Business Cycles

Module Objectives

• Know the causes of business cycles
• Know how interest rates are determined
• Know how various economic indicators behave over the business cycle
• Understand the benefits and limitations of countercyclical fiscal policies

What Are Business Cycles?

• Business cycles are short-run deviations of the economy from its long-run trend
• Cycles are irregular rather than fixed in duration
  – Typically, a complete cycle lasts 5 to 7 years
  – The expansion phase of the cycle typically lasts longer than the contraction phase

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Cyclical Behavior of Indicators

• Many macroeconomic indicators exhibit cyclical behavior
  – *Procyclical* variables move up during the expansion phase of the cycle and down during the contraction phase
  – *Countercyclical* variables move down during the expansion phase of the cycle and up during the contraction phase

What Causes Cycles?

\[ Y_t = A_t K_t^\alpha L_t^{1-\alpha} \]

• Assess the importance of short-run movements of \( L, K, \) and \( A. \)

Capital is Too Smooth

![Graph showing Capital Stock and GDP over time]

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Labor is Very Procyclical

Technology Shocks are Important

Simple Keynesian Model

• Consumption function
  – marginal propensity to consume (MPC)
• Multiplier
  – depends on MPC
• Recessions could be caused by deficient aggregate demand
• Suggests countercyclical fiscal policy
  – tax cut
  – spending increase

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**Permanent Income Hypothesis**

- Consumption depends on
  - permanent income
  - current income
  - future income
  - interest rate
  - age (in Life-Cycle Hypothesis)

**Implications**

- Marginal Propensity to Consume
  - is not well defined
  - is close to one for permanent changes in income
  - is close to zero for transitory changes in income
  - increases with age (in Life-Cycle Hypothesis)

**Capital and Investment**

- $K$ is an input in the production function
- Investment is a component of aggregate demand
- $K_{t+1} = K_t + I_t - \delta K_t$
- Net Investment = $I_t - \delta K_t$
- Net Investment is about 2-3% of $K$
  - Large fluctuations in net investment cause only small changes in $K$
  - $K$ is very smooth
Investment Demand

- Net marginal rate of return on capital
  \[ MPK_{t+1} - \delta \]
- Market rate of interest is \( r \)
- Compare the two returns
- Investment demand depends on expectations about the future MPK

Investment Demand Curve

Shifts in Investment Demand

\[ MPK = \alpha A(K/L)^{\alpha - 1} \]

- Changes in capital-labor ratio
  - cross-country comparisons
  - ongoing population growth
  - baby boom
- Technology shocks
  - ongoing technological improvement
  - temporary productivity shocks

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Equilibrium Interest Rate

Temporary Productivity Shock
Closed Economy
Future Productivity Shock
Closed Economy

Stock Prices and Interest Rates
- Leftward shift of saving curve
  - higher interest rates (lower bond prices)
  - constant or lower profits
  - lower stock prices
- Rightward shift of investment curve
  - higher interest rates (lower bond prices)
  - higher profits
  - probably higher stock prices

Countercyclical Fiscal Policies
- Temporary tax cuts
  - raise private disposable income
  - how much does private consumption increase?
- Temporary government spending

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Difficulties with Countercyclical Government Purchases

• Lags
  – inside lag
    • recognition
    • implementation
  – outside lag
• Forecasting
• Ignorance of parameters (e.g., MPC)
• Changing parameters
  – expectations

Civilian Working-Age Population

<table>
<thead>
<tr>
<th>Status</th>
<th>Percentage</th>
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<tr>
<td>Employed</td>
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</tr>
<tr>
<td>Unemployed</td>
<td>6.68</td>
</tr>
<tr>
<td>Not in Labor Force</td>
<td>66.88</td>
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</tbody>
</table>

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Labor Market Puzzles

• Why would we ever observe unemployment?
  – Is it equivalent to excess supply of labor?
  – Why doesn’t wage rate adjust?

• Why do we simultaneously observe unemployment and job vacancies?
Frictions in the Labor Market

• Heterogeneity of workers and jobs
  – Workers differ in skills
  – Jobs also differ
  – There is a gain from appropriately matching workers and jobs
• Imperfect information
  – Prevents instantaneous matching
  – Leads to job search

Model of Labor Turnover

• A substantial amount of turnover in the labor force is normal
• Notation:
  – $s$ is job separation rate
  – $f$ is job finding rate
  – $E$ is total employment
  – $U$ is total unemployment
  – $LF$ is labor force, and $LF = E + U$

Natural Rate of Unemployment

• The unemployment rate is $u = U/LF$
• The change in total employment
  $\Delta E = fU - sE$
• If $\Delta E = 0$, then
  $u = s/(s+f)$
• The natural rate of unemployment occurs when $\Delta E = 0$ and $s$ and $f$ are at their “normal” levels

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Long-Term Effects on the Natural Rate of Unemployment

- Demographic changes
  - young workers
  - female workers
  - ethnic differences
- Government policy
  - unemployment benefits
  - minimum wage
  - restrictions on firing workers
- Speed of economic change

Cyclical Unemployment

- Recessions temporarily raise the job separation rate, $s$, and lower the job finding rate, $f$
  - Countercyclical unemployment rate
- Unemployment rate is a lagging indicator
  - $f$ returns to normal only after output begins growing
  - Unemployment remains above the natural rate even after $s$ and $f$ return to normal

Total Unemployment Rate

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