Measuring GDP, Inflation, and Unemployment

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

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

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

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

Figure 2-1: The Circular Flow of Income and Consumption Expenditures
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
      – Nondefense
    • State government
    • Local government

Figure 2-4
Extending the Simple Model

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

- “Leakages” must equal “Injections”

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

### Measuring Inflation

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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, \( \frac{Y}{Y(n)} \), and
    • the unemployment rate
  – Figure 2-6
  – 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
Okun’s Law

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

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<th>U(n)</th>
<th>h</th>
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The Goals of Stabilization Policy

- Costs of a Fully Anticipated Inflation: Creeping Inflation versus Hyperinflation
  - Welfare Cost of Lower Real Money Balances
    - Money does not receive a market interest rate
    - No interest is paid on required reserves
    - Below market rates are subsidized by deposit insurance
  - Several consequences
    - Convenience use of money is reduced
    - "Shoe-leather" costs
    - Costs of an anticipated hyperinflation

- Costs of a Fully Anticipated Inflation: Creeping Inflation versus Hyperinflation
  - Summary: Costs of Inflation
    - From unanticipated inflation
      - Redistribution of income from creditors to debtors
    - From anticipated inflation
      - "Shoe-leather" costs from minimizing real cash balances
      - Changes in relative costs
      - Redistribution of income if real interest rates change
      - Redistribution of income from non-inflation neutral tax system

- Indexation and Other Reforms to Reduce the Costs of Inflation
  - Introduction
    - There are a number of reforms that can substantially cut the costs imposed by inflation
  - Decontrol of Financial Institutions
  - Indexed Bonds
    - \( i = r(0) + p \)
  - Index Tax System
    - Institute an inflation-neutral tax system

The Goals of Stabilization Policy

- Why the Unemployment Rate Cannot Be Reduced to Zero
  - Distinguishing the Types of Unemployment
    - Cyclical unemployment
      - Difference between actual and natural unemployment
      - Can be negative
    - Turnover unemployment
      - Frictional unemployment
    - Mismatch unemployment
      - Structural unemployment
    - Turnover and mismatch = natural unemployment

The Goals of Stabilization Policy

- Low Inflation and Low Unemployment
The Goals of Stabilization Policy

• Sources of Mismatch Unemployment
  – Causes of and Cures for Mismatch
    Unemployment: Mismatch Skills
    • Lack of job training
    • Inflexibility of relative wages
    • Discrimination
  – Causes of and Curves for Mismatch
    Unemployment: Mismatch Location

The Goals of Stabilization Policy

• Turnover Unemployment and Job Search
  – Reasons for Turnover Unemployment
    • The Economics of Job Refusal
      – Theory of “search” unemployment
      – Job search theory treats unemployment as a socially
        valuable, productive activity as unemployed individuals
        “invest” in their job search
      – Cost is cost of search plus loss wages
        » Benefit is “better” job and higher wages
      – Government’s ability to reduce is limited
  • Effects of Unemployment Compensation

The Human Costs of Recessions