

Business Cycle Measurement

ECO 305: Intermediate Macroeconomics

Goals / Reading

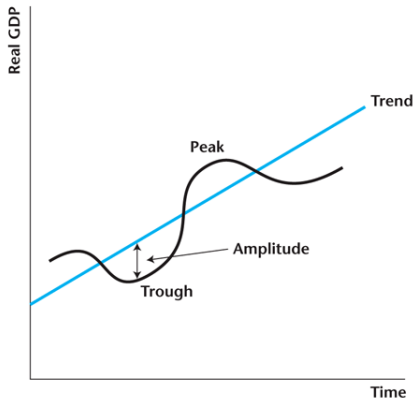
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- Specific Goals:
 - Identify regularities (and irregularities) in macroeconomic activity.
 - Identify comovement in macroeconomic variables.
 - Describe the behavior of key macroeconomic variables.
- Reading: Williamson, Chapter 3.

Business Cycle Fluctuations

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- **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.



GDP Deviations from Trend

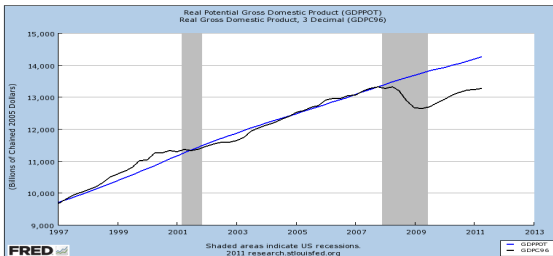
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- **Real GDP:** A measure of the *quantity* of all final goods and services produced.
- **Potential GDP:** Value of real GDP if all factors of production are used efficiently. Trend GDP.
- **Output gap:** Percentage deviation of real GDP from potential.
- **Recessionary gap:** output gap that is negative.
- **Inflationary gap:** output gap that is positive.

GDP Deviations from Trend

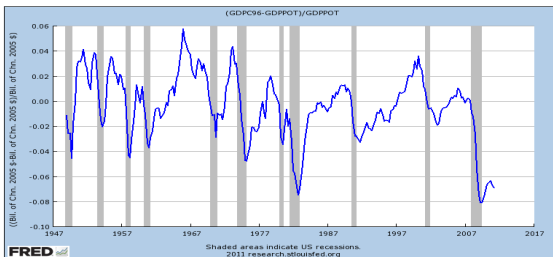
Top graph:

- Blue: Potential GDP
- Black: Real GDP



Bottom graph:

- Output gap.



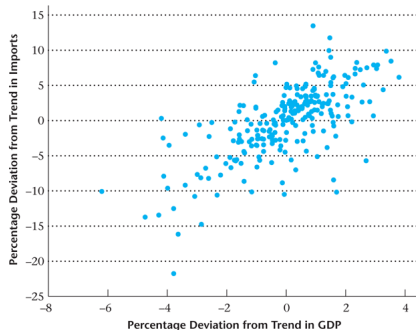
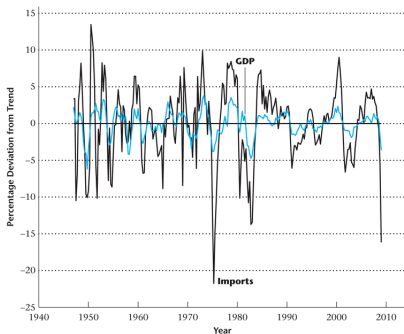
Comovement

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- **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*.

Comovement of Imports and GDP

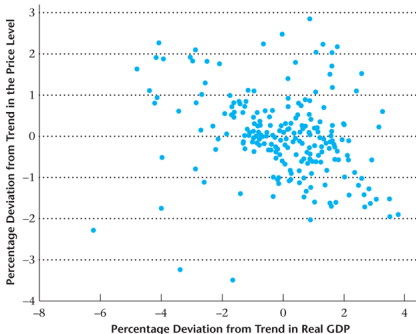
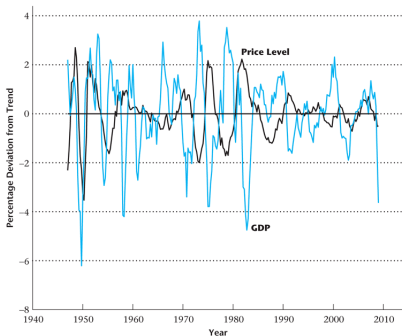
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Are imports are procyclical, countercyclical, or acyclical?

Comovement of Price Level and GDP

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Is price level procyclical, countercyclical, or acyclical?

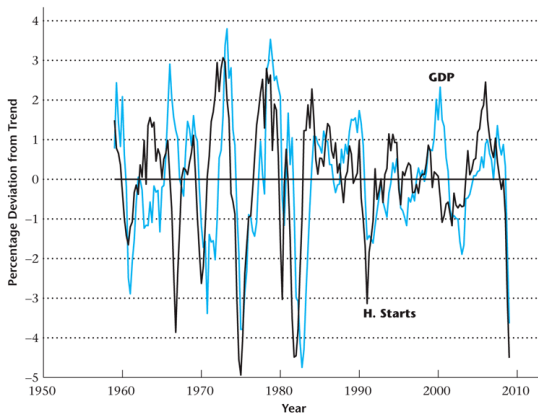
Leading and Lagging Variables

- **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.

Housing Starts

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Light blue:
Real GDP
Dark blue:
Housing Starts



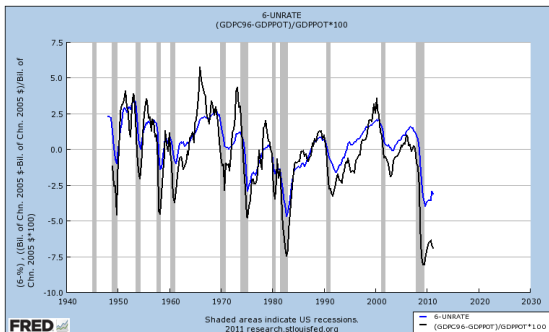
Is 'Housing Starts' a *leading*, *lagging*, or *coincident* economic variable?

