Retail Food Price Outlook: 2008

Ephraim Leibtag
Food Markets Branch, Food Economics Division
ERS-USDA

Presented at the 2008 Agricultural Outlook Forum
‘Energizing Rural America in the Global Marketplace’
Price Index Basics

- **Consumer Price Index (CPI)**
  - Average consumer prices collected on a monthly basis
  - Nationally representative sample of retail outlets

- **Producer Price Index (PPI)**
  - Average producer selling prices collected on a monthly basis
  - Nationally representative sample of producers across the supply chain
PPI for Retail Grocery Departments, 2001-2007

- Grocery PPI
- Meat PPI
- Dairy PPI
- Bakery PPI
- Produce PPI
Sources of Price Changes

- Changes in Costs
  - Operating Costs
  - Cost of Goods Sold

- Changes in Retail Market Competition
  - Number of retailers in a market
  - Type of retailers
    - Specialization
    - Differentiation

CPI for Fuel Oil  
CPI for Gas and Electricity  
CPI for Gasoline  
CPI for Food

ERS ECONOMIC RESEARCH SERVICE  
United States Department of Agriculture  
The Economics of Food, Farming, Natural Resources, and Rural America

February 21, 2008
Farm Product PPI Components (a)  
1970-2007

![Graph showing annual percent change in Farm Products PPI and individual components like Corn, Wheat, Soybeans, and Milk from 1970 to 2007.](image)

- **Farm Products PPI**
- **Corn**
- **Wheat**
- **Soybeans**
- **Milk**

February 21, 2008

ECONOMIC RESEARCH SERVICE  
United States Department of Agriculture

The Economics of Food, Farming, Natural Resources, and Rural America
Farm Product PPI Components (b) 1970-2007

- Farm Products PPI
- Livestock
- Poultry
- Fresh Fruits
- Fresh Vegetables

February 21, 2008
## Declines in Average Percent Change in Farm Prices

<table>
<thead>
<tr>
<th>Commodity</th>
<th>‘70-’07</th>
<th>’97-’07</th>
<th>Commodity</th>
<th>‘70-’07</th>
<th>’97-’07</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>6.1</td>
<td>3.6</td>
<td>Corn</td>
<td>5.0</td>
<td>1.2</td>
</tr>
<tr>
<td>Soybeans</td>
<td>5.1</td>
<td>2.5</td>
<td>Milk</td>
<td>4.2</td>
<td>4.4</td>
</tr>
<tr>
<td>Fruits</td>
<td>3.3</td>
<td>2.3</td>
<td>Livestock</td>
<td>3.1</td>
<td>2.7</td>
</tr>
<tr>
<td>Vegetables</td>
<td>4.0</td>
<td>2.3</td>
<td>Poultry</td>
<td>4.1</td>
<td>3.4</td>
</tr>
</tbody>
</table>

---

February 21, 2008
2008: Déjà vu?

Farm Price of Corn

Dollars per Bushel

2005 2006 2007 2008

February 21, 2008
Substitution = Higher Soybean Prices

Farm Price of Soybeans

Dollars per Bushel

2005 2006 2007 2008

February 21, 2008
Other Commodities also on the Rise

Farm Price of Wheat

Dollars per Bushel
Other Commodities also on the Rise

Farm Price of Milk

Dollars per C/Wt

2003 2004 2005 2006 2007 2008

February 21, 2008
Impact on Retail Prices?

- Raises costs of animal feed
  - Beef, Pork, Poultry
- Raises costs of corn as an ingredient
  - Breakfast Cereal and Soda

But…
Where a Consumer Dollar Spent on Food Goes

Profits, 4.0%
Depreciation and Repairs, 5.0%
Rent and Interest, 6.0%
Taxes and Other Costs, 6.5%
Energy and Transportation, 8.5%
Advertising and Packaging, 12.0%
Farm value, 19.5%
Labor, 38.5%

Source: Economic Research Service Calculations using 2005 Data
February 21, 2008
Corn as a Food Ingredient

- **Corn Flakes Example**
  - $2.28 vs $3.39 per bushel
  - An 18-ounce box of corn flakes contains about 12.9 ounces of milled corn.
  - Expected to raise the price of a box of corn flakes by about 1.6 cents, or 0.5 percent.

