

Suggested Solutions Assignment 4 (OPTIONAL)

Total Marks: 50

Part A **True/ False/ Uncertain Questions** **20 Marks**

Explain why the following statements are True, False, or Uncertain according to economic principles. Use diagrams and / or numerical examples where appropriate. Unsupported answers will receive no marks. It is the explanation that is important.

A1. [10 Marks]

Both the temporary and permanent expansionary fiscal policy raises the current Account balance. [Diagrams required]

False

Both the temporary and permanent expansionary fiscal policy leads to a fall in the current account balance.

See Figure 16-17 and pages 446-447 of Krugman's text (8th ed.) for a graphical explanation.

or,

See Figure 16-17 and pages 433-434 of Krugman's text (7th ed.) for a graphical explanation.

A2. [10 marks]

Under a fixed exchange rate regime, the expectation of future devaluation leads to a balance of payments crisis. [Diagrams required]

True

Under a fixed exchange rate regime, the expectation of future devaluation leads to a balance of payments crisis marked by a sharp fall in reserves and a rise in the home interest rate above the world interest rate.

See Figure 17-5 and pages 474-476 of Krugman's text (8th ed.) for a graphical explanation.

or,

See Figure 17-5 and pages 461-462 of Krugman's text (7th ed.) for a graphical explanation.

Part B

Analytical Questions

30 Marks

B1. [10 marks]

Imagine the economy is at a point on the AA-DD diagram which is below both the DD schedule and the AA schedule. Explain what will happen next.

If the economy has an exchange rate and output combination which is below the *DD* schedule, then the country's output market is not in equilibrium; in particular there is excess supply in the output market. If the economy has an exchange rate and output combination which is below the *AA* schedule, then the country's asset market is not in equilibrium; in particular, the exchange rate is "too low" so the returns on the foreign asset are above the returns on the home asset and there is excess supply of the domestic currency in the foreign exchange market. The excess supply of the domestic currency leads to an immediate depreciation of the home currency and, thus, a rise in the nominal exchange rate. This serves to equalize the expected returns on the home and foreign assets and moves the economy vertically to the *AA* curve.

If the economy began at the equilibrium level of output, Y_1 , (point *A* on Figure B1), then there are no further adjustments since the output market is now in equilibrium at the higher exchange rate at point *E*.

If the economy began at a level of output above the equilibrium level of output, Y_1 , (point B in Figure B1) then the output market is still out of equilibrium and is characterized by excess supply. Firms then decrease production, and this decreases the demand for real balances, lowers the interest rate, and raises the nominal exchange rate. This is depicted in Figure B1 as a movement from point B' to E along the AA curve.

If the economy began at a level of output below the equilibrium level of output, Y_1 , (point C in Figure B1) then the output market is still out of equilibrium but is characterized by excess demand. Firms then increase production, and this increases the demand for real balances, raises the interest rate, and lowers the nominal exchange rate. This is depicted in Figure B1 as a movement from point C' to E along the AA curve.

B2. [20 marks]

Consider the model of output and exchange rate determination (the AA-DD model) we have studied in class. Suppose the economy begins at its long-run level with output at its full-employment level.

Compare and contrast the short-run effects of the temporary policies by the home government listed below on home output, the home current account, and the nominal exchange rate under a floating exchange rate regime to the effects on these variables under a fixed exchange rate regime.

Use AA-DD diagrams to support your answers.

I. A contraction in the home money supply.

The fall in the home money supply leads to excess demand in the money market and a rise in the home interest rate to clear the home money market. This increases the return on home assets and leads to a fall in the nominal exchange rate to satisfy UIRP. This is depicted as a leftward shift in AA curve to AA' in Figure B2.I.a.

Under floating rates, the fall in the nominal exchange rate leads to a fall in the real exchange rate which causes a fall in the current account. This fall in the current account is a fall in aggregate demand for home output and causes home output to fall. The decrease in home output causes a decline in imports and thereby improves the current account balance. This increase in the current account cannot fully offset the decline in the current account which results from the appreciation of the nominal exchange rate. So, the net effect on the current account is a decrease. This is depicted in Figure B2.I.a with the original equilibrium at E and the new equilibrium at E' , which lies below the XX curve. Note that along the XX curve the current account is constant at the level $CA = X$. Below the XX curve, the current account balance is lower than the level of X and above the XX curve the current account balance is higher than the level of X .

Under fixed rates, the home central bank cannot allow the nominal exchange rate to fall so they must reverse the fall in the money supply through an expansion of the money supply. Thus, the exchange rate does not change, nor does the current account, nor does output. This is shown in Figure B2.I.b where the new equilibrium is the same as the original equilibrium.

In comparing the effects under the two exchange rate regimes, we see that under floating rates the fall in the home money supply is effective in lowering all three variables while it has no effect on any variables under fixed rates.

