○ volume decreases. *Q.E.D.*

1. Food prices
2. Dealing with high prices
3. Summing up
1. Food prices

Grain Prices ($US/mt)

- Rice
- Wheat
- Maize

Source: FAO GIEWS database
1. Food prices

“high food prices are...the biggest challenge that WFP has faced in its 45-year history”

WFP, 2008

Comparative Static - change in cost of food assistance baskets, 2007-2008

Africa

Asia

Sources: WFP Interfais, OECD-FAO Agricultural Outlook Database, authors’ calculations
2. Dealing with high prices

A. Local and Regional Procurement (LRP)

- Does the movement towards LRP insulate food assistance from international price shocks?

- Rates of price pass-through into LRP markets depend on:
  - Trade policies
  - Domestic price policies
  - Trade costs
  - Exchange rate movements
2. Dealing with high prices

A. Local and Regional Procurement (LRP)

- case studies of Canadian Foodgrains Bank programmes

<table>
<thead>
<tr>
<th>Location and Commodity Matches for Price Transmission Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commodity</td>
</tr>
<tr>
<td>-----------</td>
</tr>
<tr>
<td>Maize</td>
</tr>
<tr>
<td>Rice</td>
</tr>
<tr>
<td>Wheat</td>
</tr>
</tbody>
</table>

Sources: CFGB, FAO GIEWS

- VEC model to estimate speed at which prices in LRP locations respond to world price shocks

\[
\begin{align*}
\frac{\Delta p_{w,t}}{\Delta p_{i,t}} &= \left( \frac{\mu_w}{\mu_i} \right) + \left( \frac{\alpha_w}{\alpha_i} \right) \left( p_{w,t-1} - \beta p_{i,t-1} \right) + \sum_{k=1}^{n} A_k \left( \frac{\Delta p_{w,t-k}}{\Delta p_{i,t-k}} \right) + \left( \frac{u_{w,t}}{u_{i,t}} \right)
\end{align*}
\]

lagged disequilibrium from price shock

- ... variable transmission speeds
2. Dealing with high prices

B. Commodity substitutability

Food Assistance Flows and Commodity Prices ($US/mt; grain equivalent millions of mt)

Sources: WFP Interfais, OECD-FAO Agricultural Outlook Database, authors’ calculations
2. Dealing with high prices

B. Commodity substitutability

- do donors substitute between commodities (within component groups) when relative prices change?

<table>
<thead>
<tr>
<th>% change in P, 2007-2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maize</td>
</tr>
<tr>
<td>Rice</td>
</tr>
<tr>
<td>Wheat</td>
</tr>
<tr>
<td>70</td>
</tr>
<tr>
<td>139</td>
</tr>
<tr>
<td>55</td>
</tr>
</tbody>
</table>

Sources: FAO GIEWS

- “culturally-appropriate” food (WFP, CFGB, CRS, ...)
- tied, in-kind donations (Japan)
2. Dealing with high prices

B. Commodity substitutability

- modelling food assistance shipments
  - double hurdle/selection models → bilateral volumes of aggregated commodities
  - Nunn and Qian (2010); Langlois (2010); Neumayer (2005)
  - donors’ decisions on “why”/“how much”, not “what commodity”

- what happens to composition of baskets when relative prices change?

- identification strategy

\[ Q_{ki,t}^{\text{cereals}} = f(P_{i,t}, P_{j,t}, \ldots, P_{n,t}, ?) \]

- identify price effects without modeling decision “when” to donate, or “how much” to donate
- who “demands” FA commodities?

- model recipients’ commodity shares within baskets (treating basket size as exogenous)

\[ s_{ki,t} = \alpha_{ki} + \sum_{j=1}^{n} \gamma_{ij} P_{j,t} + \beta_{ki} X_{k,t} + \varepsilon_{ki,t} \quad k = \text{country} \]

\[ i = \text{commodity (in grain equiv. mt)} \]

- shipment size \((X_{k,t})\) is exogenous
- commodity share of food assistance basket = \(f(P, X)\)
## 2. Dealing with high prices

### B. Commodity substitutability

- **Data**
  - WFP INTERFAIS, FAO GIEWS
  - panel with 114 countries, 1988 - 2010

