INTRODUCTION TO DEVELOPMENT ECONOMICS

Principles and Concepts: Economic Development
Examples of an affluent economy and subsistence economy.

Nature of development economics:
- Traditional economics: efficient allocation of scarce resources
- Political economics: social and political process
- Development economics: role of values, attitudes, and institutions

So, what do we mean by development?

Definition of Economic Development: 1950s
In economic terms, development is the capacity of a nation to generate and sustain an annual increase in its GNP of 5% or more.

Traditional economic measures:
- GDP: is the market value of all final goods and services produced in a country in a given period of time
- Per capita GNP: is the per capita value of final goods and services produced within a country in a given period of time

Y=C+I+G+NX

GNP: is the market value of all final goods and services produced by permanent residents of a country in a given period of time.

GNP= GDP+ net factor income from abroad

Common alternative index is the rate of growth of income per capita or per capita GNP

1. Per capta GNP: is the per-head value of final goods and services produced by permanent residents of a country in a given period of time. It is converted to USD using the current exchange rate.
2. PPP Measure: the number of units of a country's currency required to purchase the same of basket of goods and services produced in the local market that a US $1 would buy in the USA. Under PPP, exchange rates should adjust to equalize the price of a common basket of goods and services across countries. Penn World Tables rank countries using the PPP method.

The hambler standard

<table>
<thead>
<tr>
<th>In local currency</th>
<th>Imply actual dollars</th>
<th>Actual dollar exchange rate valuation against the dollar</th>
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</thead>
<tbody>
<tr>
<td>United States</td>
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<td>Denmark</td>
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<table>
<thead>
<tr>
<th>Country</th>
<th>Exchange rate</th>
<th>PPP</th>
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<tr>
<td>UK</td>
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<td>8.80</td>
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<tr>
<td>USA</td>
<td>34.260</td>
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<td>Zimbabwe</td>
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<td>Bangladesh</td>
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<td>China</td>
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<td>India</td>
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<tr>
<td>Sri Lanka</td>
<td>3.470</td>
<td>3.470</td>
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Problems:
1. Underreporting of income by developing countries
2. High proportion of income is generated for self-consumption.
3. Prices of non-traded goods are not appropriately reflected in exchange rates.
4. Markets are not competitive and externalities are not reflected.

Definition of Economic Development: 1970s
Dethronement of GNP in the 1970s and increasing emphasis on "redistribution from growth". Increasing emphasis on non-economic social indicators. Economic development consists of the reduction or elimination of poverty, inequality and unemployment within the context of a growing economy.

Human goals of economic development: Sen's "Capabilities" Approach: 1985
Economic growth is not an end in itself and has to enhance the lives people lead and the freedoms they enjoy. Capability to function is what matters for status as a poor/non-poor person and it goes beyond availability of commodities. Capabilities: "freedom that a person has in terms of the choice of his functionings...". Functionings is what a person does with commodities of given characteristics that they possess/control

The concept of functionings reflects the various things a person may value doing. Therefore, development cannot focus only on income, but we also need to look at other factors impacting a person's capability to function.

Amartya Sen traced five sources of disparity between real incomes and actual advantages:
1. Personal heterogeneities
2. Environmental diversities
3. Social climate variations
4. Differences in relational perspectives
5. Distribution within family

Definition of Economic Development: 1990s
World Bank in its 1991 WDR asserted that the "challenge of development is to improve the quality of life.". The improved QOL involves higher incomes, better education, higher standards of health and nutrition, less poverty, a cleaner environment, more equality of opportunities, greater individual freedom, and a richer cultural life.

Economic factors
1. Capital
2. Labor
3. Natural resources
4. Technology
5. Established markets (labour, financial, goods)

Non-economic factors (institutional, social, values)
1. Attitudes toward life and work
2. Public and private structures
3. Cultural traditions
4. Systems of land tenure, property rights
5. Integrity of government agencies

Definition of Economic Development:
Conclusion:
"Development is a multi dimensional process involving changes in social structures, popular attitudes, and national institutions, as well as the acceleration of economic growth, the reduction of inequality, and the eradication of poverty." (Todaro and Smith). Development is both a physical reality and a state of mind for attaining a better life.

Three basic core values as a practical guideline for understanding development:
1. Sustenance
2. Self-esteem
3. Freedom

Specific components of better life vary from time to time and from society to society.

Three Objectives of Development:
1. Increase availability and distribution of basic goods
2. Raise levels of living
3. Expand range of social and economic choices available to individuals.
Human Development Index
Initiated in 1990 and undertaken by UNDP in its annual series of HDRs.

HDI is based on 3 goals:
1. Longevity
2. Knowledge
3. Standard of living

HDI = \frac{1}{3}(Income index)+1/3(Life expectancy index)+1/3(education index)

Human Development Index Ranks 175 countries into 3 groups
1. Low human development = 0.00-0.099
2. Medium human development = 0.50-0.799
3. High human development = 0.80-1.00

<table>
<thead>
<tr>
<th>Country</th>
<th>HDI</th>
<th>GDP rank-HDI rank</th>
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<tr>
<td>Low HD: Tanzania</td>
<td>0.436</td>
<td>+21</td>
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<tr>
<td>Medium HD: Turkey</td>
<td>0.736</td>
<td>-21</td>
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<tr>
<td>High HD: Canada</td>
<td>0.996</td>
<td>+3</td>
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</table>

CHAPTER 2
HISTORIC GROWTH AND CONTEMPORARY DEVELOPMENT

The Growth Game
Growth rates of national income are followed closely by policy-makers. In order to better understand contemporary growth prospects, it is useful to examine historical growth patterns.

The Economics of Growth: Capital, Labor, and Technology
Three factors/ components of economic growth:
1. Capital accumulation results from an increase in capital stock and improved human resources
2. Population and eventually labor force growth shifts in PPF
3. Technological progress - L/K augmenting

Capital accumulation
- Physical capital stock
- Infrastructure
- Human capital

Population and labor force growth
- Effect of increases in physical and human resources on PPF
- Resource growth is not a necessary condition for SR growth

Technological progress
- Neutral
- Saving
  - Labor saving
  - Capital saving
- Augmenting
  - Labor- augmenting
  - Capital- augmenting

The Historical Record: Kuznets’s Six Characteristics of Modern Economic Growth
Based on the analysis of historical growth of national incomes in developed countries, Prof. Simon Kuznets has identified three principal components for a country’s economic growth:
1. Sustained rise in national output
2. Technological advancement is a necessary but not sufficient condition for continuous economic growth
3. Technological innovation and social innovation are concomitant

Six features present in the growth process of every developed nation are:
1. High rates of per capita output and population growth
2. High rates of total factor productivity increase
3. High rates of economic structural transformation
4. High rates of social, political, and ideological transformation
5. International economic outreach for markets and raw materials
6. Limited international spread of this economic growth to 1/3 of the world’s population

High rates of per capita output and TFP
On average, between 1770 and 2000, countries that are now industrialized had
- real GNP growth 3% per year
- population growth 1% per year
- per capita output 2% per year

TFP:
- It is the output per unit of all inputs and measures the efficiency with which all inputs are used
- It represents technology and accounts for about 50 to 75% of historical growth per capita in industrialized economies

Factor Accumulation Accounts for Only a Fraction of Growth

Social and ideological transformation
“Modernization Ideals” include
1. Rationality
2. Economic planning
3. Social and economic equalization
4. Improved institutions and attitudes

Chenery’s Patterns of Development
Chenery and colleagues examined patterns of development for developing countries at different per capita income levels during the post-war period. Major hypothesis is that development is an identifiable process of growth and change whose main features are similar in all countries.

The empirical studies identified several characteristic features of economic development:
1. Shift from agriculture to industrial production
2. Steady accumulation of physical and human capital
3. Change in consumer demands
4. Increased urbanization
5. Decline in family size
6. Demographic transition

The model recognizes that differences in development occur among countries due to:
1. Resource endowment and size
2. Government policies and objectives
3. Availability of external capital and technology
4. International trade environment

A correct mix of policies based on observed patterns occurring in all countries during the development process can generate growth. Emphasis on patterns rather than theory may lead the countries to draw wrong conclusions (reverse causality).

The Limited Value of the Historical Growth Experience: Differing Initial Conditions
Physical and human resource endowments
Developing countries have poor endowments of both technology and ingenuity.

Relative levels of per capita income and GNP: LDCs have lower living standards than historical living standards in present developed nations.

Climatic differences: Tropical vs temperate

Population size, distribution, and growth:
- Exceed the historical growth rates of developed countries (2% per annum)
- Recent political independence

Historical role of international migration:
- Illegal immigration of unskilled workers
- Brain drain

International trade benefits:
- Deteriorating terms of trade for developing countries
- Existence of barriers to trade

R and D capabilities:
- Economic dualism

Institutional stability and flexibility:
- Recent political independence
- Transitional economies

### Economic convergence?

**Reasons to expect convergence of incomes between developed and developing nations:**

1. **Technology transfer to developing countries**
2. **Rapid factor accumulation in developing countries**
3. **Advantages of backwardness**

**Incomes would tend to equalize conditional on key variables such as population growth. No evidence of unconditional convergence but there is evidence of convergence among OECD countries**

### Divergence in the World as a Whole

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**Fiscal balances and Savings**

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**Case Study: Asia’s Miracle**
Literature on economic development is dominated by the following four strands of thought:
- Linear-stages-of-growth model: 1950s and 1960s
- Theories and patterns of structural change: 1970s
- International-dependence revolution: 1970s
- Neo-classical, free-market counterrevolution: 1980s and 1990s

**Linear-stages theory**
Viewed the process of development as a series of successive stages of economic growth. Mixture of saving, investment, and foreign aid was necessary for economic development. Emphasized the role of accelerated capital accumulation in economic development.

**Rostow’s Stages of Growth**
Rostow identified 5 stages of growth:
1. The traditional society
2. The pre-conditions for take-off
3. The take-off
4. The drive to maturity
5. The age of high mass consumption

All advanced economies have passed the stage of take-off into self-sustaining growth. Developing countries are still in the traditional society or the pre-conditions stage. Why? Lack of adequate investment. The financing gap exists!

