ECON 202 - MACROECONOMIC PRINCIPLES

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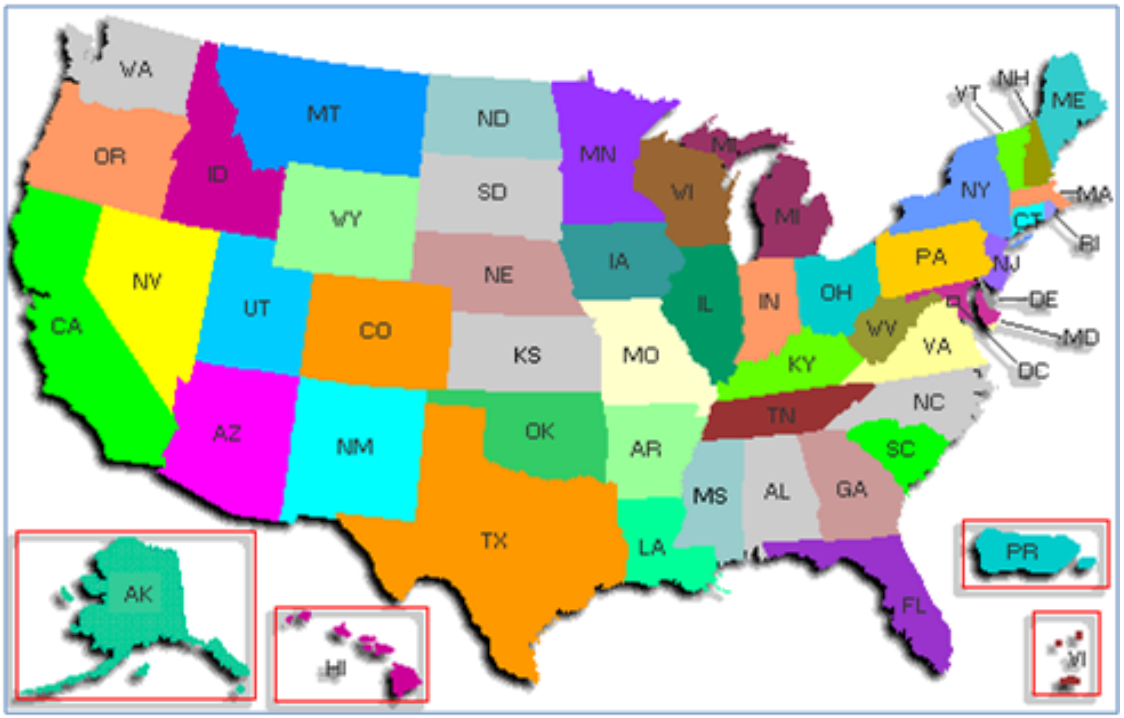
Chapter 1 - Introduction to Macroeconomics

Some US Facts

Considering the biggest economy in the world



Quick Facts

- Land area: 3,500 mil square miles

- Population: 310 mil people
- 113 mil households
- 27 mil firms

- GDP: $16.2 trillion (in 2012 USD)
- GDP per capita: $50,000 (in 2012 USD)
- Gross Domestic Product (GDP): the quantity of goods and services produced within a country's borders over a particular period of time.

Aggregate Variables

Figure 1: Real GDP (2009 USD)

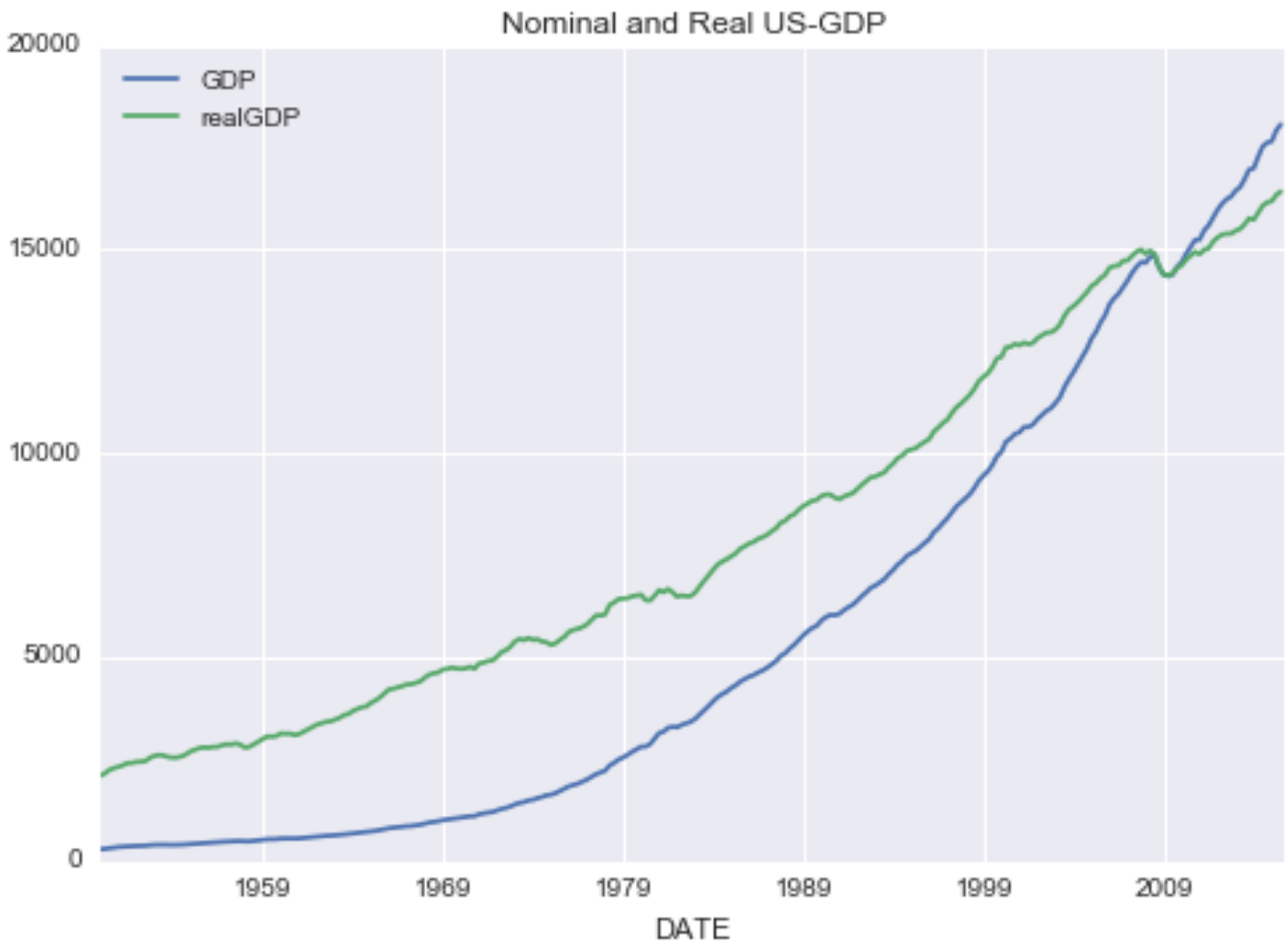


Figure 2: Per Capita Real GDP (2000 USD)

