

# GEORGE WASHINGTON UNIVERSITY

## Department of Economics

### Econ-295

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#### Problem Set 1

- 1.** We have learned that the monetary authority loses control of the money supply in a fixed exchange rate regime, thus monetary policy cannot be used in a fixed exchange rate regime to push the economy out of a recession. Still the government can use fiscal policy to jump start the economy since an increase in government spending is also an increase in demand for domestic goods. Do you think fiscal policy can work?
- 2.** Flexible exchange rates can insulate domestic economic activity from cyclical shocks in the rest of the world. Explain using the AA-DD model.
- 3.** You are asked to advise a country on the optimal exchange rate regime. You are told that in the past this country has suffered from various fiscal shocks. The country has entered in several wars and as a result military spending has fluctuated substantially, increasing during wars and declining dramatically when wars ended. These war/no-war episodes may recur in the future. What type of exchange rate regime would you advise the government to adopt if the government would like to smooth the effects of the war on economic activity? Fixed? Flexible? Why? Use the model in Krugman and Obstfeld to answer this question.
- 4.** Some have argued that the dollarization of some Latin American countries in the 1980s and early 1990s has contributed to a further devaluation of their domestic currencies both in nominal terms and in real terms. Explain using the model discussed in class (Assume flexible exchange rates)
- 5.** Discuss the effects of the imposition of a tariff on the exchange rate (flexible exchange rate system).

## Economics 295-Answers to Problem Set 1

1. When a government increases spending, demand for domestic goods will increase. If there is unemployment, firms will be able to hire more workers and production will increase and the recession will be eliminated. An increase in the level of economic activity will generate an increase in demand for money and the domestic interest rate will increase. Interestingly, in a fixed exchange rate regime domestic interest rates cannot be different from foreign interest rates. As domestic interest rate ( $i$ ) increases, investors will start buying domestic bonds, reserves will increase, and so will the money supply. If the economy were closed to foreign capital flows, the increase in interest rates at home will lead to a decline in demand, crowding out fiscal spending. In the fixed exchange rate regime domestic interest rates remain constant and thus fiscal policy can be used to follow stabilization policies. That is, fiscal policy is a better stabilization tool under fixed exchange rates. See Figure 1.

2. Suppose that demand for domestic goods by foreign residents may be high or low. Also suppose that these fluctuations are transitory. Since these shocks are of a transitory nature, the long run value of the exchange rate will not be modified following the shocks. Thus expectations will not be affected by the fluctuations in foreign demand for domestic goods. Suppose now that demand is high. This leads to an increase in domestic output. As output increases, demand for money will increase too. Since money supply does not change, interest rates at home will increase to equilibrate the money market. As interest rates at home increase, investors will switch from holding foreign bonds into holding domestic bonds. The domestic currency will appreciate. The appreciation will lead to a decline in demand for domestic goods offsetting, in part, the original increase in demand for domestic goods. Flexible exchange rates act as automatic stabilizers. See figure 2

3. War and no-war episodes are shifting the demand for domestic goods. In war times, demand increases and pushes domestic activity up. As domestic activity increases, demand for money will also increase. To equilibrate the money market, domestic interest rates will have to increase. In a floating exchange rate regime, this increase in domestic interest rates will make investors want to purchase domestic bonds and sell foreign-currency denominated bonds. As a result the domestic currency will appreciate. This appreciation will reduce demand for domestic goods and will offset the expansionary effect of the war. With a fixed exchange rate regime, this offsetting effect will not occur. In fact, as interest rates increase, the central bank will start intervening in the foreign exchange market to avoid the appreciation. The purchases of foreign assets by the central bank result into an increase in the money supply, which accommodates the increase in money demand. Thus, if the government wants to avoid instability in output, it should allow the exchange rate to float. See, figure 3. (Naturally, we can also examine what happens when there is a contraction in fiscal spending. The results are similar, although this time output declines and the exchange rate depreciates). Note: We have assumed that wars are transitory phenomena, thus exchange rate expectations are not affected.

