

# MACROECONOMICS

Lecture Notes

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## Part I – Chapters 1, 2 and 3. Introduction and Measurements

### ■ Economics

- Microeconomics
  - The study of individual economic decision making.
  
- Macroeconomics
  - The study of aggregate economic variables.
  - The study of the behavior of large collections of economic agents.

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Macroeconomics models based on  
Microeconomic principles.

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# Chapter 1

## Introduction

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### Plan

- What is Macroeconomics?
- Phenomena of interest and historical events:
  - Economic Growth (Long-Run)
    - ≡ The increase in productive capacity and average standard of living. Measured by the trend.
  - Business Cycles (Short-Run)
    - ≡ The short-run ups and down, booms and recessions. Measured by deviations from the trend.
- Building Macro models.
- Issues of disagreement in Macro.

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### Macroeconomic Questions (WHY ?)

- Why are some countries rich while others are poor?
- In terms of standard of living; are you better off than your parents/grand-parents?
- Why are there fluctuations in aggregate economic activity?
- If you can understand these fluctuations, is there any way to avoid them?

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## Macroeconomic Focus

- Aggregate behavior of consumers and firms.
- The behavior and influence of the government on overall economic activity.
  - For example, the effects of fiscal and monetary policies.
- The overall level of economic activity in individual countries.

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## HOW ?

- Theoretical Models
    - Consist of
      - Descriptions of consumers and firms
      - Their objectives and constraints
      - Resources available
    - How they interact (relationships)
    - Outcome:
      - Prediction regarding overall economic activity
- ???
- ➔
- Real Life Data
    - Long-Run Growth
    - Business Cycles

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## Definitions

- Gross Domestic Product (GDP)
  - ≡ quantity of goods and services produced in the United States.
- Gross National Product (GNP)
  - ≡ quantity of goods and services produced by US residents.
- To compare across countries:
  - GDP per capita = GDP / Population

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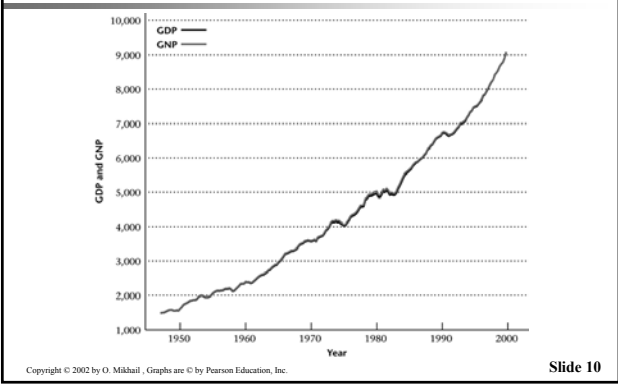
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Figure 2-1 GDP and GNP




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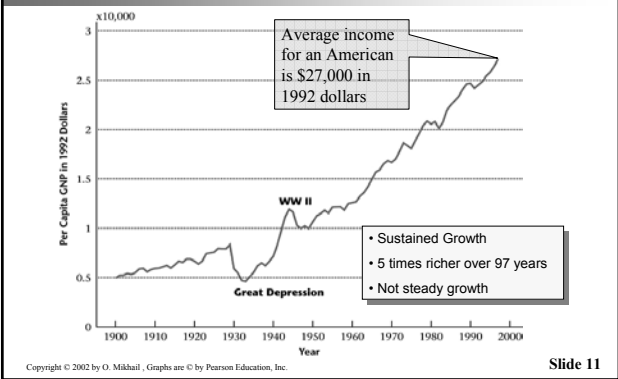
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Figure 1-1 Per Capita Real GNP (in 1992 dollars) for the United States in the Twentieth Century




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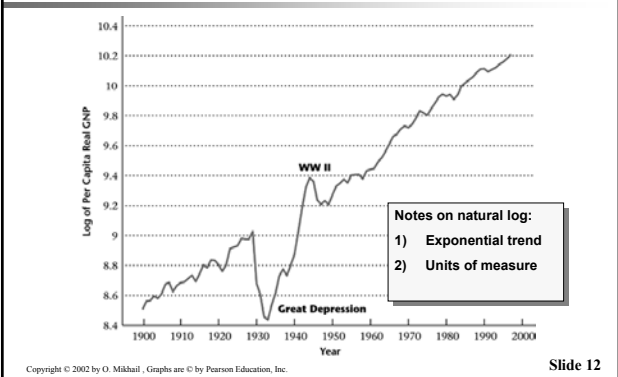
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Figure 1-2 Natural Logarithm of Per Capita GNP