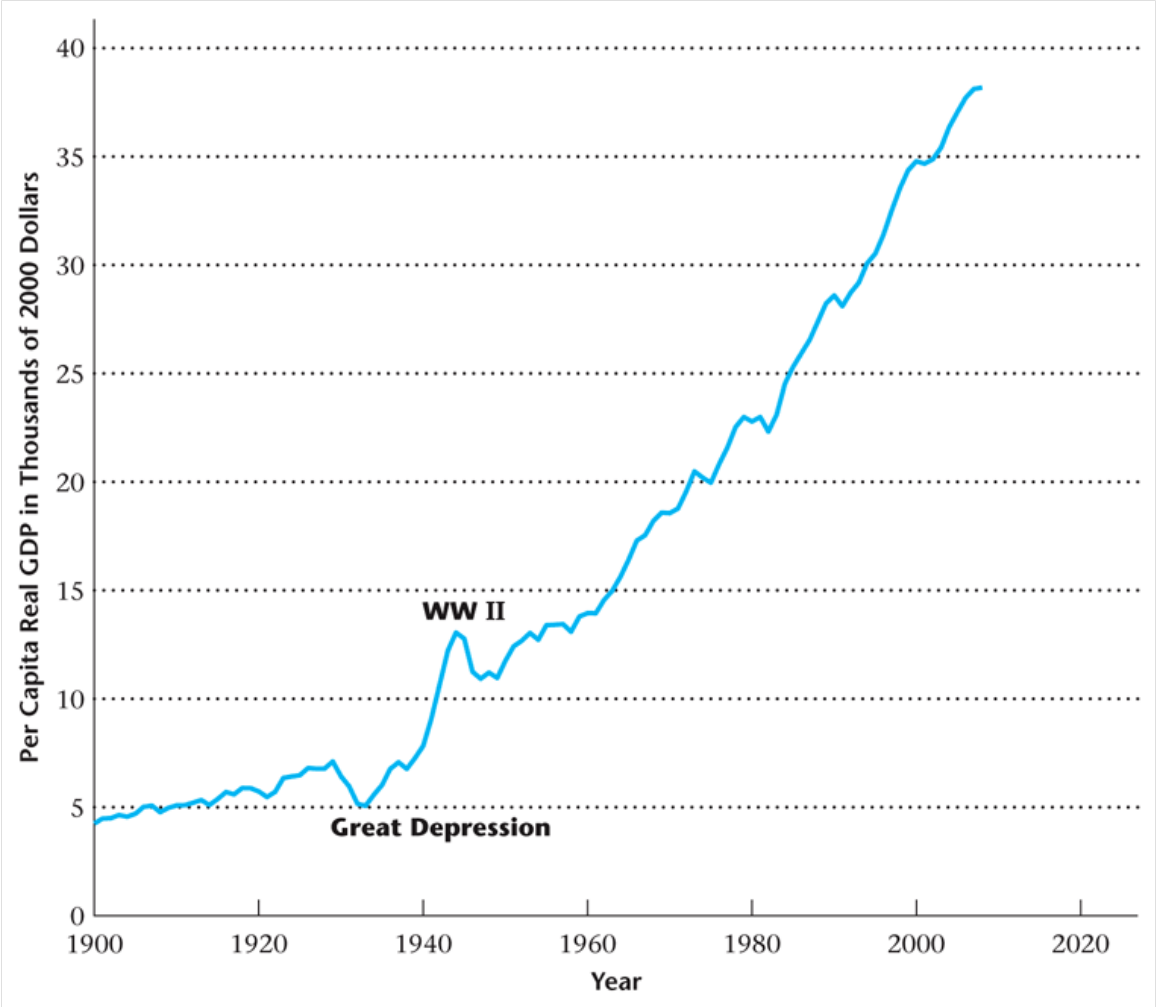


Figure 3: GDP and Consumption (2009 USD)

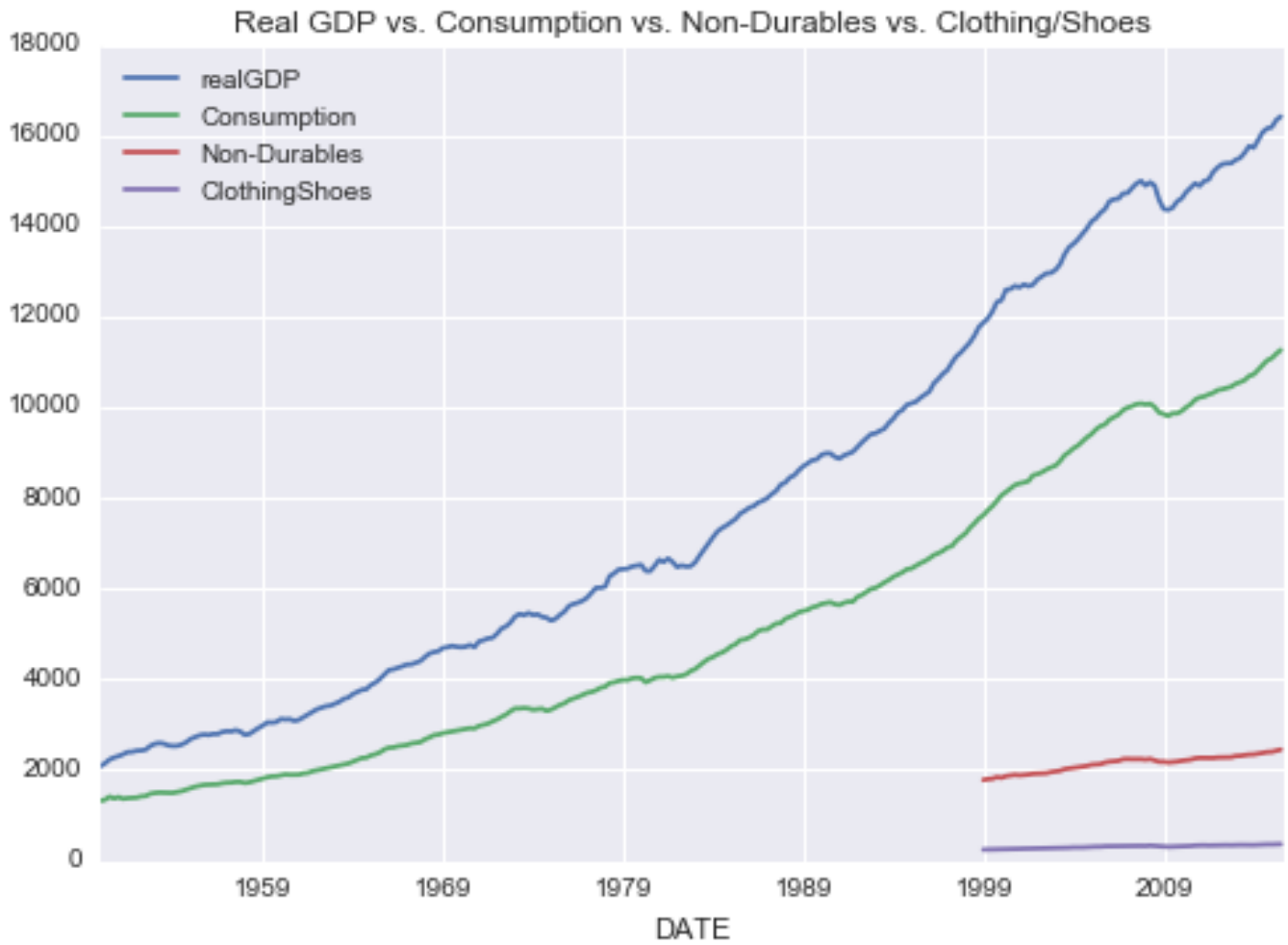


Figure 4: Growth Rates of GDP vs. Personal Consumption

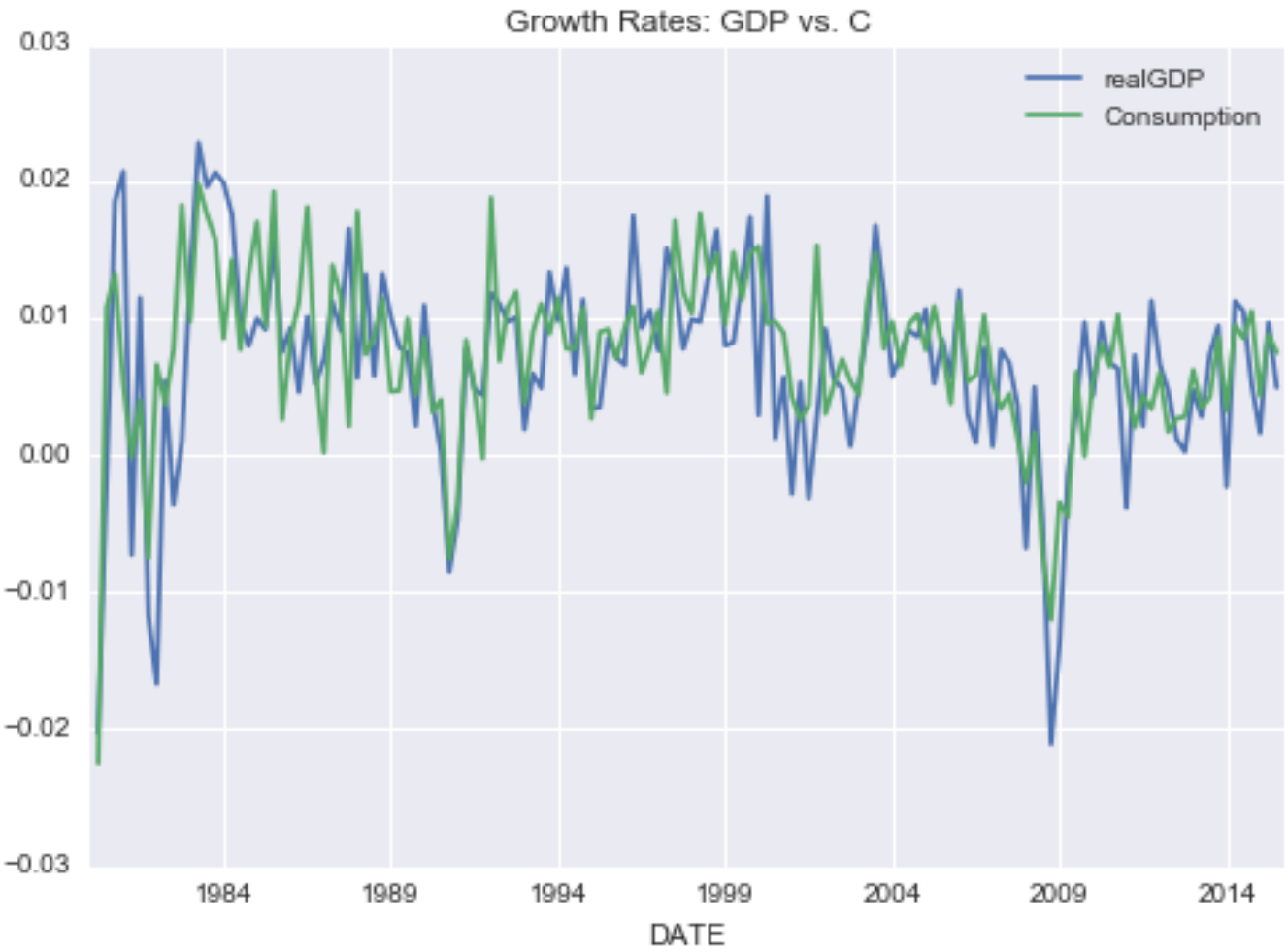


