How can food price instability be managed?

*Is today’s dominant doctrine relevant for developing countries?*

Franck Galtier, galtier@cirad.fr
After 3 centuries of lively debate, since the 1980s, domination of a single doctrine
The relevance of this doctrine has been questioned in the 2000s because of the recurrence of food price crises (on international markets, in the Sahel, in the Horn of Africa…)

French Development Agency (AFD) and French Ministry of foreign affairs (MAEE) commissioned a study to review the literature on managing food price instability

A European network of experts (ECART now AGRINATURA):

- Institutions involved: CIRAD, IRAM, NRI and Wageningen University.
  
- Experts involved: Franck Galtier (CIRAD), Jonathan Coulter and Gideon Onumah (NRI), Gerdien Meijerink and Kess Burger (WUR) and Jean-François Sempéré (IRAM), Roger Blein, Nicolas Bricas, Jérôme Coste, Benoît Daviron, Johny Egg, Françoise Gérard, Denis Michiels, Marcel van Asseldonk and Tancrède Voituriez.

Report, book, articles → Presentation based on the book and the GFS article
1. What are the consequences of food price instability in developing countries?

2. What are the possible options to manage food price instability?

3. Is today’s dominant doctrine able to protect enough DC farmers and consumers?

4. What are the costs and benefits of going beyond this doctrine?

- Focus on grains (to a certain extent, the results may also be valid for other food products)
- Illustrated with examples from Mali (West Africa)
1. What are the consequences of food price instability in developing countries?
Magnitude of consumer price instability

Evolution of the consumption prices of millet, sorghum and maize in Bamako
(2000 - 2011)

Source: Observatoire du Marché Agricole (OMA)
Magnitude of producer price instability

Evolution of the producer price of millet in Mali (2000 - 2009)

Source: Observatoire du Marché Agricole (OMA)
## (1) Consequences on consumers

<table>
<thead>
<tr>
<th></th>
<th>Proportion of grain in dietary calories</th>
<th>Proportion of grain in food expenditures</th>
<th>Proportion of grain in total expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average for rural households</td>
<td>86.0%</td>
<td>51.1%</td>
<td>34.9%</td>
</tr>
<tr>
<td>Average for the poorest 20% of rural households</td>
<td>88.6%</td>
<td>57.6%</td>
<td>44.3%</td>
</tr>
<tr>
<td>Average for the richest 20% of rural households</td>
<td>82.0%</td>
<td>44.1%</td>
<td>26.5%</td>
</tr>
<tr>
<td>Average for urban households</td>
<td>73.1%</td>
<td>31.9%</td>
<td>18.4%</td>
</tr>
<tr>
<td>Average for the poorest 20% of urban households</td>
<td>78.6%</td>
<td>38.5%</td>
<td>27.3%</td>
</tr>
<tr>
<td>Average for the richest 20% of urban households</td>
<td>68.0%</td>
<td>27.4%</td>
<td>13.6%</td>
</tr>
</tbody>
</table>

*Source: Bocoun (2011).*
(1) Consequences on consumers

- Reduction in grain consumption → deficiencies in calories
- Reduction in other foods consumption → deficiencies in nutrients
- Reduction of health and education expenditures

- Contraction of the demand for non-food products
- Less productive investment
- Reduction of household savings, capital and resilience

- Political troubles (urban riots…)

Grain price instability generates macroeconomic and long-run effects (Myers, 2006) and is therefore likely to affect the overall development process.
(2) Consequences on farmers

Food price instability

Farmers do not invest

Grain production remain sensitive to natural hazards

Farmers develop self-consumption strategies

Grain markets are narrow
(In Mali, less 20% of the millet and sorghum produced are marketed)
(2) Consequences on farmers

- Food price instability
  - Farmers do not invest
    - Grain production remain sensitive to natural hazards
  - Farmers develop self-consumption strategies
    - Grain markets are narrow
      (In Mali, less 20% of the millet and sorghum produced are marketed)
  - Grain productivity remains low
(2) Consequences on farmers

Food price instability

Farmers do not invest
- Grain production remain sensitive to natural hazards

Farmers develop self-consumption strategies
- Grain markets are narrow (In Mali, less 20% of the millet and sorghum produced are marketed)

Grain productivity remains low
- Grain production requires a large share of land and labor
- Grain accounts for a large share of hh expenditures

