Chapter 9

Agricultural Transformation and Rural Development
Importance of Agricultural and Rural Development

- Heavy emphasis in the past on rapid industrialization at the expense of agriculture

- Agricultural development is now seen as an important part of any development strategy
Contribution of Agriculture

• Produce
  – food to meet basic nutritional needs of the population
  – raw materials to help the industry
  – cash crops for export

• Farmers have demand for manufactured consumer and capital goods
Contribution of Agriculture

- Agriculture employs a large percentage of the labor force
- Agriculture generates a large percentage of the GDP
- With improved farm productivity, the labor and GDP shares of agriculture will decline over time
Improved Farm Productivity 1960-2005

The Shares of Agriculture


Note: The list of 3-letter codes and the countries they represent can be found on page xviii of the above report.
Agraian Structures

• The structure of agrarian systems consists of three types of countries:
  – Agriculture-based countries
  – Transforming countries
  – Urbanized countries
Agraian Structures


Note: Arrows show paths for Brazil, China, India, and Indonesia in previous periods.

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Agricultural Dualism: World

MDCs have higher total factor productivity than LDCs

- **Land** (output per acre)
- **Labor** (output per worker-hour)
- **Capital** (output per machine-hour)
- **Appropriate technology**
### Land Productivity in Developed and Developing Countries

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<thead>
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</table>

Reasons for Poor Performance

Lack of investment in

- **Human capital** *(education, nutrition, health)*

- **Social capital** *(roads, homes, electricity, irrigation)*

- **Physical capital** *(mechanical inputs, storage rooms)*

- **Technological advancement** *(high yield seed variety, better planting methods)*
Reasons for Poor Performance

Unequal land distribution

- Large and powerful landowners
- Small family farmers and peasants
- Sharecroppers, landless peasants, and farm workers
### Agricultural Land Distribution

<table>
<thead>
<tr>
<th>Country</th>
<th>Average Operational Farm Size (hectares)</th>
<th>Percentage of Farms and Farmland</th>
<th>Gini Coefficient of Land Concentration</th>
<th>Percentage of Tenanted Area in Total Farmland</th>
<th>Percentage of Share Tenancy in Tenanted Land</th>
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<tr>
<td></td>
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<td>Below 5 Hectares</td>
<td>Above 50 Hectares</td>
<td>Farms</td>
<td>Area</td>
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<td>67.6</td>
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<td>0.0&lt;sup&gt;c&lt;/sup&gt;</td>
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<sup>a</sup>Area in pure tenant farms plus area in owner-as-tenant farms.

<sup>b</sup>Percent in area of pure tenant farms.

<sup>c</sup>Less than 0.05%.

n.a. = not available.
## Agricultural Land Distribution

<table>
<thead>
<tr>
<th>Country</th>
<th>Period</th>
<th>Land Distribution Gini</th>
<th>Average Farm Size (hectares)</th>
<th>Change (%)</th>
<th>Farm Size Definition Used</th>
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<td>Larger farm size, more inequality</td>
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</tbody>
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*aFigure for 2004–2005.*
Agricultural Dualism: Latin America

**Latifundios:**
- Very large landholdings
- Commercial farming & advanced farm technology
- Employing more than 12 workers

**Minifundios:**
- Small family farms (a few workers)
- Subsistence farming & primitive technology
- Low standard of living
Agricultural Dualism: Latin America

Problems:

• Land concentration: 71.6% of land owned by 1.3% of landowners

• Inefficiency of latifundios

• Subsistence of minifundios
Agricultural Dualism: Asia

Commercial farming:
- Very large landholdings
- Massive government subsidies

Subsistence farming:
- Small family farms
- Sharecroppers and landless peasants
- Little or no government support
Agricultural Dualism: Asia

- Colonial heritage of cash crop production (e.g., cotton, peanuts)
- Progressive introduction of monetized transactions
- Powerful “absentee” landowners residing in large cities with political & economic influence
Agricultural Dualism: Asia

