Business Cycle Measurement

ECO 305: Intermediate Macroeconomics

Introduction
Comovement
Volatility

Goals/Reading
Business Cycle Fluctuations
GDP Fluctuations

Goals / Reading   1/ 18

- Specific Goals:
    - Identify regularities (and irregularities) in macroeconomic activity.
    - Identify comovement in macroeconomic variables.
    - Describe the behavior of key macroeconomic variables.
- Reading: Williamson, Chapter 3.

Business Cycle Fluctuations   2/ 18

- **Business Cycle:**
  fluctuations around a
  trend in economic
  activity.
- **Peak:** a turning point
  in a business cycle at a
  large positive deviation
  from the trend.
- **Trough:** a turning
  point in a business
  cycle at a large
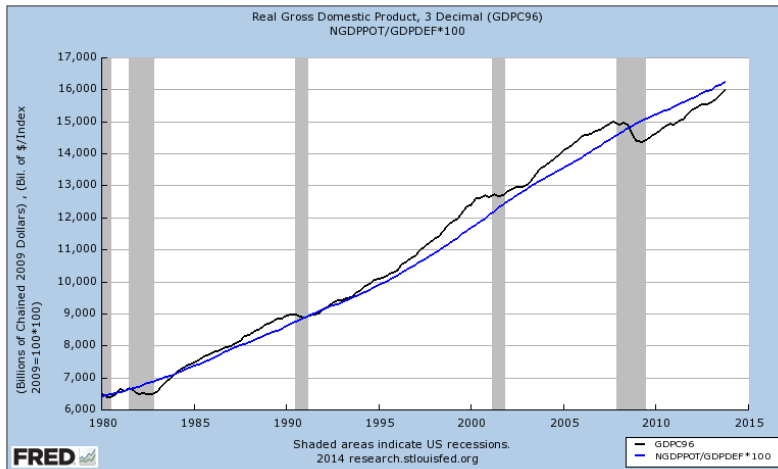 negative deviation from
  the trend.
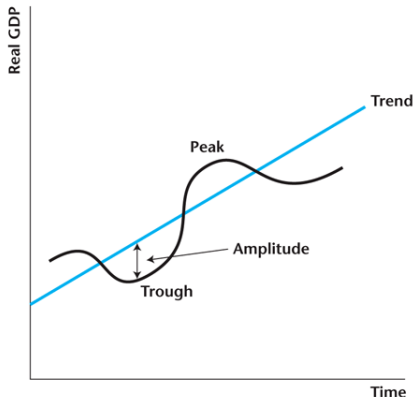
- **Real GDP**: A measure of the *quantity* of all final goods and services produced.
- **Potential GDP**: Value of real GDP if all factors of production are used efficiently. Trend GDP.
- **Output gap:** Percentage deviation of real GDP from potential.
- **Recessionary gap:** output gap that is negative.
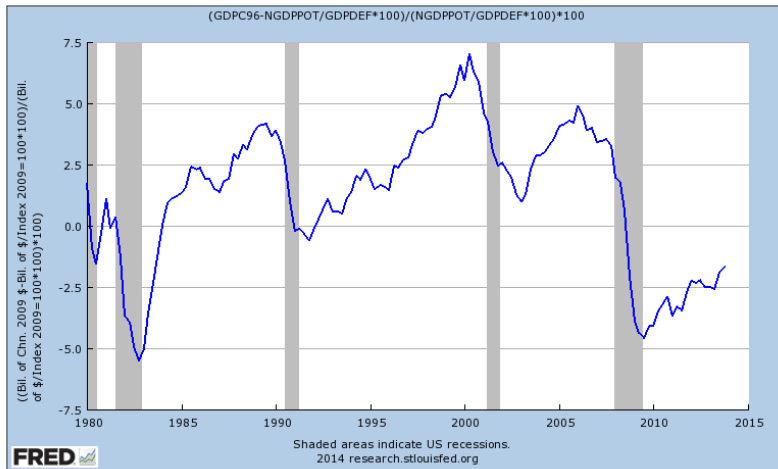- **Inflationary gap:** output gap that is positive.

Introduction
Comovement
Volatility

Goals/Reading
Business Cycle Fluctuations
GDP Fluctuations

Real GDP versus Potential GDP

http://research.stlouisfed.org/fred2

Introduction
Comovement
Volatility

Goals/Reading
Business Cycle Fluctuations
GDP Fluctuations

Output Gap

5/ 18

- **Procyclical:** A variable is procyclical if its deviations from trend are positively correlated with the output gap.
- **Countercyclical:** A variable is countercyclical if its deviations from trend are negatively correlated with the output gap.
- **Acyclical:** A variable is acyclical if it is *not procyclical nor countercyclical*.
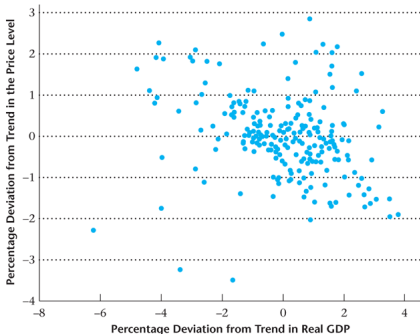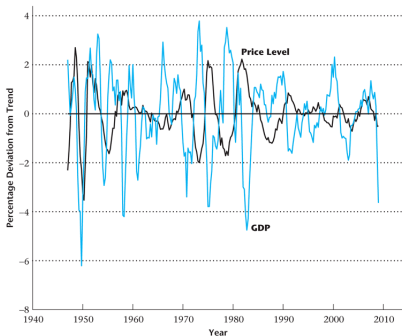
Introduction
Comovement
Volatility

Cyclicality
Leading and lagging variables
Examples

Comovement of Imports and GDP   7/ 18
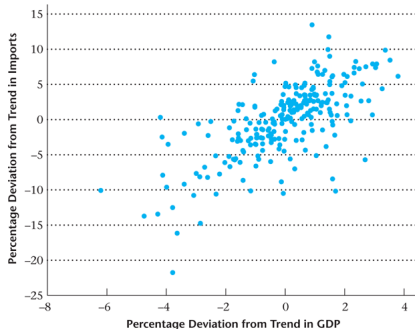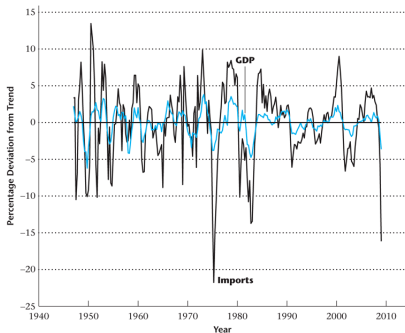
Are imports are procyclical, countercyclical, or acyclical?

Introduction
Comovement
Volatility

Cyclicality
Leading and lagging variables
Examples

Comovement of Price Level and GDP   8/ 18

Is price level procyclical, countercyclical, or acyclical?

Introduction
Comovement
Volatility

Cyclicality
Leading and lagging variables
Examples

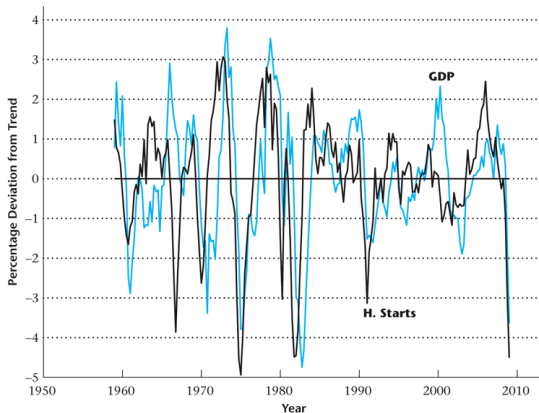Leading and Lagging Variables   9/ 18

- **Leading:** A variable is leading when it tends to predict upcoming movements in real GDP.

- **Lagging:** A variable is lagging when it tends to follow recent movements in real GDP.

- **Coincident:** A variable is a coincident variable when it is positively correlated with GDP, but not leading or lagging.

- **Leading Economic Indicators:** An index comprised of several leading economic variables, constructed using statistical forecasting techniques.
  - Conference Board's Index of Leading Economic Indicators.
  - Federal Reserve Bank of Philadelphia State and National Leading Indices.

Introduction
Comovement
Volatility

Cyclicality
Leading and lagging variables
Examples

Housing Starts

Light blue:
Real GDP
Dark blue:
Housing Starts

Is 'Housing Starts' a *leading*, *lagging*, or *coincident* economic variable?

Introduction
Comovement
Volatility

Cyclicality
Leading and lagging variables
Examples

Unemployment Rate   11/ 18

Blue Line:
Unemployment
rate

Black Line:
Output gap.
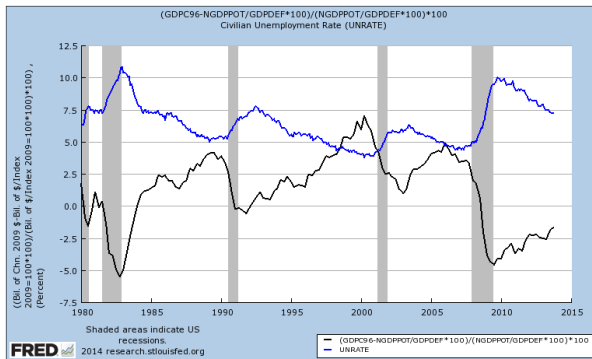
Is the unemployment rate a *leading*, *lagging*, or *coincident*
economic variable?

Introduction
Comovement
Volatility

Cyclicality
Leading and lagging variables
Examples

Unemployment Rate

12/ 18

Blue Line:
Unemployment
rate (multiplied
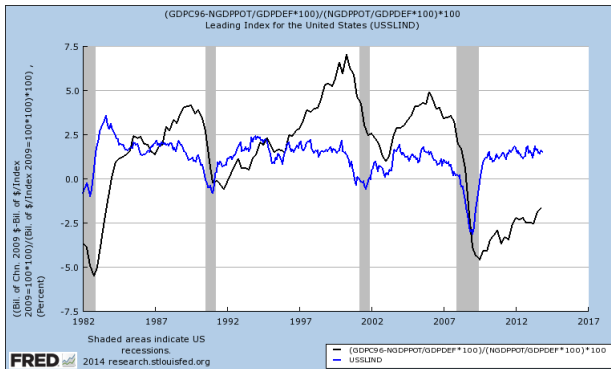by -1, scaled 7
percentage
points).

