

Chapter 4 Selected Answers

Problem 4.1:

(a) Laspeyres: $p_{2010}^L = 100$; $p_{2011}^L = 140$.

Paasche: $p_{2010}^P = 100$; $p_{2011}^P = 138$.

Fisher-ideal: $p_{2010}^F = 100$; $p_{2011}^F = 139$.

(b) $Y_{2010} = 35.00$; $Y_{2011} = 31.29$.

(c) $Y_{2010} = 48.65$; $Y_{2011} = 43.50$.

Problem 4.3:

(a) $pf_{2012}^L = 2.154$.

(b) For reference year 2010 = 100, $p_{2012}^L = 215.4$; for reference year 2012 = 100, $p_{2010}^L = 46.42$.

(c) $\bar{p} = 46.8$ percent per year.

Problem 4.5:

(a) Note that mud is an intermediate product and so does not count in GDP. The table gives the required information:

	2010	2011
Nominal GDP	200,000	215,800
Laspeyres Index	100.0	107.50
Paasche Index	100.0	107.36
Chain Index	100.0	107.43
Real GDP	200,000	200,875
(using the chain index)		

(b) *Gross Domestic Product* is all the final goods and services produced inside a country; *Net National Product* = *Gross National Product* – *Depreciation of Capital* = *Gross Domestic Product* + *Net Income from Abroad* – *Depreciation of Capital*.

For Elbonia: $NNP_{2010} = 190,000$; $NNP_{2011} = 205,900$.

(c) $NX = 36,645$; and $GNP_{2011} = 252,445$.

(d) $GNP_{2010} = 190,000$; $GNP_{2011} = 210,235$.

Problem 4.9:

	Price 1998:3	Price 1948:1	Price 1980:4
(i) Vacuum Cleaner	169.00	28.17	97.76
(ii) Cookware Set	299.99	50.00	173.54
(iii) Man's Sportshirt	24.99	4.16	14.46
(iv) Television	219.99	36.67	127.26
(v) Personal Computer	604.00	100.67	349.40

Problem 4.11:

(a)

**Difference of Between the Annual Rates
of CPI and Core CPI Inflation**
(percentage points)

Mean	0.03
Standard Deviation.	1.07
Variance	1.15

(b)

**Deviations from the Mean of the Difference
Between the Annual Rates of
CPI and core CPI Inflation**

Number of Standard Deviations	Equivalent Number of Percentage Points of the Inflation Rate
$\frac{1}{2}$	± 0.54
1	± 1.07
2	± 2.14

If core CPI is taken as the standard of true inflation, then calculations based on CPI inflation might be quite misleading. Notice that the mean of the difference between CPI and core CPI is nearly zero. On average over long periods, then, CPI and core CPI do not drift far apart. We know that 38 percent of normally distributed observations lie within $\frac{1}{2}$ standard deviation, so 30 percent (= 68 – 38) lie *between* $\frac{1}{2}$ and 1 standard deviation; 27 percent (= 95 – 38 – 30). Thus, about 4 times out of 10, the two series will report inflation rates within about $\frac{1}{2}$ percentage point of each other, which is surely close enough for most purposes. But 3 times out of 10 the difference will be between about $\frac{1}{2}$ and 1 percentage point; nearly 3 time out of 10 between about 1 and 2 percentage points, and 1 time in 20 more than 2 percentage points. (Note: that the equivalent number of percentage points are approximately equal to the number of standard errors is an odd fact about this particular data and by no means a general rule.) Monetary policymakers regard a 1 percentage point increase in the inflation rate as worrying and a 2 percentage point increase as calling for a strong monetary policy response. Thus, even if the true inflation rate as measured by the core CPI were zero, we would expect the policymakers to at least be concerned more 1/3 of the time. That seems like a too frequent mistake.