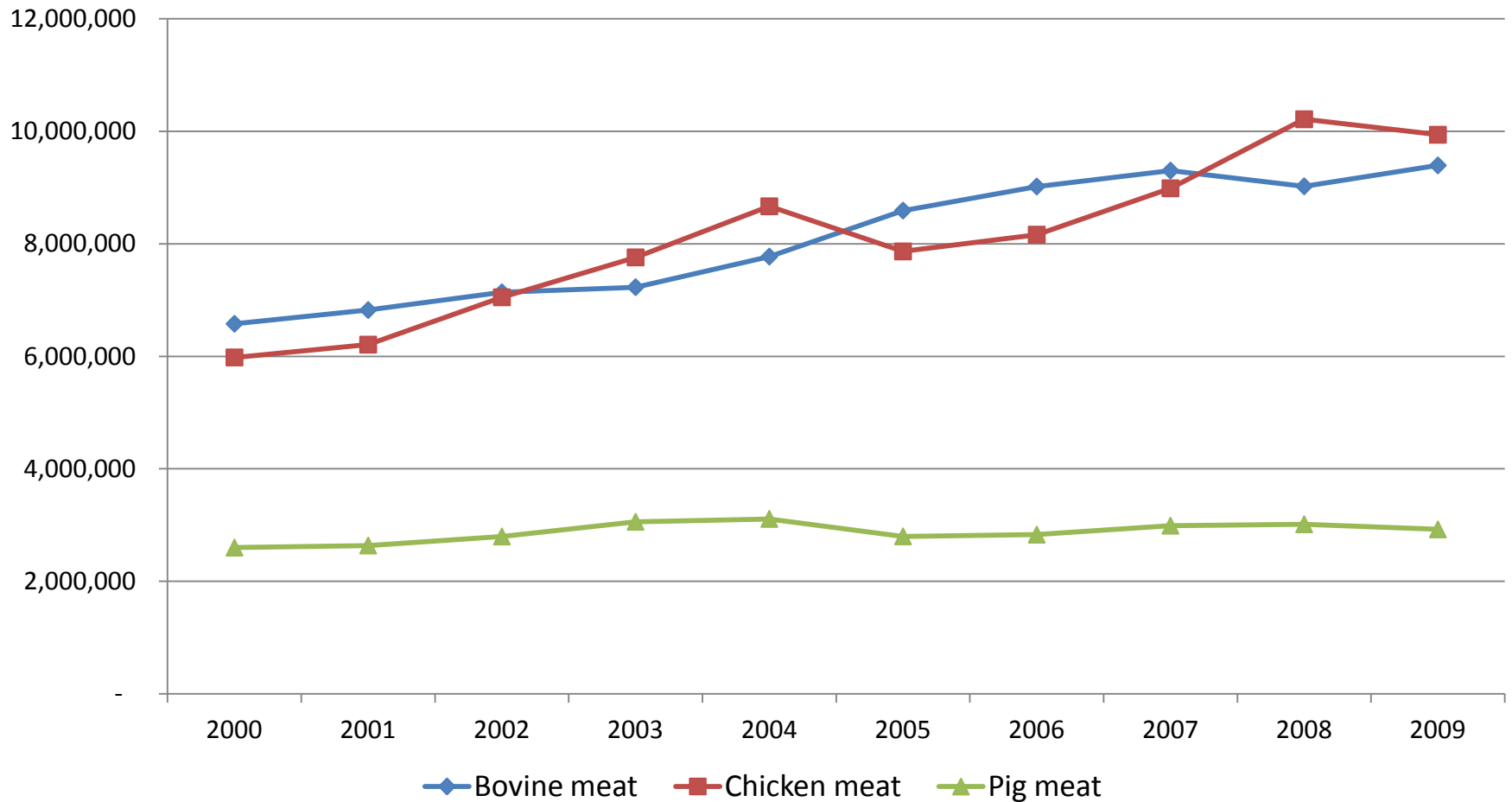


South America meat

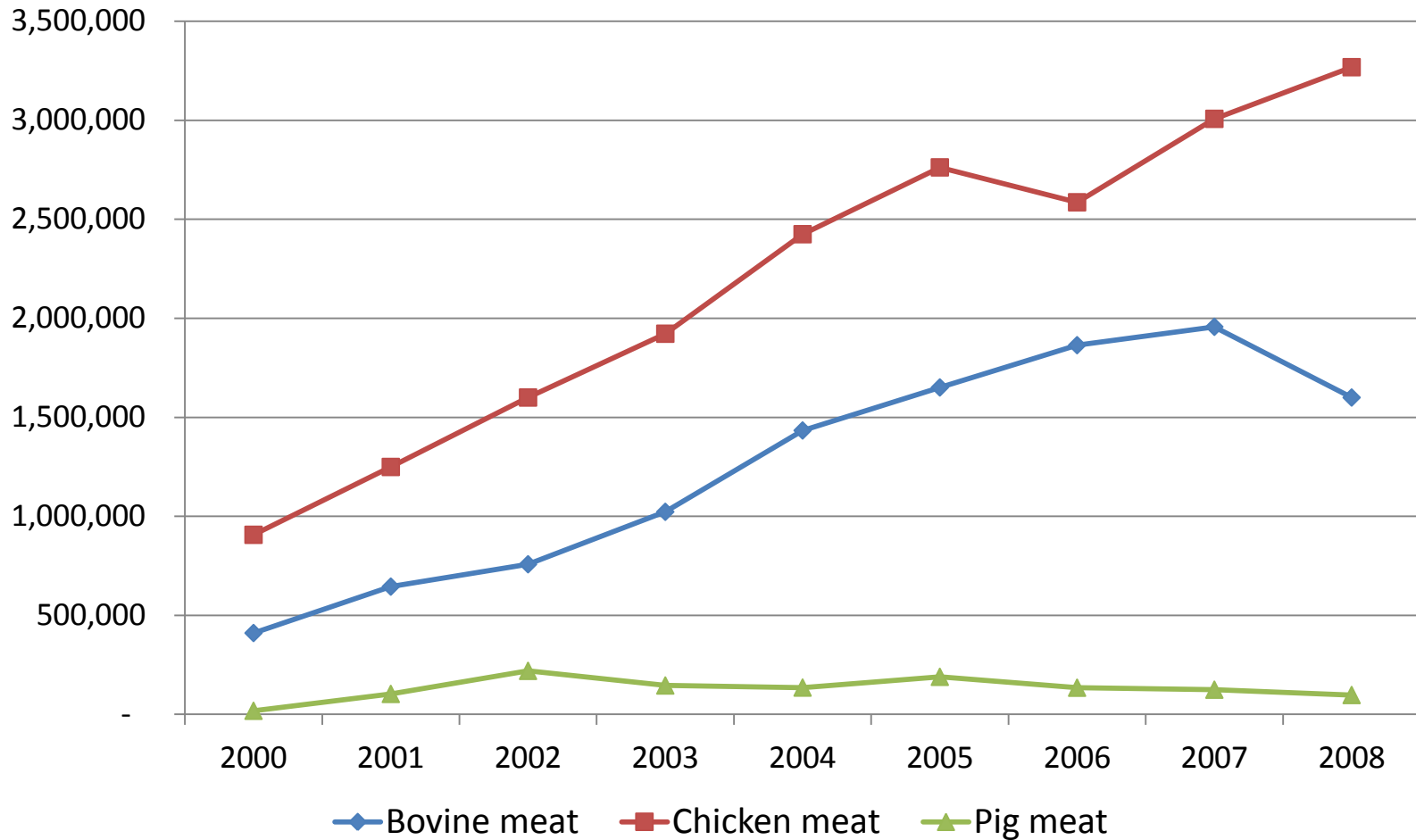
South America meat exports (tons)



Brazil meat production (tons)



Brazil meat exports (tons)



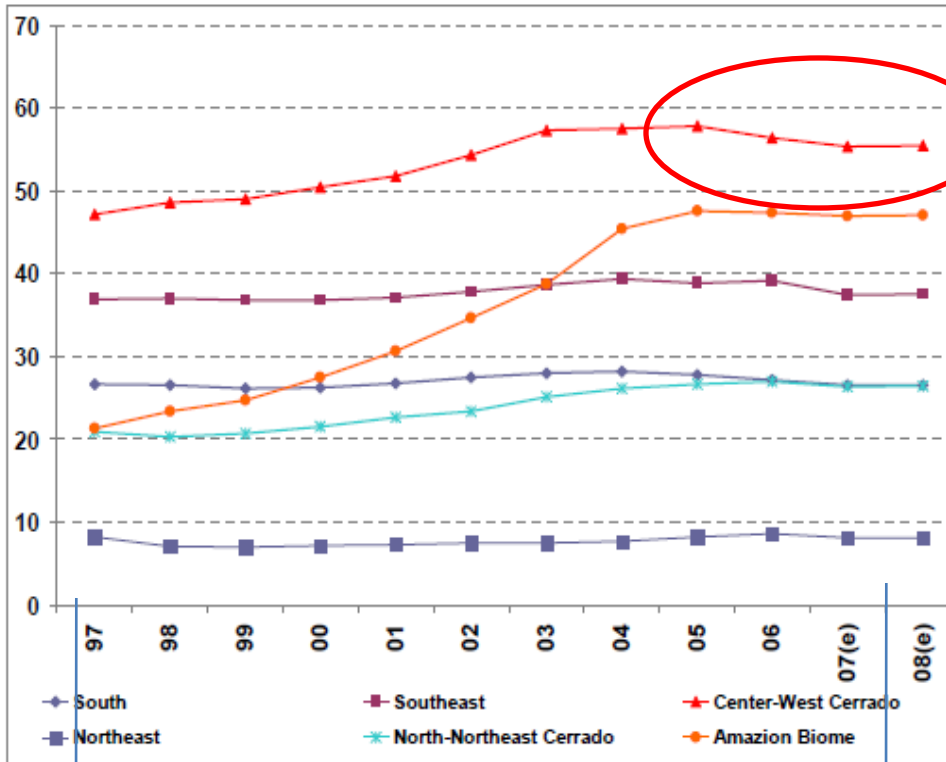
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Feed, pastures and grains

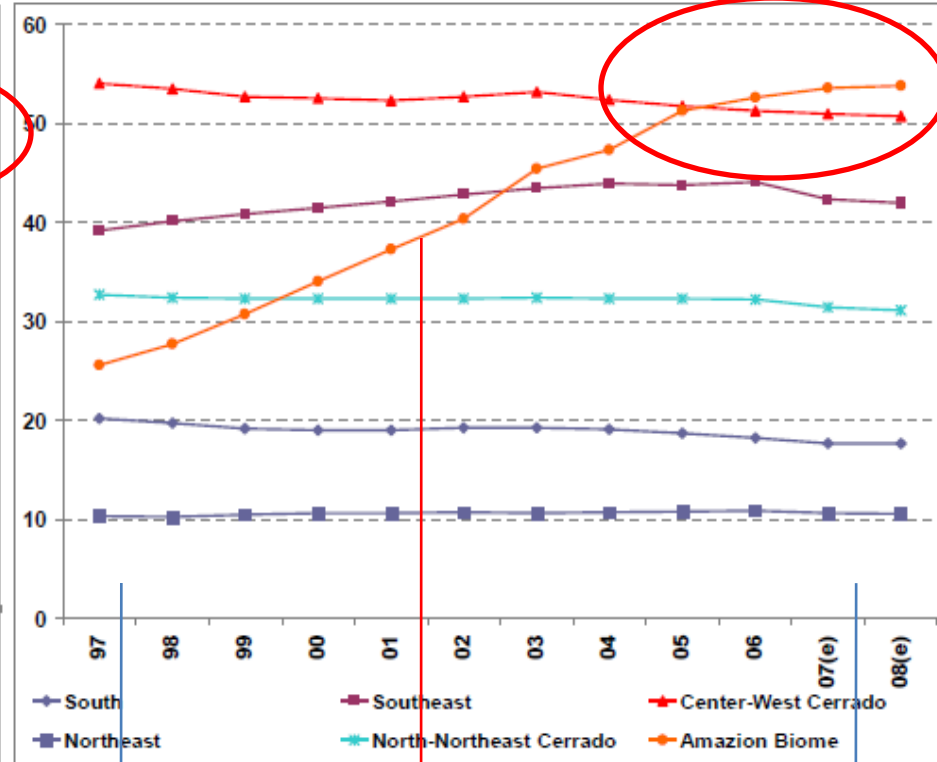
- Feeding fish, pork, poultry
- Feeding dairy cows
- Feeding beef cattle
- Major restrictions
 - Grains and soy cakes
 - Forages
 - calves

Where is the beef in Brazil?

