

GEORGE WASHINGTON UNIVERSITY
Department of Economics
Econ-295

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Problem Set 2

I. Answer the Following Questions

1. You are asked to advise Argentina on whether or not to devalue its domestic currency. Using the model discussed in class and what you have learned about currency crises, explain to the government officials in Argentina what are the advantages of devaluing and what are the advantages of defending the current peg.
2. You are asked to advise a country on the optimal exchange rate regime. You are told that the country has a large government deficit and it is in a recession. The government wants to reduce unemployment. What type of exchange rate regime would you advise the government to adopt? Fixed? Flexible?
3. Many of the theories of currency crashes emphasize that extended credit is at the core of currency crises. Still, the sources of extended credit vary across models. Explain at least two different theories of currency crashes based on the hypothesis of “loose” credit or money.
4. Some economists have argued that “countercyclical” government policy is at the root of currency crises. Explain.
5. Let’s think of an emerging-market economy described as follows:

$$Y = \bar{AD} + (c - m)Y + b\left(\frac{eP^*}{P}\right) - fi$$

$$\frac{M^s}{P} = \bar{L} + kY - hi$$

$$i = i^* + \left(\frac{e^E - e}{e}\right)$$

The first equation shows the goods market equilibrium condition. The second shows the money market equilibrium condition, and the third one is the equilibrium condition in the foreign exchange market.

Let’s suppose a transitory shock to world interest rates, with expectations about the future exchange rate unchanged. In particular, let’s assume that world interest rates decline. Examine the effect of this increase in world liquidity on output, prices, domestic interest rates, reserves (exchange rates) under fixed (floating) exchange rates.

II. True, False, or Uncertain, Answer Briefly, but be Sure to Provide an Explanation

1. The Latin American stabilization of the 1990s triggered a dramatic increase of international capital flows to these countries.
2. Banks' moral hazard behavior in the early 1990s is at the heart of the financial crises of the late 1990s.
3. In the presence of large capital inflows, central banks should follow sterilization policies to avoid an inflationary-pressure build-up in the domestic economy.
4. Central Banks should worry only about short-term capital inflows.

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Answers to Problem Set 2

1. The traditional model in Krugman and Obstfeld suggests one beneficial effect of devaluations. If prices are sticky, a devaluation of the nominal exchange rate will be also a depreciation of the real exchange rate. The price of domestic goods (relative to that of foreign goods) will be lower, competitiveness will increase, demand for domestic goods will increase and the current account deficit will decline. Thus, a devaluation can help the domestic economy to get out of a recession and reduce its current account deficit. That is what happened when Britain left the EMS and let the pound devalue in August 1992. Still this effect is just transitory. Devaluations will lead to an increase in domestic prices and the real devaluation will disappear over time.

In contrast when a country has liabilities in foreign currency, a devaluation may have an adverse effect on economic activity (witness Thailand, 1997), with firms going into bankruptcy as their liabilities in domestic currency increase in proportion to the devaluation. Most commercial banks in emerging markets had liabilities in foreign currency (borrowing overseas) but assets in domestic currency (lending to domestic firms). As the balance sheet of the banks deteriorates, banks will become more cautious in lending, triggering a credit crunch, hikes in interest rates, and a collapse in economic activity.

2. With fixed exchange rates and capital mobility, monetary policy loses its effectiveness as a stabilization tool. Thus, if the government wants to eliminate unemployment, it will have to use expansionary fiscal policy. But, remember that the government in this country has a large deficit. The use of fiscal policy to reduce unemployment will deteriorate the government accounts even further. Another problem: if the fiscal deficit is financed by the central bank, the fixed exchange rate regime will collapse. Remember that, with fixed exchange rates and perfect capital mobility, $i = i^*$, demand for money in the domestic economy cannot be changed. Thus, increases in domestic credit will lead to a loss of reserves and to a currency crisis.

With flexible exchange rates, monetary policy can be used to stabilize the economy. An expansionary monetary policy will lead to a decline in interest rates, a depreciation of the domestic currency, and to an improvement in competitiveness. Demand for domestic goods will increase (demand for foreign goods will decline) taking the economy out of a recession. Since the government can use monetary policy to stabilize the economy, another benefit of the flexible exchange rate regime is that the fiscal deficit will not increase as in the fixed exchange rate regime.

