Chapter Goal:
• Discuss macro buzz-words:
  – GDP / Growth
  – Business Cycles
  – Unemployment
  – Inflation
  – Budget Surpluses / Deficits
• Identify macroeconomic policy challenges & tools available for meeting them

Questions…
• Will tomorrow’s world be more prosperous than today?
• Will jobs be plentiful?
• Will the cost of living be stable?
• Will the government and the nation go into (and stay in) deficit again?

Questions…
• These are types of macroeconomic questions
• They can be broken down into two fields.
  – Long-term questions / goals
  – Short-term questions / goals
• The distinction lies in the time frame of your particular question

Long vs. Short-term Goals
• Short-term: Improving upon what is happening now
  – Decrease unemployment
  – Get economy out of a recession
• Long-term: Improving upon persistent features of the economy
  – Keep economic growth high
  – Keep inflation stable

Long vs. Short-term goals…
• The time frame depends on which result you’re most concerned with
  – Potential GDP
  – Real GDP
Long-term vs. Short-term output

• Long-term concerns about output deal with economic growth - expansion of production possibilities.

• Short-term concerns about output deal with an economy’s Business Cycle

Business-Cycles

• Every business cycle has two phases:
  1. A recession
  2. An expansion

• and two turning points:
  1. A peak
  2. A trough

Business-Cycles

• recessions occur when real GDP decreases for at least two successive quarters.

• expansions when real GDP increases.

Are Growth and Business-Cycles Related?

• Yes
  – Short-term realizations influence our Long-term goals

Other Short-term relationships?

• When output falls, the number of workers needed falls.

• Unemployment has serious economic consequences
  – Lost production and incomes
Output and Prices?

• **Inflation** is a process of rising prices.
  – measured as percentage change in the average price level.

• Changes in inflation are a problem if they are unanticipated.
  – Most contracts are written in nominal (price-level) terms.

The Government

• Budget Surplus / Deficit
  – If a government collects more in taxes than it spends, it has a government budget surplus.
  – If a government spends more than it collects in taxes, it has a government budget deficit.

International Accounting

• International Surplus / Deficit
  – If a nation imports more than it exports, it has an international deficit.
  – If it exports more than it imports, it has an international surplus.
  – The current account deficit / surplus is the balance of exports minus imports, plus net interest paid to and received from the rest of the world.

Inflation in the US

Persistent deficits can have serious consequences...

• Your federal government will spend over $222 Billion on servicing the interest payments on its debt this year
  • That’s 10% of its total spending!

International Accounting

• If we want Chinese goods – we will need Chinese Yuan.
  – If China wants to buy US goods, we trade Dollars for Yuan.
  – If not, they’ll accept debt.
Macro Policy Challenges…

- Boost economic growth
- Keep inflation low
- Stabilize the business cycle
- Reduce unemployment
- Reduce government and international deficits

Macro Policy Tools…

- Two groups of macro policy:
  1. Fiscal policy — making changes in tax rates and government spending
  2. Monetary policy — changes in interest rates and the amount of money in the economy

The Big Picture…

- We’ll learn how to build economic models to analyze how these policy tools influence an economy and get us to our goals.

  - Before that – we need to think about how we measure things like Growth, Inflation, Unemployment, etc.

Economics 1002

Chapter 5:
Measuring GDP and Economic Growth

Topic Questions:

- What is GDP? How do we measure it?
- How do we compare GDP over time?
- How do we compare economic well-being across countries?

Game Plan…

- This chapter (as well as the next few) will show you how ‘loaded’ an economic definition can be – and what people mean when they refer to them.
Gross Domestic Product

- GDP - the market value of all final goods & services produced in a country in a given time period.
- This definition has four parts:
  - Market value
  - Final G&S
  - Produced within a country
  - In a given time period

Gross Domestic Product

- Market Value
  - To add apples and oranges, computers and popcorn, we add the market ($) values.

Gross Domestic Product

- Final G&S
  - A final good is bought by its final user during a specified time period.
  - contrasts with an intermediate good, a component of a final good or service.
  - Excluding intermediate goods and services avoids double counting.

Gross Domestic Product

- Produced within a country
  - Producers (of any nationality) within physical borders
  - Distinction from GNP (one nationality, anywhere in the world)
  - In a given time period
    - normally a year or a quarter of a year.

Illustrating the Calculation of GDP

- The circular flow model
  - illustrates the equality of income, expenditure, and production value.
  - The Punchline:
    - Whenever someone spends money, someone earns money
    - we can calculate ‘market value’ in two different ways.

The Circular Flow Model

- Illustrates transactions among
  - Households, Firms, Government, and the rest of the world

- These transactions take place in
  - Factor markets, Goods markets, and Financial markets
The basic setup...

Firms hire factors of production from households in the factor market.

Households buy final G&S from firms in the goods market.