- Moneylenders and loan sharks
  - Lend money for buying seeds and fertilizer
  - Charge exorbitant interest rates (20-50%)
  - Hold land as collateral
  - Take over the land in case of loan default in poor-crop years
  - Become landowners themselves
Agricultural Dualism: Asia

Problems:

- Poverty
- Land and income disparity
- Rapid population growth
- Growing number of landless peasants
- Lack of government programs helping small farmers
- Massive R-U migration
Agricultural Dualism: Africa

Commercial farming:
- Very large landholdings
- Massive government subsidies

Subsistence farming:
- Small family farms
- Primitive technology
- Large areas of unusable land
- Massive underemployment, but labor shortage in crop season
Agricultural Dualism: Africa

Problems:

• Poverty
• Land and income disparity
• Rapid population growth
• Lack of government programs helping small farmers
• Massive R-U migration
• Rapid deforestation and desertification
Economic Role of Women

Daily tasks:

• Home-making and child rearing

• Food processing for consumption and storage

• Farming: weeding, harvesting, raising livestock
Economic Role of Women

• Cash crop labor

• Generate income through cottage industry

• Make up 60-80% of farm labor in Asia & Africa; 40% in Latin America

• Are subject to gender discrimination in education and employment
Risk Taking in Subsistence Farming

Minimum consumption requirement (MCR):

- Amount of food necessary for survival
- Fixed by nature
- Output below which means hunger and starvation
Risk Taking in Subsistence Farming

Minimum desirable consumption level (MDCL):

• Amount of food desirable

• Increases over time with application of more protein and sugar
Risk Taking in Subsistence Farming

Farmer A resists change

Farmer B welcomes change

MDCL

MCR

Output/Consumption

Time
Risk Taking in Subsistence Farming

• Farmer A producing a tad over MCR is risk averter

• He is unwilling to risk survival by making a change in traditional way of life and farming

• Crop failure is catastrophic
Risk Taking in Subsistence Farming

• Farmer B producing close to MDCL is risk taker

• He is willing to try new methods of production

• Crop failure still provides the minimum food requirement
Risk Taking in Subsistence Farming

- Farmer A resists change to maintain MCR; he prefers production technique A with low mean and low variance

- Farmer B welcomes change to produce closer to MDCL; he prefers production technique B with high mean and high variance
Risk Taking in Subsistence Farming

Technique A: low mean, low variance

Technique B: high mean, high variance

Mean = 10  Mean = 12
Sharecropping & Efficiency

Supply of labor is fixed at $W_A$ and demand for labor is the Value of Marginal Product, VMP.

For a small landowner: $W_A = VMP$ for employment = $L_F$

For a sharecropper: $W_A = 0.5 \times VMP$ for employment = $L_S$

Here $L_S < L_F$ as sharecroppers have less incentive to

- Apply inputs including labor, seeds, fertilizer
- Use modern farming techniques
- Produce maximum output
Sharecropping & Efficiency

\[
\frac{\gamma VMP_L}{L} \quad VMP_L \quad \gamma VMP_L \\
W^A \quad L^S \quad L^F
\]
Rural Development Strategies

Technological change and innovation:

- Modern mechanical and chemical inputs
- High-yield seed varieties
- Modern farming techniques
- Appropriate technology: labor-intensive
Expansion of Modern Inputs in the Developing Regions

(a) Irrigation

(b) Improved varieties of cereals

(c) Fertilizer consumption


Note: Figures for improved cereal varieties are based on estimates for rice, wheat, maize, and sorghum.
Rural Development

• Institutional and Pricing Policies

• Parity pricing: equalization of unit farm and nonfarm prices

• Distribution systems and farmer cooperatives
Rural Development Strategies

Land Reform:

- Distribute fertile land between small farmers and landless peasants
- Compensate owners for loss of land
- Provide supportive services to help increase production
- Establish rural industries and jobs to curb R-U migration