The overall development process is hampered (Timmer, 1988, 2009; World Bank 2007)
What are the possible options to manage food price instability?
### Possible strategies to manage food prices instability

<table>
<thead>
<tr>
<th>Modality of action</th>
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<th>Stabilize Price</th>
<th>Reduce the effects of price instability</th>
</tr>
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<tbody>
<tr>
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<td></td>
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<td>B-strategy</td>
</tr>
<tr>
<td></td>
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<td>Improve food markets</td>
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<tr>
<td><strong>Based on public interventions</strong></td>
<td></td>
<td>C-strategy</td>
<td>D-strategy</td>
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<td></td>
<td>Price stabilisation policies</td>
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<td><strong>Market-based</strong></td>
<td></td>
<td>A-instruments</td>
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<tr>
<td></td>
<td></td>
<td>• roads</td>
<td>• futures</td>
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<td>• communication networks</td>
<td>• options</td>
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<td>• storage facilities</td>
<td>• crop insurance</td>
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<td>• G&amp;S</td>
<td>• weather insurance</td>
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<td>• MIS</td>
<td>• ...</td>
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<td></td>
<td></td>
<td>• public buffer-stocks</td>
<td>• emergency reserves</td>
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<td>• variables import taxes</td>
<td>• food for work programs</td>
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<td>• ...</td>
<td>• cash for work programs</td>
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<td>• free distribution of food</td>
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<td>• safety nets</td>
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For more details, see Galtier 2013, chapter 2.
Example of A-Strategy: the effect of market information on price instability

In India, fisher access to cell phones generated a strong decrease in price instability

Source: Jensen (2007)
Example of C-Strategy: the effect of public stocks on price instability in Indonesia

**FIGURE 1** Indonesian Domestic Rice Prices and International Prices (constant 1985 Rp/kg)

Source: Timmer (1996)
Combining strategies

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These strategies are not exclusive (they can be combined)
Positive and negative interactions between the strategies depending on how they are articulated:
- Crowding out effect of public stocks on private storage (C damaging A)
- Public procurement on commodity exchanges (C and D strengthening A)
3.

Is today’s dominant doctrine able to protect enough DC farmers and consumers?
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- Price stabilisation policies (C-strategy) should not be used.
- Targeted transfers (D-strategy) should be:
  - restricted to periods of crisis (emergency aid)
  - strictly targeted (only food insecure hh should receive transfers)
Farmers are supposed to be protected by:

- food markets (much more efficient to avoid collapses than spikes, see Williams and Wright, 1991)
- the natural insurance provided by the negative correlation between harvest levels and prices (Newbery and Stiglitz, 1981)
- the cover they can get on futures markets

Poor consumers are supposed to be protected by emergency targeted aid at a moderate cost and without disturbing markets (transfers limited in time, space and amount)
Do grain markets impede price collapses?

Source: Observatoire du Marché Agricole (OMA)
Do farmers benefit from a « natural insurance »?

To what extent the harvest level of individual farmers is correlated with price level?

- Case of tradable grains (rice)
- Case of grains traded at regional and national levels (millet, sorghum and – to a certain extent- maize)
- Case of « endogenous instability » (speculative bubbles, panics, cobweb)

When this correlation does exist, to what extent is it beneficial for farmers? (case of deficit farmers)

<table>
<thead>
<tr>
<th></th>
<th>Zambia (maize)</th>
<th>Mozambique (maize)</th>
<th>Kenya (maize)</th>
<th>Ethiopia (maize and teff)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sellers only</td>
<td>21%</td>
<td>13%</td>
<td>18%</td>
<td>13%</td>
</tr>
<tr>
<td>Buyers only</td>
<td>33%</td>
<td>51%</td>
<td>55%</td>
<td>60%</td>
</tr>
<tr>
<td>Buy and sell</td>
<td>8% (3%)</td>
<td>12% (na)</td>
<td>19% (7%)</td>
<td>25% (13%)</td>
</tr>
<tr>
<td>including net buyers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neither buy nor sell</td>
<td>59%</td>
<td>24%</td>
<td>8%</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>100%</td>
<td>100%</td>
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Source: Jayne et al. (2006)
Can DC farmers hedge price-risk on futures markets?

To what extent are DC farmers (traders and processors) able to hedge price risk on futures markets?

- DC farmers access to B-instruments is limited by i) the lack of information on these tools, ii) their technicity and iii) their cost.

- No futures markets for millet, sorghum, yams or cassava.

