Macro Questions

1. Obtain the Euler equation for consumption in a decentralized economy. Give an interpretation to it.

2. Explain what the "golden rule" is in the context of a closed centralized economy. Contrast the "golden rule" with results from the intertemporal optimization of consumption.

3. In the Solow-Swan economic growth model it is assumed that $\lim_{k\to\infty} \frac{dy}{dk} = 0$. Is this a crucial hypothesis for that growth to be exogenous? What would happen if $\lim_{k\to\infty} \frac{dy}{dk} = A > 0$? Explain your answer.

4. Maintaining a balanced budget is a necessary condition for the sustainability of the fiscal position? Will it be a sufficient condition for this sustainability? Explain your answer.

5. Set conveniently "debt sustainability". Show that, if the interest rate is high enough in the face of the nominal GDP growth rate, it is necessary for the Government to run future primary surpluses to make sure that government debt is sustainable.

6. From the Euler equation in an open economy, $\frac{\beta U'(c_{t+1})}{U'(c_t)}(1 + r^*_{t+1})$=1 , show how an an economy may reach a level of wellbeing higher than then the one attained in a closed setting.

7. From the Euler equation in na open economy, , $\frac{\beta U'(c_{t+1})}{U'(c_t)}(1 + r^*_{t+1})$=1 , analyse the effects of an international interest rate increase in a simplified two period model. The achieved level of wellbeing will be lower or higher? Explain your answer.

8. Consider the following identity for the balance of payments:

$$x_t - Qx_t^m + r^* f_t = \Delta f_{t+1}$$

where x_t, x_t^m, Q, r^* e f_t are, respectively, exports, imports, the terms of trade, the international interest rate and net foreign assets change.

The total product y_t can be consumed internally (c_t^h) or else exported:

$$y_t = c_t^h + x_t.$$

Consider that exports and the total product are exogenous variables and let c_t be total consumption.

a) Derive the Euler condition resulting from the maximization of $\sum_{s=0}^{\infty} \beta^s \ln c_{t+s}$ with respect to $\{c_t, c_{t+1}, \ldots; f_{t+1}, f_{t+2}, \ldots\}$ with $\beta = \frac{1}{1+\theta}$.

b) Show how and explain why the international interest rate influences the long-term values for consumption.

9. Show that the price level in the Taylor model of overlapping contracts is "forward looking", that is, the present price level depends on the expected value of the future price level.

10. The following excerpt was taken from the article "Policy Analysis Using DSGE Models: An Introduction", by Sbordone, Tambalotti, Rao, e Walsh:

> In our model, we assume that interest rates are set according to the policy rule
>
> (3.12) $$i_t = \rho i_{t-1} + (1-\rho)[r_t^e + \pi_t^* + \phi_\pi(\pi_t^{4Q} - \pi_t^*) + \phi_y(y_t - y_t^e)] + \varepsilon_t^i,$$
>
> where r_t^e, π_t^*, and y_t^e are the baselines for the real interest rate, inflation, and output, respectively, and $\pi_t^{4Q} \equiv (\log P_t / P_{t-4})$ is the rate of inflation over the previous four quarters. The monetary policy shock ε_t^i, a random variable with mean zero, captures any deviation of the observed nominal interest rate from the value suggested by the rule.

Critically analyze this statement, referring in particular to the significance of each of the parameters. This hypothesis for a interest rate rule seems suitable for the representation of monetary policy in the euro area or in the U.S.? Explain.