

# 202: Dynamic Macroeconomics

## Introduction

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# Course Objectives

- The course seeks to address two fundamental questions:
  - What explains the vast divergence in growth patterns across the world?
  - What is an appropriate government policy (if any) in a low income-low growth country which can usher in a “high growth” regime?
- Modern growth theory has moved beyond the neoclassical framework to provide answers to these set of questions. This course takes a closer look at these alternative theories.

- This course will enable students to understand, evaluate and compare various policies that promote growth.
- It will also help them understand the deeper institutional and cultural characteristics that might be the root cause of underdevelopment in many poor countries.

- **Proximate Causes of Growth**

- Human Capital
- Technology

- **Deeper Causes of Growth**

- Imperfect Markets
- Political Economy
- History vis-a-vis Expectations
- Culture, Trust and Other Sociological Factors

# A Glimpse at History:

*"We all know that history has proceeded very differently for peoples from different parts of the globe. In the 13000 years since the end of the last Ice Age, some parts of the world developed literate industrial societies with metal tools, other parts developed only nonliterate farming societies, and still others retained societies of hunter-gatherers with stone tools. Those historical inequalities have cast long shadows on the modern world, because the literate societies with metal tools have conquered or exterminated the other societies. While those differences constitute the most basic fact of world history, the reasons for them remain uncertain and controversial."*

- Jared Diamond (*Guns, Germs & Steel*)

# Fast Forwarding to the Contemporary World:

- There exist large and persistent differences in levels as well as growth rates of GDP across regions even in the contemporary world.

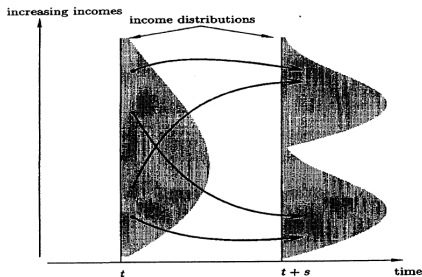
Total GDP (US\$, millions, constant 2000)	1960	1975	1990	2005
East Asia & Pacific	1,27,100	2,65,240	7,67,490	25,55,100
Latin America and Caribbean	4,37,540	9,81,880	14,25,900	22,27,100
South Asia	1,02,880	1,76,690	3,64,940	8,31,210
Sub-Saharan Africa	97,697	1,94,700	2,73,000	4,23,020
High Income OECD countries	59,92,900	117,68,000	190,80,000	271,48,000
GDP Growth Rate (% annual)	1960	1975	1990	2005
East Asia & Pacific	10.6	6.8	5.5	9.0
Latin America and Caribbean	5.7	3.4	0.4	4.5
South Asia	-0.6	7.0	5.6	8.7
Sub-Saharan Africa	6.3	1.1	1.1	5.7
High Income OECD countries	5.0	0.4	3.0	2.5

Source: Tribe, Nixon & Sumner (2010)

# Contemporary World: (Contd.)

- Over the period of 1960-2000, the relative distribution of world income has remained remarkably stable - although some countries (notably, East Asia) moved up; some countries (notably, Sub-Saharan Africa & Latin America) moved down.
- Notwithstanding such (rather rare) movements in the middle order, majority of the rich countries have remained rich; majority of the poor countries have remained poor.

## Twin Peaks:



# Contemporary World: (Contd.)

- Indeed, the picture becomes starker when we focus on the tail-ends of the distribution.
- The richest 5% of countries has averaged a level of *per capita* income that is **29 times higher** than the poorest 5%.
- To paraphrase Robert Lucas (1988):  
One cannot look at figures like these without seeing them as representing *possibilities*. Is there some action a government of Sierra Leone could take that would lead the economy to grow like South Korea's or China's? If so, *what*, exactly? If not, what is it about the 'nature of Sierra Leone' that makes it so? The consequences for human welfare involved in questions like these are simply staggering: Once one starts to think about them, it is hard to think about anything else!
- In this course we seek some answers to these questions.