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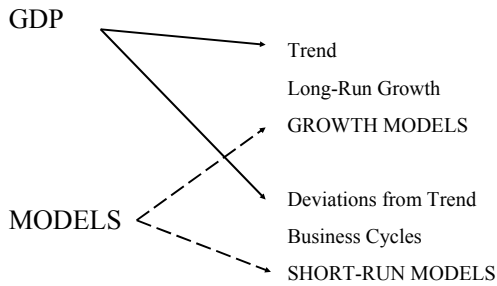
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# Decomposition of GDP and Models




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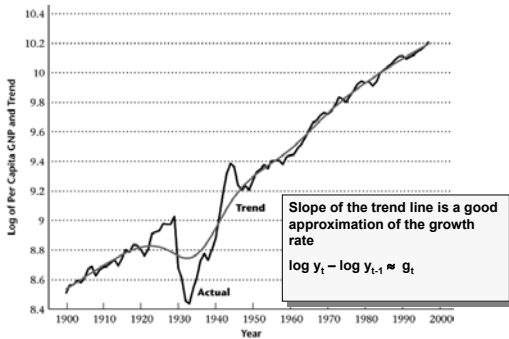
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## Figure 1-3 Natural Logarithm of Per Capita GNP and Trend




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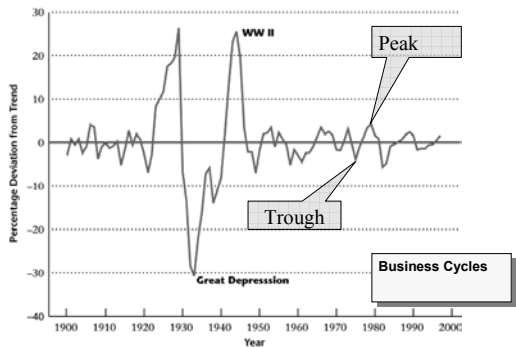
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## Figure 1-4 Percentage Deviations from Trend in Per Capita GNP




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## Building a Model (The Art of War)

- Consumers and firms (representative)
- Set of goods (one good)
- Consumers preferences (utility)
- Technology available (production function)
- Resources available (constraints)
- Nature of the market (competitive)
- Behavior of agents (optimization)

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## Building a Model (Flavors)

### The setup

- Investment and saving.
- Government spending and taxes.
- International and exchange rates (open economy).
- Money supply and inflation.
- One traded good or many goods.
- Nature of market: competitive, monopoly or oligopoly.
- Markets clear or not.

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## Outcome of the Model

### Ask the model questions:

- For which we know the answers  
Does the economy grow in a manner that matches the data?
- For which we do not know the answers  
How much growth had the level of government spending been higher? or lower?

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### Why Microeconomic Principles?

- Changes in government policy, may alter the behavior of consumers and firms and consequently the behavior of the economy as a whole.
- The Lucas Critique (1976) introduced macro models based on micro principles.

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### Disagreement in Macro (The Fight)

- Economic Growth Models
  - Little disagreement
  - Based on Robert Solow's model
- Business Cycles Models
  - Keynesian Theory (John Maynard Keynes)
  - Money Surprise Theory (Milton Friedman and Robert Lucas)
  - Real Business Cycle Theory (Edward Prescott and Finn Kydland)
  - Keynesian Coordination Failure Theory

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### Understanding Recent and Current Macroeconomic Events

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## Seven Issues

1. Productivity Slowdown
2. Taxes, Gov spending and deficit
3. Inflation
4. Interest rates
5. Energy prices
6. Trade and twin deficits
7. Unemployment

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## Productivity

≡ average labor productivity =  $Y / N$   
where Y refers to aggregate output (GDP)  
and N denotes employment.

It is the output per worker. For example, in a  
one good economy, 10 chocolate bars per  
worker or 12 chocolate bars per worker.