3. One theory is based on the inconsistency between a fiscal deficit financed by money creation and the fixed exchange rate regime. The theory goes as follows: a deficit financed by money creation implies that the central bank will have to purchase government bonds from the

government. Money supply increases, there is pressure for domestic interest rates to decline. Investors prefer to hold foreign-currency denominated bonds since the domestic interest rate has declined. Investors will buy foreign currency and there will be pressure for the exchange rate to depreciate. To avoid the depreciation, the central bank will have to sell foreign exchange reserves until money supply declines again and $i = i^*$. Next period, if the deficit continues, the central bank will have to buy government bonds from the government and to avoid the depreciation it will have to sell foreign exchange reserves. While money supply does not change, the composition of assets of the central bank will change every period, with foreign exchange reserves declining. When reserves are depleted, the central bank will not be able to maintain the peg and the domestic currency will start to float.

A similar story can be told when the banking sector is in a fragile situation. If the central bank decides to bail out the banks it will start buying banks' non-performing loans by issuing credit, private debt held by the central bank will increase and so will supply of money. Interest rates will fall, prompting investors to buy foreign bonds. To avoid the depreciation, the central bank will sell reserves. If reserves fall too much the central bank will not be able to continue to peg the domestic currency.

The third theory focuses on the distortion introduced by deposit insurance or bank bailouts. With deposit insurance (or the possibility of a bank bailout) banks take more risk and lend more (there is overlending) because risky projects pay a higher return in good states. However, they go bankrupt in bad states more often than less risky projects. However, banks do not care much because in bad states they are bailed out. Those that support this theory show that the overlending gives place to overconsumption, larger current account deficits and may generate a speculative attack by investors who are worried that domestic residents will not pay back the foreign debt.

4. Some governments want to avoid recessions, that is, they try to follow countercyclical government policy. One possibility is to follow expansionary monetary policy when there is a recession, because a decline in interest rates will promote consumption and investment, leading to an increase in production. Similarly, they can devalue the domestic currency to make domestic goods more competitive. If investors know this, a rumor can also generate a self-fulfilling crisis. For example, if a group of investors think that there is going to be a devaluation, their expectations of a future devaluation will result in higher domestic interest rates (by the interest parity condition). As interest rates increase, consumption and investment will decline, demand for domestic goods will fall, and the economy will enter in a recession. The government may be end up devaluing the domestic currency to increase competitiveness and avoid the recession. Investors that know the policy followed by the government will speculate against the domestic currency and prompt the devaluation.

5. Let's suppose the emerging economy has fixed exchange rates. The economy can be described by:

$$Y = \bar{AD} + (c - m)Y + b\left(\frac{eP^*}{P}\right) - fi^*$$

$$\frac{M^s}{P} = \left(\frac{D + R}{P}\right) = \bar{L} + kY - hi^*$$

$$i = i^*$$

A decline in the world interest rate will trigger an increase in demand for domestic goods. Since the exchange rate is fixed and prices are sticky in the short run, the increase in liquidity will trigger an increase in output. The increase in output will be given by

$$\Delta Y(1 - (c - m)) = -f\Delta i^*$$

The change in output and world interest rates will also affect the equilibrium condition in the money market. Money demand will increase with increases in output and with reductions in the world interest rate.

$$\Delta\left(\frac{M^s}{P}\right) = \Delta\left(\frac{D + R}{P}\right) = k\Delta Y - h\Delta i^*$$

The increase in demand for money pushes domestic interest rates up and pushes for an appreciation of the domestic currency. In order to avoid an appreciation of the domestic currency, the central bank will have to purchase foreign exchange reserves. Money supply will increase (it will accommodate the increase in money demand)

The increase in economic activity will lead to an increase in domestic prices in the medium run (and thus a real appreciation of the domestic currency). See Figure 1

Let's suppose the economy has **flexible exchange rates**.

Suppose that when world interest rates decline, domestic interest rates also decline. Money demand will increase. Note that under flexible exchange rates, money supply is constant (the central bank does not need to intervene in the foreign exchange market). Thus, for the money market to be in equilibrium, output will have to decline (leading to a reduction in money demand).

$$\Delta\left(\frac{M^s}{P}\right) = 0 = k\Delta Y - h\Delta i$$

Thus, if a decline in world interest rates triggers a reduction in domestic interest rates, economic activity will slow down. Looking at the equilibrium condition in the goods market, we note that for economic activity to decline there should be a real appreciation of the domestic currency.

$$\Delta Y(1 - (c - m)) = b\Delta\left(\frac{eP^*}{P}\right) - f\Delta i$$

Thus, with floating rates, a reduction in world interest rates triggers an appreciation of the domestic currency as investors switch from holding foreign bonds into holding domestic bonds. The appreciation of the domestic currency will fuel a loss in competitiveness of the domestic economy, a decline in demand for domestic goods, and a slowdown of the domestic economy. See Figure 2.