4. Some economies in Latin America have become dollarized as a result of chronic or even hyperinflation. Dollarization means that domestic residents hold not only domestic-currency denominated assets but also foreign-currency denominated bonds. Moreover, they make transactions with foreign currency to avoid the continued deterioration of the purchasing power of their holdings of domestic money used for transaction purposes. Argentina, for example,

became fully dollarized in the late 1980s. Even taxi rides could be paid in dollars. In other words, demand for Argentine pesos declined. As demand declined, the exchange rate had to depreciate. If the dollarization is permanent, the devaluation has to be permanent. Thus demand for Argentine bonds declined both because the fall in the demand for money (leading to a decline in domestic interest rates) and because there were expectations of a devaluation in the future. Both effects lead to an immediate devaluation of the domestic currency. There is an overshooting effect. Over time, prices will increase, supply of real balances will decline and domestic interest will increase again leading to an appreciation of the domestic currency. In the long run the overshooting effect will be eliminated. See Figure 4.

5. A tariff makes imported goods more expensive to domestic residents relative to a situation of free trade. Demand for domestic goods increase and so does production. Money demand will also increase, pushing domestic interest rates up. Investors will prefer domestic bonds and will sell foreign bonds. There is pressure for the domestic currency to appreciate. Thus, a tariff will lead to an appreciation of the domestic currency and competitiveness will deteriorate. A permanent tariff will also trigger an appreciation of the domestic currency in the future leading investors to modify their expectations about the future value of the domestic currency. Since domestic prices do not have to change in the long run, we can show that the exchange rate will appreciate and offset completely the effect of the tariff. See figure 5

### The AA and the DD Equilibrium Conditions

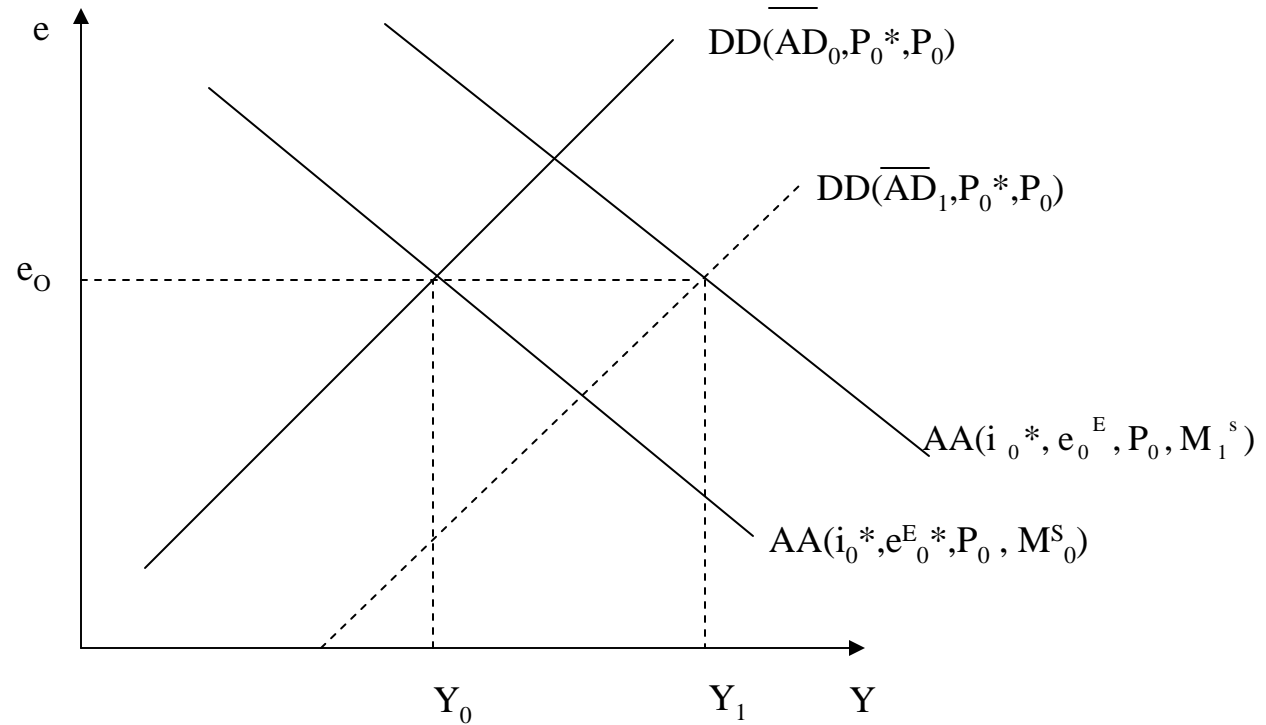
$$\frac{M^S}{P} = \frac{D + R}{P} = kY - h\left(i^* + \frac{e^E - e}{e}\right)$$

