

**2011 CTPECC Agricultural and Food Policy Forum:
Moving Beyond Market Volatility to Foster Food Security**

Do Stock Reserves and Price Control Stabilize Grain Market?

**--Lessons from recent
world food crisis**

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Introduction

Extreme weather conditions:

Drought and wildfire in Russia and flood in Pakistan; weather related reduction in grain production in Ukraine and Canada, etc.

Government and market responses:

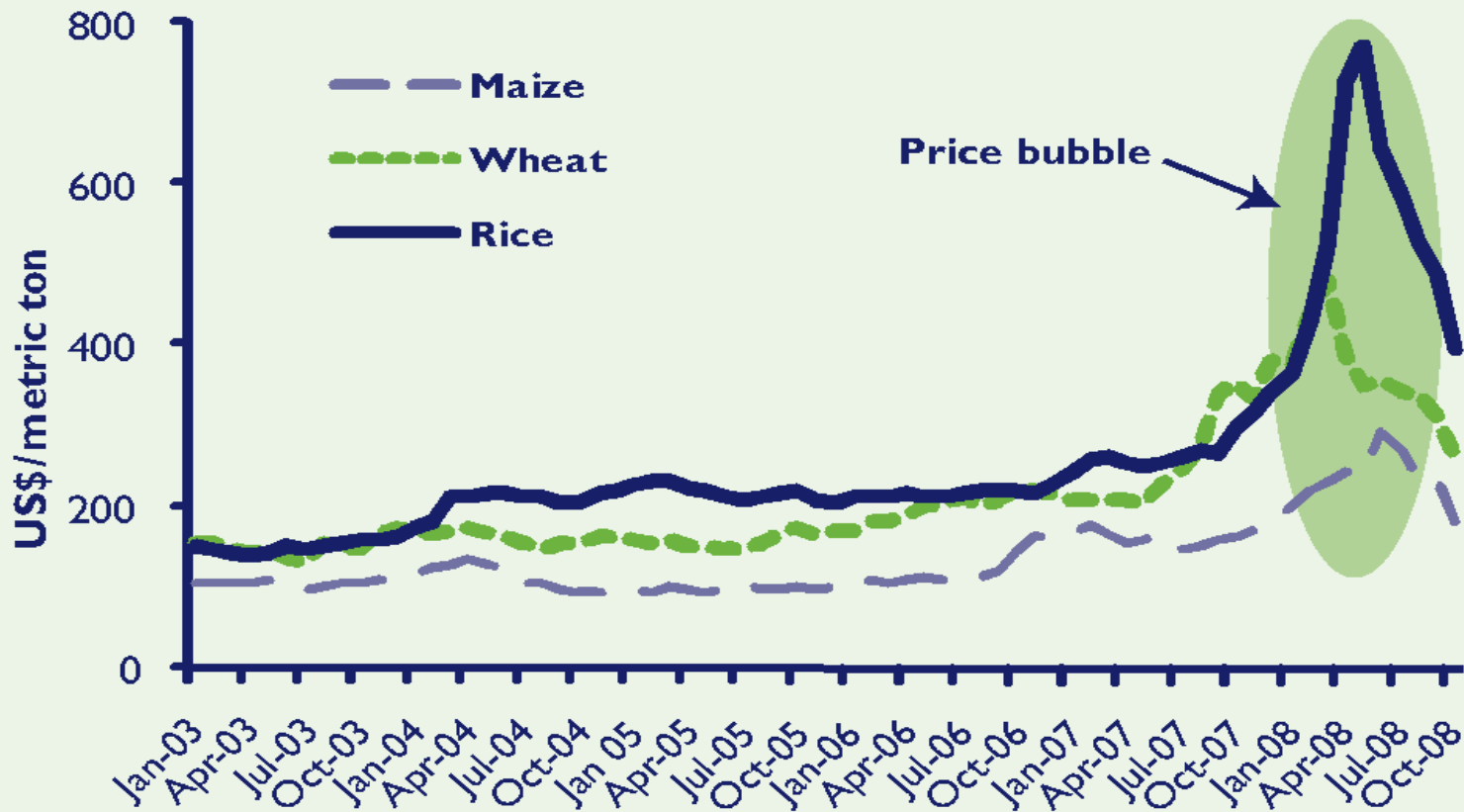
Temporary bans on grain exports by Russia and Ukraine, and price surge in India, Mozambique, etc.

Is a new world food crisis like that in 2007/08 coming again?

If the danger of new crisis is resulted from weather related natural disasters, are stock reserves an appropriate solution? How about government intervention in the form of price control?



Grain prices, 2003-2008



Source: FAO

Adopted from von Braun, 2008a.

