Effects of Agricultural Research and Farm Subsidy Policies on Human Nutrition and Obesity

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Presentation Outline

- Obesity in the U.S. – Trends and Presumed Causes
- Farm Subsidy Policy – The ‘Smoking Gun’
- A Broader Look at Agricultural Policy – Farm Subsidies and R&D
- Commodity Prices
- Food Prices
- Poverty and Food Security in the US
- Preliminary Conclusions and Implications for Research and Policy
Children with BMI values at or above the 95th percentile of the sex-specific BMI growth charts are categorized as overweight.
Obesity Trends* Among U.S. Adults
(*BMI ≥30, or about 30 lbs overweight for 5’4” person)

Source: Behavioral Risk Factor Surveillance System, CDC.

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Economic Costs

- **Direct**
  - Increased health care costs
    - $78.5 billion in the U.S. in 1998
    - $7.8 billion in California alone, 1998-2000

- **Indirect**
  - Morbidity costs
    - Lost productivity
    - Absenteeism
  - Mortality costs
    - Over 300,000 death per year attributable to obesity
    - Obese individuals have a 50 to 100% increased risk of premature death from all causes
Key Issues

• Why Is This Happening?
  – Long-Term and Worsening Energy Imbalance
    • Energy Intake > Energy Expenditure

• Drivers of This Imbalance
  – Types and sources of food
  – Food portions
  – Energy expenditure patterns

• What Role of Agriculture and Agricultural Policy?
  – Getting us to this point?
  – Course correction?
Is Agricultural Policy (Partially) Responsible?

• “[Our] cheap-food farm policy comes at a high price: . . . farmers in the United States have managed to produce 500 additional calories per person every day; each of us is, heroically, managing to pack away 200 of those extra calories per day.” (Pollan 2003)

• “Commodity prices . . . are so low that restaurants have been able to double serving sizes without doubling prices.” (Davis 2003)

• “Why healthier foods are slipping out of reach of large segments of the US population is a question with many policy and political implications.” (Drewnowski and Barratt-Fornell, 2004)
Focus of Our Current Efforts

• Commodity Programs
• Agricultural R&D
• Foci of Future Work
  – WIC
  – Trade Policy
The ‘Smoking Gun’

Trends in Consumption of Corn Sweeteners

http://www.ers.usda.gov/data/foodconsumption/FoodGuideIndex.htm#calories
The More Complete Story

Trends in Consumption of Selected Sweeteners

Refined cane and beet sugar
Corn sweeteners
All Added sugars

http://www.ers.usda.gov/data/foodconsumption/FoodGuideIndex.htm#calories
The Much More Complete Story

Calories from Different Food Groups

Year

Avg. Kcalories/person/day

Meat, eggs, and nuts
Dairy
Fruit
Vegetables
Flour and cereal products
Added fats
Added sugars

http://www.ers.usda.gov/data/foodconsumption/FoodGuideIndex.htm#calories

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Links Between Selected Agricultural Policies and Human Nutrition

- Agricultural R&D
  - Farm Production Costs
    - Commodity Prices
      - Food Industry
        - Food Prices
          - Food Intake
            - Genetic Factors
              - Nutritional Status

- Agricultural Commodity Programs
  - Farm Income
    - Disposable Income
      - Available Time
    - Information & Sociocultural Factors
      - Activity Levels
Producer NPC = \( \frac{\text{domestic price received by producers (at the farm gate)} + \text{unit payments based on output}}{\text{border price (also at the farm gate)}} \)

<table>
<thead>
<tr>
<th>USDA Program</th>
<th>Expenditure in 2004</th>
<th>Percent of Total</th>
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<tbody>
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<td><strong>Food, Nutrition, and Consumer Services</strong></td>
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<tr>
<td><strong>Farm Service Agency (mainly farm commodity programs)</strong></td>
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<td><strong>TOTAL</strong></td>
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</table>

Producers NPCs for Different Commodities

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Trends in Agricultural R&D

Total Federal and State Spending on Ag. R&D
(1925-1997)

Total Private Sector Spending on Ag R&D
(1960-1992)

