**Solution SØK1151 Fall 2015**

**Problem 1**

a) onsider an open economy characterized by following:
   1. $Y = C + I + G + NX$
   2. $C = c_0 + c\,(Y-T)$
   3. $I = d_0 + d\,Y$
   4. $NX = x_0 + xY^* - mY$
   5. $T = t\,Y$

This model must be explained.

Assume there is a change in $d_0$.

The change in output will be:

$$\Delta Y = \frac{1}{1-c(1-t)-d+m}\,\Delta d_0$$

A balanced budget means $tY = G$.

A change in the output will then be:

$$\Delta Y = \frac{1}{1-c(1-t)-t-d+m}\,\Delta d_0$$

This multiplier is larger, indicating that the change in Y will be higher for a given value of $\Delta d_0$ (negative or positive). A policy of balanced budgeting reduces the possibility to use the fiscal policy actively in the case of low or high activity of the output. Therefore, this policy might destabilize the economy.

b) See chapter 21. It is important to make a distinction between short and long run effect. High debt limits the option of using the fiscal policy to achieve other goals. To repay the debt in the short run the primary surplus $T_t - G_t$ must be higher than $rB_{t-1}$.
The debt is: $B_t = (1+r)\,B_{t-1} + (G_t - T_t)$
High debt might also result in high interest for Government bonds.

In the long run the Debt ratio depends on the following:

$$\frac{B_t}{Y_t} - \frac{B_{t-1}}{Y_{t-1}} = (r-g)\frac{B_{t-1}}{Y_{t-1}} + \frac{G_t - T_t}{Y_t}$$

This equation must be explained and discussed.

**Problem 2**

a) Private investments depend on interest rate and output. But one has to discuss other factors (see chapter 21).
    - Lower expected growth
    - Postpone of project due to expected changes in interest rate, future demand, costs etc.
    - Higher risk
    - Low capacity in some sectors
    - New taxes, regulation etc.

One can use the same model to answer b) –e).

Introduce and explain the IS-LM –UIP model (see chapter 6.5).

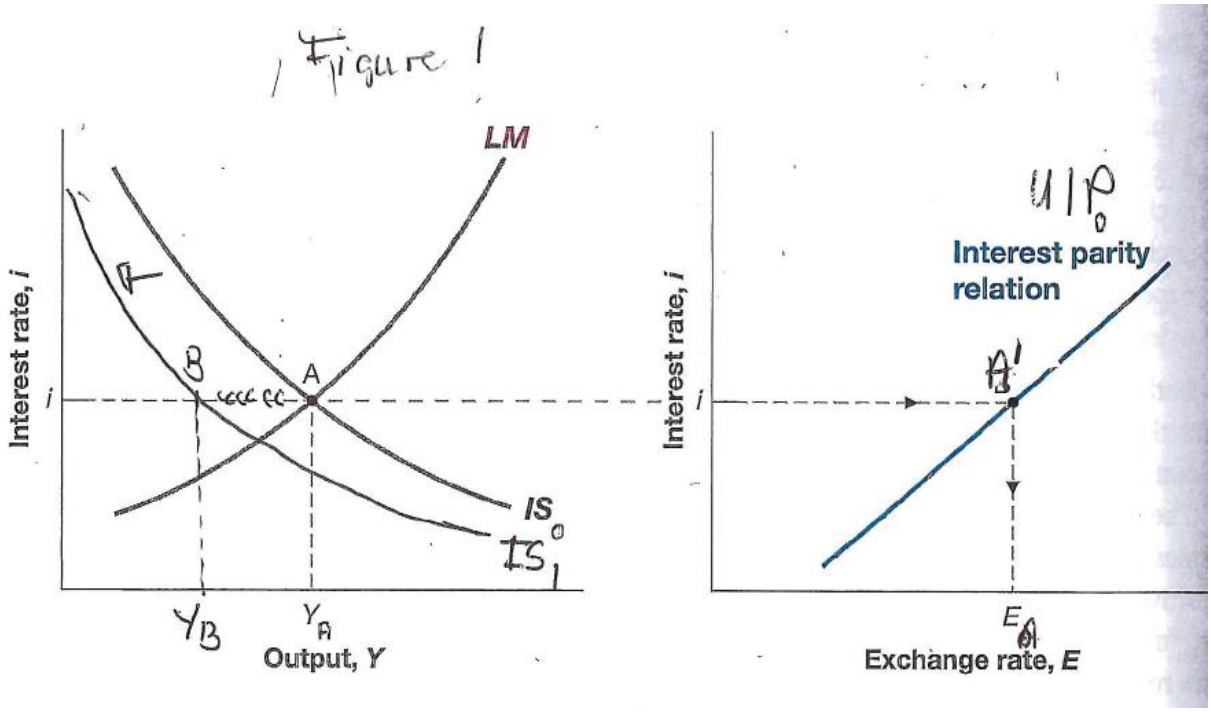
$$IS: \quad Y = C(Y-T) + I(Y, i) + G + NX\left(Y, Y^*, \frac{1+i}{1+i^*}\bar{E}^e\right)$$

$$LM: \frac{M}{P} = YL(i)$$

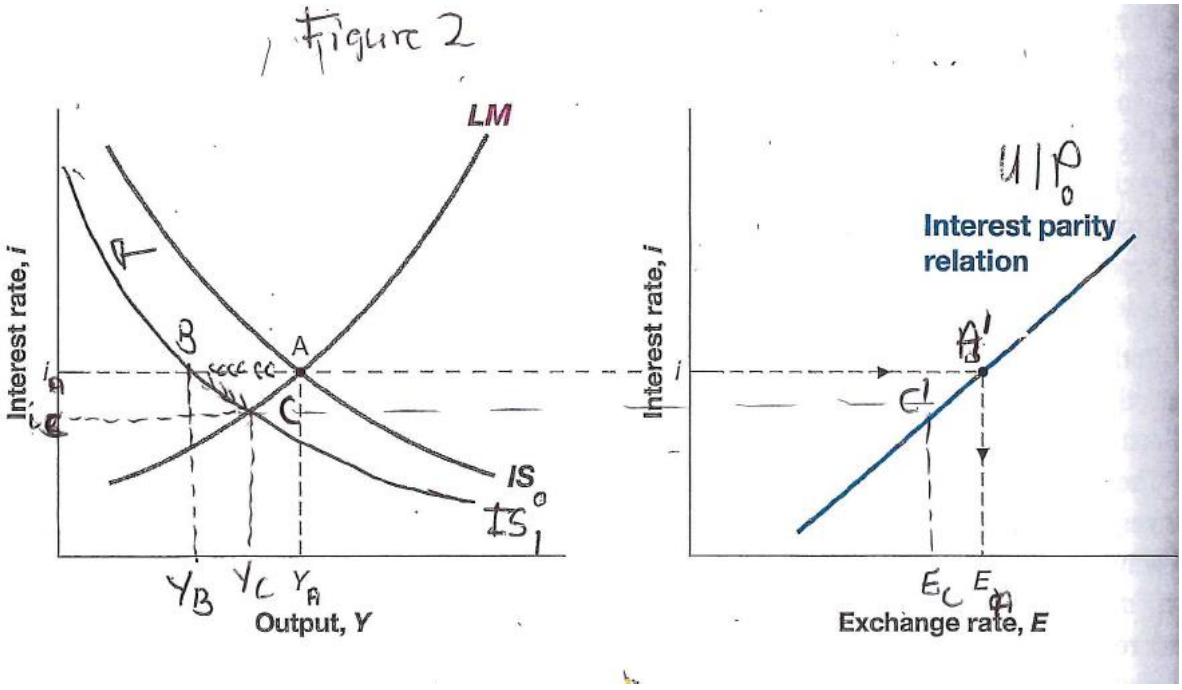
UIP:

$$E = \frac{1+i}{1+i^*}\bar{E}^e$$

b) A drop in private investment gives a shift of IS to the left ($IS_0$ –$IS_1$). Since we only assume equilibrium in the goods marked, we assume unchanged interest rate (step 1). It moves from A to B. Output will $Y_B$. It gives the traditional multiplier effect (see 1a). Please explain.




c) The equilibrium in all three markets will be C. Step 2 from B to C. Output is $Y_c$. The interest rate will fall due to less demand for money and this implies a lower exchange rate E. It follows from UIP. See d for an explanation.

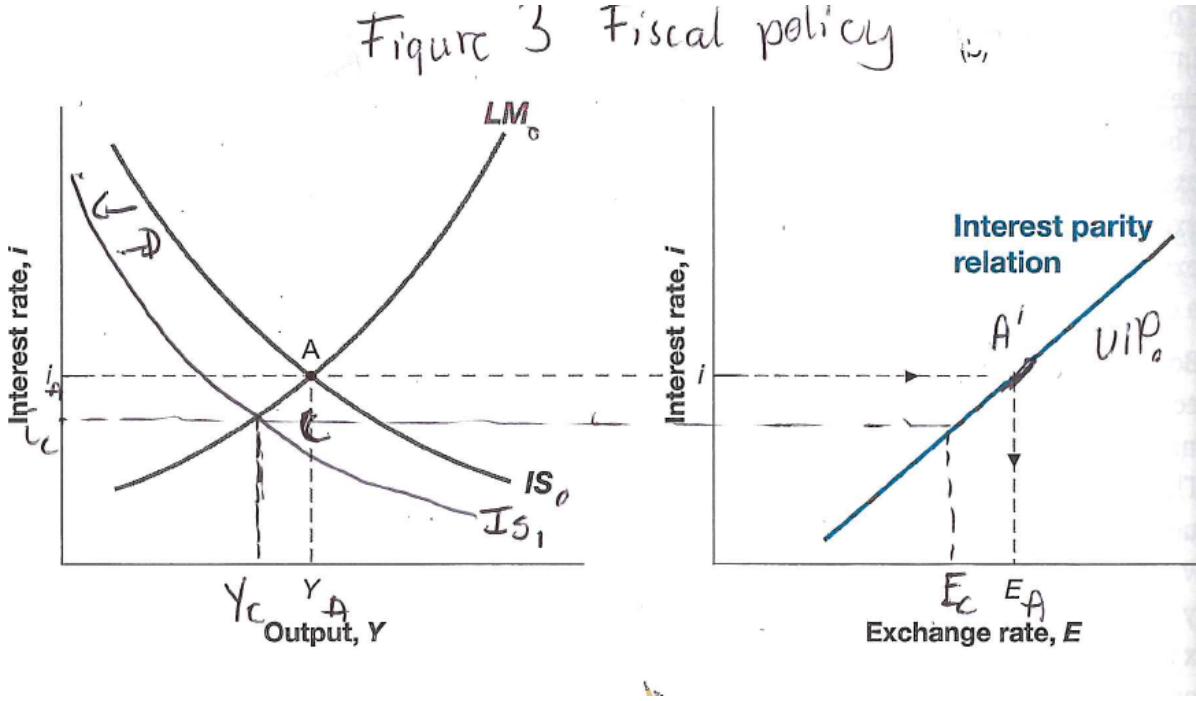



d) The result is different because the interest rate is unchanged in b), but it falls in c). A lower interest rate will increase the private investment. It will also give a lower exchange rate that will stimulate our export and reduce the import. Both

these effects result in a higher output so the total impact on output is less in d) than c). Yc is higher than $Y_B$, but still less than $Y_A$.

e) They are two options.

1. A fiscal policy that gives unchanged output and net export. IS shifts back to $IS_0$ by increasing G.
   $\Delta Y = \Delta C + \Delta I + \Delta G + \Delta NX$
   Since Y is the same $\Delta C = \Delta NX$ and $\Delta I + \Delta G = 0$.




2. An expansive monetary policy. LM shifts downward ($LM_0$ to $LM_1$). This gives a lower interest rate,

Since Y is the same $\Delta C = 0$ and G is fixed. So $\Delta NX + \Delta I = 0$. A lower interest rate gives a less fall in I and NX increases due to the fall of E.

Figure 4 Monetary Policy