**The Harrod-Domar Growth Model**
The principal strategy for development is mobilization of saving and generation of investment to accelerate economic growth. Importance of H-D growth model (AK model): It explains the mechanism by which investment leads to growth. Investment comes from savings. Rate of economic growth (GNP growth rate) is determined jointly by the ability of the economy to save (savings ratio) and the capital-output ratio change in Y/Y=s/k

**Obstacles and Constraints**
Problem with the argument that GDP growth is proportional to the share of investment expenditure in GDP. Low rate of savings in developing countries gives rise to savings gap and capital constraint. Savings and investment is a necessary condition for accelerated economic growth but not a sufficient condition.

**Beyond AK model**
- Endogeneity of savings
  - Savings are influenced by per capita incomes and distribution of income in an economy
  - Both of these are influenced by economic growth. Economic growth mirrors the movement of savings with income

**Structural-Change Models**
Structural-change theory focuses on the mechanism by which underdeveloped economies transform their domestic economic structures from traditional to an industrial economy.

Representative examples of this strand of thought are:
- The Lewis theory of development
- Chenery’s patterns of development

**Lewis Theory of Development**
Also known as the two-sector surplus labor model
Features of the basic model:
- Economy consists of two sectors: traditional and modern
- Traditional sector has surplus of labor (MPL=0)
- Model focuses on the process of transfer of surplus labor and the growth of output in the modern sector

The process of self-sustaining growth and employment expansion continues in the modern sector until all of the surplus labor is absorbed. Structural transformation of the economy has taken place with the growth of the modern industry.

The Lewis Model of Modern-Sector Growth in a Two-Sector Surplus Labor Economy

Differences in development among the countries are ascribed to:
1. Domestic constraints
2. International constraints

To summarize, structural-change analysts believe that the “correct mix” of economic policies will generate beneficial patterns of self-sustaining growth.

The International Dependence Revolution (IDR)

The IDR models reject the exclusive emphasis on GNP growth rate as the principal index of development. Instead they place emphasis on international power balances and on fundamental reforms world-wide. IDR models view developing countries as being in both domestic and international setups. The IDR models argue that developing countries are up in a dependence and dominance relationship with rich countries.

Three streams of thought:
1. Neoclassical dependence model
2. False-paradigm model
3. Dualistic-development thesis

Neoclassical Dependence Model

“Dependence is a conditioning situation in which the economies of one group of countries are conditioned by the development and expansion of others.”

“Dependence, then, is based upon an international division of labor which allows industrial development to take place in some countries, while restricting it in others, whose growth is conditioned by and subjected to the power centers of the world.”

Theotonio Dos Santos

The False-Paradigm Model

Attributes under development to the faulty and inappropriate advice provided by well-meaning but biased and ethnocentric international “expert advisers”. The policy prescriptions serve the vested interests of existing power groups, both domestic and international.

The Dualistic Development Thesis

Dualism represents the existence and persistence of increasing divergences between rich and poor nations and rich and poor peoples at all levels.

The concept embraces four key arguments:
1. Superior and inferior conditions can coexist in a given space at a given time
2. The coexistence is chronic and not transitional
3. The degrees of the conditions have an inherent tendency to increase
4. Superior conditions serve to “develop underdevelopment”

Weaknesses of IDR Models
1. Do not offer any policy prescription for
2. how poor countries can initiate and
3. sustain economic development
4. Actual experience of developing countries have pursued policy of autarky/closed economy has been negative

The Neoclassical Counterrevolution: Market Fundamentalism

Neoclassical counterrevolution in the 1980s called for freer markets, and the dismantling of public ownership, and government regulations.

Four component approaches:
1. Free-market analysis: markets alone are efficient
2. Public-choice theory: governments can do nothing right
3. Market-friendly approach: governments have a key role to play in facilitating operations of markets through nonselective interventions
4. New institutionalism: success or failure of developmental efforts depend upon the nature, existence, and functioning of a country’s fundamental institutions

Traditional Neoclassical Growth Theory

According to the traditional neoclassical growth theory:
Output growth results from one or more of three factors— increases in labor, increases in capital, and technological changes. Closed economies with low savings rates grow slowly in the SR and converge to lower per capita income levels. Open economies converge at higher levels of per capita income levels.

Traditional neoclassical theory argues that capital flows from rich to poor countries as KL ratios are lower and investment returns are higher in the latter. By impeding the flow of foreign investment, poor countries choose a low growth path.

Solow’s Neoclassical Model or Exogenous Growth Model
Solow’s model of economic growth implies that economies will conditionally converge to the same level of income, given that they have the same rates of savings, depreciation, labor force growth, and productivity growth.

Solow’s model differs from Harrod-Domar model in the following respects:
1. Allows for substitution between labor and capital
2. Assumes that there exist diminishing returns to these inputs
3. Introduces technology in the growth equation

Aggregate production function:
\[ Y = A K^{\alpha} L^{1-\alpha} \]

Growth accounting formula:
\[ \frac{\Delta Y}{Y} = \alpha \frac{\Delta A}{A} + (1 - \alpha) \frac{\Delta K}{K} \]

Impact of increase in savings rate:
1. Temporary increase in per capital K/L and per capita output. However, both would return to a steady-state of growth at higher level of per capita output
2. Savings has no impact on long-run per capita output growth rate but has an impact on long-run level of per capita output
3. Total output and total capital stock grow at the same rate as the population growth rate

Impact of increase in population growth rate:
1. Population growth rate has a positive effect on the growth of total output
2. Results in a lower steady-state growth rate with lower levels of per capita capital, output, and consumption

Impact of increase in productivity:
1. Shifts the per-worker production function to the right
2. Raises steady state per capita output through increase in per capita capital
3. In the long-run increase in per capita income takes place at the same rate as productivity/technical progress

Application: Do Economies Converge?
Unconditional convergence occurs when poor countries will eventually catch up with the rich countries (LR) resulting in similar living standards. Conditional convergence occurs when countries with similar characteristics will converge (savings rate, investment rate, population growth). No convergence occurs when poor countries do not catch up over time and living standards may diverge.

CHAPTER 4
CONTEMPORARY MODELS OF DEVELOPMENT AND UNDERDEVELOPMENT

New theories that help us understand the barriers to development include
- Endogenous growth
- Coordination failures
- Multiple equilibria
- The Big Push
- O-Ring theory

The new models of economic development have broadened the scope for modeling a market in a developing country. Departs from neoclassical economics in its assumptions of perfect information, the relative insignificance of externalities, and the uniqueness and optimality of equilibria.

The New Growth Theory: Endogenous Growth
Endogenous growth theory explains TFP “endogenously”. Advances in explaining growth rate differentials across countries. New growth theories assume increasing returns to capital, permit increasing returns to scale and focus on the role of externalities in determining rate of return on capital investments. Suggest an active role for public policy in increasing complementary investments.

Endogenous Growth Models
The models imply that a country’s LR growth rate depends on its rate of savings and investment, not only on exogenous productivity growth. The models use the aggregate production function

\[ Y = AK \]

Assume that marginal productivity of capital is constant as a result of concurrent investment in human capital and R & D

The Romer Endogenous Growth Model
The model addresses technological spillovers that may be present in the process of industrialization. The aggregate production function is similar to that of Harrod-Domar model and endogenizes why growth might depend on investment. As a result of saving, investment (knowledge/know-how) spillovers occur leading to higher rates of growth. Drawbacks of the theory/model

Underdevelopment as a Coordination Failure
- Influential during 1990-early 2000
  - Emphasizes that complementarities between several conditions is necessary for economic development
  - Complementarities versus congestion
  - Coordination failures result in (bad) equilibrium in which agents are worse-off than in alternative (situation of) equilibrium
  - Deep interventions by the government can move an economy to a preferred equilibrium

Illustration of Coordination Failure: Multiple equilibria
Equilibrium occurs when agents do what is best for them and when agents observe what they expected to observe. Multiple equilibria is illustrated using a 5-shaped curve intersecting a 45 degree line. When there is multiple equilibria, we usually have a
- lower stable equilibrium
- higher stable equilibrium

Examples: Coordinating investment decisions in an economy and Malthus population trap
Lower stable equilibrium occurs when only a few agents take a complementary action and spillovers are minimal. Higher stable equilibrium occurs at a stage when many agents have taken the complementary action that they all enjoy the positive benefits of the spillovers. Government intervention can change expectations of individuals and thus move the economy from low to high stable equilibrium. Technological availability is a necessary but not a sufficient condition for development

The Big Push Model Of Development
The big push model shows how market failures can be mitigated by concerted public policy. It is the most famous model of coordination failures and it emphasizes the existence of increasing returns in the modern, industrialized sector

Assumptions:
1. Factors
2. Factor payments
3. Technology
4. Domestic demand
5. International supply and demand
6. Market structure

The Big Push Model Of Development
The Big Push:

Other cases in which a big push may be necessary:
1. Intertemporal effects
2. Urbanization effects
any development strategy. Although agriculture employs the majority of the LDC labor force, it accounts for a much lower share of total output. Trends in per capita food and agricultural production, 1950–1994

- How can agricultural output and productivity per capita be substantially increased that will benefit the small farmer and support the urban population?
- What is the process by which traditional farms are transformed into commercial farms?
- Why do traditional farmers resist change?
- Are price incentives sufficient to increase output?
- How can rural development be achieved?

Agricultural stagnation and Growth Since 1950: Output and employment, 1995

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<th>Region</th>
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<tr>
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<td>64</td>
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<tr>
<td>East Asia</td>
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<td>Latin America</td>
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<tr>
<td>Africa</td>
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Implications of the Kremer’s O-Ring Theory

1. Firms would worry about productivity only if other firms are trying to increase their quality.
2. Wages would be proportionally higher in developed countries because wages increase at an increasing rate.
3. Levels of human capital investment made by other workers is an important determinant of worker’s decision to improve her skill level.
4. Firms would employ workers with similar skills for their several tasks.
5. Workers performing the same task at a high-skill firm earn higher wages.
6. Workers are imperfect substitutes for one another.
7. There is sufficient complementarity of tasks.

