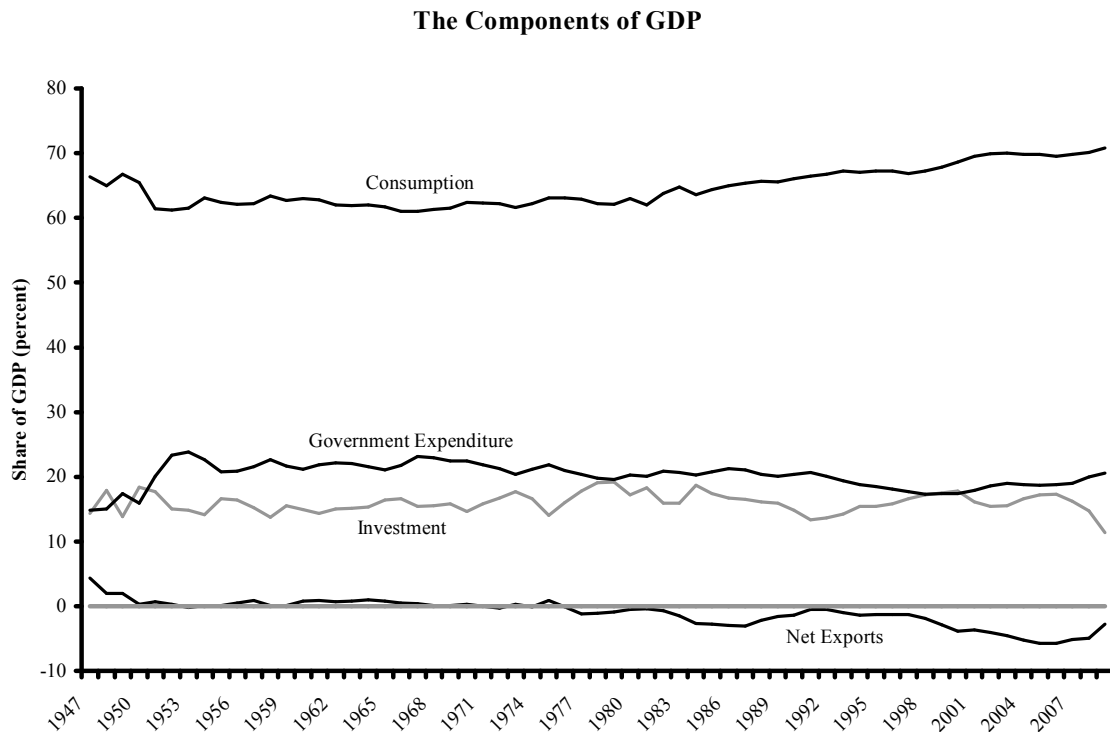


Chapter 2 Selected Answers

Problem 2.1: [Each students conjectures will be different.]

(a)



(b)

Components of GDP: Descriptive Statistics

	Consumption	Investment	Government Expenditure	Net Exports
Mean	64.7	16.0	20.2	-1.0
Variance	8.7	2.3	3.8	4.2
Standard Deviation	2.9	1.5	1.9	2.0
Coefficient of Variation	4.6	9.4	9.6	212.5

Notes: original data express each component as a percentage share of GDP.

(c) Both the graph and the data in the table show that consumption is the largest component of GDP (on average nearly 2/3) and net exports the smallest (in fact, often negative); while, typically, government expenditure is second and investment third. The shares display some variability, but only weak trends. Consumption trended upwards from the mid-1980s and net exports downward from the mid-

1970s. Neither investment nor government expenditure display a strong trend. Net exports are by far the most volatile component of GDP as measured by the coefficient of variation. Investment and government expenditure display a similar and much smaller volatility; while consumption is the most stable component – only about half as volatile as either investment or government expenditure.

[A good answer will relate each conjecture to particular data in the table to confirm or contradict it.]

Problem 2.3:

- The *Production-Expenditure Identity*: $Y = C + I + G + (EX - IM) = 68,439 + 22,783 + 20,464 + (1,284 - 39,252) = 113,718$
- The *Disposable-Income Identity*: $YD = Y - T + TR = 113,718 - 34,440 + 14,361 = 93,639$
- The *Sectoral-Deficits Identity*: $(G - (T - TR)) + (I - S) + (EX - IM) = (20,464 - (34,440 - 14,361)) + (22,783 - 25,200) + (41,284 - 39,252) = 385 - 2,417 + 2,032 = 0$
- The *Inflow-Outflow Identity*: $I + G + EX = 22,783 + 20,464 + 41,284 = 84,531 = S + (TTR) + IM = 25,200 + (34,440 - 14,361) + 39,252 = 84,531$

All four national-income-accounting identities hold in 2000 (current dollars).

Problem 2.5:

The Variability of GDP Growth Rates		
	Real GDP Growth (annual rate)	Real GDP Growth (annualized quarterly rate)
Variance	7.4	16.9
Standard Deviation	2.7	4.1

Note: the root growth rates are expressed in percentage points.

The calculation does bear out the visual impression of Figure 2.11: the annualized quarterly growth rate shows a higher variance and standard deviation.

Problem 2.8:

Economic Performance by the Terms of Office of American Presidents					
Rank	President	Average Annual Rates of real GDP Growth	Rank	President	Average Annual Rate of Inflation
1	John F. Kennedy	5.5	1	Barack Obama	0.5
2	Lyndon B. Johnson	5.1	2	John F. Kennedy	1.3
3	William J. Clinton	3.7	3	William J. Clinton	1.8
4	Jimmy Carter	3.4	4	Dwight D. Eisenhower	1.9
5	Ronald Reagan	3.3	5	George W. Bush	2.5
6	Gerald R. Ford	3.0	6	Lyndon B. Johnson	3.0
7	Richard M. Nixon	2.5	7	George H.W. Bush	3.1
8	Barack Obama	2.4	8	Ronald Reagan	3.8
9	Dwight D. Eisenhower	2.3	9	Richard M. Nixon	5.9
10	George H.W. Bush	1.9	10	Gerald R. Ford	7.1
11	George W. Bush	1.7	11	Jimmy Carter	8.3

*2010:1

Notes: Original data real GDP and the implicit price deflator. Growth rates ranked from high to low; inflation rates from low to high.

[There is no one correct way to answer this question, since it depends on judgments on the relative importance of GDP growth and inflation. Each student should supply and justify his or her own answer.]

Problem 2.10: Quarterly rate = 0.80 percent. Compound annual rate = 3.23 percent.

Problem 2.12: 2.31 percent.

Problem 2.15: (*Answers use rule of 72 or of 69 or 70, whichever is more convenient and/or more accurate.*)

Doubling times:

- at $1/3$ percent per year = 216 years.
- at 1.5 percent per year = 48 years.
- at 3 percent per year = 23 years.

Quadrupling times:

- at $1/4$ per year = 576 years.
- at 1 percent per year = 140 years.
- at 2 percent per year = 70 years.

Halving times:

- at $-1/4$ percent per year = 288 years.
- at -1 percent per year = 69 years.