Total Ag. R&D Spending

Private Ag R&D Spending
Trends in Productivity

Average Yield of Corn 1900-1997

Milk Production per Cow 1929-1996

Total Factor Productivity Index (1948=100)
Trends in Prices Received By Farmers

Prices received Deflated with prices paid (Commodities, services, interest, taxes, wages) (1977=100)

- All Crops
- Livestock & Products
- All Farm Products

Deflated Prices Received for Selected Grains (1977=100)

- Rice (PP)
- Wheat (PP)
- Corn for Grain

Deflated Prices Received for Selected Fruits (1977=100)

- Apples
- Oranges
- Strawberries
- Table Grapes
Prices Paid By Consumers – Basic Stuff

Consumer Prices for Eggs Deflated by CPI (food at home)

Year
$/doz.

Eggs, Grade A Large

Consumer Prices for Ground Beef Deflated by CPI (food at home)

Year
$/lb.

Ground Chuck, USDA Choice Cons_Food_Prices/$N$7, 100% Beef

Consumer Prices for Chicken deflated by CPI (food at home)

Year
$/lb.

Chicken, w hole, fresh

Consumer Prices for White Sugar Deflated by CPI (food at home)

Year
$/lb.

Sugar, w hite, all sizes

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## Getting the Price Story Right: Strawberries

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<th>Jun</th>
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The (Old) Food Pyramid: Consumer Prices

- **White Sugar**: -0.008
- **Milk**: -0.011
- **Butter**: -0.023
- **Cheese**: -0.033
- **Lettuce**: -0.004
- **Tomatoes**: +0.003
- **Carrots**: -0.003
- **Potatoes**: 0.0
- **Turkey**: -0.021
- **Chicken**: -0.009
- **Eggs**: -0.015
- **Beef**: -0.031
- **Bananas**: -0.004
- **Apples**: -0.006
- **Oranges**: 0.0
- **Grapefruit**: -0.002
- **White Bread**: 0.0
- **Rice**: -0.031
‘Disconnect’ Between Commodity & Food Prices

Divergence Between Retailer and Shippers’ Prices

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Costs of Producing Fast Foods

Farmer Prices for the Components of a McDonald's Quarter Pounder

Costs to Consumer for Components McDonald's Quarter Pounder with Cheese

Percent of Costs and Expenses
McDonald's Corporation

% Selling and administrative expenses of costs and expenses
% Occupancy and other operating expenses of costs and expenses
% Payroll of costs and expenses
% Food and paper of costs and expenses

http://www.mcdonalds.com/corp/invest/pub.html

Alston, Sumner, Vosti UCD/AIC
The Poverty And Food Security Stories

**Poverty: 1959 to 2003**

- Numbers in millions, rates in percent
- Recession

<table>
<thead>
<tr>
<th>Year</th>
<th>Number in poverty</th>
<th>Poverty rate</th>
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<tbody>
<tr>
<td>1959</td>
<td>39.5 million</td>
<td>22.4%</td>
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<tr>
<td>2003</td>
<td>35.9 million</td>
<td>12.5%</td>
</tr>
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</table>


**Trends in the prevalence rates of food insecurity and food insecurity with hunger in U.S. households, 1995-2003**

- Percent of households


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Preliminary Conclusions and Policy Implications

• Agricultural Policy ➔ Commodity Prices
  – Commodity Support Programs
    • Effects on farmer income are large; Effects on commodity prices are small, varied and difficult to predict
  – Publicly Sponsored Agricultural Research
    • Chiefly responsible for past yield increases and price declines

• Commodity Prices ➔ Food Prices ➔ Caloric Intake
  – Increasing ‘disconnect’ between commodity prices and food prices
  – Role of food industry needs to be better understood and exploited
    • Entry points for changes in food preparation technologies and portion sizes

• Managing food consumption via macro-management of commodity prices is probably a bad strategy
  – Is cheap food a bad thing?
  – Can reductions in agricultural R&D reduce obesity?

• Agricultural Policy for Dealing with Obesity
  – Increased yields, and improved quality and availability of fruits/vegetables
    • Large role for private sector
    • Caloric ‘catalytic converters’

• Difficult to Defend the ‘Increasingly Out of Reach’ Hypothesis