

**China's Agricultural Sector State Owned Enterprises and Entry  
Into the WTO: Impact and Strategies for Coping and  
Development**

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## **China's Agricultural Sector State Owned Enterprises and Entry Into The WTO: Impact and Strategies for Coping and Development**

The first part of my speech focuses on projections of China's ability to feed itself during the next quarter century. This is a prelude to discussion of the impact on China's agricultural sector resulting from its entry in the WTO and particularly on state owned enterprises. After the discussion on why and how changes have taken place and will take place, I will turn to strategies for state owned enterprises to cope with the rapidly changing business environment facing them.

It is important that you be able to visualize the changes that will take place in China during this decade and the next one in the economy as a whole, as well as in agriculture. This is because China is undergoing rapid changes and the pace will likely accelerate now that it is a member of the WTO. Please think about the changes you have seen over the past two decades as I recount my first visit to China, which was in 1985 when I gave a speech at the World food Production Conference followed by a visit to the area west of Huhhot. Beijing had very few cars and most of the vehicles even in the center of the city were army trucks or farm tractors. Animals or humans pulled many vehicles. It was virtually impossible to get a meal except at prescribed times and there were few restaurants. If I stopped on a street corner I would soon be surrounded by a hoard of people, partly out of curiosity but mainly because they simply had no better business than to look at this Westerner. Since then I have made more than 15 trips to China, and have spent more than a half year visiting in a substantial portion of the country, mainly due to my involvement in crop and animal agriculture.

It has only been about a decade and a half since I first came to China, yet the country is very different now and will be very different in another decade and a half. There will be great technology development and adoption in agriculture as well as in the manufacturing and services sectors. There are problems, but I think Chinese enterprises have great opportunities to capitalize on the changes that are taking place and will continue to take place.

## **Long-term Projections of China's Ability to Maintain a Very High Level of Net Food Self-Sufficiency**

In 1994 Professor Cheng Xu of China Agriculture University and I, along with Professor Akira Miyazaki of Kyoto University in Japan, published a book titled *China's Livestock and Related Agriculture: Projections to 2025* in which we concluded that *technically* China would basically be able to have close to a net self-sufficiency in animal feedstuffs and in human food through 2025 if they so desired. These projections, using a very large computer program with more than 800 variables, were based on three-year average data for the period 1989-1991. At that time, and during the early 1990s most Chinese as well as foreigner researchers said that China would require huge imports of food and animal feedstuffs in the near future. In the latter 1990s most researchers changed their opinions and now feel that while China will continue to import some agricultural commodities, the amounts will grow at modest rates.

In 2001 Ou Li of China Agriculture University and I presented a paper in New Zealand based on 1996-1998 data in which it was again concluded that *technically* China would be able to have close to a net self-sufficiency in animal feedstuffs and in human food, this time through 2030 if the leaders so desire. We concluded that increased imports of protein-based feedstuffs such as soybeans would be required primarily due to rapid growth in advanced fish feeding methods and use of compound feeds for poultry and pigs, but that very small increases would be needed in energy feedstuffs such as maize. The term *technically* is stressed because the projections do not take Chinese and potential exporter production costs into account, a factor that has become very important now that China is a member of WTO. The projections also do not take politics into account nor do they take world economic conditions into account. They are only based on production abilities.

TABLE 1 PRODUCTION PER HEAD OF INVENTORY, CHINA, 1979-81 TO 2030							
SPECIES	YEAR						
	1979-81	1984-86	1989-91	AVG 96-98	2005	2015	2030
-----KG OF MEAT PER HEAD OF INVENTORY-----							
SHEEP	2.3	3.2	4.9	9.5	10.4	11.3	12.3
GOATS	2.5	4.5	5.4	6.9	7.3	7.8	8.4
CATTLE	4.2	5.6	13.7	40.5	45.0	61.1	73.4
BUFFALO	3.0	6.4	8.8	14.4	16.1	17.3	18.8
PIGS	37.3	53.8	66.3	92.8	102.4	129.9	144.8
POULTRY (JAN 1 IN\	1.4	1.3	1.5	2.4	2.9	4.2	5.7
-----KG OF MILK PER HEAD OF INVENTORY-----							
GOATS	0.6	0.9	0.8	0.8	0.8	0.7	0.7
MILK COWS	571.6	1,046.5	1,469.9	1,390.8	2,050.4	3,780.0	5,712.0
BUFFALO	58.5	82.8	102.4	116.4	121.8	127.6	139.2

