SØK1151. Assessment Guidance. Fall 2019

Problem 1 (60%)

Start out from the arbitrage condition. a) The linear consumption function is $C = c_0 + c_1 Y_D$, where C is consumption, Y_D is disposable income $Y_D = Y - T$, where Y is GDP and T are net taxes. c_0, c_1 are parameters. $c_0 > 0$. c_1 is interpreted as the marginal propensity to consume, that is, the effect on consumption of an additional euro of disposable income. c_1 is a number between 0 and 1, indicating that some fraction o increase in disposable income is saved. A decrease in c_1 implies that less of an additional euro in disposable income is used for consumption.

The Keynes' model assumes excess production capacity, implying that production is determined by aggregate demand. Equilibrium is thus characterized by production (Y) being equal to aggregate demand (Z). Aggregate demand is $Z = C + I + G$, where I is investment and G is government spending.

The equilibrium Y = Z should be illustrated in a graph with Y on the horizontal axis, and Z on the vertical axis. Aggregate demand is a straight line with slope equal to the propensity to consume. Extra bonus to students who explicitly address the intersection between aggregate demand and the vertical axis. Equilibrium is where aggregate demand intersects with the Y=Y line. Importantly, the decrease in the propensity to consume makes the Z-line less steep, implying that equilibrium production decreases. This is the basic result. Extra credit to students that formalize this result (for instance by considering the derivative of equilibrium output wrt. the propensity to consume), or students that make sense of the result in words.

b) Solve for Y, establish the multiplier. Explain the multiplier. The effect of a decrease in net taxes follows from $\frac{\Delta Y}{\Delta T} = \frac{-c_1}{1-c_1}$ and an increase in government spending follows from $\frac{\Delta Y}{\Delta G} = \frac{1}{1-c_1}$. Some major points should be made: Notably, explain why an increase in government spending leads to a larger increase in Y than an equally large cut in taxes. An additional point: the multiplier is smaller after the decrease in c_1. To achieve the same effect on GDP, as prior to the drop in the propensity to consume, larger dosages of fiscal stimuli are required – due the larger leakage into saving. The consequences for public debt: It suffice to discuss the primary deficit – which will increase. For the same stimulus, tax cuts lead to larger deficits than government spending.

c) Investments are now endogenous, and a function of the interest rate and GDP. These relationships should be justified. The IS-curve should be derived by using the figure established in 1a), and by shifting the aggregate demand downwards when investments decrease as a response to an increase in the interest rate. Interpret the IS-curve as a collection of equilibria of interest rate and GDP in the goods market. Top answers include a discussion of the slope of the IS-curve, and especially an explanation why the IS-curve becomes steeper when the propensity to consume decreases. Relevant shifts should be discussed. The LM curve should be established by starting out from the market for money. Supply and demand of money should be explained. Increasing Y leads to an upward shift in the demand for money and a new equilibrium with higher Y and higher interest rate. Discuss the relevant shift in the LM curve.

d) Start out from the ISLM model, consider the decrease in the propensity to consume, shift the IS-curve to the left and increase the steepness of the curve. The new equilibrium is characterized by a smaller GDP and lower interest rate than initially. Discuss why the interest rate is now lower. Then discuss how the initial GDP can be restored by fiscal and monetary policy. For fiscal policy, compare with the results in 1b): What is different when the market for money is included in the model? For monetary policy, the increase in money supply shifts the LM curve outwards. Because the IS-curve is now steeper, the shift must be of some size. Explain in words. Consider the components of aggregate demand: Which are the main differences between the fiscal and monetary policies?

e) When investments do not respond to changes in the interest rate, monetary policy will not affect GDP. There is no transmission mechanism between the market for money and the goods market.

Problem 2 (40%)

a) Start out from the condition for uncovered interest parity:

$$E = \frac{1+i}{1+i^*} E^e .$$ Explain E, E^e, i and i^* .

This condition should be derived by considering placing an amount of the domestic currency in a domestic bank, and alternatively, a bank abroad. Then consider what happens if the domestic nominal interest rate increases.

b) Net export depends on domestic and foreign GDP and the real exchange rate ε. These relationships must be explained. Further, explain why changes in the exchange rate has opposing effects on net export, and introduce the Marshall-Lerner condition. Notably, students who make sense of *IM/ε* are rewarded.

c) First and foremost, domestic firms should be sorted into different types. Exporting firms, importing firms (importing inputs, importing consumer goods). Then, discuss how the different types of firms are affected.