

# A Rural People's Republic of Hunger

## Economic Growth, Food and Nutrition in Contemporary China



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11 Feb 2015  
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a point of departure...  
Mo Yan (or Guan Moye), 1955 -



Nobel prize for literature, 2012  
described as "who with hallucinatory  
realism merges folk tales, history and  
the contemporary"

“The Republic of Wine (1992, in English 2000)”

“Pow” (2013)

Mo Yan’s satire targets Gross materialism in contemporary China, Venality of government officials, Abuse of political power.....

# The Republic of Wine

Gastronomy, alcohol, cannibalism (as a metaphor for self-destruction) - Decadence

Relationship between Chinese people and food and drink, and comments on government corruption and excesses

# “Pow” (2013)

Meat eating gluttony, Greed, Lust, Abuse of power  
- Excess

Farming to Meat production

Adulteration of food

etc...

# Gluttony and Hunger

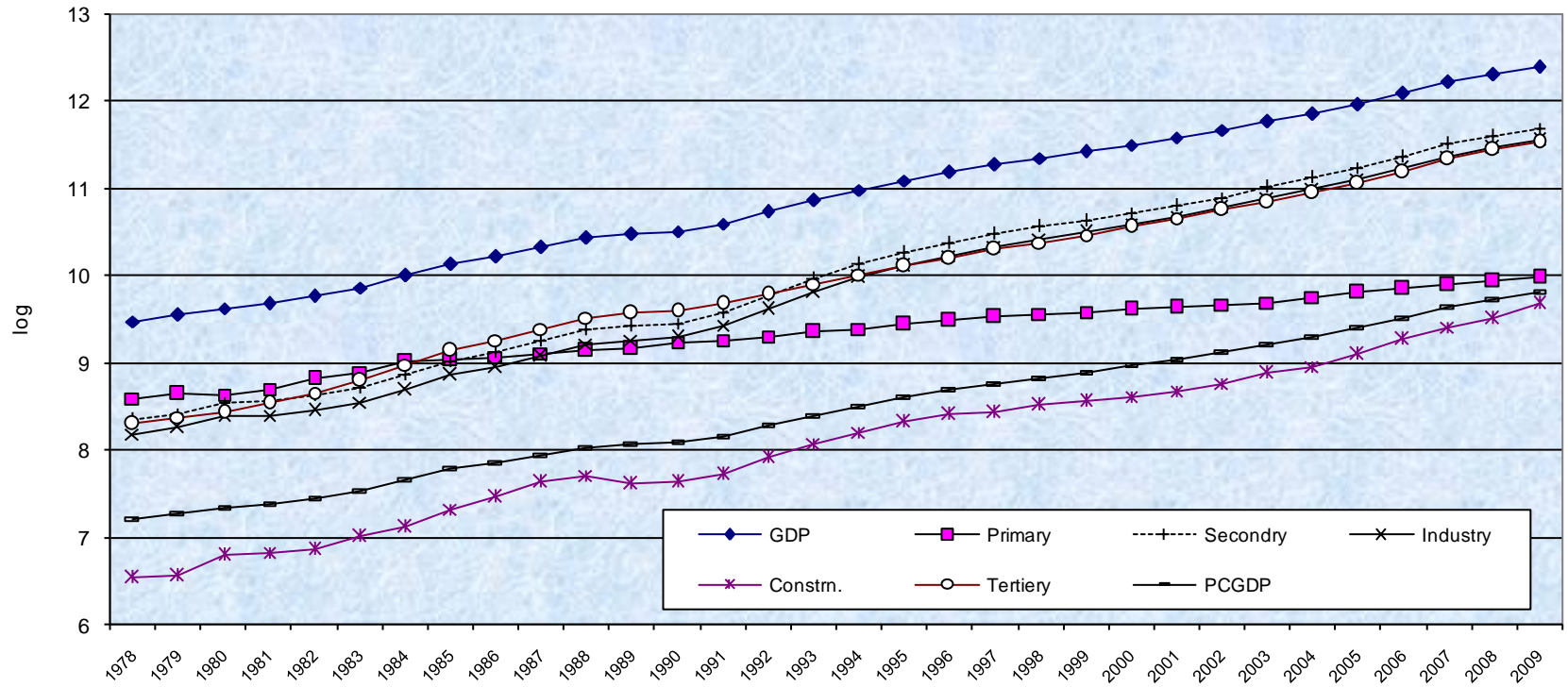
Rapid Economic growth

Middle-Income Status

Can this be consistent with widespread hunger ?

# Rapid Growth in China

Chart 1 China: Trends in GDP and its components, 1978-2009



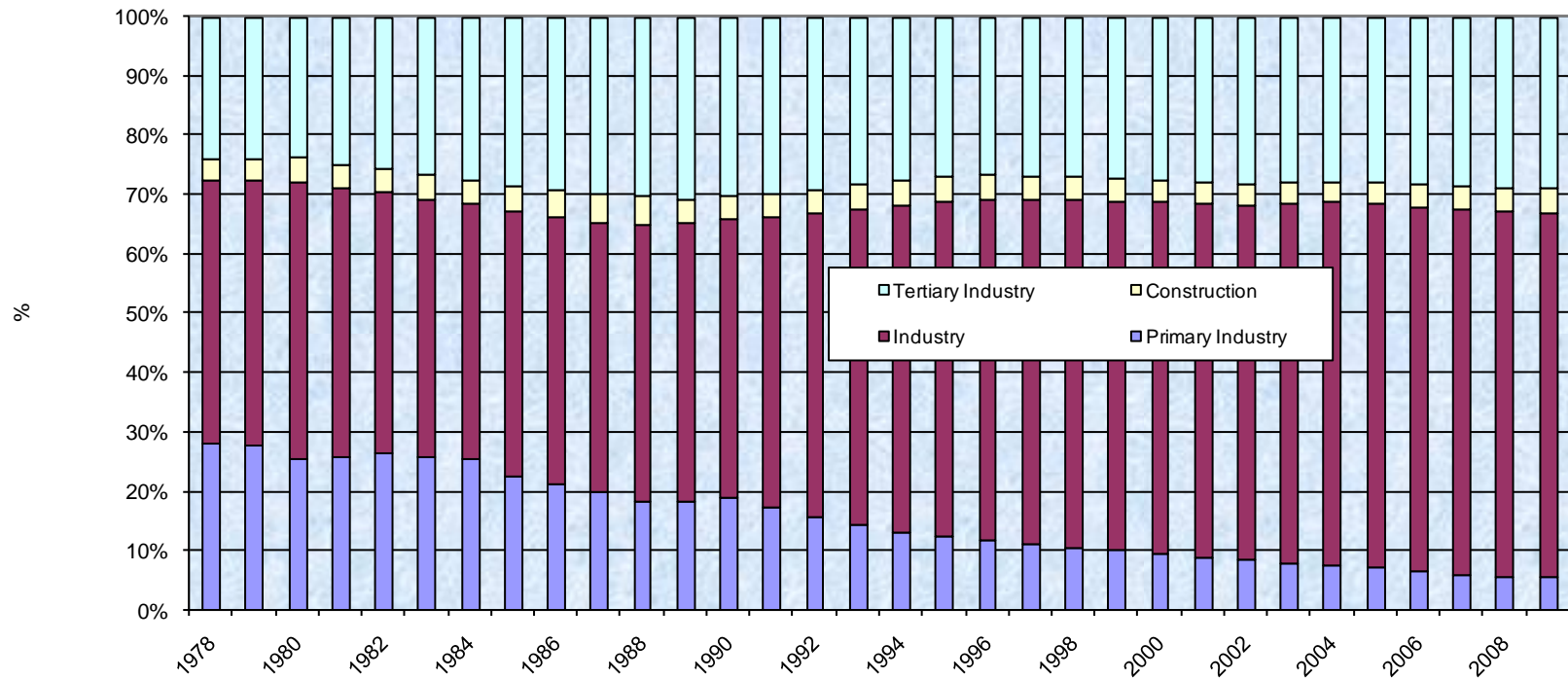
Comparable 2000 prices, Source data: CSY, various years