### Why Important?

Economic growth theory points to growth in  
productivity as an important reason for growth  
in living standards in the LONG-RUN.

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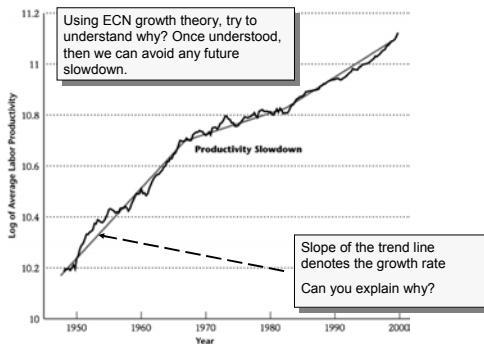
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### Figure 1-5 Natural Logarithm of Average Labor Productivity



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## Explaining Productivity Slowdown

1. Costs of adjusting to new technology.
2. Reflects measurement bias problem.
3. Any other suggestion ???

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Figure 1-6 Total Taxes (black line) and Total Government Spending (colored line) in the United States (federal, state and local) as Percentages of GDP



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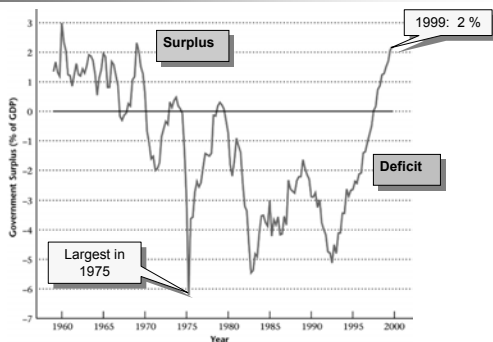
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Figure 1-7 The Total Government Surplus (Government Saving) in the US, as a % of GDP.



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## Effects of the deficit depend on the source

Deficit due to:

1. Lower taxes
  - Implies higher future taxes.
  - Ricardian Equivalence theorem: Under some conditions, government deficits do not matter.
2. Higher spending
  - Implies crowding out of private spending.

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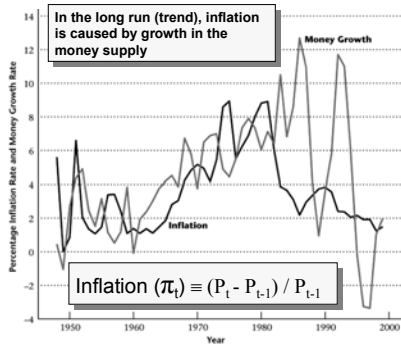
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## Figure 1-8 Inflation and Money (M1) Growth



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## Figure 1-9 The Nominal Interest Rate (91-day U.S. Treasury bills) and the Inflation Rate



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## Real (r) and Nominal (R) interest rates

$$r \approx R - \pi^e$$

ECN decisions depend on the real interest rates.  
Market forces determine the real interest rates.

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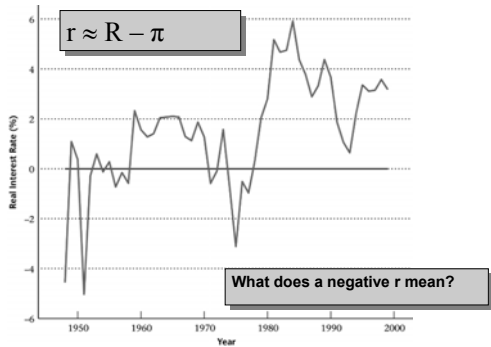
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## Figure 1-10 Real Interest Rate



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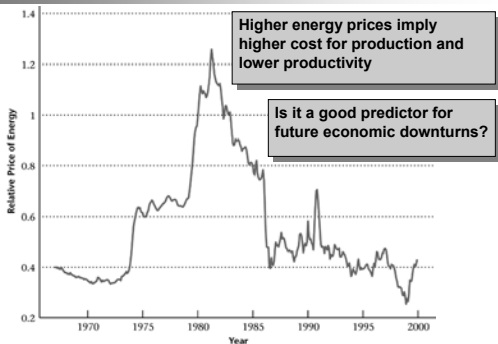
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## Figure 1-11 The Relative Price of Energy, Measured as the Producer Price index of Petroleum Products Divided by the Consumer Price Index