II. An increase in taxes.

The increase in taxes lowers disposable income which lowers home demand for home goods and lowers home demand for foreign goods. The first effect decreases home aggregate demand but the second effect (which increases the current account) increases home aggregate demand. In the model, we assume the first effect dominates so the increase in taxes lowers aggregate demand and the *DD* curve shifts to the left. The fall in aggregate demand leads to a fall in output, a fall in the demand for real balances, a fall in the home interest rate, and a rise in the nominal exchange rate.

Under floating rates, the rise in the nominal exchange rate leads to a rise in the real exchange rate which increases the current account and increases output, mitigating the fall in output from the fall in aggregate demand described above. Overall, output falls because the decrease in output due to the fall in aggregate demand is larger than the increase in output due to the higher current account. Overall, the current account rises because of three reasons: 1) the fall in imports induced by a fall in disposable income 2) the increase in the real exchange rate and 3) the fall in imports induced by the decrease in equilibrium output. This is depicted in Figure B2.II.a with the original equilibrium at *E* and the new equilibrium at *E'*, which lies above the *XX* curve.

Under fixed rates, the central bank must contract the home money supply to prevent the exchange rate from rising. This is depicted as a shift in the *AA* curve to the left to *AA'* in Figure 2.B.2. Output falls because of the fall in aggregate demand. The current account rises because of two reasons: 1) the fall in imports induced by the fall in disposable income and 2) the fall in imports induced by the decrease in equilibrium output. This is depicted in Figure B2.II.b with the original equilibrium at *E* and the new equilibrium at *E'*, which lies above the *XX* curve.

So comparing we see that the nominal exchange rate rises under floating rates but not under fixed rates. Output falls by less under floating than under fixed rates. The current account increases both under floating and fixed rates. However, without knowing the actual strengths of the responsiveness of the current account with respect to nominal exchange rate and with respect to home output, we can not conclude in which case the increase in the current account will be greater.

III. A revaluation of the home currency.

A revaluation of the home currency is a decrease in the official fixed exchange rate and is a policy tool *only* under fixed exchange rates. Therefore, under fixed exchange rates, a revaluation will decrease the nominal exchange rate which will decrease the real exchange rate and lead to a fall in the current account. This, in turn, lowers aggregate demand and decreases home output. To support the new lower exchange rate, the central bank must contract the money supply and this is shown as a downward shift in the AA curve in Figure B2.III. Overall, the current account falls because the decrease in the current account due to the fall in the real exchange rate is larger than the increase in the current account due to the fall in equilibrium output. This is depicted in Figure B2.III with the original equilibrium at E and the new equilibrium at E' , which lies below the XX curve.

IV. A tariff on home imports.

A tariff on home imports increases the relative price of foreign goods. This increases the real exchange rate which increases the current account and output. The increase in output increases the demand for real balances, increases the home interest rate and lowers the nominal exchange rate. This is depicted as a rightward shift in DD curve to DD' in Figure B2.IV.a and Figure B2.IV.b.

Under floating rates, this fall in the nominal exchange rate lowers the real exchange rate, mitigating the increase induced by the tariff, lowers the current account, and lowers output. This decrease in output is dominated by the increase in output due to the first effect. So in the end, the tariff leads to a lower nominal exchange rate and a rise in home output. Overall, the current account rises because the increase in the current account due to the increase in the relative price of foreign goods is larger than the decrease in the current account both due to the increase in equilibrium output and due to the subsequent appreciation of nominal exchange rate. This is shown in Figure B2.IV.a with the original equilibrium at E and the new equilibrium at E' , which lies above the XX' curve. Note that in Figure B2.IV.a the XX curve along which the current account is constant at X shifts downward in response to an increase in the relative price of foreign goods. Because for a given level of output, to keep the current account constant at X the nominal exchange rate must appreciate. Along the curve XX' the current account is fixed at X . Also note that the magnitude of the vertically downward shift in the DD curve is same as the vertically downward shift in the XX curve.

Under fixed rates, the central bank must prevent the fall in the nominal exchange rate by expanding the home money supply. This is illustrated as a shift in the AA curve to the right to AA' in Figure B2.IV.b. Hence, in this case, there is no mitigating effect on the rise in the real exchange rate in response to the tariff. Home output rises by more than under floating rates. Overall, the current account rises because the increase in the current account due to the increase in the relative price of foreign goods is larger than the decrease in the current account due to the increase in equilibrium output. This is shown in Figure B2.IV.b with the original equilibrium at E and the new equilibrium at E' , which lies above the XX' curve.

In comparing the effects, we see that the nominal exchange rate falls under floating but does not change under fixed. Home output rises by more under fixed than under floating. The current account increases both under both floating and fixed rates. However, without knowing the actual strengths of the responsiveness of the current account with respect to nominal exchange rate and with respect to home output, we can not conclude in which case the increase in the current account will be greater.