Households save some income in financial markets & pay taxes.

Firms purchase capital goods from other firms. (Red flow (I) represents investment expenditure.)

Government buys G&S (G), and borrows if spending exceeds taxes (or repays debt).
The rest of the world buys G&S from us (X), and sells us G&S (M) — net exports are X - M

Note: the blue flows are income, the red flows are expenditures, and the green flows are borrowing / lending.

Punch Line: This model illustrates two ways of calculating GDP…

The Expenditure Approach
- Total expenditure on final G&S equals total value
- How much do the households, firms, government & r-o-w in our model purchase?
  \[ C + I + G + (X - M) = GDP \]

The Income Approach
- Firms pay out their receipts from sales of final G&S, so income equals expenditure
- What do households do with their income?
  \[ C + S + T = GDP \]

Then there’s the Financial Markets…
- Finance deficits, facilitate investment
- If govt purchases (G) exceed taxes (T), the deficit (G-T) is borrowed
- If imports (M) exceed exports (X), the deficit (M - X) is borrowed
Distinction: Gross & Net Domestic Product

- “Gross” = before accounting for depreciation.
  - Capital: stock of plants, equipment, & inventories that are used to produce other G&S.
  - Investment: flow that changes the stock of capital.
  - Depreciation: the decrease in capital stock that results from wear and tear.

Gross investment is spent new on capital and replacing depreciated capital.

Net investment is the change in the stock of capital – gross investment minus depreciation.

Real GDP and Prices

We’ve learned how to calculate nominal GDP – output in present prices.

We need a measurement that can be compared across time. What good is our measure if prices change?

Real GDP and Prices

Real GDP is the value of final G&S produced in a given year at constant prices.

There are two ways for calculating Real GDP.

Method One: Old way

Some data for 2002 & 2003:
- GDP in 2002 equals $200
- GDP in 2003 equals $575

Note: some of the increase is due to prices!

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<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Price</th>
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<td>Balls</td>
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Method One: Old way

- The old method simply selects one of the years as a base year and calculates all GDPs with the same set of prices.

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- GDP 2002 is unchanged, $200
- GDP 2003 is now $270 ($= 160 x $1 + 22 x $5)

Method Two: New Way

- A chain-weighted output index uses prices of adjacent years to calculate real GDP.
  - Step 1: Value at last year’s prices, calculate growth rate from year to year.
  - Step 2: Value at this year’s prices, calculate growth rate from year to year.
  - Step 3: Calculate average of the two growth rates. (This is the growth rate of real GDP).
  - Step 4: Repeat steps 1, 2, and 3 for each pair of adjacent years to link real GDP back to the base year’s prices.

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- Step 1 is done.
  - RGDP 2002 = $200
  - RGDP 2003 = $270
- The 2003 growth rate in 2002 prices is 35%.

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- Step 2.
  - RGDP 2002 = $500
  - RGDP 2003 = $575
- The 2003 growth rate in 2003 prices is 15%.

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- Step 3.
  - The average growth rate is 25%

- Step 4.
  - Real GDP in 2003 is $250.
    - A 25% increase from $200
Calculating the Price Level

- The price level is an average level of prices of all G&S.

- GDP deflator: an average of GDP prices in the current year, expressed as a percentage of the base year prices.

GDP Deflator

- GDP Deflator = (NGDP/RGDP) × 100.
- In 2002, the GDP deflator is ($200/$200) × 100 = 100.
- In 2003, the GDP deflator is ($575/$250) × 100 = 230.

<table>
<thead>
<tr>
<th>Year</th>
<th>Nominal GDP</th>
<th>Real GDP</th>
<th>GDP deflator</th>
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<tr>
<td>2002</td>
<td>$200</td>
<td>$200</td>
<td>100</td>
</tr>
<tr>
<td>2003</td>
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<td>$250</td>
<td>230</td>
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Deflating GDP

Nominal GDP is Real GDP inflated by 230%!

Measuring Economic Growth

- economic growth rate: the % change in quantity of G&S from one year to the next.

- We measure economic growth to make:
  - Economic welfare assessments
  - International welfare comparisons
  - Business cycle forecasts

Economic Welfare

- “If we’re growing, we’re better off”
- Some pitfalls…
  - Neglects quality changes
  - Household production / underground economy not calculated
  - Health / environmental damage / anything nonproductive (leisure) not calculated
### International Comparisons

- Compares welfare across countries.
- Two problems arise…
  - Real GDP of both countries must be converted into the same currency units (an exchange rate must be used).
  - The same prices should be used to value G&S in both countries.

### Business Cycle Forecasts

- Measure business cycle fluctuations.
  - Expansions / recessions
- Fluctuations are accurately timed, but changes in real GDP may overstate changes in total production and welfare caused specifically by business cycles.
  - There may be more going on than a business cycle.