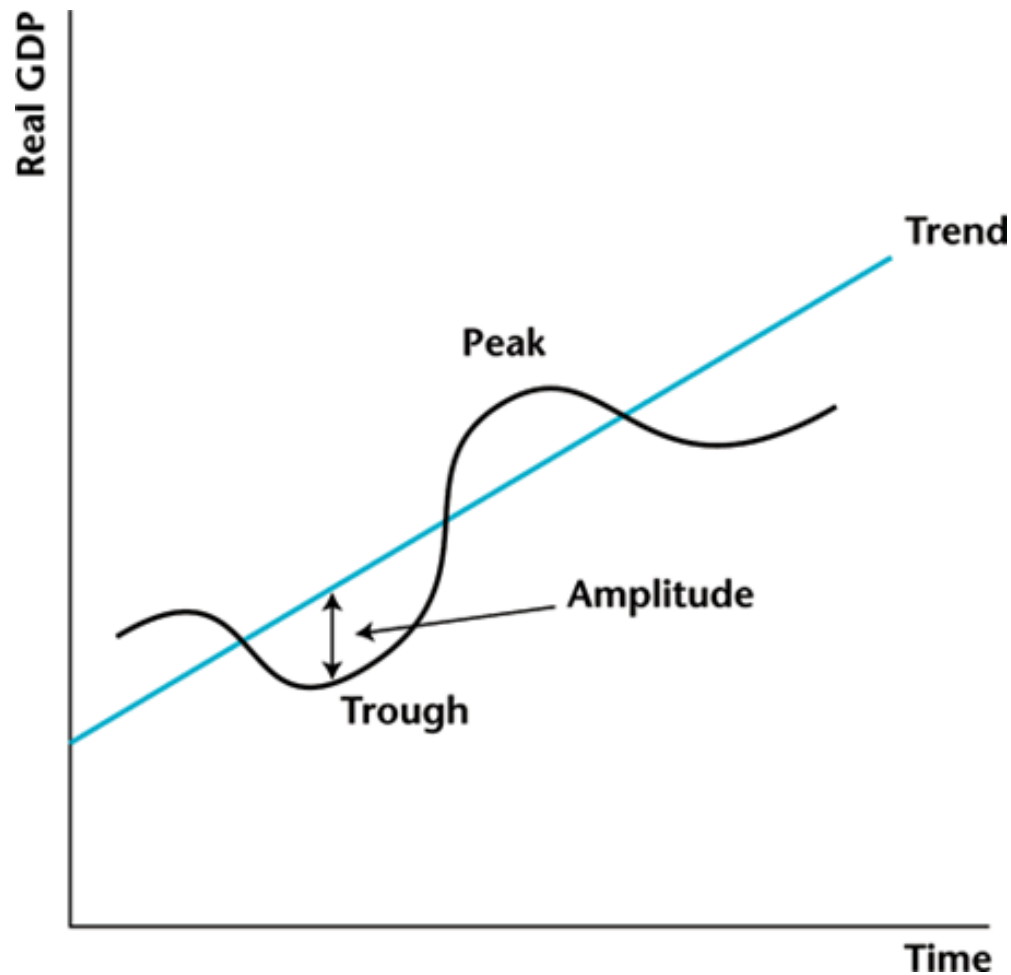# ECON3102-005
Chapter 3: Business Cycle Measurement

Neha Bairoliya

Spring 2014

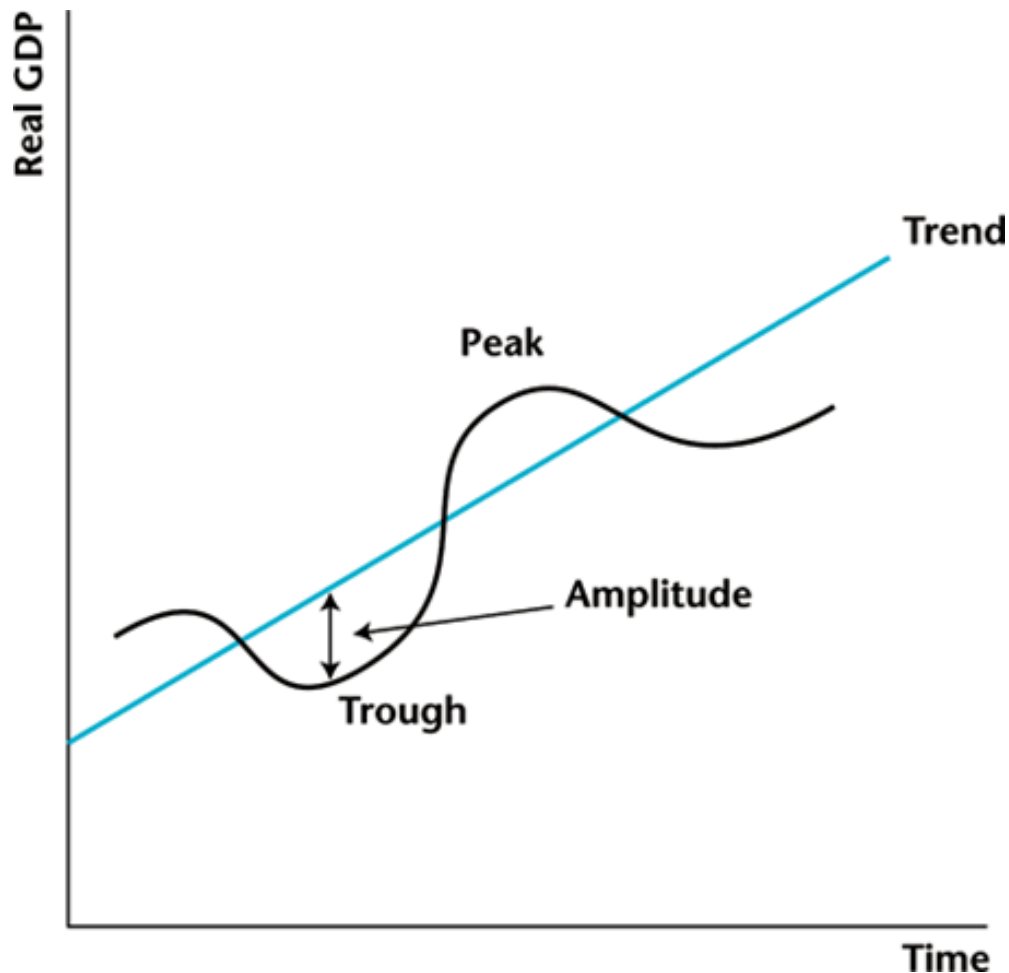# Regularities in GDP Fluctuations

Business Cycles are fluctuations about trend in real GDP.

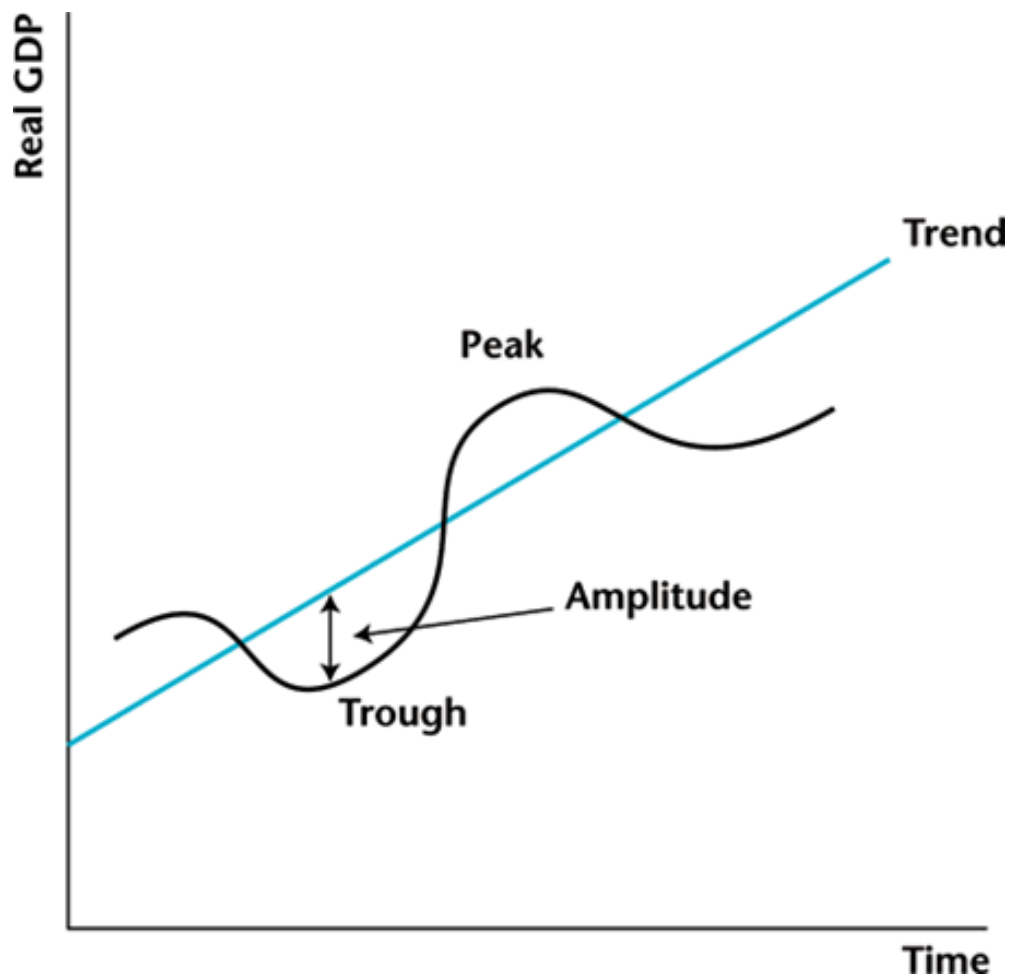# REGULARITIES IN GDP FLUCTUATIONS

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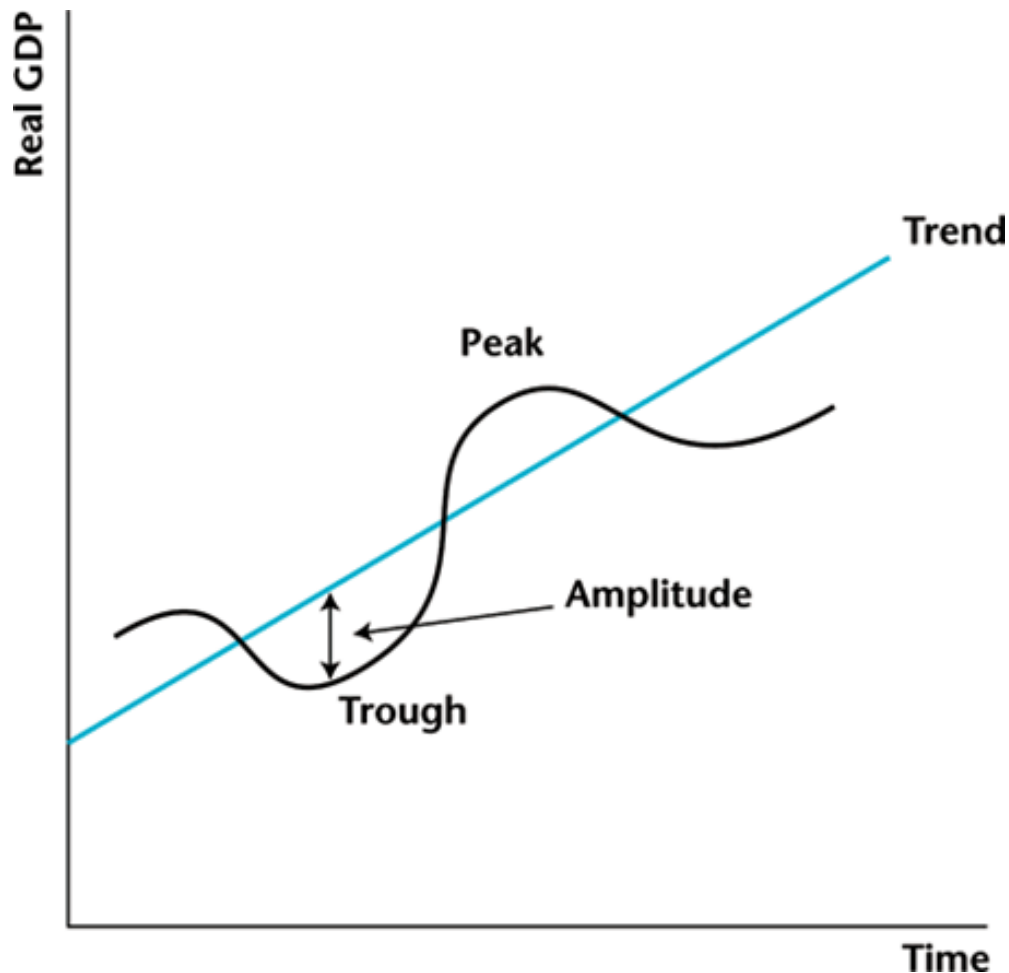# REGULARITIES IN GDP FLUCTUATIONS

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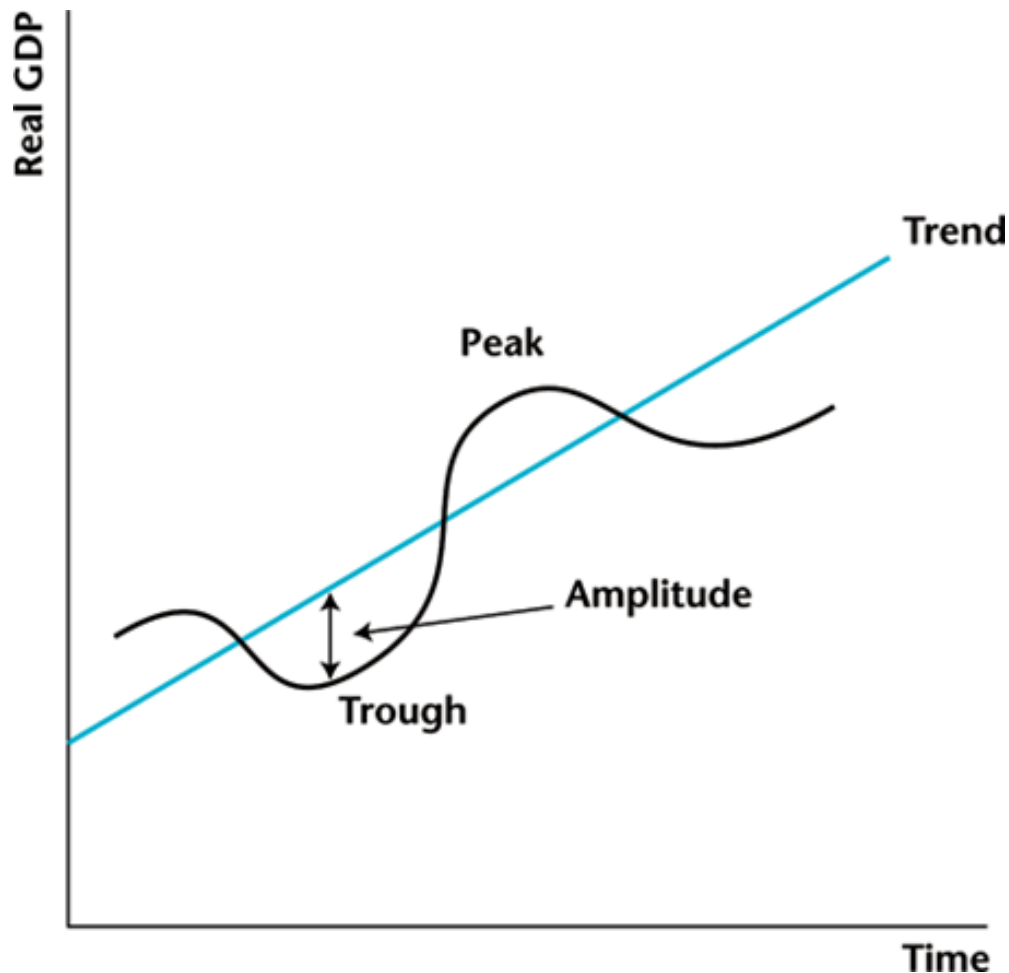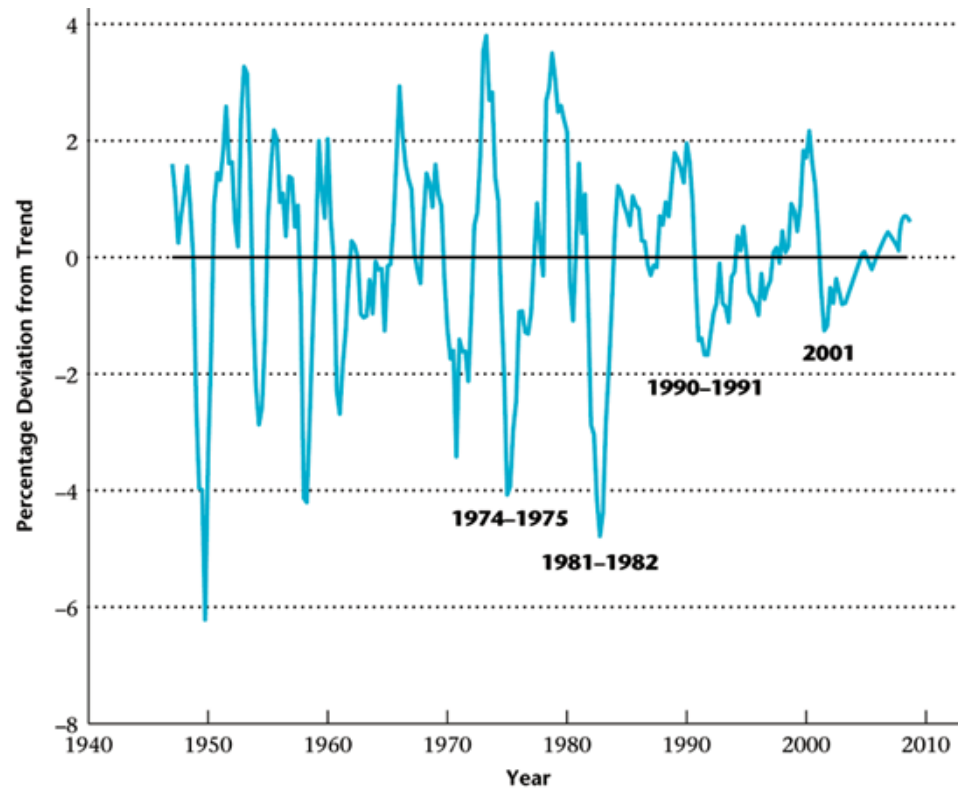# REGULARITIES IN GDP FLUCTUATIONS

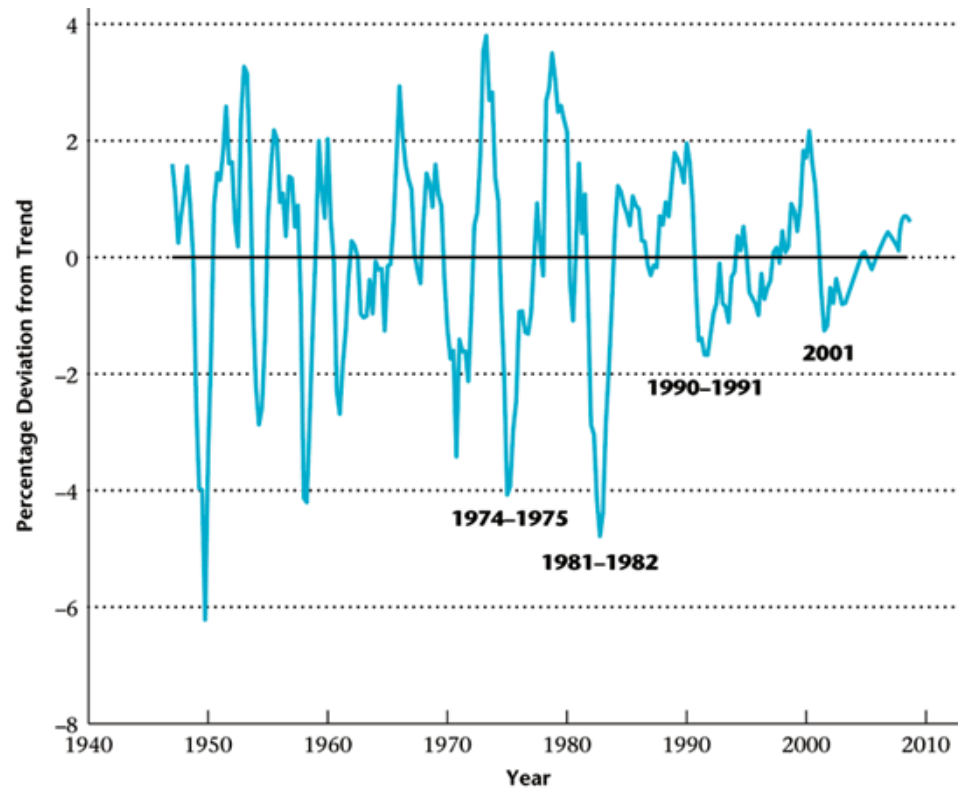Business Cycles are fluctuations about trend in real GDP.

- The turning points in the deviations of real GDP from trend are peaks and troughs.

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- The amplitude of the business cycle is the maximum deviation from trend.

- The frequency of the business cycle is the number of peaks in RGDP that occur per year.

Irregularities in GDP Fluctuations

Source: U.S. Department of Commerce.

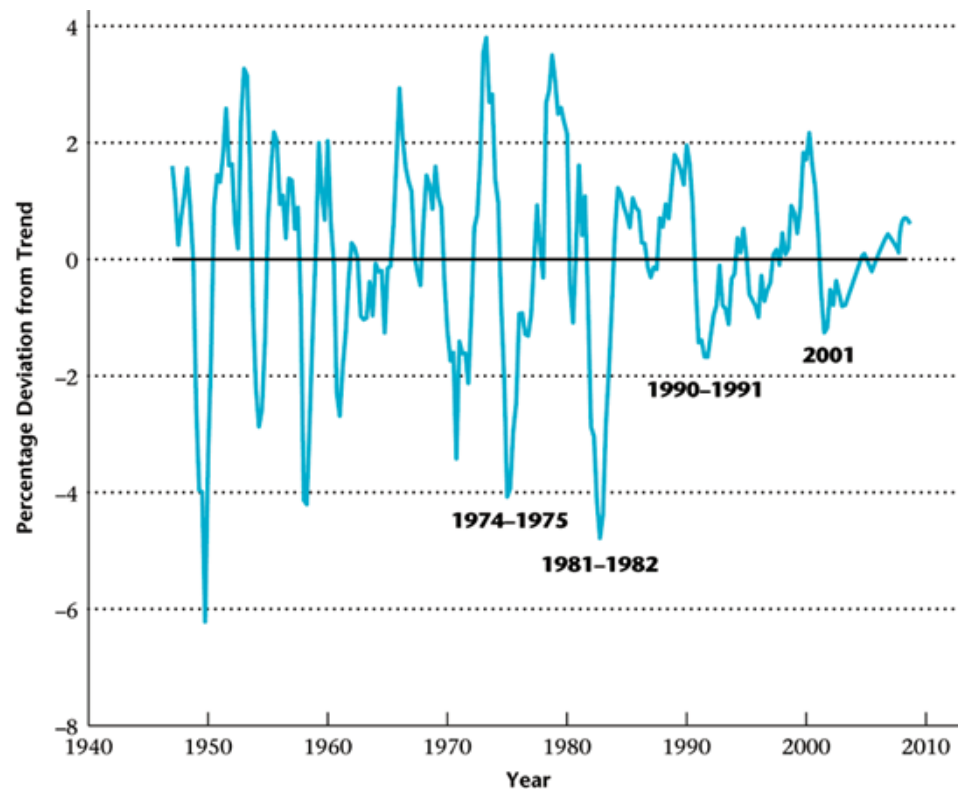# IRREGULARITIES IN GDP FLUCTUATIONS

Source: U.S. Department of Commerce.

- The fluctuations in GDP about trend are quite choppy.

Irregularities in GDP Fluctuations

Percentage Deviation from Trend vs. Year

2001
1990–1991
1974–1975
1981–1982

Source: U.S. Department of Commerce.

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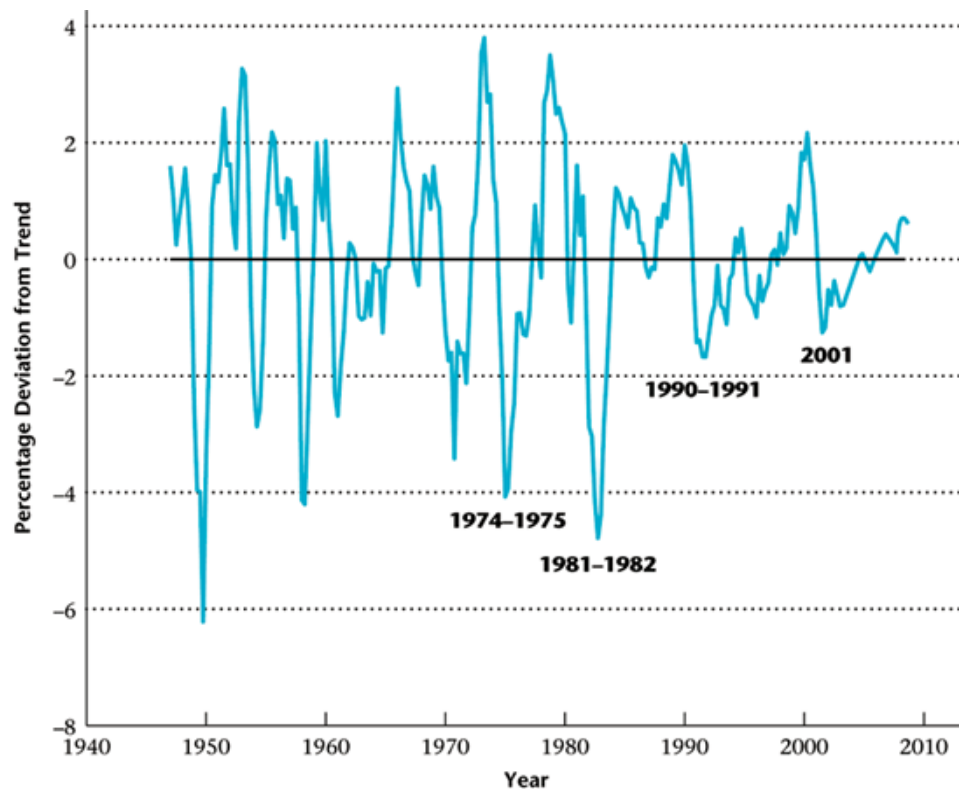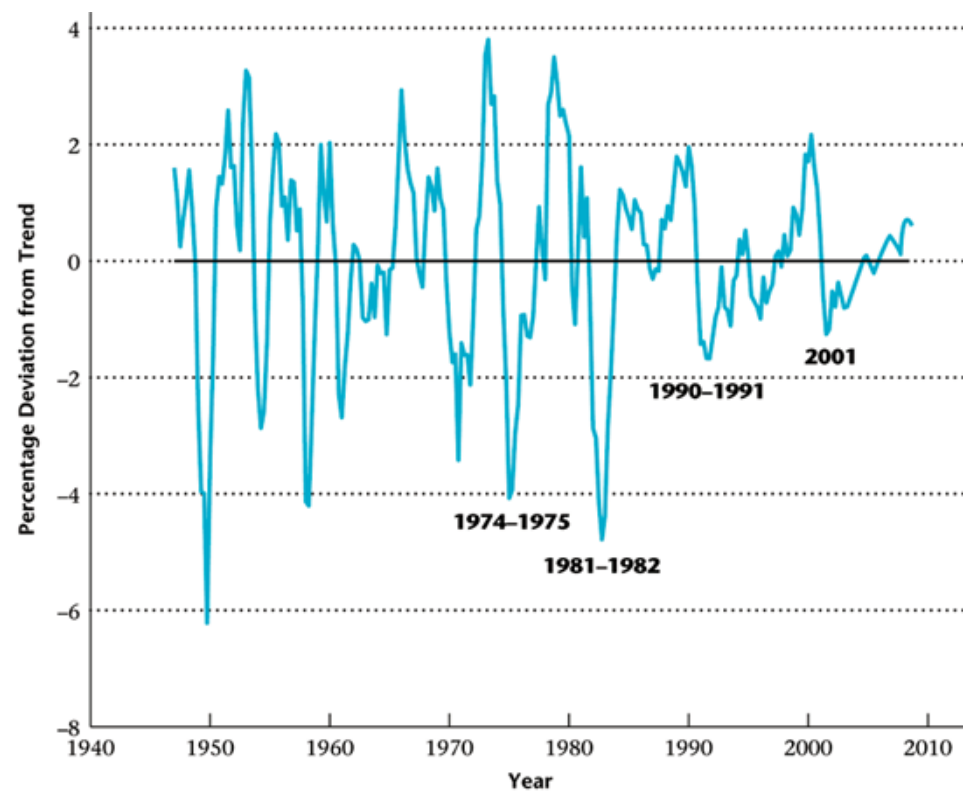
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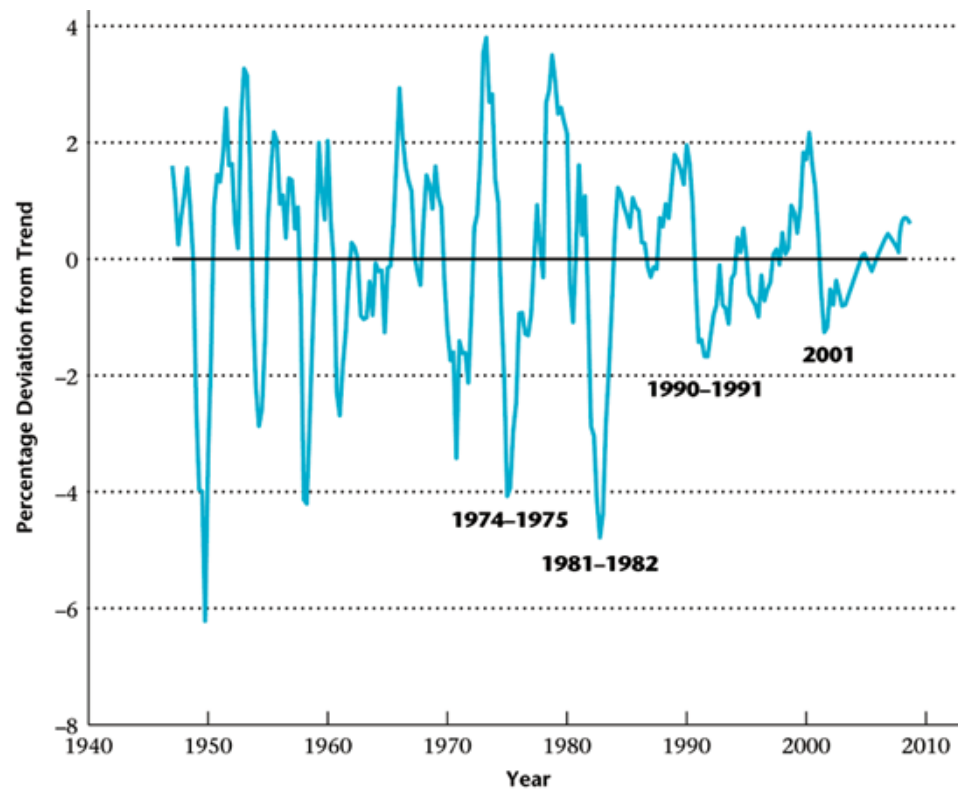

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So, is there any hope of anticipating business cycles?

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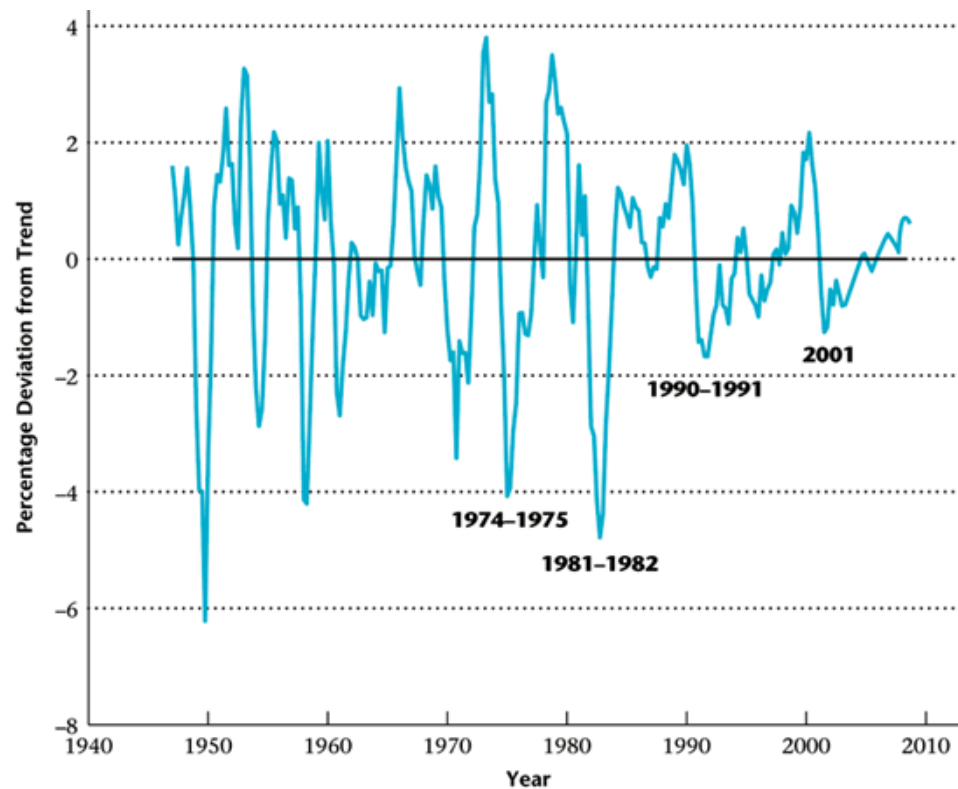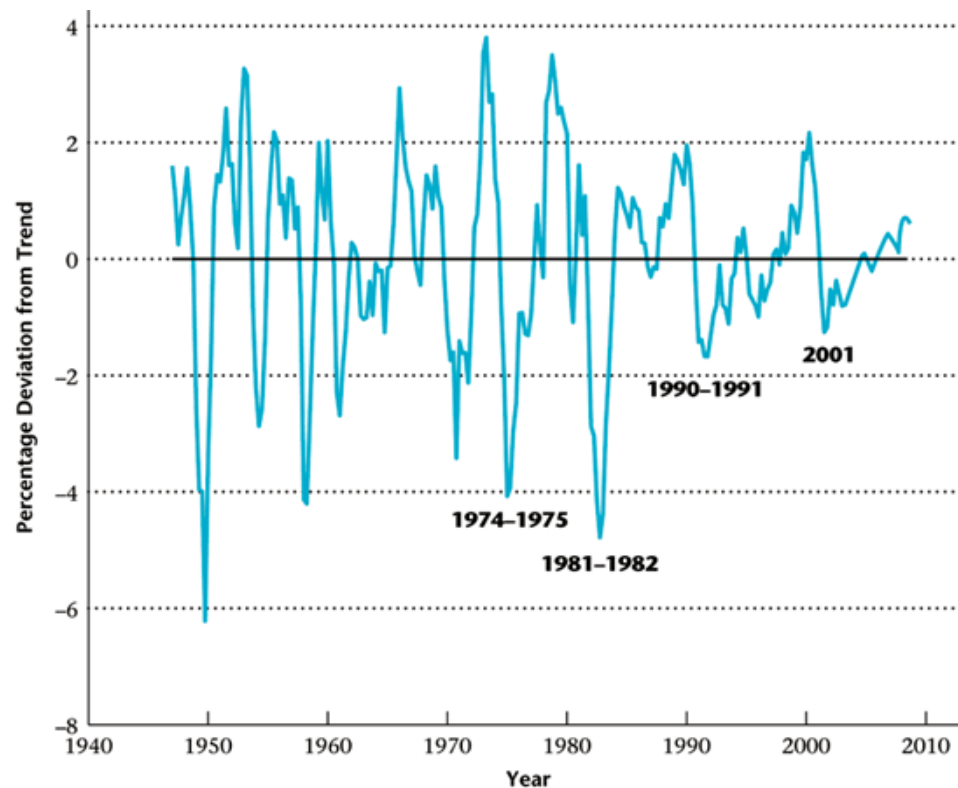- long-term forecasting is nearly impossible.

