

FIGURE 21-6 SHORT AND LONG-RUN EFFECTS OF A MONETARY EXPANSION.

the *IS* schedule to *IS'*. The economy moves rapidly from *E* via *E'* to *E''*. Output has risen, the exchange rate has depreciated, and the economy has thereby gained in external competitiveness. But that is not the end of the story.

At *E''* output is above the full-employment level. Prices are therefore rising, and that implies that real balances are falling. As the real money stock, *M/P*, declines because of rising prices, the *LM* schedule starts shifting to the left. Interest rates tend to rise, capital tends to flow in, and the resulting appreciation leads now to a decline in competitiveness that also shifts the *IS* schedule back toward the initial equilibrium. Both the *IS* and *LM* schedules thus move back toward point *E*. The process continues until point *E* is reached again.

What adjustments have taken place once the economy is back to point *E*? At point *E*, interest rates have returned to their initial level and so have relative prices, eP_f/P . In moving from *E* to *E'* the exchange rate depreciated immediately, ahead of the rise in prices. But when prices increased and real balances fell, some of that depreciation was reversed. Over the whole adjustment process, prices and exchange rates rose in the same proportion, leaving relative prices, eP_f/P , and therefore aggregate demand unchanged. In the long run, money was therefore *entirely neutral*. Table 21-2 summarizes these results. By the end of the adjustment process, nominal money, prices, and the exchange rate have all increased in the same proportion, so the real money stock and relative prices—including the real exchange rate—are unchanged.

EXCHANGE RATE OVERSHOOTING

The analysis of monetary policy under flexible exchange rates, given above, leads to an important insight about the adjustment process. The important feature of the adjustment

TABLE 21-2 Short- and Long-Run Effects of a Monetary Expansion

| | <i>M/P</i> | <i>e</i> | <i>P</i> | eP_f/P | <i>Y</i> |
|-----------|------------|----------|----------|----------|----------|
| Short run | + | + | 0 | + | + |
| Long run | 0 | + | + | 0 | 0 |

process is that *exchange rates and prices do not move at the same rate*. When a monetary expansion pushes interest rates down, the exchange rate adjusts immediately but prices adjust only gradually. Monetary expansion therefore leads in the short run to an immediate and abrupt change in relative prices and competitiveness.

Figure 21-7 shows time paths of nominal money, the exchange rate, and the price level implied by the analysis of Figure 21-6. For each of these variables we show an index that is initially equal to 100. The economy starts at long-run equilibrium. Then, at time T_0 , the money stock is increased by 50 percent and stays at that higher level, as shown by the red schedule. The exchange rate immediately depreciates. In fact the exchange rate index rises more than money does, say, from the initial level of 100 at point *A* to a new level of 170 at point *A'*. Prices, by contrast, do not move rapidly.

Following the impact effect at time T_0 , further adjustments take place. Because the gain in competitiveness at time T_0 has raised output above potential, there is now inflation. Prices are rising and, at the same time, the exchange rate is appreciating, thus undoing part of the initial, sharp depreciation. Over time, prices rise to match the increase in money, and the exchange rate will also match the higher level of money and

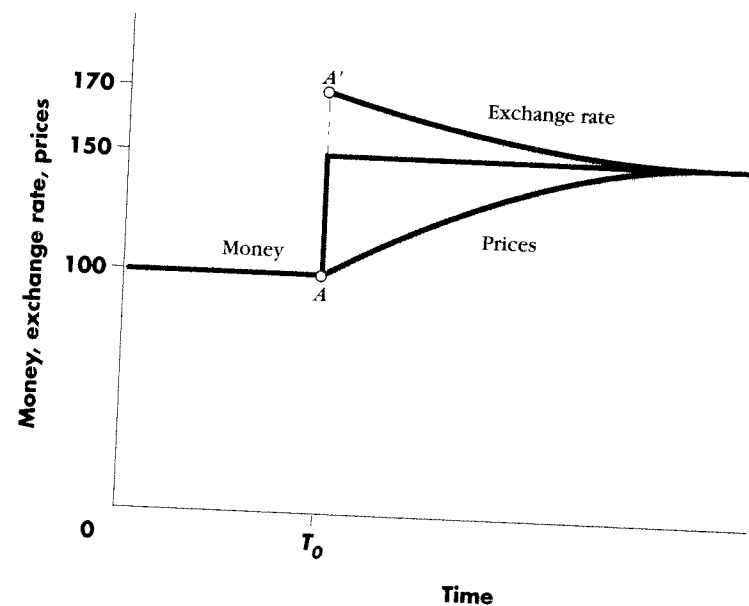


FIGURE 21-7 EXCHANGE RATE OVERSHOOTING.