Cattle Herd (Million Heads)



Pasture Area (Million Hectares)



163 million

204 million

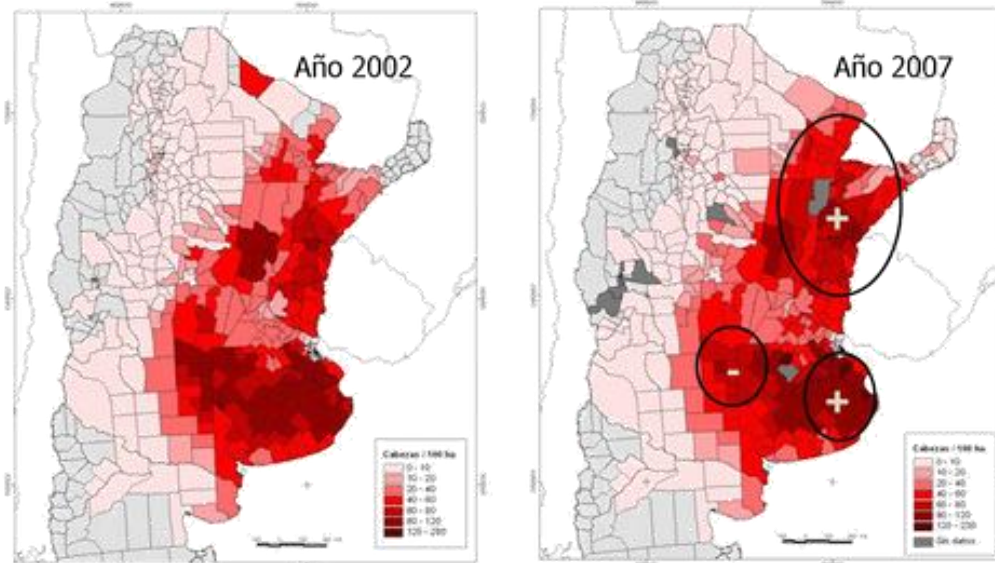
182 million

208 M

30 M new hectares in Amazon Biome but decreasing growth

Where is the beef in Argentina?

Distribución del Rodeo nacional



Fuente: SENASA (en función de los datos arrojados por las 2da vacunaciones contra aftosa)

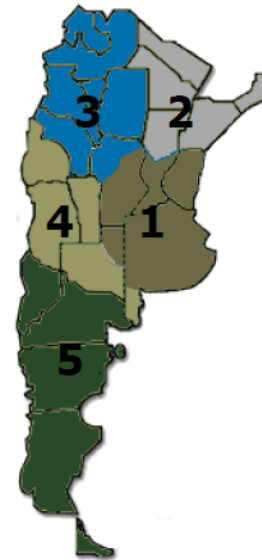


25%

57%

En
ca

Mapa Ganadero



Region	Clima	Actividad principal	Ganado vacuno (%)
1 - Pampeana	Templado húmedo	Suelos pobres: Cría para producción de terneros. Mejores Suelos: Recría y engorde	57
2 - NEA	Sub-tropical húmedo	Cría o cría-recría	25
3 - NOA	Sub-tropical seco	Cría	7
4 - Semiárida	Templado seco	Cría	8
5 - Patagónica	Desértico frío	Valle Rio Negro: Cría. Precordillera: Ciclo completo	3



Potential growth in beef and dairy

- Cultivated pastures
- Pasture genetics: subtropical
- Animal genetics: dairy in Brazil
- Rotational farming: risk management, prices and pests
- Intensive grassing systems

