

Homework 14

1. Consider a traditional IS curve: output, Y , is the sum of investment, I , consumption, C , and government expenditures, G . Consumption is assumed to be a linear function of disposable income, $Y - T$: $C = a + b(Y - T)$, where $a > 0$, $0 < b < 1$, and T is current taxes. Investment is assumed to be linear function of the real interest rate, r_+ : $I = d - er_+$, where $d > 0$ and $e < 0$. Government spending is just a constant. In the following cases, suppose that the interest rate, r_+ , remains constant.
 - (a) Suppose that the government increases public expenditures by an amount ΔG , with three possible ways of financing this increase: in case 1, the increase is 100% financed with borrowing; in case 2, it is 100% financed with current taxes; and in case 3 it is financed to 50% with borrowing and to 50% with an increase in current taxes. Determine, in each case, what the final effect on output is. Compare the three cases and interpret.
 - (b) Suppose that investment increases by an increase in the parameter d of the amount Δd . What is the final effect on output?
 - (c) Consider two countries which are identical in all respects except in the parameter b : in country 1, b is high and in country 2, it is low. Suppose each of these two governments engineers an increase in G , financed the same way. In which country will output increase the most? Explain why.
 - (d) Suppose the taxes that governments raise are not constant but linearly related to income: $T = f + gY$, where g is the marginal tax rate, which is between 0 and 1. Derive the IS curve in this case. What is the effect on output of an increase in G now, assuming that the tax code is not changed (i.e., that f and g remain unchanged)? What is the resulting change in government borrowing?
 - (e) Still in the context of the case with $T = f + gY$ and an increase in G , compare the following two alternative ways of fully financing through changes in the tax code (i.e., no change in borrowing is implemented): (i) an increase in the intercept (lump-sum) part of taxes, f , but no change in marginal tax rates and (ii) an increase in the marginal tax rate, g , but no change in the lump-sum part. Compare the final value of output in the two cases, and derive, for each case what the exact changes in the tax code must be.
2. Suppose that the nominal wage is sticky—it has been set at too high a level—and that the economy expects no inflation. Prices of goods, however, adjust. Suppose also that there is an IS-curve relationship of the form of the previous question (the case where marginal tax rates are zero). Analyze the effects on output, the real interest rate, and prices of (i) an increase in the money supply and (ii) a decrease in government spending financed by borrowing.
3. Define the Phillips curve and discuss under what assumptions one can use it to let monetary policy influence the economy toward higher lower unemployment.

4. Name a source of business cycle fluctuations and explain why, given this source, consumption and investment should be expected to be positively correlated (move together).