Introduction to Macroeconomics

Answers to Second Homework Exercise

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1. Straightforward insertion leads to the form

$$Y = \frac{c_0 - c_1 T + d_0 - d_2 i + G}{1 - c_1 - d_1},$$

which, seen as Y being functionally related to the interest rate i, already is the IS–curve. The relationship is clearly a negative one, as the denominator is always positive and $-d_2 < 0$, as it should be. The coefficient of G in this expression, on the other hand, i.e.

$$\frac{1}{1 - c_1 - d_1},$$

is the fiscal multiplier for this model, assuming an exogenous and given interest rate.

2. Rearranging the given function and solving for i quickly yields the LM curve

$$i = \frac{P}{m_1 M} Y - \frac{m_0}{m_1}.$$

There are many ways to modify this expression, but this is the form that shows the positive relationship between i and Y most clearly. Note that M and P always appear as M/P, real money.

3. The algebraic manipulation steps here are a bit tedious but inserting the LM expression for i into the IS curve should always lead to

$$Y = \frac{c_0 - c_1 T + d_0 - \frac{m_0 d_2}{m_1} + G}{1 - c_1 - d_1 + \frac{d_2 P}{m_1 M}},$$

and the coefficient of G, i.e.

$$\frac{1}{1 - c_1 - d_1 + \frac{d_2 P}{m_1 M}},$$

is the fiscal multiplier for the complete IS-LM model. Note that it is always smaller than the one from part (a), as the added expression in the denominator will always be positive. Also note that any increase in the coefficient d_2 will further decrease this multiplier, while more real money M/P will increase the multiplier, as will a higher m_1. The interpretation could be that a higher money supply decreases the dependence of investors on the interest rate, and a similar effect appears if money demand decreases strongly in case of higher interest. By contrast, it is quite natural that a lower d_2 directly weakens the link between the goods and the financial model and pushes the multiplier in the direction of the one in (a), which ignores the financial market.