$$Y = \overline{AD} + b \frac{eP^*(1+t)}{P}$$

The first equation shows the equilibrium condition in the asset markets. It is obtained from the money market equilibrium condition and the uncovered interest parity condition. When exchange rates are fully floating, foreign exchange reserves of the central bank are constant (in fact, foreign exchange reserves could be even zero  $R = 0$ ). In contrast, with fixed exchange rates Reserves fluctuate when the central bank intervenes in the foreign exchange market.

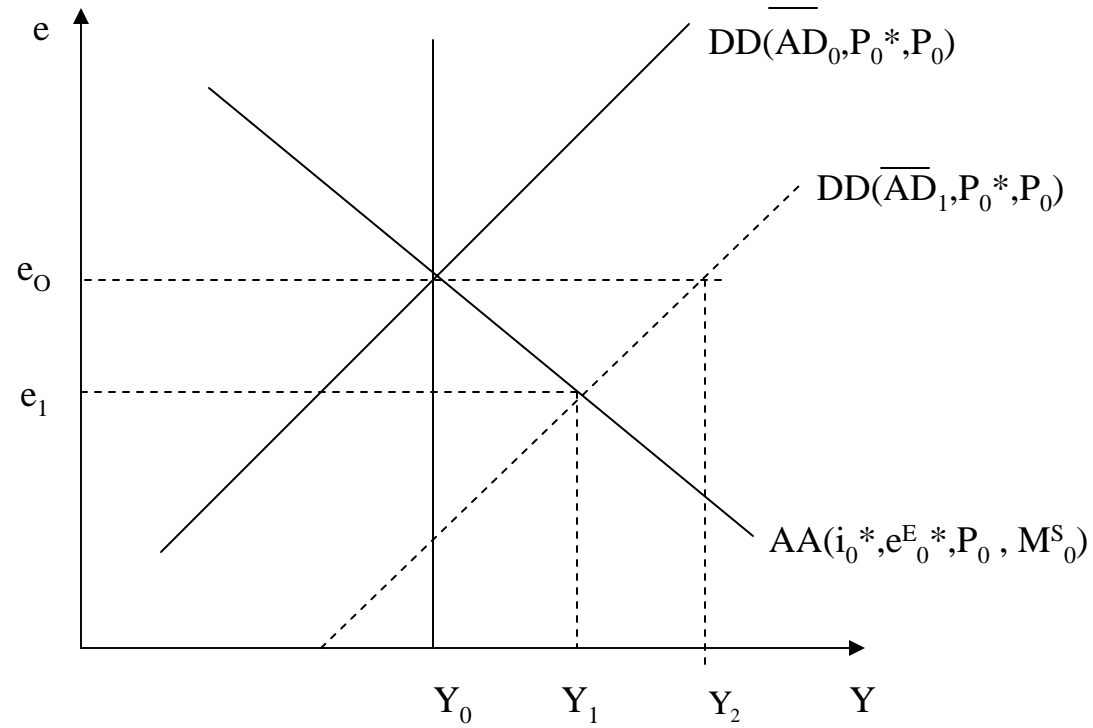
The second equation shows the equilibrium condition in the goods market.  $\overline{AD}$  can reflect changes in government expenditure or households and firms changes in preferences about consumption and investment. The parameter  $b$  reflects the sensitivity of demand for domestic goods with respect to the real exchange rate. In this equation,  $t$  is the tariff rate. As the tariff rate increases, foreign goods will become more expensive for domestic residents.

