

Homework 1 solution

1. Government budget balance = Taxes – government purchases

$$G = \text{Taxes} - \text{Government Budget Balance} = 200 - (-500) = 700$$

$$NX = \text{Export} - \text{Import} = 300 - 450 = -150$$

$$\text{Gross Domestic Investment} = I = \text{Net Domestic Investment} + \text{depreciation} = 800 + 150 = 950$$

$$GDP = C + I + G + NX = 400 + 950 + 700 - 150 = 1900$$

GNP = GDP + Factor incomes of domestic factors of production used abroad - Factor incomes of foreign factors of production used in the given country = 1900 + 200 - 300 = 1800

$$NNP = \text{GNP} - \text{depreciation} = 1800 - 150 = 1650$$

$$NI = \text{NNP} - \text{indirect taxes} + \text{subsidies} = 1650 - 50 + 30 = 1630$$

PI = NI – retained earnings – income taxes and social insurance + government social and interest payments to households = 1630 – 100 – 120 + 45 = 1455

2. a)
$$\text{GDP deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}} \times 100$$

$$\text{Real GDP 1996} = \frac{\text{Nominal GDP 1996}}{\text{GDP Deflator 1996}} \times 100 = \frac{7662}{110} \times 100 = 6965.4$$

$$\text{Real GDP 1997} = \frac{\text{Nominal GDP 1997}}{\text{GDP Deflator 1997}} \times 100 = \frac{8111}{112} \times 100 = 7241.9$$

b)
$$\text{Growth rate of nominal GDP} = \frac{8111 - 7662}{7662} \times 100 = 5.86$$

$$\text{Growth rate of real GDP} = \frac{7241.9 - 6965.4}{6965.4} \times 100 = 3.96$$

c) The growth rate of nominal GDP was higher than the growth rate of real GDP because of the existing inflation which is evident from the growth of GDP deflator between 1996 and 1997 .

3. Nominal GDP 2010 = 7*4+6*5=58

$$\text{Nominal GDP 2009} = 6*5 + 5*7 = 65$$

$$\text{Real GDP 2010} = 4*5 + 6.5*5 = 52.5$$

$$\text{Real GDP 2009} = 5*5 + 6.5 *7 = 70.5$$

$$\text{GDP deflator 2010} = \frac{\text{Nominal GDP 2010}}{\text{Real GDP 2010}} \times 100 = \frac{58}{52.5} \times 100 = 110.4$$

$$\text{GDP deflator 2009} = \frac{\text{Nominal GDP 2009}}{\text{Real GDP 2009}} \times 100 = \frac{65}{70.5} \times 100 = 92.2$$

$$CPI\ 2010 = \frac{7*6+6*6}{5*6+6.5*6} \times 100 = \frac{79}{69} \times 100 = 114.4$$

$$CPI\ 2009 = \frac{6*6+5*6}{5*6+6.5*6} \times 100 = \frac{66}{69} \times 100 = 95.6$$

$$Growth\ rate\ of\ real\ GDP = \frac{52.5-70.5}{70.5} \times 100 = -25.5$$

Inflation considerably accelerated in 2010 compared to 2009.

4.

$$a) \text{ Growth of price} = \frac{0.75-0.15}{0.15} \times 100 = 400\%$$

$$\text{Growth of wage} = \frac{13.84-3.35}{3.35} \times 100 = 313.3\%$$

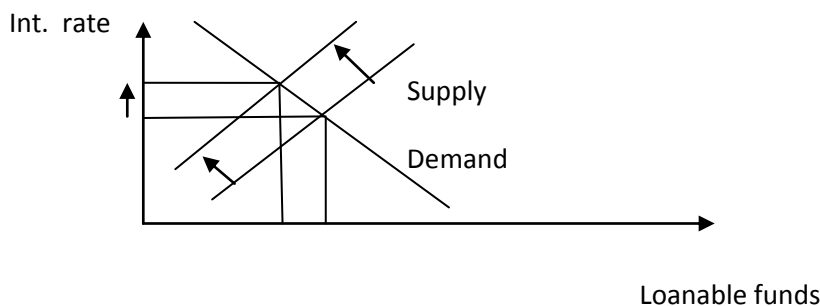
$$b) \text{ Time to work in 1970} = \frac{0.15}{3.35/60} = 2.68 \text{ minutes}$$

$$\text{Time to work in 1999} = \frac{0.75}{13.84/60} = 3.25 \text{ minutes}$$

c) Since the worker has to work more minutes in 1999 to buy one newspaper than he had to work in 1970, the worker's purchasing power fell.

5. a)

Increase in government borrowing decreases public saving thus decreasing national saving and decreasing the supply of loanable funds. This shifts the loanable supply curve to the left and raises the interest rate.



b) Because of the higher interest rate private investment becomes more expensive and decreases. Public saving (which is the difference between taxes and government expenditures) decreases. Private saving increases because of the higher interest rate. The changes are equivalent to 20 billion.

c) The possibility if increase in taxes discourages private saving decreases the supply of loanable funds and leads to bigger increase in the interest rates. Thus the effects in a) and b) increase.