# China Sectoral Growth Rates

<b>Table 1 China: GDP and sectoral annual trend growth rates 1978-2009 (%)</b>						
	1978-85	1985-91	1991-2009	1985-95	1995-2009	1978-2009
<b>Gross National Income</b>	9.2	7.6	9.6	9.2	9.6	9.5
<b>Gross Domestic Product</b>	9.2	7.6	9.5	9.3	9.3	9.5
<b>Primary Sector</b>	6.9	3.9	3.8	4.1	3.7	4.3
<b>Secondary Sector</b>	8.9	9.0	10.9	12.0	10.2	11.2
<b>Industry (manufacturing)</b>	8.8	9.3	11.1	12.4	10.3	11.3
<b>Construction</b>	10.7	5.5	9.5	9.0	9.5	9.6
<b>Tertiary Sector</b>	12.0	8.7	10.1	9.1	10.2	10.3
<b>PCGDP</b>	7.8	6.1	8.7	7.9	8.7	8.4
<b>The external Sector</b>						
	1982-91	1985-91	1999-2009	1985-95	1995-2009	1991-2009
<b>Exports</b>	12.3	14.9	21.3	15.8	18.5	18.0
<b>Imports</b>	12.0	5.3	19.9	11.4	18.0	17.0
<b>Avg. Net Foreign Direct Investment*</b>	17.2	21.7	576.1	101.0	525.6	449.5
Note: Avg. Net FDI* - Annual average Foreign Direct Investment in US\$ million, for the respective period. <i>Source: Natrajan(2011)</i>						

# Structural Change - Output

Chart 2. China: Sectoral shares in GDP, 1978-2009



Source: CSY, various years



# Structural Change -Employment

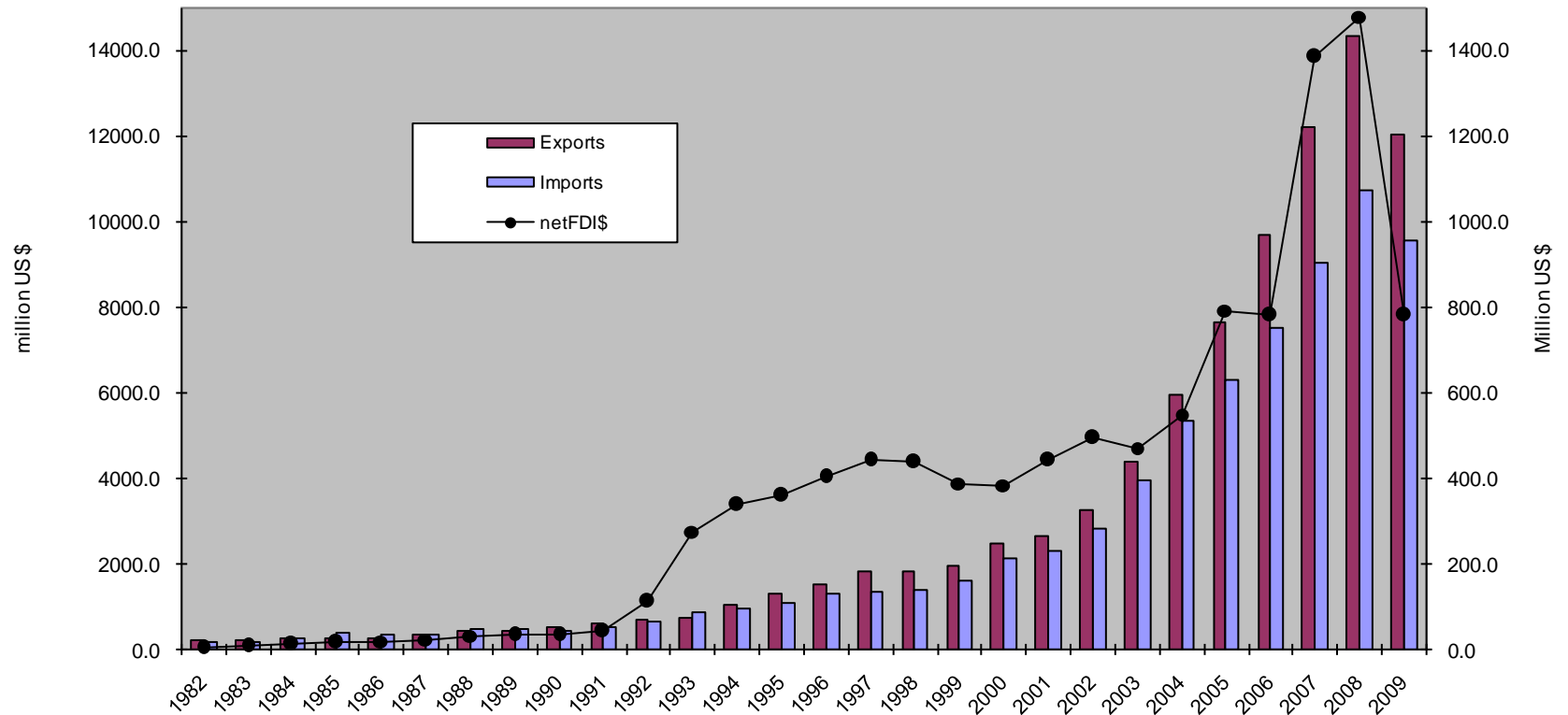
**Table 2 China: Share of Economically Active population in total Population and Sectoral shares of Employment (%)**

	Share in total Population %	Share in Total Employment		
	Econ. Act. Pop	Primary	Secondary	Tertiary
1978-79	42.5	70.2	17.5	12.4
1980-84	43.1	67.2	18.7	14.1
1985-89	43.8	60.5	21.8	17.7
1990-94	44.5	57.8	21.9	20.3
1995-99	45.1	50.5	23.3	26.2
2000-04	45.9	49.2	22.1	28.7
2005-09	46.9	41.2	26.2	32.7

Source: Natrajan (2011)

# Foreign Investment and Trade

Chart 3 China-The external sector, 1982-2009



Source data: World Development Indicators Database, World Bank

# China: Savings, Investment and Consumption

**Table 3 China: Savings, Capital Formation and Consumption, 1978-2009 (100 million constant Yuan)**

<b>Indices</b>				
	<b>GDS</b>	<b>GFCF</b>	<b>HHC</b>	<b>Govt.con.</b>
1978-79	100.0	100.0	100.0	100.0
1980-84	128.9	131.2	138.7	135.5
1985-89	196.3	231.0	234.3	217.3
1990-94	297.9	354.8	326.3	359.2
1995-99	510.7	655.7	503.6	533.4
2000-04	812.7	1076.3	703.7	840.1
2005-09	1622.8	1967.4	1022.0	1301.9
<b>Average Shares in GDP (%)</b>				
	<b>GDS</b>	<b>GFCF</b>	<b>HHC</b>	<b>Govt.con.</b>
1978-79	36.4	28.9	49.3	14.2
1980-84	35.0	28.7	49.9	15.1
1985-89	35.9	29.8	50.1	14.0
1990-94	40.5	31.8	44.3	15.2
1995-99	41.9	33.8	43.8	14.4
2000-04	41.1	37.0	43.7	15.2
2005-09	50.5	41.3	35.8	13.6

Source: Natrajan (2011)

# Consumption & Investment

Domestic Consumption (DC) + Net Exports  
&

Domestic Investment + FDI

China: Compression of DC and  
Expansion of External Absorption  
Export and FDI led growth