II. True, False, or Uncertain, Answer Briefly, but be Sure to Provide an Explanation

1. False. While many countries in Latin America implemented new and successful stabilization programs, these stabilization programs were not the main driving force of the increase in capital inflows to Latin America as Eduardo Fernandez-Arias discusses. In his estimations, he allows for domestic and external factors to affect capital flows in the late 1980s and the beginning of the 1990s. The external factors (the decline in world interest rates) explain about 60 percent of the increase in capital inflows in that period.

2. True. Most of the crises of the 1990s are joint banking and currency crises. This was the case in Mexico, 1994 and Asia in 1997. The evidence for twin crises episodes is that they are preceded by dramatic increases in credit expansion (this is not the case in single balance-of-payments crises). This dramatic increase in credit may be linked to moral hazard behavior of banks (Excessive and risky lending behavior triggered by implicit or explicit deposit insurance).

3. False. When emerging countries adopt a fixed exchange rate regime, international capital inflows can trigger inflation, real appreciation, and a deterioration of the current account. This is so, because the central bank purchases foreign exchange reserves to keep the domestic currency from appreciating. Money supply increases, creating inflationary pressure. To avoid this problem, central banks try to sterilize the effect of foreign exchange intervention on the money supply by selling government or central bank bonds, mostly at very short maturities. Since money supply does not change, inflationary pressures may be contained. However, as the central bank sells sterilizes foreign exchange intervention, the wedge between domestic and foreign interest rates $i - i^* > 0$ (that attracted capital inflows) remains and continues to attract international capital inflows. If the central bank keeps on selling bonds to sterilize the effect of the foreign exchange rate intervention, the central bank will accumulate high interest liabilities (the interest on those bonds will be i) at the same time that it accumulates low interest rate assets (the foreign assets with at return equal to i^*). This generates a quasi-fiscal deficit that can become quite large. Intervention is not a viable solution in the long run.

4. False. As discussed in Claessens, Dooley, and Warner ("Portfolio Capital Flows: Hot or Cold") long-term flows are often as volatile as short-term flows. Also, the time it takes for an unexpected shock to a flow to die out is similar across flows. The implication is that the emphasis on analyzing specific flows, especially short-term portfolio flows is overdone. An attempt to reduce capital account volatility by administratively limiting short-term inflows is unlikely to be effective because there is little evidence that these flows are really more volatile

than other flows. To conclude, the evidence in that paper is consistent with the view that capital flows are fungible and highly substitutable.

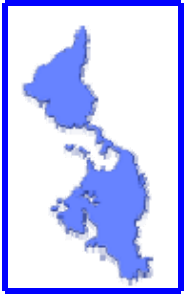
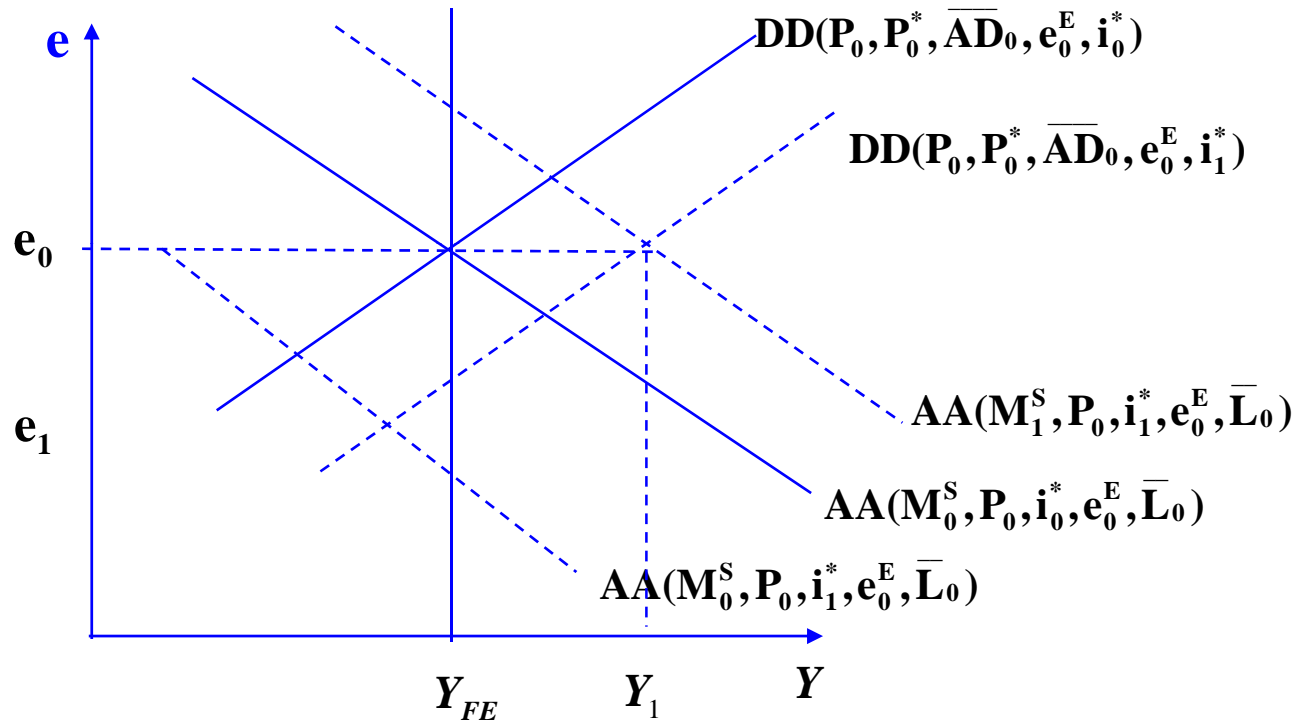


