Economic Fluctuations

Intermediate Macroeconomic Theory
Macroeconomic Analysis

University of North Texas
Significant short-run variations in aggregate output and employment

Business Cycles: 2-year to 5-year fluctuations around trends in real GDP and other related variables

Business cycles dates: http://www.nber.org/cycles.html
Stylized Facts about Economic Fluctuation

Business Cycles

- Significant short-run variations in aggregate output and employment
- Real GDP Growth in the U.S.

![Graph showing percent change from 4 quarters earlier with average growth rate = 3.5% between 1960 and 2000.](chart.png)
Significant short-run variations in aggregate output and employment

**Business Cycles:** 2-year to 5-year fluctuations around trends in real GDP and other related variables

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- Significant short-run variations in aggregate output and employment
- **Business Cycles**: 2-year to 5-year fluctuations around trends in real GDP and other related variables
Significant short-run variations in aggregate output and employment

**Business Cycles:** 2-year to 5-year fluctuations around trends in real GDP and other related variables

Business cycles dates: http://www.nber.org/cycles.html
(1) No simple regular or cyclical pattern: output changes very considerably in size and spacing

⇒ The economy is perturbed by disturbances of various types and sizes at more or less random interval
(1) No simple regular or cyclical pattern: output changes very considerably in size and spacing

<table>
<thead>
<tr>
<th>Year and quarter of peak in RGDP</th>
<th>Number of quarters until trough in RGDP</th>
<th>Change in RGDP, peak to trough (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1948:4</td>
<td>2</td>
<td>-1.7</td>
</tr>
<tr>
<td>1953:2</td>
<td>3</td>
<td>-2.7</td>
</tr>
<tr>
<td>1957:3</td>
<td>2</td>
<td>-3.7</td>
</tr>
<tr>
<td>1960:1</td>
<td>3</td>
<td>-1.6</td>
</tr>
<tr>
<td>1970:3</td>
<td>1</td>
<td>-1.1</td>
</tr>
<tr>
<td>1973:4</td>
<td>5</td>
<td>-3.4</td>
</tr>
<tr>
<td>1980:1</td>
<td>2</td>
<td>-2.2</td>
</tr>
<tr>
<td>1981:3</td>
<td>4</td>
<td>-2.9</td>
</tr>
<tr>
<td>1990:2</td>
<td>3</td>
<td>-1.5</td>
</tr>
</tbody>
</table>
Fluctuations are distributed very unevenly over the components of output.

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<thead>
<tr>
<th>Component of GDP</th>
<th>Average Share in GDP (%)</th>
<th>Average Share in fall in GDP in recessions relative to normal growth (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumption</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Durables</td>
<td>8.4</td>
<td>15.6</td>
</tr>
<tr>
<td>Nondurables</td>
<td>25.8</td>
<td>11.2</td>
</tr>
<tr>
<td>Services</td>
<td>29.5</td>
<td>9.1</td>
</tr>
<tr>
<td>Investment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential</td>
<td>4.7</td>
<td>20.9</td>
</tr>
<tr>
<td>Business Fixed</td>
<td>10.7</td>
<td>11.7</td>
</tr>
<tr>
<td>Inventories</td>
<td>0.7</td>
<td>40.6</td>
</tr>
<tr>
<td>Net Export</td>
<td>-0.4</td>
<td>-12.3</td>
</tr>
<tr>
<td>Gov’t Purchases</td>
<td>20.6</td>
<td>3.3</td>
</tr>
</tbody>
</table>
(2) Fluctuations are distributed very unevenly over the components of output

1. Investment is the most volatile component

2. Consumption, government purchases, and net exports are relatively stable
(2) Fluctuations are distributed very unevenly over the components of output

1. Investment is the most volatile component
2. Consumption, government purchases, and net exports are relatively stable
(3) The behavior of some important macroeconomic variables during recession: procyclical or countercyclical

- Cyclical behavior of key macroeconomic variables
(3) The behavior of some important macroeconomic variables during recession: procyclical or countercyclical

1. **Procyclical** variable: an economic variable that moves in the “same” direction as aggregate economic activity