**Figure 1**



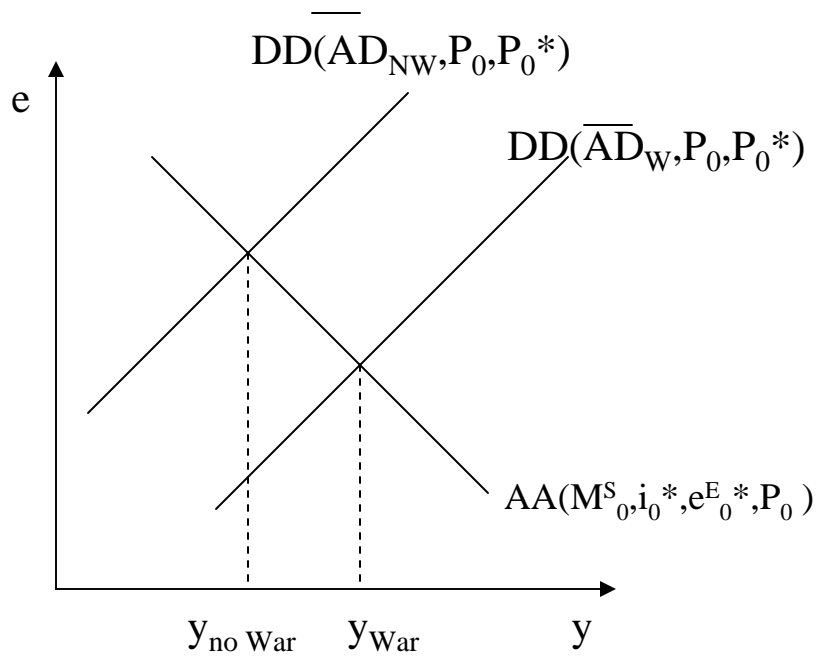
Note: Money supply increases because the Central Bank intervenes in the foreign exchange market to avoid the appreciation of the domestic currency following the expansionary fiscal policy captured by the increase in  $\overline{AD}$