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- long-term forecasting is nearly impossible.

- This is why we say that business cycles are unpredictable.

Other Macro Indicators

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- To identify comovements we often rely in observation of the variables graphs.

  Generally, graphs of macroeconomic variables come in two different flavors:

  - Scatter plots

  - Time-series plots

TIME-SERIES PLOTS

(a) Positive Correlation Between x and y

(b) Negative Correlation Between x and y
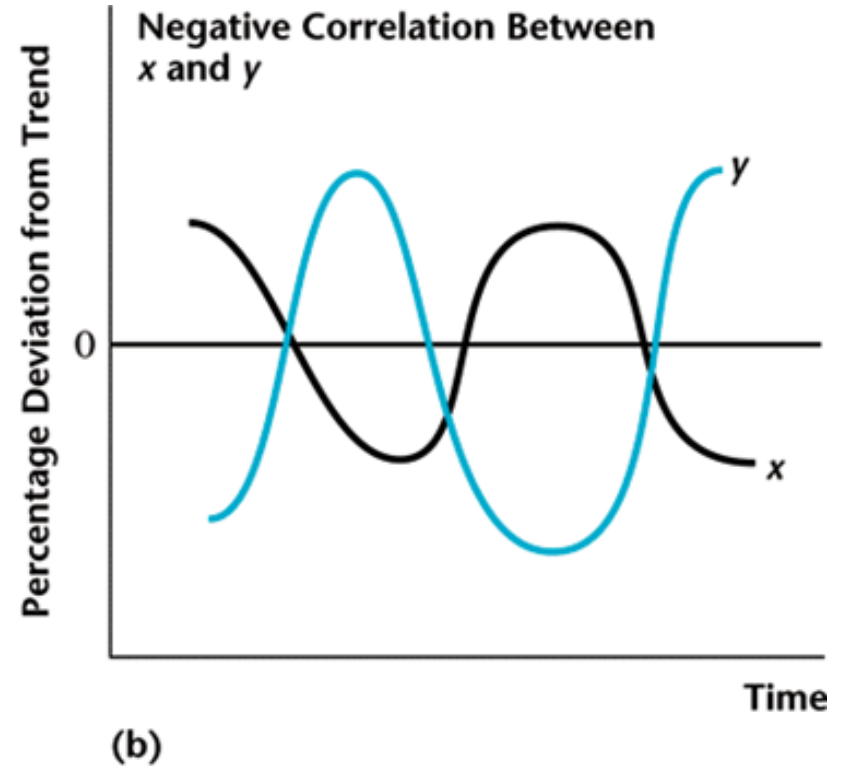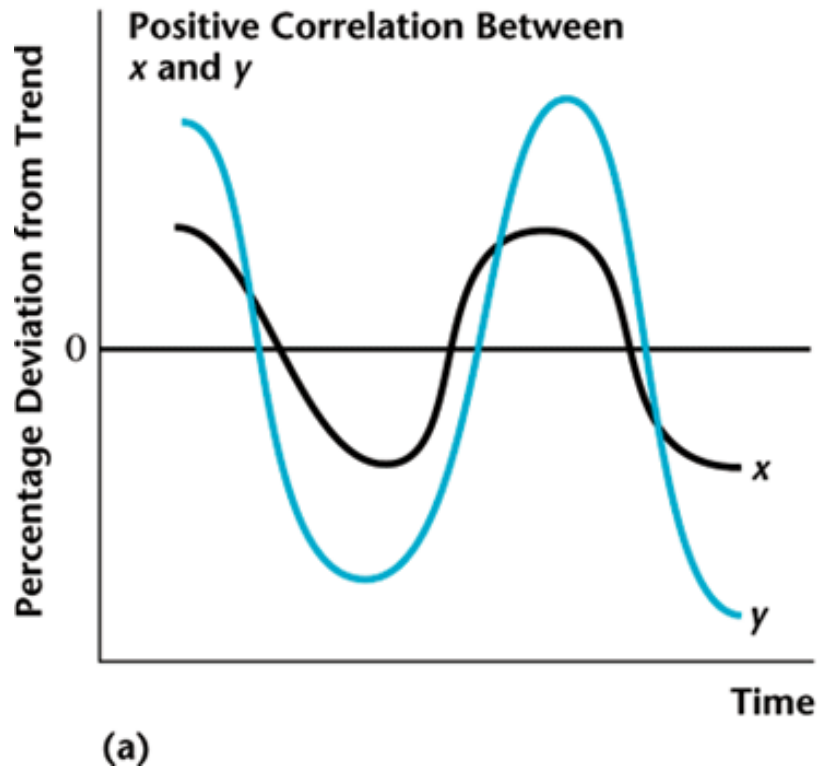
- Example: variables X and Y

TIME-SERIES PLOTS
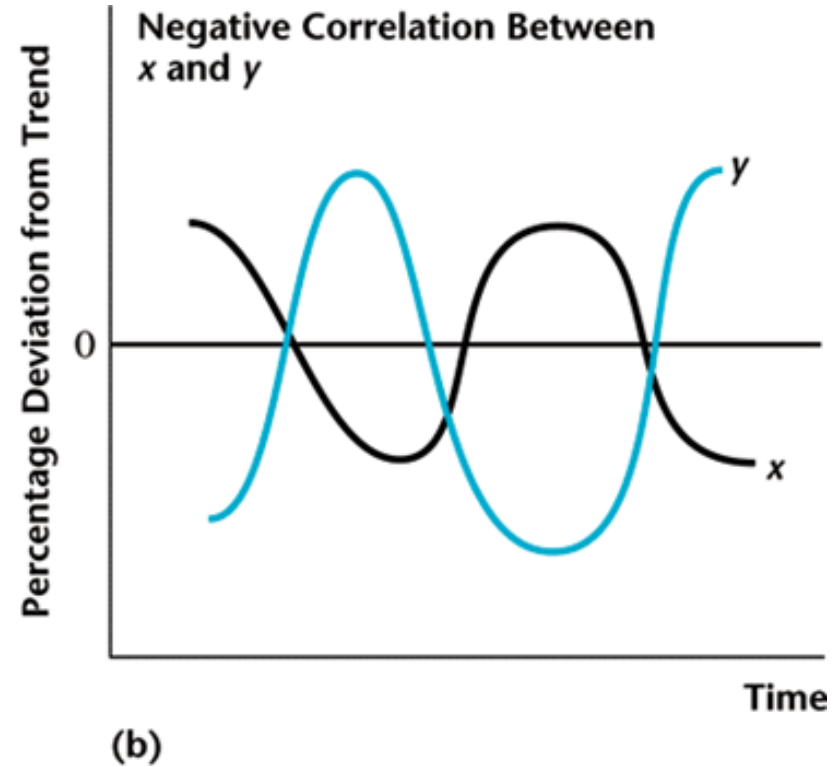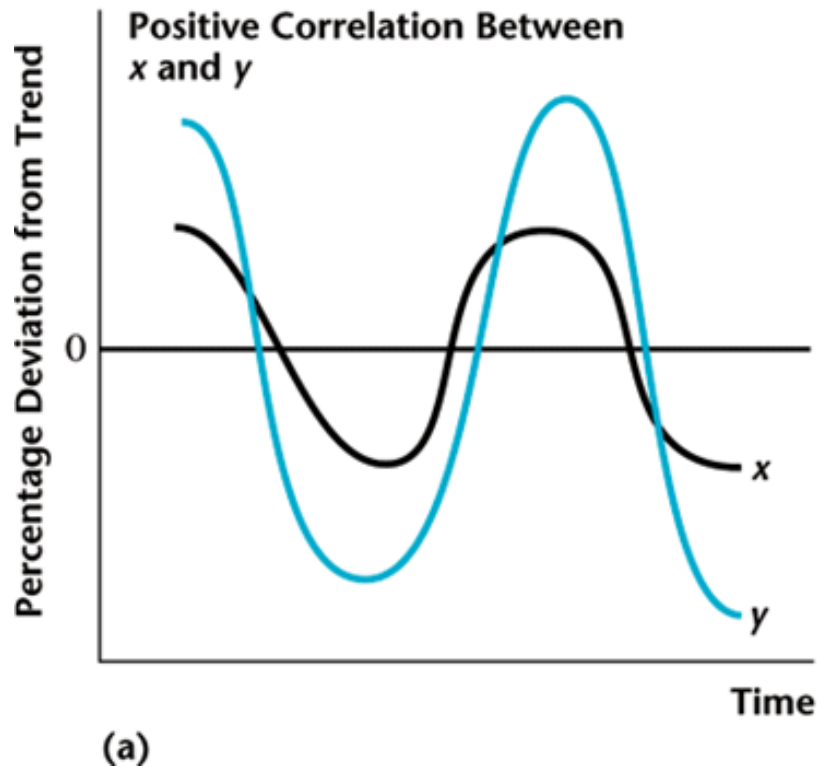
- Example: variables X and Y
- Variable values are on the Y-axis. Time is on the X-axis.

Scatter Plots

(a) Positive Correlation Between y and x

(b) Negative Correlation Between y and x

(c) Zero Correlation Between y and x
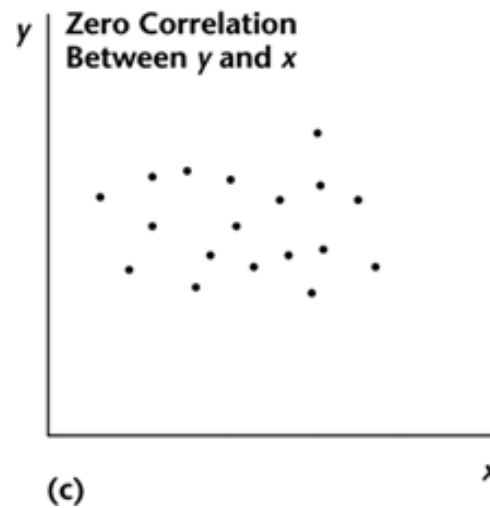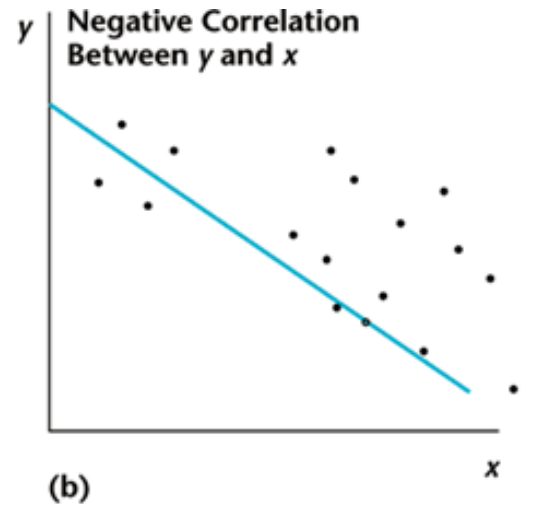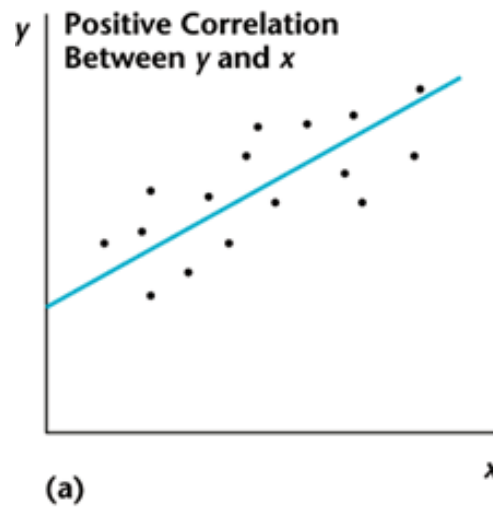
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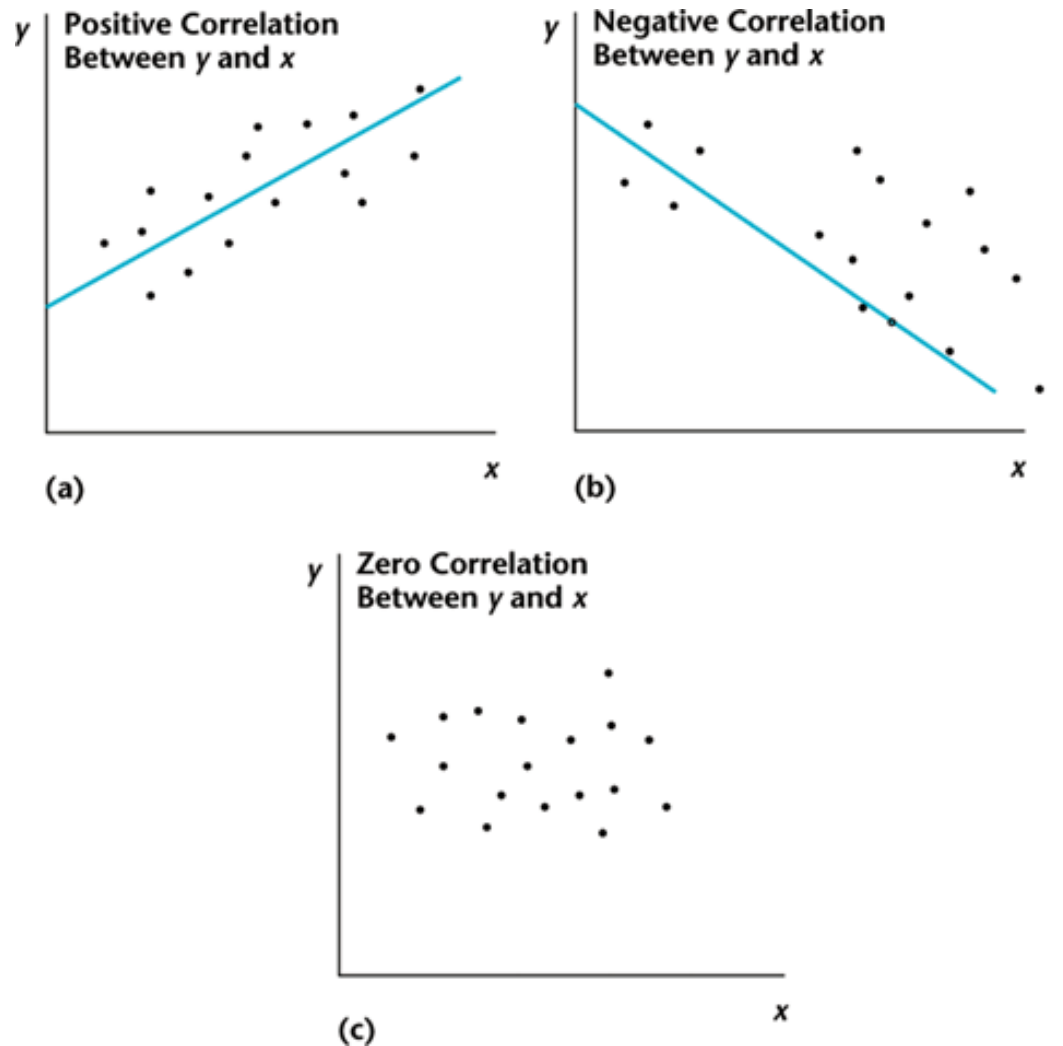
- Example: variables X and Y
- One variable is on the X-axis, and the other on the Y-axis.

Correlation With Real GDP

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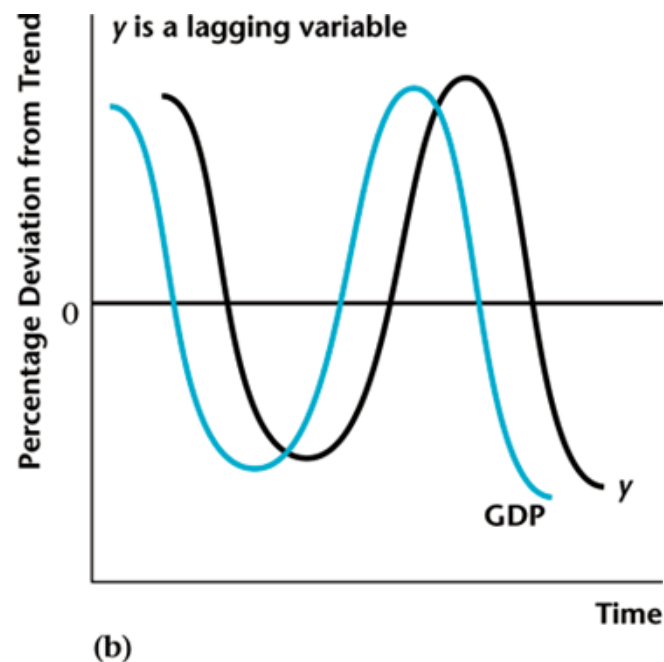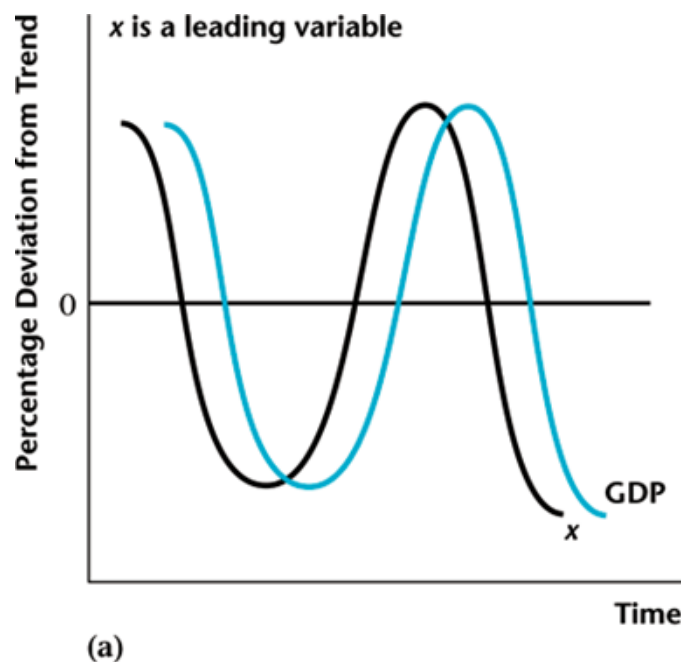
- Variables which are neither procyclical nor countercyclical are called acyclical.