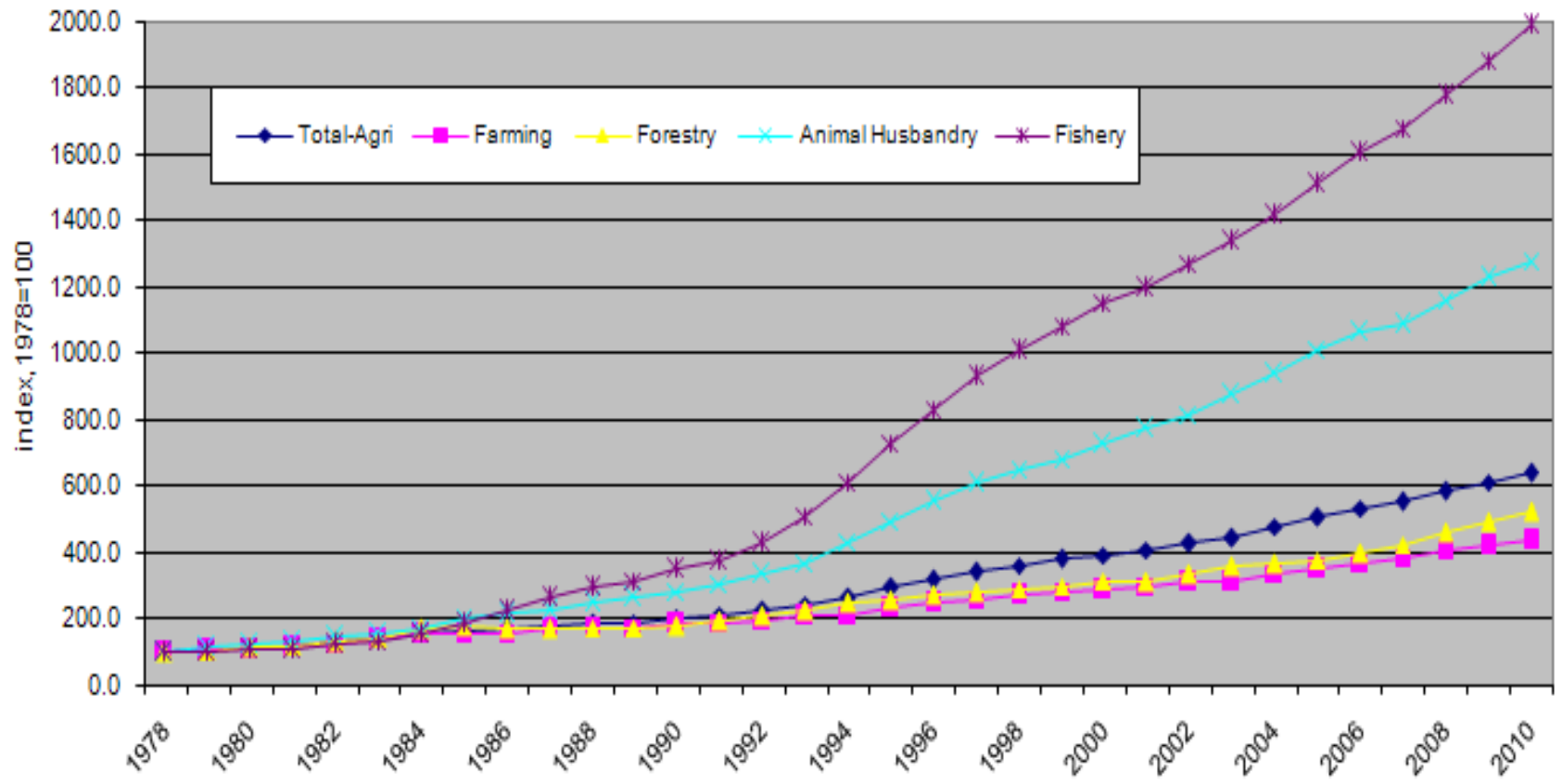
# China Agricultural growth

**Table 4 China: Growth rates in the Agricultural Sector, 1978-2009**

	1978-84	1985-92	1993-2009	1985-2009	1978-2009
<b>Agriculture</b>	7.2	4.7	5.4	5.9	5.96
<b>Farming</b>	6.9	3.7	4.3	4.3	4.51
<b>Forestry</b>	8.4	2.4	4.4	4.6	4.81
<b>Animal Husbandry</b>	8.6	7.2	6.9	8.0	8.37
<b>Fishery</b>	7.6	11.1	7.3	9.7	10.65

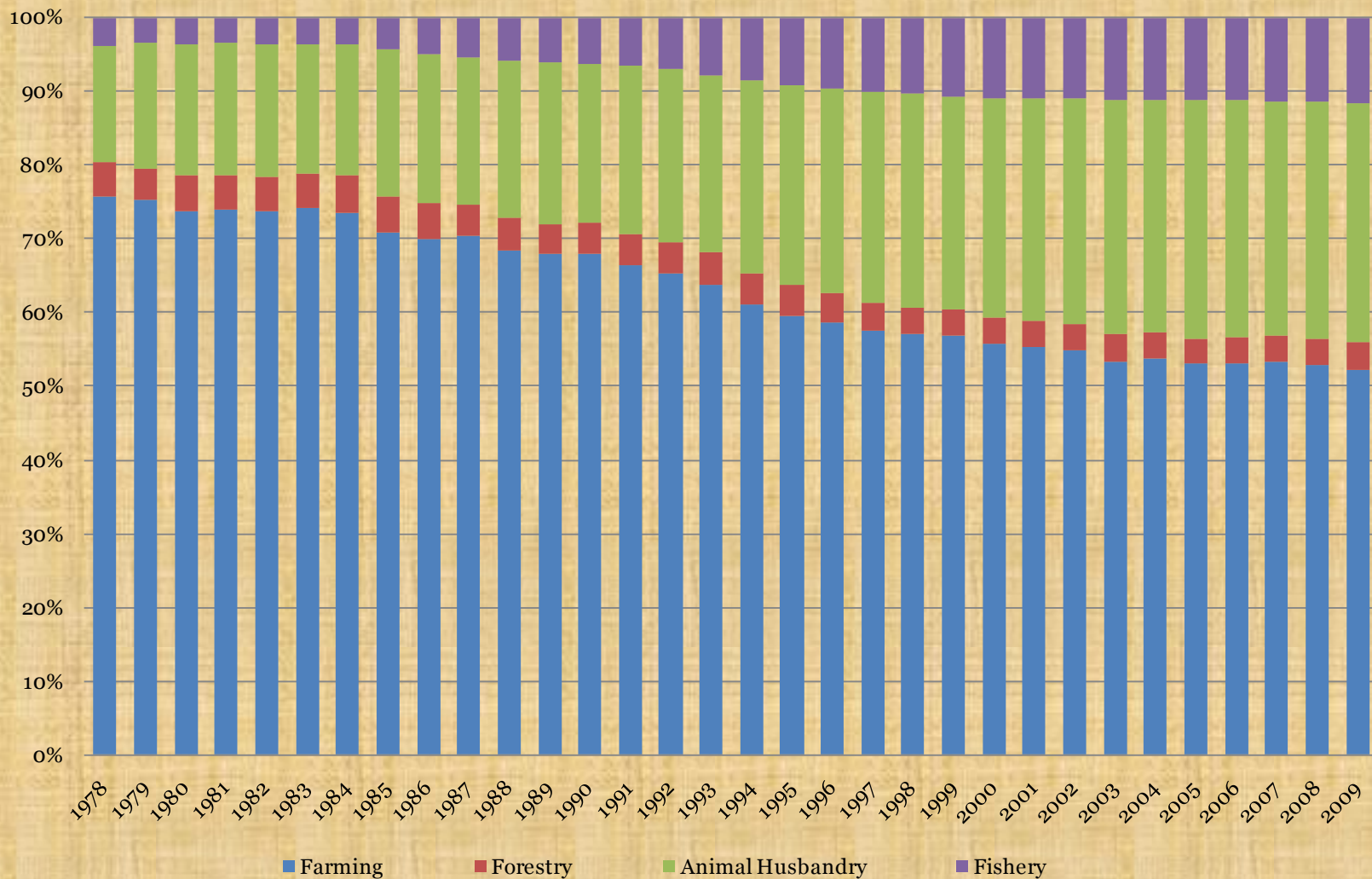
Source: CSY, various years, comparable 2000 prices