Technology change and adoption are the reasons why China, with population growth from the current 1.3 billion people to 1.5 billion in 2030, reduction in farmland due to increased urban and industrial uses, and rapid growth in demand for water, will be able to meet future demands for a higher animal and fisheries based protein diet. Other reasons are structural change in the agricultural sector including improved marketing, processing, storage, input provision and management of natural resources. In addition, there will be development and adoption of crop yield enhancing methods such as improved seeds, fertilizers, irrigation, land reclamation, machinery use in place of animal and human power, and management. Individual land holdings will increase in size as the economy develops and smallholders give up farming for urban activities thus leading to larger farms and consequent economies of size. Much more use will be made of contract services such as planting and harvesting by cooperative or private services that will result in increased yields and reduced production costs.

An interesting and useful way to show the impact that technological change combined with management improvement has had on agriculture is to look at the animal sub-sector. Review of the data in Table 1 will help you to really appreciate the changes that have taken place and will take place. I realize that the agricultural sector is not the main interest of most participants here today. Nevertheless, this discussion about the impact on agricultural structure will serve as a base for my suggestions about strategies that can be followed to

rationalize state owned enterprises, regardless of the sector they are engaged in, whether it be in agriculture, manufacturing or services.

The changes in production per head are dramatic. For example, the average production of pork per pig in inventory (total pork production divided by the total number of pigs in China) was 37 kg in 1980. By the time I first arrived in 1985 it had jumped to 54 kg. Now it is about 100 kg. By 2030 it will reach 145 kg. The result is that as productivity increases fewer pigs are needed to produce a kilogram of pork.

There are far reaching implications of productivity improvements. The main one is that fewer animals will be needed to meet demands for food. The way I determined the number of animals was to first project income per capita and animal and fish product consumption. Then, I multiplied by population to get total production of each commodity. I then applied detailed animal productivity parameters to determine the total number of animals needed. In the case of pork, I projected that per capita consumption would grow from 29.75

TABLE 2 INCOME PER CAPITA AND ANIMAL AND FISH CONSUMPTION IN CHINA, 1997-2030							
ITEM	COMPOUND ANNUAL GROWTH RATE CHANGE FROM / TO			BASE MIDPOINT OF THREE	PROJECTION YEAR		
	96-98 2005	2005 2015	2015 2030	YEAR AVG 96-98	2005	2015	2030
	0.87	0.61	0.23	1,227.7	MILLION		
					1,315.5	1,397.4	1,446.5
	--COMPOUND ANNUAL GROWTH RATE--			BASE YEAR 1998	\$ US		
GDP PER CAPITA PPP BASIS	7.0	5.5	4.5	3,567	6,129	10,469	20,260
EXCHANGE RATE	7.0	5.5	4.5	722	1,241	2,119	4,101
	PER CAPITA PRODUCTION						
	COMPOUND ANNUAL GROWTH RATE CALCULATED			DATA ENTERED			
	PCT			96-98	2005	2015	2030
	KG						
BEEF AND VEAL	2.72	4.97	2.19	3.23	4.00	6.50	9.00
PORK (1)	0.52	0.47	0.30	29.75	31.00	32.50	34.00
MUTTON AND GOAT	0.29	0.11	0.07	1.71	1.75	1.77	1.79
MUTTON AND LAMB	0.14	0.21	0.14	0.94	0.95	0.97	0.99
GOAT	0.52	0.00	0.00	0.77	0.80	0.80	0.80
BUFFALO MEAT (2)	-0.36	-0.39	-0.67	0.24	0.24	0.23	0.20
TOTAL RED MEAT	0.70	0.99	0.60	36.64	38.74	42.77	46.78
POULTRY	2.30	3.42	2.06	8.34	10.00	14.00	19.00
TOTAL MEAT	1.01	1.54	0.99	44.97	48.74	56.77	65.78
FISH,FRESH	1.65	0.80	0.50	10.53	12.00	13.00	14.00
TOTAL MEAT & FRESH FISH	1.13	1.40	0.90	55.50	60.74	69.77	79.78
MILK							
COW (3)	5.02	4.14	3.46	5.41	8.00	12.00	20.00
GOAT	-0.87	-1.33	-1.02	0.17	0.16	0.14	0.12
BUFFALO (2)	-1.16	-0.64	-0.65	1.95	1.78	1.67	1.51
EGGS	0.03	0.09	0.02	16.26	16.30	16.45	16.50