The future of beef and dairy



Growth restrictions in beef and dairy

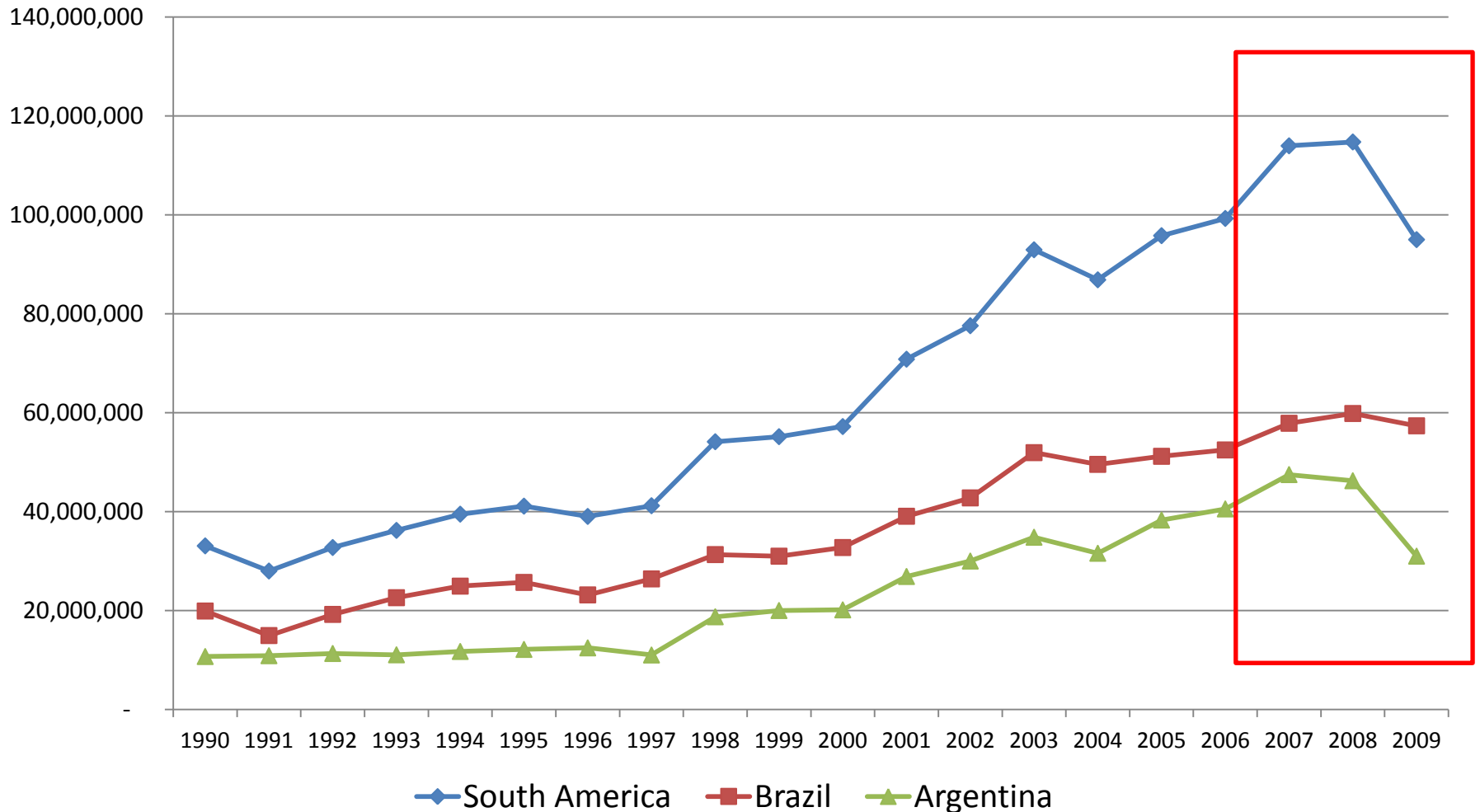
- Beef
 - Moving to marginal areas
 - Less quality of soils and pastures
 - Cows and calves are major bottleneck
- Dairy
 - Moving to marginal areas
 - Upfront investments
 - Learning curve and qualified labor
 - Higher barriers to entry compared to crop farming

The total number of animals finished in feedlots in Brazil in 2008 was around 2.7 million which corresponds to 6.7% of slaughter. Another 2.5 million were finished in semi-confinement which is on grass but with supply of cut forage, silage and grain. This number, although seemingly small in percentage terms, is larger than all the animals finished in feed lots in Australia in 2008 which was around 2.1 million.