### Chart 4 China: Diversification in Agriculture-1978-2010

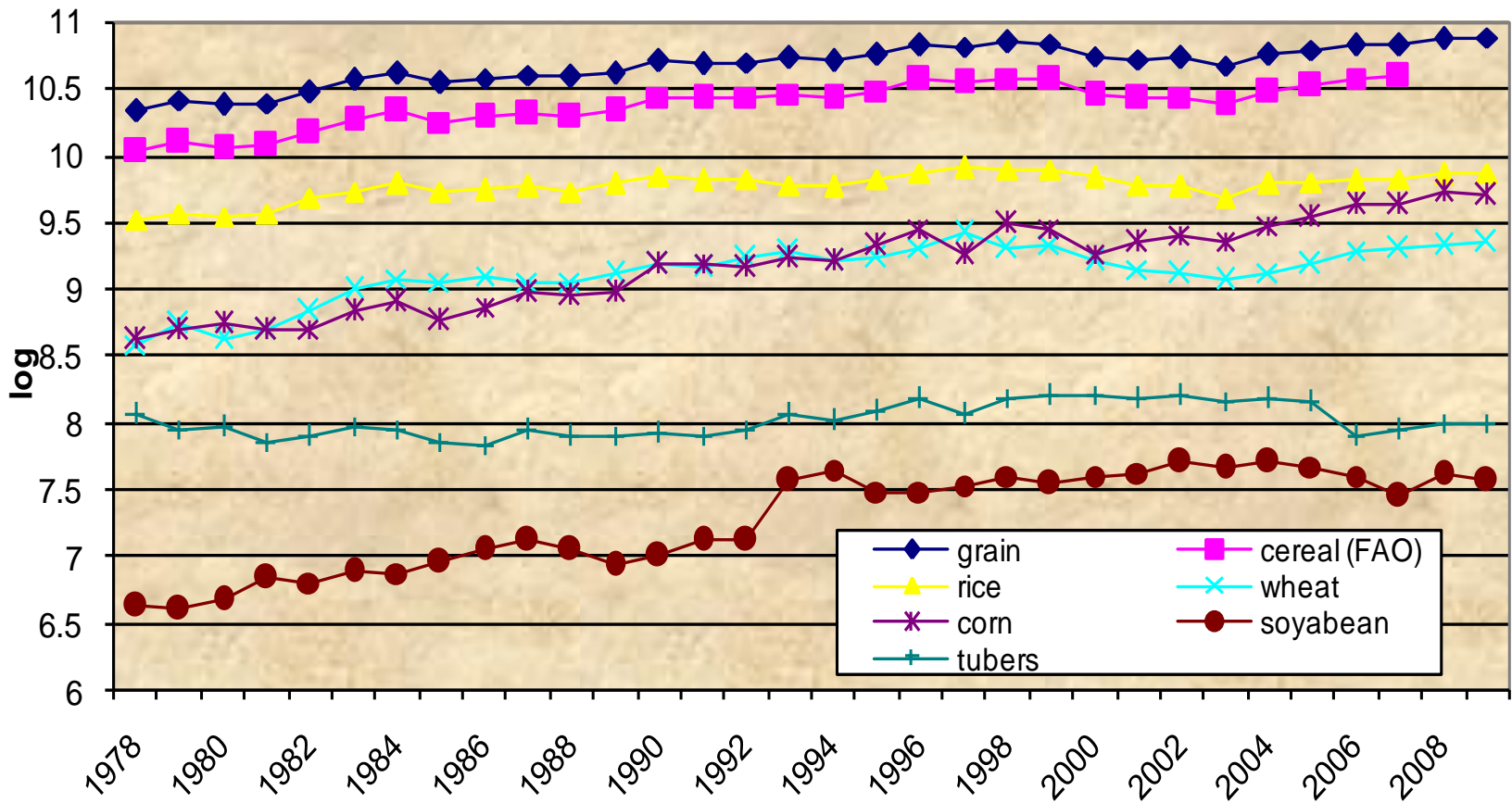


Note: constant 2000 prices; Source data: CSY various issues

# Chart 4 China: composition of Agricultural Output



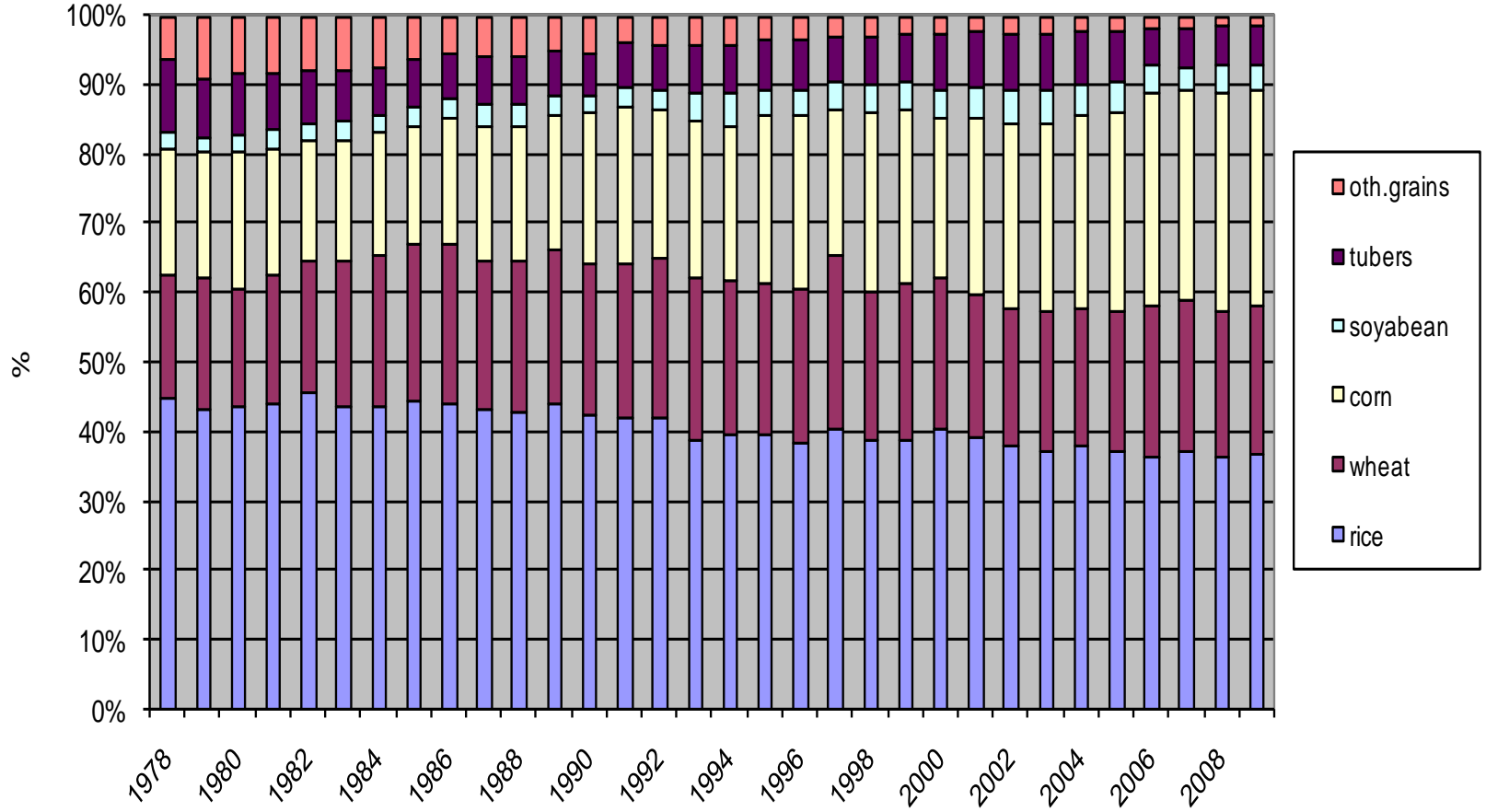
### Chart 5. China-Trends in grain production, 1978-2009