Figure 5: Growth Rates of Real GDP and Non-Durables Consumption

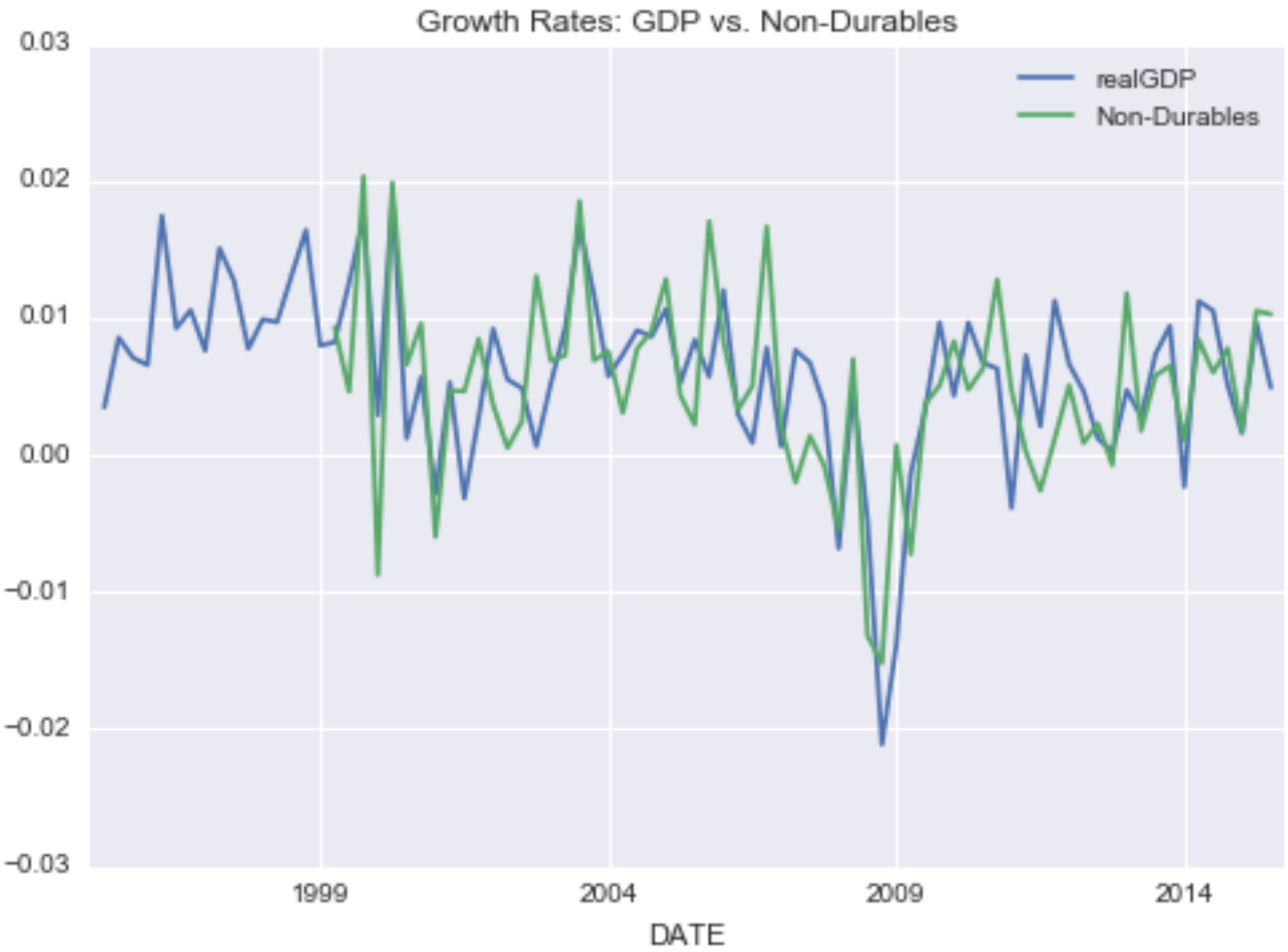
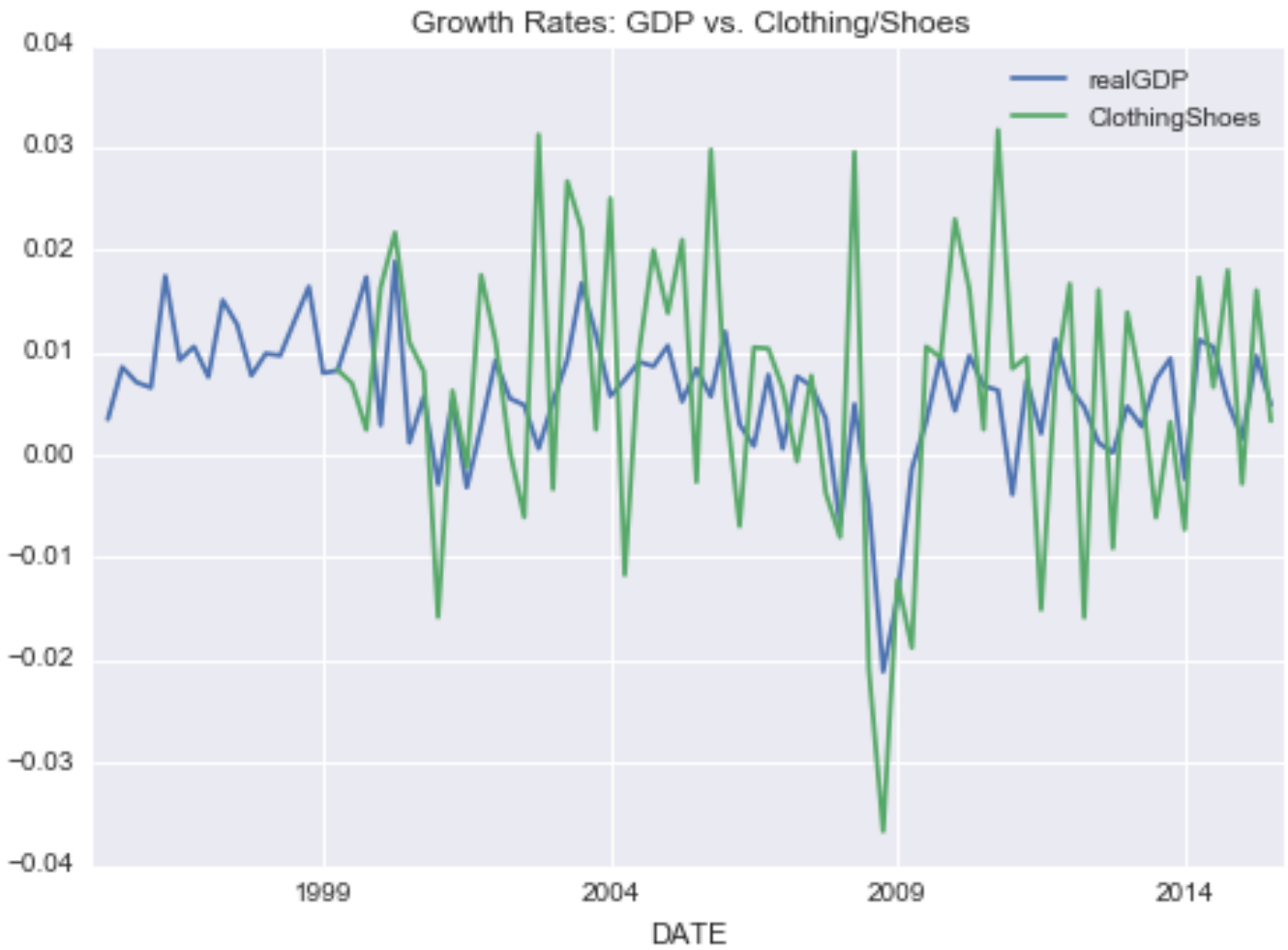