Unemployment Rate

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Blue Line:
Unemployment rate:
deviation from mean,
multiplied by -1.

Black Line:
Output gap.

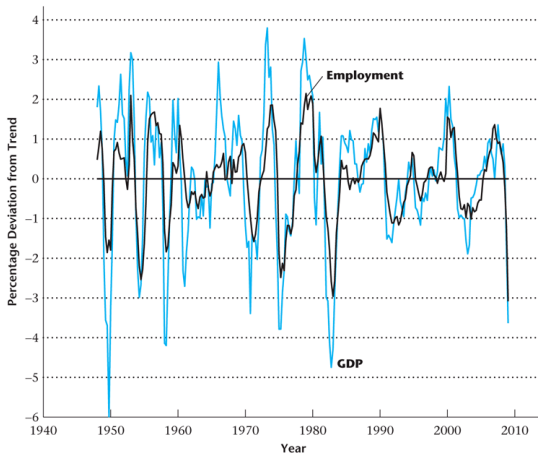


Is the unemployment rate a *leading*, *lagging*, or *coincident* economic variable?

Employment

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Light blue:
Real GDP
Dark blue:
Employment



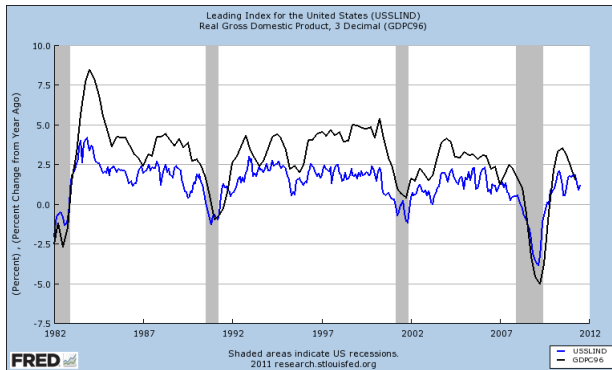
Is 'Employment' a *leading*, *lagging*, or *coincident* economic variable?

FRB Philadelphia National Leading Index

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Blue Line:
Leading Index

Black Line:
Real GDP Growth

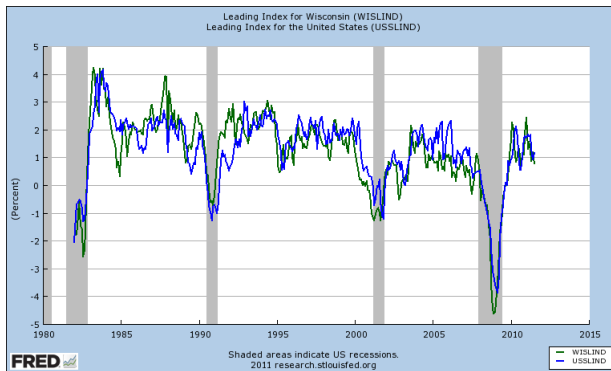


FRB Philadelphia Wisconsin Leading Index

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Blue Line:
National Leading
Index

Green Line:
Wisconsin Leading
Index

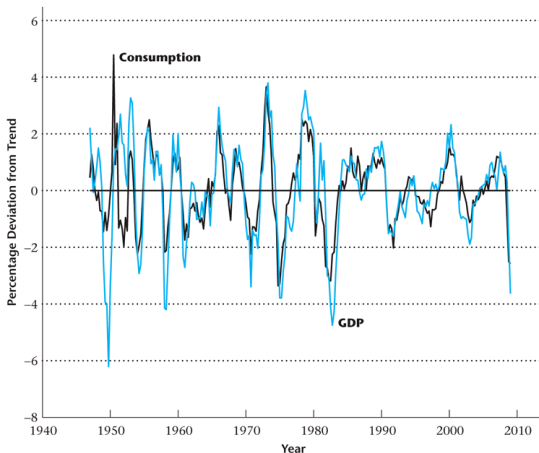


Volatility

- **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.

Consumption Volatility

Light blue:
Real GDP
Dark blue:
Consumption

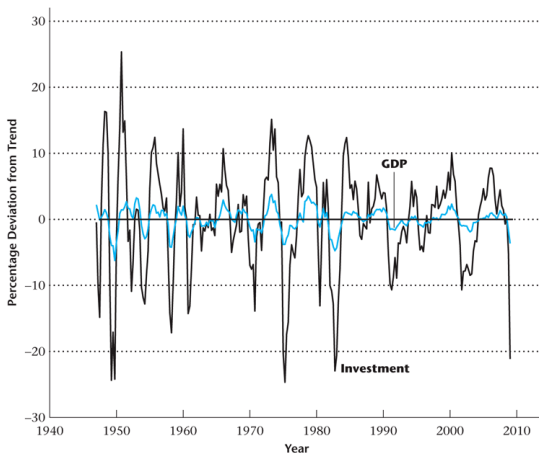


Consumption Volatility = 75%.

Investment Volatility

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Light blue:
Real GDP
Dark blue:
Investment



Investment Volatility = 473%.

Coming Up!

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- Next class: One-period model of the macroeconomy.
- Please read Chapter 4!
- Homework due Tuesday, Sept 13: Williamson, Chapter 3 problems: 2-6.
 - Convert any Word documents to PDF.
 - File name convention: lastname_firstname_hw1.pdf.
 - Type up answers and upload to D2L dropbox.