How can food price instability in developing countries be managed?

To what extent is today’s dominant doctrine relevant?

Franck Galtier
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Long-standing debate (for at least the last 3 centuries)

Since the 1980s, domination of a single doctrine (market-based tools)

Disappointment:

- Price are still highly unstable (in spite of liberalization)
- Price risk hedging tools have not developed
- Agricultural investment has not been boosted (Africa)
- Food price crises

In the 2000s, the debate was open again

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 AGRINATURE):

- Institutions involved: CIRAD, IRAM, NRI and WUR.

- Experts involved: 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 GFS article + book
1. The problem: magnitude and consequences of food price instability in developing countries

2. Panorama and taxonomy of possible options: the ABCD framework

3. Presentation and assessment of the dominant doctrine

4. Costs and benefits of going beyond the Doctrine

5. Concluding remarks

- 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 is the problem?

Magnitude and consequences of food price instability in developing countries
Magnitude of food price instability in developing countries: consumer prices

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

Source: Observatoire du Marché Agricole (OMA)
Magnitude of food price instability in developing countries: producer prices

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

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

Proportion of grain in the diet and household expenditures in Mali

<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>
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<td>38.5%</td>
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<td>68.0%</td>
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- under-nutrition (calories and nutrients)
- less investment in human capital (health, education…)
- contraction of the demand for non food products (macroeconomic effects)
- less productive investment
- reduction of household (hh) savings, capital and resilience
- political troubles

Affects labor productivity, investment and political and macroeconomic stability (Myers, 2006)
(2) Consequences on farmers

Food price instability

Farmers do not invest and agricultural productivity remains low
(2) Consequences on farmers

Food price instability

Farmers do not invest and agricultural productivity remains low

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

The overall development process is hampered
(Timmer, 1988, 2009; World bank 2007)
(3) Consequences on macroeconomic balances

1. Food price instability may affect country balance of payments and exchange rate

2. Food price instability may affect state budget
2.

Panorama of available strategies to manage food price instability
## Possible strategies to manage food price instability

<table>
<thead>
<tr>
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**Source:** Galtier (2013)
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1. Making food production be less dependent on natural hazards and more responsive to price movements has a stabilizing effect on prices.

2. Improving arbitrages compensates for surpluses and deficits:
   - between areas (through trade)
   - between periods of time (through storage)
   - between products (through substitutions in production and consumption)
Ex 1: Effect of irrigation on price instability

In Mali, rice producer price is much more stable and predictable than maize producer price.

Source: Observatoire du Marché Agricole (OMA)
Ex 2. Effect of market information on price instability

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

Source: Jensen (2007)
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B-strategy: rationale

Reducing the effects of price instability through risk hedging tools

If covered against price-risk, operators will receive a financial compensation in case of price drops or price hikes.

They can hedge directly against price risk by using the tools provided by futures markets (futures, options, …)

They can insure themselves against risks that are correlated with prices: production risk (crop insurance) and climatic risk (weather insurance).
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Public interventions aiming to stabilize prices by stabilizing availability on the domestic market:

• Interventions to remove surpluses from the market (purchase of public stocks, measures to reduce imports or increase exports)

• Interventions to make up for deficits (release of public stocks, measures to increase imports or reduce exports)
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Aid (food, cash, vouchers…) is a way:
• to help vulnerable households to maintain their level of consumption in periods of price spikes (emergency aid).
• to rebuild the capital of households exhausted by the previous crises, thus increasing their resilience (structural safety nets)

Targeting is a way to reduce the cost of these transfers and to avoid market distortions.
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These strategies are not exclusive but:
- synergies and incompatibilities between them can exist
- choice have to be made on budget allocation
The ABCD framework story

