Assignment2 - Answer Key

1. (a) Expected after-tax real-interest rate $= i(1-t) - \pi^e = 1\%$.

(b) Expected after-tax real-interest rate $= (r+\pi^e)(1-t) - \pi^e = 1\%$.

(c) The nominal bond. You can verify that the realized after-tax real return of the nominal bond can be written: $R^N_{AT} = 5\% - \pi$ and that the realized after-tax real return of the indexed bond can be written: $R^I_{AT} = 3\% - 0.5\pi$. The nominal bond has the higher return when $\pi < \pi^e = 4\%$.

2. (a) $\frac{\partial Y}{\partial E} = E^{-0.5} = P_e$ or $E^D = P_e^{-2}$.

(b) We get $E = P_e = 1$.

(c) The real wage is given by: $\frac{\partial Y}{\partial N} = \frac{1}{32}$.

3. (a) $(1-0.15)^{12} = 0.142 = 14.2\%$.

(b) As the unemployment rate is constant, the number of people who lose their jobs equal the number of people who find a job: $0.15U = 0.05E$. Also $L = U + E$. Combining the two equations we have: $0.15U = 0.05(L-U)$. Dividing both side by L and rearranging we find: $\frac{U}{L} = \frac{0.05}{0.05+0.15} = 0.25$. The unemployment rate is 25%.

4. (a) Solving from the budget constraint with $C_1 = C_2$ and $G_1 = G_2 = 100$, we get that: $C = 900$ in each period. $CA_1 = Y_1 - C - G = -100$, $CA_2 = Y_2 - C - G = 110$.

(b) The consumption will be unchanged; people will expect higher future taxes and save more today. National savings are unchanged and so are the current accounts.

(c) As the Nigeria is a borrower here, the income and substitution effect are going in the same direction. National saving will increase and the current account deficit for the first period will be lower.

5. (a) $r = 0.05$, $I = 10$ and $C = 60$.

(b) $r = 0.075$, $I = 5$ and $C = 60$. Higher government expenditures crowd-out investment.

(c) $r = 0.02$, $I = 16$ and $C = 74$. Lower taxes lead to more consumption. Lower government expenditures increase government saving and lower the interest rate. Hence investment is also higher.