

Chapter 20. Exchange Rate Regimes (7e)

How does the exchange rate regime affect macroeconomic adjustment?

- Under a *fixed nominal exchange rate regime*, there are two methods of adjustment: relatively slow, medium-run adjustment through the *movement of prices and the real exchange rate*, or relatively fast adjustment through *devaluation*, often induced by a speculative attack on the currency.
- Under a *flexible exchange rate regime*, policymakers can use *monetary policy* to stimulate output during a recession.
- In choosing between exchange rate regimes, the apparently superior adjustment mechanism offered by a flexible exchange rate has to be weighed against the potential benefits offered by fixed exchange rates.
- The relative costs and benefits of exchange rate regimes will depend on a country's specific circumstances.

20.1 The Medium Run

- Suppose a country operates under a fixed exchange rate, \bar{E} .
- Note that impossible trinity (also known as the trilemma) states that it is impossible to have all three of the following at the same time:
 - a fixed foreign exchange rate
 - free capital movement (absence of capital controls)
 - an independent monetary policy
- Perfect capital mobility implies that the domestic nominal interest rate equals the world nominal interest rate, i.e., $i=i^*$.
- To simplify, take expected inflation and foreign output as fixed. These assumptions imply that the goods market equilibrium condition can be expressed as follows:

$$Y = Y\left(\frac{\bar{E}P}{P^*}, G, T, i^* - \pi^e, Y^*\right) \quad (20.1)$$

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- This chapter focuses on the role of the real exchange rate ($\varepsilon = \bar{E}P/P^*$) in equation (20.1).
 - A *real depreciation* (a decrease in the real exchange rate) *increases output* by increasing net exports.
 - An *increase in G* also *increases output*;
 - an *increase in T* *reduces output*.
 - *Increase in Y^* will improve NX.*
 - Real interest rate $r = i^* - \pi^e$. As $r = i - \pi^e$ and real exchange rate $= EP/P^*$, in fixed exchange rate regime, $E = \bar{E}$, $i = i^*$.

Equilibrium in the Short and Medium Run

- Now suppose that the economy where real exchange rate is too high, in which $Y < Y_n$ and $u > u_n$.
- Under a *flexible exchange rate regime*, the central bank can *decrease interest rate* (nominal depreciation), which can *improve trade balance and increase output*.
- Under a *fixed exchange rate regime*, the central bank *cannot* move the domestic interest rate. So, in the SR, the country is still in *recession and trade deficit*.
- However, in the MR, *prices can adjust*.
- From the Philips curve relation, $\pi - \pi^e = (\alpha/L)(Y - Y_n)$, when $Y < Y_n$, $\pi < \pi^e$.
- Assume expected inflation is a constant, i.e., $\pi^e = \bar{\pi}$.
 - The Philips curve is now $\pi - \bar{\pi} = (\alpha/L)(Y - Y_n)$
- Assume that if output was equal to Y_n , domestic and foreign inflation would be equal to each other, and both equal to $\bar{\pi}$. So, $\pi = \pi^* = \bar{\pi}$.

- In this case, relative price level will be constant and so for real exchange rate.
- If now, $Y < Y_n$, implies $\pi < \bar{\pi} = \pi^*$. It means *price level increases more slowly than the foreign price level*.
- Given nominal exchange rate is fixed (in fixed exchange rate regime), $\pi < \pi^* \Rightarrow \bar{E}P/P^*$ decreases.
- When *real exchange rate decreases* $\Rightarrow NX$ increases overtime.
- In the MR, domestic inflation is back to $\bar{\pi} = \pi^* \Rightarrow$ real exchange rate is constant then.
- Even if the *nominal exchange rate is fixed*, the economy *can return to potential output* in the medium run, although the process of adjustment can be *long and painful for low output and high unemployment for a long time*.

20.2 Exchange Rate Crises under Fixed Exchange Rates

- Section 20.1 assumed that international investors believed that policymakers would maintain a fixed exchange rate of \bar{E} .
- In fact, as was demonstrated in Section 20.1, policymakers have the option of *devaluing the currency* or, in the extreme, *abandoning fixed exchange rates altogether*.
- ~~If international investors believe a devaluation is possible, the expected future exchange rate will rise above the current exchange rate, and by uncovered interest parity, the domestic interest rate will rise above the world rate by the amount of the expected devaluation (in percentage terms).~~
- Thus, in the face of an expected devaluation, policymakers will be required to raise the interest rate if they wish to maintain the fixed exchange rate.
- Since raising the interest rate reduces domestic output and increases home unemployment, policymakers may find this course too painful and may abandon the current fixed rate, either through

a devaluation (which validates the original expectation) or by adopting a flexible exchange rate regime.

