TOPIC 10: EXCHANGE-RATE POLICY AND THE CENTRAL BANK*

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This lecture studies the link between a country's exchange rate policy and its domestic monetary policy. We will conclude that central banks must choose between a fixed exchange rate and an independent monetary policy (interest rate rule).

1 EXCHANGE-RATE POLICY AND DOMESTIC MONETARY POLICY

We will look at two ways to examine the connection between exchange rates and monetary policy.

Inflation and the long-run implications of purchasing power parity. Recall that the theory of purchasing power parity (PPP) extends the law of one price—*ignoring transportation costs*, identical goods should sell for the same price everywhere in the long run—to a basket of goods and services. Some important implications:

- In the U.K. case, the PPP condition becomes

$$\underbrace{E}_{\text{pounds per dollar}} = \frac{\text{pound price of one basket in U.K.}}{\text{dollar price of one basket in U.S.}} = \frac{P^*}{P} \tag{1.1}$$

  which suggests that changes in exchange rates are tied to differences in inflation from one country to another.

- Using the relation that the percentage change in x/y approximately equals the percentage change in x minus the percentage change in y, (1.1) becomes

$$\%\text{ change in } E \approx \underbrace{\%\text{ change in } P^*}_{\text{U.K. inflation rate}} - \underbrace{\%\text{ change in } P}_{\text{U.S. inflation rate}} \tag{1.2}$$

  That is, when the U.K. inflation rate is higher (lower) than the U.S. inflation rate, the number of pounds needed to buy one dollar rises (falls).

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Disclaimer: these are notes that I used by myself to lecture from and for educational purposes only. The material presented here is largely based upon the undergraduate textbook by Stephen Cecchetti and Kermit Schoenholtz (2014), *Money, Banking and Financial Markets*, 4th Edition, McGraw-Hill/Irwin. Please do NOT circulate.

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- The Bank of England must choose between a fixed exchange rate—its monetary policy must be conducted so that U.K. inflation matches U.S. inflation—and an independent monetary policy—its exchange rate must be allowed to vary. It cannot have both.

Interest rates and the short-run implications of capital market arbitrage. Further recall that a country's exchange rate is determined by supply and demand for its currency in the short run. Assume that governments allow funds to flow into and out of their countries. Consider the choice between U.S. one-year bonds and U.K. one-year bonds of equal risk. Some important implications of international capital mobility:

- Arbitrage in the capital market ensures that both bonds have the same expected return

$$1 + i_t = (1 + i_t^*) \left(\frac{E_t}{E_{t+1}^e} \right) \tag{1.3}$$

  which gives the uncovered interest parity condition.

- Under a fixed exchange rate and every financial investor believes so, i.e. $E_t = E_{t+1}^e = E$, (1.3) becomes

$$i_t = i_t^* \tag{1.4}$$

  Whenever the U.S. and the U.K. interest rates diverge, investors will move funds back and forth, wiping out the difference.

- Once again, the Bank of England must choose between a fixed exchange rate and an independent monetary policy. It cannot have both.

- Note that if a country forgoes participating in international capital markets, it can impose **capital controls**, fix its exchange rate, and control its domestic interest rate. In other words, policymakers must choose two of the three options below:[1]

  – Be open to international capital flows;

  – Control its domestic interest rate;

  – Fix its exchange rate.

[1] For most of the time, policymakers at the Fed and the ECB concentrate on the domestic economy and let their exchange rates float freely. But in small countries where changes in exchange rates can have a dramatic impact, central bankers do not have that luxury.

2 MECHANICS OF EXCHANGE-RATE MANAGEMENT

This section discusses the mechanics of exchange-rate management and exchange-rate intervention.

The central bank's balance sheet. Central banks can fix the exchange rate by offering to buy and sell their country's currency at that fixed rate. Controlling the exchange rate means giving up control of the size of reserves so that the market determines the interest rate. Two remarks:

- For example, suppose the U.S. Treasury instructs the Fed to purchase $1 billion worth of euros.[2] See Figure 17.3 below.
  - The Fed's balance sheet: its assets and liabilities both go up $1 billion, increasing the monetary base by the same amount and, through the money multiplier, the quantity of money in the economy as well.
  - Buying euros (or selling dollars) increases the supply of reserves to the banking system, putting downward pressure on interest rates.

Figure 17.3 Balance Sheet Changes after the Federal Reserve Purchases a German Government Bond

A. Federal Reserve's Balance Sheet

Assets		Liabilities	
Foreign exchange reserves (German government bonds in euros)	+$1 billion	Reserves	+$1 billion

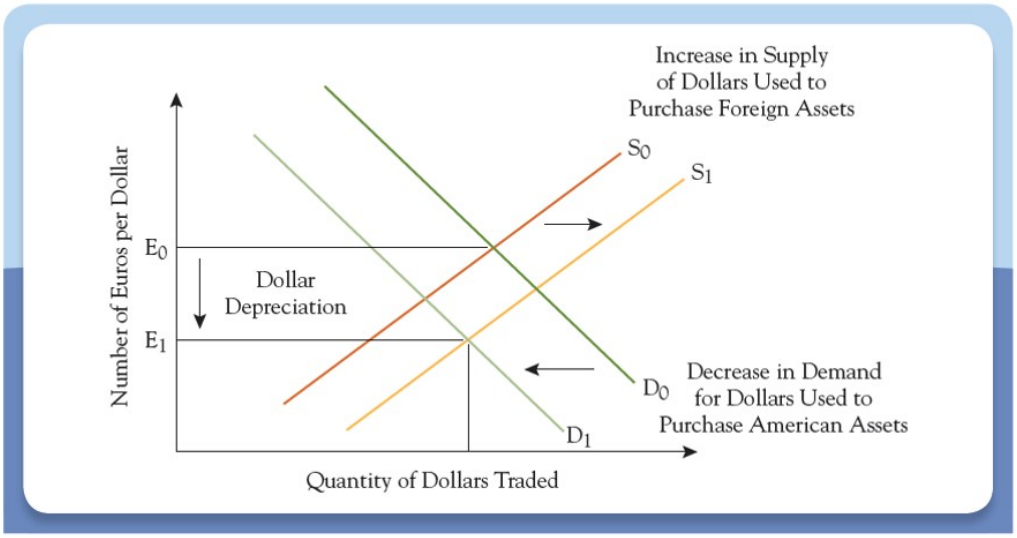
B. Banking System's Balance Sheet

Assets		Liabilities	
Reserves	+$1 billion		
Securities (German government bonds)	−$1 billion		

- What is the impact of this intervention on the exchange rate? See Figure 19.2 below.
  - Lower domestic interest rate makes U.S. bonds less attractive relative to foreign bonds, shifting the demand for dollars to the left and the supply of dollars to the right.
  - The dollar-euro exchange rate goes down: the dollar depreciates and the euro appreciates.

[2] Recall that the Fed can buy German government bonds, denominated in euros, from the foreign exchange departments of large commercial banks and pays for them with dollars.

Figure 19.2 Effect of a Decrease in U.S. Interest Rates Relative to Interest Rates in the Euro Area



- Conclusion: an *unsterilized foreign exchange intervention*—one that changes the monetary base—affects the exchange rate by changing domestic interest rate. This means that an open market purchase or sale works exactly the same way.

3 The Costs, Benefits, and Risks of Fixed Exchange Rates

Assigned as reading. You should know under which situations exchange rate stabilization becomes the overriding objective of central banks, to the extent that a decision to fix the exchange rate may be made.

4 Fixed Exchange-Rate Regimes

Assigned as reading. You should know under which situations a country might give up its currency entirely.