Figure 6: Growth Rate GDP vs. Consumption of Clothing/Shoes



Key Macroeconomic Facts

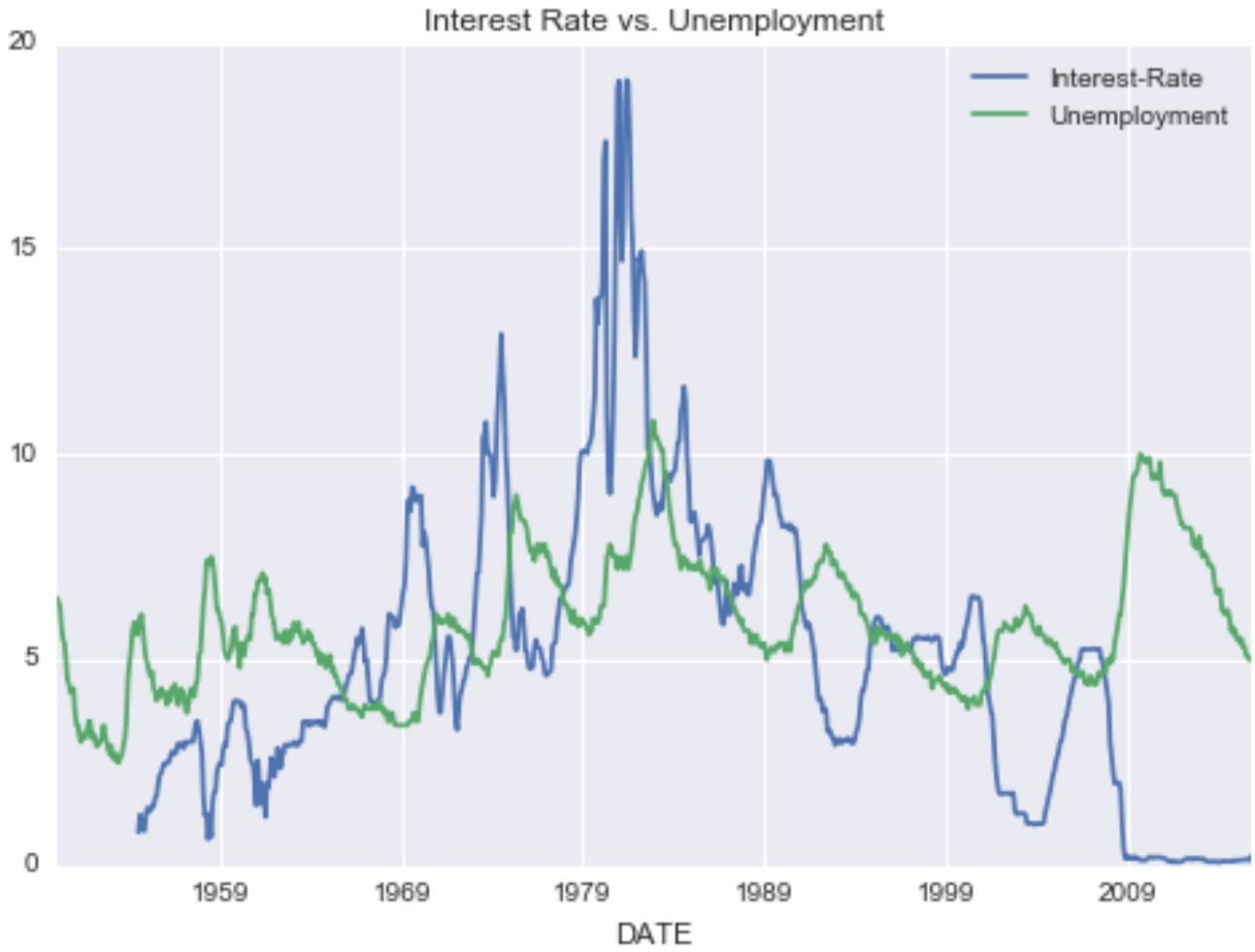
- Fact 1: Upward exponential trend
  - Between 1900 and 2002, average income increased eight-fold
  - Long-run growth
- Fact 2: Fluctuations around long term growth trend
  - Short-run cyclical components
  - Business cycle
- There exist stable, quantitatively accurate relations among aggregate variables

A Stable Relationship?

Figure 7: Okun's Law

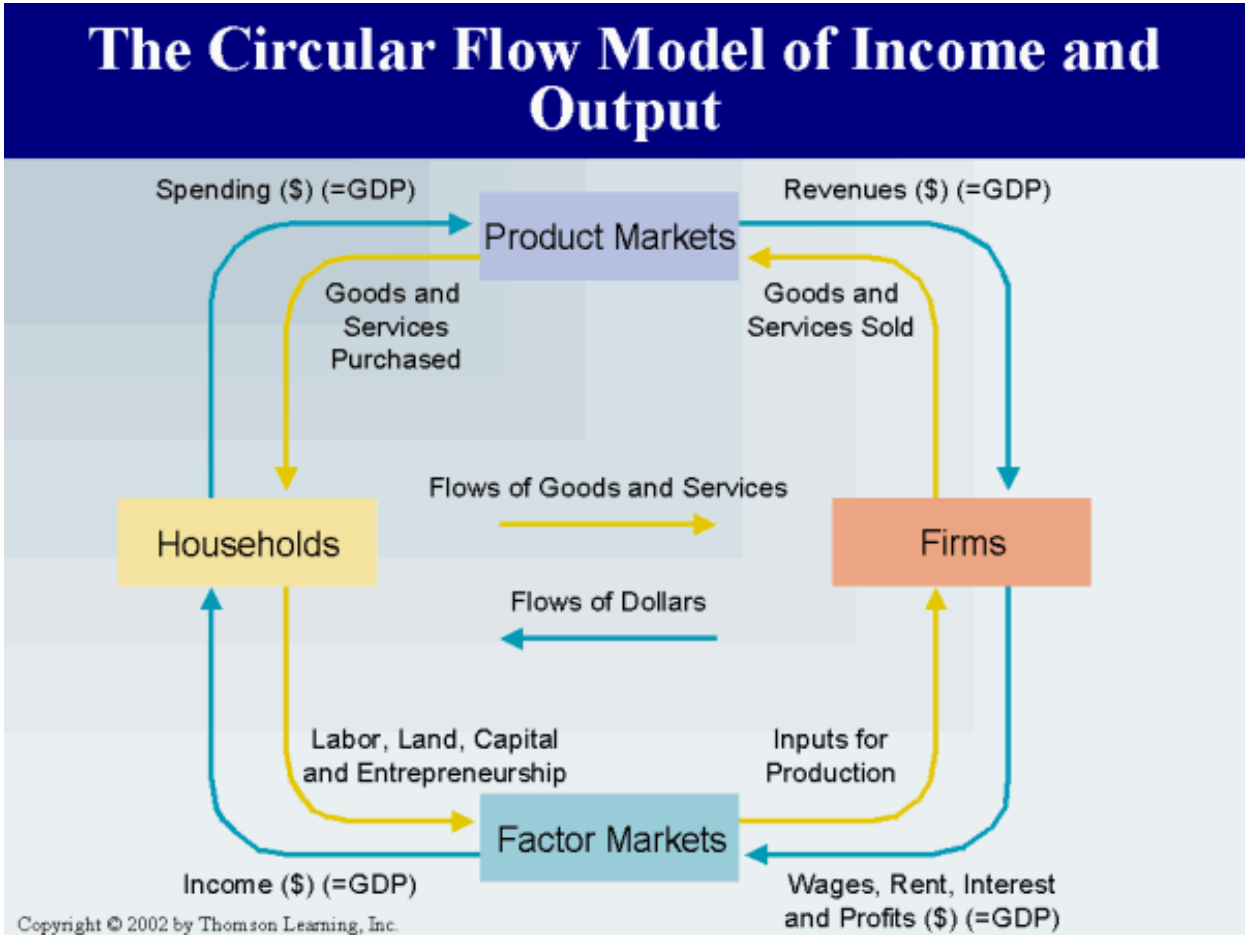
A Stable Relationship?

Figure 8: Interest Rates and Unemployment



A Macroeconomic Model

Model


The Circular Flow Model of Income and Output
Spending ($) (=GDP)
Revenues ($) (=GDP)
Product Markets
Goods and Services Purchased
Goods and Services Sold
Flows of Goods and Services
Households
Firms
Flows of Dollars
Labor, Land, Capital and Entrepreneurship
Inputs for Production
Factor Markets
Income ($) (=GDP)
Wages, Rent, Interest and Profits ($) (=GDP)
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Some fundamental macro questions

1. What causes sustained economic growth?
2. Is economic growth indefinite *i.e.* limit to growth?
3. Can governments (policymakers) alter the rate of growth?
4. What causes business cycles?
5. Can the booms (expansions) and busts (recessions) be repeated?
6. Should governments (policymakers) smooth business cycles?