kg average in 1996-98 to 34.0 kg in 2030 (Table 2). There is also some population growth, with the result that total production is projected to increase from 36 million tons in 1996-98 to 49 million tons in 2030, an increase of 36 percent (Table 3).

TABLE 3 LIVESTOCK AND FISH PRODUCTION IN CHINA, 1979-81 TO 2030							
	NON-REVISED DATA				REVISED DATA		
	1979-81	1984-86	1989-91	AVG 96-98	2005	2015	2030
	-----1,000 MT-----						
BEEF AND VEAL	229	368	1,129	3,963	5,262	9,083	13,019
PORK (1)	11,704	17,128	23,871	36,524	40,781	45,416	49,181
MUTTON AND GOAT	434	601	1,070	2,099	2,302	2,473	2,589
MUTTON AND LAMB	237	307	551	1,154	1,250	1,355	1,432
GOAT	197	293	520	942	1,052	1,118	1,157
BUFFALO MEAT	72	125	165	298	310	316	296
TOTAL, RED MEAT	18,823	27,305	27,305	44,979	50,957	59,762	67,674
POULTRY	1,602	2,014	3,766	10,236	13,155	19,564	27,484
TOTAL MEAT	20,424	29,319	31,071	55,215	64,112	79,326	95,157
FISH, FRESH	1,314	2,942	5,258	12,922	15,786	18,166	20,251
TOTAL MEAT & FISH	21,738	32,261	36,329	68,137	79,898	97,492	115,408
MILK							
COW (3) (4)	1,143	2,616	4,410	6,637	10,524	16,769	28,930
GOAT	113	144	159	211	210	196	174
BUFFALO (2)	1,380	1,627	1,907	2,400	2,342	2,333	2,189
EGGS, PRIMARY (5)	2,912	5,263	8,348	19,967	21,443	22,987	23,867
(1) ADJUSTED BY TRADE							
(2) VERY LITTLE IS USED FOR HUMAN CONSUMPTION.							
(3) COW MILK IS FRESH MILK.							
(4) INVENTORY DIVIDED BY PRODUCTION PER FEMALE IN LACTATION							
(5) ALL SPECIES							

