Feeding the World’s Hungry: Financing More Efficient Food Assistance

Global Conference 2010
Feeding the World’s Hungry: Financing More Efficient Food Assistance
Tuesday, April 27, 2010; 2:30 - 3:45 PM

Moderator:
James Moglia, Executive Managing Director, BMO Capital Markets

Speakers:
Mary Chambliss, Former Deputy Administrator, USDA Foreign Agricultural Service
Michael Klein, Special Advisor, U.N. World Food Programme
Ejnar Knudsen, Co-Portfolio Manager of the Agriculture Fund, Passport Capital
Vijaya Ramachandran, Senior Fellow, Center for Global Development
When all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.

Source: Food and Agriculture Organization of the United Nations.
Barrier: Unpredictable funding
→ Issue food assistance bonds backed by donor commitments

Barrier: Price risk
→ Make forward purchases
→ Use call option contracts

Barrier: Supply risk
→ Tap public-sector grain reserves
→ Arrange tax credits for private-sector companies to tap their stocks at the tax-free price

Source: Milken Institute, “Feeding the World’s Hungry: Fostering an Efficient and Responsive Food Access Pipeline” (October 2009).
United Nations Millennium Development Goals

- Adopted by world leaders committing their nations to reduce extreme poverty by 2015
- Eight goals:
  - Eradicate extreme poverty and hunger
  - Improve maternal health
  - Combat HIV/AIDS, malaria and other diseases
  - Achieve universal primary education
  - Ensure environmental sustainability
  - Promote gender equality and empower women
  - Reduce child mortality
  - Develop a global partnership for development

Number of undernourished in the world
1969 - 2009

Millions of people

Source: Food and Agriculture Organization of the United Nations.
Sixty-five percent of the world's hungry live in only seven countries.

<table>
<thead>
<tr>
<th>Country</th>
<th>Undernourished as a percent of world total</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>29%</td>
</tr>
<tr>
<td>China</td>
<td>15%</td>
</tr>
<tr>
<td>Democratic Rep. of the Congo</td>
<td>5%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>5%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>4%</td>
</tr>
<tr>
<td>Pakistan</td>
<td>4%</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>4%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>65%</td>
</tr>
</tbody>
</table>

Source: Food and Agriculture Organization of the United Nations.
Undernourishment in 2009 by region

*Total = 1.02 billion people*

- Asia and the Pacific: 63%
- Sub-Saharan Africa: 26%
- Latin America and the Caribbean: 5%
- Near East and North Africa: 4%
- Developed countries: 2%

Source: Food and Agriculture Organization of the United Nations.
Cereals prices more than doubled in 2008

**FAO cereals and food price indices**

Index level (2002-2004 = 100)

Source: Food and Agriculture Organization of the United Nations.
Cereal yield in low-income countries is 60 percent lower than in high-income countries.

Kilograms per hectare (thousands)

Challenges to delivering food assistance in an efficient and timely manner

- Price risk (e.g., spikes and volatility)
- Distance between suppliers and aid recipients
- Lack of deep financial markets in recipient countries
- Variable demand
- Uncertain global food production (e.g., due to climate change, biofuels, weather or conflicts)
- Security
- Unpredictable funding
Possible solutions to combat food crises

Investors and financial intermediaries → Commodity markets

Public- and private-sector donors → Intermediaries*

Commodity markets → Forward purchases

Intermediaries* → Aid recipients

Source: Milken Institute.

* Intermediaries can be humanitarian aid agencies, governments and other parties.
Proposed solutions to funding challenges

- Apply the Advance Market Commitment model to food assistance delivery
- Issue food assistance bonds backed by donors
- Create a swing donor facility
- Guarantee a base funding level to humanitarian orgs
- Use a multi-year funding structure

*Source: Milken Institute, “Feeding the World’s Hungry: Fostering an Efficient and Responsive Food Access Pipeline” (October 2009).*
Milken-Gates Financial Innovations Lab

Proposed solutions to price risk challenges

• Make forward purchases

• Use call option contracts

• Employ a financial hedging strategy

Source: Milken Institute, “Feeding the World’s Hungry: Fostering an Efficient and Responsive Food Access Pipeline” (October 2009).
Proposed solutions to supply risk challenges

- Tap public-sector grain reserves
- Arrange tax credits for private-sector companies to tap their stocks at the tax-free price
- Set up pre-positioned food stocks near areas in need
- Buy call options with domestic animal feeders or biofuels producers

Source: Milken Institute, “Feeding the World’s Hungry: Fostering an Efficient and Responsive Food Access Pipeline” (October 2009).
Food access pipeline