Black Line:
Output gap.
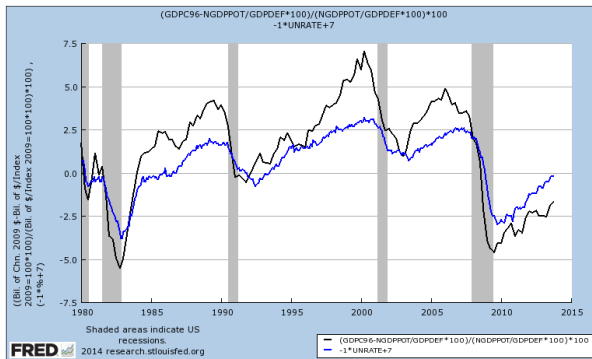
Is the unemployment rate a *leading*, *lagging*, or *coincident*
economic variable?

Introduction
Comovement
Volatility

Cyclicality
Leading and lagging variables
Examples

FRB Philadelphia National Leading Index

Blue Line:
  Leading Index
Black Line:
  Real GDP Growth

Introduction
Comovement
Volatility

Cyclicality
Leading and lagging variables
Examples

FRB Philadelphia National Leading Index

Blue Line:
  Leading Index
Black Line:
  Unemployment
Rate

Introduction
Comovement
Volatility

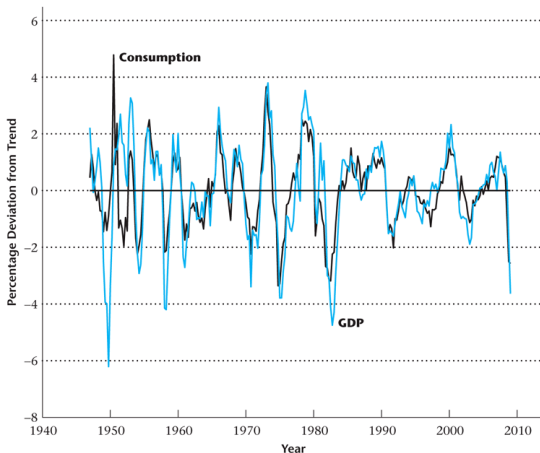**Measure of variance**
Consumption
Investment
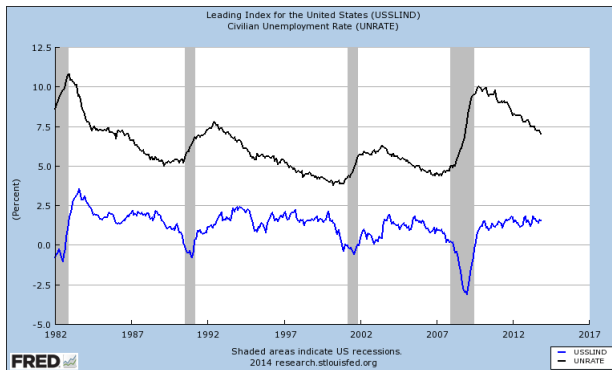
Volatility

- **Volatility** is a description of how much a variable deviates from its trend.

- Volatility is the opposite of stability.

- Typically measured by the variance of the variable's standard deviation from trend, as a ratio of the standard deviation of the output gap.

Introduction
Comovement
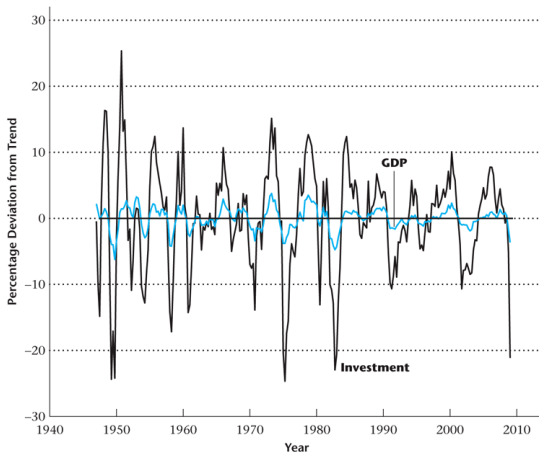**Volatility**

Measure of variance
Consumption
Investment

Consumption Volatility

16/ 18

Light blue:
Real GDP
Dark blue:
Consumption

Consumption Volatility = 75%.

Introduction
Comovement
Volatility

Measure of variance
Consumption
Investment

Investment Volatility   17/ 18

Light blue:
   Real GDP
Dark blue:
   Investment

Investment Volatility = 473%.

- Next class: One-period model of the macroeconomy.
- Please read Chapter 4
- Homework due Tuesday, February 6
  - Convert any Word documents to PDF.
  - Type up answers and upload to D2L dropbox.