TABLE 4. LIVESTOCK INVENTORY PROJECTIONS FOR CHINA, ECONOMY ROBUST							
SPECIES	YEAR						
	1979-81	1984-86	1989-91	AVG 96-98	2005	2015	2030
	-----1,000 HEAD-----						
LARGE WORK ANIMALS							
ASSES	7,567	9,942	11,129	9,906	9,235	8,352	6,168
CAMELS	597	542	470	350	256	209	167
HORSES	11,144	10,955	10,337	9,234	8,022	7,110	5,668
MULES	4,019	4,785	5,417	4,992	4,654	4,426	3,807
<b>TOTAL, WORK ANIMALS</b>	<b>23,327</b>	<b>26,224</b>	<b>27,353</b>	<b>24,482</b>	<b>22,167</b>	<b>20,097</b>	<b>15,810</b>
CATTLE							
MILK COWS	2,000	2,500	3,000	4,772	5,133	4,436	5,065
<b>DRAFT/BEEF</b>	<b>52,567</b>	<b>62,907</b>	<b>79,282</b>	<b>93,092</b>	<b>111,899</b>	<b>144,338</b>	<b>172,385</b>
SUBTOTAL	54,567	65,407	82,282	97,864	117,031	148,774	177,450
BUFFALO	23,597	19,647	18,622	20,622	19,224	18,285	15,726
TOTAL, CATTLE, BUFF	78,164	85,054	100,904	118,486	136,256	167,059	193,175
TOTAL LARGE ANIMALS	101,491	111,278	128,257	142,968	158,422	187,156	208,985
SHEEP	101,864	96,108	112,299	120,892	120,224	119,532	116,227
GOATS	78,457	64,521	95,615	136,165	145,007	143,413	138,554
<b>TOTAL SMALL RUMIN.</b>	<b>180,321</b>	<b>160,629</b>	<b>207,914</b>	<b>257,057</b>	<b>265,232</b>	<b>262,944</b>	<b>254,781</b>
PIGS							
COMMERCIAL				86,559	159,284	262,169	309,100
BACKYARD				306,892	238,927	87,390	30,570
<b>TOTAL</b>	<b>313,660</b>	<b>318,618</b>	<b>360,247</b>	<b>393,452</b>	<b>398,211</b>	<b>349,558</b>	<b>339,671</b>
	-----MILLION BIRDS-----						
<b>TOTAL POULTRY</b>	<b>1,147</b>	<b>1,579</b>	<b>2,552</b>	<b>4,294</b>	<b>4,484</b>	<b>4,693</b>	<b>4,824</b>

The total number of pigs is projected to increase from 393 million in 1996-98 to 398 million in 2005 (Table 4). At that time technology adoption and structural change really begin to have a substantial impact on the industry. By 2015 total pig population is expected to fall to 350 million and then to 340 million in 2030. A major reason for the decline, even though total production will increase, is that an increasingly larger proportion of pigs will be raised on commercial farms. In 1996-98 about 20 percent of all pigs were on commercial operations (Simpson, Shi, Li, Chen, and Liu, 2000). I forecast that by 2015 the proportion will have grown to 75 percent, and by 2030 it will have reached 90 percent. Most of the technology adoptions such as use of improved breeds, better feeding methods, etc. are on commercial operations.

The numbers are interesting for several reasons. One is that the number of pigs will probably actually decline, a finding that contradicts initial logic and simplistic analysis. The second is that the impact technological change has had and will continue to have is substantial. The examples and numbers are for agriculture, but the lessons about the impact technology and structural change can have apply to all sectors. Another useful finding is that sound scientific based analysis is needed to accurately project complex relationships—ones that are found in virtually every industry.

### **Impact on Agricultural State Owned Enterprises**

Numerous analyses have been carried out about the impact that WTO membership will have on China's agricultural sector. There are wide differences with many pundits suggesting that the impact will be so great that a substantial portion of workers in production agriculture and associated industries will be displaced, and that could even lead to severe social unrest. I do not think that WTO membership alone will have much effect on labor displacement, for several reasons. One is that the projections I have made shows that technically China can continue to have substantial food self-sufficiency if the leaders are really committed to it. On the crop production side, I believe that production of non-

ruminants such as pigs and poultry will not require substantially larger amounts of grain and oilseeds than are now used.

Ruminant animal production is now heavily dominated by feeding by-products such as straw when animals are confined, and I think that practice will continue. China's production systems are simply much different than those of the United States, Australia or New Zealand (Longworth, Brown and Waldron, 2001). It is also significant my projections are based on comparisons of energy and protein requirements and availabilities rather than only using a fixed ratio of soybeans and maize per kilogram of meat as is done in large-scale trade models. I believe the reason their analyses have been consistently wrong (projections that Chinese purchases would be much larger than actually has taken place) is because of not understanding industry structure and production practices (Simpson and Li, 2001).

