

prices. In the long run, real variables are unchanged. The adjustment pattern for the exchange rate seen in Figure 21-7 involves *overshooting*. The exchange rate overshoots its new equilibrium level when, in response to a disturbance, it first moves *beyond* the equilibrium it ultimately will reach and then gradually returns to the long-run equilibrium position. Overshooting means that changes in monetary policy produce large changes in exchange rates.

Those who believe that exchange rate overshooting introduces an undesirable instability into the economy argue that governments should intervene in foreign exchange markets to avoid large, excessive exchange rate fluctuations. The sharp dollar appreciation in 1980–1985 strongly reinforced the call for such intervention. In 1985 the major countries agreed in principle that they would intervene to try to prevent exchange rate instability. The agreement notwithstanding, major exchange rate movements continue to occur. For instance, in 1995, the yen reached an exchange rate of 80 yen to the dollar. The major industrial countries agreed that the yen was overvalued and should depreciate. This declaration, and intervention by the Bank of Japan, moved the exchange rate to 110 yen to the dollar within a year. Accordingly, although the current flexible rate system emerged because the Bretton Woods system of fixed rates broke down in 1973,¹⁵ it is not viewed as the last word, and reform of the international monetary system is always on the agenda.

PURCHASING POWER PARITY (PPP)

In the preceding analysis, the exchange rate rose by precisely the right amount to offset the effects of domestic inflation on the real exchange rate. That is, the exchange depreciation maintained the *purchasing power* of our goods in terms of foreign goods between the initial and the final equilibrium points.

An important view of the determinants of the exchange rate is the theory that exchange rates move primarily as a result of differences in price-level behavior between the two countries in such a way as to maintain the terms of trade constant. This is the *purchasing power parity (PPP)* theory. The purchasing power parity theory of the exchange rate argues that exchange rate movements primarily reflect differences in inflation rates between countries. Examining the real exchange rate, eP_f/P , the theory maintains the following: When P_f and/or P changes, e changes in such a way as to maintain eP_f/P constant.¹⁶

PPP is a plausible description of the trend behavior of exchange rates, especially when inflation differentials between countries are large. In particular, we have seen that the PPP relationship does hold in the case of an increase in the money stock. If price-level movements are caused by monetary changes—as they are likely to be if the inflation rate is high—we should expect PPP relationships to hold in the long term.

But qualifications are necessary. First, even a monetary disturbance affects the real exchange rate in the short run. Exchange rates tend to move quite rapidly relative to prices, and thus in the short term of a quarter or a year we should not be at all surprised

¹⁵This is the system of fixed exchange rates that prevailed from the end of World War II to 1973, so called because it was designed, in 1944, in a major international conference held in Bretton Woods, New Hampshire.

¹⁶Assuming, of course, that the initial level of the real exchange rate had equated purchasing power between the two countries.

to see substantial deviations of exchange rates from the rates implied by PPP even if the exchange rate change is caused by monetary policy.

The second important qualification concerns the role of nonmonetary disturbances in affecting exchange rates. For example, we saw that an increase in exports leads to currency appreciation at unchanged domestic prices. This example illustrates that, over time, adjustments to *real* disturbances will affect the *equilibrium* real exchange rate. In the longer run, exchange rates and prices do *not* necessarily move together, as they do in a world where all disturbances are monetary. On the contrary, we may have changes in relative prices, which run counter to the purchasing power parity view of exchange rates.

Consider Figure 21-8, which shows that the real exchange rate between the dollar and the deutsche mark ($eP_{Ger}/P_{U.S.}$) fluctuates a great deal over time. The figure also shows the nominal exchange rate. According to PPP, when the exchange rate index (DM/\$) changes, the real exchange rate should not—because according to PPP the exchange rate should be moving only because relative price levels change. However, the real exchange rate clearly moves roughly in parallel with the nominal exchange rate, showing that PPP does not hold in the case of Germany and the United States over the period since 1979. Nor is PPP a good description of the behavior of exchange rates among the major currencies over any recent period.

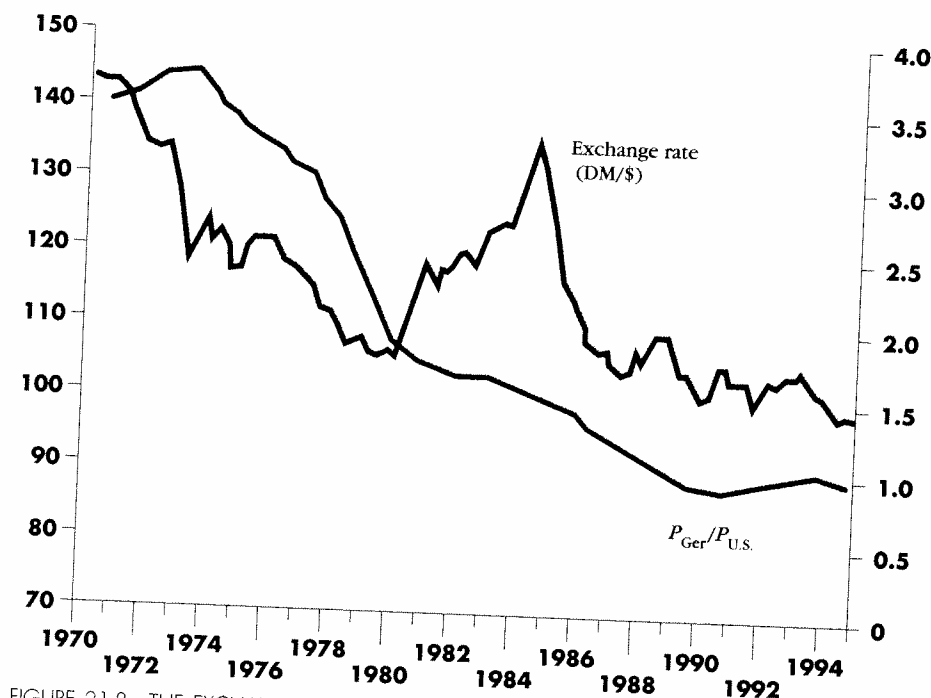


FIGURE 21-8 THE EXCHANGE RATE AND RELATIVE PRICES, GERMANY AND THE UNITED STATES, 1970–1995.

Note the different scales of the axes. The left axis shows relative prices, indexed to 1985 = 100. The right axis shows the number of deutsche marks per dollar. (Source: DRI/McGraw-Hill Macroeconomic Database; International Financial Statistics Yearbook, 1996, IMF).