Classic Theories of Economic Growth & Development
Classic Theories of Economic Development: *Four Approaches*

1. The Linear-Stages of growth model
2. Structural change pattern Theories
3. International-Independence
4. Neo-Classical (counter-revolution) Theory
1. Development as Growth and the Linear-Stages Theories

- 1.1. Rostow’s stages of growth
- 1.2. The Harrod-Domar growth model
- 1.3. Obstacles and constraints
- 1.4. Some criticisms of the stages model
Rostow Stages of Development

- Different countries are at different stages of development. Rostow has classified the stages of economic development into five categories as follows:
  - Traditional Society
  - Precondition take-off
  - Take-off
  - Drive to Maturity or sustaining stage
  - The stage of large scale of mass consumption
Traditional Society

- Dominated by subsistence (defined as no economic surplus, meaning output being consumed by producers rather than traded);
- Trade being carried out by barter, meaning goods being exchanged directly for other goods;
- Agriculture being the most important industry; Production being labor intensive using only limited quantities of capital.
Transitional Stage (the preconditions for takeoff)

• Increased specialization starting to generate surpluses for trading.

• an emergence of a transport infrastructure to support trade; External trade also occurs concentrating on primary products; Entrepreneurs emerge

• savings and investment grow.
Take Off

• Rapid Industrialization or Industrial Revolution
• Growth concentrated in a few regions of the country and in one or two manufacturing industries.
• The level of investment reaches over 10% of GNP.
• The economic transitions are accompanied by the evolution of new political and social institutions that support the industrialization.
• The growth is self-sustaining: investment leads to increasing incomes in turn generating more savings to finance further investment.
Drive to Maturity

- **Industrial Diversification**; producing a wide range of goods and services; reliance on exports and imports may start decreasing
High Mass Consumption

- Domestic Aggregate Demand is the major determinant of Business (Cycles)
- Consumer durable industries; Service sector
1.2. The Harrod-Domar Model:
(The idea that Capital and Saving is fundamental)

- Saving \((S)\) is some proportion of national Income \((Y)\)
  \[ S = sY \]  \hspace{1cm} (1.1)

- Net Investment is the change in capital stock \((K)\)
  \[ I = \Delta K \]  \hspace{1cm} (1.2)

- \(K\) bears a direct relationship with \(Y\), therefore

\[ \frac{K}{Y} = k \text{ or } \frac{\Delta K}{\Delta Y} = k \]
1.2. The Harrod-Domar Model cont.

\[ \Delta K = k \Delta Y \]  \hspace{1cm} (1.3)

\[ S = I \]  \hspace{1cm} (1.4)

\[ S = sY = k \Delta Y = \Delta K = I \]  \hspace{1cm} (1.5)

\[ sY = k \Delta Y \]  \hspace{1cm} (1.6)

\[ \frac{\Delta Y}{Y} = \frac{s}{k} \]  \hspace{1cm} (1.7)
1.2. Harrod-Domar Growth Model

- A model of “capital fundamentalism”
- Where \( s = \text{savings ratio} = S/Y \),
- and \( k = \text{capital output ratio} = K/Y \)
- \( Y_g = \text{growth rate of GDP} = s/k \)

*Note: The more economies save and invest, the faster they grow.*

- e.g. If \( s = 6\% \), and \( k = 3.0 \), \( Y_g = 6\%/3 = 2\% \)
Another way of deriving the Harrod-Domar Model

• Let $Y$ represent output, which equals income, and let $K$ equal the capital stock. $S$ is total saving, $s$ is the savings rate, and $I$ is investment. $\delta$ stands for the rate of depreciation of the capital stock. The Harrod–Domar model makes the following a priori assumptions:
1: Output is a function of capital stock

\[ Y = f(K) \]

2: The marginal product of capital is constant; the production function exhibits constant returns to scale. This implies capital's marginal and average products are equal.

\[ \frac{dY}{dK} = c \rightarrow \frac{dY}{dK} = \frac{Y}{K} \]

3: Capital is necessary for output.

\[ f(0) = 0 \]
4: The product of the savings rate and output equals saving, which equals investment

\[ sY = S = I \]