Source: Milken Institute.
<table>
<thead>
<tr>
<th>Tool</th>
<th>Description</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reserves</td>
<td>Purchased in advance, shipped to destination, and stored</td>
<td>• Warehousing costs&lt;br&gt;• Risk of damage or loss&lt;br&gt;• Little flexibility on volume / delivery locations&lt;br&gt;• Can crowd out private sector</td>
</tr>
<tr>
<td>In-kind donations</td>
<td>Donors contribute commodities, which are shipped to destination</td>
<td>• Risk of long lead times, high transport costs&lt;br&gt;• Disincentives to local / regional market development</td>
</tr>
<tr>
<td>Spot purchases</td>
<td>Purchases made when funding is confirmed, then shipped to destination</td>
<td>• Risk of high commodity and transport costs, long lead times&lt;br&gt;• Performance risk&lt;br&gt;• Difficult to budget/plan&lt;br&gt;• Little flexibility on volume / delivery locations</td>
</tr>
</tbody>
</table>

Source: Julie Dana, World Bank.
How a food assistance bond would work

Source: Milken Institute.
Advance Market Commitment for pneumococcal vaccines

Source: GAVI.
A risk management approach to commodity procurement

<table>
<thead>
<tr>
<th>Contingencies / flexible supplies</th>
<th>Call contracts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium probability</td>
<td>Forward purchases</td>
</tr>
<tr>
<td>Spot purchases</td>
<td>Pre-positioned stocks</td>
</tr>
<tr>
<td>High probability</td>
<td>Reserves</td>
</tr>
</tbody>
</table>

Source: Julie Dana, World Bank.
## Alternative procurement tools for food assistance organizations

<table>
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<th>Tool</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Forward purchases</td>
<td>Purchases with set or variable pricing, for fixed or optional delivery points at a later date; can be long-term supply arrangements</td>
</tr>
<tr>
<td>Call option contracts</td>
<td>Buyer has the right but not the obligation to take delivery of the goods</td>
</tr>
<tr>
<td>Financial hedging using futures or options</td>
<td>Use financial contracts on established futures exchanges to lock in prices (futures) or establish price caps (options)</td>
</tr>
</tbody>
</table>

*Source: Julie Dana, World Bank.*
Global Agriculture and Food Security program

New multi-donor trust fund to tackle global hunger and poverty

- Initial contribution of $880 million from the U.S., Canada, Spain, South Korea, and the Gates Foundation
- Created to help implement some of the $22 billion in pledges made by G-8 leaders
- Fund will have public and private sector accounts:
  - Public sector account will provide aid for better irrigation systems, linking farmers to markets and building post-harvest storage infrastructure.
  - The private sector account will provide innovative financing to increase the commercial value of small and medium-sized agri-businesses and farmers.

Source: U.S. Department of Treasury.
Panelists’ slides
James Moglia
Executive Managing Director
BMO Capital Markets
World population, 1800–2100

Historical and projected prices of maize, wheat, soybean, soybean oil and sorghum

US$ per metric ton

Source: World Food Programme.
Net long soybean positions by large speculators

Thousands

Sources: CFTC and BMO Capital Markets
Needs vs. contributions
*World Food Programme*

<table>
<thead>
<tr>
<th>Year</th>
<th>Program Needs</th>
<th>Contributions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>2.7</td>
<td>2.7</td>
</tr>
<tr>
<td>2007</td>
<td>2.7</td>
<td>3.4</td>
</tr>
<tr>
<td>2008</td>
<td>5.1</td>
<td>5.8</td>
</tr>
<tr>
<td>2009</td>
<td>4.0</td>
<td>6.7</td>
</tr>
<tr>
<td>2010</td>
<td>3.7</td>
<td>5.4</td>
</tr>
<tr>
<td>2011</td>
<td>3.7</td>
<td>4.4</td>
</tr>
</tbody>
</table>

Sources: Center for Global Development, World Food Programme.

Note: 2010 and 2011 are projections.
Occurrence and causes of recent food emergencies

Number of emergencies

Source: Food and Agriculture Organization.
Illustration of capital markets solutions: Catastrophe bonds

<table>
<thead>
<tr>
<th>Year</th>
<th>Risk capital issued (US$ millions)</th>
<th>Number of issuances</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>633.0</td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td>846.1</td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td>984.8</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>1,139.0</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>966.9</td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td>1,219.5</td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>1,729.8</td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>1,142.8</td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>1,991.1</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>4,683.4</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>6,996.3</td>
<td></td>
</tr>
</tbody>
</table>

Source: GC Securities.
Vijaya Ramachandran
Senior Fellow
Center for Global Development
FINANCING FOOD ASSISTANCE:
Options for the World Food Programme
to Save Lives and Dollars

Vijaya Ramachandran
Benjamin Leo
Owen McCarthy
World Food Programme is the largest provider of food aid in the world

Food distributed (millions of metric tons) | Number of recipients (millions)
---|---
2001 | 0
2002 | 3
2003 | 5
2004 | 6
2005 | 5
2006 | 4
2007 | 3
2008 | 2

Number of recipients

Amount of food distributed
WFP’s group of “high vulnerability” countries does not vary much from year to year...
WFP’s “top ten” account for 60 percent of its budget ($2.5 billion in 2008)

- Afghanistan
- Burundi
- DRC
- Ethiopia
- Kenya
- Somalia
- Sudan
- Tanzania
- Uganda
- Zimbabwe
The WFP could not really respond to the food price crisis in 2008

- In 2008, the number of hungry people rose by 100 million.
- Donor contributions increased by 86 percent in 2008 in response.
- Due to the lack of predictability and timing of these donations, rising prices, and the absence of a hedging strategy, the WFP only delivered 18 percent more food (by volume) to 27 percent more people.
Can the WFP move to a new business model?