- At times, international investors may have good reason to expect devaluation or abandonment of a fixed exchange rate.
- A country's currency may be overvalued, implying that a real depreciation is necessary to improve output, the trade balance, or both.
- The quickest way to achieve a real depreciation is through a nominal depreciation.
- Likewise, a country may want to reduce its interest rate to get out of a recession.
- A fixed exchange rate precludes this option, but a flexible exchange rate permits an interest rate reduction through monetary expansion and concomitant nominal depreciation.
- Although there may be reasons to expect devaluation in some circumstances, an expected devaluation can trigger a crisis even if the initial fear of devaluation is groundless.

20.3 Exchange Rate Movements under Flexible Exchange Rates

- Assumed that the expected exchange rate next period was fixed.
- This assumption generated a simple relationship between the interest rate and the exchange rate: the lower the interest rate, the more depreciated the exchange rate.
- In fact, the expected future exchange rate is not fixed, but can vary, with implications for the current exchange rate.
- Rewrite the uncovered interest parity condition as follows:

$$E_t = [(1+i_t)/(1+i_t^*)]E_{t+1}^e. \quad (20.4)$$

- Applying equation (20.4) to time $t+1$ implies that the exchange rate at time $t+1$ will depend on the domestic and foreign interest rates at time $t+1$ and the expected exchange rate at time $t+2$.
- Thus, the expected exchange rate at time $t+1$ will depend on expected interest rates at time $t+1$ and the expected exchange rate at time $t+2$. In other words,

$$E_{t+1}^e = [(1+i_{t+1}^e)/(1+i_{t+1}^{*e})] E_{t+2}^e.$$

- Substituting this equation into equation (20.4) gives

$$E_t = [(1+i_t)(1+i_{t+1}^e)/[(1+i_t^*)(1+i_{t+1}^{*e})]] E_{t+2}^e.$$

- Carrying this calculation n years into the future gives

$$E_t = [((1+i_t)(1+i_{t+1}^e)...(1+i_{t+n}^e))/((1+i_t^*)(1+i_{t+1}^{*e})...(1+i_{t+n}^{*e}))] E_{t+n+1}^e. \quad (20.5)$$

- Equation (20.5) makes clear that the current exchange rate depends on expected interest rates and the expected exchange rate far into the future.
- In particular, there are three implications.
 1. the current exchange rate will be affected by any factor that affects the future expected exchange rate.
 2. the current exchange rate will be affected by any factor that affects current or expected future domestic or foreign interest rates.
 3. as a result of the first two implications, the relationship between the home interest rate and the exchange rate is not straightforward.
 - Suppose the home central bank cuts the domestic interest rate.
 - Financial market participants will make some judgement about whether the cut is temporary or signals the start of a series of interest rate cuts, and will then revise their

expectations about future domestic interest rates accordingly.

- They will also assess the likely response of foreign central banks and revise their expectations of future foreign interest rates.
 - These changes in expectations will affect the current exchange rate.
- The bottom line is that exchange rates can fluctuate greatly even in the absence of large changes in current economic variables.
 - As a result, countries that operate under flexible exchange rate regimes must be prepared to accept substantial exchange rate fluctuations.

20.4 Choosing between Exchange Rate Regimes

- As Robert Mundell pointed out in the 1960s, the loss of discretionary monetary policy is less important to the extent that countries operating under fixed exchange rates face one of two conditions: similar economic shocks or high factor mobility with one another.
- If countries face similar shocks, they would tend to choose the same monetary policies even in the absence of fixed exchange rates.
- If countries have high factor mobility, movements of workers can substitute for real depreciation as a method of economic adjustment.
- In other words, workers will move from areas that require real depreciation to avoid high unemployment.
- A group of countries that satisfy at least one of Mundell's conditions is said to constitute an optimal currency area.