What forces push grain prices up and down so wildly?
What lessons could be drawn from the crisis?

Introduction

Grain prices doubled or even tripled from 2006 to 2008, but then dropped even more quickly in a couple of months, though not to the original level in the early years of the century.

- ★ **It is quite likely that the price boom and bust in 2007/08 was pushed by speculation, as indicated by the rapid swings up & down.**
- ★ **However, were grain supply & demand in balance as suggested by stable price between 2000 and 2005?**
- ★ **Whether stock reserves and/or price control could be used to smooth price fluctuations?**



Why world grain prices went up since 2005?

- * Was there a real gap between production and consumption in addition to the increasing demand commonly believed to come from ethanol development? When did it start?**
- * If there was a gap between production and consumption before 2005, was it resulted from a long-run trend or short-run fluctuations?**
- * Reasons behind?**



World grain price trend

Remember:

World grain prices were quite stable at low levels before 2005, then started rising at moderate rates since 2005, and finally surged since mid 2006. Although grain prices declined since mid 2008, but stayed at the 2005 levels or a little bit above.

Why they started to rise in 2005?

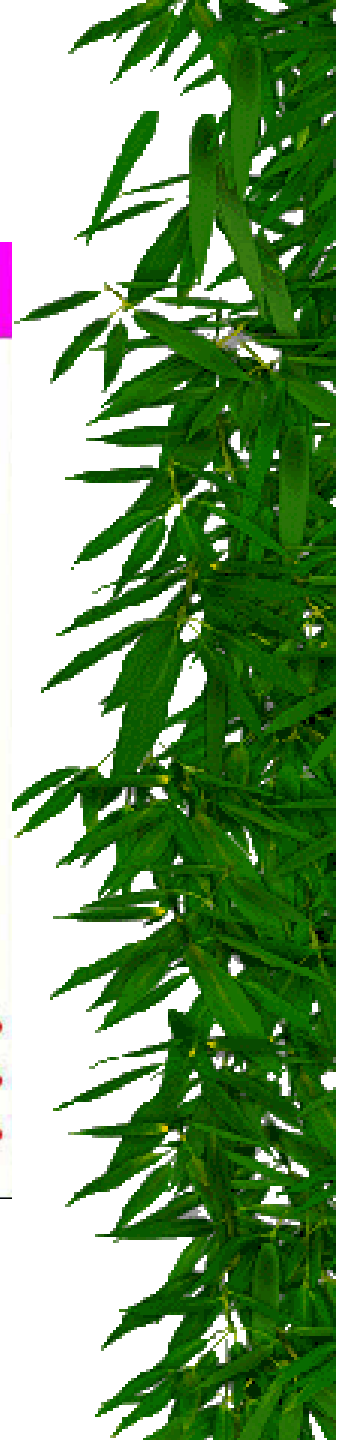
Is it a reflection of a new trend, or a continuous trend, in global grain demand/supply balance?



World grain stocks, mmt

	RICE		WHEAT		COARSE GRAINS		CORN	
	Total Cons.	Ending Stocks	Total Cons.	Ending Stocks	Total Cons.	Ending Stocks	Total Cons.	Ending Stocks
1977/78	244.6	44.8	396.0	109.2	680.8	124.0	356.5	77.3
1987/88	313.3	105.3	511.3	191.1	799.5	263.3	458.3	197.5
1990/91	345.0	126.7	553.7	170.5	815.9	195.2	473.7	141.2
1991/92	353.1	126.8	551.5	162.0	813.3	194.4	493.6	140.9
1992/93	357.5	123.3	547.6	175.7	841.9	219.3	512.5	162.5
1993/94	359.1	119.1	552.4	181.4	836.4	181.1	509.3	129.3
1994/95	365.2	117.8	542.4	162.1	853.8	196.5	535.4	152.9
1995/96	368.2	118.4	544.8	155.3	835.6	162.1	536.3	132.7
1996/97	378.7	120.6	573.4	164.5	869.3	202.1	560.0	165.6
1997/98	379.7	127.9	577.5	197.0	867.5	216.2	573.7	166.2
1998/99	388.2	134.3	579.1	207.9	869.2	237.9	581.1	190.9
1999/00	399.7	143.5	585.1	208.5	882.3	232.8	604.9	193.6
2000/01	395.1	147.2	584.2	205.8	884.2	211.2	610.0	174.3
2001/02	413.1	133.4	585.4	201.6	906.9	198.3	623.5	151.0
2002/03	407.6	103.6	603.7	166.3	903.0	170.7	628.1	126.2
2003/04	413.0	82.1	587.5	132.4	945.8	141.0	648.9	104.6
2004/05	408.1	74.5	606.9	150.6	978.2	178.6	688.0	131.4
2005/06	415.5	76.7	624.4	147.6	991.5	164.4	704.0	123.7
2006/07	419.2	75.1	615.8	125.1	1009.7	136.5	720.7	107.3
2007/08	423.7	72.1	619.0	109.7	1062.5	126.0	771.6	101.9
5 year change	3.95%	-30.41%	2.53%	-34.03%	17.66%	-26.19%	22.85%	-19.26%
10 year change	11.59%	-43.63%	7.19%	-44.31%	22.48%	-41.72%	34.50%	-38.69%
20 year change	35.24%	-31.53%	21.06%	-42.60%	32.90%	-52.15%	68.36%	-48.41%
30 year change	73.19%	60.99%	56.32%	0.45%	56.07%	1.63%	116.46%	31.81%