Decline of the Heavy emphasis in the past on rapid industrialization may have been misplaced. Agricultural development is now seen as an important part of any development strategy. Although agriculture employs the majority of the LDC labor force, it accounts for a much lower share of total output. Trends in per capita food and agricultural production, 1950–1994

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Distribution of Farms and Farmland

<table>
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<tr>
<th>Country</th>
<th>Average Grain Yield (kilograms per hectare)</th>
<th>Population (million)</th>
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<td>United Kingdom</td>
<td>6,975</td>
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<tr>
<td>Japan</td>
<td>5,971</td>
<td>127</td>
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<tr>
<td>United States</td>
<td>5,794</td>
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<tr>
<td>Indonesia</td>
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<td>Bangladesh</td>
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<tr>
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<td>Brazil</td>
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<td>India</td>
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<tr>
<td>Congo</td>
<td>781</td>
<td>50</td>
</tr>
</tbody>
</table>


Structure of Agrarian Systems

Two kinds of world agriculture:
1. Efficient agriculture- high labour and land productivity
2. Inefficient agriculture- diminishing returns to labour

Agricultural in Latin America, Asia, and Africa

Peasant agriculture in Latin America, Asia, and Africa

Latin America
- The Latifundio-Minifundio pattern
- Resource underutilization

Asia
- Fragmentation and subdivision of peasant land in Asia

Africa
- Extensive cultivation patterns
- Shifting cultivation

Latifundio-Minifundio pattern

Crop yield of different farming techniques
Sharecropping and interlocking factor markets
Sharecropping occurs when a peasant farmer uses the landowner’s farmland in exchange for a share of food output which the peasant farmer grows.

Is share cropping inefficient?
- Marshall’s observations
- Cheung’s findings
- Shaban’s study
- Hayam’s findings

Recent approach to share cropping in the event of interlocking factor markets

Sharecropping and interlocking factor markets
Interlocking factor markets occur when different inputs are provided by the same suppliers and these suppliers exercise monopolistic or oligopolistic control over resources.

Land Reform: Is it inevitable for tenant’s welfare
Land reform means the redistribution of property or landrights for the benefit of the landless, tenants, and farm laborers. Agrarian reform embraces improvements in both land tenure and agricultural organization.

Types of land reform intervention:
1. Land tenure reform
2. External inducements or market based incentives
3. External controls
4. Confirmation of title

Points for discussion:
What is the case for equitable land distribution?
Are big farms more efficient?

Design of a land reform
- Should land reform be a permanent, one-shot reform?
- (revolutionary)
- Should landlords be compensated? (evolutionary)

Alternatives to traditional land reform
1. Market assisted land reform
2. Tenancy reform

Toward a strategy of agricultural and rural development
Improving small-scale agriculture
1. Technology and innovation
2. Institutional and pricing policies
3. Supportive social institutions

Conditions for rural development
1. Land reform
2. Supportive policies
3. Integrated development objectives

CHAPTER 6
THE ENVIRONMENT AND DEVELOPMENT

The Environment and Development: Basic Issues
- Sustainable development and environmental accounting
- Population, resources, and the environment
- Poverty and the environment
- Growth versus the environment
- Rural development and the environment

Economic Models of the Environment
Traditional model advocates that so long as all resources are privately owned and there are no market distortions, resources will be efficiently allocated. Therefore, there will be misallocation in a CPR market.

- Properties of a perfect property rights market and does it exist in developing countries?
- What about issues of equity

Model for regional environmental degradation and the free-rider problem
Any limitations to the above model??

Static Efficiency in Resource Allocation

Optimal Resource Allocation over Time

Common Property Resources and Misallocation

Return to labor

Number of laborers
Poverty and Environment
Poverty is viewed as encompassing both income and non-income dimensions of deprivation, lack of empowerment, and extreme vulnerability to external shocks. Environment refers to the living and non-living components of the natural world, and to the interactions between them, that support life on earth. The environment is a provider of goods and services and is also a recipient of waste products.

Poverty and Environment: Concerns
Poverty and environment linkages are dynamic and context-specific. Rural poor are concerned with access to clean water, energy, sanitation, and security of housing. Poor women are concerned with safe and close access to potable water and energy supplies.

Rural Poverty/ Development and Environment
Rural poverty and environmental degradation interact leading to...

Urban poverty causes environmental degradation in two ways:
A. Industrialization and urban air pollution
   1. Environmental Kuznets curve
   2. Role of taxation in controlling pollution externalities
B. Congestion and availability of clean water and sanitation
   A. Productivity losses
   B. Financial feasibility of providing clean drinking water and sanitation for all

Poor people are the main victims of a bad environment. Poor people are more vulnerable to the loss of biological resources. Extreme environmental stress can force the poor to migrate. Inequality reinforces environmental pressure. Government policies can create or reinforce vicious cycle: poverty-environment interaction.

Poor people are agents of environmental degradation (poverty and exploitation). Poor people have shorter time horizons, which exacerbates environmental degradation. Poverty increases risk aversion and discount rates, aggravating environmental pressure.

Poverty and Environment: Linkages
Incomplete property rights reinforce the vicious poverty-environment circle. Population pressure exacerbates both poverty and environmental degradation.

Policy opportunities to reduce poverty and improve environment
- Improve governance
  - Integrate poverty-environment issues into national development frameworks
  - Strengthen decentralization
  - Empower poor and marginalized groups
  - Address gender dimensions
  - Strengthen anti-corruption measures
  - Reduce environment-related conflict
  - Improve poverty-environment monitoring and assessment
- Enhance the assets of the poor
  - Strengthen resource rights of the poor
  - Enhance poor’s capacity to manage environment
  - Expand access to environmentally-sound and locally appropriate technology
  - Reduce environmental vulnerability of the poor
- Improve the quality of growth
  - Integrate poverty-environment issues into economic policy reforms
  - Increase the use of environmental valuation
  - Encourage private sector involvement in environmental management
  - Implement pro-poor environmental fiscal reform

Reform domestic international and industrial policies
- Industrial emissions abatement policies
- Reform trade policies
- Make FDI more pro-poor
- Enhance the contribution of multilateral environmental agreements to poverty reduction
- Encourage sustainable consumption and production
- Enhance the effectiveness of development cooperation and debt relief

CHAPTER 7
POPULATION GROWTH AND ECONOMIC DEVELOPMENT

The Basic Questions
Is there a relationship between population growth and QOL?

Six major issues:
1. Will developing countries be able to improve levels of living given their anticipated population growth?
2. How will developing countries deal with the vast increases in their labor forces?
3. How will higher population growth rates affect poverty?
4. Will developing countries be able to extend the coverage and improve the quality of health care and education in the face of rapid population growth?
5. Is there a relationship between poverty and family size?
6. Is affluence in developed countries more harmful to global environment and to the poor than the absolute increase in their numbers?
Population: Historical trends

Population Growth, 1750-2200:

World Population Growth Rates and Doubling Times

<table>
<thead>
<tr>
<th>Period</th>
<th>Growth rate (%)</th>
<th>Doubling time (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1650-1770</td>
<td>0.3</td>
<td>240</td>
</tr>
<tr>
<td>1850-1900</td>
<td>0.6</td>
<td>115</td>
</tr>
<tr>
<td>1930-1950</td>
<td>1.0</td>
<td>72</td>
</tr>
<tr>
<td>1960-1980</td>
<td>2.3</td>
<td>31</td>
</tr>
<tr>
<td>Present</td>
<td>1.3</td>
<td>54</td>
</tr>
</tbody>
</table>

Population Growth Rates in Developed and Countries, 1950-2000

CHANGING DISTRIBUTION OF WORLD POPULATION, 1950, 1998, AND 2050

The Fifteen Largest Countries and Their Annual Population Increases

<table>
<thead>
<tr>
<th>Country</th>
<th>Rank</th>
<th>Population 1998 (millions)</th>
<th>Rate of Natural Increase, 1998 (%)</th>
<th>Annual Increase (millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>1</td>
<td>1,243</td>
<td>1.0</td>
<td>12.4</td>
</tr>
<tr>
<td>India</td>
<td>2</td>
<td>1,800</td>
<td>1.0</td>
<td>18.8</td>
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<tr>
<td>United States</td>
<td>3</td>
<td>270</td>
<td>0.6</td>
<td>1.6</td>
</tr>
<tr>
<td>Indonesia</td>
<td>4</td>
<td>207</td>
<td>1.5</td>
<td>3.1</td>
</tr>
<tr>
<td>Brazil</td>
<td>5</td>
<td>162</td>
<td>1.4</td>
<td>2.3</td>
</tr>
<tr>
<td>Russia</td>
<td>6</td>
<td>147</td>
<td>0.5</td>
<td>0.7</td>
</tr>
<tr>
<td>Pakistan</td>
<td>7</td>
<td>142</td>
<td>2.8</td>
<td>4.0</td>
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<tr>
<td>Japan</td>
<td>8</td>
<td>120</td>
<td>0.2</td>
<td>6.3</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>9</td>
<td>123</td>
<td>1.8</td>
<td>2.2</td>
</tr>
<tr>
<td>Nigeria</td>
<td>10</td>
<td>122</td>
<td>3.0</td>
<td>3.7</td>
</tr>
<tr>
<td>Mexico</td>
<td>11</td>
<td>88</td>
<td>2.2</td>
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<tr>
<td>Germany</td>
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<td>Vietnam</td>
<td>13</td>
<td>79</td>
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<td>0.9</td>
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<tr>
<td>Philippines</td>
<td>14</td>
<td>75</td>
<td>2.3</td>
<td>1.7</td>
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<tr>
<td>Turkey</td>
<td>15</td>
<td>65</td>
<td>1.6</td>
<td>1.0</td>
</tr>
</tbody>
</table>


Population: Historical and geographical trends

Concepts and definitions

Rate of population increase is measured as the percentage yearly net relative change in population due to natural increase and net international migration. Natural increase is the difference in the fertility rate and mortality rate. Total fertility rate (TFR) is the average number of children a woman would have assuming that the current age-specific birth rates remain constant throughout her childbearing years. The childbearing years range between 15-49 years of age.