- As the name implies, it makes sense economically for such a group of countries to adopt a single currency.
- As the text argues, many economists believe that the countries of the Euro zone do not constitute an optimal currency area, since they satisfy neither of Mundell's conditions.
- In some cases, the loss of policymaking flexibility under fixed exchange rates may also provide benefits.
- If countries have a reputation for undisciplined monetary policy, international investors may fear that a flexible exchange rate system will allow too much latitude for inflationary policy.
- To the extent that such countries can commit to a fixed rate system, they eliminate the potential for discretionary monetary policy.
- Since a fixed exchange rate can always be abandoned, however, it is not always a simple matter to demonstrate commitment to a fixed rate system.
- One method is to enter into a common currency with a set of other countries, as much of Europe has done.
- Another is to supplement fixed exchange rates with legislative or technical measures that limit or prohibit discretionary monetary policymaking.
- The latter arrangements—called currency boards—generated much interest in the 1990s.
- Argentina adopted a currency board in 1991, but abandoned it in crisis in 2001. Some economists argue that Argentina's currency board was not tight enough, since an exchange rate crisis was not prevented.
- These economists argue that a country that wants a fixed exchange rate should simply adopt the U.S. dollar as its currency.

- Other economists argue that fixed exchange rates are a bad idea, and that currency boards should be used for only short periods of time, if at all.
- Finally, the policy flexibility seemingly offered by flexible exchange rates may be illusory. In practice, flexible exchange rates vary greatly.
- Large and unpredictable movements in the nominal exchange rate make life more complicated for firms and consumers and have real effects in the short run since prices (and hence the real exchange rate) adjust slowly.
- Moreover, to the extent that changes in the nominal exchange rate have real effects, monetary policymakers may be required to use policy to respond to unpredictable (and sometimes difficult to understand) movements in the nominal exchange rate.
- Thus, flexible exchange rates do not allow policymakers complete independence: to some extent, policymakers are at the mercy of the foreign exchange market.

Exercises

2. Consider a country operating under fixed exchange rates. The IS

$$Y = Y\left(\frac{\bar{E}P}{P^*}, G, T, i^* - \pi^e, Y^*\right) \quad (20.1)$$

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curve is given by relation

- Explain the term $(i^* - \pi^e)$. Why does the foreign nominal interest rate appear in the relation?
- Explain why when $\bar{E}P/P^*$ increases, the IS curve shifts left.
- In the following table, how is the real exchange rate evolving from period 1 to period 5? What is domestic inflation? What is foreign inflation? Draw an IS-LM diagram with the IS curve in period 1 and the IS curve in period 5.

Period	P	P*	E	π	π^*	Real exchange rage
1	100.0	100.0	0.5			
2	103.0	102.0	0.5			
3	106.1	104.0	0.5			
4	109.3	106.1	0.5			
5	112.6	108.2	0.5			

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Period	P	P*	E	π	π^*	Real exchange rage
1	100.0	100.0	0.5			
2	102.0	103.0	0.5			
3	104.0	106.1	0.5			
4	106.1	109.3	0.5			
5	108.2	112.6	0.5			

e. In the table that follows, how is the real exchange rate evolving from period 1 to period 4? What is domestic inflation? What is foreign inflation? What happened between Period 4 and Period 5? Draw an *IS-LM* diagram with the IS curve in period 1 and the IS curve in period 5.

Period	P	P*	E	π	π^*	Real exchange rage
1	100.0	100.0	0.5			
2	103.0	102.0	0.5			
3	106.1	104.0	0.5			
4	109.3	106.1	0.5			
5	112.6	108.2	0.48			

Answer:

- a. The $(i^* - \pi_e)$ is the real interest rate in the domestic country. The foreign nominal interest rate and the domestic nominal interest rate take on the same value in a fixed exchange rate regime.
- b. The term $(EP^*)/P$ is the real exchange rate. An increase in this value is an appreciation and the appreciation reduces demand for domestic goods. The IS curve shifts left.
- c. The real exchange rate is appreciating as P is rising more quickly than P^* . Domestic inflation is 3% per year and foreign inflation is 2% per year. Between period 1 and period 5, the IS curve would shift left.
- d. The real exchange rate is depreciating as P^* is rising more quickly than P . Domestic inflation is 2% per year and foreign inflation is 3% per year. Between period 1 and period 5, the IS curve would shift right.
- e. From period 1 to period 4, the real exchange rate is appreciating because domestic inflation (3%) is higher than foreign inflation (2%). Then in period 5, there is a depreciation of the nominal exchange rate that leaves the real exchange rate at its period 1 value. The IS curve in period 1 and period 5 are in the same position.