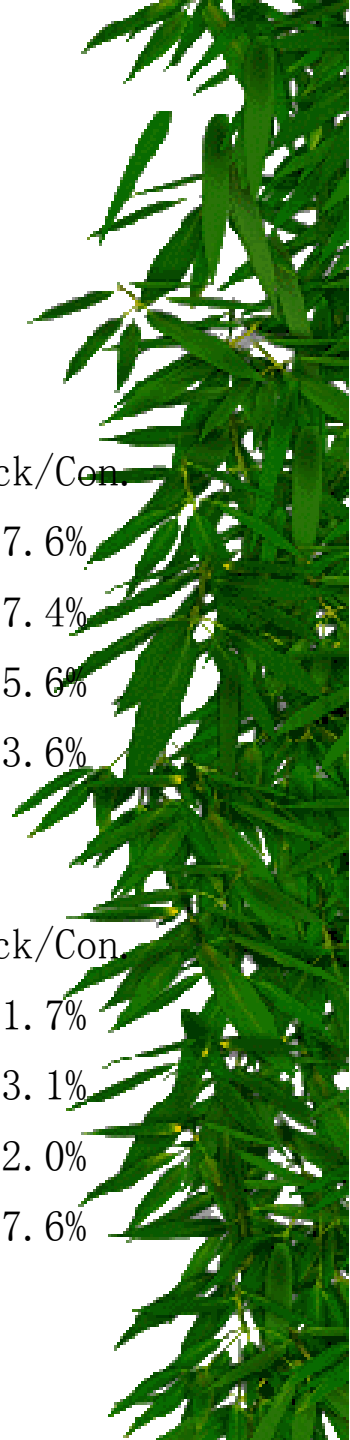
Source: USDA
Adopted from



Changes in world grain stock

Year	Rice			Wheat		
	Con.	Stock	Stock/Con.	Con.	Stock	Stock/Con.
1977/1978	244.6	44.8	18.3%	396.0	109.2	27.6%
1987/1988	313.3	105.3	33.6%	511.3	191.1	37.4%
1999/2000	399.7	143.5	35.9%	585.1	208.5	35.6%
2005/2006	415.5	76.7	18.5%	624.4	147.6	23.6%

Year	Coarse grains			Corn		
	Con.	Stock	Stock/Con.	Con.	Stock	Stock/Con.
1977/1979	680.8	124.0	18.2%	356.5	77.3	21.7%
1987/1988	799.5	263.3	32.9%	458.3	197.5	43.1%
1999/2000	882.3	232.8	26.4%	604.9	193.6	32.0%
2005/2006	991.5	164.4	16.6%	704.0	123.7	17.6%