Infant Mortality Rates, 1970 and 2001

<table>
<thead>
<tr>
<th>Country</th>
<th>1970</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>140</td>
<td>66</td>
</tr>
<tr>
<td>Bolivia</td>
<td>150</td>
<td>63</td>
</tr>
<tr>
<td>China</td>
<td>65</td>
<td>31</td>
</tr>
<tr>
<td>Ghana</td>
<td>111</td>
<td>56</td>
</tr>
<tr>
<td>India</td>
<td>137</td>
<td>70</td>
</tr>
<tr>
<td>Korea</td>
<td>102</td>
<td>74</td>
</tr>
<tr>
<td>Nigeria</td>
<td>130</td>
<td>75</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>53</td>
<td>17</td>
</tr>
<tr>
<td>Zambia</td>
<td>106</td>
<td>95</td>
</tr>
</tbody>
</table>


Fertility Rate for Selected Countries, 1970 and 2001

<table>
<thead>
<tr>
<th>Country</th>
<th>Total Fertility Rate*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>7.0</td>
</tr>
<tr>
<td>Colombia</td>
<td>5.3</td>
</tr>
<tr>
<td>Indonesia</td>
<td>5.5</td>
</tr>
<tr>
<td>Jamaica</td>
<td>5.3</td>
</tr>
<tr>
<td>Mexico</td>
<td>4.9</td>
</tr>
<tr>
<td>Thailand</td>
<td>3.5</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>7.7</td>
</tr>
</tbody>
</table>


*Average number of children born to women who are 20 years of age or older.

Concepts and definitions
Dependency burden:
- Youth dependency ratio
- Old age dependency ratio

The youth dependency gives rise to the hidden momentum of population growth. It is a dynamic latent process of population growth where population continues to grow despite a fall in birth rate due to larger number of child bearing couples.

Population Pyramids: Less Developed and More Developed Countries; 1998

Hidden Momentum of Population Growth

Population Pyramids: Kenya, United States, and Italy, 1955

The Demographic Transition

The Beginning of a Demographic Transition in Third World Countries

Causes of High Fertility in Developing Countries

The Malthusian population trap
- Population grows at a geometric rate and food supplies expand at an arithmetic rate.
- Per capita incomes would fall to the subsistence level

Criticisms
- Assumes decreasing returns to scale
- Assumes relation between population growth rate and levels of per capita incomes
- Focus on the wrong variable - per capita income

Malthusian population model
Population tends to grow at a geometric rate, doubling every 30 to 40 years. Food supplies only expand at an arithmetic rate due to diminishing returns to land (fixed factor). Malthusian population trap: countries would be trapped in low per-capita incomes (per capita food), and population would stabilize at a subsistence level

1. preventive checks
2. positive checks

Causes of High Fertility: Malthusian Population Trap

Malthusian Population Trap: Criticism
Causes of High Fertility in Developing Countries

The Microeconomic Household Theory of Fertility

Individual or family decision making is the principal determinant of family size. The interplay between microeconomic determinants of family fertility are understood using theory of consumer choice. Fertility decisions (family size) are taken at the microeconomic level by households. It is a rational economic decision of “demand for children.”

Why are there so many children in poor households?
- Children are an “economic investment” rather than a “consumption good”
- The “expected return of the investment” is given by child labor and financial support for parents in old age
- In developing countries, parents have children up to the point at which marginal economic benefit = marginal private cost

Demand for Children Equation

\[ C_d = f(Y, P_c, P_x, t_x), x = 1, ..., H \]

Where
- \( C_d \) is the demand for surviving children
- \( Y \) is the level of household income
- \( P_c \) is the “net” price of children
- \( P_x \) is price of all other goods
- \( t_x \) is the tastes for goods relative to children

Under neoclassical conditions, we would expect:

\[ \frac{\partial C_d}{\partial Y} > 0, \quad \frac{\partial C_d}{\partial P_c} > 0, \quad \frac{\partial C_d}{\partial P_x} < 0, \quad \frac{\partial C_d}{\partial t_x} < 0 \]

Microeconomic Theory of Fertility: An Illustration

Rich and Poor Countries: There is more between rich & poor

Learn Terminology about different stages of County level of development based on Income.

Developed vs developing or less developed (LDCs)= Low income Countries(LICs) lower middle income (LMIC), upper middle income (UMIC), high income (HIC), newly industrialized or OECD countries, third world, North vs South.

Growth and Development

Growth is not the same as Development.

Development = Economic Growth + structural change involving participation of people in the economy.

A Key feature of economic growth is that modern economic Growth that involves the application of Science and Technology for human progress (Simon Kuznets view)

A Development Continuum

Developing country covers a diverse group of African and other developing economies in Asia, Latin America, Caribbean, etc. Income per capital is a key indicator of development but, limited. One limitation is the international comparison requires converting country currency into a common currency. A more accurate method is Purchasing Power Parity compared to using simple exchange rates conversion. Other methods include using physical measures of wellbeing such as Energy Use, life Expectancy, Adult Literacy, Proportion of rural population, etc.

Glance at History

Multiple Paths to Development across the World based on different historical & colonial experiences for Africa, Latin America, & Asia.

Diversity in Development Achievements

But, there is also common features or goals of desire for education, developed institutions, self-government, cultural identity & pride, etc

Approaches to Development
Development is a complex and multi-dimensional process that can be understood by combining the understanding of economics, empirical analysis, and institutions and politics as well as culture. Development is foremost a process about people involving mobilization of inputs, the role of trade, sectors including the role of government in human development. It is multi-disciplinary.

Country Studies
Look up selected African countries in annual publications such as the World Development Report (World Bank) & Human Development Report (UNDP)

Identification & Paired Concepts
Note: Explain the meaning and the relationships, if any
- Economic Growth & Economic Development
- Modern Economic Growth & Modernization
- North & South
- GDP and per capita income
- World Bank, OECD
- Industrialization, Urbanization
- Substitutes, LDCs
- Institutions, Economic Development

Three stories Ethiopia, Malaysia & Ukraine
Your book opens with three vignettes: one of Rachmina Abdullah, a young Malaysian woman; another of Getachew, a young Ethiopian man; and one of Viktor and Yulia from Ukraine. These three contrasting stories reflect the profound economic and social changes under way in developing countries, affecting billions of poor people throughout the world. These examples, are aimed to help students understand the economic forces underlying the historic changes in the world economy and how economic policies influence the changes for better or worse. Introduction of the concept of globalization and broadly describing its effect on developing countries.

The first step is to introduce terminology distinguishing different stages of development. Some basic terms include developing versus developed countries; less-developed countries (LDCs); low-income, lower-middle-income, upper-middle-income, and high-income countries; industrial or OECD countries; transitional(postsocialist) economies; newly industrializing countries; third world; and North versus South.

Economic Growth & Economic development
Economic development is not synonymous with economic growth. Beyond rising income per capita, development also entails basic structural changes and wide participation of the people of each country. A key ingredient in what Simon Kuznets called the epoch of modern economic growth is the application of science to achieve increased production.

Measuring Diversities of Developing Economies
The label developing country covers a diverse group of economies spanning a wide continuum of conditions. Income per capita remains the most useful single indicator of development, although it is far from ideal. One limitation is that international comparisons require the conversion of national statistics into common currency units, usually U.S. dollars. A more accurate method uses purchasing power parity (PPP) calculations. This method shows that income differences between rich and poor countries are less acute than one finds in statistics based on exchange rates. Other than income, an alternative comparison method is to use physical measures of structural change. Examples in the text include energy consumption, rural population, life expectancy, and female adult literacy.

Different Historical Experiences
Different historical experiences imply different trajectories for Asia, Latin America, and Africa. Countries with the greatest potential for modern economic growth share the following common features: an emphasis on education, highly developed institutions, common culture,

Development as a complex process that can best be understood by combining economic theory, empirical analysis, and consideration of the institutional context. Economic development first and foremost as a process involving people. Other themes include the role of government, the mobilization and allocation of capital, the role of international trade, and sectoral development.
Economic development is broader than economic growth in that it entails fundamental structural changes and broad-based participation. Using two countries such as Sri Lanka and Brazil reinforces this point. Contrast their GNP per capita and then slowly unveil other indicators (e.g., inequality) to illustrate how development also encompasses indicators other than just GNP. LDCs form a diverse group of countries in virtually every respect. Provide a selection of statistical examples to support the point. Even so, there are regularities to the development process, including general patterns of structural change and socioeconomic progress.

Studying Economic Development
Finally, point out that LDCs make up most of the world’s population. The economics of development is not a sideline in study of the human condition but a central, dramatic theme. To check their knowledge of the world, ask what they know about Malaysia, Kenya, Nigeria, Ethiopia. Looking up basic facts about countries discussed in the text or in class. It is very helpful to get insight to the data set provided by the World Bank in its annual World Development Report. An equally valuable data source is the annual Human Development Report from the Development Programme.

CHAPTER 9
MEASURING ECONOMIC AND GROWTH AND DEVELOPMENT

Measuring Economic Growth
Measured by GDP (Gross Domestic Product) counts all output produced within the borders of the country, including by foreigners but excludes value of production of citizens living abroad. GNP is the same as GDP or the value of goods and services but includes citizens who live overseas. GNP is the most commonly used by countries including Multinational Institutions like the World Bank who call it GNI (Gross National Income). GNP excludes intermediate goods such as steel in Car production for example.

GDP per capita= GNP/total population is more accurate Conversion Problems

Limitations of GNP Per capita
It does not include subsistence production in Developing Countries & Africa, which is large. Does not account for “public bads” such as Pollution, crime, congestion, etc. To capture this we need to calculate Net Economic Welfare (NEW).