A big unknown is production cost differences between China and countries that potentially might expand exports to China. Import tariffs are being reduced as part of commitments China made for membership to the WTO but as Carter and Rozelle (2002) have observed, there are a variety of non-tariff barriers. In addition, the country is protected in the first few years by tariff rate quotas (TRQ) that limit the amount of imports on certain commodities. Despite widespread belief that China has a comparative disadvantage in production of cereals, there are no studies I know of that contain detailed evaluations of cost differences using standard budgeting techniques combined with technical analysis of yield enhancing practices. On the animal production side, a study by Tuan and Tingjun (2001) reveals that China has a competitive advantage in international trade in broilers and pigs and also in beef cattle production (supported by evidence in the Longworth, Brown and Waldron 2001 book).

On the industry and processing side, China has considerable advantages that are not available to foreigners such as knowledge of the markets and connections between suppliers. However, as the economy grows and consumers are afforded greater selections and higher



quality goods, and as they grow in sophistication, there will be increased pressure from foreign suppliers and companies such as supermarkets and what are now called “hypermarkets” (because they are huge and sell a wide variety of both domestic and imported food and other products (Gilmour and Gale, 2002).

Will the WTO have a great impact on State Owned Enterprises? There a huge variety of State Owned Enterprises ranging from small rural based ones engaged in production agriculture, to mammoth ones involved in international trade. I conclude that considerable impacts have already been felt because many businesses have felt for many years that entry in WTO would lead to greater transparency in bureaucratic procedures, and more equitable dealings in all aspects of business. The actual impacts from the accession agreement and from whatever agreements are made at the conclusion of the current WTO negotiations (known as the Doha Agenda) provisionally set to conclude January, 2005 will only gradually affect China and will provide considerable time for structural readjustment. I am absolutely convinced there is much more impact from internal competition than from foreign competitors in agriculture and food industries, and this probably holds for the manufacturing and services sectors as well although I admit to little knowledge about them.

### **Strategies for State Owned Enterprises to Cope In this Decade of Vast Competition**

I do admit to little knowledge about China’s State Owned Enterprises even in agriculture. But, I do have a great deal of experience in economic analysis of businesses and in strategic planning for them. Let me share some thoughts about actions that probably apply to all of those businesses. There are two vital steps. First, recognize there is a problem by realistically studying it. Do not try to cover up problems and just hope they will go away. Second, make a decision, to make a decision, to do something, and to take some action. I can tell you that the hardest decision, is the decision, to make a decision. Following are some ideas that I will be glad to elaborate on as time permits in question and answer sessions.

- Enterprises should work together, particularly along commodity lines. There are great economies of size by collaborating on feasibility studies, worker training, etc.
- Develop a strategic plan for industries, sub-industries and individual firms. Such an activity begins with a vision or well thought out idea of who you, as a business enterprise, want to be, and what you want to be at various points in the future. Then carry out feasibility studies of alternative ways and steps to get there.
- Hire foreign experts in strategic planning, feasibility studies, economic analyses, cost and returns analyses, and management planning to provide large-scale training sessions, and in-depth case studies on your own industries and businesses to provide experience for the individuals who will actually do the analytical work after the experts leave.
- Remember that economic analyses, especially those that are oriented toward the future, are different than cost accounting in which the objective is to just keep track of expenses and income.
- Carry out sub-industry risk assessment studies to determine which are the most liable to not survive in the new competitive era. Determine options for other businesses to replace the ones at risk.
- Keep employees informed of the planning activities and involve them. Solicit opinions and make each contributor feel important and useful regardless whether the ideas have merit or not. You might even develop Strategic Planning Teams and perhaps even print a small newsletter about activities to foster comradeship and team spirit.
- Value creativity and imagination. Even develop an award system for them. I know Chinese are creative, curious and imaginative because I have worked in much of the country and with many Chinese at levels from nomadic herdsmen to top bureaucratic

managers. I have also been an academic advisor to many Chinese students studying abroad. The main thing is to be bold and not be afraid to solicit help.

It has been a great pleasure to be with you and I look forward to learning more about you and your problems, prospects and policies. Thank you all very much.

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