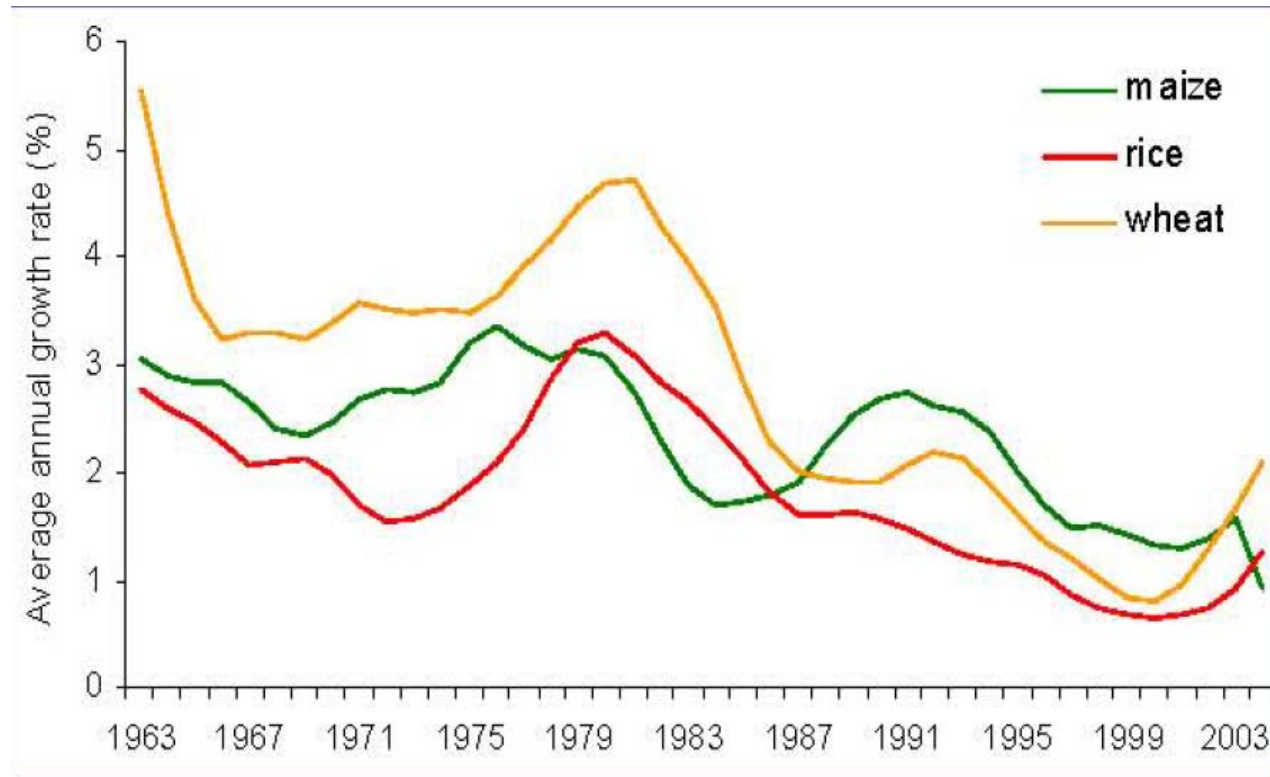


Supply/demand imbalance

- ★ **Production of major grain crops has been in short since 1999/2000 marketing year;**
- ★ **World stocks of major grain crops have been declining, postponing sending right price signal to producers, researchers, and policy makers;**
- ★ **After the accumulated stocks reduced by 1/3 to 1/2, the delayed signal from changing stocks might trigger price surge in 2005/06;**
- ★ **Why the stocks had been accumulated? And why annual production growth was slowed down?**



