Factors contributing to recent increases in food commodity prices

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USDA Economists Group
June 10, 2008
Food commodity prices:
up 220 % since January 2002: 70 % since January 2006

Index: January 2002 = 100

1/ Food Commodities include grains, vegetable oils, meats, sugar, and other basic food commodities.

Source: International Monetary Fund: International Financial Statistics
Food commodity prices:
up 220 % since January 2002: 70 % since January 2006

Index: January 2002 = 100

Percent increase in prices since
Food Commodities 220 70

1/ Food Commodities include grains, vegetable oils, meats, sugar, and other basic food commodities.

Source: International Monetary Fund: International Financial Statistics
Prices of many commodities rose:
Crude oil up 640 % since January 2002

Index: January 2002 = 100

<table>
<thead>
<tr>
<th>Percent increase in prices since</th>
<th>Jan 2002</th>
<th>Jan 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Commodities</td>
<td>220</td>
<td>70</td>
</tr>
<tr>
<td>All commodities</td>
<td>405</td>
<td>80</td>
</tr>
<tr>
<td>Crude oil</td>
<td>640</td>
<td>97</td>
</tr>
</tbody>
</table>

1/ Food Commodities include grains, vegetable oils, meats, sugar, and other basic food commodities.

Source: International Monetary Fund: International Financial Statistics
Crop prices increase
(wheat, soybeans, corn & rice)

Index: January 2002 = 100

Source: International Monetary Fund: International Financial Statistics
Real crop prices
(wheat, soybeans, corn & rice)

Index: January 2002 = 100

Source: International Monetary Fund: International Financial Statistics
Crop price increases: real vs. nominal
Average of 4 crops (wheat, soybeans, corn & rice)

Index: January 2002 = 100

Source: International Monetary Fund: International Financial Statistics
Factors contributing to higher food commodity prices


**Strong growth in demand, based on:**
- Increasing population
- Rapid economic growth
- Rising per capita meat consumption

**Slowing growth in ag production**

**Declining stocks of food commodities**

**Escalating crude oil price**

**Rapid expansion biofuels production**

**Dollar devaluation**

**Large foreign exchange reserves**

**Rising costs of ag production**

**Adverse weather**

**Demand factors in brown**

**Supply factors in green**

**Exporter policies**

**Importer policies**

**Aggressive purchases by importers**
World grain & oilseeds
Total production and use

Source: USDA PS&D Database
Total world grain & oilseeds
Stocks and stocks-to-use ratio

Source: USDA PS&D Database
Long term trends contributing to higher food commodity prices

- Demand-side trends
- Supply-side trends
Population growth rates decline
(Percent by period)

Source: USDA Agricultural Baseline Projections to 2017.
Strong economic growth
Average Real GDP growth rates

Source: USDA Agricultural Baseline Projections to 2017.
## Global meat
Production and per capita consumption

<table>
<thead>
<tr>
<th>Exponential trend growth rates:</th>
<th>1975-90</th>
<th>90-07</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>3.1</td>
<td>2.5</td>
</tr>
<tr>
<td>Population</td>
<td>1.7</td>
<td>1.4</td>
</tr>
<tr>
<td>Per capita consumption</td>
<td>1.4</td>
<td>1.1</td>
</tr>
</tbody>
</table>


1 Total meat = beef + pork + chickens & turkeys.
Global rice imports

Million metric tons

Source: USDA Agricultural Baseline Projections to 2017.

1/ European Union, former Soviet Union, and other Europe. 2/ Includes Mexico.
Global soybean oil imports

Million metric tons

- Rest of world
- EU, FSU, & OE
- India
- China
- Other Asia
- N. Africa & M. East
- Latin Am

1/ European Union, former Soviet Union, and other Europe.
2/ Asia excluding India and China. 3/ Includes Mexico.

Source: USDA Agricultural Baseline Projections to 2017.
Poultry imports 1/

Million metric tons

- Russia
- Other N Afr. & M. East
- East Asia
- China & Hong Kong
- Saudi Arabia
- Mexico
- European Union 2/

1/ Selected importers.

Source: USDA Agricultural Baseline Projections to 2017.
Total world grain & oilseeds\(^1\)
Production, yield, area harvested, population & percap production

**Exponential trend growth rates:**

<table>
<thead>
<tr>
<th></th>
<th>1970-90</th>
<th>90-07</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>2.2</td>
<td>1.3</td>
</tr>
<tr>
<td>Yields</td>
<td>2.0</td>
<td>1.1</td>
</tr>
<tr>
<td>Area</td>
<td>0.15</td>
<td>0.14</td>
</tr>
<tr>
<td>Population</td>
<td>1.7</td>
<td>1.4</td>
</tr>
<tr>
<td>Per capita use</td>
<td>0.56</td>
<td>0.11</td>
</tr>
</tbody>
</table>

Index: 1970 = 100

\(^1\) Total oilseeds = soybeans + rapeseed + sunflowers

Source: USDA Agricultural Projections to 2017
Role of biofuels

- Focus on feedstocks
- Major producers
- Impact on land use
- Impact on price relationships
Biofuels production: Largest producers

Million Gallons

Source: USDA Agricultural Projections to 2017
U.S. corn use

1/ Food, seed, and industrial less ethanol.

Source: USDA Agricultural Baseline Projections to 2017.
Global wheat and coarse grains use, 2002/03 – 2007/08

Note: Category’s share of the change in total use from 2002/03 to 2007/08.

