Introduction to Agricultural Business

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AGBE 210
Spring 2014
OUTLINE

1. Introduction
2. Input Sector
3. Production Sector
4. Processing-Manufacturing Sector
1. INTRODUCTION

2. INPUT SECTOR

3. PRODUCTION SECTOR

4. PROCESSING-MANUFACTURING SECTOR
Famous Adam Smith Quote

“It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest.”

- “An Inquiry into the Nature and Causes of the Wealth of Nations” by Adam Smith (1776)
The U.S. Agribusiness Sector

- The world’s largest agribusiness sector
- Large part of the U.S. economy
- Huge integrator of technology
- Biggest user of biotechnology
- Safest food
- Lowest cost food
- Largest assortment of food
- 11,000+ new food products per year
U.S. Households Spend Lower Share of Income on Food over Time

Source: ERS, USDA
U.S. Households Spend Less of Income on Food at Home and Slightly More Away from Home
Households in Developing Countries Spend Much More of Budget on Food

![Bar chart showing percent of family budget spent on food, 2010 for various countries.]

- U.S.: 12
- Brazil: 15
- China: 21
- India: 22
- Saudi Arabia: 23
- Turkey: 25
- Russia: 35
- Indonesia: 37
- Egypt: 46

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We consume 350 million Tons of food per year (about 6 lbs per person per day)

Farmers receive about 20 cents for each food dollar

Consumers spend about 10% of disposable income on food

Each farm worker produces enough food for 103 people
  - 75 people in the U.S.
  - 28 people abroad

Employment of farm workers is larger than workers in auto, steel, and transportation industries
U.S. Agriculture Has Experienced Massive Productivity Gains

![Graph showing productivity gains over time.](graph.png)
The Productivity of U.S. Agriculture

- The U.S. is endowed with 7% of the world’s land and 5% of the world’s population.
- The U.S. produces 12% of the world agricultural output:
  - 47% of the world’s soybeans
  - 42% of the world’s corn
  - 28% of the world’s cheese
  - 19% of the world’s milk
  - 16% of the world’s cotton
  - 12% of the world’s wheat
- The U.S. exports 27% of its production.
“Science remains in the laboratory unless there is incentive to adopt the knowledge. This is the difference between science and technology. Agribusiness Management is the integrator.”

- “The Agricultural Revolution of the 20th Century” by Paarlberg and Paarlberg, p. 59
The Agricultural Revolution

“If a farmer from Old Testament times could have visited an American farm in year 1900, he would have recognized and had the skill to use most of the tools he saw: the hoe, the plow, the harrow the rake. If he were to visit an American farm today, he might think he was on a different planet.”

- Paarlberg and Paarlberg, p. xiii
More on The Agricultural Revolution

“The changes that occurred in American agriculture during the 20th century exceed in magnitude all the changes that occurred during the 10,000 years since human beings first converted themselves from hunters and gatherers to herdsmen and cultivators.”

- Paarlberg and Paarlberg, p. xiii
PRODUCT FLOW IN THE GLOBAL AGRI-FOOD SYSTEM
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction</td>
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<td>2</td>
<td>Input Sector</td>
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<td>3</td>
<td>Production Sector</td>
</tr>
<tr>
<td>4</td>
<td>Processing-Manufacturing Sector</td>
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</tbody>
</table>
Where Does Technological Change Come From?

- Technological Change has been a function of
  - Commodity markets are highly competitive
  - Basic research provided by public entities
  - Prive research by agribusiness (economic incentive when prices are high)
- These efforts have kept the U.S. competitive with the rest of the world
- Concerns about future funding
- Has led to changes in the composition of inputs
  - Capital to labor substitutions
  - Chemical to labor substitutions
  - Chemical to capital substitutions
THE U.S. PRODUCES MORE THAN DOUBLE THE OUTPUT WITH THE SAME INPUT

![Graph showing the production and input index from 1948 to 2008. The total output index increases significantly over time, while the total input index remains relatively stable.](image-url)
Farming Is Less Labor-Intensive
**Grain Yields Trending Positively**