Exchange Rate versus Purchasing Parity Methods
Assume:
- Assume official exchange rate 45R=$1US.
- If total GDPs using local currencies in billions of US & India US=$30 and India - ₹312.
- Indian GDP in US Dollars =312/45=$6.9B (GP Method).
- Indian GDP in US dollars calculated by US Prices applied to Indian quantities Produced (PP method)
- Steel BM x $200=$1.6B
- Retail sales 4M x $5000= $20B
- Total GDP (using PP)= 20+1.6= $21.6 Billion
- Ratio of PPMethod/GPmethod= 21.6/6.9= 3.1

Economic growth structural change with significant participation of people in producing wealth. Economic Development is about expanding capabilities of people their lives. Income is one determinant of that capability. (A.K. Sen)

A.K Sen’s Capabilities view of Development: Beyond income poverty
- State of Health wellbeing
- Environmental adversity
- Social climate: crime, violence, security
- Relative Deprivation & inequality

These sources of “capability deprivation” that prevent people the lives they desire.

Economic Growth Around the World
- Since 1950 patterns of economic growth has changed
- Income GAP between rich & poor nations have grown.
- In 1821 it was 3/1
- In 1950 it was 15/1
- Now it is 18/1 and rising

Rate of growth in GDP per capita (% per year)

Trends in Economic Development
Measuring Human Development (HD): is anindex of health, knowledge and income: It is measured by weighted average of adult literacy, primary & Secondary school enrollment, Life Expectancy, & GDP Per capita income. HDI is based on 3 indexes on Life expectancy, education & GDP or income per capita.

What Can We Learn from the Human Development Index (HDI)?

<table>
<thead>
<tr>
<th>Year</th>
<th>East Asia &amp; Pacific</th>
<th>Europe and Central Asia</th>
<th>Latin America and Caribbean</th>
<th>Middle East and North Africa</th>
<th>South Asia</th>
<th>Sub-Saharan Africa</th>
<th>High Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970-90</td>
<td>4.4</td>
<td>4.4</td>
<td>3.1</td>
<td>2.3</td>
<td>1.0</td>
<td>0.8</td>
<td>2.6</td>
</tr>
<tr>
<td>1980-2000</td>
<td>5.7</td>
<td>1.2</td>
<td>-0.2</td>
<td>-0.9</td>
<td>3.2</td>
<td>-1.3</td>
<td>2.5</td>
</tr>
<tr>
<td>2000-2007</td>
<td>6.1</td>
<td>-0.6</td>
<td>1.8</td>
<td>1.0</td>
<td>3.8</td>
<td>0.1</td>
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</tr>
</tbody>
</table>

Gross National product per capita in 2002 (USD)

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<tr>
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<td>4.4</td>
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<td>2.3</td>
<td>1.0</td>
<td>0.8</td>
<td>2.6</td>
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<td>1980-2000</td>
<td>5.7</td>
<td>1.2</td>
<td>-0.2</td>
<td>-0.9</td>
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<tr>
<td>2000-2007</td>
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<td>1.0</td>
<td>3.8</td>
<td>0.1</td>
<td>1.8</td>
</tr>
</tbody>
</table>

Gross National product per capita in 2002 (USD)
– Some criticisms of three indexes: too limited?
– We need other measures such as Gender Gap, etc.
– HDI is a better or more comprehensive measure than GDP per capita.
– HDI ranges from 0 to 100% or (0 to 1)
– The higher the HDI the better the development

One important target date for reducing absolute poverty rate by 50% is 2015. How is this possible? What level of growth is necessary? At least 7%? More than Economic growth is needed

<table>
<thead>
<tr>
<th>People Living on Less Than $1/Day</th>
<th>Primary School Completion Rate</th>
<th>Under-5 Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Country</strong></td>
<td><strong>TARGET</strong></td>
<td><strong>2015 (PERCENT)</strong></td>
</tr>
<tr>
<td>East Asia and Europe and Central Asia</td>
<td>5.4</td>
<td>14</td>
</tr>
<tr>
<td>Latin America</td>
<td>3.6</td>
<td>1</td>
</tr>
<tr>
<td>the Caribbean</td>
<td>1.8</td>
<td>8</td>
</tr>
<tr>
<td>Middle East and North Africa</td>
<td>1.4</td>
<td>1</td>
</tr>
<tr>
<td>South Asia</td>
<td>3.8</td>
<td>22</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>1.2</td>
<td>24</td>
</tr>
</tbody>
</table>

Is Economic Growth Desirable
Does greater economic growth lead to more happiness?

There is no correlation between growth and happiness or growth does not increase happiness. Growth may not increase happiness but it increases the range of human choice including more control over the environment. (Easterl)

Development economics ultimately is about mass poverty and suggesting solutions for achieving rapid and equitable growth. Chapter addresses the measurement of economic growth and development across economies and over time. Concepts & measures national (GNP) & domestic (GDP) Basic index-number problems involved in making comparisons or over time in the same country (CPI, GDP deflators). Exchange rate and PPP conversions specific example on PPP calculation (Table 2–1). A brief overview of the historical record on interregional differences in initial income levels and divergent growth rates in the past two centuries is provided based on historian Angus Maddison to provide stylized facts of growth that will have to be explained by theory.

Indicators of economic development are discussed including human development index (HDI) including a discussion of the Millennium Development Goals (MDGs) and their impact on economic growth. For most regions, growth would be sufficient to meet most of the goals with exception of Africa. The chapter concludes with the philosophical question of whether economic growth is desirable. This concludes the Norton Media Library.

Millennium Development Goals (MDGs) by the United Nations
Adopted by world nations in September 2000 that declared 8 goals
1. Eradicating Extreme Poverty and Hunger
2. Achieve Universal Primary Education
3. Promote gender equality and empower women
4. Reduce Child Mortality
5. Improve Maternal Health
6. Combat HIV/AIDS, Malaria and other diseases
7. Ensure environmental sustainability
8. Develop Global Partnership for Development

Target Date of Meeting some of MDGs
Divergent Patterns of Economic Growth since 1960

– Factor Accumulation, Productivity Growth, Econ. Growth
– Saving, Investment, & Capital Accumulation
– Sources of Growth Analysis

Characteristics of Rapidly Growing Countries
– Macroeconomic and Political Stability
– Investment in Health and Education
– Effective Governance and Institutions
– Favorable Environment for Private Enterprise
– Favorable Geography ??
– Diminishing Returns and the Production Function
– The Convergence Debate
– Economic Growth and Structural Change

Divergent Patterns of Economic Growth since 1960

Ather 1960s LDCs begin to diverge. For example per capital income in Thailand was $1100 and that of Zambia was $1200. Thailand now has per capital income of $7000, but Zambia is about $900. What happened? Growth difference. Thailand grew over 4.5% and Zambia growth was -0.6% (negative).

Rates across countries 1960-2003:
– Negative Growth (Nigeria, Zambia, Chad, etc) <0
– Slow Growth (Kenya, Ghana, Rwanda, Argentina) 0.12<G<1.3
– Moderate growth (Lesotho, Egypt, Brazil, India) 2.1<G<2.75
– Rapid Growth (Botswana, Malaysia, South Korea, Singapore) <3.32<G<6.3
– Industrial Countries (Japan, USA, Canada, UK) Japan G- 4.11, USA= 2.42

Why is Botswana Successful

Between 1970-90, Botswana was the fastest growing country in the world at about 8% per year. But at independence in 1965, it was poor it had 100 high school graduates and 22 college graduates. What is the main source of success: Good policies and strong institution and democratic government. Protection of property rights and minimal corruption including civil service base on merit not on patronage. These has led to highest per capital income and best HDI. Recent challenge: High HIV/AIDS infection rate has reversed this.

Factor Accumulation, Productivity Growth, Econ. Growth

Factor Accumulation: increase in the size of capital stock and labor force. More machines, factories, buildings, roads, electricity, computers and tools along with better trained workers Productivity Growth: Amount of output per unit of machine or worker: increases in 2 ways by greater efficiency-specialization, and technological change. This can be explained using production function

\[ Q = f(Labor, Capital, etc...) \]

Basic sources of economic growth

– New investment increases the capital stock
– Investment (I) is financed through savings (S)
– Savings comes from income of GDP S= f(GDP)

These decisions are made by consumers, firms, corporations, & governments. Sustaining Growth requires both generating new investment and making sure it is productive & employment creating.

Sources of Growth Analysis

Solow Model: explores the contribution of each factor to increase to output: \[ Q(K, L, Productivity gains) \]

Growth Accounting or Source of Growth Analysis

\[ Yg= (Wk x Kg) + (Wn x Lg) + A \]
\[ Yg= growth of income \]
\[ Kg, Lg= growth of capital and labor \]
\[ Wk, Wn= share of capital and labor \]
\[ A= rate of productivity of inputs= residual \]

Example of Growth Accounting

Assume the following:
\[ Yg=0.05 \] (GDP)
\[ Kg=0.07 \] (7 percent), \[ Kl=0.02 \] (labor growth)
\[ Wl=0.06 \] share of labor in income (6%)
\[ Wk= 0.04 \] (share of capital in income (4%)

\[ 0.05= (0.4 x 0.07) + (0.6 x 0.02) + A \]
\[ A= 0.01 \] or 1 percent

Sources of Growth Across Countries 1960-2000 (1980s)

Country Region Output(Q) Labor Education TFP
Brazial -1.63 0.16 0.68 -2.47
Ethiopia -1.74 1.11 0.27 -3.12
Ghana -1.14 -1.21 0.15 0.07
Africa -1.06 -0.07 0.42 -1.41
East Asia 4.38 2.45 0.66 1.25
Latin America -1.77 0.04 0.47 -2.28
Middle East 1.15 0.55 0.55 0.07
South Asia 0.08 1.02 0.42 2.25

Characteristics of Rapidly Growing Countries

1. Macroeconomic stability
2. Investment in Health and Education
3. Effective Governance and Institutions
4. Favorable Environment to Private Enterprise
5. Favorable Geography or location?

Macroeconomic stability

Macroeconomic implies avoiding inflation and recession. An extreme case of high inflation: Zaire/Congo-2800%, more recently Zimbabwe-4000%!. Primarily by printing too much money to pay for deficit. Political instability in the form of civil war, military coups, cross-border wars are rampant in Africa. 2/3 of African states suffer from conflict.