# Motivation:

The course is motivated by three fundamental queries:

- What explains the per capita GDP growth (or lack of it) of any particular country?
- What explains the vast divergence in growth patterns across the world?
- What is an appropriate government policy (if any) in a low income-low growth country which can usher in a “high growth” regime?
- Different theories have different answers to these set of questions.

# Neoclassical Growth Theory:

- In the **neoclassical growth theory** (Solow, Ramsey-Cass-Koopmans)
  - Long Run (steady state) growth is explained by exogenous population growth and exogenous technical progress .
  - Growth during transition (away from steady state) is explained by factor accumulation.
  - Predicts convergence: poor countries will eventually catch up with the rich.
  - No scope for government intervention (perfect markets, rational expectations).
  - No attempt to explain either demographic behaviour or technical progress.

# Endogenous Growth Theory:

- The **endogenous growth theory** (Romer; Barro; Lucas; Grossman-Helpman, Aghion-Howitt & others) goes a little deeper than the neoclassical growth theory. It focuses on technical progress and attempts to explain technical progress and productivity growth in terms of
  - Direct R&D activities by firms (Romer, Aghion-Howitt);
  - Government investment in infrastructure (Barro);
  - Education and skill Formation by households (Lucas; Nelson-Phelps).
  - International trade and concomitant technology transfer (Grossman-Helpman);
- Often there is no separate transitional dynamics.
- Does not predict convergence. If anything, predicts history dependence & possible divergence.
- In many cases, argues for direct government intervention.

# Theories of Demographic Changes and Economic Growth:

- The **theories of demographic transition** (Galor; Galor-Weil; Galor-Moav) on the other hand & others) goes a little deeper in a different direction. It focuses on endogenous population dynamics and its implications for growth.
- But technical progress or demographic factors are still proximate causes of growth, which are linked to the initial factor endowments (land, labour, capital, human capital, natural resources). Hence history plays an important role in determining the path of development (although some of the demographic explanations are based on evolutionary factors (e.g., Galor & Moav)).
- But a bit of a puzzle still remains: why does demographic or technological change follow a certain path in some countries and not in other countries - *even when they are similar in terms of factor endowments?*
- This is where institution-based growth theories come in.

- **Institution-based theories of growth** (Acemoglu, Alesina-Rodrick, Greenwood-Jovanovic, Levine, Doepke-Zilibotti, Krugman, Ray-Mookherji) are more recent works in growth theory which link growth to various kinds of growth promoting institutions such as:
    - political institutions;
    - financial institutions;
    - legal framework and contractual structure;
    - distribution of wealth, power and control;
    - culture, corruption and cooperation
- and so on.....

# Evolutionary Theories of Growth:

- Finally, there are various **evolutionary theories of growth** which argue that even institutions evolve endogenously. These theories trace emergence of 'good' (growth-promoting) institutions to non-economic factors such as biology, geography, climate etc. (along the lines suggested by Jared Diamond and others).

# In this course:

- In this course we shall take a closer look at these theories that take you beyond the neoclassical growth story.
- We shall pick one/two well-cited papers from each of these sub-fields and discuss these in detail.
- Needless to say, I cannot cover the entire range of this vast literature: the purpose here is to whet your appetite so that you decide to pursue this further on your own.
- The course is entirely based on published papers rather than textbooks and you are expected to read the original articles - introduction as well as the models.
- So a basic knowledge of the dynamic tools (difference/differential equations, phase diagram technique, dynamic optimization in discrete and continuous time) is *necessary*.

# Mode of Evaluation:

- Internal evaluation (30 marks) will be based on presentation (and a written referee report) of original research articles (from a collection to be provided by me). Presentation can be done individually or in a group (depending on class size).
- Final examination (70 marks) will be the usual two and half hours exam at the end of the semester.
- **Students are expected to put in effort in reading up the relevant literature beyond the class notes and lecture slides.**