Development and Structural Transformation: The Lewis Model

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Development and Structural Transformation

- The Harrod-Domar-Solow models are macroeconomic theories of growth.
- A key distinction between growth and development: latter additionally involves changes in structure of the economy.

**Structure**: relative importance of
- Rural versus Urban
- Agriculture versus Industry
- Informal versus Formal sectors
- Small-scale versus Large-scale
- Traditional versus modern
Processes of industrialization, urbanization and modernization are important drivers of growth in living standards.

Because productivity and living standards differ significantly between rural and urban areas, between informal and formal sectors.

Formulation of development policy needs to be based on an understanding of why these differences arise, and focus on speeding up structural transformation.
### Table: Breakdown of GDP Across Different Sectors, 1999

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<th>Agriculture</th>
<th>Industry</th>
<th>Services</th>
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<tbody>
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<td>Low Income Countries</td>
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<td>Middle Income Countries</td>
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<td>High Income Countries</td>
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Table: Breakdown of Employment Across Different Sectors, 1990-92

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<thead>
<tr>
<th></th>
<th>Agriculture</th>
<th>Industry</th>
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<tr>
<td>L/M Income Countries</td>
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<td>OECD</td>
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Productivity and Living Standard
Differences between Rural and Urban Sectors

- Fact of life: agricultural production is limited by scarcity of land
- Industry and services not limited by any such fixed factor
- Technical progress and rising worker skills raise productivity in industry and services far more than in agriculture
- Hence development typically goes hand-in-hand with industrialization and urbanization
Informal versus Formal Sector Enterprises

- Enterprises in the informal sector: unregistered, unregulated, outside tax net, low access to technology and institutional finance
- Few hired employees; high reliance on family labor
- Most farms in LDCs are informal
- Producing goods for self-consumption; not operating on a commercial (profit-making) basis
- As development proceeds, they switch to cash crop cultivation on a commercial basis
Dualism within Urban Areas

- Large informal sector also exists in urban areas: selling services or low quality goods, or subcontracting with formal sector firms
- Coexists with formal sector: factories, banks, supermarkets, hospitals, government etc.
- Vast gaps in wages, job security and working conditions between formal and informal sector
- Formal sector characterized by commercial principles and legal contracts enforced by law
- Informal sector by ‘customs’ and ‘norms’
The Lewis Model of Development based on Structural Transformation

- Lewis (1955) models development as a process of transformation of a traditional rural agricultural economy into a modern urban industrial economy.
- Based on the observation that most traditional LDCs have an almost ‘unlimited supply of labor’ in the countryside and in the urban informal sector.
Rural Sector: Surplus Labor and Traditional Norms

- Phenomenon of ‘disguised unemployment’ or ‘surplus labor’ in rural sector: have low productivity jobs with lots of time to spare
- Not hired on a commercial basis, but on the basis of family/kinship relations or customary norms
- ‘Traditional’ wage $\bar{w}$ is based on sharing norms, equals average (not marginal) product of labor
- The rural wage is going to remain fixed at this level, until a later stage when labor scarcity arises in the countryside and labor markets emerge
Industrial Sector

- Industrial sector: factories owned by capitalists, operated on commercial lines
- Wage rate in industry equals marginal product of labor
- Main impetus for growth and development: investment in new factories by capitalists
Workers can migrate from rural to urban sector
Unlimited (initially) supply of labor in rural sector
Hence urban wage equals (is determined by) the (given) rural wage $\bar{w}$
Let $P$ denote the cost of living in the city for workers (price of food relative to industrial good (numeraire))

In industry, workers hired till

$$MP^I_L = P \cdot w^I = P \cdot \bar{w} = P \cdot AP^A_L > 0 = VMP^A_L$$

Productivity difference between the sectors:

$$VMP^I_L > VMP^A_L = 0$$

Rural-urban migration would raise GDP, but won’t happen by itself in the free market
What Determines Migration?