5: The change in the capital stock equals investment less the depreciation of the capital stock

\[ \Delta K = I - \delta K \]
\[ c = \frac{dY}{dK} = \frac{Y(t + 1) - Y(t)}{K(t) + sY(t) - \delta K(t) - K(t)} \]

\[ c = \frac{Y(t + 1) - Y(t)}{sY(t) - \delta \frac{dK}{dY}Y(t)} \]

\[ c(sY(t) - \delta \frac{dK}{dY}Y(t)) = Y(t + 1) - Y(t) \]

\[ cY(t) \left( s - \delta \frac{dK}{dY} \right) = Y(t + 1) - Y(t) \]

\[ cs - c\delta \frac{dK}{dY} = \frac{Y(t + 1) - Y(t)}{Y(t)} \]

\[ s \frac{dY}{dK} - \delta \frac{dY}{dK} \frac{dK}{dY} = \frac{Y(t + 1) - Y(t)}{Y(t)} \]

\[ sc - \delta = \frac{\Delta Y}{Y} \]
1.3. Obstacles & Constraints to Harrod-Domar Model

- \( Yg = \frac{s}{k} = \frac{6\%}{3} = 2\% \)
- Suppose ‘s’ increases to 15%, then
- Growth Rate = \( Yg = \frac{15\%}{3} = 5\% \)
- **Constraint**: But there is low capital formation or scarcity in LDCs & African economies
- How can LDCs overcome" capital constraint”? By savings, foreign aid & investment both foreign & domestic ...
1.4. Harrod-domar Model cont. *Is Savings a necessary & sufficient condition?*

- Savings & Capital accumulation may be **necessary** for economic growth, but NOT a **sufficient condition**.

- Other factors such as institutions, human capital, skilled labor, transparency, etc.. may be lacking.

- **Historical Example**: “The Marshall Plan” in Europe/Germany succeeded due to the existence of these other factors such as educated labor and knowledge even though the physical infrastructure was destroyed by the War...
2. Structural-Change Models

- The focus of these theories is on the way economies are transformed over time, from traditional to modern/industrial economies.

- The Lewis theory is the Basic Model.

- The Model explains the “structural transformation” of a subsistence/agricultural economy to a modern/Industrial economy.
2.1. The Lewis Model of Development: Key Assumptions & Implications..

- **Two sectors** - traditional-labor surplus economy that co-exists with modern/Industrial sector- There is an “economic dualism”.

- **Labor surplus** in traditional/agricultural sector. Much of this is unskilled.

- The Lewis model implies employment will expand until surplus labor is absorbed in the modern or industrial sector.
2.2. Limitations of the Lewis Model

- Model roughly explains the historical growth experience of today’s Industrial Nations.
- But, its key assumptions do not reflect the realities of today’s LDCs. Why?
- Profits may not be re-invested domestically in LDCs especially in African economics i.e. there may be “capital flight”
- Surplus labor may not exist in rural economy.
2.3. Structural Change & Patterns of Development

- Empirical structural change analysis stresses both domestic and international constraints, including institutional ones for successful transformation.

- Holis Chenery (*Harvard Economist*) used time series & cross-section data of countries to examine key features of the development process.
2.4. Conclusions and Implications

• The major hypothesis of structural analysis is that development is an identifiable process of change with similar features and patterns.

• But, these patterns can also vary among countries. Key point. Why do they vary?
  (Due to institutions, and human capital, and nature of government)

• It assumes there are “correct” mix of economic growth that will generate sustained growth... It is an approach used by World Bank.
3. The International-Dependence Revolution: Various Versions

- LDCs beset by institutional, political & economic rigidities both domestic and international
- 3.1. The neocolonial dependence model assumes **Unequal relationship between the center (developed countries) and the periphery (LDCs)**.
- 3.2. The false-paradigm model: inappropriate advice by developed countries experts and donors.
- 3.3. The dualistic-development thesis: leads to increased inequality and poverty or greater gap between the few rich and a large poor.

- **3.4. Conclusions and implications**: These Dependency models imply pursuit of autarky & anti-globalization policies. These have proved to be a failure in general.
- What countries remain that practice this model?
4. The Neoclassical Counter-revolution: *Market Fundamentalism*

- 4.1. Challenges the statist model of centralized socialism and centrally planned economy.
- Free market approach
  - Public choice approach
  - Market-friendly approach
- 4.2 Traditional neoclassical growth theory or the Solow Model theory
- 4.3 Conclusions and implications
The Neoclassical Counterrevolution
Market Fundamentalism

• Market fundamentalism gained resurgence in the 1980s. It dominated economic policies of the US, Britain, Canada & Germany, as well as the thinking of International Development agencies such as the World Bank & the IMF.

• There are three variations or approaches:
1. The Free Market Approach

- Assumes markets are efficient. Competition is effective. The state or Government intervention is ineffective.