2. **Countercyclical** variable: an economic variable that moves in the “opposite” direction as aggregate economic activity
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2. Time Horizons in Macroeconomics
3. The Model of Aggregate Supply and Aggregate Demand
4. Stabilization Policy
5. Real Business Cycle (RBC) Theory
Short Run (SR) versus Long Run (LR)

⇒ Economic policies have different effects over different time horizon

- Flexible prices and classical macroeconomic theory
- Sticky prices and Keynesian macroeconomic theory
Short Run (SR) versus Long Run (LR)

1. LR: prices are flexible and can respond to changes in supply or demand

2. SR: many prices are sticky at some predetermined level

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Time Horizons in Macroeconomics

- **Short Run (SR) versus Long Run (LR)**
  - Economic policies have different effects over different time horizon
- **Flexible prices and classical macroeconomic theory**
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Time Horizons in Macroeconomics

- Short Run (SR) versus Long Run (LR)
  - Economic policies have different effects over different time horizon

- Flexible prices and classical macroeconomic theory
  - The economy’s ability to supply goods and services ($Y_S$)
  - With flexible prices, $Y_S = Y_D$ (Say’s Law)
    - Classical dichotomy: theoretical separation of real and nominal variables [monetary neutrality]

- Sticky prices and Keynesian macroeconomic theory
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- **Short Run (SR) versus Long Run (LR)**
  
  ⇒ Economic policies have different effects over different time horizon

- **Flexible prices and classical macroeconomic theory**

- **Sticky prices and Keynesian macroeconomic theory**
  
  - Output also depends on the demand for goods and services
  
  - Monetary policy and fiscal policy may be useful in stabilizing the economy in the short run
  
  ⇒ Monetary nonneutrality
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Aggregate Demand (AD)

- **AD**: The relationship between the quantity of output demanded ($Y_D$) and the aggregate price level ($P$)

- The quantity equation as AD: $MV = PY$ or $M/P = kY$

- Why the AD curve slopes downward

- Shifts in the AD curve
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- The quantity equation as AD: $MV = PY$ or $M/P = kY$
  
  - For any fixed $V$ (or $k$), the quantity equation yields a negative relationship between $P$ and $Y$

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- Why the AD curve slopes downward

  Since \( V \) is fixed, \( M \) determines the dollar value of all transactions \( (PY) \) in the economy

  1. If \( P \) rises, so that each transaction requires more dollars, the number of transactions and thus quantity of goods and services purchased must fall \( (\downarrow Y) \)

  2. If \( Y \) is higher, people engage in more transactions and need higher real balances. For a given \( M \), higher real balances \( (M/P) \) imply a lower price level \( (\downarrow P) \)

- Shifts in the AD curve
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- Shifts in the AD curve
  1. Changes in $M$
  2. Changes in $V$
**AS**: The relationship between the quantity of output supplied \((Y_S)\) and the aggregate price level \((P)\)

- The firms that supply goods and services have flexible prices in the LR but sticky prices in the SR
- Long-run AS curve (LRAS)
- Short-run AS curve (SRAS)
- Changes in AD: Is money neutral?
- Transition from the SR to the LR
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  → **AS** depends on the time horizon

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- **AS**: The relationship between the quantity of output supplied \( Y_S \) and the aggregate price level \( P \)

- The firms that supply goods and services have flexible prices in the LR but sticky prices in the SR

- Long-run AS curve (LRAS)
  - The amount of output produced in the LR depends on the fixed amounts of capital and labor and on the available technology
  
  \[
  Y = F(K, L) = \bar{Y}
  \]
  
  - Output does not depend on the price level: the **vertical** LRAS curve

- Short-run AS curve (SRAS)

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- **AS**: The relationship between the quantity of output supplied ($Y_S$) and the aggregate price level ($P$)

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- The firms that supply goods and services have flexible prices in the LR but sticky prices in the SR

- Long-run AS curve (LRAS)

- Short-run AS curve (SRAS)
  - Sticky price in the SR: the horizontal SRAS curve

