Measuring GDP, Inflation, and Unemployment

GDP, Inflation, and Unemployment

• The 3 major macroeconomic performance indicators
• Definitions & measurement
• Flows & Stocks
  – Flows: measured per period of time
    • income statement
  – Stocks: measured at a point in time
    • balance sheet

A Simple Model of the Economy

• Assumptions
  – Only business firms and households
  – Only business firms produce goods & services
  – Only households own factors of production
  – There is no savings; there is no investment
  » Figure 2-1

Figure 2-1
The Circular Flow of Income and Consumption Expenditures

A Simple Model of the Economy

• Conclusions
  – Income (Y) = Factor payments
  – Consumption (C) = Production
  – Income (Y) = Consumption expenditures (C)
  – Income (Y) = Production of goods and services

  – Output can be measured from either:
    • the income side, or
    • the product side

Extending the Simple Model

• Gross Private Domestic Investment
  – Adds to the economy’s stock of income-yielding assets
  – Classification
    • Fixed Investment
      – Business Investment
      » Structures
      » Equipment
      – Residential Investment
    • Inventory Investment
Extending the Simple Model

• Assumptions
  – Only business firms and households
  – Only business firms produce goods & services
  – Only households own factors of production
  – Households can save
  – Business firms can invest
    » Figure 2-3

Extending the Simple Model

• Development of the Capital Markets
  – Households buy stocks and bonds issued by the business firms
  – Households deposit savings in financial institutions that lend the money to business firms

Extending the Simple Model

• Conclusions
  – Savings “leaks” from the income/consumption stream
  – Investment “injects” spending back into the system
  – Leakages and injections must equal

Extending the Simple Model

• Net Exports
  – Exports: domestic production/foreign sales
    • creates domestic income, not spending
  – Imports: foreign production/domestic sales
    • creates domestic spending, not income
  – Net exports: exports - imports
    • a component of GDP
    • if exports > imports, then GDP is higher
    • if exports < imports, then GDP is lower
  – Net foreign investment

Extending the Simple Model

• Government
  – Types of expenditures
    • government purchases
    • transfer payments
  – Classification of government purchases
    • Federal government
      – Defense
    • State government
    • Local government
    » Figure 2-4
Extending the Simple Model

• With equations
  \[ Y = E \]
  \[ E = C + I + G + NX \]
  \[ Y + F = C + S + R \]
  \[ Y = C + S + (R - F) \]
  \[ Y = C + S + T \]

Extending the Simple Model

• Government Budget Deficit
  \[ G - T = S - (I + NX) \]

• Increased budget deficit can be financed by
  – more private savings
  – less private investment
  – less foreign investment/more foreign borrowing

Measuring GDP

• National Income & Product Accounts
  – NIPA or National Accounts
  – Accounting for all of the flows of income and expenditures in the economy

Measuring GDP

• Defining GDP:
  – all currently produced goods and services that are sold through the market (but are not resold)
  – Currently produced
    • No used products
    • No transfer payments
    • No capital gains
Measuring GDP

• Defining GDP (continued)
  – Sold on the market
    • No value of non-paid personal time
    • No externalities
    • No illegal activities
    • The puzzling case of consumer durable spending
    • The puzzling case of government expenditures

– But not resold
  • during the current time period
  • intermediate versus final goods
  • double counting versus value added
  » Figure 2-2

Measuring GDP

• GDP versus GNP
  – GDP: goods and services produced in the US regardless of who owns the factors of production
  – GNP: goods and services produced by US owned factors of production regardless of where the production takes place
  – GNP < GDP

Measuring GDP

• Real versus Nominal Magnitudes
  – Nominal magnitudes: include price effects
  – Real magnitudes: strip price effects out
    • expressed in the prices of an arbitrarily chosen base year, currently 1992

• Calculating GDP
  – must add together all goods and services
  – must use prices to get values
  – since prices change, real GDP will depend on what prices we pick
### Measuring GDP

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**Measured at Year 1 Prices**

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**Measured at Year 2 Prices**

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**Geometric mean (year 2) = 1.13**

### Measuring Inflation

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**Measured at Year 1 Quantities**

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**Geometric mean (year 2) = 1.60**

### Measuring Unemployment

- Survey 60,000 households monthly
  - 25% rotation
- Employment Status of the Population
  - Total labor force
    - Military
    - Civilian labor force
      - employed
      - unemployed
  - Not in labor force
Measuring Unemployment

- **The Unemployment Rate:**
  - Ratio of the number of people unemployed to the number in the labor force, expressed as a percentage

\[
\text{Unemployment Rate} = \frac{\text{unemployed}}{\text{civilian labor force}} \times 100
\]

- **Shortcomings of the Unemployment Rate**
  - What does it mean to be employed?
  - Involuntary part-timers
  - What is the cost of unemployment?
  - Family head or teenager?
  - Does anybody fall through the cracks?
  - Discouraged workers

- **Do these Shortcomings Matter?**

Measuring Unemployment

- **Labor Force Participation Rate:**
  - The ratio of the number of people in the labor force to the adult population, expressed as a percentage

\[
\text{LFPR} = \frac{\text{Labor Force}}{\text{Adult Population}} \times 100
\]

- **Employment-Population Ratio:**
  - The ratio of the number of people employed to the adult population, expressed as a percentage

\[
\text{EPR} = \frac{\text{Employed}}{\text{Adult Population}} \times 100
\]

GDP and Unemployment

- **Okun’s Law**
  - There is a close negative relationship between
    - the output ratio, \(Y/Y(n)\), and
    - the unemployment rate
  - The percentage point change in the unemployment rate is approximately 1/2 times the percentage point change in the output ratio, but in the opposite direction

Figure 2-6

The U.S. Ratio of Actual to Natural Real GDP (\(Y/Y(n)\)) and the Unemployment Rate, 1965–96
Okun’s Law

\[ U = U(n) - h \times (100 \times (Y / Y(n)) - 100) \]

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<thead>
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<th>U(n)</th>
<th>h</th>
<th>Y / Y(n)</th>
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<tr>
<td>11.2</td>
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<td>0.90</td>
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<tr>
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<td>6.2</td>
<td>0.5</td>
<td>0.95</td>
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<td>6.2</td>
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<td>1.00</td>
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<tr>
<td>3.7</td>
<td>6.2</td>
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<td>1.10</td>
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