- Given the efficiency of markets, any imperfections in markets are of little significance.
Public-Choice or New Political Economy Approach

• Argues that governments can not solve economic problems, since the state itself is dominated by politicians, bureaucrats, that use power for selfish ends.

• State officials extract “rents”, taking bribes, and confiscate or nationalize property, and reduce freedom of citizens. Therefore, it is best to minimize the role of governments.

• Big corporations also suffer from similar problems but market and public policy disciplines them.
The Market-friendly Approach

• This is the most recent variant of Neo-Classical Theory. It is an approach used by World Bank & IMF economists.

• This approach recognizes market imperfections, missing markets, and externalities. Therefore, there is a need for government role in areas such as providing public goods, developing market supporting institutions or rules, and defining and protecting property rights.

• The state or the government has a necessary role of being an “impartial” referee in the economic game.
The Neoclassical Growth Theory – The Solow Growth Model

• The Solow model expanded the Harrod-Domar Model, that stressed the critical role of savings, Investment & capital accumulation.

• It formalized & expanded the Harrod Model by adding labor, capital, and technology.

• Technology is assumed to explain the “residual” factor, and was assumed to be determined exogenously.
A Production Function

- Output, $Y$, is a function of:
  - Physical capital, $K$
  - Human capital, $e \times L$
  - Ideas (productivity), $A$

$$Y = F(A, K, eL)$$

- To simplify we assume $A$, $e$ and $L$ are constant.
  $$Y = F(K)$$

- Properties of $F$? More $K$, more $Y$ but at a diminishing rate.
  $$Y = \sqrt{K}$$
The Solow Model

Output, $Y$

Capital, $K$

$Y = \sqrt{K}$
The Solow Model

Output, Y

Capital, K

Y = \sqrt{K}
The Solow Model

Output $Y$ vs. Capital $K$

Equation: $Y = \sqrt{K}$
Hints at Convergence
(Catching Up and Cutting-Edge Growth)

- Due to diminishing returns to capital, countries with small capital stocks should grow rapidly.
- China
  - Prediction: China will slow as K accumulates.
- Why don’t all poor countries grow rapidly?
- China – adopted more capitalist institutions, improved incentives has grown very rapidly.
  - Conditional convergence.
- Bombing a country can increase its growth rate!

| Average Annual Growth Rate of GDP per Capita for Germany, Japan, and the United States |
|----------------------------------|----------------------------------|
| Germany                          | 6.6%                             | 1.9%                             |
| Japan                            | 6.8%                             | 3.4%                             |
| United States                    | 1.2%                             | 2.3%                             |

Source: Cowen and Tabarrok, Modern Principles
The Solow Model

Output, \( Y \)

Capital, \( K \)

\[ Y = \sqrt{K} \]

\[ I = 0.3 \ Y = 0.3 \sqrt{K} \]
Capital Depreciates
The Solow Model

Output, $Y$

Capital, $K$

$Y = \sqrt{K}$

$D = 0.02K$

$I = 0.3Y$

$I = 0.3\sqrt{K}$
The Solow Model

Output, Y

Steady state Output = 15

Capital, K

Steady state I = D = 4.5

Steady state is when Investment = Depreciation

Y = \sqrt{K}

D = 0.02 K

I = 0.3 Y = 0.3 \sqrt{K}

Steady state K = 225
Development Policy Implications of the Solow Model for African economies

- Output (GDP) grows as a result of 3 factors:
- **increase in labor quantity and quality**, **increase in capital (by saving & investment)**, and **technological progress**.

- *Closed economies* grow more slowly than *Open economies*. Impeding free trade and foreign investment will slow economic growth.
Schumpeter’s Theory

• Economic growth is a dynamic process and not continuous – national income does not always increase.

• National income exhibit cyclical pattern – increases and decreases.

• National income increases when innovations takes place.

• Innovation means the discovery of a new product, a new process or a new market.
• Entrepreneurs introduce innovations through new profit opportunities
• Therefore, entrepreneurs are central to the development process
• As long as innovations proceeds, the economy continues to grow
• Leading entrepreneurs are imitated by others, thus prosperity continues.
• After some time, when banks loans are paid off, depression comes because old firms disappear due to innovations.
5. Theories of Development: Reconciling the Differences

- Development economics has no simplistic and universally accepted paradigm: *But it is also not the case that any policy or strategy will work! History & Evidence shows this.*

- Insights and understandings are continually evolving.

- Each theory has some strengths and some weaknesses. Incites can be gained from a combination of alternative theories and experiences of successful countries to guide development policy.