Source: China Statistical Yearbook, various issues

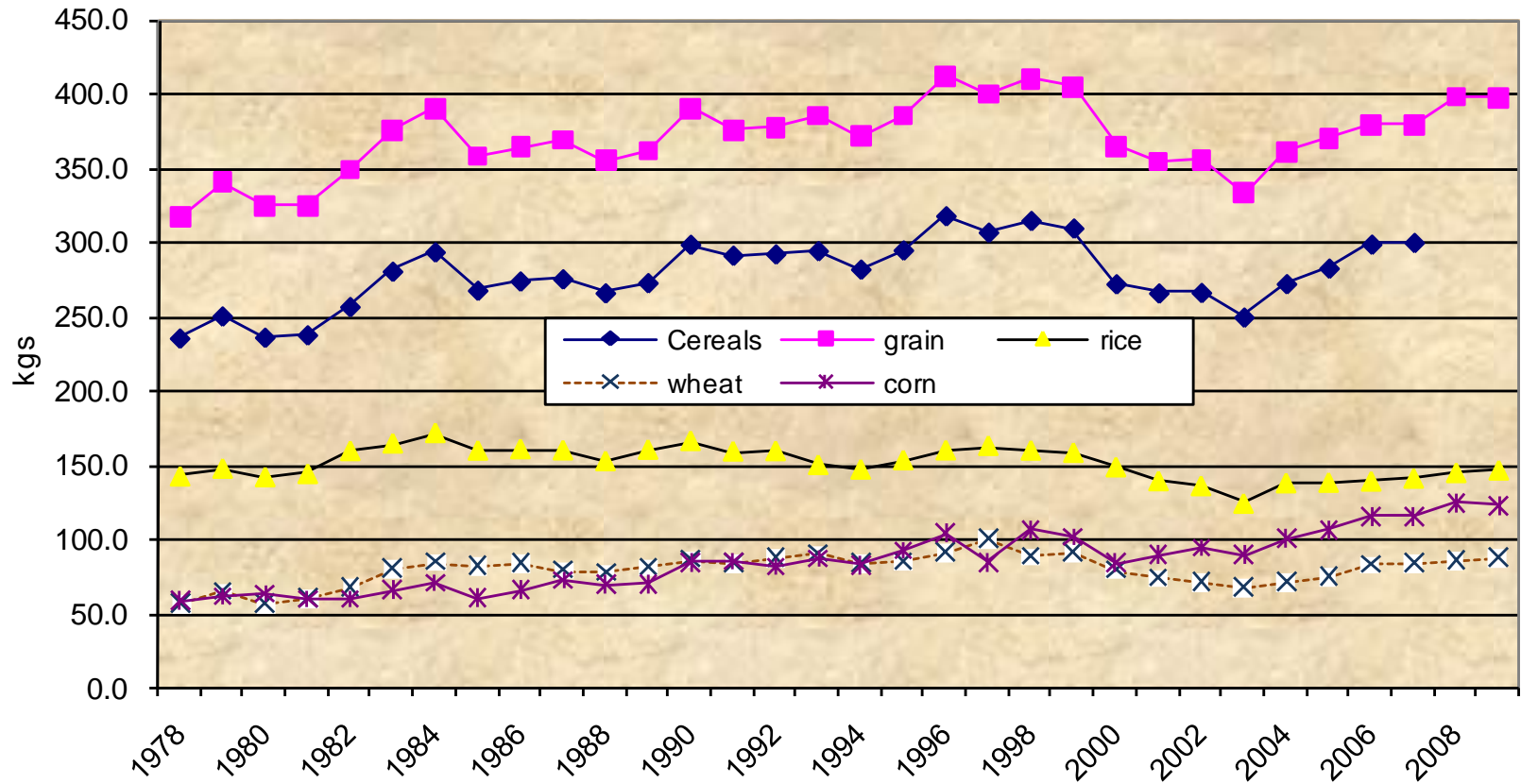


Chart 6. China Components of total grain, 1978-2009



Source: Natrajan (2011)

### Chart 7. China: Output of grain per capita, 1978-2009



Source: Natrajan(2011)

<b>Table 5. China: Production of Cereals, Grain and Population, 1978-2009*</b>			
	Cereals	Grain	Population
	10,000 metric tons		Millions
1978-79	23511.9	31844.3	969.0
1980-82	24357.6	33336.0	1001.4
1983-85	29226.9	39123.2	1044.1
1986-88	29635.0	39619.0	1092.8
1989-91	32803.4	42969.3	1142.9
1992-94	34227.9	44808.2	1185.1
1995-97	37425.2	48844.1	1223.8
1998-00	37473.1	49428.5	1257.6
2001-03	33401.3	44679.6	1284.4
2004-06	37118.7	48384.5	1307.3
2007-09		52037.8	1314.4
<b>Growth rates, compound (%)</b>			
	Cereals	Grain	Population
1978-9 to 1986-88	2.94	2.77	1.51
1986-88 to 1995-97	2.63	2.35	1.27
1995-97 to 2004-06	-0.09	-0.11	0.74
OVERALL 1978-79 to 2007-09	n.a.	1.53	1.08
Grain includes tubers at 1/5 <sup>th</sup> weight, pulses and soyabeans. 3-year averages except first period 1978-79, Source: CSY, various years			

# Food Production, Availability and Consumption

For a nation as a whole,

Production – net exports + stock change equals  
Domestic Supply

Domestic Supply – seed – feed – other uses equals  
availability as food

Food Availability divided by population gives per capita  
availability

(FAO)

For an individual or household, various factors configure to determine food consumption.

What about distribution of incomes and food consumption?

# Reason for Decline in Grain Production

Table 6 China: Changes in Sown areas of various crops 1978-2009 (various periods)							
Grain Crops, 1000 ha							
	Rice	Wheat	Corn	Soyabean	Tubers	Oth.Grains	Total
1978-85	-2351	35	-2267	574	-3224	-4509	-11742
1986-90	994	1535	3707	-159	549	-2007	4621
1991-94	-2893	-1773	-249	5177	150	-5333	-4922
1995-98	1042	793	4087	-1065	730	-343	5243
1999-2003	-4706	-7777	-1171	1228	-298	-1653	-14377
2003-2009	3119	2294	7114	-950	-1066	-936	9575
1978-2009	-4794	-4892	11221	4805	-3160	-14782	-11602
Non-Grain Crops, 1000 ha							
	Cotton	Oilcrops	Sugar Crops	Tobacco	Vegetables	Tea	Fruit
1978-85	274	5578	421	529	1017	31	1080
1986-90	447	-900	384	280	1585	16	2443
1991-94	-60	1181	76	-103	2583	74	2085
1995-98	-1069	838	230	-129	3372	-78	1271
1999-2003	651	2071	-327	-97	5661	150	902
2003-2009	-159	-1338	226	128	461	641	1703
1978-2009	85	7430	1010	608	14678	835	9484
Source: Natrajan(2011)							

**Table 7. China; Per capita output of meat and aquatic products, 1978-2009 (kgs)**

	Meat products			Aquatic products			
	Meat-total	pork	poultry	total	freshwaer	marine	other
1978-79	13	10	2	6	1	3	1
1980-84	16	13	2	6	2	3	1
1985-89	22	18	2	10	4	4	3
1990-94	32	24	5	16	6	5	5
1995-99	44	30	8	29	11	8	10
2000-04	52	34	10	34	13	8	12
2005-09	53	35	10	33	13	8	12
Change over periods (%)							
	Meat products			Aquatic products			
	Meat-total	pork	poultry	total	freshwater	marine	other
1978/79-1980-84	28.5	31.5	10.5	10.0	42.4	-4.3	15.2
1980/84-1985/89	38.4	36.9	39.8	66.1	115.2	20.5	103.1
1990/94-1995/99	41.0	30.9	84.0	55.5	54.5	46.7	67.4
1990/94-1995/99	38.2	24.3	78.6	79.3	87.9	57.3	93.0
1995/99-2000/4	19.5	15.2	26.1	16.0	21.3	-0.5	24.6
2000/04-2005/09	1.8	1.7	1.1	-0.2	0.9	-2.5	0.3
5 year averages except for 1978-9; Source: FAO-FBS Database and CSY various years							

# Diversification of Diets

Economists have often used a behaviouralist explanation to explain diversification of diets with increased consumption of meat and other superior foods.

What appears to be a reasonable argument breaks down when examined closely.