- If a macro variable helps in predicting the future path of RGDP, we say call it a leading variable.

CORRELATION WITH REAL GDP (CONT'D)
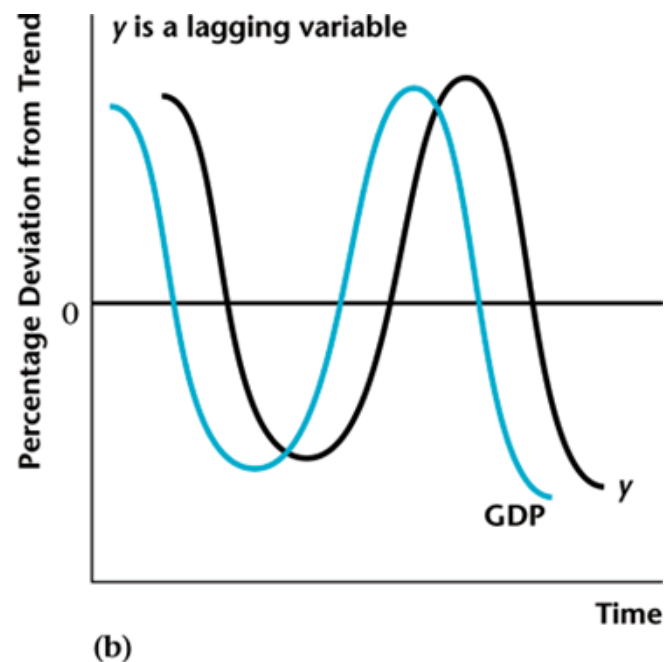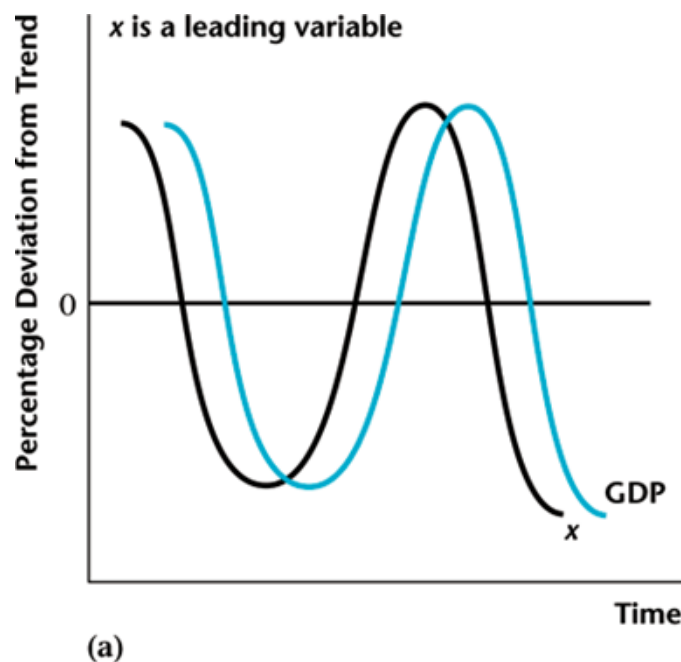
(a) x is a leading variable

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- If a macro variable helps in predicting the future path of RGDP, we say call it a leading variable.

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- Variables which neither lead nor lag RGDP are called coincident variables.

Another Measure

Volatility: a measure of cyclical variability is the standard deviation of the percentage deviations from trend.

EXAMPLE: IMPORTS AND RGDP (SCATTER PLOT)
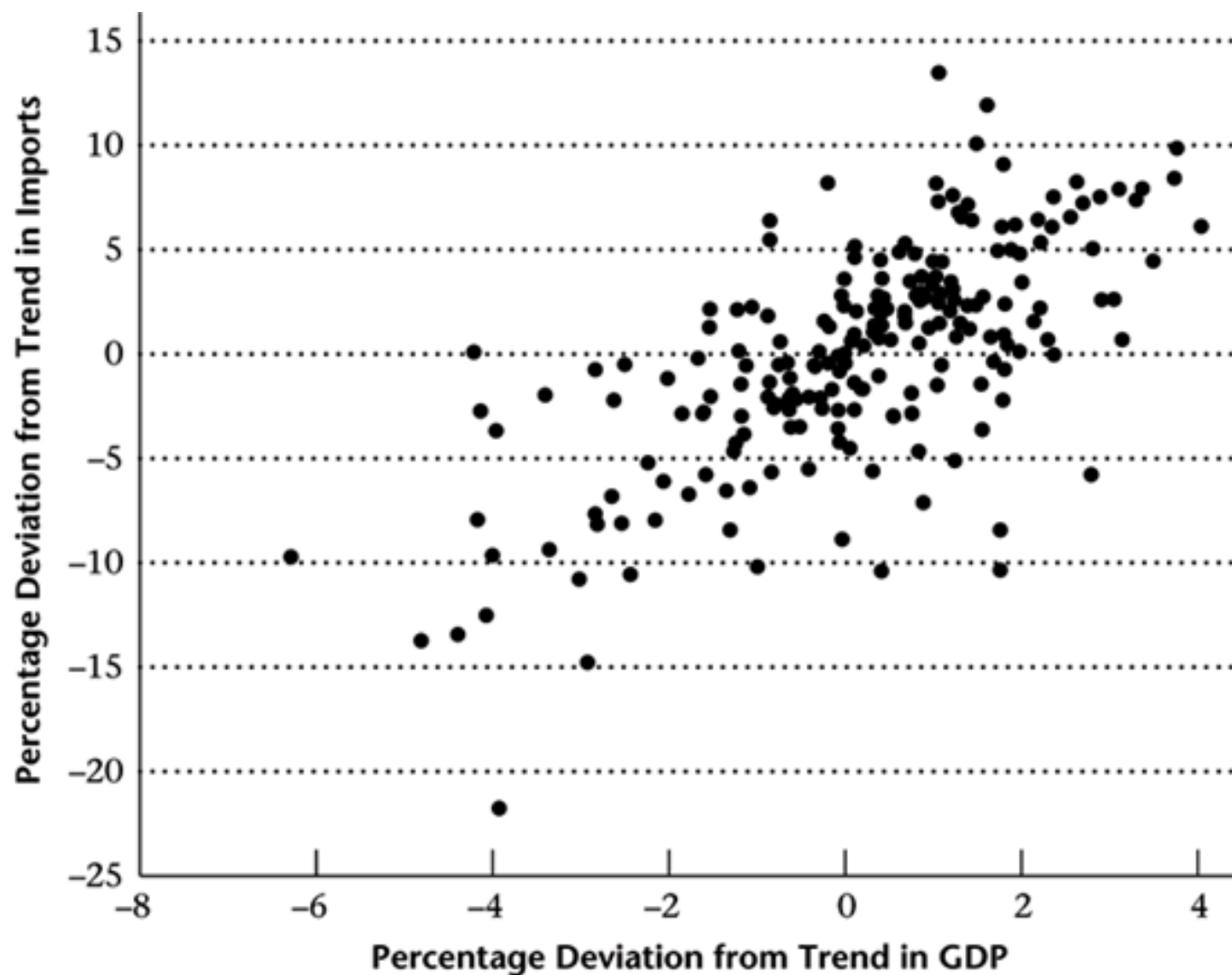
Source: U.S. Department of Commerce, Bureau of Economic Analysis.

EXAMPLE: IMPORTS AND RGDP (TIME-SERIES PLOT)
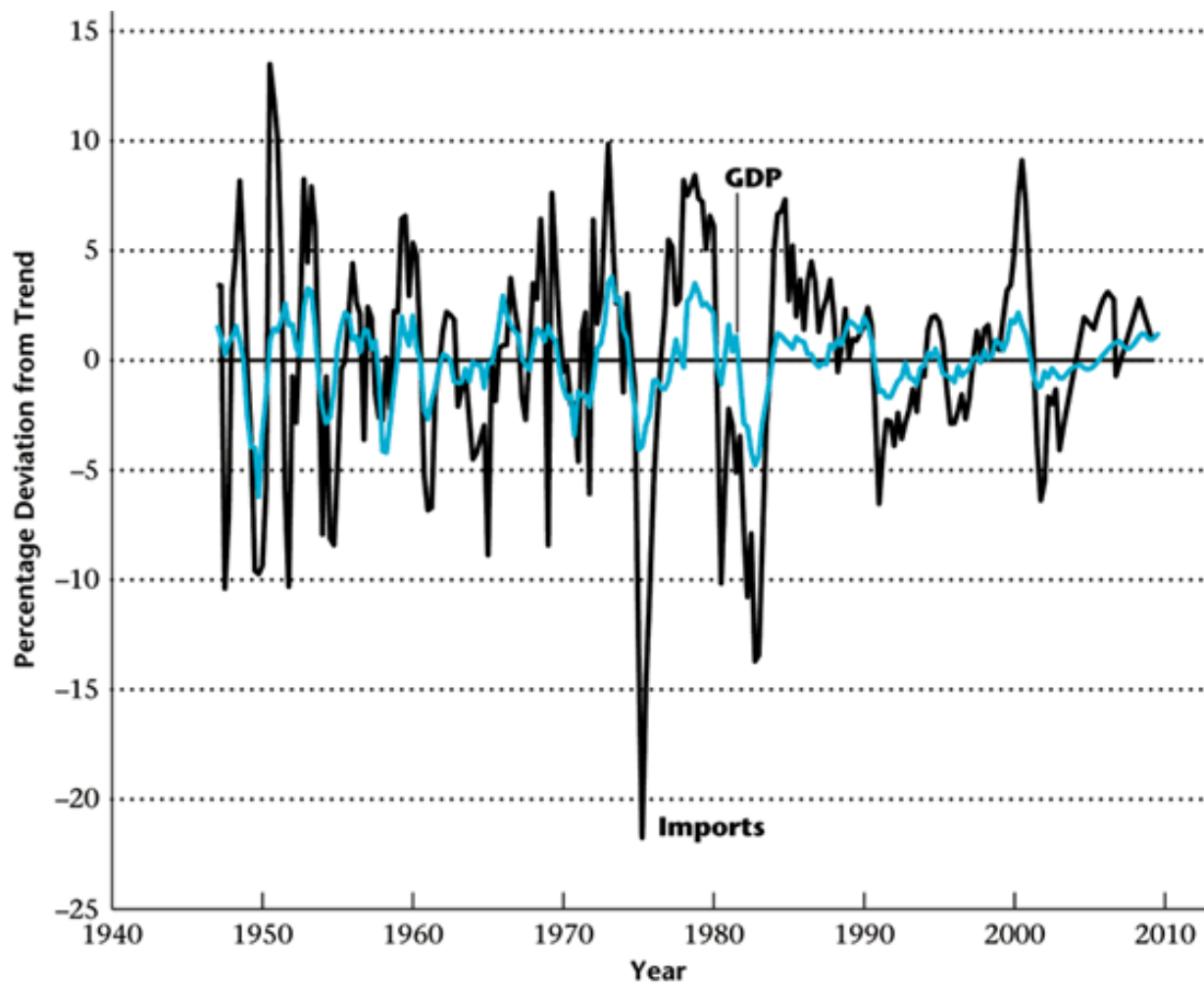
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EXAMPLE: IMPORTS AND RGDP (TIME-SERIES PLOT)
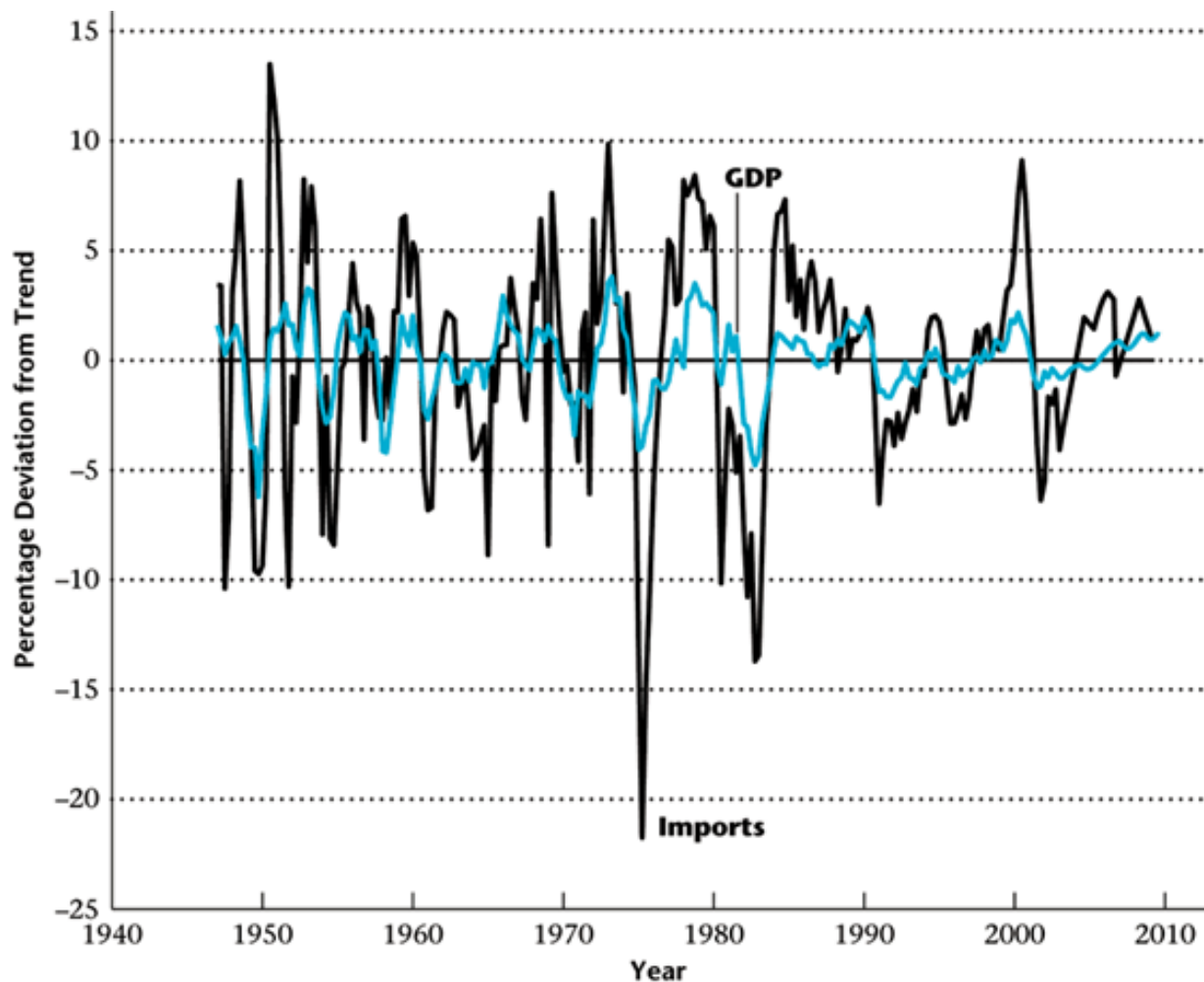
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- Imports are procyclical and more volatile than RGDP.

Model and Behavior of Key Macroeconomic Variables

If we are to construct a macroeconomic model which helps us understand business cycles and the economy, itd better be the case that it is able to replicate the regularities and comovements that we observe in RGDP and its components!