Key Elements of Economic Growth

Muhammad Firman (University of Indonesia - Accounting)
Investment in Education and Health (Human Capital)

Investment on human capital is a key as it translates to longer life, healthier and productive population. Health and Education are both input or means and outcome (goal) of development. Increase in the level and quality of Education and health is crucial.

Effective Governance and Institutions

Douglas North study shows relationship between economic growth, the rule of law, extent of corruption, property rights and quality of government bureaucracy, and other measures of institutional quality.

Economic Growth = \( \Phi(\text{Institutions}) \)

Other factors: effective private sector, civil society groups, and free press, political competition, etc.

Institutions, Governance & Growth

Five institutions are necessary according to Rodrik and Sumbramanian (2003 - Finance & Development):

1. Market institutions that protect property rights
2. Market regulating institutions that deal with market failure
3. Market stabilizing institutions to control inflation
4. Market legitimizing institutions such as social protection and insurance
5. Political institutions determine how a country is governed: level of democracy, transparency, free press, participatory politics, and competitive parties.

Favorable Environment for Private Enterprise

Growth depends on millions of private citizens making decision to save, invest, work, educate, etc. Agricultural policies are central in Africa since 70-80% of the population lives from agriculture. Hernando de Soto: The Mystery of Capital. Heavy business regulation and weak property rights under mine or kill businesses. The degree of openness to international trade and influence matters.

Does Geography Matter?

Most economically developed states are in Temperate climate Zone. Most developing countries are in the tropics. "The effect of climate". Andrew Kamrack argument. Does being land locked matter? (no coast line). Yes and no. Botswana is land locked but it is most successful African Economy. Switzerland and Austria are land locked yet they are wealthy countries.
Production Function & Diminishing Returns

The Concept of Production Function

\[ Q = f(\text{Labor, Capital, Land, etc}) \]

Principle of Diminishing Marginal Product. Implications of diminishing returns of capital for developing & African countries

Implications of Diminishing marginal product of Capital

Poor countries have a potential to grow more rapidly since they face capital scarcity. Richer countries with capital abundant grow slowly. Since poor countries have more potential to grow faster they can catch up with rich countries. Examples: China, India, etc...This has not happened in Africa except in Botswana. Why?

Economic Growth & Structural Change

Growth involves more than increases in per capita income and rise in factor productivity. Structural change must take place in ways:

1. Proportion of output from agriculture declines, share of manufacturing & services rise
2. Proportion of labor engaged in agriculture declines and labor force in industry rises
3. Population becomes more urbanized & cities and towns grow over time
4. Greater share of output is sold in markets.
5. Ignoring agriculture in early stage is a mistake

Reasons for the Decline of Share of Agriculture

Engel’s Law: as income the share of expenditure on food declines and expenditure on non-food such as recreation, clothing, housing, etc rises.

Productivity gains in agriculture frees labor for nonagricultural goods or manufacturing and service production. Technology (improved seeds, fertilizer, machinery, etc) allows less labor to produce food. Example in 18th & 19th century the majority of Americans were in agriculture, now only 3% of US population is engaged in agriculture and 97% in industry and services.

The Convergence Debate: Is there convergence?

There may be convergence among open economies that share the same features. For example East Asian Economies since 1965 (Sachs and Warner, 1995). Other studies show there no evidence of absolute convergence but there may be conditional convergence.
CHAPTER 11
THEORIES OF ECONOMIC GROWTH

The Basic Growth Model Aggregate Production function
Is based on five equations

1. Aggregate production function \( Y = f(K, L) \)
2. Savings (S) = \( \frac{s}{1-s} \) \( \text{bill} \), \( S = 2 \text{B} \)
3. Saving = Investment
4. Change in K = (I - dK) where d = depreciation and K = capital
5. Change in L = nL \( \text{n} = \text{population growth} \) and L = Labor force, if L = 1mill. & n = .02

Combining 2,3,4. leads to (change in K) = \( sY - Dk \). Five equations and 5 variables can be solved and the change in K can be substituted into production function \( Y = f(K, L) \)

The Harrod-Domar Growth Model
HD Growth model is a particular model with basic feature of fixed coefficient production function. It assumes no substitution between labor and capital \( Q = \min f(L, K) \). The production Isoquant is L shaped. It also shows constant returns to scale (CRS) i.e. doubling inputs will double output.

The Solow Model
The Solow model is an improvement over Harrod-Domar Model. It drops fixed coefficient or no substitution and allows for substitution between factors.

Y = f(K, L) Labor and capital are substitutable

The production function or Isoquant is U shaped showing substitution as in figure 4.2

Point A is where new savings \( S_y = \text{amount of new capital needed for growth in the labor force and depreciation (n+d)} \). Point A is steady state level of capital per worker where stable equilibrium occurs. At steady state total output continues to grow at the rate of population (n) or labor force, but GDP per capital (\( \gamma \)) is constant.

The Effect of Changes in Saving Rate and Population Growth in the Solow Model

Harrod-Domar Prod. function
The production function \( Y = (1/v)XK \) or \( Y = K/v \), where \( v = \text{capital output ratio or measure of the productivity of capital or investment} \).

For example if v = 4, then how 20 million investment will be needed produce 5 million output or 20/4 = 5 based on \( Y = K/v \)

The Basic Harrod Model \( Yg = (s/v) - d \)
Point: save more and make productive investment and the economy will grow. This makes sense. Example: if s = .24, v = 3, and d = .05, then the economy will grow at 3\% (why? \( s/v - d = 0.24/3 - 0.05 = 0.03 = 3\% \))

Case Study: Economic Growth in Thailand
Thailand in 1960 was an agrarian economy with 75\% of population in agriculture, GDP was about $1000, Life expectancy was 53, infant mortality was 103 per 1000. Beginning 1970 Thailand began to save averaging 20\% and reaching 35\% in 1990. This combined with good governance and prudent policies led to rapid economic growth. Average income is more than 6 times it was in 1960, Life expectancy is 69, infant mortality 24 per 1000, adult literacy is 93\%, Labor intensive manufacturing is 80\% of exports and ICOR rose from 2.6 to 4.1 by 1990.
An increase in the Savings rate in the Solow Model from \( s \) to \( s' \) results in a shift in capital deepening curve, so capital per worker increases from \( k_1 \) to \( k_2 \) or \( A \) to \( B \).

Evaluating the Solow Model: Strengths and Weaknesses

It is an improvement over Harrod-Domar Fixed coefficient model. With neo-classical production function it allows for substitution between inputs. Provides good insights about the relationship between role of technology and innovation on growth. Limitations: One sector approach, factors that drive steady state, and assumes saving rate, population growth, and technical change as given. It does not explain how these parameters change over time.

What Explains Differences in Growth Rates among countries

Key factors from a recent study: initial level of income, openness to trade, healthy population, effective governance, high saving rate and geography. The above policy variables explain the differences between 3 groups of countries from 1965-90:

- 10 East Asian countries (4.6%)
- 17 African Countries (0.6%)
- 21 Latin American countries (0.7%)

Beyond the Solow Model: New Approaches to Growth

The Solow model assumes fixed or exogenous saving rate, growth rate of savings and labor force. Recent works provides models where these variables are determined within or endogenously in the model. These new models allow for increasing returns to scale and positive and negative externalities. They are called endogenous models but their estimation suffers from lack of good data.

Two-Sector Models

Both Harrod and Solow models are one sector-one product model. The two sector models go back to 1817 in the Work of David Ricardo’s Principles of Political Economy and Taxation. Makes several assumptions in his model that includes: diminishing returns to labor, laborsurplus economy, rural unemployment. It assumes agricultural production function as shown in figure 4.8, with diminishing marginal product.

Determination of rural wages

The subsistence wage is institutionally fixed above MPL=W=0 where all labor is in agriculture. As labor decreases by moving to industry the marginal product of labor increases as shown in Figure 4.9. Thus \( h \) is the supply of labor facing industrial sector as shown in the same figure.

The Supply and Demand for Industrial Level

The demand for industrial level is downward sloped or \( m \) is determined from industrial production function \( Q=f(L) \). The supply curve \( kk' \) is drawn from figure 4.9. The final step of derivation is to combine figures 4.8, 4.9, 4.10 as follows in figure 4.11 next.
The 2-Sector Labor-Surplus Model (The Lewis Classical Model)

As demand for industrial labor grows or shifts to the right the MPL in agriculture or agricultural wages rise as shown on top two diagrams. In the agricultural production increase in labor leads to increase agricultural production and vice versa.

An Application of the Lewis Model Labor Surplus in China

In the mid 1970s China was a labor surplus economy in the rural sector with 2% population growth and over 70% of population in agriculture. With surplus labor, China after 1978 managed to transfer workers out of agriculture to growing urban/industrial/manufacturing employment made possible by encouraging labor intensive consumer goods (textiles, electronics, service industries, etc). To deal with growing rural surplus, China engaged in strict population growth of “controversial one child policy” and reduced population from 2% to 1.2%. The agricultural labor force that accounted for over 70% in 1978 fell to about 50% or less in 1997. China transformed its economy by moving labor from agriculture and increasing employment labor intensive manufacturing including rural industries.

The Neoclassical Two-Sector Model

The neoclassical model differs from the labor surplus model in two ways: 1. MPL is not zero and 2. there is no institutional fixed minimum wages allowing wages to equal MPL. This shown in figure 4.12 as a modified form of figure 4.11 allowing for diminishing return to land and the movement labor out of agriculture increases MPL labor that remains in agriculture.

Markets and Market Failures

At Independence many African countries had a promising future due to low population and rich resource base. Ghana became the first to gain independence in 1957 from Britain with leadership of Kwame Nkrumah. Nkrumah introduced central control on the economy and abolished some traditional institutions such as Ashanti and led to a serious of coups until 1983 when Lt. Rawlings took power and introduced Ghana’s Recovery Program supported by the World Bank and the IMF toward macroeconomic stability, economic growth and poverty reduction.

African Economic Reforms

The 1980s were called the “lost decade” of Africa. These were also applied to Latin America due to state driven excessive control on the economies. Ghana led the way in economic reforms followed by others. Later the collapse of the Berlin Wall in 1989 enable many African countries make reforms along market system. The end of the cold war and demise of the former Soviet Union led to fall of African dictators such as in Ethiopia, and Somalia, etc.

