Volatility in Commodity Markets: Causes and Impacts on the Poor

Joachim von Braun
Center for Development Research (ZEF),
University of Bonn, Germany

The George Washington University (GWU) Elliott School of International Affairs
Sept. 22, 2011
Outline

• Food markets, poverty, costs of volatility

• Explaining food price volatility

• Proposed policy actions for G20
Food price – drivers: old and new

Old Fundamentals
- supply / demand / stocks remain drivers
- the source of old fundamentals is changing from US to emerging economies such as China, India, Brazil, etc.

New Fundamentals
- Energy market linkages
- Financial market linkages
- Speculation, in combination with trade policy
Wheat Price last 5 years (EUR / ton)

Source: Finanzen.net, Sept. 22, 2011
Level Change, Volatility, Spikes
2004 - 2011: food price indices (monthly)
High food price volatility reaches the poor in different ways

- **Poor countries** are affected by food price shocks (non-linear transmission elasticities)

- **Poverty effects** depend on
  1. prevalence of poverty and inequality
  2. consumption patterns and structures of price change
  3. spatial pattern of price change (incl. urban, rural)
  4. income sources of the poor (incl. farming)
# Real change in prices in Honduras and Nicaragua 2006-08

<table>
<thead>
<tr>
<th>Group</th>
<th>Honduras</th>
<th>Nicaragua</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Rice</td>
<td>24%</td>
<td>18%</td>
</tr>
<tr>
<td>2. Corn</td>
<td>19%</td>
<td>28%</td>
</tr>
<tr>
<td>3. Breads</td>
<td>13%</td>
<td>28%</td>
</tr>
<tr>
<td>4. Beans, roots, vegetables, and fruits</td>
<td>18%</td>
<td>35%</td>
</tr>
</tbody>
</table>

Real change in observed consumer prices between first quarter 2006 and first quarter 2008. Observed prices come from corresponding country’s bureau of statistics.

Source: M. Torero, IFPRI, 2009
Calorie consumption – Honduras

Before (blue) and after (red) of the increase in prices

Source: M. Torero, IFPRI, 2009
Human costs: Food crises have made child malnutrition worse.
Economics saw market volatility costs as low: broader approach needed

Cost components of volatility:
1. increased hunger and disease
2. reduction of investment incentives
3. distorted asset markets (land prices and commodities)
4. fiscal and macro-economic effects
5. political insecurity
Food price volatility drivers?

VOLATILITY OF FOOD PRICE
= f [SUPPLY SHOCKS;
DEMAND SHOCKS;
FINANCIALIZATION]
Volatility and supply shocks (e.g. maize)

Volatility is measured as the coefficient of variation of monthly prices
Supply shock is measured as the absolute value of difference between de-trended supply and the actual supply

Joachim von Braun, ZEF 2011
Fig 4. Food and energy prices volatility

- The association was positive until 1996,
- Remained strongly negative until the food crisis started in late 2006
- After the crisis the correlation is not only positive but it becomes stronger.
Financialization – Food Market Volatility and Financial Crises

Fig. 9. Wheat price and financial crises 1900 - 2008

Correlations: 1900-1950 = -0.16, 1951-1990 = -0.24, 1991-2008 = 0.65


Joachim von Braun, ZEF 2011
Volatility in global food markets and determinants (wheat, maize)

<table>
<thead>
<tr>
<th></th>
<th>Pooled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Shock in millions of tons</td>
<td>0.0014</td>
</tr>
<tr>
<td></td>
<td>(0.006)</td>
</tr>
<tr>
<td>Financial crisis</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(0.06)</td>
</tr>
<tr>
<td>Oil price volatility</td>
<td>0.235</td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.004</td>
</tr>
<tr>
<td></td>
<td>(0.85)</td>
</tr>
<tr>
<td>R-square</td>
<td>0.52</td>
</tr>
<tr>
<td>N</td>
<td>46</td>
</tr>
</tbody>
</table>

- Elasticities: % increase of food price volatility due to a 1% increase in supply shocks (0.22), financial crises index (0.6) and oil price volatility (0.32).

Volatility boosted by Speculation in futures markets

Speculation effect partly depends on the ‘nervousness’ of the market…

• stabilizes when the market is less nervous through price discovery
• destabilizes when the market becomes nervous as a result of changes in fundamentals, policies and structures

Unconditional control of speculative transaction would undermine the stabilization effect
Speculation - Evidence of causality in the 2008 spike

"Changes in supply and demand fundamentals cannot fully explain the recent drastic increase in food prices."

Source: Robles, Torero, and von Braun (2009)
**Strategic agenda**

1. **Promote pro-poor agriculture growth with technology and institutional innovations**

2. **Expand social protection and child nutrition action**

3. **Reduce market volatility**
What to do about volatility?

1. **Keep trade open** at times of global and regional food shortage is a must

2. Regulation of food **commodity markets**? (only as part of financial markets)

3. Establish grain **reserves policy** at global level (emergency reserve, shared physical reserves, and a virtual reserve)
Required international institutional arrangements

• **Unilateral food market actions lead to global collective action failures**

• The agenda is too complex for declarations and for delegation of selected issues to selected current international agencies

• A new multilateral organization is needed to watch matters and to guide policy and to engage in curbing food price volatility: an “international grain reserves bank”.