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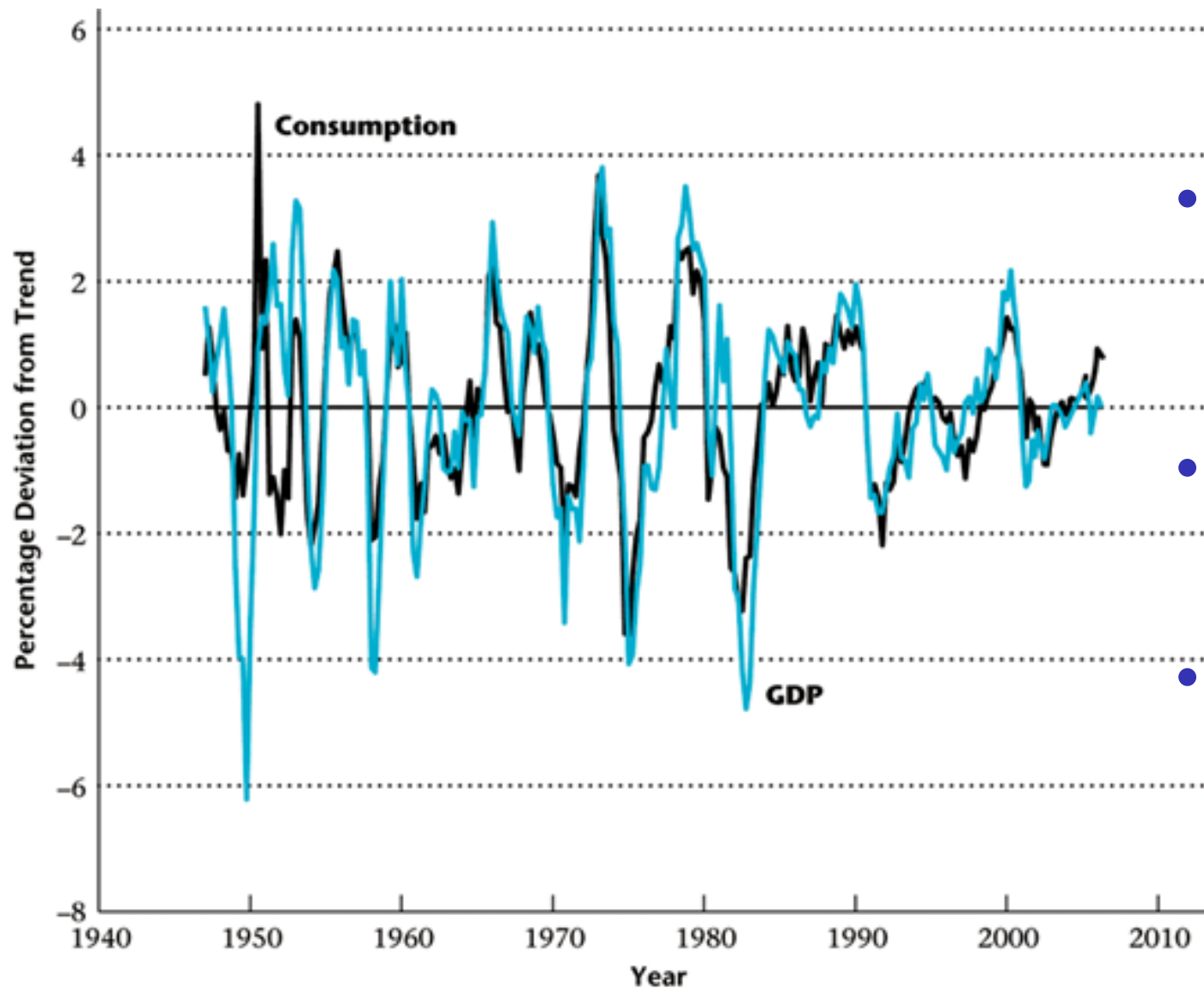
- Components of GDP: consumption and investment.

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- Labor market variables: employment, real wage, average labor productivity.

CONSUMPTION AND GDP

- Procyclical or countercyclical?

- Lead or lag?

- More volatile than GDP?

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Consumption and GDP

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Consumption and GDP

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INVESTMENT AND GDP

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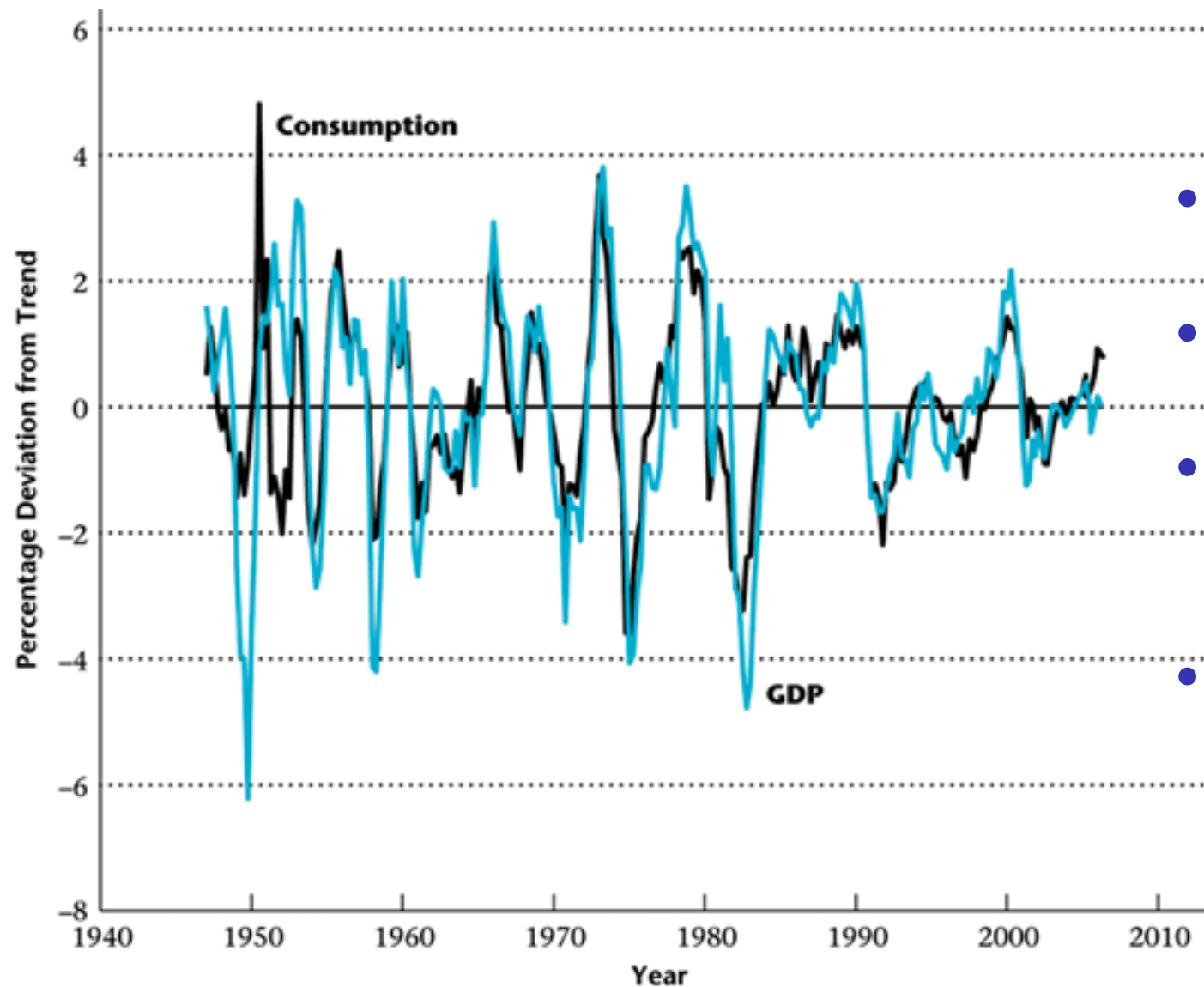
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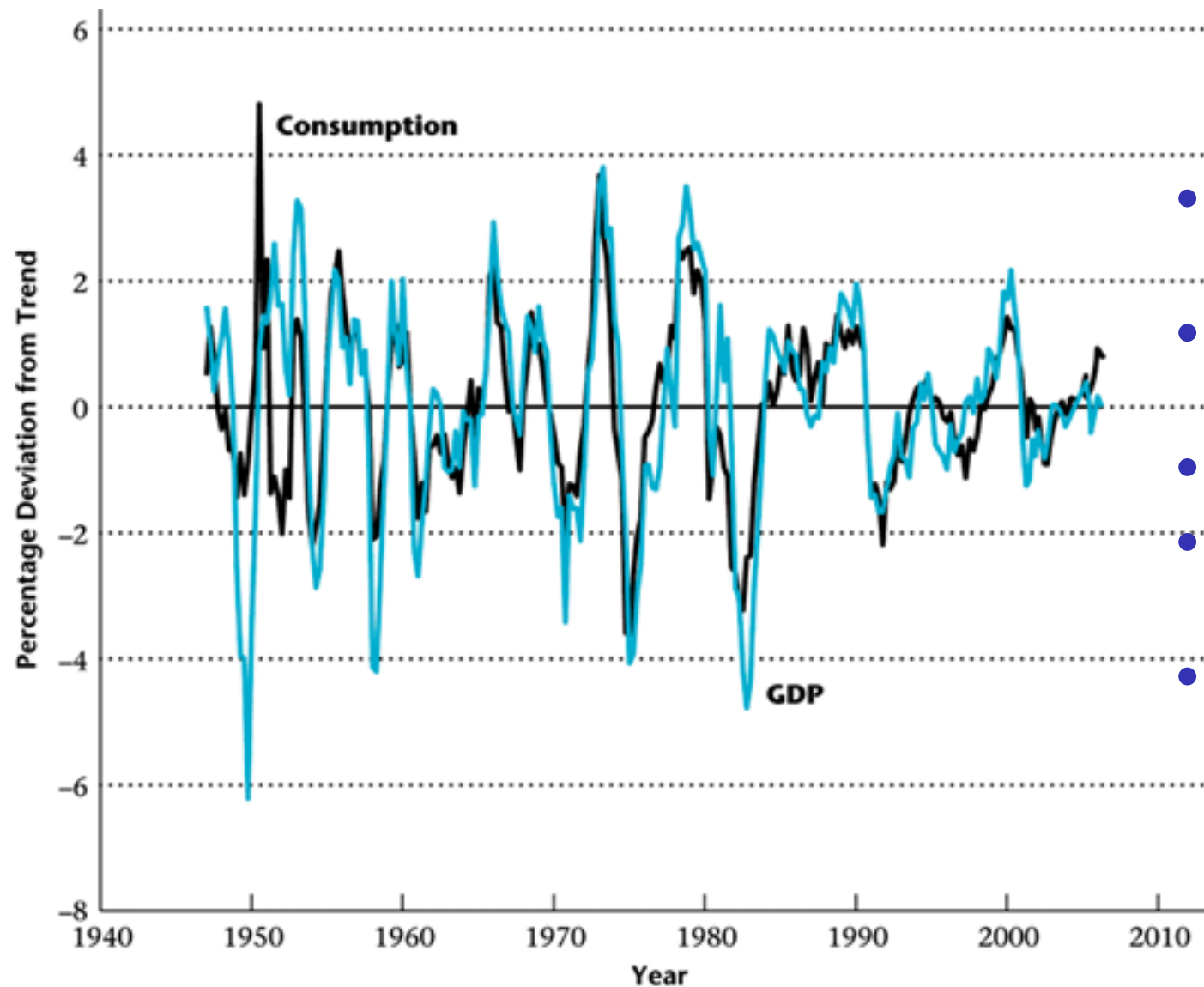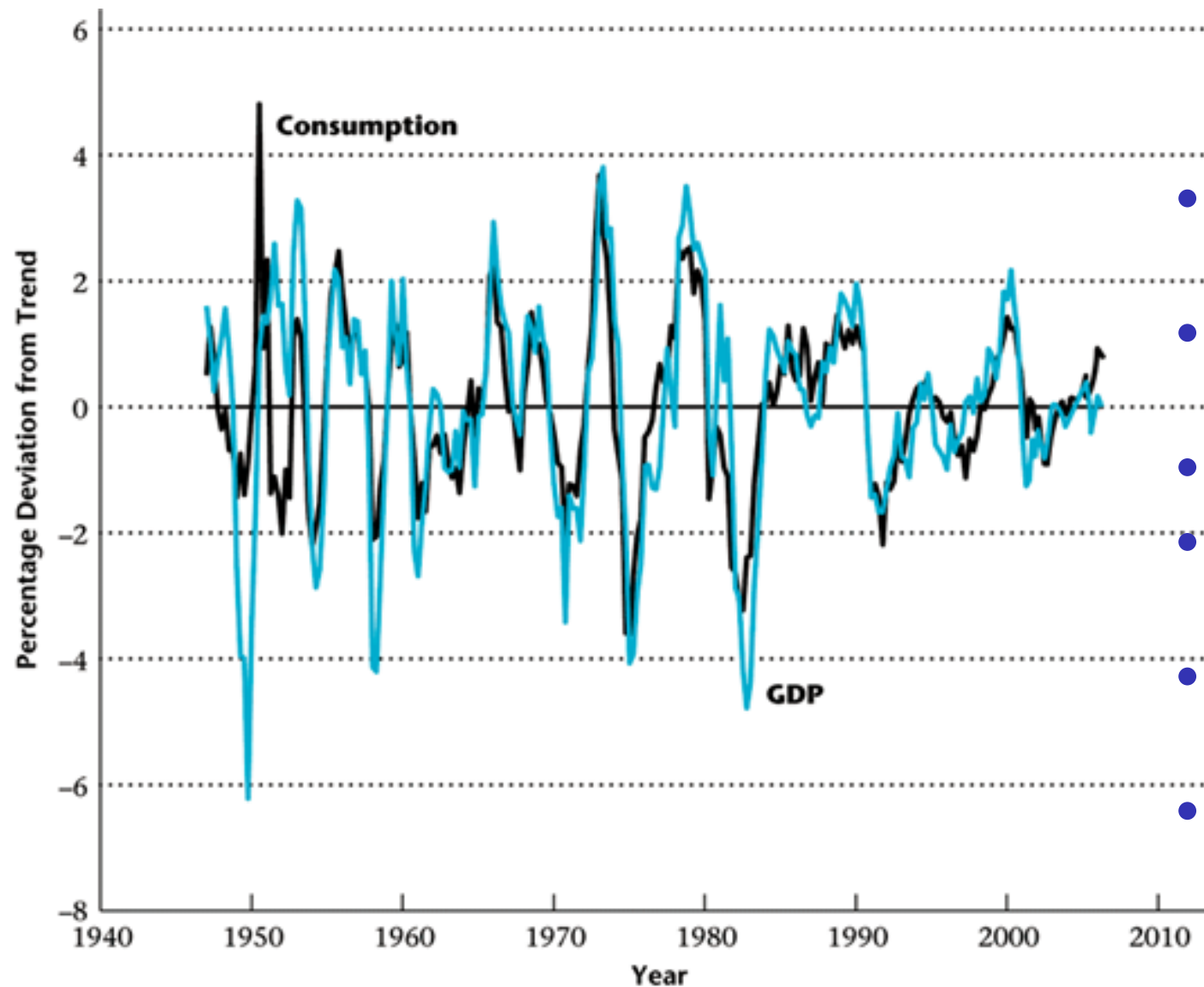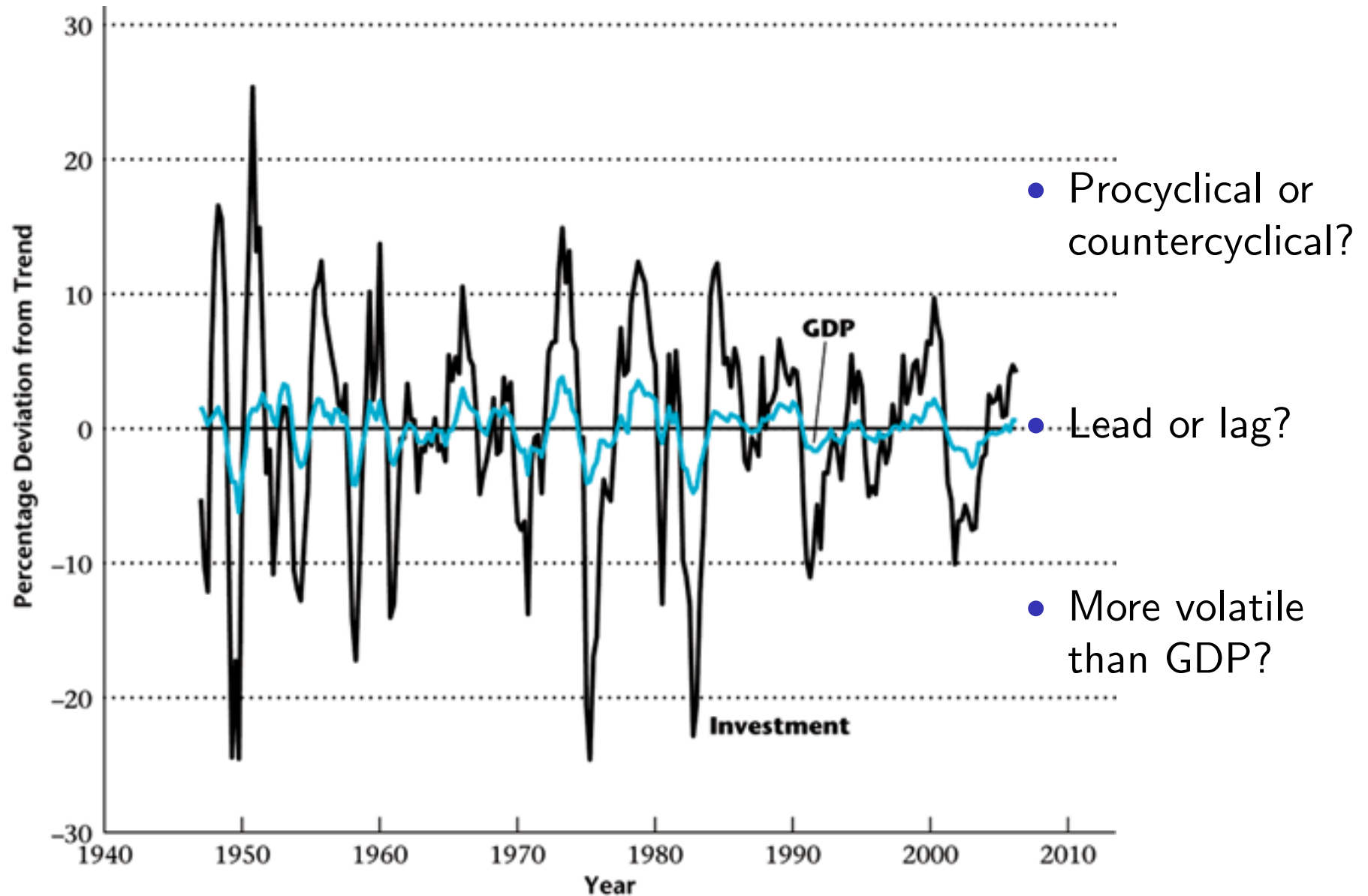- Procyclical
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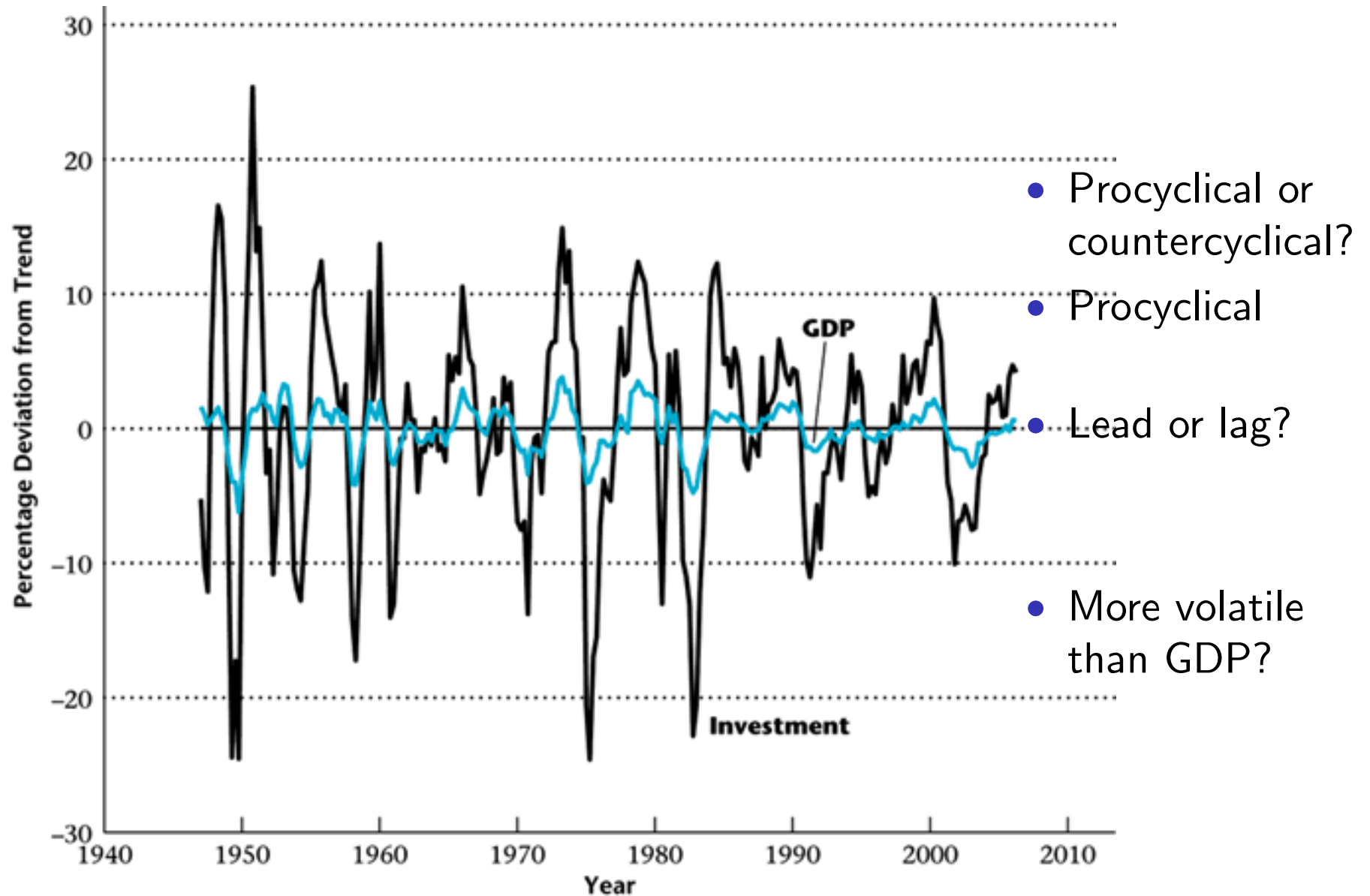- Lead or lag?
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Source: U.S. Department of Commerce, Bureau of Economic Analysis.