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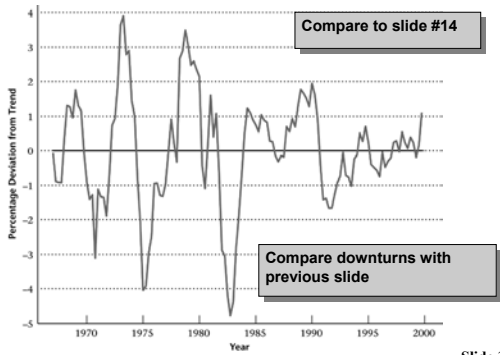
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Figure 1-12 Percentage Deviations from Trend in Real GDP



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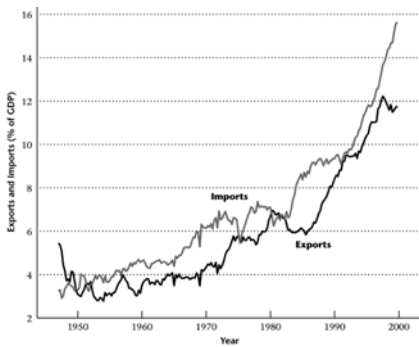
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Figure 1-13 Exports and Imports of Goods and Services for the United States, as Percentages of GDP



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### Current Account Surplus

Current Account Surplus (CA)  
 = net exports (exports minus imports) + net  
 factor payments (net income to domestic  
 residents from abroad)

$CA \approx NX$   
 (because net factor payments is small)

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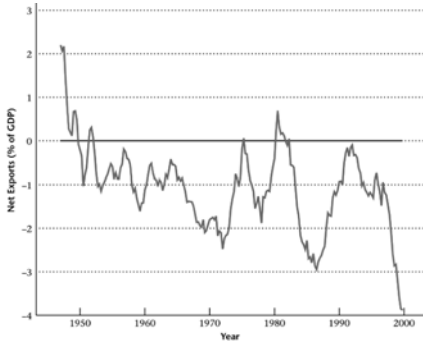
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Figure 1-14 Net Exports



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### Current Account Deficit

It is important when financed by borrowing.

1. To smooth consumption
2. If borrowing is used to add to the nation's productive capacity

Short-run borrowing for higher future living standards.

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### Twin Deficits (mid-to-late 1980s)

- Government Budget Deficit
- Current Account Deficit

Whenever borrowing is done from abroad.

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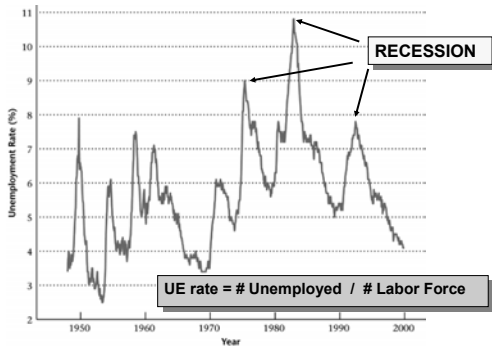
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Figure 1-15 The Unemployment Rate in the United States, 1948-1999



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### Explaining UE

1. Aggregate ECN activity (countercyclical)
2. Structure of population (baby boom)
3. Government intervention (insurance system)
4. Sectoral shifts (acquiring new skills)

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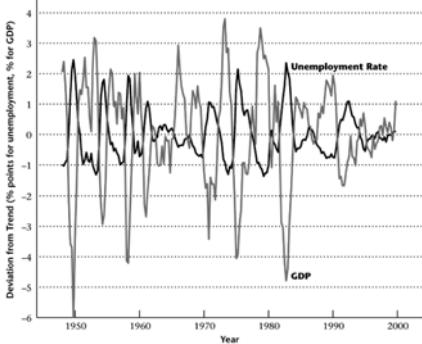
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Figure 1-16 Deviations from Trend in the Unemployment Rate (black line) and Percentage Deviations from Trend in Real GDP (colored line)



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## To do list

- Can you build a 'good' macroeconomic model that explains current and historical economic activity?

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