Figure 1

The Effects of Capital Inflows with Fixed Rates: Transitory Decline in i^*



- A decline of world interest rates triggers an appreciation of the domestic currency. To avoid the appreciation, the central bank intervenes in the foreign exchange market (buying foreign exchange reserves). With the exchange rate unchanged and lower interest rates, economic activity increases. Upward pressure on domestic prices.

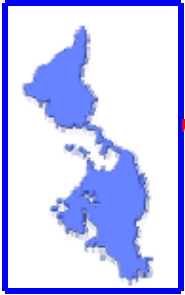
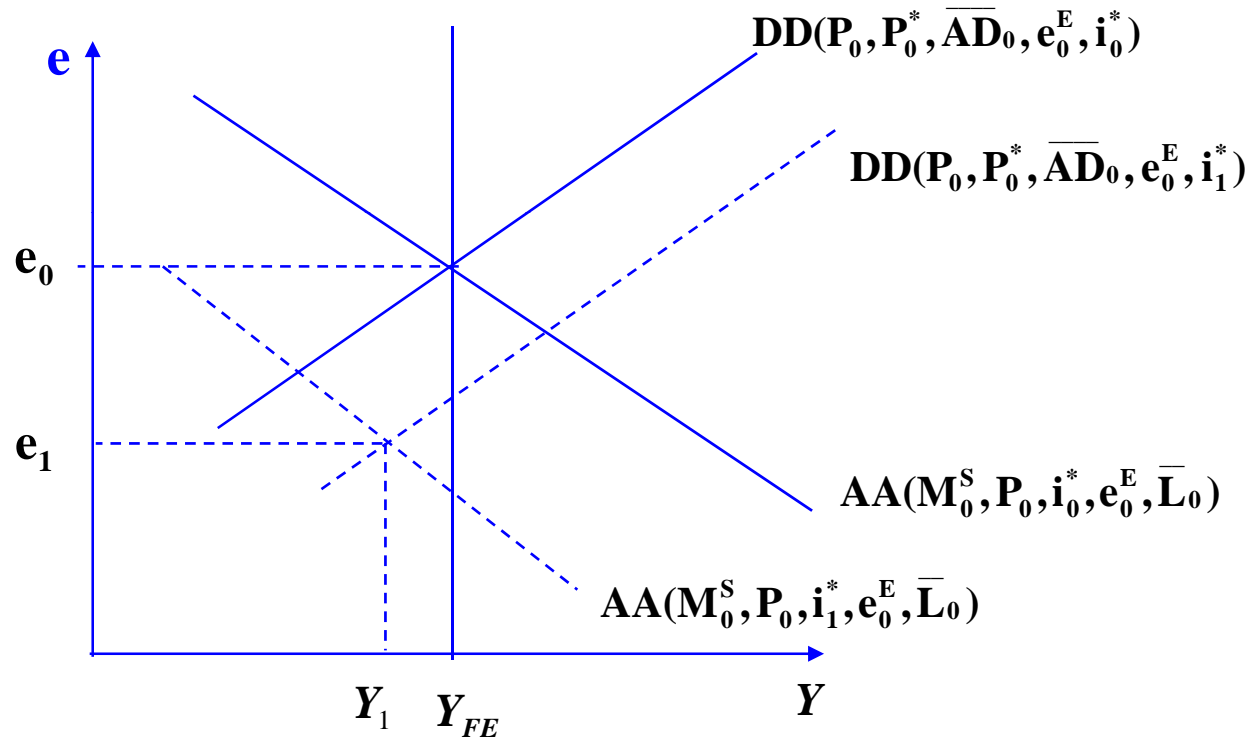


Figure 2

The Effects of Capital Inflows with Flexible Rates: Transitory Decline in i^*



- A decline of world interest rates triggers an appreciation of the domestic currency and a decline in exports and economic activity.