PRICE AND GDP

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Source: U.S. Department of Commerce, Bureau of Economic Analysis.

PRICE AND GDP
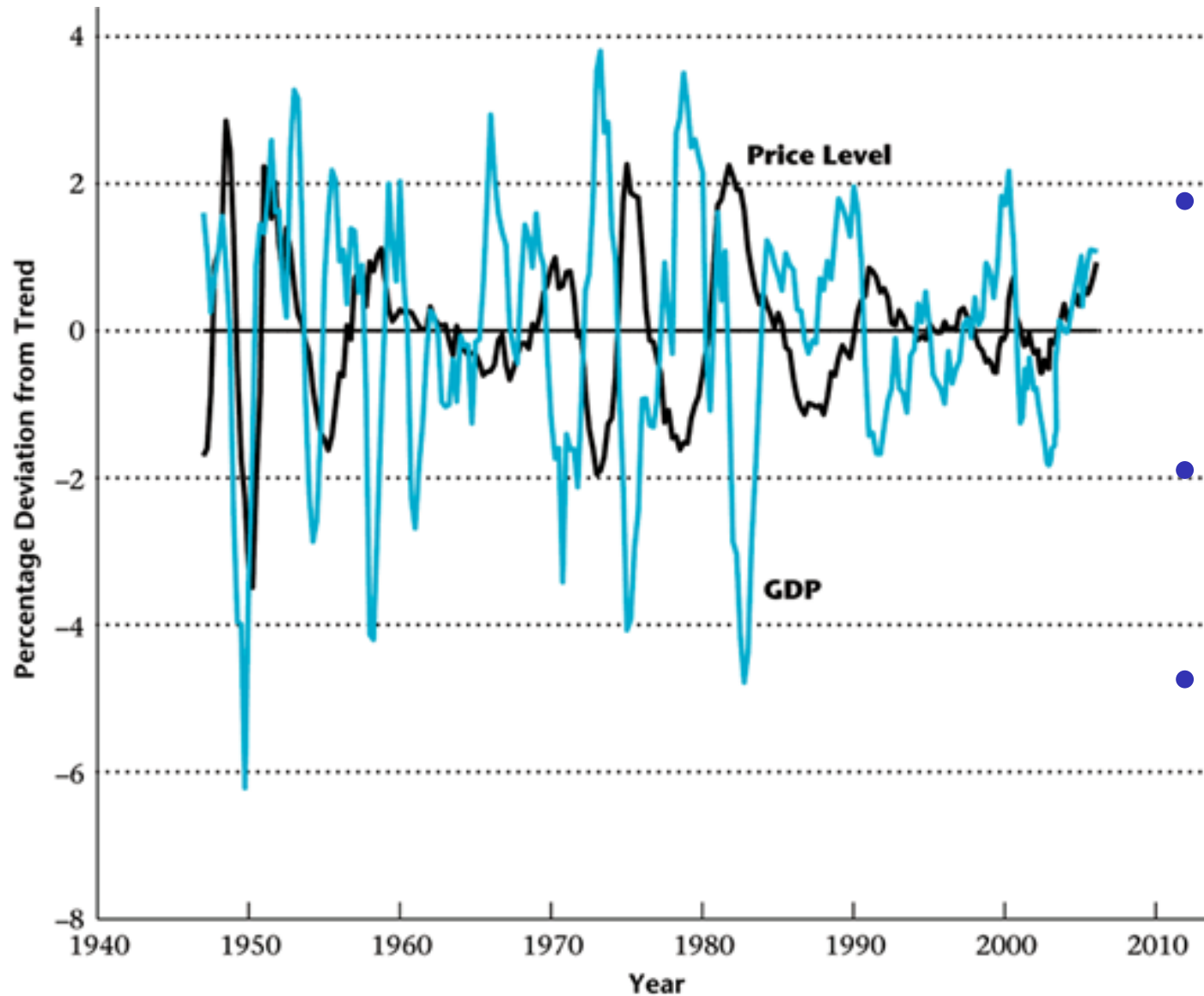
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PRICE AND GDP

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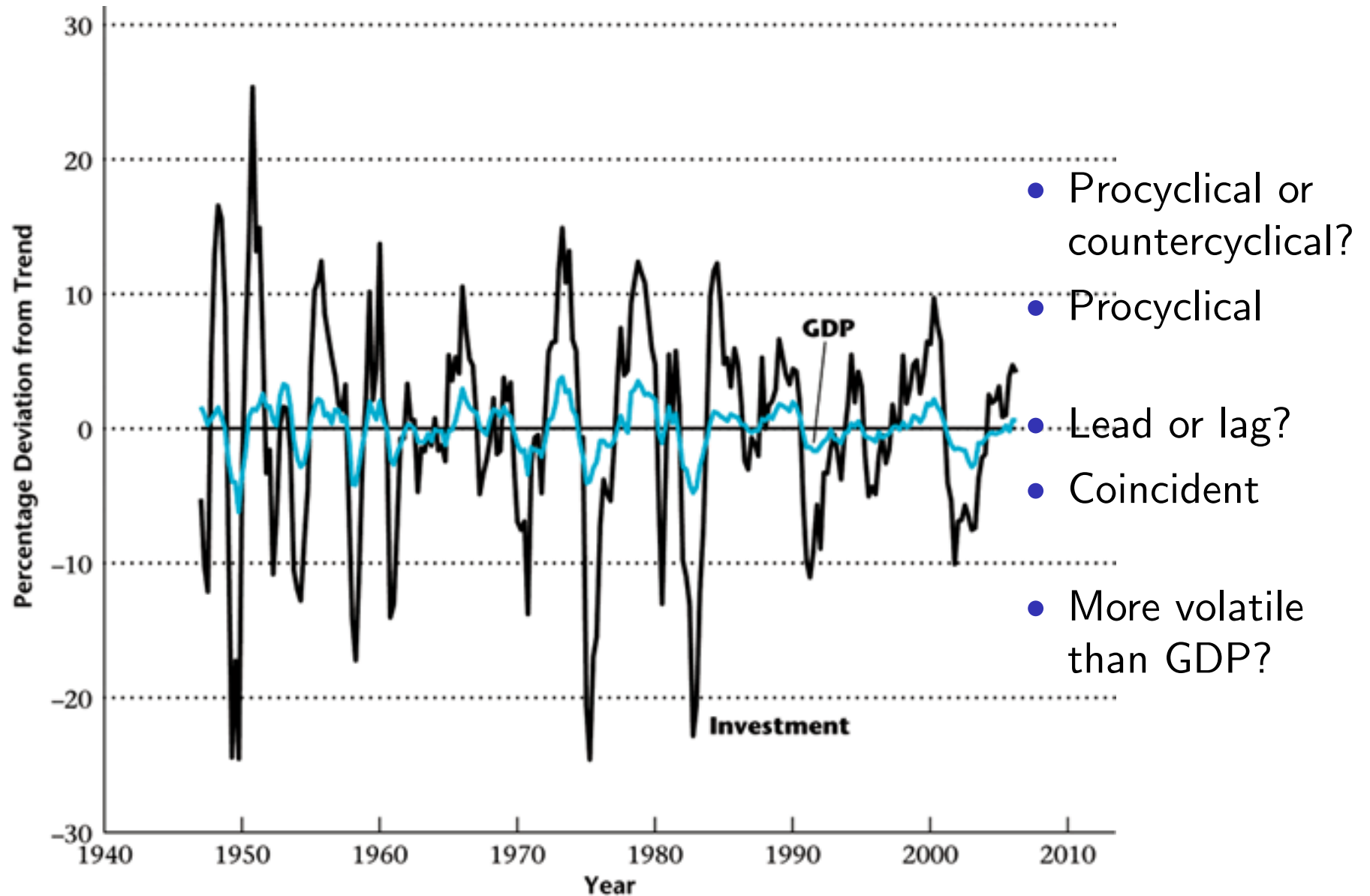- Lead or lag?
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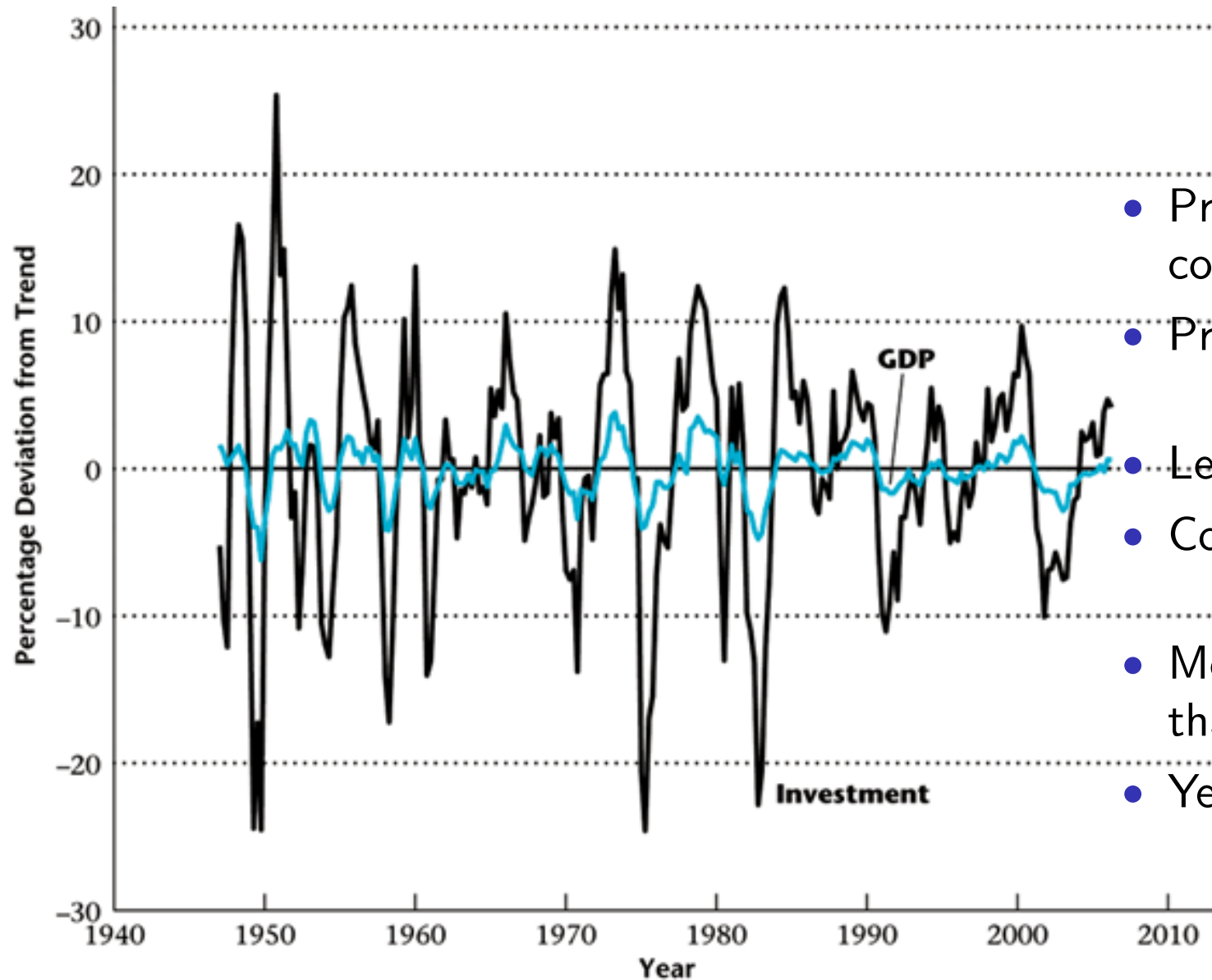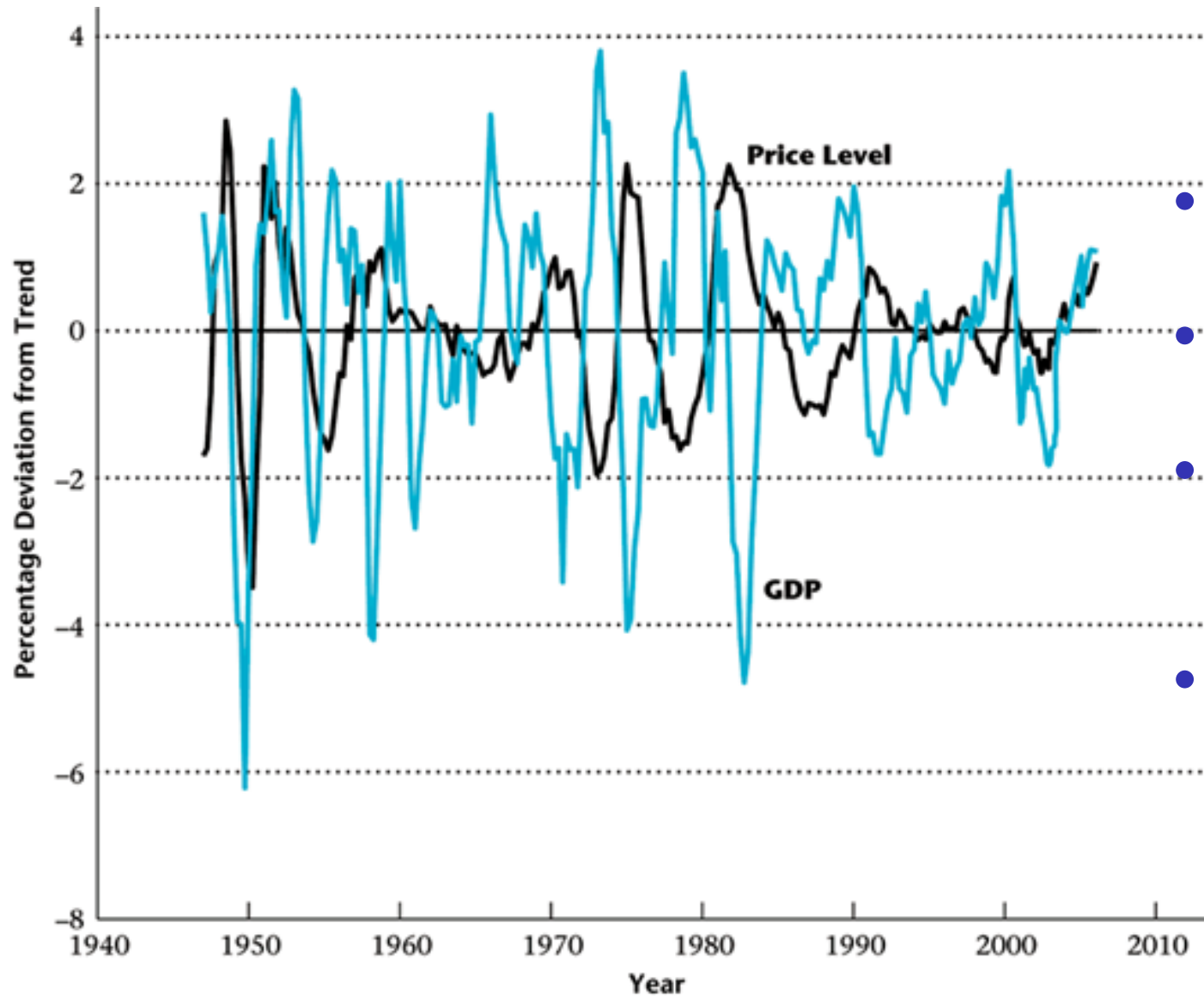*Source:* U.S. Department of Commerce, Bureau of Economic Analysis.