The scope for hedging

• Historical baseline
  – Utilize historical food deliveries as an indication of future operational plans.

• Projected needs filter
  – Incorporate the WFP’s annual program projections, country program strategies, and early famine warning system to provide a forward-looking, demand-based check on projected hedging needs.

• Commodity filter
  – Determine the commodity mix of projected WFP country operations.
Multi-step hedging strategy

• Regional clustering
  – Pool relevant hedging projections on a regional basis.

• Operational timing
  – Utilize historical data and WFP’s decades of country expertise to determine seasonal or monthly needs projections.

• Projected unrestricted donor contributions
  – Compare the relevant aggregated hedging and timing components against projected unrestricted donor contributions and relevant restricted cash contributions for the coming operational year.
Multi-step hedging strategy

• Commodity price projections
  – WFP may execute procurements at spot market prices if commodity prices are projected to decline.
  – Or it may use options contracts to provide maximum flexibility and account for any unforeseen changes in the price environment.

• Currency risk exposure
  – WFP operations are denominated in U.S. dollars, so there is potential currency risk for hedging contracts denominated in another foreign currency.
  – Currently, the WFP does limited currency hedging (dollar vs. euro).
  – Should be managed with currency-related derivatives (e.g., currency futures or swaps).
Example: Price of yellow maize

Futures prices vs. spot price in SAFEX, 2001-2009

Average price per metric ton

- 90 day futures
- 180 day futures
- 270 day futures
- WFP (spot)
Other potential benefits

• Predictability

• Reduction or elimination of delays in delivery

• Provides clear signal of government intent

• Supports local and regional trade

• Creates a defined space for the commercial sector to operate
Financial backstop options

• Commercial line of credit
  – Would be tapped as a last resort to address: hedging collateral requirements or short-term inter-temporal mismatches between contributions and food operations.

• International financial institution guarantee
  – The WFP could negotiate a credit guarantee arrangement with the World Bank or African Development Bank.

• Bilateral donor credit line
  – An individual or group of bilateral donors could provide a credit line, guarantee, and/or flexible advance contributions to support WFP’s hedging.
Conclusion

• The WFP can pilot a hedging exercise, perhaps starting out with a physical call option (with assistance from the World Bank).

• U.S. and other donors must do more to increase financial certainty and the share of unrestricted contributions so that the WFP can engage in futures markets.

• Goldman Sachs or others can provide underwriting services on a pro-bono basis.

• Commercial banks can provide a credit line.

• The World Bank can play a role in financial backstopping.
Ejnar Knudsen
Co-Portfolio Manager of the Agriculture Fund
Passport Capital
Earth’s carrying capacity

- **Range**
  - 0.5 to 14 billion people

- **Biophysical capacity**
  - 7.7 to 12.0 billion

- **Social sustainability**
  - 2.1 to 5.0 billion

- **“Organic” – without chemical fertilizer**
  - 2.4 billion people

1798/1802: Malthus’ prediction – delayed?

“The power of population is indefinitely greater than the power in the earth to produce subsistence for man.”


Age of cheap fossil fuel
Barrier: Supply risk – policy shocks

• Malthus’ prediction delayed due to technological innovations
  – More trade, more farmland, higher crop yields
  – Can we extend the Earth’s carrying capacity to 9 billion people?

• Potential policy shocks that may reduce our Earth’s carrying capacity
  – Climate change laws/carbon credit incentives
    • Conversion of cropland to other non-food crop uses
      – How many more people in the world will become undernourished if the U.S. converts 35 million acres of row crops to grow trees for carbon credits?
    • Increased production costs due to direct or indirect environmental taxes = higher worldwide food prices
  – “Sustainability” laws
    • Romantic-based definitions vs. science-based definitions used for defining “sustainable agriculture”
Barrier: Price risk – climate shocks

• The Laki volcano eruption in Iceland in 1783 lasted eight months.

• In North America, the winter of 1784 was the longest and one of the coldest on record.

• In France, a sequence of meteorological extremes contributed significantly to increasing poverty and famine that presumably played a role in triggering the French Revolution in 1789.

Source: Advanced Forecasting Corporation.
Barrier: Price risk – climate shocks

• 4.5+ yrs of climate change
  – Global warming
  – Global cooling
• Plan for disruptions in our just-in-time food supply
• Solving the problem for the current undernourished – will help prepare billions of people for these predictable climate “black swans”
• Every society is only three meals away from a revolution – this is not someone else’s problem