### Share Elasticities - Cereals (country FE)

<table>
<thead>
<tr>
<th></th>
<th>Wheat</th>
<th>Rice</th>
<th>Maize</th>
</tr>
</thead>
<tbody>
<tr>
<td>$p_{wheat}$</td>
<td>-0.275</td>
<td>0.322$^b$</td>
<td>-0.235</td>
</tr>
<tr>
<td>price</td>
<td>-0.193</td>
<td>0.125$^c$</td>
<td>0.068</td>
</tr>
<tr>
<td>$p_{maize}$</td>
<td>0.060</td>
<td>-0.238</td>
<td>0.109</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>0.040$^a$</strong></td>
<td><strong>-0.054$^a$</strong></td>
<td><strong>0.048$^a$</strong></td>
</tr>
</tbody>
</table>

Note: Superscripts “a”, “b”, and “c” denote significance at the 1%, 5% and 10% levels, respectively.

### Share Elasticities - Beans (country FE)

<table>
<thead>
<tr>
<th></th>
<th>Beans</th>
<th>Lentils</th>
<th>Peas</th>
<th>Soybeans</th>
</tr>
</thead>
<tbody>
<tr>
<td>$p_{beans}$</td>
<td>0.035</td>
<td>0.047</td>
<td>-0.122</td>
<td>0.163</td>
</tr>
<tr>
<td>$p_{lentils}$</td>
<td>-0.062</td>
<td>-0.719$^a$</td>
<td>0.738$^c$</td>
<td>-1.043$^c$</td>
</tr>
<tr>
<td>$p_{peas}$</td>
<td>0.091</td>
<td>0.789$^a$</td>
<td>-0.612$^c$</td>
<td>-0.551</td>
</tr>
<tr>
<td>$p_{soybeans}$</td>
<td>-0.495</td>
<td>0.372</td>
<td>0.433</td>
<td>1.997$^b$</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>-0.035$^a$</strong></td>
<td><strong>-0.022</strong></td>
<td><strong>-0.007</strong></td>
<td><strong>0.618$^a$</strong></td>
</tr>
</tbody>
</table>

Note: Superscripts “a”, “b”, and “c” denote significance at the 1%, 5% and 10% levels, respectively.
2. Dealing with high prices

B. Commodity substitutability - robustness

i. regional variation in diets may impact donors’ willingness to substitute

  ◦ disaggregate panel into 7 regions (central Asia, east Asia, south Asia, eastern Europe, Latin America, Middle East & North Africa, sub-Saharan Africa)

  ◦ baseline results very robust (except LAC)

    Share Elasticities - Cereals (LAC, country FE)

<table>
<thead>
<tr>
<th></th>
<th>Wheat</th>
<th>Rice</th>
<th>Maize</th>
</tr>
</thead>
<tbody>
<tr>
<td>$p_{wheat}$</td>
<td>-1.800b</td>
<td>0.650</td>
<td>1.789b</td>
</tr>
<tr>
<td>price</td>
<td>-0.213</td>
<td>0.197</td>
<td>-0.063</td>
</tr>
<tr>
<td>$p_{maize}$</td>
<td>0.624b</td>
<td>-0.185</td>
<td>-0.721b</td>
</tr>
<tr>
<td>Total</td>
<td>0.168a</td>
<td>-0.158a</td>
<td>0.0522c</td>
</tr>
</tbody>
</table>

Note: Superscripts “a”, “b”, and “c” denote significance at the 1%, 5% and 10% levels, respectively.

ii. assistance categories (Emergency vs. Programme & Project)

  ◦ baseline results robust for Emergency, not for P&P

iii. delivery modes (in-kind vs. LRP) - “Japan” effect
3. Summing Up

A. Local and Regional Procurement

◦ donors moving towards LRP

◦ degree of insulation from price shocks is variable
  ◦ spectre of export restrictions...

B. Commodity substitutability

◦ cereals ◦ no significant substitution effects
  ◦ rice share declines with increasing basket size

◦ beans ◦ significant substitution effects
  ◦ bean share declines with increasing basket size

◦ price volatility can be good for food consumers (Barrett & Bellemare, 2011)
  ◦ depends on ◦ storage ✓
  ◦ substitution X