Money Supply and GDP
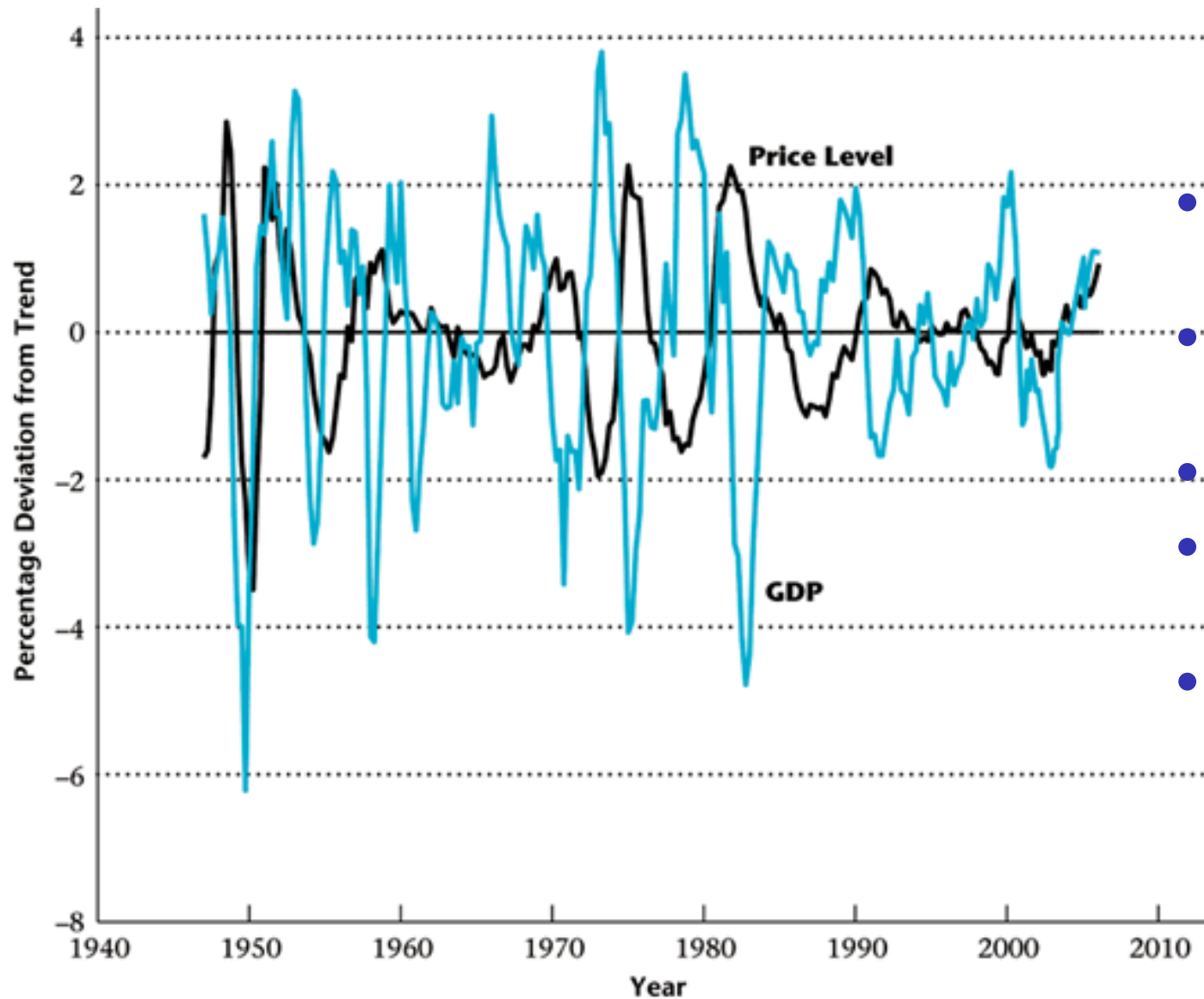

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MONEY SUPPLY AND GDP

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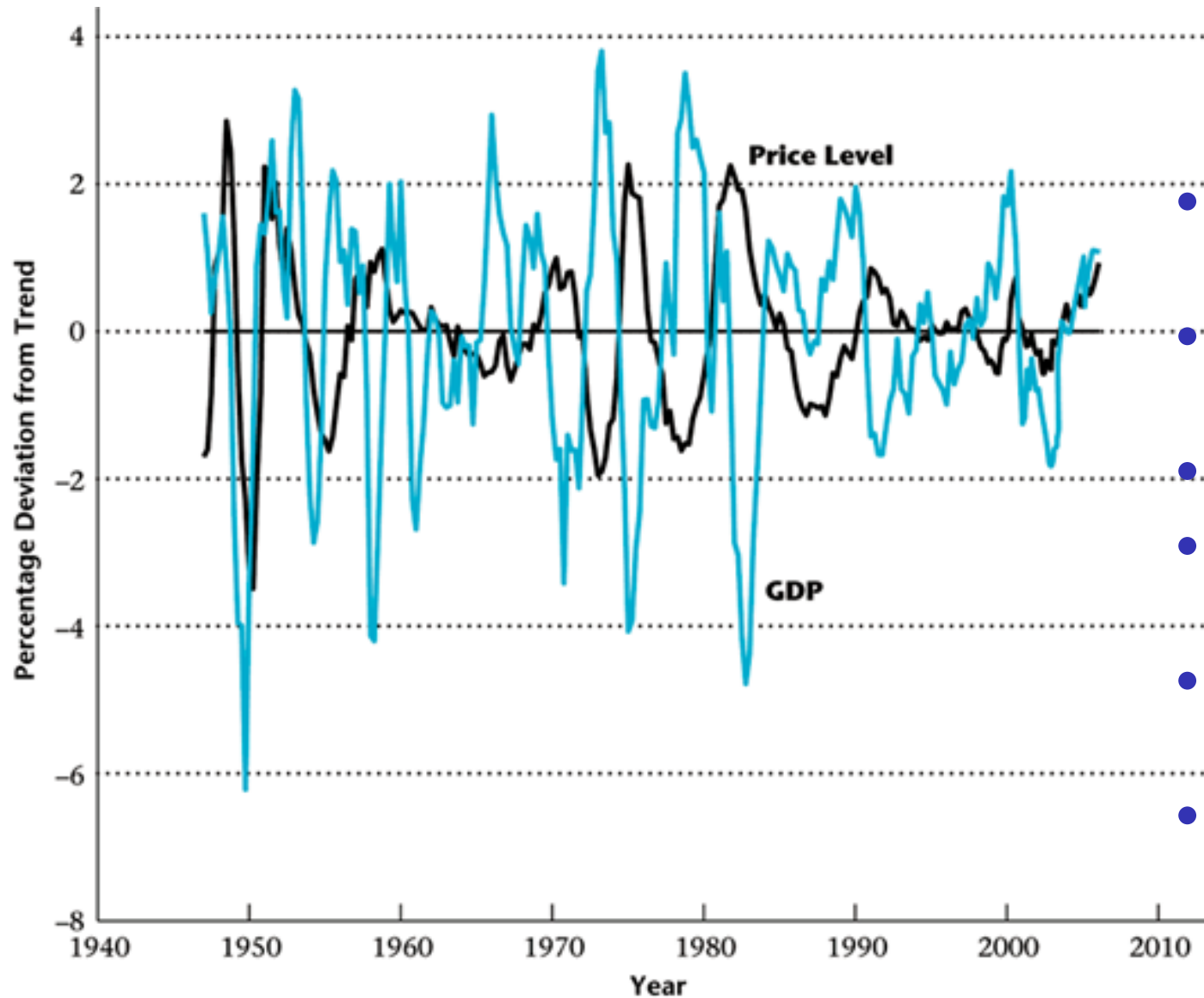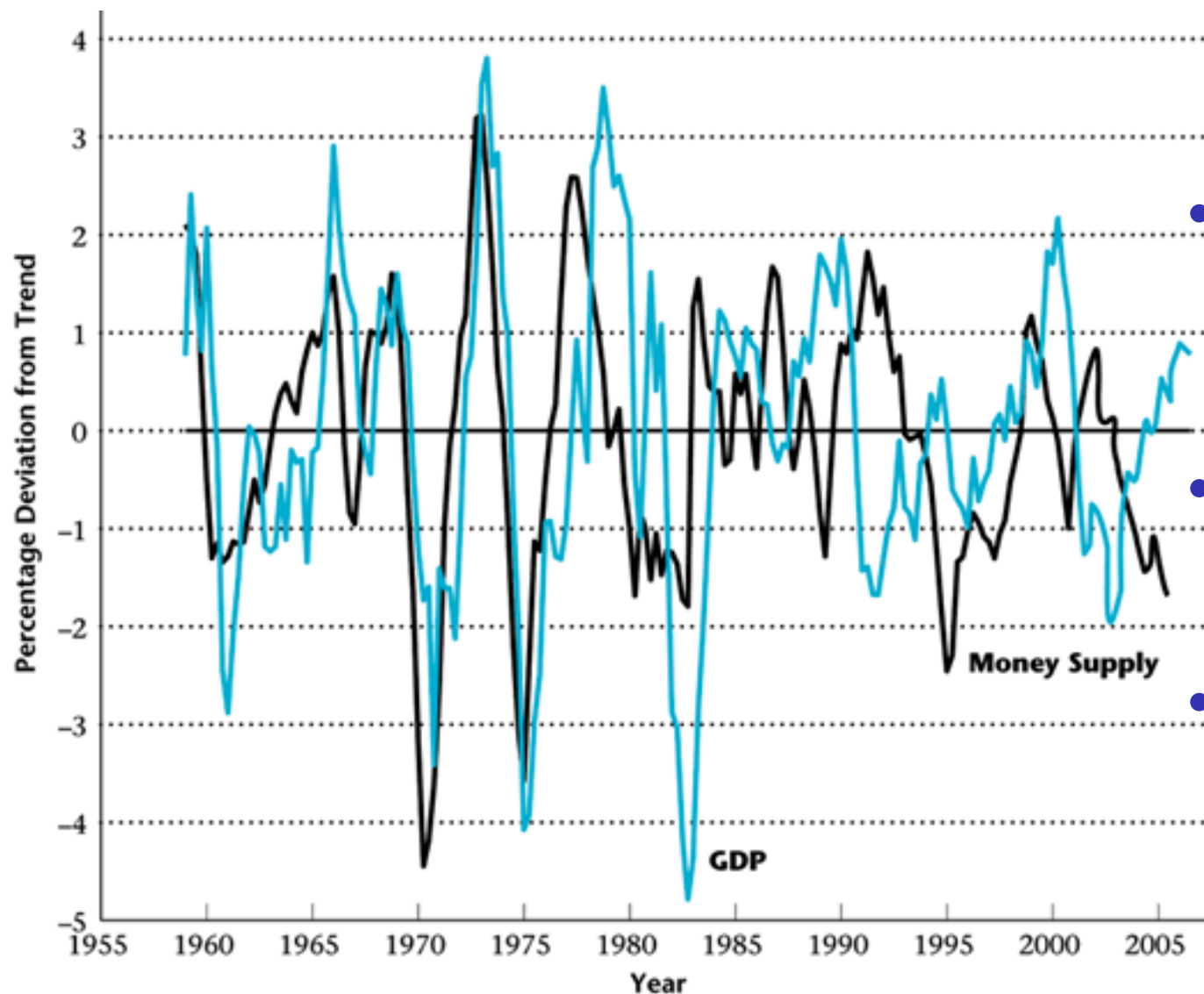- Lead or lag?

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Source: U.S. Department of Commerce, Bureau of Economic Analysis, and Board of Governors of the Federal Reserve System.

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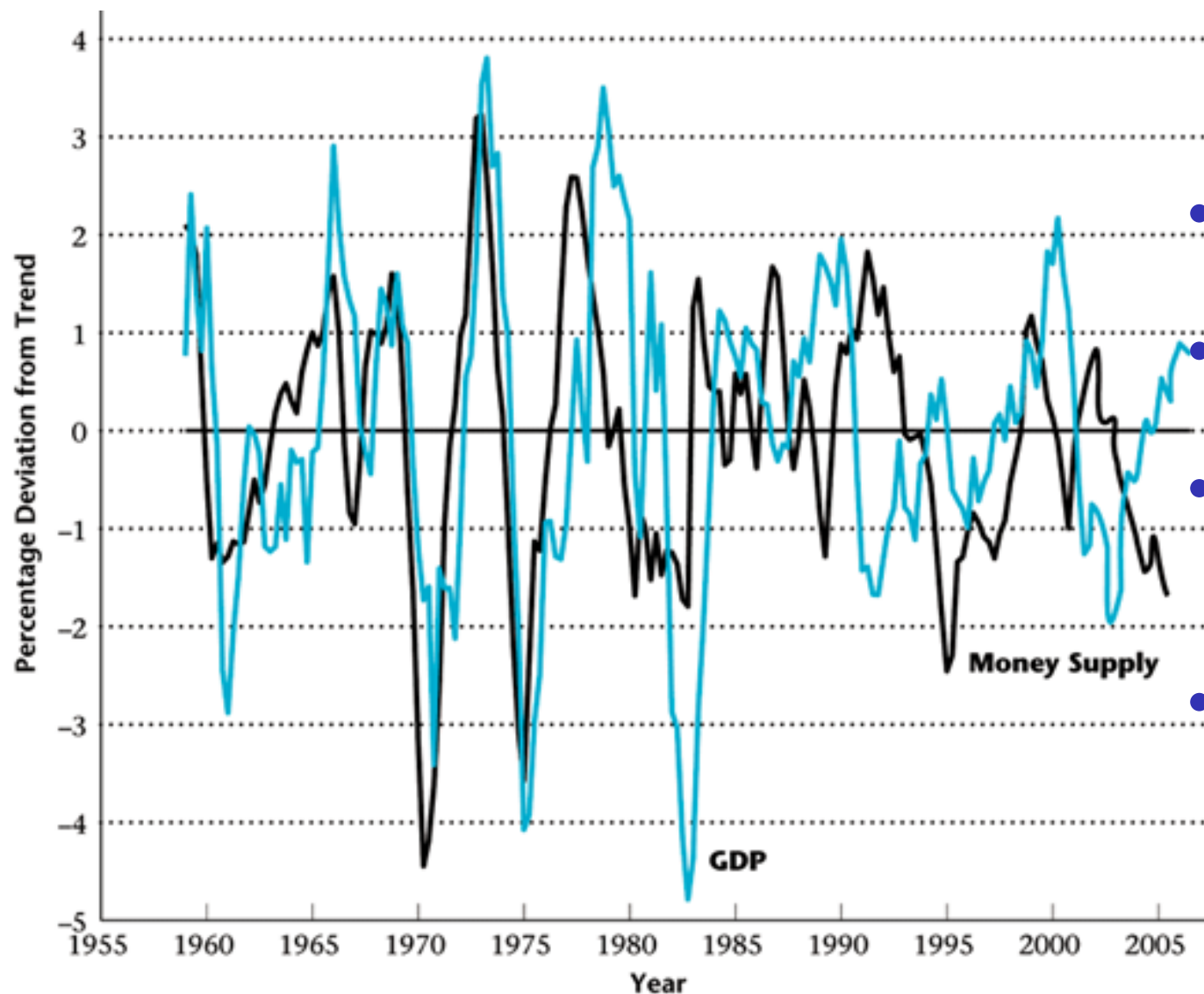
EMPLOYMENT AND GDP

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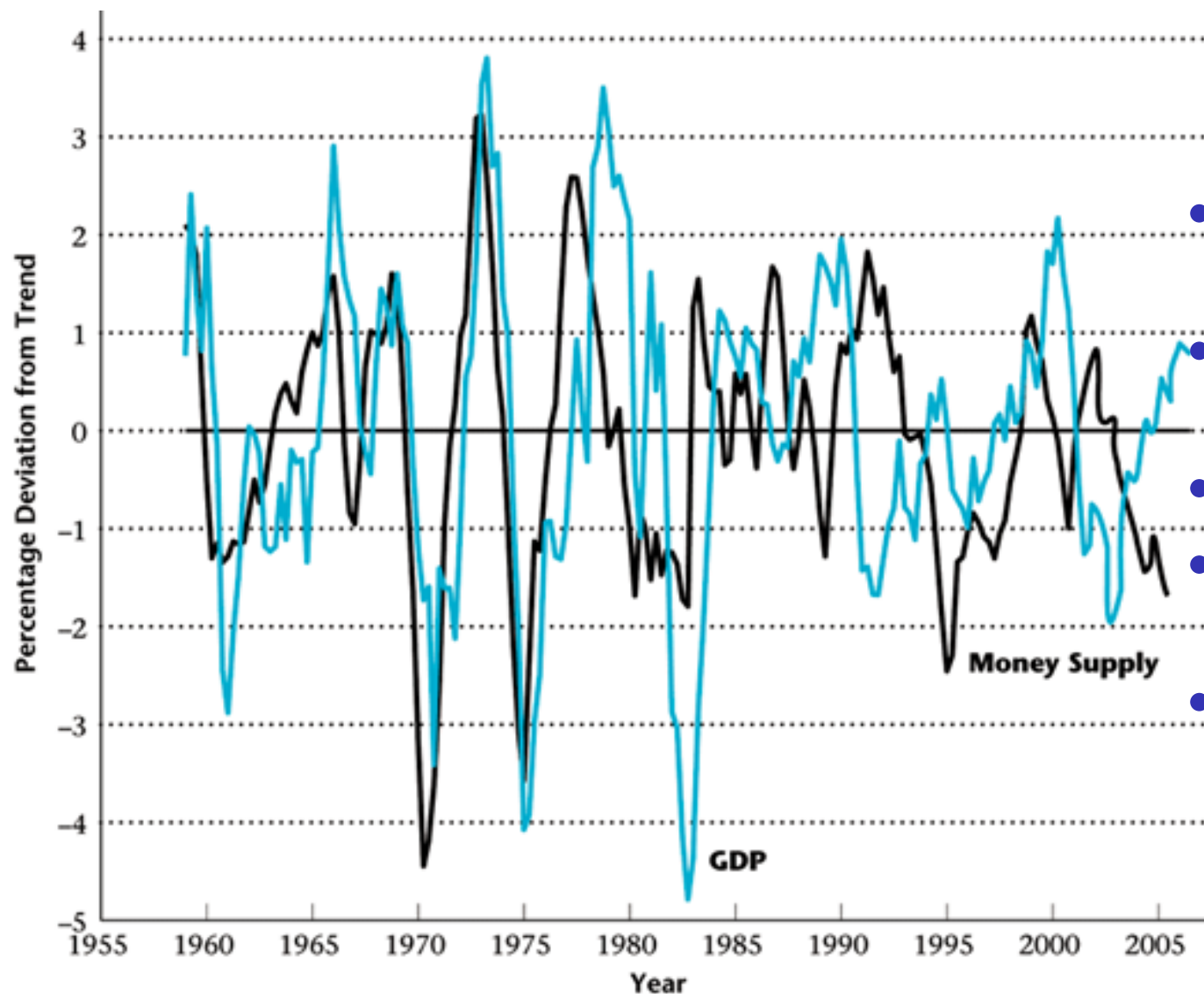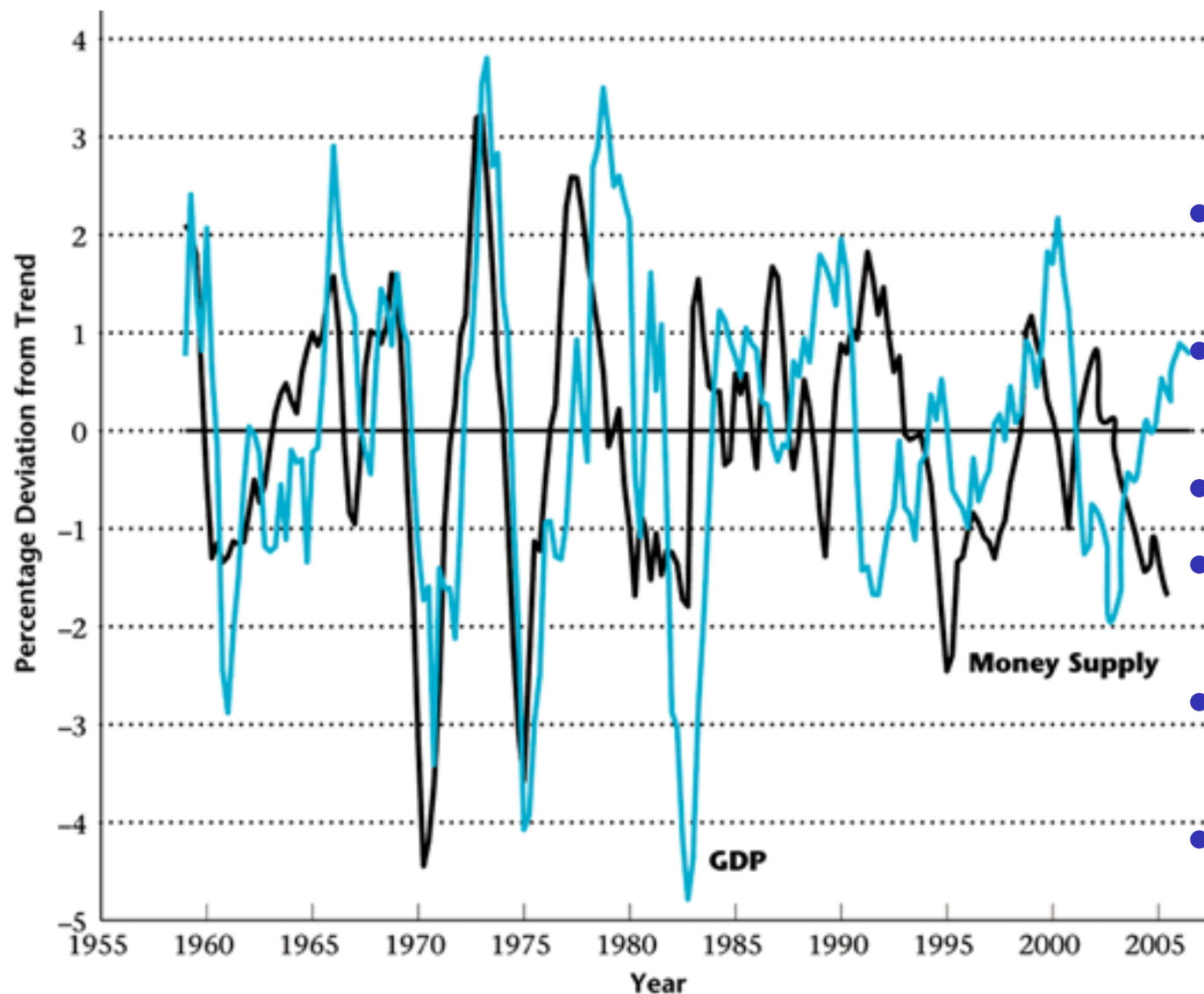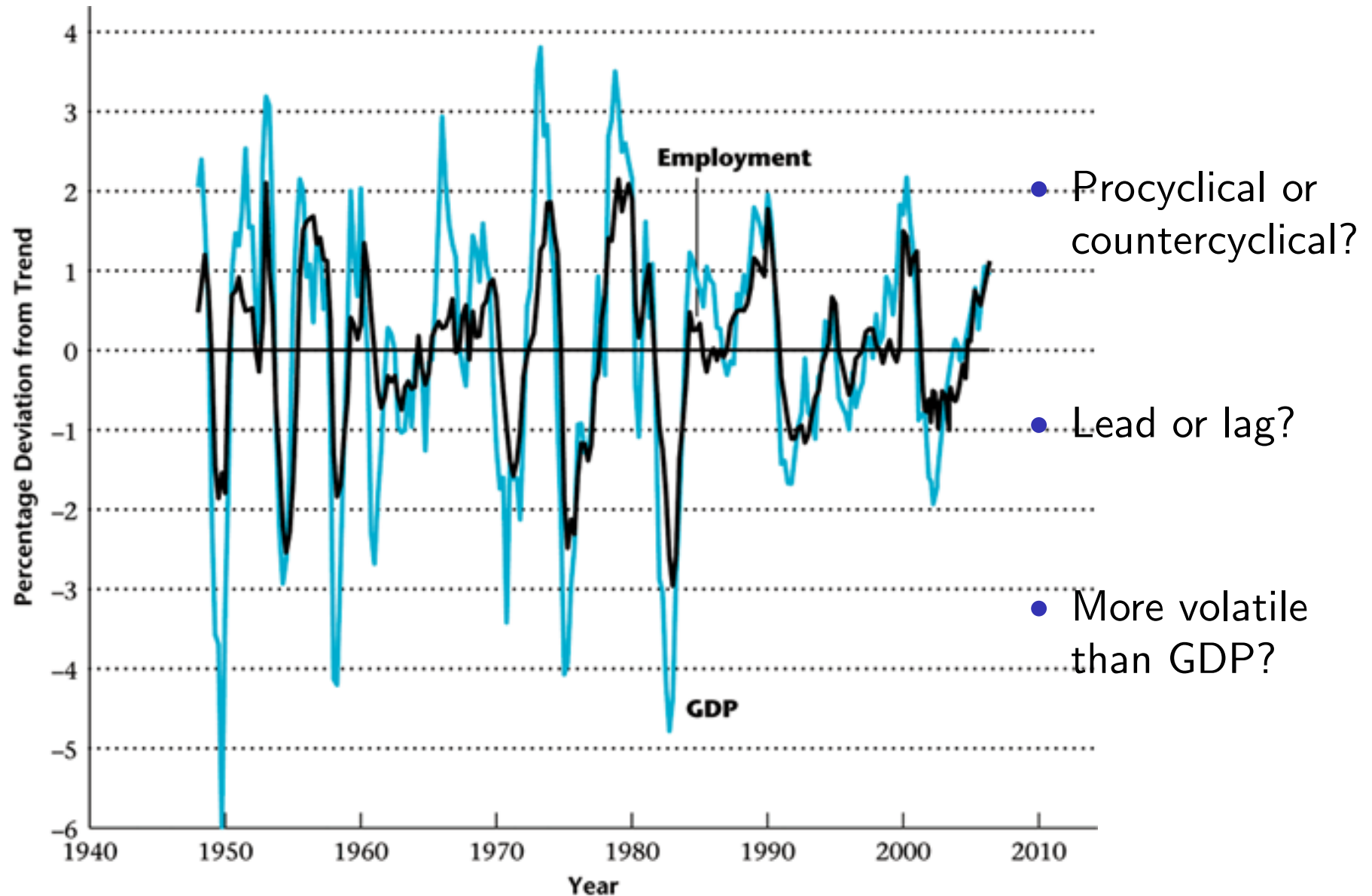
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EMPLOYMENT AND GDP

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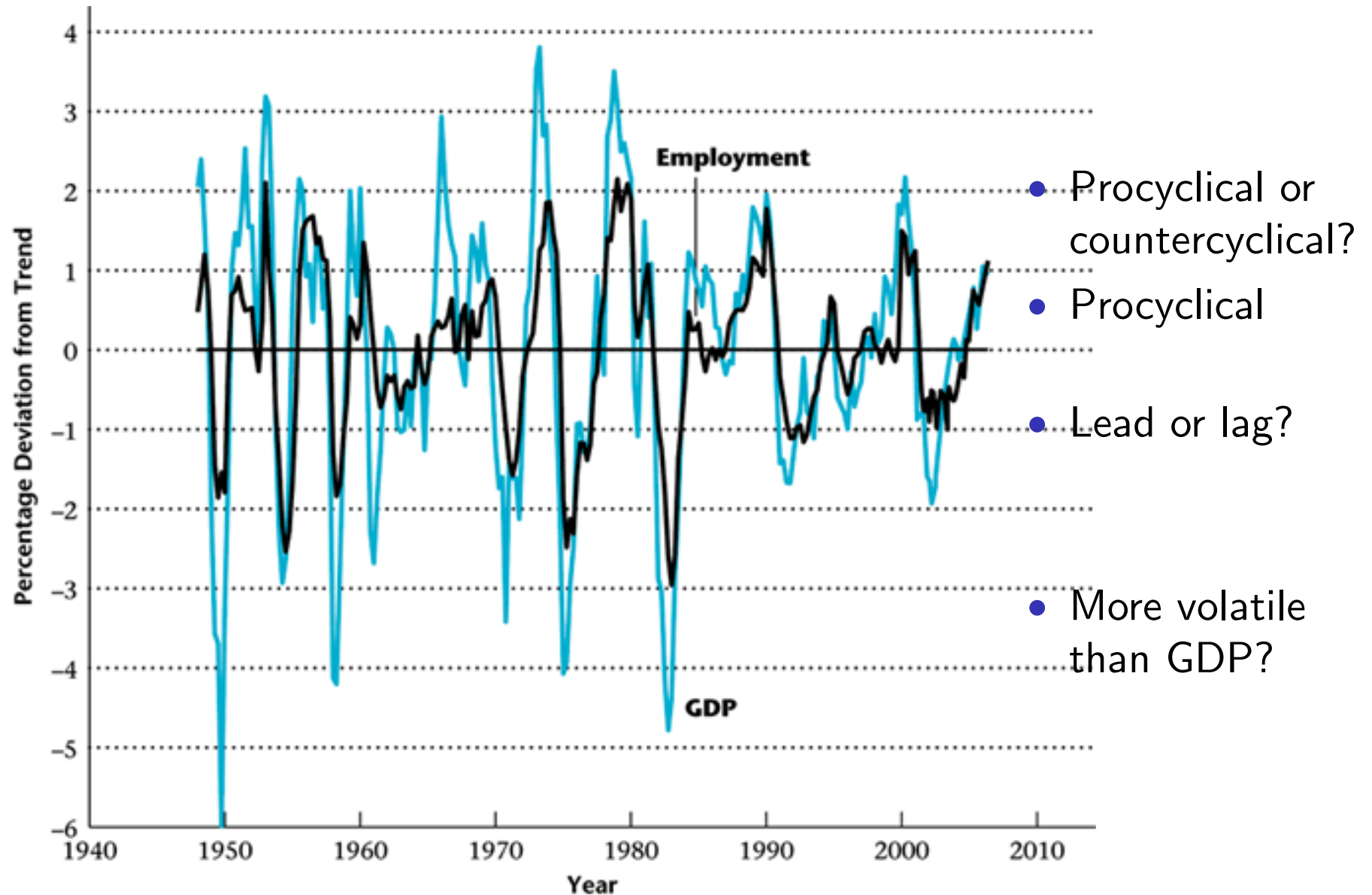- Lead or lag?
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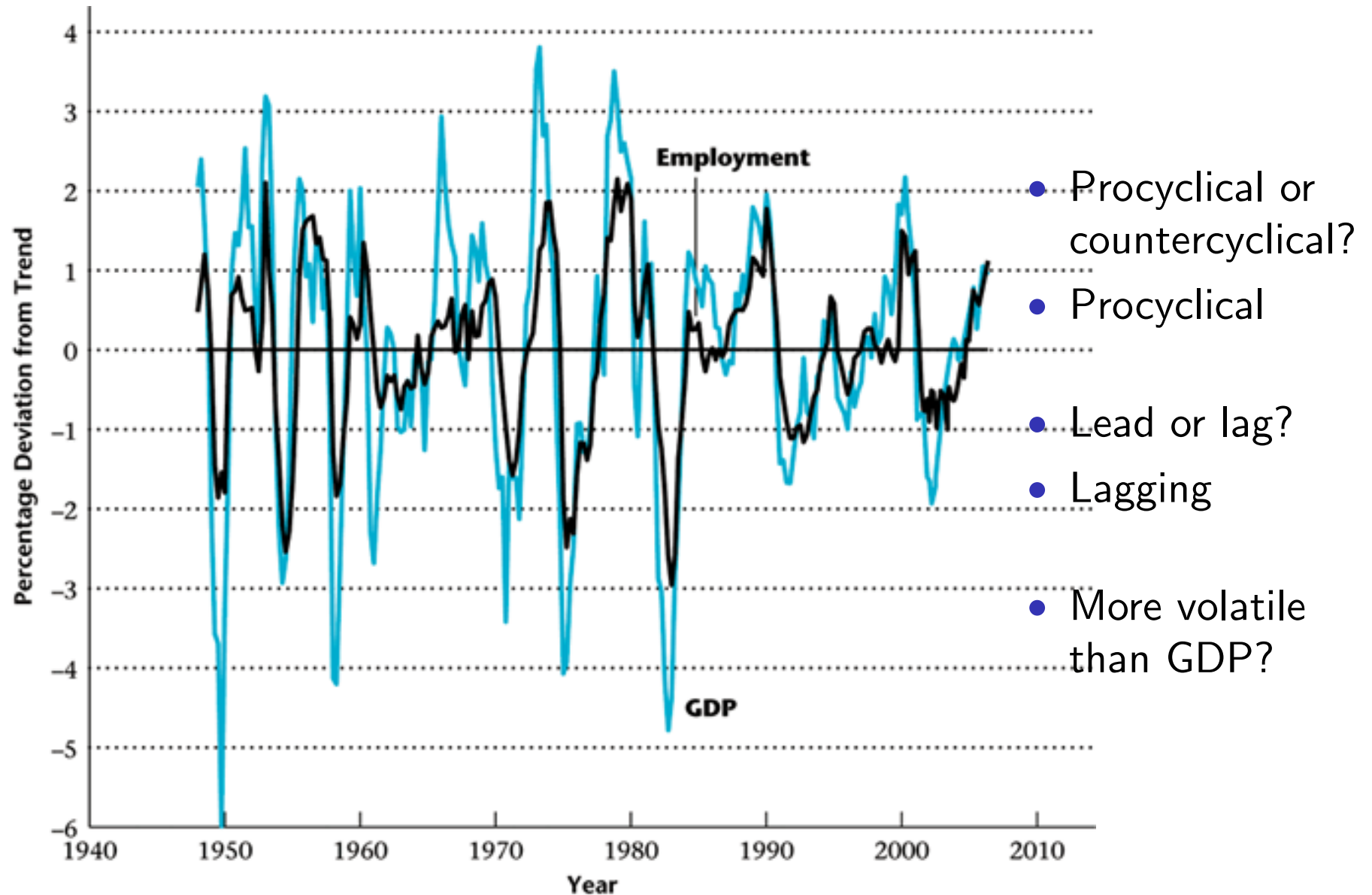# Average Labor Productivity and GDP

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Summary

Our models should be able to replicate the following table.

	Cyclicality	Lead/Lag	Variability Relative to GDP
Consumption	Procyclical	Coincident	Smaller
Investment	Procyclical	Coincident	Larger
Price Level	Countercyclical	Coincident	Smaller
Money Supply	Procyclical	Leading	Smaller
Employment	Procyclical	Lagging	Smaller
Real Wage	Procyclical	?	?
Average Labor Productivity	Procyclical	Coincident	Smaller