Market economics well developed in Introductory Principles of Economics (Microeconomics & Macroeconomics). Markets under certain conditions provide the “invisible hand” to the economy. The Power of Markets in organizing national economies have been proved in successful market Economies.

Arguments for Markets

1. Allocate resources efficiently. Under competitive economy economic welfare is maximized under free working markets
2. Market system is more flexible and able to adjust to business cycles than government control
3. Market promote competition which motivate consumers and producers guided by enlightened self-interest.
4. Reliance in Markets disperses economic and political power and therefore consistent with democracy.

Areas of Market Failure
Markets can fail due to numerous reasons
1. Monopoly or oligopoly control
2. Presence of Externalities (Positive Spill Over effects) such as public education, etc.
3. Negative Externalities (negative spilt over effects such as pollution)
4. Markets may not facilitate change in economic structure infant industries or early stages
5. Missing or underdeveloped Institutions rules/laws
6. Macroeconomic Imbalances
7. Misguided National Goals promoted by autocratic governments especially in Dictatorship.

Market Pessimists & Market Optimists

Sothe Roots of Market Pessimism:
- “Great Depression of the 1930 & 1940’s when war led blocked trade barriers
- Arguments for intervention and control (balanced growth, big push arguments)
- Forced structural transformation of economies by States justified by Lewis theory of labor surplus the Soviet Union was the model 1950-60’s
- Marxist, Leninist, Mao ideologies of central control and direction of the economies.

Market Optimism
Intellectual basis for Market Optimism
- Economic Theory provides the basis for market supremacy
- Powerful theories by the Chicago School of Economists such as Friedman, Schultz, etc
- The historic collapse of the Soviet Union in 1991 and the end of the Cold War
- East Asian Miracle of Asian Tigers such Singapore, South Korea, Taiwan, Malaysia, etc.

Implementing Market Reforms
Due to regulations and control that led to rent seeking that diverted investors and entrepreneurs to unproductive activity and corruption, it became necessary to promote markets and the private sector. The World Bank and IMF helped to countries economic reforms: structural adjustment and stabilization reforms.

Stabilization of the Macro-economy
Stabilization refers to correcting imbalances in budgets, & money supply aimed at controlling inflation. It also means the need to devalue the currency or exchange rate to avoid currency controls. With inflation and uncertainty investors divert resources from productive activities such as transfers to overseas, etc.

IMF Stabilization Programs

There are five such remedies
1. Reduce government budget deficit via higher taxes, reduce spending, financing by borrowing which crowds out private investment.
2. Restrictions on central credit-control of money supply
3. Adjust exchange rate via devaluation to stimulate exports.
4. Remove price controls on consumer goods including food prices
5. Restrain wage increases since wages greater than productivity increase costs and contributes to inflation

Structural Adjustment Program (SAP) by the World Bank
- Trade reform- opening the economy to trade
- Adjusting Prices “Getting Prices Right”
- Promoting market competition
- Fostering Privatization
- Creating Market Support Institutions (Legal system, financial system, well define property rights rules that promote long term investment and productivity.

Timing of Market Reforms
Faster reform- shock therapy often recommended by the IMF. This may work under new regimes: Russian & Eastern Europe case. Graduate reform-based on sequencing of reforms- China and Vietnam. China began with household responsibility system in the rural sector (Attempted reforms in Africa with varying results; Uganda, Kenya, Ghana, Mozambique, and Tanzania)

Credibility of Reforms
How do we evaluate and monitor credibility of reforms. Public perception is key. IMF & World Bank are supposed to evaluate reforms. IMF & World Bank reliability of evaluation is questionable especially in dictatorships.

The Washington Consensus
Economist Williamson labeling of growing agreement among Washington Institutions (US Government, World Bank, IMF). There are 10 components of these consensus:

**The ten Components of the Washington Consensus**
1. Fiscal discipline-Balance budget, deficit 1% to 2%
2. Reordering public expenditure and priorities-reduce subsidies including Military expenditure
3. Tax Reform: Reduce taxes, improve incentives
4. Liberalize interest rates: Nominal rate should be higher than the rate of inflation, real interest rate should be positive
5. Promote competitive exchange rate. Avoid currency controls, aimed at expanding exports
6. Trade Liberalization: Reduce or eliminate tariffs (export and import taxes)
7. Liberalization of Foreign Direct Investment (FDI): Attract inflow of capital, skills and knowledge
8. Privatization: State enterprises should be privatized since they are more efficient under private ownership than state.
9. Deregulation: reduce government regulations including entry and exit of firms. Also ensure safety of the environment.
10. Secure Property Rights in the private sector. Provide long term property rights that is secure and transferable.

**The future Economic Reforms**
While implementing the Washington Consensus helps the challenge remains along these lines:
1. The need for strong democratic institutions and good governance necessary to implement development policies
2. The need for transparency in national and international institutions including global institutions that re-solve peacefully and promote sustainable peace and justice.

**CHAPTER 13**

**INEQUALITY AND POVERTY**

Measuring Inequality
Both growth and inequality affect poverty. Simple way of measuring distribution is using frequency distribution as shown in figure 6.1 for 3 countries: Bangladesh, Mexico & USA. Income inequality can be measured by quintiles or shares of income orconsumption (micro-level): Table 6.1

We can get a measure of relative inequality in general by looking at table on comparative share of income or consumption of the three countries.

Range=Top 20%/Bottom 20%
- Range in Bangladesh = 41/9= 4.5
- Range in Mexico = 13.7/3.5=3.8
- Range in USA = 59.8/3.4= 17.6
USA has most unequal income. Bangladesh least unequal based on range: simple measure of variance.
Simple calculation of Inequality using Range: Top 20%/bottom 20%

Based on Table 6.1, Range in Bangladesh = 41/9 = 4.5
- Range in Mexico = 53.7/3.5 = 15.3
- Range in USA = 59.8/3.4 = 17.6
- USA has most unequal income and Bangladesh least unequal.

Some Observations from 3 countries
Bangladesh, Mexico & USA show similar lognormal distribution with flat tail to the right. While these distributions are similar in terms of frequency distribution shapes, they are not identical. The degree of inequality or variance among the three nations.

Measuring Inequality:
Lorenz Curve & Gini Coefficient Ratio (GCR)

Gini Coefficient relates cumulative % of income recipients (persons) to cumulative % of consumption or income received
- GCR= A/(A+B) where A= area of inequality
- 0< GCR<1.0, if GCR=0 (Perfect equality)
- If GCR = 1 (Perfect inequality)

See Figure 6.2 on the Lorenz Curve

Patterns of Inequality
Three categories of inequality
1. Low: GCR<0.4
2. Medium: GCR (0.4-0.5)
3. High (GCR>0.5)

See Table 6.2 for GCRs by country and region. Which are low, high, and medium country African countries?

Measuring Poverty
Poverty Lines ($1/day): The Global Poverty line is $1 per day according to WDR 1990. WDR estimated in 1990 about 1.12 billion or 1/3 of the world population in absolute poverty 36% of Bangladeshi live below poverty line

Methods of measuring Poverty
1. Headcount Index: % of people below poverty line
2. Poverty Gap: How many people fall below poverty line and how far they are from the line

The Poverty Gap (PG)= (PLMC)/ PLxHI
PL=Poverty line
MC=mean consumption per capita for individuals below poverty line
HI= Head Count Index

The PG measures how much income is needed to get the poor from poverty line. It shows the severity of poverty

How much Poverty is there?
How Much Poverty Is There?
- Dissenting Opinions on the Extent of Absolute Poverty
- Who Are the Poor?
- Are Women Poorer than Men?

How much poverty is there
The number of people living below $1 a day or $365 per year. See figure 6.5 for poverty levels for various regions of the world. The number of people below $1 in the world declined by 400 million between 1981-2001. This is good news? But what are bad news?
China Leads in reducing poverty
China Head Count Index in 1981 was 64% it fell to 17% in 2001. Africa’s population growth led to doubling the number of people living below poverty line. China lowered poverty gap from 23% to 4%. A remarkable human achievement.

Strategies for Reduce Poverty
Two elements of strategy:
1. Promote market oriented economic growth.
2. Direct investment on basic health, education of the poor

Recommendation of Washington Consensus, Macroeconomic stability, more openness to trade and investment, increase public investment on infrastructure, and credit, etc. Combine this with labor-intensive demand growth that would benefit the poor. Economic growth will lead to poverty reduction- World Bank Approach. “Trickle down Approach”. Human Development Report approach sees problems with economic growth approach. HDR argues it can be jobless, ruthless, voiceless, and rootless, & futureless or unsustainable.

Problems with Economic Growth Approach
What kind of growth? UNDP argues growth can be: “jobless” overall economy grows but does not expand employment, “ruthless”-where the rich only benefit, leaving millions in poverty, voiceless, no basic democratic freedoms, and rootless “ undermine cultural identity, and “futureless” where present generation squanders resources needed for future generation, UNDP’s Human Development Report 1996.

A Brief History of World Population
The Demographic Transition (Figure 7.1, 7.2).
Rapid Population growth is a recent phenomenon in human history. It took more than 10,000 years for the world to reach one billion in 1804. It took only 125 years to add the next billion or double the population to 2 billion. Annual population was 0.08% from 1AD to 1800 Population explosion occurred in the 1960s &70s. World population reached 5 billion in 1987 and six billion in 1999. Between 1945-2004, population growth reaches an average of 1.6% per year, with no historical precedence.

Demographic transition: When population starts with low growth rates due to high birth rates and high death rates, moves through rapid growth stage with high birth rates and low death rates and later becomes stable with low-growth rate where both birth and deaths are low.

Stages of Population Growth
The 3 stages of population growth
Stage 1: low growth due to high death rates and high birth rates
Stage 2. high growth rates driven by high birth rates and low death rates
Stage 3. Stable or falling growth rate due to low birth rates and low death rates

The Demographic Situation Today
In 2002 the world population picked at 6.2 billion with 15% in ICs and 85% in LICs. Total fertility rate in industrial nations has declined. Population is below 2% even less in Europe, Japan, and negative in a few countries such as Italy.