- **Soda ~ Corn Syrup Example**
  - A 2-liter bottle of soda contains about 15 ounces of corn in the form of high fructose corn syrup.
  - Expected to raise soda prices by 1.9 cents per 2-liter bottle, or 1 percent.
Corn as Animal Feed

About 55 percent of U.S. corn is used as animal feed for livestock and poultry.

This analysis uses upper-bound conversion estimates of:

- 7 pounds of corn to produce 1 pound of beef
- 6.5 pounds of corn to produce 1 pound of pork
- 2.6 pounds of corn to produce 1 pound of chicken
Simple Pass-Through Model

A pound of retail chicken uses 10.6 cents worth of corn or about 5.2 percent of the $2.05 average retail price for chicken breasts.

Using the average price of corn for 2007 and assuming producers do not change their animal-feeding practices, retail chicken prices would rise 5.2 cents, or 2.5 percent.

Using the same corn data, retail beef prices would go up 14 cents per pound, or 8.7 percent, while pork prices would rise 13 cents per pound, or 4.1 percent.
Controlling for Other Factors

Assumes the magnitude of the corn price change does not affect the rate at which cost increases are passed through to retail prices.

Need to account for potential substitution by producers from more expensive to less costly inputs.
Higher corn prices pass through to retail prices at a rate less than 10 percent of the corn price change. Given that foods using corn as an ingredient make up less than a third of retail food spending, overall retail food prices would rise less than 1 percentage point per year above the normal rate of food price inflation when corn prices increase by 50 percent. Even this increase may be partially tempered by changes to corn use in food production.
Food at Home vs Food Away from Home 1970-2007

Annual Percent Change

CPI for Food at Home
CPI for Food Away from Home

February 21, 2008

ERS ECONOMIC RESEARCH SERVICE
United States Department of Agriculture
The Economics of Food, Farming, Natural Resources, and Rural America
Food at Home vs Food Away from Home 1997-2007

Annual Percent Change

CPI for Food at Home

CPI for Food Away from Home
‘Stable’ Components of the CPI for Food at Home 1990-2007

Annual Percent Change

- CPI for Food at Home
- Cereals and Bakery Goods
- Sugar and Sweets

February 21, 2008
Less Stable Components of the CPI for Food at Home 1990-2007

Annual Percent Change


CPI for Food at Home  Meat, Poultry, Fish  Fats and Oils  Nonalcoholic Beverages

ERS ECONOMIC RESEARCH SERVICE
United States Department of Agriculture
The Economics of Food, Farming, Natural Resources, and Rural America
‘Volatile’ Components of the CPI for Food at Home 1990-2007

Annual Percent Change

CPI for Food at Home  
Dairy  
Fruits and Vegetables  
Eggs

February 21, 2008
CPI for Food Above Historical Average Again in 2008

Annual Percent Change in CPI for Food

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Change</td>
<td>2.6</td>
<td>2.2</td>
<td>2.1</td>
<td>2.3</td>
<td>3.2</td>
<td>1.8</td>
<td>2.2</td>
<td>3.4</td>
<td>2.4</td>
<td>2.4</td>
<td>4</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
Why?

- **Upward Pull on Retail Food Prices:**
  - Higher commodity costs (corn, wheat, soybeans, etc.)
  - Higher energy and transportation costs
  - Increased U.S. exports due to weaker dollar
  - Rising labor and healthcare costs

- **Stabilizing Forces:**
  - Increased competition from nontraditional retail formats.
  - Better inventory management/cost saving technologies
  - Globalized trade: year-round availability
  - Demand by consumers for convenience, quality, and low prices.
### Percent Change in Food CPI 2005-2008(a)