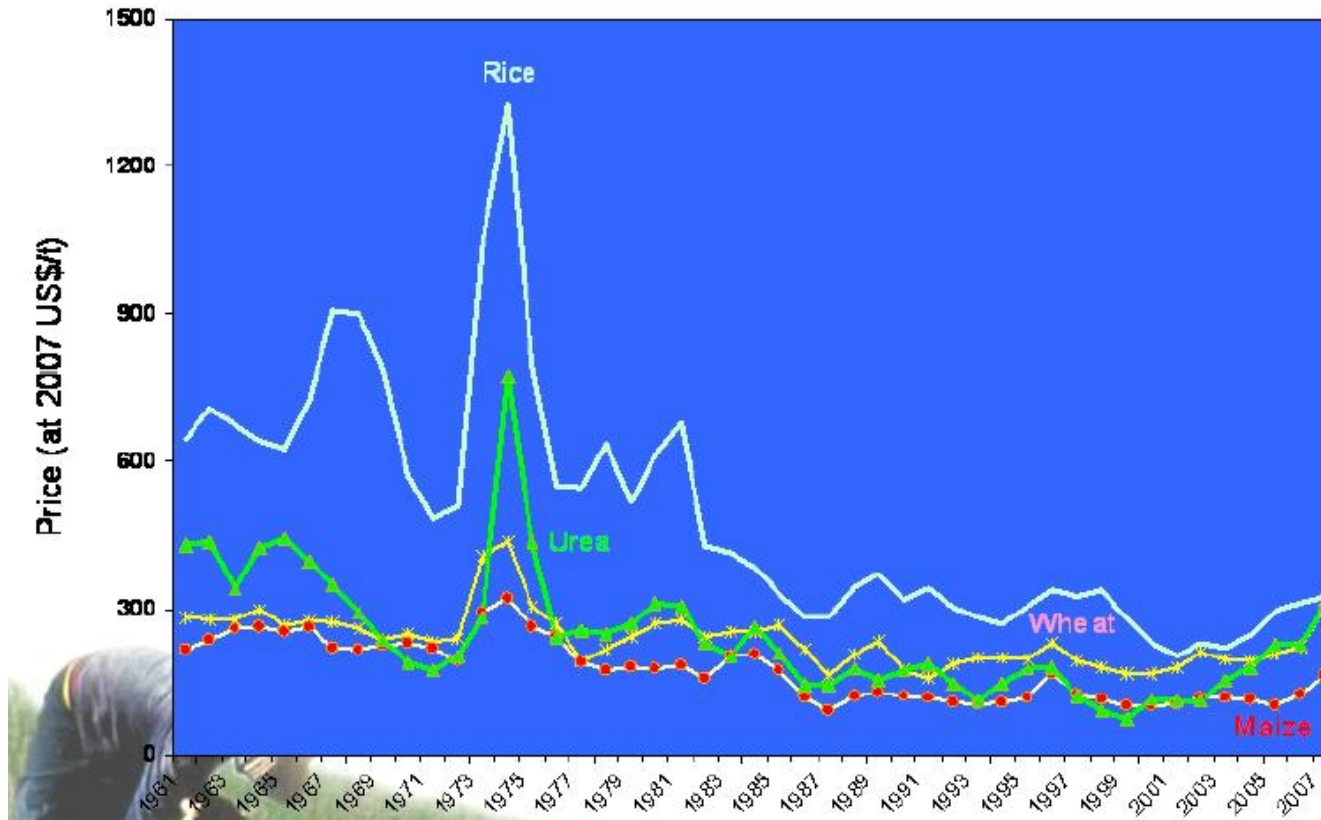
Productivity growth of major cereals



Source: World Bank, 2008.
Adopted from Barker, 2008.