Recessions

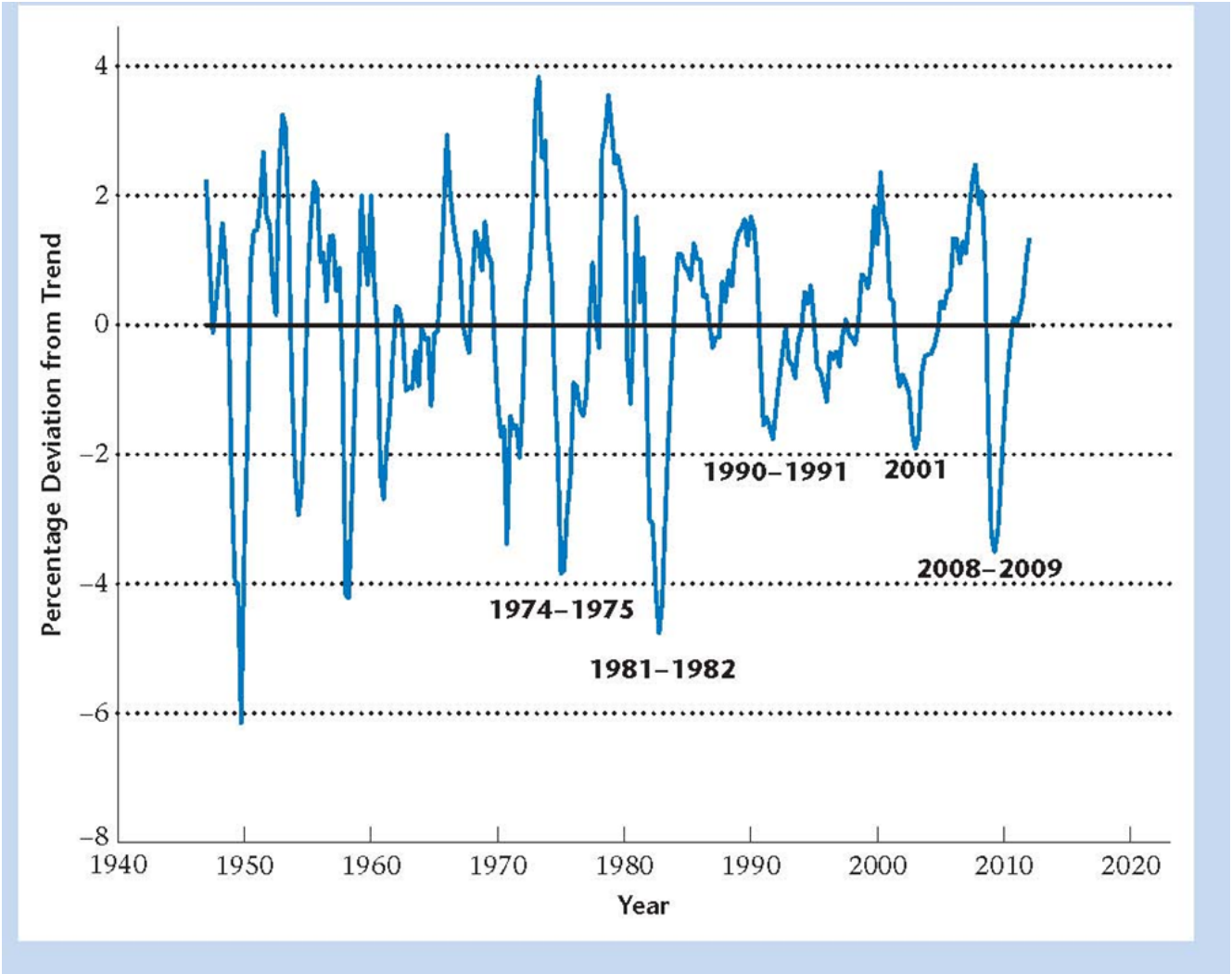
1. 1974 – 1975: Oil price shock caused by OPEC restrictions
2. 1981 – 1982: Fight inflation using monetary policy i.e. high interest rates (Volcker rule)
3. 1990 – 1991: Gulf War, oil price high again
4. 2001: Burst of Dot.com bubble and loss of optimism $\rightarrow$ start of housing bubble (Greenspan rule)
5. 2008 – 2009: Burst of Housing bubble and financial crisis

1982 – 2008: The Great Moderation $\rightarrow$ macro aggregates become less volatile

Figures

Figures (cont.)

Figure 9: Percentage Deviation from Trend in Real GDP, 1947-2009

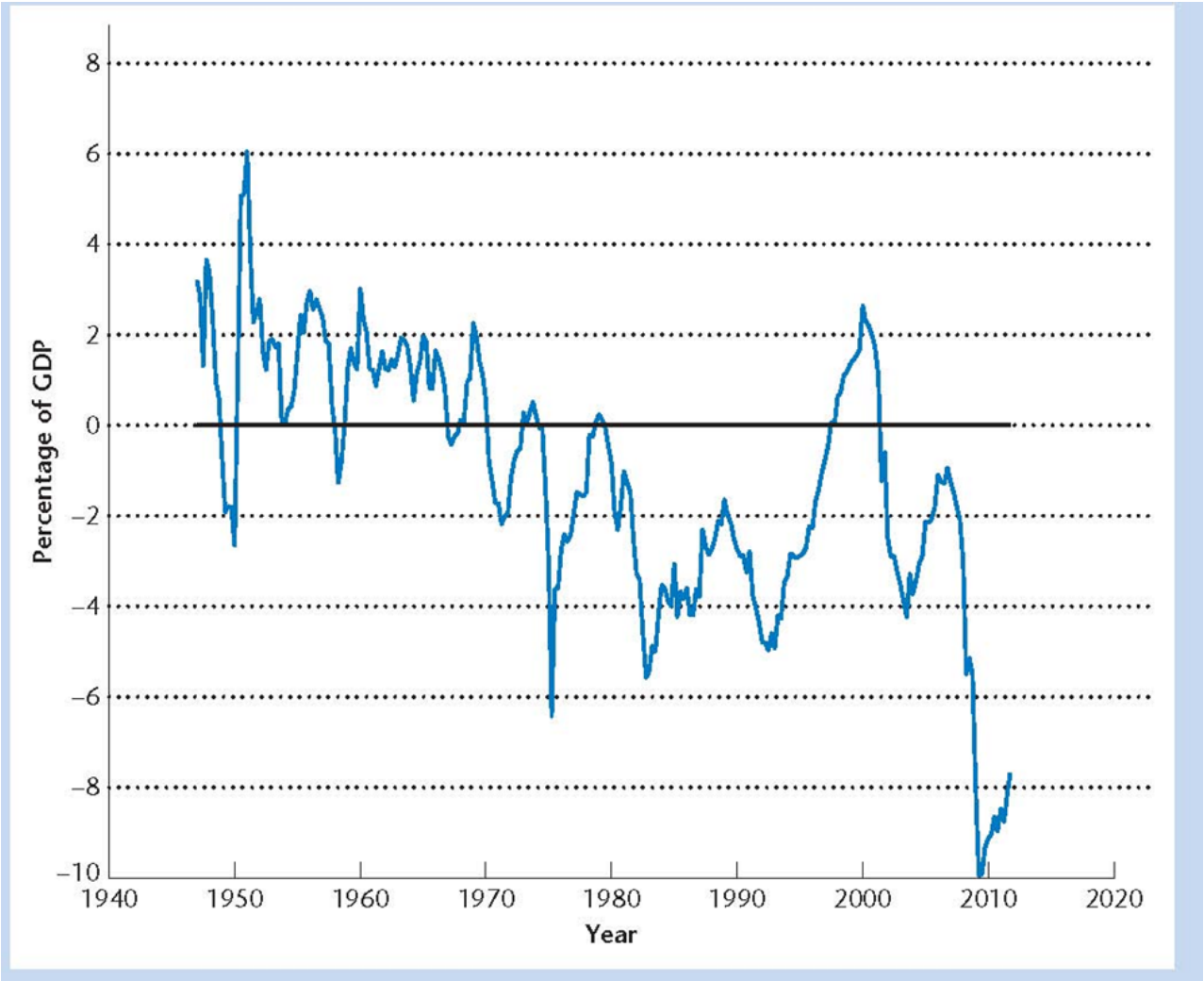


Figures (cont.)