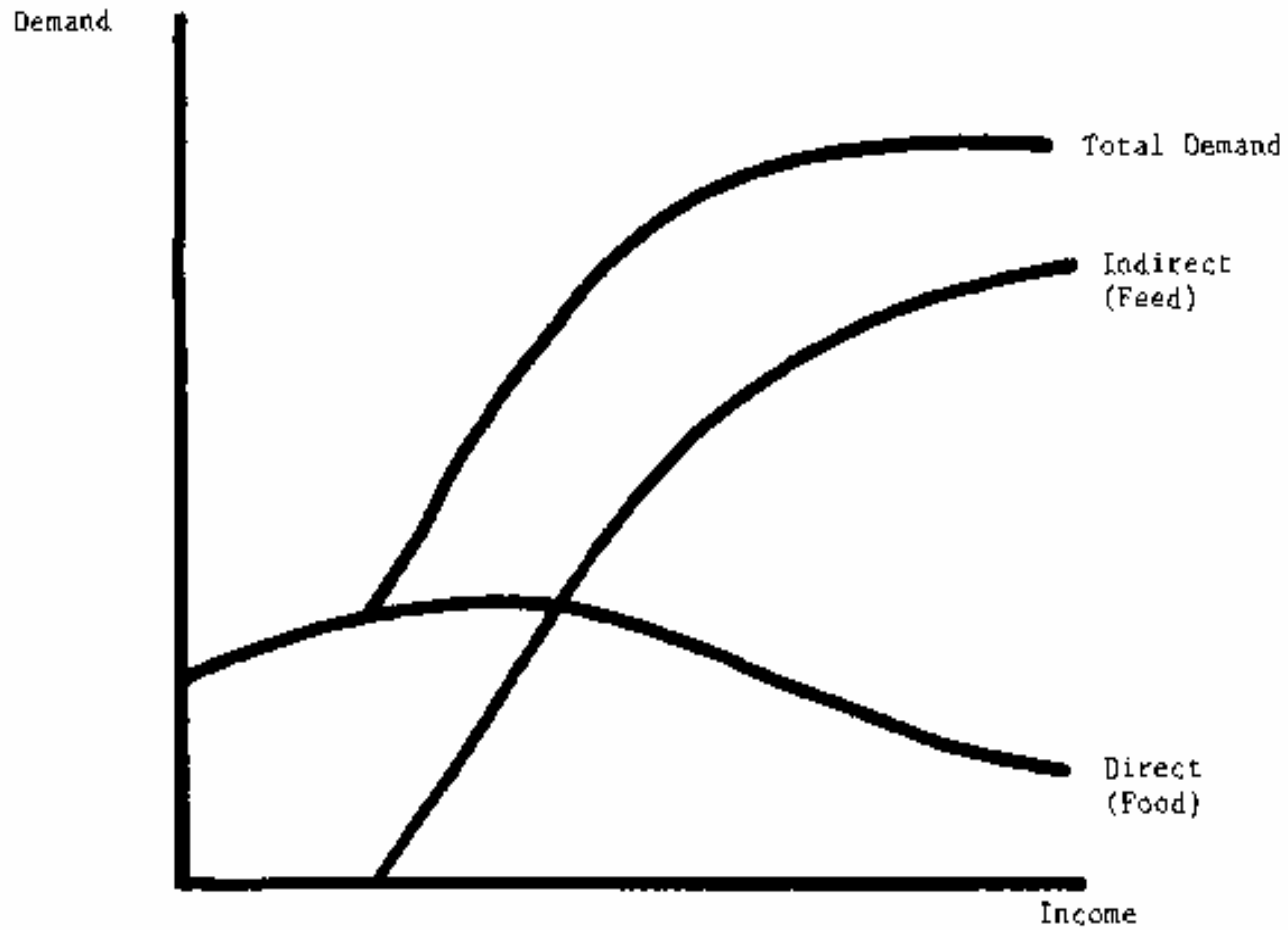


Figure 1. Total, direct and indirect demand for cereals

(Source: Yotopoulos PA, 1985 )

# Food vs Feed

As diversification of food occurs the direct demand of cereals/foodgrains rises marginally and then begins to fall.

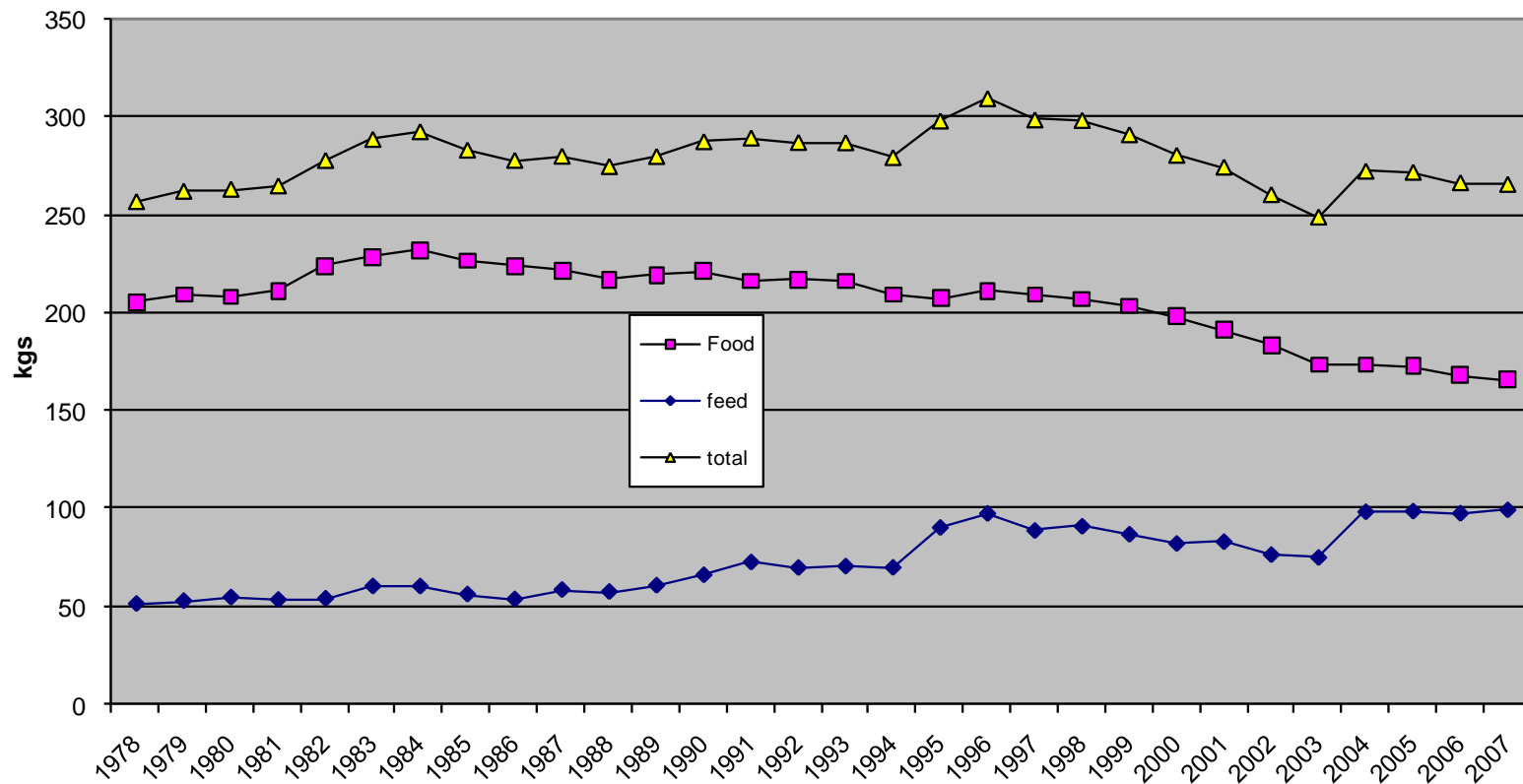
The indirect demand for cereals –feed – rises more sharply such that total demand for cereal begins to rise at a faster rate.

But in the Chinese case, food begins to be substituted for feed and total demand begins to stagnate. So who is eating meat and at what cost?