- Beef and dairy in S.A.
 - Production and trade
 - Growth restrictions and potential
 - Competing for land versus crop farming

South America soybean production (tonnes)



WARNING!

Highly debatable content

**The honourable audience may not like some or all
of the following pure-play propositions**

Sources of food insecurity

- Domestic
 - Short term shocks
 - Climate, pests; Food safety
 - Long term imbalance
 - Area and productivity
- Foreign
 - Short term shocks
 - Price volatility, domestic politics, market interventions, geopolitics, conflicts, climate, pests
 - Long term imbalance
 - Area and productivity

Sources of meat and dairy supply

- Future supply of dairy and animal proteins in China
 - Soybeans and dairy
 - Alternative sources
 - Domestic growth
 - Imports
 - FDI in production
 - Securing foreign procurement of soybean and dairy?
 - Government and industry perspectives
 - Sources of insecurity
 - Meats vs. dairy industry interests
 - Implications for S.A.

Meeting dairy demand with domestic supply

- Every 1 lt. of extra milk per capita per year in China = 1.3 B liters marginal demand
- Assuming a herd of 13 million milking cows
- Yield per cow must increase 100 liters per year
- Assuming same supply of forages
- Extra feed needs to be imported
 - Aprox 650,000 tons of feed stuffs per year

Meeting dairy demand with foreign supply

- Option 1: Brazil increases 60 liters per cows per year
- Option 2: S.A would need to add 250,000 hectares of dairy farming plus 4 cows per hectare if in Brazil and 2 cows per hectare if in Argentina.
-