Figure 10: Total Taxes and Total Government Spending

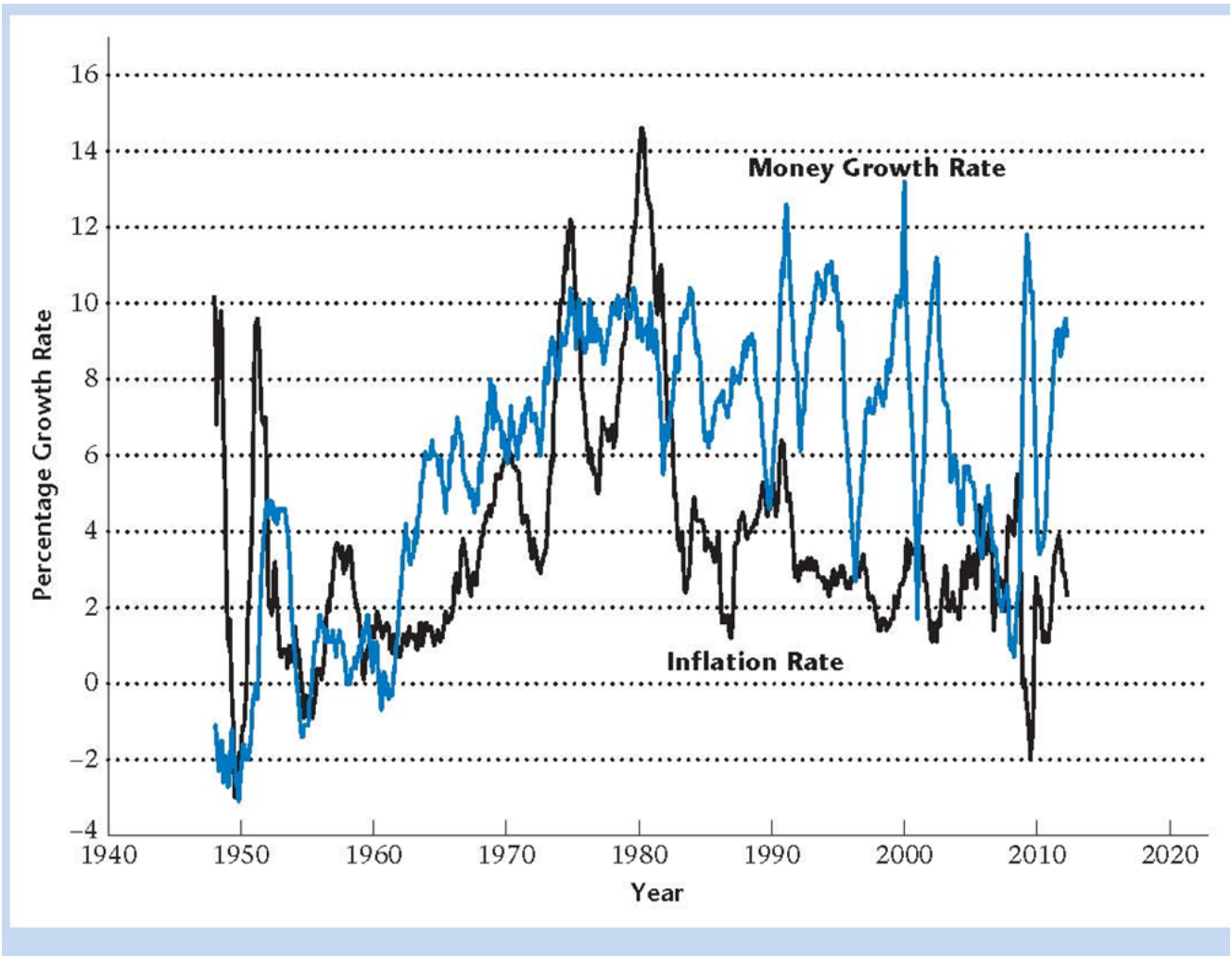
Figures (cont.)

Figure 11: Government Surplus (Deficit) as fraction of GDP



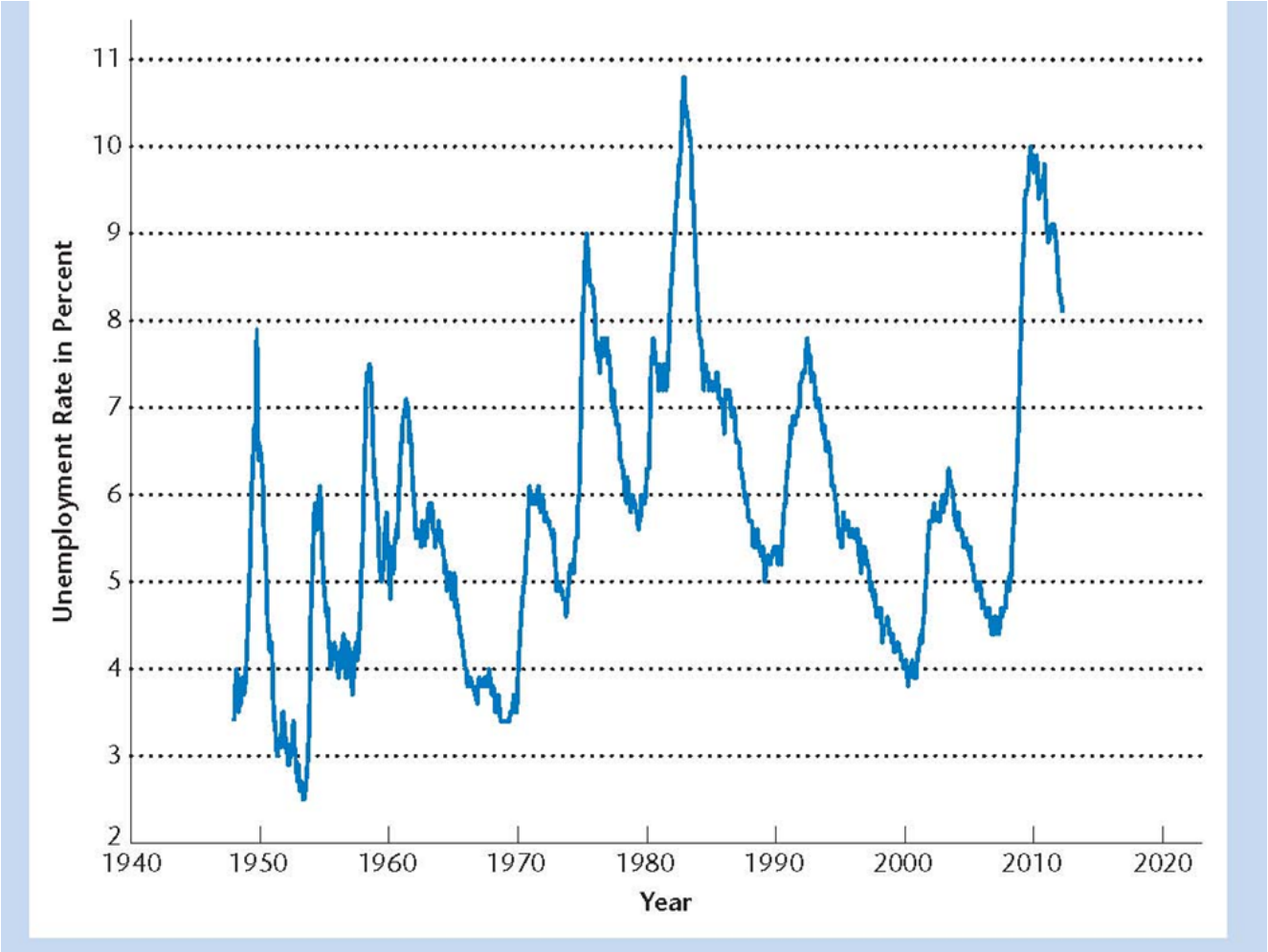
Figures (cont.)