**Table 8. Loss/Gain of Energy and Protein in converting grain to meat**

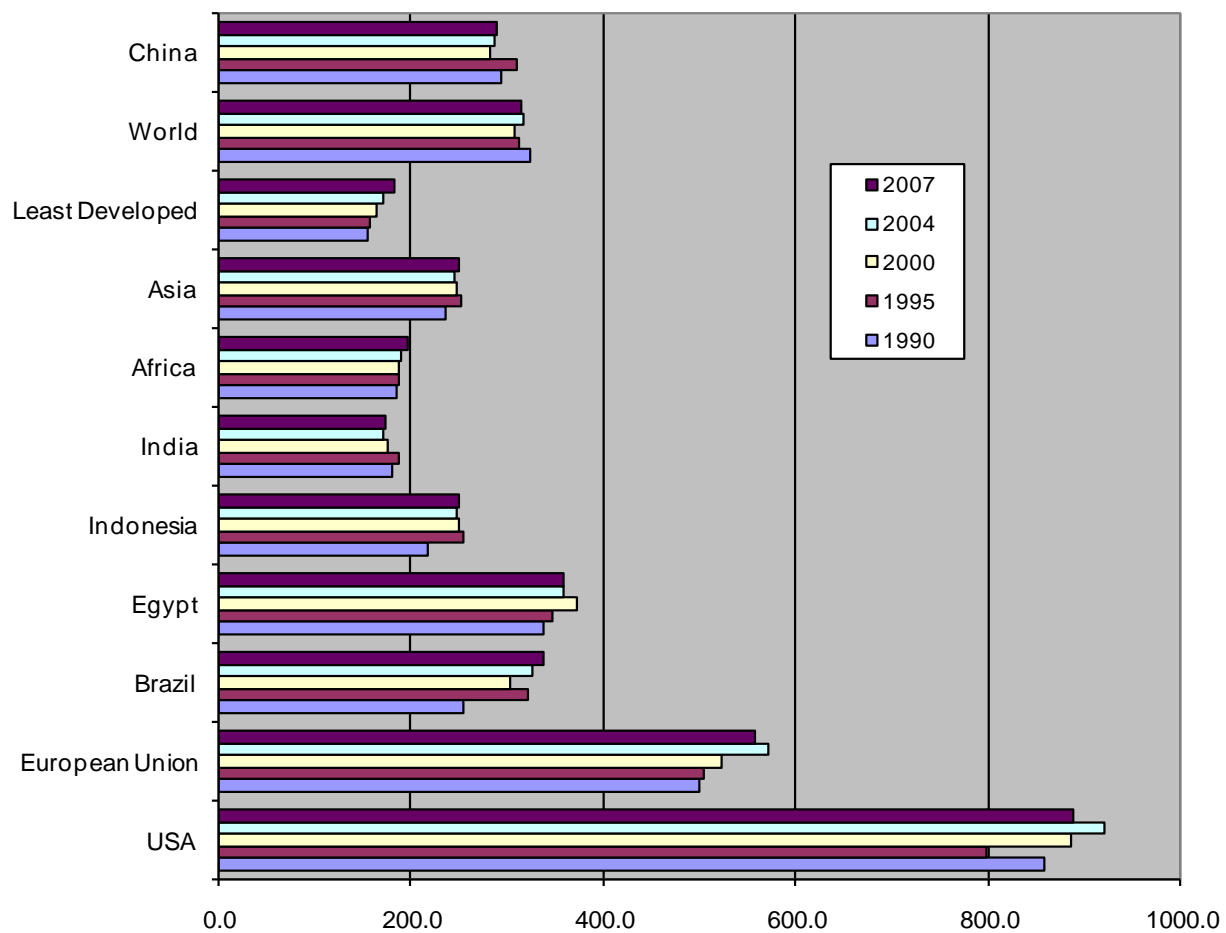
	Energy (Kilocalories)	Protein (Grams)
1 kg Chicken/Eggs gives	1,090	259
Requires 2kgs feed	6900	200
1 kg Pork gives	1180	187
Requires 3 kgs feed grain	10,350	300
1 Kg Beef gives	1140	226
Requires 7 kgs feed grain	24150	700
Source: Patnaik (2009 )		

**Chart 8 Direct and Indirect availability of foodgrains per capita, 1978-2009**



Source FAO-FBS

**Chart 9. Domestic supply of cereals per capita, selected countries, 1990-2007**



Source: FAO-FBS

**Table 9. Comparison of Cereal production and utilization in selected countries and Regions, 2007**

	millions	1000 metric tons					
	Population -	Production)	Net Imports	DS*	Feed	Food	other uses
European Union	493.5	261015	959	275029	168316	61710	45021
United States of America	308.7	412169	-96574	274560	162027	34450	78088
Brazil	190.1	65758	-1140	64118	33179	21695	9244
Egypt	80.1	19275	9292	28632	7099	18476	3077
Indonesia	224.7	51412	7493	56031	6102	39368	10562
India	1164.7	212344	-7196	202884	7950	177682	17254
Africa	962.7	130802	53214	188864	26480	138687	23753
Asia	3963.8	944389	66559	987498	225697	619473	142531
Least Developed Countries	771.1	125892	19377	140428	10677	105525	24259
World	6590.5	2121320	-21440	2066740	745879	966236	355253
<b>Kgs per capita per year</b>							
			<b>food</b>	<b>feed</b>	<b>other</b>	<b>DS*</b>	
United States of America			111.6	524.9	253.0	889.5	
Brazil			114.1	174.5	48.6	337.2	
European Union			125.1	341.1	91.2	557.4	
Least Developed Countries			136.9	13.8	31.5	182.2	
Africa			144.1	27.5	24.7	196.3	
China			152.5	89.9	46.7	289.1	
India			152.6	6.8	14.8	174.2	
Asia			156.3	56.9	36.0	249.2	
Indonesia			175.2	27.2	47.0	249.4	
Egypt			230.8	88.7	38.4	357.9	
World			146.6	113.2	53.9	313.7	

\*DS – domestic supply: Source: Natrajan(2011)

# Average per capita vs Disaggregated by income groups

Income distribution and access to food

Diversification of diets for the upper income groups with an upwardly inflexible total availability of grains would mean the cost in the form of a lower direct and indirect consumption for the lower income groups.

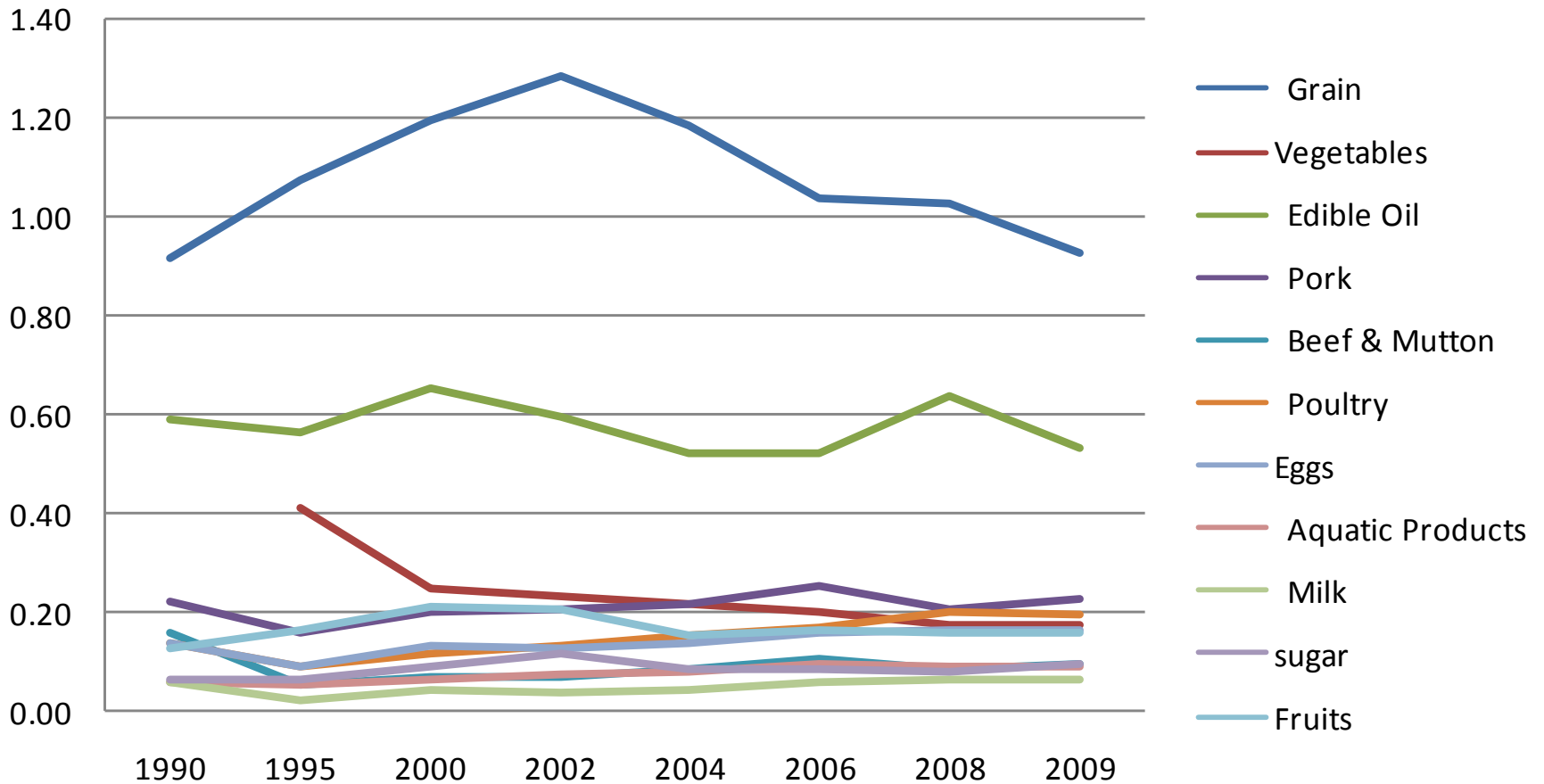
# China: Rural vs Urban Food Consumption

