

Question 1

- a. GDP stands for Gross Domestic Product. The four major expenditure components are:
- Consumption – anything that gives us utility today, but does not provide utility in the future
 - Investment – anything that we store away for the purposes of providing future consumption (i.e. contributes to the capital stock)
 - Government spending
 - Net exports (Exports less imports)
- b. Consumer price inflation: the rate of change of a basket of consumption goods. Over long periods of time, the printing of money causes consumer price inflation. This is because the printing of money does not create goods; so more money chasing the same amount of goods causes the price of goods to rise.

Question 2

						exp. Share	growth,	inflation
Year	a	pa	b	pb	Nom GDP	apples	real GDP	rate
2000	25	\$ 1.00	30	\$ 2.50	\$ 100.00	0.25	NA	NA
2001	26	\$ 1.02	31	\$ 2.566	\$ 106.07	0.25	3.50%	2.48%

Real GDP growth (from 2000-2001) = $0.25 \times (26/25) + 0.75 \times (31/30) - 1.0 = 3.50\%$

Inflation (from 2000-2001) = $0.25 \times (1.02/1.00) + 0.75 \times (2.566/2.50) - 1.0 = 2.48\%$

Likely that phi is equal to 0.25.

Question 3

Year	pa	a	pb	b	pc	c	Nom. GDP	exp. Share apples	exp. Share bananas	exp. Share cherries
2000	\$ 10.00	100	\$ 20.00	100	\$ 35.00	200	\$10,000.00	0.100	0.200	0.700
2001	\$ 11.00	103	\$ 19.00	102	\$ 35.00	200	\$10,071.00	0.113	0.192	0.695
2001	\$ 12.00	104	\$ 20.00	103	\$ 36.00	206	\$10,724.00	0.116	0.192	0.692
	all goods						no cherries			
	growth, real GDP	inflation rate	real GDP \$2000	real GDP \$2002		Year	exp share apples	exp share bananas	growth real GDP	inflation rate
2000	NA	NA	\$10,000.00	\$10,401.58		2000	0.333	0.667	NA	NA
2001	0.70%	0.00%	\$10,070.00	\$10,474.39		2001	0.369	0.631	2.33%	0.00%
2001	2.38%	4.02%	\$10,309.98	\$10,724.00		2001	0.377	0.623	0.98%	6.68%

Question 4

	Apples		Bananas		Nominal GDP	Real GDP (in \$2005)	Ann. Growth Rates in %		exp share apples	exp share bananas
Year	Quan.	Price	Quan.	Price			Real GDP	Infl.		
2005	10	\$ 2.00	5	\$ 1.00	\$ 25.00	\$ 25.00	NA	NA	0.80	0.20
2006	11	\$ 2.02	6	\$ 1.05	\$ 28.52	\$ 28.00	12.00%	1.80%	0.78	0.22
2007	12	\$ 2.05	7	\$ 1.12	\$ 32.44	\$ 31.01	10.76%	2.63%	0.76	0.24

Question 5

	Nominal	exp share	exp share	Nom. Apple	Nom. Banana					inflation	growth
Year	GDP	apples	bananas	expenditures	expenditures	pa	pb	a	b	rate	real GDP
2005	\$ 100.00	0.20	0.80	\$ 20.00	\$ 80.00	\$1.0000	\$5.0000	20.00	16.00	NA	NA
2006	\$ 105.00	0.20	0.80	\$ 21.00	\$ 84.00	\$1.0300	\$5.1000	20.39	16.47	2.20%	2.74%
2007	\$ 110.00	0.20	0.80	\$ 22.00	\$ 88.00	\$1.0815	\$5.2530	20.34	16.75	3.40%	1.32%

Question 6

$$\begin{aligned}\text{Overall} &= \text{apples contribution} + \text{bananas contribution} \\ 1.05 &= 0.2 * 1.5 + 0.8 * x\end{aligned}$$

$$0.8 * x = 0.75 \rightarrow x = 0.9375$$

The price of bananas decreased by 6.25 percent (0.9375 – 1.0).

Question 7

This question requires that you download data from the NIPA. I used NIPA Table 1.1.5 and computed the ratio of line 11 (Gross Private Domestic Fixed Investment: Residential) to line 1 (Gross Domestic Product). The average of this ratio from 47:Q1 to 96:Q4 is 4.77%; the average of the ratio from 97:Q1 to 07:Q4 is 4.97%.

Question 8

32 percent.

Question 9

This is a direct application of the formula:

$$\begin{aligned}\text{Alpha} &= \text{Capital Income} / (\text{Total Income} - \text{Ambiguous Income}) \\ &= \$27 / (\$100 - \$10) \\ &= 0.30\end{aligned}$$

Capital's share of income in 2003 in Germany is 30%.

Question 10

$$\begin{aligned}\text{Alpha} &= \text{Capital Income} / (\text{Total Income} - \text{Ambiguous Income}) \\ &= \$32 / (\$100 - \$5) \\ &= 0.337\end{aligned}$$

Capital's share of income in 2007 in Germany is 33.7%.

Question 11

Note: You'll need some way to run a regression. Excel has this capability as an add-in.

The data on real GDP are in NIPA table 1.1.6. I downloaded the annual real GDP data from 1973-2007, regressed $\ln(\text{real GDP})$ on a time trend and included a constant in the regression.

I then computed the residuals for each year. The residuals are equal to $\ln(\text{real GDP}) - \text{predicted}$, where *predicted* is the predicted value based on the regression). The residual for 1982 is -0.058 and the residual for 2001 is 0.012 (your results may be slightly different depending on whether the BEA data have revised).

-5.8% and 1.2% are the "output gaps" for those two years.