Source: USDA’s PS&D Database and estimates from ERS
Other contributing factors

- Higher energy prices
- Weaker U.S. dollar
- Increasing foreign exchange reserves held by importers
- Adverse weather reduced crop production
- Role of hedge funds, index funds, & sovereign wealth funds:
  - (affect demand and/or volatility?)
Value of U.S. dollar declines after 2002 1/

1/ Real U.S. agricultural trade-weighted dollar exchange rate, using U.S. agricultural export weights, based on 192 countries.

Source: USDA PS&D Database
Adverse weather reduced crop production in 2006 and 2007

- Ukraine & Russia: drought for 2 years
- Australia: severe drought for 2 years
- Europe: dry spring; harvest floods
- SE Europe: drought
- NW Africa: drought
- USA: late spring freeze
- Canada: hot and dry
- Turkey: dry
Food Price Inflation: Policy responses by some exporters and importers

- Export restrictions
- Lower import tariffs
- Consumer subsidies
Defensive measures to control inflation -- Exporters

- Eliminated export subsidies:
  - China (grains & products)

- Export taxes:
  - China (grains & products)
  - Argentina (wheat, corn, soybeans, soymeal, soyoil)
  - Russia (wheat)
  - Malaysia (palm oil)
  - Kazakhstan (wheat)

- Export quantitative restrictions:
  - Argentina, Ukraine (wheat)
  - India & Vietnam (rice)

- Export bans:
  - Ukraine, Serbia, India (wheat)
  - Egypt (rice)
  - Kazakhstan (oilseeds & veg oils)
  - Cambodia (rice to neighboring countries)
  - Indonesia (rice)
Defensive measures to control inflation -- Importers

- **Reduce Import tariffs:**
  - India (wheat flour)
  - Indonesia (soybeans, wheat; will “green line” wheat flour)
  - Serbia (wheat)
  - Thailand (pork)
  - EU (grains)
  - Korea & Mongolia

- **Subsidized distribution of imported staples**
  - Morocco (import wheat; subsidize bread sales)

- **Promoting a/o subsidizing production:**
  - Indonesia (soybeans)

- **Other:**
  - Iran imported corn from the USA
Other developments

- **Domestic price controls:**
  - China (cooking oils, grain, meat, milk & eggs)
  - Thailand (food)

- **Protests**
  - Malaysia (millers & bakers)
  - Indonesia (soybean prices; meat prices)
  - Pakistan (wheat)
  - USA (wheat)

- **Food riots:**
  - Guinea
  - Mauritania
  - Morocco
  - Senegal
  - Cameroon
  - Mexico
  - Uzbekistan
  - Yemen
  - Niger
  - Burkina Faso
  - Egypt
  - Haiti
  - Ethiopia
  - Philippines
  - Thailand
### Impact of high food commodity prices on consumers food budgets

<table>
<thead>
<tr>
<th></th>
<th>High-income countries</th>
<th>Low-income food-deficit countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. <strong>Base Scenario</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td>40,000</td>
<td>800</td>
</tr>
<tr>
<td>Food expenditure</td>
<td>4,000</td>
<td>400</td>
</tr>
<tr>
<td>Food as % of income</td>
<td><strong>10.0%</strong></td>
<td><strong>50%</strong></td>
</tr>
<tr>
<td>II. <strong>Scenario: 50% Price increase in staples</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disaggregate retail food spending</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(staples vs. non-staples)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staples as % of total food spending</td>
<td>20%</td>
<td>70%</td>
</tr>
<tr>
<td>Expenditures on staples</td>
<td>800</td>
<td>280</td>
</tr>
<tr>
<td>Expenditures on non-staples</td>
<td>3,200</td>
<td>120</td>
</tr>
<tr>
<td>II. <strong>Scenario: 50% Price increase in staples</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partial pass through on staples</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assumed % pass through</td>
<td>60%</td>
<td>60%</td>
</tr>
<tr>
<td>Increase in cost of staples</td>
<td>240</td>
<td>84</td>
</tr>
<tr>
<td>New cost of staples</td>
<td>1040</td>
<td>364</td>
</tr>
<tr>
<td>New total food costs</td>
<td>4,240</td>
<td>484</td>
</tr>
<tr>
<td>Food as % of income</td>
<td><strong>10.6%</strong></td>
<td><strong>61%</strong></td>
</tr>
</tbody>
</table>
U.S. Title II Food Aid Allocations

*2008 is an forecast

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Food commodity price spikes since 1970

Index: January 2002 = 100

Source: International Monetary Fund: International Financial Statistics
### Categories of factors contributing to higher food commodity prices

<table>
<thead>
<tr>
<th>Temporary factors:</th>
<th>Structural changes:</th>
<th>Continuation of long-term trends:</th>
<th>Questionable future impact:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adverse weather</td>
<td>High oil prices</td>
<td>Rapid economic growth in many developing countries</td>
<td>Further dollar depreciation</td>
</tr>
<tr>
<td>Trade policies by exporters and importers</td>
<td>Biofuels production costs</td>
<td>Population growth in developing countries</td>
<td>Slower growth in ag productivity</td>
</tr>
<tr>
<td>Aggressive buying by importers</td>
<td>High ag production costs</td>
<td>Increasing per capita meat consumption</td>
<td>Role of large foreign exchange reserves held by importers</td>
</tr>
</tbody>
</table>

- **Supply factors in green**
- **Demand factors in brown**
U.S. Commodity Prices: History & Projections
Soybeans, Wheat, Corn, & Rice
Projections from Nov 2007 USDA Baseline

$ per bushel; ($ per cwt for rice)

Global Agricultural Supply and Demand: Factors Contributing to the Recent Increase in Food Commodity Prices

Report available at:

http://www.ers.usda.gov/Publications/WRS0801/

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