Which price management instruments for agricultural markets?

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The need to regulate agricultural markets
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The necessity of agricultural prices management

- A market is “optimal” if price equates long run marginal cost

- Agricultural markets never equate marginal cost with price…
  - Who can admit that long run marginal cost of production change from 50 to 200 in a few months?
  - Prevents credit…
    » No banker will lend in such risky endeavors
  - And capital accumulation
    » The only way of increasing labor productivity and removing poverty
Specific to agriculture:

Retail prices of new car in large american cities as compared with tomatoes (SA)

Remark: average tomatoes prices are increasing, car prices decreasing....

Index base 100 = 1967, deflated by implicit GNP price index

author computations from economagic.com
The necessity of agricultural prices management

• A market is “optimal” if price equates long run marginal cost
• Agricultural markets never equate marginal cost with price….
• But finding remedies requires analyzing causes
  – Otherwise, risk that remedies worse than evil

• **Where does agricultural price volatility come from?**

• **One unanimous agreement, and two antagonistic theories!**
Unanimous agreement on:
Where does price volatility come from?

Every economist congregate: from a rigid demand which magnifies shocks.

- Elastic demand: large shock, small price change
- Inelastic demand: small shock, large price change

But where do shocks come from?
Where do shocks come from?

- Two alternative theories
  - 1 - Exogenous shocks
    - drought, frost, etc.; Out of operators control.
  - 2 - Endogenous motion
    - Mathematically “chaotic” markets: fluctuations resulting from operators behavior

- Leading to opposite policies:
  - 1 - Liberal if exogenous shocks
    - To let the “law of large numbers” playing the role of an insurer
  - 2 – Administered prices if endogenous
    - Because in that case, the law of large numbers does not hold

- Determining which explanation holds is therefore crucial
  - Let’s dig a little further ….
The exogenous fluctuations theory

• Shocks from nature (drought, epidemy, etc…) 
  • Individually **small and numerous**
    – Every year are good or bad somewhere in the world
  • **Independently distributed**
  • Risk **not depending upon remedies**
    – (irrigation does not change rainfalls )

• Therefore, the **law of large numbers holds**
  • Therefore insurance works
  • Within limits : a drought involves large surfaces
  • The larger the surface, the easier mutualizing risks :
    – Throughout space : transportation, removing duties …. etc…
    – Throughout time : stockpiling , financial reserves…
    » “catbonds”, “revenue insurance” etc..
    – Throughout activities : futures markets etc…

• These are always **liberal** prescriptions
• Let’s see a few examples ….
The efficiency of liberal prescription with exogenous shocks

Widening markets stabilizes prices

 Suppressing production quotas and prices guaranties is also efficient

Here is the rational for liberalizing agriculture!
Liberal recipes OK for **exogenous** shocks. Do they work with **endogenous** shocks?

- **Endogenous shocks**: what is it?
- **The cobweb model**:

  Example of false expectations driven fluctuations

  Not satisfactory (nothing prevents prices and quantities being negative)

  Yet, shows how the equilibrium point can be « repellent » (or the equilibrium unstable)
A more realistic cobweb scheme.....
can result in chaotic series:

- This simulated price series looks like the tomatoes price series.
- Important notice: Nothing random!
- Completely different properties!
In a chaotic context, « nature is wicky »

• Because operators will react to new circumstances, any step creates opposite reactions
• Exemple : stabilizing prices for any supplied quantity likely to generate overproduction, because producers are sensitive to risk as well as to price.
• Implies that most « liberal » recipe will not work any more
Instead of cancelling out each others, fluctuations synchronize

Two almost independent markets:
10% of A supply sold on B, and vice versa

They just fluctuate together!

Same parameters, but 30% of market A supply sold on market B
Suppressing production quotas increases instability on residual market

Just the opposite of what happened in the case of exogenous fluctuations!
Is agricultural price volatility exogenous or endogenous?

- No really clearcut statistical tests
  - Nothing more similar to a random series than a chaotic series!

- But: …
Models based on endogenous hypothesis perform relatively well compared to classical exogenous fluctuation models:

Wheat price projections with different models

Successive OECD Ag Link model projections and actual

CIRAD ID3 model for 3 scenarios

The Aglink model missed both the surge and the down fall

The chaotic ID3 model predicted both in 2005 (from 2001 data)
The world wheat price has been less volatile during the years of high price policies in developed countries.

Prices were higher and more volatile before 1935…

Internal stabilisation policies do not increase volatility…

….and help decreasing average price !
In fact:

• Both theories hold!
  – The existence of climatic or epidemic shocks cannot be denied
    • (and taken in consideration when elaborating policies)
  – Yet, most of the international agricultural price volatility derives from endogenous phenomena

• It means that apparently contradictory policies must be pursued:
Insurance based methods to cope with exogenous yield risk:

– Provides large room for private insurance
  • Public intervention not required in principle
– Yet, large catastrophes involving simultaneously many farmers still a problem
  • Interannual risk sharing (« cat bond », etc…) for income losses
  • Stockpiling for consumer protection
  • Trade: not contradictory with active public regulation, such as import and export licences, quotas, etc… ;
– Should yield insurance be subsidized?
  • In principle, no!
  • Yet, poor even poorer than they feel… (a redistribution issue, not an efficiency issue)
Regulation to cope with endogenous market risk

• Cutting links between agriculture and market
  – **Prices** must be administered
  – **And quantities** too, for it is impossible to manage prices without considerations of quantities
  – Easy, because demand is fairly easy to know!
  – Allows for “multifunctionnality”

• Not contradictory with the existence of residual markets, for marginal adjustments
  – Will be stabilized by intervention (the tip of iceberg)

• Not contradictory with trade!
  – But incompatible with “ad valorem tariffs” which assume the problem is solved
Concluding remarks:

- These views not shared by WTO and International institutions advisers.
  - They lack economic analysis, satisfied with the « physiocrats » of 18th century
  - A pity they did not derive lessons from the 1930’s!
- They mix up three different aspects of market:
  - Comparative advantage and trade: undisputable!
  - Efficiency effect of competition: present with elastic demand, not the case for agricultural (and other!) commodities.
  - The objectivity of income distribution: Very disputable!

But this is another story!