• Framework elaborated for practical reasons (WPs)
• Positive feedbacks (top specialists, teachers, historian of economic thought)
• Why?
  ➔ It corresponds to mental categories implicitly used
  ➔ It is a practical language (so many tools but 90% of the – current or past- debates can be expressed in ABCD categories)
  ➔ It is rather neutral
  ➔ It allows a more rigorous analysis of causalities (ex: the crowding out effect)
  ➔ It is a good way to organize the analysis at the instrument level (this kind of analysis is provided in the book – chapter 2).
• For this presentation, we will stay at the level of the strategies (A-, B-, C- and D-strategies)
3. The dominant doctrine
Presentation and assessment
a) Presentation
### The dominant doctrine: an ABD*-mixed strategy

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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) and strictly targeted (only food insecure hh should receive transfers)

→ In Sahel, public stocks co-managed with donors (only strictly targeted transfers, only on EWS recommendations, double signature….)
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)
b) Assessment of the doctrine
Do grain markets impede price collapses?

Price (FCFA / Kg)

Maize
Millet
Sorghum

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

To what extent is the harvest level of individual farmers 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)

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

<table>
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<tr>
<th></th>
<th>Zambia (maize)</th>
<th>Mozambique (maize)</th>
<th>Kenya (maize)</th>
<th>Ethiopia (maize and teff)</th>
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<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%</td>
<td>12%</td>
<td>19%</td>
<td>25%</td>
</tr>
<tr>
<td>including net buyers</td>
<td>3%</td>
<td>na</td>
<td>7%</td>
<td>13%</td>
</tr>
<tr>
<td>Neither buy nor sell</td>
<td>39%</td>
<td>24%</td>
<td>8%</td>
<td>2%</td>
</tr>
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Source: Jayne et al. (2006)
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
Can DC farmers hedge price-risk on futures markets?

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- 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 impedes them from offering an effective cover to DC farmers.

→ Farmers are strongly exposed to price instability
→ Other storers as well ⇒ that is the reason why private storage is not effective to prevent price collapses
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
   3) As hh are more and more vulnerable to low magnitude shocks, indicators used by EWS are less and less relevant.

… nor sustainable:
   With the decrease in hh resilience the cost of managing crises with emergency aid increase over time (X2 in Niger in 2010 compared to 2005, see Michiels et al., 2011)
4. Costs and benefits of going beyond « the Doctrine »
a) Costs and benefits of protecting more farmers
Available options to protect more farmers

- **A+ (subsidize trade or private storage)** → uncertain results and very distortive effects
- **B+ (subsidize the building of price risk hedging tools)** → not relevant nor feasible for DCs
- **D (counter-cyclical transfers)** → difficult to implement in DCs
- **C (floor prices)**
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 induced:
- Budgetary costs
- Distorsions (can impede prices to play their role of signals and incentives and generate surpluses)
  → Questionable: mid-term trends vs. short term price movements as a guide for farmers + cobweb dynamics
- Instability exported on international markets

Benefits generated
- Stimulate agricultural investment by i) reducing the risk faced by farmers and ii) increasing their access to credit → historical correlation between successful green revolution and floor prices + measures to facilitate farmers access to inputs.
- Stimulate economic development (structural transformation and knock-on effects on the other sectors of the economy)
Should governments intervene to hold the price above a floor? (2)

- Costs – benefits balance:
  - In developed countries:
    - the effect of price instability on agricultural investment is low as farmers can hedge on futures markets
    - the benefits generated by agricultural investment are low as potential gains in productivity have already been realized and the know-on effect on the other sectors of the economy have already occurred.
    - the risk of floor prices being captured by farmers (too high floor prices) is high (organized lobbies; no counterbalance from consumers)
      → The balance is probably negative: floor prices are not relevant for these countries
  - In developing countries
    - the effect of price instability on agricultural investment is huge as farmers are more willing and able to invest (increased access to credit)
    - the benefits generated by agricultural investment are huge as a significant increase in agricultural productivity can be reach and is likely to facilitate the take-off of DCs’ economies.
    - the risk of floor prices being captured by farmers is low because of short term food security issues (the pressure of urban consumers on governments) in spite of few counterexamples (Zambia)
      → The balance is clearly positive: DCs need floor prices for grains
Feasibility issues (condition of success):

- **Realistic objective**: floor prices should be set at appropriate levels and regularly updated to follow the mid-term market trend (otherwise, the scheme is not sustainable).