The Causes of Population Growth
Thomas Malthus was Population “Pessimist”. Malthus argued populations grows because of “passion between the sexes” that leads to rapid population growth. He argued population grows geometrically and food production grows arithmetically at best, leading to famines and starvation. It can only prevented by natural “positive checks” such as epidemics, famines, plague, natural disasters, and wars. Malthus did not live long enough to see European population growth decline. Why did Birth Rates Decline in spite of Malthus pessimism?

Why Population Growth Declined
All societies control their birth rates thru a natural process Children impose costs and incur benefits Economic Costs of Children: Explicit (cash outlays) & implicit (opportunity costs) View children as an “economic decision” has the following implications. The Economics of Childbearing

1. Fertility should be higher when children earn income and contribute to the household
2. Reducing infant deaths should lower fertility
3. Institutionalized social security and pension will lower the need for parents to depend on their children so less children are desired by parents.
4. Fertility should be lower if there is more opportunity for employment for couples, especially for women.
5. Fertility may be higher with higher income.

The first 4 are empirically supported. The last point is not since income growth is negatively related to number of children. Poorer families appear to have children.

Economist Gary Becker Theory of Household Economics
Gary Becker of the University of Chicago analyzed whether children are "normal" or "inferior" goods. He argued couples maximize joint total Utility function (U) from having children which is a function of the following factors: Number of children, child quality (associated with health & education), goods and services, subject to constraints of time, income or cost of goods and services, and cultural constraints.

The Demand for Children
Demand for children (Qdc)= f(number of children-N, Quality of children (Q), Prices or costs of other goods and services (P), Income (I))

Qdc = F (N, Q, P, I, cultural factors like religion).

How do changes in the right hand side variables affect the demand for children.

Beckers Basic Model
The Basic Model of Becker from which the demand for children is derived is as follows:

Maximize U= F( Nc, Qx, I, other factors)

Subject to resource constraints in:
- Time, &Income or cost of raising children
- These model has a power implications for population growth. How?

Population Growth & Economic Development
Is population an obstacle or helpful to development? Population and Productivity: Rapid population growth may retard labor productivity in the short run. There is no simple correlation between economic and population growth (see figure 7.5). Simon Kunzites showed for 40 LDCs between 1950-64. There is no correlation between population growth & per capital income.

Population and Accumulation
Demographers A. Coale and E.Hoover (1958) are population pessimists arguing population growth retard economic development by reducing income per capita in three ways; Capital per worker for growing number of workers or capital widening decreases & permit more investment to be used increase per capital per worker or capital deepening. Lower fertility investment will be diverted from education and health to physical capital investment. Higher population growth will increase dependency ratio.

Dependency Ratio.
Dependency Ratio: Ratio of non-working population (0-14 & 65 and over) divided by total working population.

Dependency Ratio for developed Country comesfrom the youth while that of Industrial Countries is from over 65 or elderly or retired population. See comparative age structure and dependency ratio of Nigeria and Russia.

Population and Market Failures
This is 3rd view on population is by population revisionists. Revisionists assume market failures where costs and benefits of reproductive behavior are not fully borne by them. There is a negative externality from population growth resulting resource depletion, congestion, natural resource and environmental decay. Revisionists assume the problem is lack of well defined property rights. They point to "The tragedy of commons" scenario in history that common use can destroy resources from over use such as pasture, fishery since there is a free-rider problem where individual user does not impact his use on others.

The Population Debate
- Population Pessimists- Malthusians
- Population Optimists- Some Economists
- Population Revisionists- Economists View
- Discussion on population can be polarized
- What should countries and the world do about their population if any?

Population Policy
Reducing birth rates is one solution. But How? Use policy interventions to reduce birth rates. The biggest reducer of population is economic development (UN World Population in Bucharest in 1974). "Take care of the people, population will reduce itself". So, economic development is the "best contraceptive".

There are also arguments for direct control. The most extreme is the Chinese one child policy campaign in 1979. Family Planning Programs: Use of persuasion and education to influence couples to have less children. The 9994 International Conference on Population & Development replaced family planning with broader program of reproductive health. Authoritarian policy of China's one child policy is difficult to implement in Africa and other societies.

Missing Women & Girls
In most countries Male/Female Ratio is not equal or 50/50. It is more like 105/100. In Asia it is 111/100. This is due to cultural male preference by couples in traditional societies for various reasons. Other factors such as sex selection abortion, abandonment of female infants, including murder of female children in the Chinese case. In 2000, China reported male/female ratio of 120/100. This due to high "one child" population policy.

The Causes of Population Growth
- Thomas Malthus, Population "Pessimist"
- Why Birth Rates Decline

FIGURE 7.1 World Population Growth through History: Years Needed to Add 1 Billion More People

FIGURE 7.2 Demographic Transition for Finland, 1785-2003 (top)

FIGURE 7.3 Demographic Transition for Finland, 1785-2003 (bottom)
Population Momentum
A dynamic latent process of population growth that continues even after the birth rates fall due to large youthful population that widens population's parent base. This implies a given population will not stabilize until 2 or 3 generations.

**TABLE 2.1** Levels and Trends in World Population, 2002

<table>
<thead>
<tr>
<th>Country</th>
<th>Population (Millions)</th>
<th>Rank</th>
<th>Birth Rate (Per 1,000)</th>
<th>Death Rate (Per 1,000)</th>
<th>Natural Increase (Per Cent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>6,192</td>
<td>100</td>
<td>21</td>
<td>9</td>
<td>1.2</td>
</tr>
<tr>
<td>Income category</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low income</td>
<td>2,270</td>
<td>37</td>
<td>29</td>
<td>11</td>
<td>1.8</td>
</tr>
<tr>
<td>Middle income</td>
<td>2,063</td>
<td>48</td>
<td>17</td>
<td>8</td>
<td>0.9</td>
</tr>
<tr>
<td>High income</td>
<td>666</td>
<td>15</td>
<td>9</td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td>Region</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>East Asia</td>
<td>1,330</td>
<td>20</td>
<td>16</td>
<td>8</td>
<td>0.9</td>
</tr>
<tr>
<td>South Asia</td>
<td>1,401</td>
<td>23</td>
<td>26</td>
<td>9</td>
<td>1.7</td>
</tr>
<tr>
<td>High income</td>
<td>666</td>
<td>15</td>
<td>9</td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>699</td>
<td>11</td>
<td>39</td>
<td>18</td>
<td>2.1</td>
</tr>
<tr>
<td>Latin America</td>
<td>928</td>
<td>8</td>
<td>21</td>
<td>6</td>
<td>1.8</td>
</tr>
<tr>
<td>Europe and</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central Asia</td>
<td>472</td>
<td>8</td>
<td>13</td>
<td>12</td>
<td>0.1</td>
</tr>
<tr>
<td>Middle East and</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Africa</td>
<td>306</td>
<td>5</td>
<td>24</td>
<td>6</td>
<td>1.8</td>
</tr>
</tbody>
</table>

**TABLE 2.2** Projections: The World’s Ten Most-POPULOUS Nations in 2050

<table>
<thead>
<tr>
<th>Country</th>
<th>Population (Millions)</th>
<th>Rank</th>
<th>Population (Millions)</th>
<th>Rank</th>
<th>Population Increase (Millions)</th>
<th>PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>1,531</td>
<td>1</td>
<td>1,017</td>
<td>2</td>
<td>514</td>
<td>51</td>
</tr>
<tr>
<td>China</td>
<td>1,265</td>
<td>2</td>
<td>1,275</td>
<td>1</td>
<td>120</td>
<td>9</td>
</tr>
<tr>
<td>United States</td>
<td>409</td>
<td>3</td>
<td>285</td>
<td>3</td>
<td>124</td>
<td>44</td>
</tr>
<tr>
<td>Pakistan</td>
<td>349</td>
<td>4</td>
<td>143</td>
<td>7</td>
<td>206</td>
<td>144</td>
</tr>
<tr>
<td>Indonesia</td>
<td>294</td>
<td>5</td>
<td>212</td>
<td>4</td>
<td>82</td>
<td>29</td>
</tr>
<tr>
<td>Nigeria</td>
<td>268</td>
<td>6</td>
<td>116</td>
<td>10</td>
<td>148</td>
<td>54</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>255</td>
<td>7</td>
<td>138</td>
<td>8</td>
<td>117</td>
<td>65</td>
</tr>
<tr>
<td>Brazil</td>
<td>252</td>
<td>8</td>
<td>172</td>
<td>5</td>
<td>61</td>
<td>25</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>171</td>
<td>9</td>
<td>66</td>
<td>18</td>
<td>105</td>
<td>60</td>
</tr>
<tr>
<td>Congo, Democratic</td>
<td>159</td>
<td>10</td>
<td>49</td>
<td>24</td>
<td>103</td>
<td>910</td>
</tr>
<tr>
<td>Total (share of world’s population)</td>
<td>55,648 (0.87)</td>
<td></td>
<td>34,752 (0.57)</td>
<td></td>
<td>10,896 (0.35)</td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER 15

EDUCATION

Introduction
Education is a form of Human Capital. Economist T.W. Schultz underscored the critical role of human capital investment in the form of education for development.

Trends and Patterns
Stocks and Flows: Stock is amount of schooling embodied in a population. Flows: Net change in those flows as a result of enrollment. Gross enrollment rates have risen many parts of the world at various levels. Net enrollment rates are enrollments of those relevant age.

The Benefits of Education
Education is an Investment. Education is a human capital investment. Internal Rates of Return to Schooling. Estimated Rates of Return.

Present Value (PV) of all costs and benefits
- PVbr= Sum of the present value of all future private benefits (see 8.1)
- PVc= Present value of all anticipated private costs (see 8.2)
- Internal Rate of Return is the rate or (r) that which equates $PVb=PVc$ (see formula 8.3).

TABLE 8.7 Estimates of School Attainment for Adults 25 and over by Gender and Region, 1980 and 2000

The gap between rich and poor.