Farming incentives: a S.A. farmer perspective

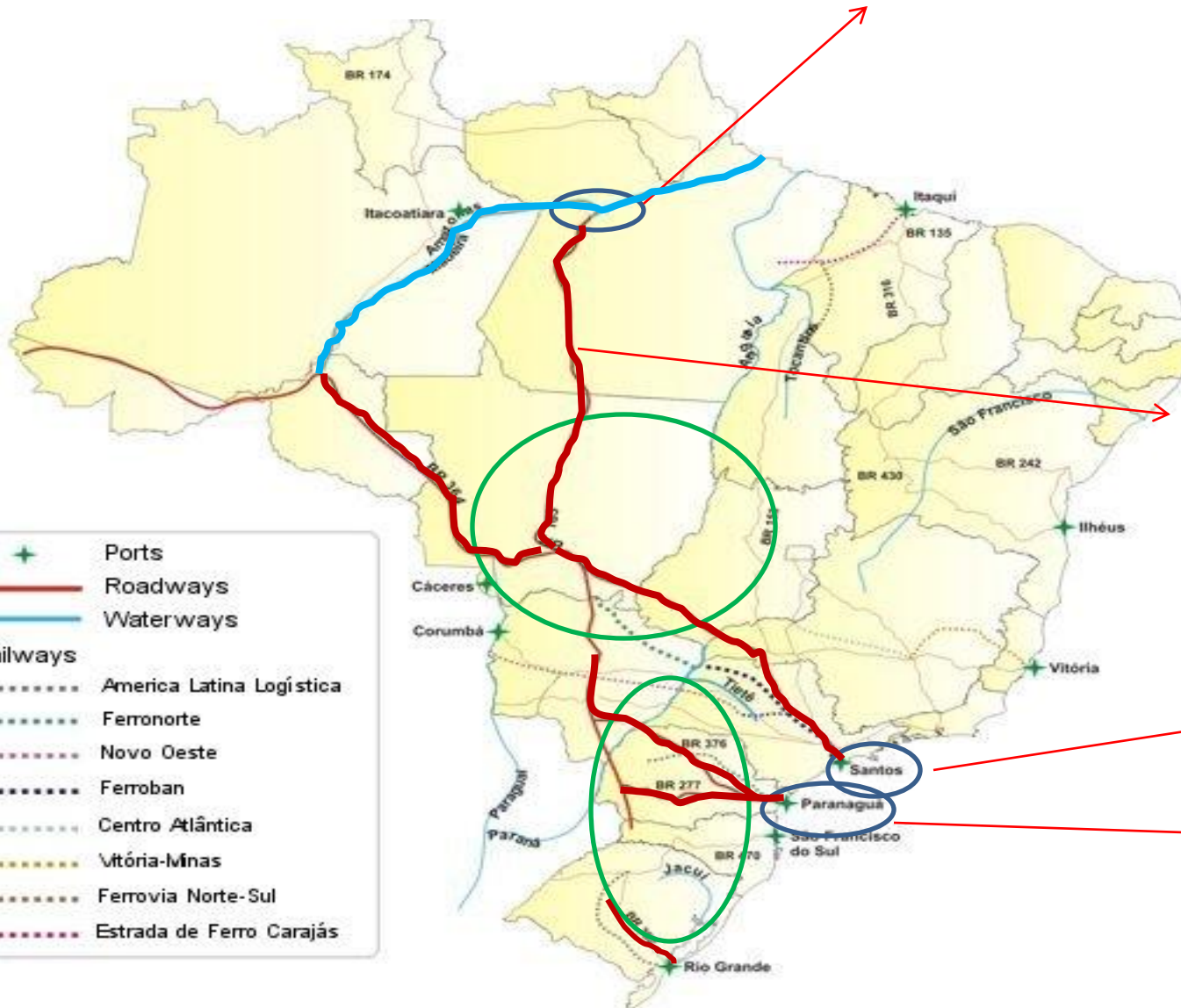
- Current rate of soybean imports driven by animal protein demand is 3 million tons per year which is equivalent to 1,5 extra million hectares per year (marginal land areas)
- It is easier to plant 1 extra million hectares with soybeans than to milk 500,000 extra dairy cows

Technology driven economies



Brazil: major soybean routs

Santarem Port



Route BR 163

Port of Santos

Port of Paranaguá

	Ports
	Roadways
	Waterways
Railways	
	America Latina Logística
	Ferronorte
	Novo Oeste
	Ferrobán
	Centro Atlântica
	Vitória-Minas
	Ferrovía Norte-Sul
	Estrada de Ferro Carajás

Route BR 163



http://www.brazilmax.com/news.cfm/tborigem/pl_amazon/id/28

10/14/2011

Daniel Conforte

Deforestation along BR163



Supply assurance: the make or buy dilemma of feed stuffs

- Buy: let markets work
 - Private companies
 - State owned enterprises
 - Hybrids (private but highly government dependent)
- Do: FDI by state owned or dependent enterprises
 - Land ownership
 - Production ownership
 - Origination control
 - Global sourcing and trading control

Who will invest?

- S.A. farmers
- Investment funds
- Chinese grain companies
 - Markets
 - Origination
 - Global traders
- Chinese dairy interests
 - Production in China
 - Production in S.A.

Conclusion

- Future dairy growth in China at 100 liters per cow is possible: vast forages a major restriction
- Slowly increasing dairy imports from China are likely; many sources available but divers growth potential
- Slow growth of beef imports are likely but not too relevant
- If demand growth for meats continues, crop farming will continue pressure on grass lands and marginal areas in S.A.

Conclusions

- Calves production is a major restriction for beef growth
- Crop farming has low barriers to entry – low assets specificity, there are standard procedures and subcontracting facilities
- Dairy farming has high barriers to entry – upfront investment, knowledge, human resources

Recommendation

- China: institute policies for a moderate growth of meat and dairy consumption
- China: open up to imports of dairy
- China & SA: invest in developing dairy production capacity in SA
- China, be mindful of what exchange rate (strong) could do to global agriculture incentives, resources and environment

Corollary

May the Chinese continue a moderate and prudent growth in animal protein consumption and a mostly vegetarian base diet

Thank you for your attention!