

GEORGE WASHINGTON UNIVERSITY
Department of Economics
Econ-295

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Problem Set 3

I. Answer the Following Questions

- 1.** You are asked to advise a Latin American country on whether or not to devalue its domestic currency. Using what you have learned about currency crises, explain to the government officials in that country what are the advantages of devaluing and what are the advantages of defending the current peg.

- 2.** The recent turmoil in currency markets around the world and the explosion of international capital flows that preceded these crises have ignited once again the debate on restrictions to international capital mobility. Many have argued that capital controls can help to reduce the perhaps excessive euphoria of investors, attenuate the severity of the crises, and limit contagion. Do you agree? What are the disadvantages of capital controls?

- 3.** You are asked to examine the signals of upcoming crises in Turkey in 1999 and 2000. You are given the following indicators (see next table). Answer the following questions:
 - a.** What is the real exchange rate? Does the real exchange rate signal an upcoming crisis in 2001?
 - b.** What is the trade balance? Is the trade account deteriorating?
 - c.** What is the money multiplier? Does the money multiplier anticipate a crisis?
 - d.** What is the behavior of Domestic Credit/GDP? Does this ratio anticipate an upcoming crisis?
 - e.** Did the 2001 crisis happen in the midst of a recession?
 - f.** Do you think Turkey suffer from external vulnerability in 2000? How do you measure external vulnerability?
 - g.** Write a small report on the state of the Turkey economy in 1999 and 2000.

- 4.** As of late, the contagious nature of currency crises has been at the center of the debate both in academic and policy circles. Are there evidences of contagious currency crises? What are the channels of contagion?

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Answers Problem Set 3

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 increases, 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. A devaluation 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. Households also may have liabilities in foreign currency but assets in domestic currency. As the balance sheet of the firms deteriorates and households net wealth declines, aggregate demand will fall and output may decline. See, figure 1.

2. If markets were efficient, capital controls would be clearly welfare worsening since with free capital mobility capital is allowed to move to the most profitable destination. However, if there are distortions in the functioning of capital markets, then there may be a case for capital account restrictions. One of the distortions that is most frequently cited when reviewing the behavior of capital markets is the lack of perfect information. When there are asymmetries among the parties in the financial contract, inefficient pricing of loan contracts may result. Also, when one agent cannot observe a relevant action to be undertaken by the other agent, moral hazard may result. In financial markets, a creditor may not be able to observe whether the borrower will invest in a risky project or a safe project. In some circumstances too much investment in risky projects will result. Information on overseas financial markets is even more imperfect and on top of that there is the problem of sovereign debt. Thus, there may be some justification for capital account controls on that basis. However, controls on capital mobility restrict the growth of financial markets, with financial markets in emerging markets becoming shallow and too volatile. Moreover, restrictions to capital mobility also reduce competition in financial market, with inefficient lenders becoming highly protected. So, there are trade-offs. With respect to the effects of capital controls, the evidence is still fragmented. Edwards finds that controls on capital inflows in Chile reduced short-maturity capital inflows, but did not prevent contagion from Asia. Edison and Reinhart examine the effects of controls on capital outflows. Only in the case of Malaysia, they find that capital controls have reduced volatility in exchange rate markets and has reduced the need for skyrocketing domestic interest rates to defend the parity. The

evidence from Thailand and Brazil suggests that controls on outflows did not have any impact in the financial markets of those countries.

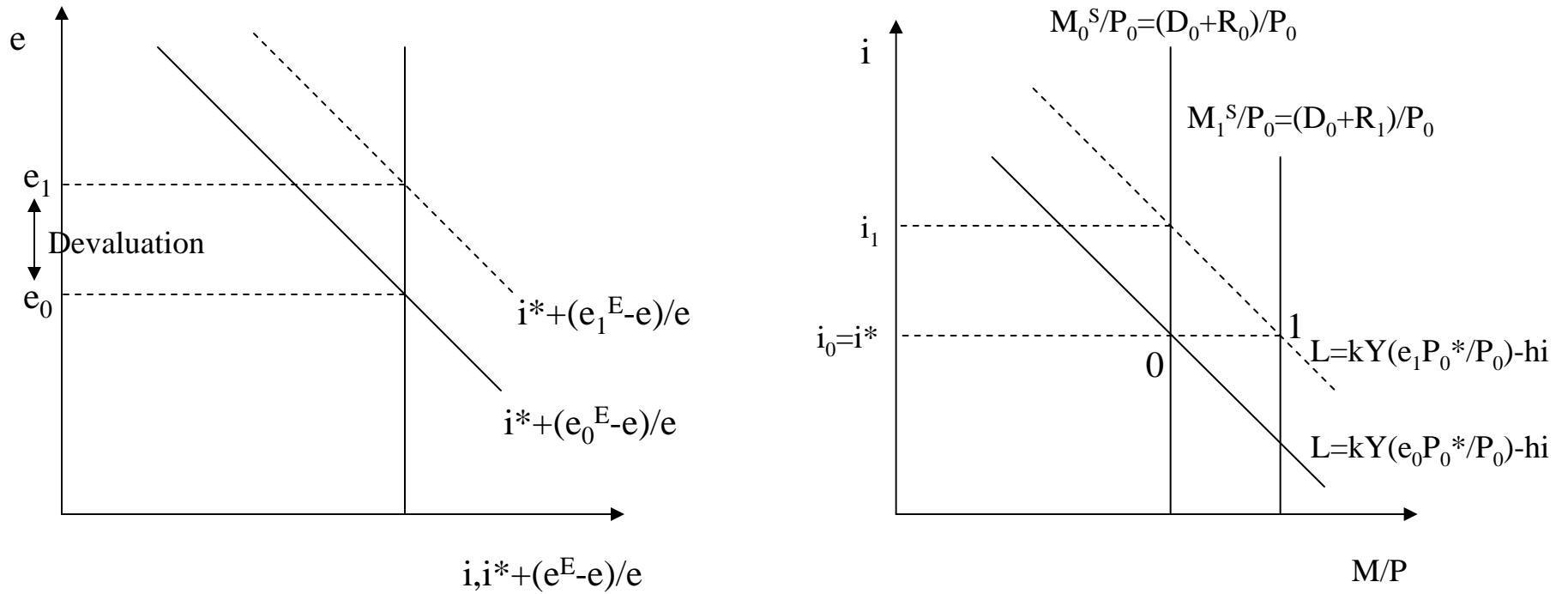
3.