- Creation of jobs in the industrial sector, owing to investment in new factories by capitalists
- Rate of investment in new factories equals savings of capitalists (workers are too poor to save)
- Savings of capitalists equals capitalist profits times their saving rate
- Like the Solow model, growth rate depends on investment in new capital

**Lewis Assumptions:** no investment in rural sector; capitalist m.p.c. on food is zero
Stage 1: Workers move from agriculture to industry at a rate determined by new industrial investment:
- $MP_L^A$ remains zero (drawing down of surplus labor)
- food supply (hence $P$) remains fixed
- industrial wage is fixed at $P \times \bar{w}$
Three Stage Process of Development, contd.

- **Stage 2**: starts when surplus labor in rural sector ends and $MP_L^A$ becomes positive
- Continues as long as $MPL^A$ remains below $\bar{w}$: no labor scarcity yet in rural sector
- Wage continues to be $\bar{w}$ in rural sector
- But food supply falls, causing urban cost-of-living for workers $P$ to rise
- Raises wage that workers must be paid in urban areas, reducing capitalist profits and rate of growth
Stage 2 ends when $MP^A_L = \bar{w}$: labor scarcity in countryside

Agriculture becomes commercialized: labor markets emerge

Farms hire workers on the market, until $MP^A_L = w^A$
Agricultural wage $w^A$ now starts rising owing to growing labor scarcity.

Resulting in further reduction in capitalist profits and industrial growth rate.

Economy is now modern and mature; no spatial mis-allocation any more ($VMP^A = VMP^I$)

Solow model works from now on.
Features of the Lewis Development process

- Similarity to Solow growth process: once an industrial sector and capitalist class emerges, development proceeds more or less automatically.
- Driven by investment in new industrial capital.
- Rate of growth slows down over time.
- But not owing to (technological) diminishing returns to industrial investment.
- Instead: limited by availability of food and labor from the countryside.
Inequality in Lewis Development process

- Unevenness of development pattern
- Benefits of development in early stages accrue entirely to capitalists
- Why inequality tends to rise in early stages
- Benefits flow down to workers only in last stage
Role of Agriculture in Economic Development (Eswaran-Kotwal, Ch 8 in UP)

- Model focuses attention also on role of agriculture:
  - Need to prevent critical shortages in supply of food and workers which lower growth rates by raising inflation and industrial wage costs
  - Complementarity between agriculture and industry in early stages of development (e.g., India and China vs Russia)
  - Become substitutes later on, during the third stage of the Lewis process
Role of Population Growth

- Lewis theory differs from Solow theory also with respect to effects of higher population growth.
- In first stage, higher population raises demand for food and cost of living, hastens onset of second stage, so has negative effect.
- But it helps prolong the second stage, by preventing rapid emergence of labor scarcity.
- Trade-off between food shortage and labor shortage.
Role of Globalization

- If the developing country has access to a world food market, the price of food is constant, which eliminates the transition from the first to second stage.
- Prevents food shortages: helps prolong first stage.
- Ability to export industrial goods raises growth rate, while competition from foreign imports slows down growth.
- Foreign investment raises growth rate, but foreign investment tends to fall in second and third stages owing to declining capitalist profits (Thailand, China experience).
Implications for Government Policies

- Minimum wage legislation in urban sector slows down growth and creates urban unemployment (next lecture)
- Early development creates pressures (esp in democracies) to promote redistribution from capitalists to workers, which slow down growth
Implications for Government Policies, contd.

- Need for government to promote agricultural growth first (via land reform, investments in infrastructure and technical diffusion), to support industrial growth
- Trade policy: need to ensure access to cheap food imports to keep growth rates high (Corn Laws in early 19th century UK)
- Need to attract foreign capital inflows
Critique of Lewis Model Assumptions

- Surplus Labor assumption not applicable in some contexts (eg Africa in 1960) (next lecture)
- Agriculture sector: traditional family farms, no labor markets, no technical progress, no scope for investments
- No role assigned to human capital investments and its importance in industrial progress
- Assumptions concerning motive for migration: ‘selfish’ migrants