- Rice futures markets are not working (cf. AFET rice futures contract in Thailand)

- Futures markets do exist for maize (CBT and SAFEX) but the basis risk impede them to offer an effective cover to DC farmers.
Can DC farmers hedge price-risk on futures markets?

*The « basis risk »*

Sources: Observatoire du Marché Agricole (OMA) and SAFEX
Are poor consumers effectively protected by emergency aid?

- Lessons of the 2005 crisis in Niger: the high frequency of crises generated a decrease in hh capital (savings, assets) and resilience and made some hh fall in chronic malnutrition. Same conclusions in other parts of the world (ex: Horn of Africa)

→ Consequences: the standard model currently used to manage food crises (exclusively based on emergency targeted aid) is not effective:
  1) Emergency aid is not enough for hh suffering from chronic malnutrition
  2) Aid targeted exclusively on food insecure hh does not allow to put a break on hh decapitalisation

... nor sustainable:
  With the decrease in hh resilience the cost of managing crises with emergency aid increases over time (X2 in Niger in 2010 compared to 2005, see Michiels et al., 2011)
4.
What are the costs and benefits of going beyond this doctrine?
a) Costs and benefits of protecting more farmers
Available options to protect more farmers

- D: (counter-cyclical or decoupled) cash transfers → difficult to implement in DCs
- C (floor prices)
Should governments intervene to hold the price above a floor? (1)

Guaranteeing a floor price to farmers can be done by absorbing surpluses through i) purchase by public stocks, ii) increased import restrictions and/or iii) export subsidies

**Costs**

- Budgetary costs
- Distortions (can generate surpluses) if the floor price is set at a too high level
- Instability may be exported on international markets

**Benefits**

- the risk faced by farmers is reduced
- farmers access to credit is increased
- investment in grain production is stimulated [historical correlation between successful green revolution and floor prices]
- grain productivity is increased
- economic development is stimulated (knock-on effects on the other sectors of the economy)
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b) Cost and benefits of protecting more consumers
Available options to protect more consumers

- D (expanded use of targeted transfers)
- C (ceiling prices)
Should the use of D-Instruments be expanded?

• Expanding the use of D-Instruments may mean:
  - use them structurally (not only as emergency tools)
  - increase the number of beneficiaries (large targeting)
  - increase the amounts transferred

• Costs induced:
  Budgetary costs
  Increased distortions on the markets of the goods transferred (food products, assets, inputs) and on the labor market

• Benefits generated
  Help continuously hh suffering from chronic malnutrition
  Put a break on hh decapitalisation and loss of resilience
  Rebuild capabilities of low resilient hh
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Previous experiences do exist (ex: Brazil, Ethiopian PSNP…)

This idea is in progress (see for instance the EU-funded AGIR Initiative in West Africa)
Should governments intervene to hold the price below a ceiling (C-strategy)?

- Guaranteeing a ceiling price to consumers can be done by compensating deficits through i) sales by public stocks, ii) reduction import taxes (or even recourse to import subsidies) and iii) export restrictions.

- Costs induced:
  - Budgetary costs
  - Crowding out effect on private storage and imports (controversial: Jayne vs. see Poulton et al. 2006)
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Benefits may be > Costs when:
- Households needing transfers account for a large share of the population (the cost and errors of targeting can exceed its benefit) → realistic for Sahel countries
- The frequency of price crises is high (Ex: in Sahel, 5 price crises in 10 years!)
- Implementing safety nets is difficult
- A symmetric scheme (floor price + ceiling price) is more accepted by the population
5. Concluding remarks
The options for managing food price instability can be expressed in the form of 4 pure strategies that can be combined (the ABCD framework).

Food price instability is a huge problem for DCs both in the short run (food insecurity, macroeconomic instability) and in the long run (as it compromises their development) [Controversial]

The solution proposed by the doctrine is not enough to protect DC farmers and consumers [Controversial]

For DCs, going beyond the doctrine is necessary which means i) guarantee floor prices for grains ii) expanding targeted transfers to poor consumers (permanent transfers, broad targeting) and –in some case- impeding prices to go above a ceiling. [Controversial]

No one size fits all solution - Role of country position along its development trajectory (policies should evolve). [Controversial]

The tools to be selected to implement the strategy depend on context specificities
References cited


An article

http://www.sciencedirect.com/science/journal/22119124/2

A book


French version :
Thank you for your attention

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