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BA Economics Honours | Semester V | Calicut University

Growth Theories in Economics

Course Code: ECO5CJ303 • Module 3

Module III: Advanced Discussion on Growth Models

Neoclassical and modern growth theories eliminated Harrod-Domar knife-edge instability by introducing flexible factor substitutability and endogenizing technological progress within market-driven investment frameworks.

Unit 10, 11 & 12: Robert Solow, Joan Robinson, and Paul Romer

- **Robert Solow Neoclassical Growth Model (1956):** Replaced fixed coefficients with a smooth, neoclassical Cobb-Douglas production function with constant returns to scale and diminishing returns to capital:

  $$Y = F(K, AL) \implies y = f(k)$$

  The capital accumulation equation in intensive form is:

  $$\dot{k} = sf(k) - (n + g + \delta)k$$

  In the long-run steady state ($\dot{k} = 0$), capital per effective worker reaches equilibrium k^*. Solow showed that increases in the saving rate raise the level of output per capita but cannot sustain long-run per capita growth. In the Solow model, long-run per capita growth is determined solely by exogenous technological progress (the **Solow Residual** or Total Factor Productivity - TFP).
- **Joan Robinson's Model of Capital Accumulation (1956):** Explored long-run growth under imperfect competition and income distribution dynamics. Robinson identified the conditions for a "Golden Age" of smooth growth where the capital stock expands at a rate matching full employment labor growth.
- **Paul Romer's Endogenous Growth Model (1986, 1990):** Overcame Solow's limitation by endogenizing technological progress. Knowledge and ideas are non-rival economic goods. Private firms invest in R&D to earn temporary monopoly rents protected by patents. Because knowledge spills over across firms, aggregate capital and human capital exhibit **increasing returns to scale**, sustaining positive per capita economic growth in the long run without exogenous technological shocks.

Unit 13, 14 & 15: Dual Economy Models and Unified Growth Theory

- **Fei-Ranis Model of Economic Growth (1964):** A mathematical refinement of Arthur Lewis's dual economy model. Traces the reallocation of surplus labor from the traditional agricultural sector to the modern industrial sector through three distinct stages, culminating in the commercialization point where agricultural labor earns its marginal product.
- **Oded Galor's Unified Growth Theory (2005):** Reconciles thousands of years of Malthusian stagnation with the modern transition to sustained demographic and economic growth through the historical co-evolution of technology, human capital, and fertility reduction.
- **Justin Yifu Lin's New Structural Economics:** Proposes that economic structure is endogenous to a country's factor endowment structure. Sustainable industrial upgrading requires following comparative

advantage determined by current factor endowments, supported by a facilitating state.

Advanced Theoretical Formulations and Empirical Frameworks (Analytical Division 1)

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Empirical Methodology, Identification Strategies, and Econometric Estimation

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Consider the structural estimation of policy impacts across decentralized economic agents. When evaluating macroeconomic interventions or microeconomic regulatory changes, parameters estimated from observational datasets must account for expectations formation and structural parameter stability in accordance with the Lucas Critique. Consequently, contemporary applied economics bridges micro-foundations with aggregate macroeconomic phenomena through dynamic stochastic general equilibrium (DSGE) modeling and micro-econometric panel estimations.

Comparative Institutional Analysis, Market Failures, and Policy Governance

Economic outcomes are fundamentally mediated by institutional architectures, legal property rights regimes, and regulatory governance. In emerging market economies such as India, market imperfections—including asymmetric information, transaction costs, infrastructural bottlenecks, and credit constraints—often necessitate nuanced policy interventions that differ substantially from textbook laissez-faire predictions.

Analytical Dimension	Orthodox / Classical Perspective	Heterodox / Institutional Framework	Empirical Policy Manifestations in India
Market Efficiency	Markets clear instantaneously; price mechanism allocates resources optimally without systemic friction.	Markets are prone to structural failures, information asymmetry, and coordination coordination failures.	Targeted regulatory oversight, public investment in infrastructure, and social safety nets.
Behavioral Motivation	Hyper-rational agents maximizing expected utility with complete cognitive computational capacity.	Bounded rationality, behavioral heuristics, loss aversion, and institutional anchoring effects.	Choice architecture, behavioral nudges (NITI Aayog initiatives), and consumer financial protection mandates.
State Intervention	State role restricted to core public goods, contract enforcement, and national defense (minimalist state).	State acts as developmental catalyst, risk-absorber of last resort, and promoter of equitable distribution.	Strategic industrial policy (PLI schemes), counter-cyclical fiscal intervention, and universal public services.

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Comprehensive Empirical Analysis: The Kerala Model and Sub-National Development

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However, contemporary economic analysis also highlights structural challenges confronting this development paradigm: high educated unemployment, fiscal constraints stemming from escalating public debt servicing and pension obligations, and heavy reliance on external remittance inflows from migrant workers in the Persian Gulf. Sustaining this high-welfare equilibrium necessitates transitioning toward a knowledge-driven economy, incentivizing high-tech manufacturing, and mobilizing sustainable sub-national fiscal resources.

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Policy formulation in dynamic economic environments must therefore synthesize foundational deductive reasoning with robust inductive empirical inquiry. Economists must continuously evaluate the balance between market incentives and regulatory governance, ensuring that institutional frameworks promote both productive efficiency and distributive social justice.

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