![Graph of grain yields over time](image)

- **Corn**
- **Soybeans**
- **Wheat**

**Introduction**

**Input Sector**

**Production Sector**

**Processing-Manufacturing Sector**

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*Introduction to Agricultural Business*
More Meat With Less Cows

![Graph showing the relationship between cattle inventory and US beef production from 1950 to 2010. The graph illustrates a trend where beef production has increased despite a decrease in cattle inventory over the years.]
Higher Yields With Less Labor

![Chart showing hours of farm work per planted acre from 1950 to 1998. The chart indicates a decrease in hours from 55 in 1950 to 17 in 1998.]
1 Introduction

2 Input Sector

3 Production Sector

4 Processing-Manufacturing Sector
# Number and Size of Farms in the U.S. and MT

<table>
<thead>
<tr>
<th>Metric</th>
<th>U.S.</th>
<th>MT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Farms</td>
<td>2,192,000</td>
<td>29,300</td>
</tr>
<tr>
<td>Land in Farms (acres)</td>
<td>917.0 M</td>
<td>60.5 M</td>
</tr>
<tr>
<td>Avg. Farm Size (acres)</td>
<td>420</td>
<td>2,065</td>
</tr>
<tr>
<td>Wheat Acreage Planted (acres)</td>
<td>54.4 M</td>
<td>5.1 M</td>
</tr>
<tr>
<td>Cattle and Calves Inventory (head)</td>
<td>92.6 M</td>
<td>2.5 M</td>
</tr>
</tbody>
</table>
Half of production comes from relatively small number of farms.

<table>
<thead>
<tr>
<th>Annual Sales</th>
<th>% Of $ Sales</th>
<th>% Of Farms</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;$50,000</td>
<td>11</td>
<td>74.4</td>
</tr>
<tr>
<td>$50,000-99,999</td>
<td>10.1</td>
<td>9.1</td>
</tr>
<tr>
<td>$100,000-249,999</td>
<td>9.1</td>
<td>9.1</td>
</tr>
<tr>
<td>$250,000-499,999</td>
<td>4</td>
<td>15.9</td>
</tr>
<tr>
<td>$500,000 and over</td>
<td>2.6</td>
<td>44.9</td>
</tr>
</tbody>
</table>
Changes in Land Use, 1945 vs. 2002

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**Value of Exports and Imports Growing**

![Graph showing the value of agricultural exports and imports from 1976 to 2011. The graph indicates a significant increase in the value of exports and imports over time.](image)

**Value of Agricultural Exports, 1976-2011**

- **Exports**
- **Imports**
U.S. Exports Much of the World’s Food and Fiber

![Graph showing U.S. Agriculture in World Trade, 2010/2011]
Farmer’s Share of Dollar is 19 Cents

What a dollar spent on food paid for in 2006

Farmer’s Share of Dollar Had Declined Substantially Over Time
The Trends: Farming to Food Factories

- Fewer but larger facilities
- Fewer but better educated employees
- A high tech business
**Drivers of Change**

1. **Technology**
   - Biotechnology
   - Information Technology
   - Transportation Technology
   - Packaging and Food Processing

2. **Population and Income Growth**
   - Developed Countries - High Income
     - Food Safety
     - Convenience
     - Processes
   - Developing Countries
     - Increasing Middle Class
     - Demand for Animal Sources of Protein
World Population Growth

1 billion, 1804
2 billion, 1927
3 billion, 1960
4 billion, 1974
5 billion, 1987
6 billion, 1999
7 billion, 2011
8 billion, 2025
9 billion, 2041
10 billion, 2071
Today
Drivers of Change (cont.)

3. Trade and Government Involvement
   - Protectionism is expensive
   - Increased competitiveness from overseas
   - Trade alliances provide new market and new costs

4. Demographic Shifts in the U.S.
   - Larger population share of Hispanic, Asian, and Black
   - Aging population