<b>Table 10. Estimated Urban consumption of various foods per capita, 1990-2009</b>								
	1990	1995	2000	2002	2004	2006	2008	2009
<b>Grain</b>	286.0	238.2	209.0	183.6	183.6	197.5	193.6	204.0
<b>Fresh Vegetables</b>		254.0	431.9	477.8	486.9	500.3	559.6	560.0
<b>Edible Oil</b>	8.7	10.3	10.8	12.6	10.1	11.2	9.8	11.7
<b>Pork</b>	47.9	66.4	66.3	66.1	62.2	60.9	60.6	61.0
<b>Beef and Mutton</b>	5.0	13.1	15.7	16.3	14.9	14.3	14.5	14.5
<b>Poultry</b>	9.0	20.7	24.0	22.3	20.3	20.9	21.7	21.5
<b>Eggs</b>	17.5	35.9	36.3	37.3	33.6	31.6	32.8	32.6
<b>Aquatic Products</b>	37.6	63.4	64.1	58.7	54.6	52.3	57.9	58.5
<b>Milk</b>	19.3	25.0	24.6	32.2	46.3	56.9	57.0	57.8
<b>Sugar</b>	24.2	20.3	14.3	14.1	13.3	13.1	13.9	11.1
<b>Fruits</b>	46.1	78.1	86.5	91.8	110.0	115.4	120.5	127.6
<b>Rural Household consumption per capita 1990-2009</b>								
	1990	1995	2000	2002	2004	2006	2008	2009
<b>Grain</b>	262.1	256.1	250.2	236.5	218.3	205.6	199.1	189.3
<b>Fresh Vegetables</b>	134.0	104.6	106.7	110.6	106.6	100.5	99.7	98.4
<b>Edible Oil</b>	5.2	5.8	7.1	7.5	5.3	5.8	6.3	6.3
<b>Pork</b>	10.5	10.6	13.3	13.7	13.5	15.5	12.7	14.0
<b>Beef and Mutton</b>	0.8	0.7	1.1	1.2	1.3	1.6	1.3	1.4
<b>Poultry</b>	1.3	1.8	2.8	2.9	3.1	3.5	4.4	4.3
<b>Eggs</b>	2.4	3.2	4.8	4.7	4.6	5.0	5.4	5.3
<b>Aquatic Products</b>	2.1	3.4	3.9	4.4	4.5	5.0	5.2	5.3
<b>Milk</b>	1.1	0.6	1.1	1.2	2.0	3.1	3.4	3.6
<b>Sugar</b>	1.5	1.3	1.3	1.6	1.1	1.1	1.1	1.1
<b>Fruits</b>	5.9	13.0	18.3	18.8	17.0	19.1	19.4	20.5

Source: CSY, various years

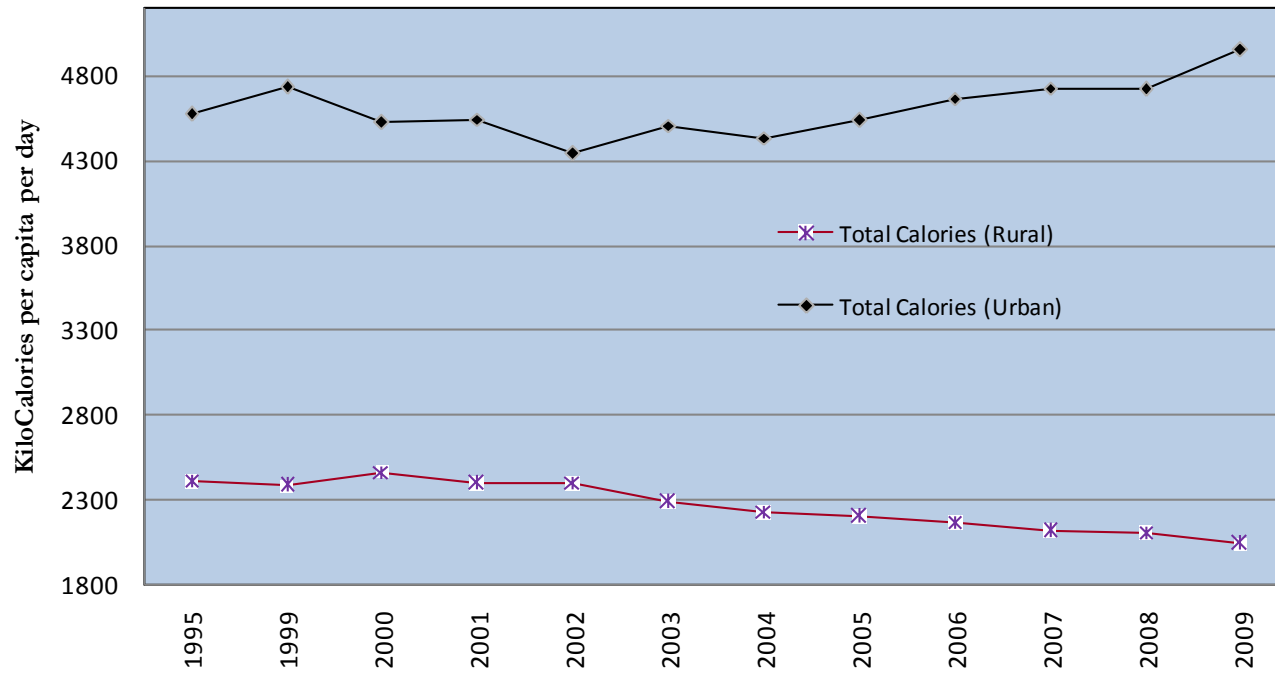


# Chart 10. Ratio of Rural to Urban Food Consumption



# Urban Prosperity and Rural Hunger

Chart 11. China: Rural and Urban Per capita calorie availability, 1995-2009



Source: Table 10 and FAO-FBS

# China Trade in food

**Table 11. China: Net Imports of Food Grains, 1978-2007 (Million Metric tons)**

	All Foodgrains	All Cereals	Wheat	Maize
1978-79	13.5	13.5	9.1	4.4
1980-84	17.3	17.4	12.7	4.1
1985-89	12.1	12.3	12.1	-0.2
1990-94	7.9	8.5	10.9	-2.7
1995-99	10.8	10.7	5.6	3.7
2000-04	-0.5	-1.7	2.2	-4.4
2005-07	4.4	1.4	0.9	-0.9
<b>Indices</b>				
	All Foodgrains	All Cereals	Wheat	Maize
1978-79	100.0	100.0	100.0	100.0
1980-84	128.4	129.5	140.4	93.2
1985-89	89.5	91.2	133.9	-3.7
1990-94	59.0	63.4	120.3	-60.7
1995-99	79.9	79.3	61.8	83.4
2000-04	-3.3	-12.9	24.2	-98.7
2005-07	32.9	10.7	10.1	-21.3
Source: Natrajan (2011)				

# Global Ramifications

“Chinese are eating more meat and Chinese pigs are eating more grain”

Industrial production of meat expanding rapidly requiring higher feedgrain demand per kg of meat produced.

Between 2001 and 2011 Soya consumption in China expanded 160% while area planted fell 20%.

Since 1990s, 30 million ha of farm, savannas and forests converted to Soy plantations in South America (Brazil, Argentina mainly)

China sourcing soya and Maize from Latin America and Africa in large quantities since 2008.

Local communities in Southern cone of S.America seriously affected with changes to their food consumption bundles.

“Farms, cows and fruit trees replaced by GM soy plantations”

Plus intensive use of pesticides, chemical fertilizers.

Chinese Agricultural companies and Multinational food corporations benefiting immensely.

Large areas of farmlands in Africa, South America, Russia and Canada are being contracted to produce feed for China.

Lester Brown's prognosis has already begun unfolding with unforeseen consequences.

“Who will feed China?” is still alive.