<table>
<thead>
<tr>
<th>Items</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>Forecast 2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Food</td>
<td>2.4</td>
<td>2.3</td>
<td>4.0</td>
<td>3.0 to 4.0</td>
</tr>
<tr>
<td>FAFH</td>
<td>3.1</td>
<td>3.1</td>
<td>3.6</td>
<td>3.0 to 4.0</td>
</tr>
<tr>
<td>Food at Home</td>
<td>1.9</td>
<td>1.7</td>
<td>4.2</td>
<td>3.5 to 4.5</td>
</tr>
<tr>
<td>Beef</td>
<td>2.6</td>
<td>0.8</td>
<td>4.4</td>
<td>2.0 to 3.0</td>
</tr>
<tr>
<td>Pork</td>
<td>2.0</td>
<td>-0.2</td>
<td>2.0</td>
<td>1.5 to 2.5</td>
</tr>
<tr>
<td>Other Meats</td>
<td>2.4</td>
<td>1.8</td>
<td>2.3</td>
<td>0.0 to 1.0</td>
</tr>
<tr>
<td>Poultry</td>
<td>2.0</td>
<td>-1.8</td>
<td>5.2</td>
<td>1.5 to 2.5</td>
</tr>
</tbody>
</table>

---

**ECONOMIC RESEARCH SERVICE**
United States Department of Agriculture

*The Economics of Food, Farming, Natural Resources, and Rural America*
## Percent Change in Food CPI 2005-2008 (b)

<table>
<thead>
<tr>
<th>Items</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>Forecast 2008</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All Food</strong></td>
<td>2.4</td>
<td>2.3</td>
<td>4.0</td>
<td>3.0 to 4.0</td>
</tr>
<tr>
<td><strong>Food at Home</strong></td>
<td>1.9</td>
<td>1.7</td>
<td>4.2</td>
<td>3.5 to 4.5</td>
</tr>
<tr>
<td><strong>Fish and Seafood</strong></td>
<td>3.0</td>
<td>4.7</td>
<td>4.6</td>
<td>3.0 to 4.0</td>
</tr>
<tr>
<td><strong>Dairy</strong></td>
<td>1.2</td>
<td>-0.6</td>
<td>7.4</td>
<td>2.0 to 3.0</td>
</tr>
<tr>
<td><strong>Fats and Oils</strong></td>
<td>-0.1</td>
<td>0.2</td>
<td>2.9</td>
<td>6.5 to 7.5</td>
</tr>
<tr>
<td><strong>Sugar + Sweets</strong></td>
<td>1.2</td>
<td>3.8</td>
<td>3.1</td>
<td>2.0 to 3.0</td>
</tr>
<tr>
<td><strong>Eggs</strong></td>
<td>-13.7</td>
<td>4.9</td>
<td>29.2</td>
<td>0.0 to 1.0</td>
</tr>
</tbody>
</table>
## Percent Change in Food CPI 2005-2008 (c)

<table>
<thead>
<tr>
<th>Items</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>Forecast 2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Food</td>
<td>2.4</td>
<td>2.3</td>
<td>4.0</td>
<td>3.0 to 4.0</td>
</tr>
<tr>
<td>Food at Home</td>
<td>1.9</td>
<td>1.7</td>
<td>4.2</td>
<td>3.5 to 4.5</td>
</tr>
<tr>
<td>Fresh Fruits</td>
<td>3.7</td>
<td>6.0</td>
<td>4.5</td>
<td>3.5 to 4.5</td>
</tr>
<tr>
<td>Fresh Vegetables</td>
<td>4.0</td>
<td>4.6</td>
<td>3.2</td>
<td>2.5 to 3.5</td>
</tr>
<tr>
<td>Processed F + V</td>
<td>3.3</td>
<td>2.9</td>
<td>3.6</td>
<td>3.0 to 4.0</td>
</tr>
<tr>
<td>Cereals + Bakery</td>
<td>1.5</td>
<td>1.8</td>
<td>4.4</td>
<td>5.5 to 6.5</td>
</tr>
<tr>
<td>Nonalcoholic Bev.</td>
<td>2.9</td>
<td>2.0</td>
<td>4.1</td>
<td>3.5 to 4.5</td>
</tr>
</tbody>
</table>
Food Price Inflation Stabilizing

Average Annual Percent Change in Food Price Inflation by Decade

- 1970s: 8.1%
- 1980s: 4.6%
- 1990s: 2.8%
- *2000s*: 2.7%

February 21, 2008
Questions
Contact Information

Ephraim Leibtag, PhD

eleibtag@ers.usda.gov

202-694-5349

For more information, see

http://www.ers.usda.gov/Briefing/CPIFoodAndExpenditures/