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- The firms that supply goods and services have flexible prices in the LR but sticky prices in the SR

- Long-run AS curve (LRAS)

- Short-run AS curve (SRAS)

- Changes in AD: Is money neutral?
  - Monetary neutrality in the LR and monetary nonneutrality in the SR

- Transition from the SR to the LR
**Aggregate Supply (AS)**

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Stabilization Policy

Fluctuations in the economy come from changes in AS and/or AD

- Stabilization policy: the policy actions aimed to reducing the severity of SR economic fluctuations

1. Shocks to AD
2. Shocks to AS
Fluctuations in the economy come from changes in AS and/or AD

- AD shocks & AS shocks: disrupt economic well-being by pushing output and employment away from their natural values

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1. **Shocks to AD**
   - Introduction and expanded available credit cards
     - $\Rightarrow$ Reduce the quantity of money people choose to hold
       $(\downarrow k(\uparrow V))$
   - The Fed can reduce $M$ to offset the increase in $V$

2. **Shocks to AS**
Stabilization Policy

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Stabilization policy: the policy actions aimed to reducing the severity of SR economic fluctuations

(1) Shocks to AD

(2) Shocks to AS

- Increase in the cost of producing goods and services
- Examples: the organization of an international oil cartel, bad weather, workers unionize
- The Fed can increase $M$ to accommodate the adverse supply shock
Early 1970s: OPEC coordinates a reduction in the supply of oil

Oil prices rose

1. 11% in 1973
2. 68% in 1974
3. 16% in 1975

Such sharp oil price increases are supply shocks because they significantly impact production costs and prices

1. SR: $Y < Y^n, u > u^n, \text{ and } P > P_0$
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Predicted effects of the oil price shock:

\[ \Rightarrow \uparrow \pi, \downarrow Y, \text{ and } \uparrow u \text{ and then a gradual recovery} \]
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Predicted effects of the oil price shock:

⇒ $\pi \uparrow$, $Y \downarrow$, and $u \uparrow$ and then a gradual recovery
Late 1970s: As economy was recovering, oil prices shot up again, causing another huge supply shock!!
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1980s: A favorable supply shock [a significant fall in oil prices]

⇒ Model predicts $\downarrow \pi$, $\uparrow Y$, and $\downarrow u$ and then a gradual recovery
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⇒ Model predicts ↓ $\pi$, ↑ $Y$, and ↓ $u$ and then a gradual recovery
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Real Business Cycle Theory

- **RBC** assumes that **prices are fully flexible, even in the short run**, and macroeconomic analysis should be based on this assumption.

- RBC emphasizes **real changes in the economy** to explain fluctuations in real variables.
RBC assumes that *prices are fully flexible, even in the short run*, and macroeconomic analysis should be based on this assumption.

- Consistent with classical dichotomy
- Nominal variable, such as the money supply and the price level, do not influence real variable, such as output and employment

RBC emphasizes *real changes in the economy to explain fluctuations in real variables*.
**Real Business Cycle Theory**

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- **RBC** emphasizes *real* changes in the economy to explain fluctuations in real variables.
Real Business Cycle Theory

- RBC assumes that prices are fully flexible, even in the short run, and macroeconomic analysis should be based on this assumption.
- RBC emphasizes real changes in the economy to explain fluctuations in real variables.
  - “Real” $\Rightarrow$ exclusion of nominal variables in explaining short-run economic fluctuation.
Crusoe’s decisions

⇒ Allocate time among swimming, fishing, and making nets based on preferences and the opportunities

RGDP = the number of fish caught + the number of net made

Crusoe’s decisions change as shocks impinge on his life

Fluctuations in output, employment, consumption, investment, and productivity are all the natural and desirable response of an individual to the inevitable changes in his environment

⇒ Fluctuations have nothing to do with monetary policy, sticky prices, or any type of market failure
Crusoe’s decisions

1. Leisure: swimming

2. Work: fish (consumption), nets (investment)

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1. A big school of fish: productivity and employment rise → ↑ Y (boom)
2. A storm: productivity and employment fall → ↓ Y (recession)

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