In contrast to the Mundell-Fleming model, the flexible price monetary model proposed by Frenkel (1976), as suggested by the name, works with the assumption that all prices are flexible. This means that the aggregate supply curve is vertical, and a shift in aggregate demand has no whatsoever effect on output. The level of output cannot be easily adjusted either up or down as it is mainly determined by supply side factors. Only a shift in aggregate supply can result in changes in output. Therefore, the IS part of IS–LM analysis is irrelevant here. The model assumes that purchasing power parity (PPP) holds continuously, so does the international Fisher effect (IFE) or uncovered interest rate parity (UIRP). It further assumes that money supply and real income are exogenously determined. In the following, we simply call the model the monetary model in short when there is no confusion. The other version of the monetary models, the sticky price monetary model by Dornbusch to be introduced in the next chapter, will be simply termed as the Dornbusch model.

This chapter begins with workings on demand for money in a framework similar to the LM part of IS–LM analysis. Then demand for money functions in two relevant countries are jointly analysed and linked through PPP, leading to the derivation of the monetary model for the determination the foreign exchange rate between the two currencies, involving relative real income, demand for money, and interest rate levels in the two countries. Incorporating IFE, the model takes another form with an inflation dimension in the model. Effects of various shocks on the foreign exchange rate are evaluated through applying the monetary model.

Next the chapter examines the roles of the fundamentals and expectations in foreign exchange rate determination. The relationship between the fundamentals and the foreign exchange rate is illustrated and rational bubbles and testing for rational bubbles are discussed, within the framework of the monetary model, revealing important implications for foreign exchange market activity and operations.
8.1 Demand for Money in Two Countries and Foreign Exchange Rate Determination

As learned in Chapter 5, demand for money is a function of real income, the interest rate and the price level. More precisely, the velocity of money, defined as the ratio of demand for money and the price level, is an increasing function of the level of real income and a decreasing function of the level of the interest rate. Reserving these qualitative features, the relationship between these variables in the domestic country can be expressed as follows:

\[
\frac{M_i^D}{P_i} = \frac{Y_i^a}{(1 + r_i)^\beta}
\]

where \(M_i^D\) is demand for money, \(P_i\) is the price level, \(Y_i\) is real income and \(r_i\) is the interest rate, all at time \(t\), for the domestic country; \(\alpha > 0\) and \(\beta > 0\) are coefficients representing the income elasticity of money demand, and the interest rate semi-elasticity of money demand. Taking logarithms of equation (8.1) yields:

\[
m_i^d - p_i = \alpha y_i - \beta r_i
\]

where \(m_i^d = \ln(M_i^D),\ p_i = \ln(P_i),\ \text{and}\ y_i = \ln(Y_i)\). The only differences between equation (5.8) and equation (8.2) are that demand for money, real income and the price level are in their original forms in the former, while they are in logarithms in the latter. Nevertheless, both equation (5.8) and equation (8.2) point out that the velocity of money increases with real income and decreases with the interest rate.

Similarly, demand for money in the foreign country is:

\[
\frac{M_i^{D\ast}}{P_i^{\ast}} = \frac{Y_i^{a\ast}}{(1 + r_i^{\ast})^\beta}
\]

and in logarithms:

\[
m_i^{d\ast} - p_i^{\ast} = \alpha y_i^{\ast} - \beta r_i^{\ast}
\]

where * denotes the foreign country, \(M_i^{D\ast}\) is demand for money, \(P_i^{\ast}\) is the price level, \(Y_i^{\ast}\) is real income and \(r_i^{\ast}\) is the interest rate, all at time \(t\), for the foreign country; \(m_i^{d\ast} = \ln(M_i^{D\ast}),\ p_i^{\ast} = \ln(P_i^{\ast}),\ \text{and}\ y_i^{\ast} = \ln(Y_i^{\ast})\). \(\alpha\) and \(\beta\) are assumed to be equalised across countries, i.e., the effect of a unit increase or decrease in real income and/or the interest rate on the velocity of money is the same in the domestic country and in the foreign country.

Money demand equals money supply in the domestic country and the foreign country respectively, when the money market is in equilibrium in the two countries: