

## 14.02 Introduction to Macroeconomics

### Solutions to Problem Set #7

#### Question 1

1) **Uncertain.** An appreciation in the real exchange rate makes imports less expensive in relative to goods produced in the United States. The total import bill (in real terms) is  $\varepsilon Q$ . We know that  $\varepsilon$  falls and that  $Q$  rises. It is not clear whether  $\varepsilon Q$  rises or falls. We usually assume that in the long run, the demand for imports is sufficiently sensitive to the price of imports so that the increase in  $Q$  is larger than the decrease in  $\varepsilon$ . This is the J-curve effect.

2) **True.** A larger country will tend to produce a wider array of goods than a smaller country. Thus there is less need for the citizens of a large country to import goods. Many of the goods imported by smaller countries are imported precisely because they are not produced by domestic firms.

3) **True.** An appreciation of the nominal exchange rate will lead to a fall in the dollar price of foreign goods ( $EP^*$ ) assuming that  $P^*$  remains constant.

4) **False.** An appreciation in the dollar real exchange rate will increase the relative price of US exports abroad and reduce the relative price of foreign imports in the US. This will make US consumers better off as they now face lower prices for imported goods. US producers, however, will be worse off because they face competition on the domestic and export markets from cheaper foreign goods.

5) **False.** Any fluctuation in the nominal exchange rate will not immediately be offset by changes in the domestic prices. In the long run, however,  $P$  may change so that  $\varepsilon$  would change by less than  $E$ .

6) **True.** An increase in the return earned on US funds invested abroad will increase the current account surplus and have no direct effect on the capital account. However, it may have an indirect effect on the capital account. If US investors respond to the higher returns by investing more abroad. This will lead to higher capital outflows or, equivalently, a lower capital account surplus.

7) **False.** The increase in capital flows out of the US will increase the capital account deficit.

8) **False.** Investors must also take into account the fact that the dollar may appreciate ( $E$  falls) against the German currency. Only if the German interest rates are higher than US interest rates by an amount greater than the

expected appreciation of the dollar, will it make sense to invest in Germany.

$$i_{us} = i_G + \frac{E_{t+1}^e - E_t}{E_t}$$

### Question 2

a) The curve slopes up, but is flatter than the 45 degree line. The intercept with the vertical axis is the exogenous component of aggregate demand. The curve slopes up because an increase in income will cause consumption to rise and imports to fall. By assumption the effect on consumption is greater. The slope is less than one because people save some portion of any extra income they receive i.e. the marginal propensity to consume is less than one.

b) When  $Y^*$  increases exports rise. This is one of the exogenous components of aggregate demand. The  $Z$  curve will shift up vertically, leading to a higher equilibrium GDP.

c) The trade balance goes into surplus. Exports rise directly as a result of the increase in the foreign countries' income. Imports also rise, indirectly, because US GDP rises. This second effect is lower than the effect on exports. If it were not, then US GDP could not have increased at all.

d) Cutting back on welfare programs is a reduction in the exogenous component of aggregate demand. This shifts the  $Z$  curve down vertically. The new equilibrium GDP will be lower. The current account will shift into surplus exports have not changed but imports fall due to the fall in GDP.