Figure 12: The Inflation Rate and the Money Growth Rate



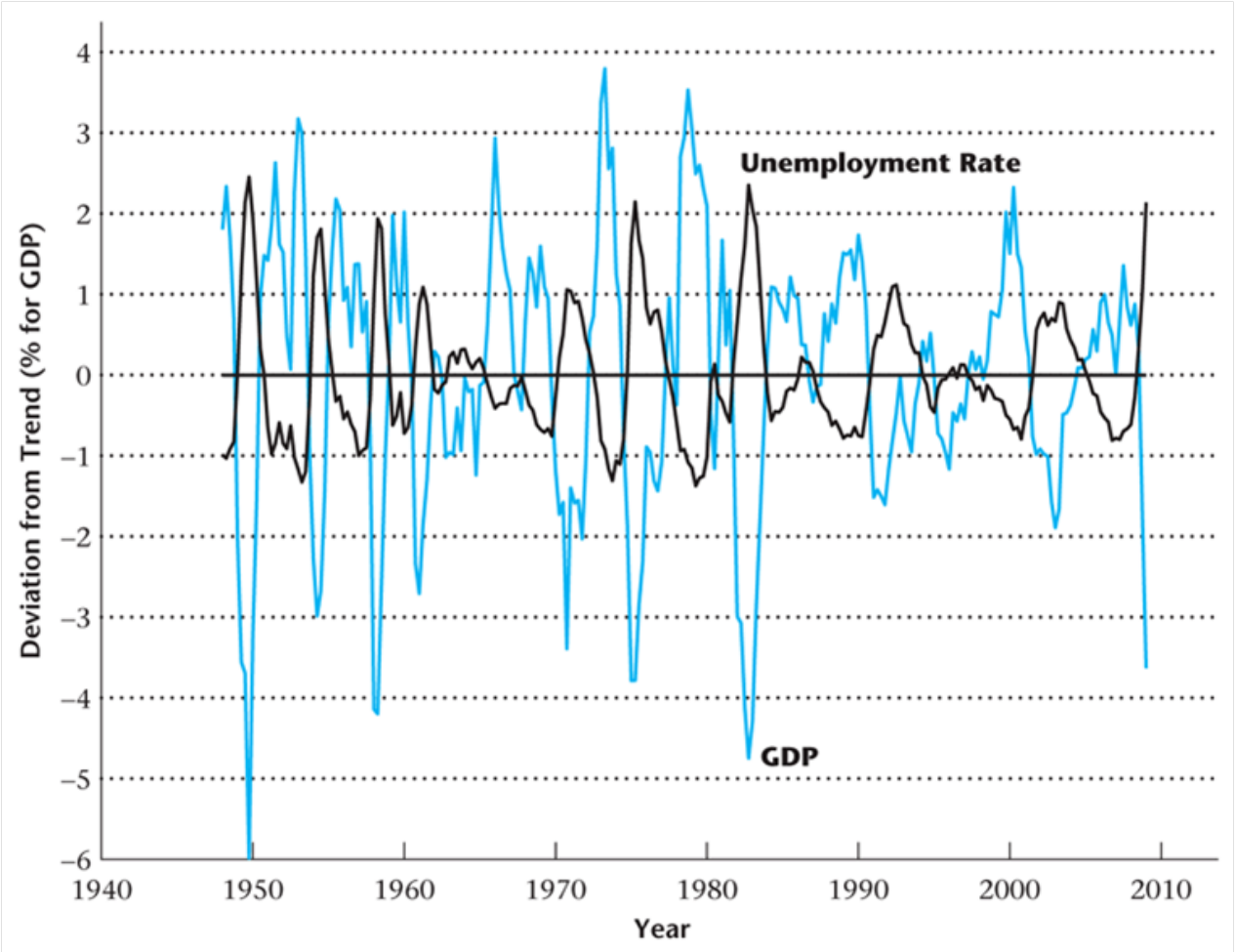
Figures (cont.)

Figure 13: The Unemployment Rate in the United States, 1948-2012



Figures (cont.)

Figure 14: Deviations from Trend in the Unemployment Rate and Percentage Deviations from Trend in Real GDP



Appendix

How to Measure Growth

- Consider a time series $y_0, y_1, ..., y_{t-1}, y_t, ..., y_T$
- Let y_t denote GDP in time period t i.e. US GDP 10 trillion in year t.
- Growth rate is the rate of change (Discrete vs. Continuous). The discrete rate of change is:

$$g_t = \frac{y_t - y_{t-1}}{y_{t-1}} = \frac{y_t}{y_{t-1}} - 1$$

so that

$$1 + g_t = \frac{y_t}{y_{t-1}}$$

How to Measure Growth (cont.)

- Note: If x is small then $\log(1+x) \approx x$. So, if g_t is small then:

$$\begin{aligned} \log(1+g_t) &\approx g_t \\ \log\left(\frac{y_t}{y_{t-1}}\right) &\approx g_t \\ &\textit{or} \\ \log y_t - \log y_{t-1} &\approx g_t \\ \Delta \log y_t &\approx g_t \end{aligned}$$

- g_t is the slope of the $\log y_t$ line.
- Can think of growth rates in log as continuous time analogue of discrete approximation

How to Measure Growth (cont.)

- Remember also the definition of log

$$ln(x) = y \rightarrow e^y = x$$

so that

$$ln(1) = 0 \rightarrow e^0 = 1,$$
$$ln(e) = 1 \rightarrow e^1 = e,$$

where e is Euler's constant

$$e = \lim_{n \to \infty} \left(1 + \frac{1}{n}\right)^n = 2.71828$$

Figure 15: Natural Log of Per Capita Real GDP