- **Good governance**: to stimulate farmers investment, floor prices should be set in advance, known to everybody and respected.

- **Financial means**: governments should be able to fund public stocks large enough to be able to buy large quantities.

- **Compliance with trade agreements**: governments should be able to restrict their M or stimulate their X, but currently constrained by WTO and other trade agreements (*FTAs, customs unions*).

> *The international community has a major role to play in supporting DCs*
b) Cost and benefits of protecting more consumers
Available options to protect more consumers

- A+ (subsidize trade or private storage) $\rightarrow$ ineffective (Gouel and Jean, 2012) and very distortive effects
- B+ (subsidize price risk hedging tools) $\rightarrow$ not relevant for 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
  - Crowding out effect on private storage (and more broadly on A-instruments) in case of transfers in kind

• Benefits generated
  - Help continuously hh suffering from chronic malnutrition
  - Put a break on hh decapitalisation and loss in resilience
  - Rebuild capabilities of least resilient hh
Guaranteeing a ceiling price to consumers can be done by compensating deficits through: i) sales of public stocks, ii) reduction of import taxes (or even recourse to import subsidies) and iii) export restrictions.

Costs induced:
- Budgetary costs
- Farmer's « natural insurance » can be reduced (Newbery et Stiglitz, 1984) → Questionnable
- Distorsions (informational role) → Questionnable in the case of speculative bubbles, panics.
- Crowding out effect on private storage and imports (that can lead to increased price instability: see Chapoto and Jayne, 2009) → Questionable: if good governance (ceiling prices are not set too low and know in advance), see Poulton et al. 2006.
- Instability exported on international markets

Benefits generated
- Put a break on hh decapitalisation and loss in resilience (without the targeting problems faced by D-strategy).
- But not enough for hh with an already low resilience or that are suffering from chronic malnutrition
Expanding the use of D-instruments is necessary to help households with an already low resilience or that are suffering from chronic malnutrition.

- Regarding the expected impact on food security and the increasing cost of emergency aid, the costs-benefits balance is clearly >0.
- Previous experience do exist (ex: Ethiopian PSNP).
- This idea is in progress: EU-funded AGIR Initiative in West Africa.

Is it enough? Or is it also relevant to guarantee ceiling prices? This policy seems to be relevant 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!)
- A symmetric scheme (floor price + ceiling price) is more accepted by the population.
5.

Conclusion
(to open the discussion...)
Main results

• Food price instability is a huge problem for DCs both in the short run (food insecurity, possibly macroeconomic instability) and in the long run (as it compromises development).

• The solution proposed by the doctrine is not relevant to protect DC farmers and consumers.

• Going beyond the dominant line of thinking is therefore relevant for DCs, which means i) guarantee floor prices for grains ii) expanding targeted transfers (permanent transfers, broad targeting) and –in some case- impeding prices to go above a ceiling.

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

• The tools to be selected to implement the strategy depend on context specificities.
Some points of discussion

- Magnitude of price instability
  - Good quality of price data
  - Controversies on IPC used to calculate real prices (Dorward, 2011)
  - Controversies on indicators of price instability (CV vs. indicators based on extreme price values)

- Consequences of consumers being exposed to price instability (Myers, 2006)

- Consequences of farmers being exposed to price instability:
  - Consequences on farmer investment
  - Consequences on country economic take-off

- Relevance and usefulness of the ABCD framework

- Relevance of the dominant doctrine for DCs
  - Relevance of futures markets for DCs
  - Effectiveness of food markets to prevent price spikes and collapses (William and Wright model)
  - Reality of a “natural insurance” protecting farmers
  - Effectiveness of emergency aid to protect poor consumers

- Costs and benefits of going beyond the doctrine

- Feasibility of effective (good-governed) price stabilization policies


An article

A book

French version :
Thank you for your attention

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