**Figure 2**

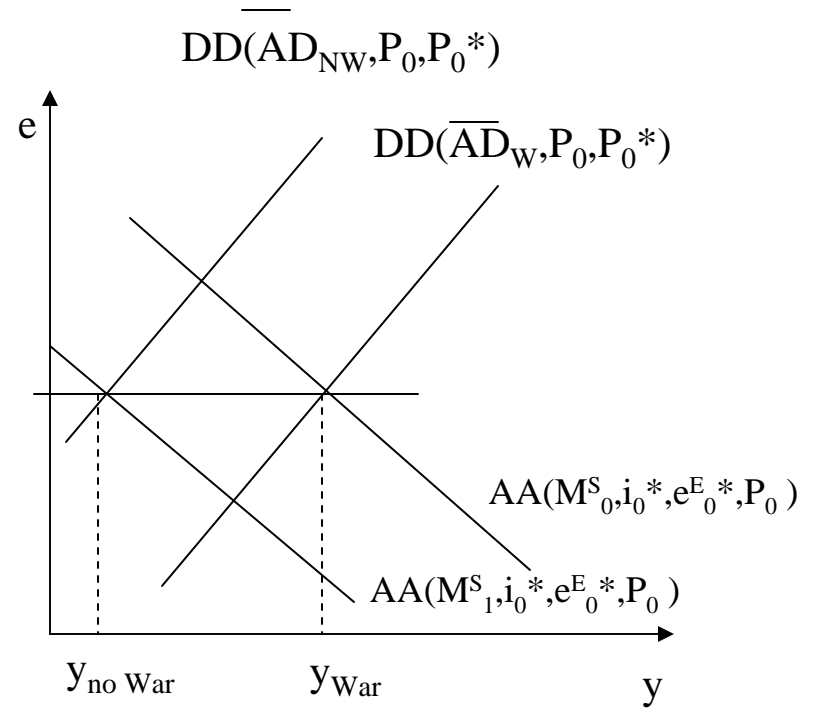


Note: A similar increase in demand for domestic goods under a fixed exchange rate system will trigger an increase in output to  $Y_2$

**Figure 3**



Float

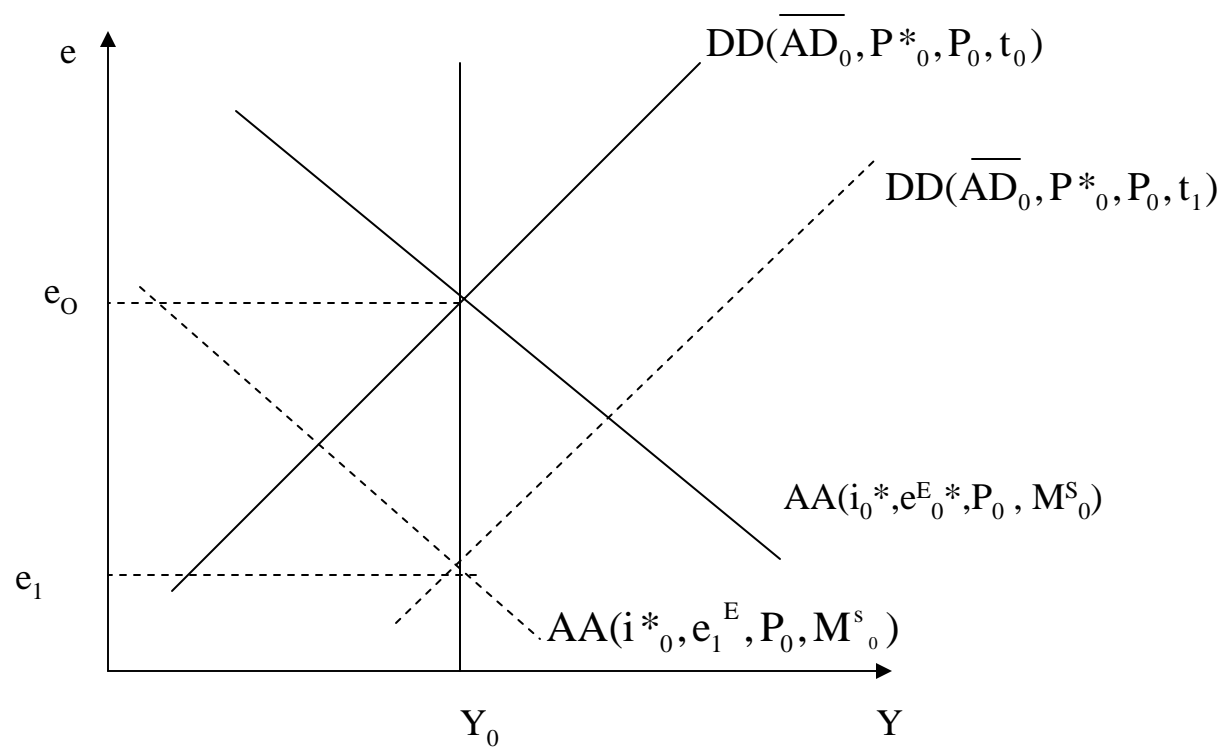


Larger Fluctuations

Fix



**Figure 5**



$$t_1 > t_0$$

In this exercise, we assume that the increase in the tariff is permanent.