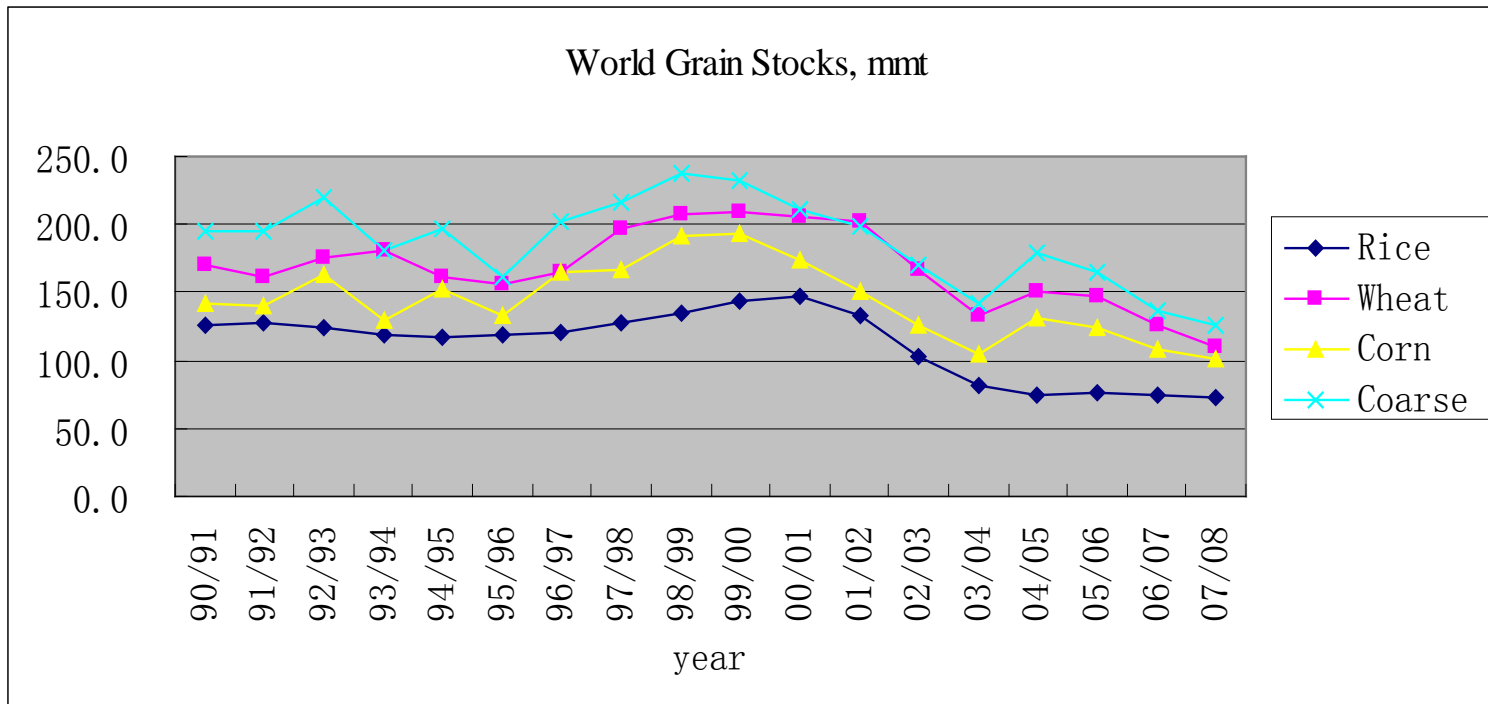


Real prices of major cereals & urea



Source: World Bank, 2008.
Adopted from von Braun, 2008b.

World grain stock



Source: USDA
Adopted from

Relationship between production, stocks, & price

- * Production & productivity growth is likely determined by current and lagged prices;**
- * Given stable consumption, changes in price may reflect changes in both production and stock;**
- * changes in stocks are likely to be outcomes of both market forces and policy intervention;**
- * Stocks may have significant impact on market price, and hence production in later years;**
- * If this is true, price control may have the same effect as operation of stocks**



Chinese case

*** Operation of government reserves**

Current state grain reserve system was established in the late 1980s, in response to farmers' complain of difficulty in selling surplus grain.

It procure grain from farmers/markets at support prices (pre-set quantities and types), and release grain to wholesale markets through auction, with pre-set minimum prices.

All operations are in response to price changes.

*** Changes in on-farm stocks**

As government reserve does not absorb all surplus, on-farm stock may increase facing low and/or declining prices



Chinese case

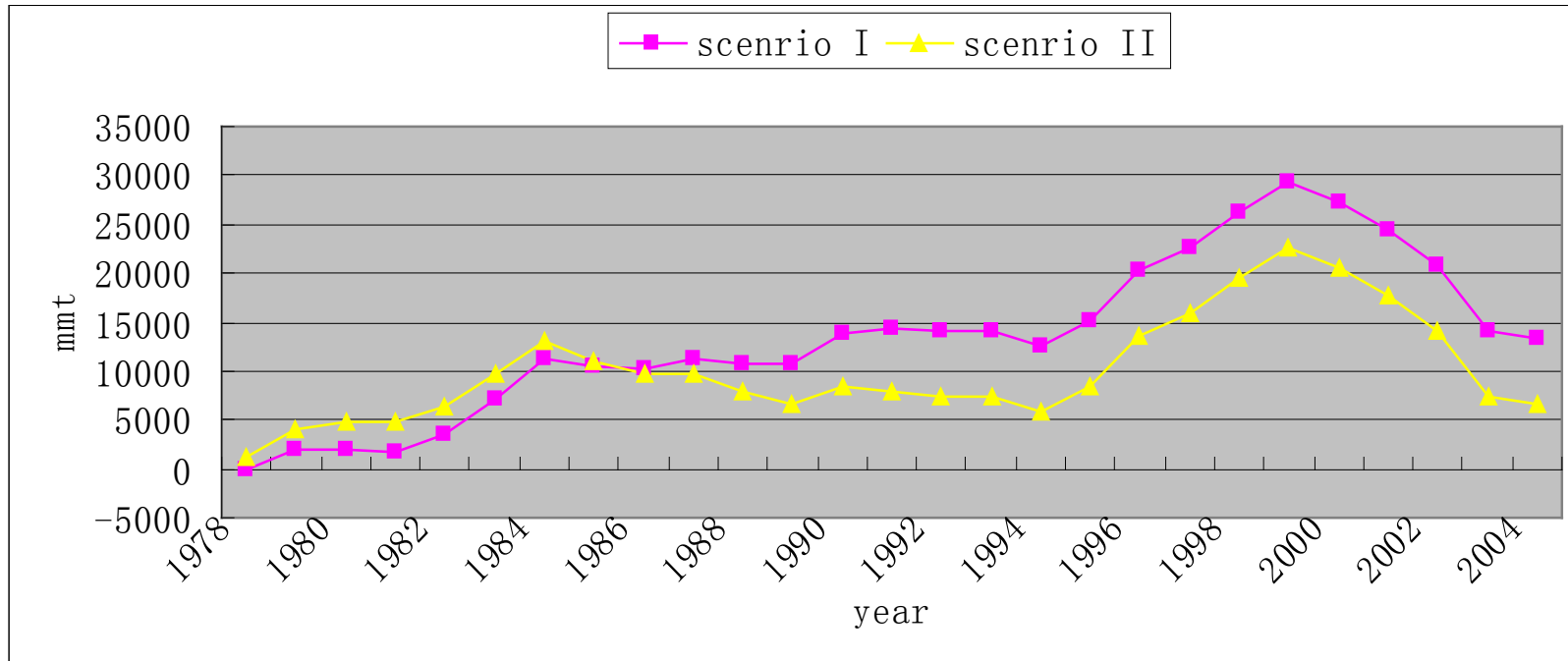
Basic assumptions:

- ★ **Total consumption is increased with population and income, at a relatively smooth manner;**
- ★ **Annual change in stocks is calculated as the difference between total consumption and the sum of production and net imports;**
- ★ **Accumulated stocks is a part of the total annual supply;**
- ★ **Starting stock is assumed at 10 mmt in 1978;**
- ★ **1978 figures are taken as bases.**



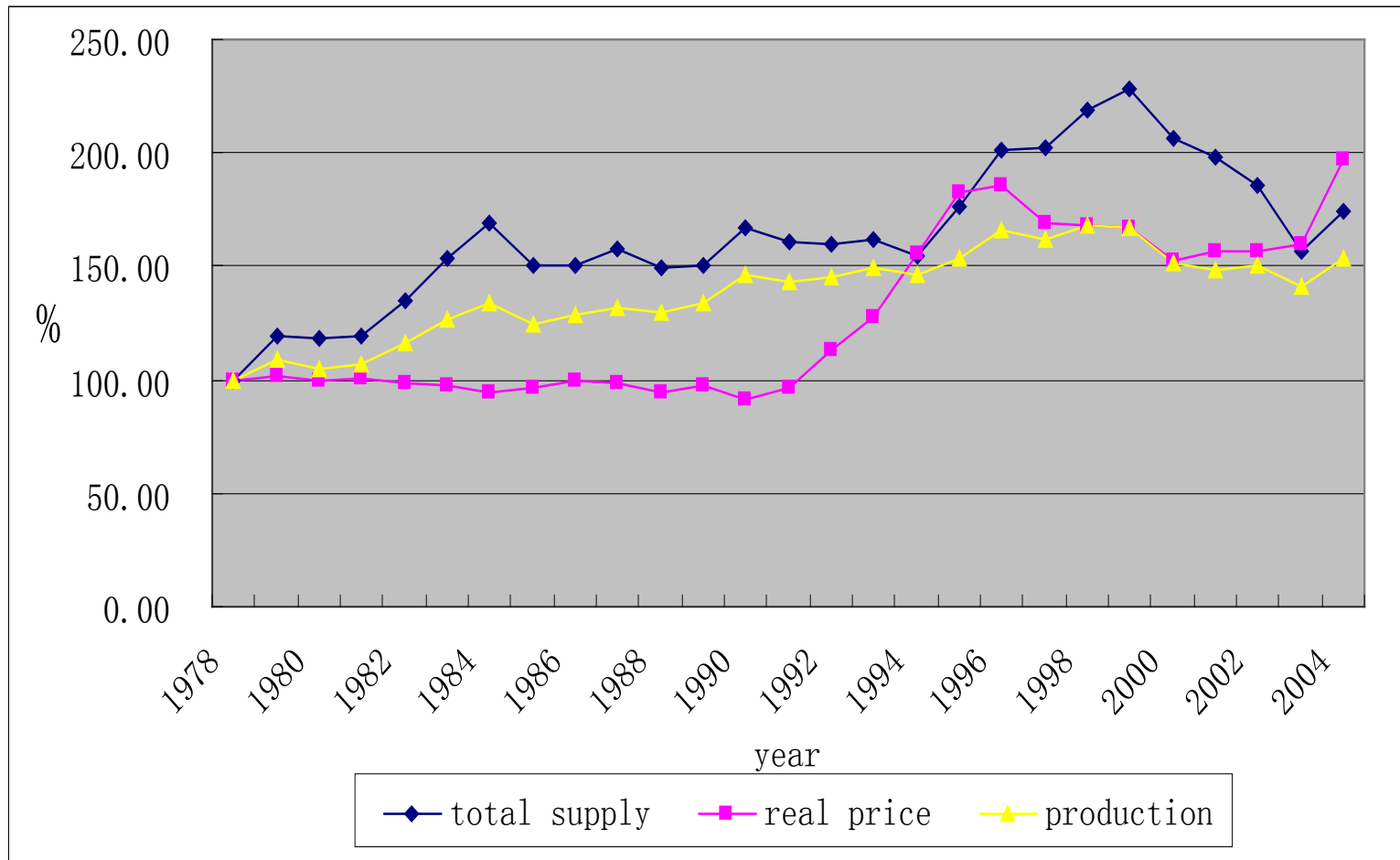
Chinese case

Estimated accumulated stocks



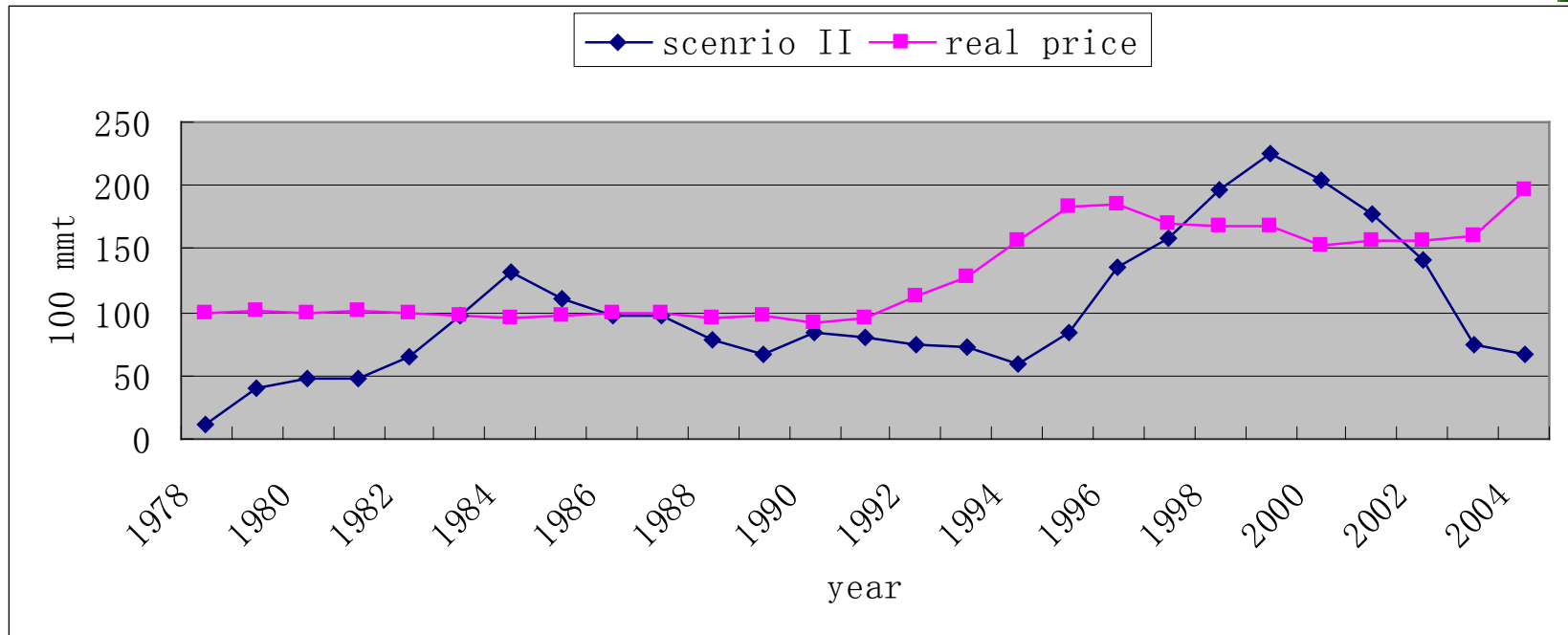
Chinese case

Price, total supply and production



Chinese case

Relations between price and accumulated stocks



Chinese case

Preliminary conclusions:

- ★ Surplus production may be absorbed by changes in stock for several years before pushing down market prices, and vice versa;
- ★ Accumulative change in stocks may trigger greater price change;
- ★ Price change may led to production adjustment with time lags;
- ★ Price is likely to fluctuate more widely than production;
- ★ Function of stocks may just delay fluctuations and let the fluctuations wider.



Chinese case

Plausible consequences of price control

- ★ **Objective of price control: to maintain price at a stable (and often low) level;**
- ★ **Commonly assumed function of stocks: smoothening supply against production fluctuations, usually expected to reduce price fluctuation;**
- ★ **If stocks may actually widening fluctuations with delay, how about price control?**



Lessons drawn

- (1) It is important to fully understand the long-run impacts of stocks reserves, and price controls;**
- (2) It is crucial to distinguish short-term fluctuation from emerging long-run trend;**
- (3) It may be more important to look at quantity instead of price in formulating food security policy;**
- (4) The welfare issue of the poor may be addressed by income and other measures instead of price instrument.**

It is important to distinguish two policy objectives: long-run secured supply with reasonable price changes, and short-run price fluctuation reduction concerning welfare of the poor.



Thanks !

