Problem Set 6
Due: Wednesday, October 27.

Answers

Question 1.

a.   **FALSE**. If the budget deficit is zero, a trade deficit could indicate either that investment is high OR that saving is low. In addition, a trade deficit could also indicate that private saving (S-I) is smaller than public spending (G-T).

b.   **FALSE**. If private saving is sufficiently high, a budget deficit can exist simultaneously with a trade surplus, as is the case in Japan.

c.   **FALSE**. See the focus box on Belgium versus the United States. Open economies have smaller multipliers and net exports which are more sensitive to autonomous expenditure than large countries.

d.   **FALSE**. The appreciation need not be painful, as expansionary fiscal or monetary policy can be combined with an apprecation to eliminate a trade surplus without changing equilibrium income.

e.   **FALSE**. If exports and imports respond slowly to changes in relative prices, net exports will actually improve before the trade balance deteriorates. This is the j-curve.

Question 2.

a.
$$Y = C + I + G + X - Q = 30 + 0.8(Y - 10) + 0.3Y^* - 0.3Y$$
$$Y = 44 + 0.6Y^*$$

The multiplier for this economy is 2 when foreign output is fixed. The closed economy multiplier is 5, and it is different from the open economy multiplier because higher income increases imports, which are a leakage from the economy, and do not bring about higher income.

b. $Y = Y^*$ implies $Y = Y^* = 110$. The multiplier for this economy, taking into account that foreign income is endogenous, is 3.125. It is higher than the open economy multiplier above because it takes into account the impact of higher imports on foreign income, which raises exports. As the domestic country becomes small relative to the foreign country, this feedback effect goes away because any change in imports will be small relative to foreign output, implying the change in foreign imports (and thus domestic exports) will be small as well. The point here is that small countries should probably not think about this channel in considering the consequences of policy changes.

c.   If $Y = 125$ then $Y^* = 44 + 0.6 * 125 = 119$. Using these two facts and the equation $Y = 24 + 2G + 0.6Y^*$ yields the equation, $125 = 24 + 2G + 0.6 * 119$, which implies that $G = 14.8$. In the domestic country $NX = 0.3(119) - 0.3(125) = -1.8$. In the foreign country $NX^* = -NX = 1.8$.

d.   If $Y = Y^* = 125$ then we have the following equation, $125 = 24 + 2G + 0.6(125)$, which implies $G = G^* = 13$. In both countries, net exports are still zero, but the budget deficit has increased by 3.

e.   In part because of the benefits of doing nothing, as indicated from part c. In this example,

there is also little difference in the cost in tax dollars in either strategy, so the foreign country may not be willing to spend the nine additional units required to raise output from 119 to 125, giving up its favorable trade position as well.

Question 3.

a. A tax on foreign goods of rate tau affects $Q(e(1+tau),Y)$ but not $X(e,Y^*)$. The higher price of foreign goods to domestic consumers will reduce demand for imports (but not affect demand for exports), which given domestic income increases NX. This shifts the IS curve to the right, increasing domestic equilibrium income. Higher domestic income will offset some of the initial increase in NX, but the overall effect is still favorable. A second effect of lower foreign income will reduce this effect, but does not change the results qualatatively. Intuitively, the government is reducing leakages from the economy, increasing the multiplier.

b. The tax has opposite effects in the foreign country, affecting their exports negatively, shifting the IS curve to the left, which reduces equilibrium income. Lower income and higher foreign income mitigates the reduced exports somewhat, but net exports still fall overall.

c. Each shift in the IS curve will be reversed, but the overall volume of trade, described by $Q+Q^*$ will fall. If agents simply substitute domestic goods for foreign goods, output will remain the same.