- a. The real exchange rate is equal to eP^*/P , that is the relative price of foreign goods over domestic goods. As you can see from the attachments, the real exchange rate appreciated 10.29 percent in 1995, 2.52 percent in 1997, 8.43 percent in 1998, and 7.51 percent in 2000. These appreciations were not compensated by the depreciations in 1996 and 1999. These figures suggest a loss of competitiveness as Turkey approaches the crisis in 2001.
- b. The trade balance is the difference between exports and imports. Turkey had large trade deficits in the 1990s, with exports around 50 percent of imports.
- c. The money multiplier reflects money creation by the banking system. In our case, it is equal to $M2/M0$. The money multiplier grew substantially in 1995 and 1996.
- d. Domestic Credit/GDP growth was highly positive since 1996 indicating the presence of pronounced booms in financial markets.
- e. Industrial production declined 9.58 percent in 1998 and 4.10 percent in 2000. It grew 3.33 percent in 1999. This increase did not compensate for the two declines. Overall industrial production declined by about 11 percent in those three years, suggesting a downturn in the economy.
- f. One way of measuring external vulnerability is to look at the external debt/export ratio. If the ratio is high it means the country may not obtain foreign currency to repay the debt. In the case of Turkey, this ratio oscillated around 30 in the late 1990s and about 13 in 2000. Another way of looking at external vulnerability is to examine the short-term debt/foreign exchange reserves of the central bank. This ratio was about 1.3 in 1999 indicating that short-term debt was about 30 percent higher than the reserves of the central bank, indicating liquidity problems.
- g. In the late 1990s, Turkey suffered from a real exchange rate appreciation and a deterioration of the trade balance. The loss of competitiveness also led to a 10 percent decline in industrial production in the 1998-2000 period. There are also signs of financial vulnerability, domestic credit/industrial production ratio increased almost continuously since 1996 even increasing more than 50 percent just in 2000 and 2001. Stock prices in dollars increased dramatically in the since 1996 and collapsed in 2000-2001 suggesting the burst of a bubble. Finally, as shown in f. external vulnerability was high with external short-term debt about 30 percent higher than the stock of foreign exchange reserves held at the central bank.

4. The literature on contagion has focused on two venues for contagion: Trade links and financial links. With respect to trade links, the idea is as follows. Suppose a country devalues the domestic currency. Trading partners will be affected. Competitiveness of the country that has not devalued will decline and the country's current account will deteriorate. If bilateral trade is important, the second country may be pressured to devalue to restore the current account surplus. Sometimes bilateral trade is not important. However, two countries may be competing in third-country markets. A devaluation in one of the countries may lead to a loss of competitiveness of the second country. However, now we care about the type of goods and services that each country exports to the third-party country. If the two countries export different commodities, then a devaluation in the first country will not affect competitiveness of the second

country. But, if both export similar goods to a third-party country, then the second country may be pressured to devalue to improve the current account. With respect to financial links, many have pointed to the role of common creditors. When one country is in crisis, it may not be able to pay to international banks, the balance sheet of foreign banks will deteriorate and the banks may be pressured to reduce portfolio exposure to emerging markets. If this is the case, banks will recall loans, not necessarily from the country in crisis but from other countries in the region. A liquidity crunch may develop, with other emerging economies being unable to even obtain trade credits. The crisis will spread to other emerging economies. This was the case in Asia after Japanese banks started to recall loans from East Asian economies after the collapse of the Thai baht.

Figure 1
No Balance Sheet Effects



In the short-run, a devaluation without balance-sheet problems, increases demand via a real exchange rate depreciation. It triggers an increase in demand for money and pushes “ i ” up. To avoid an appreciation, central bank intervenes, R increases. The new short-run equilibrium moves from 0 to 1.

Figure 1

If Balance-Sheet Effects

$$AD = AD + b(eP^*/P) + cW$$

Where W is net wealth of households: $W = \text{Assets} - \text{Liabilities}$. As W goes up, consumption increases and so does AD .

After devaluation: If liabilities are in foreign currency but assets are in domestic currency, wealth will decline, pushing consumption down. There are two effects on aggregate demand the competitiveness effect and the wealth effect.

If the wealth effect is larger:

