Sixth Edition

EXCHANGE RATES AND INTERNATIONAL FINANCE

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Exchange Rates and International Finance

To see why its usefulness is likely to be limited, we need to follow through the implication of the second-stage increase in domestic credit. Obviously, the effect of an increase in domestic credit starting from the situation at *J* in Figure 5.5(c) will be to move the money supply line even further up the vertical axis. The result will be to further dilute the foreign currency backing of the UK money stock.

Neither is that all. We have already established that, as long as the money stock is above its equilibrium level, the UK will be haemorrhaging reserves. Clearly, anything that prolongs that situation will reduce the reserves below what they otherwise would be in the absence of any attempt at sterilisation.

It follows that sterilisation is likely to prove a treadmill. Each expansion of domestic credit will prolong the reserve loss and hence generate the need for further credit creation. At each stage, the domestic credit component of the money stock gets larger and the reserve component smaller.

In theory, at least, there will come a stage when the reserves are exhausted and the game will be over. In reality, the limit to this process is likely to come some time before the country's reserves are actually exhausted, simply because currency markets will anticipate the evil day and thereby hasten its arrival by rushing to sell pounds at the current exchange rate while they still can,[6] as we shall see in Chapter 15.

CASE STUDY 5.1

China and the USA 1995–2005

There is one very important counter-example which shows that sterilisation can work for many years in an economy where domestic and foreign capital flows can be controlled by the authorities. Consider the case of China in the decade of rapid industrialisation before the 2008 global financial crisis, and its trade relationship with the USA.[7] For simplicity and in order to highlight the issues at stake, we ignore the rest of the world. Although the picture we will draw here is little more than a caricature of what actually happened, it is none the less sufficient to give an insight into this critical episode in the recent history of the world economy. It will also serve as a case study of the fixed exchange rate monetary model.

Before we can apply the analytic tools introduced in this chapter, we need to recognise the salient features of the situation during the period in question and where necessary modify our assumptions accordingly.

- Throughout the decade starting in 1995, the exchange rate of the Renminbi remained fixed at around the $1 = RMB8.3 level, in spite of rapid growth in China's real GDP and, for most of the period but especially post-2000, highly expansionary US monetary policy.
- At the start of the decade, China had vast reserves of unemployed or underemployed peasants in its heartland, who streamed into its industrialised East Coast cities before any excess demand for labour could make itself felt – or at least, before it could cause money wages to increase by more than the rapid rise in productivity. The net effect was that China could expand output to an almost unlimited degree without raising prices. In terms of our diagrams, it faced a horizontal aggregate supply curve.
- Thanks to the process we call globalisation – open borders for goods, services and, to some extent, labour and capital, relatively cheap transport systems and modern communications technologies (mobile telephones, internet), deregulation, and so forth – the labour markets of the two countries were effectively integrated for all practical purposes. Wholesalers in America could often source

Case study 5.1 (*continued*)

supplies of manufactures as quickly, easily and cheaply from China as from domestic producers. Superimposing China's flat aggregate supply curve on America's vertical supply curve meant that, in effect, the US faced a flat aggregate supply curve too.[8]

- At the start of the period, aggregate demand in China was very small compared to the USA, so we take simplification to the limit and assume that it was zero.
- We also assume (this time, not at all unrealistically) that China uses dollars as its reserve currency.
- However, dollars can never be regarded as a reserve currency for the USA. For all practical purposes, America has no reserves of its own. Its money stock has been 100% domestic credit ever since it left the gold standard at the end of Bretton Woods in 1971 (see Section 1.5.1). In terms of the model of a fixed exchange rate regime we have just outlined, it means that the US money supply process was (and is still today) determined in the same way as it would be in a closed economy or, indeed, under a floating exchange rate regime.

Under these assumptions, we can illustrate some features of the two-country situation by a simple modification of Figure 5.5.

Start from a situation of equilibrium at points A and a in Figures 5.6 (a) and (b) respectively. At point a, aggregate demand of y_0 is matched by US aggregate supply of the same amount (hence the line labelled AS^{USA}). Given the initial US money stock, M^s_0, the price level is P_0 and with the price of RMB fixed at the level, $\bar{S}$, there is a zero balance in the US current account. (We can assume that at the outset, twenty years ago, the volume of China's trade with America was negligible compared to the size of the US economy.)

On the right-hand side, in Figure 5.6 (c), we plot the US money stock. Since it is all dollars, in other words all domestic credit, it is always on the vertical axis at the intercept of the money supply line. It starts off at the point labelled M^s_0.

Now when the Federal Reserve increases the US money stock, as it did repeatedly over this

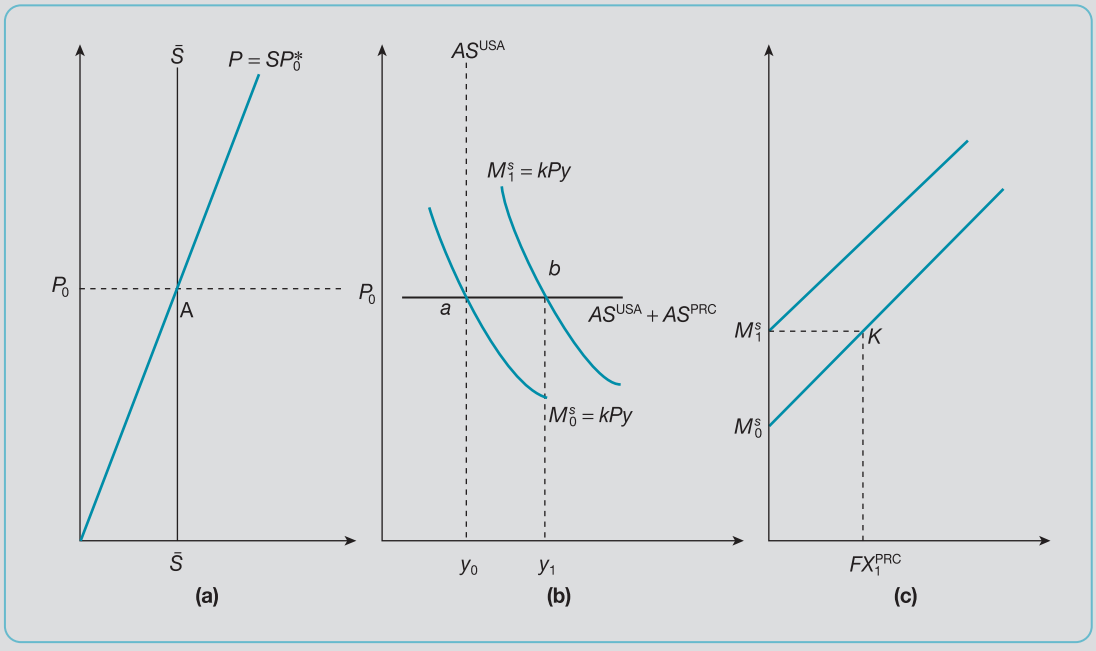

Figure 5.6 China and the USA under a fixed exchange rate

Case study 5.1 (*continued*)

period, especially after the stock market boom collapsed in 2000 and the following year in the aftermath of 9/11, the money supply line shifts up to a point like M_1^s and, in the central diagram, the aggregate demand curve shifts to the right.

With US output constrained by lack of resources ('full employment'), the additional demand is satisfied by supply from China at the point marked *b* on the flat aggregate supply curve marked $AS^{USA} + AS^{PRC}$. At this point, there is excess demand in the US economy equal to the gap $y_1 - y_0$, but there is no upwards pressure on prices. Imports from China are supplied at the constant price, P_0, so there is no change in the left-hand side PPP diagram. As far as the balance of payments is concerned, the excess demand represents a US deficit and matching Chinese surplus. In Figure 5.6 (c), the associated outflow of dollars is given at the point K, where the gain in China's reserves is FX_1^{PRC}.

Now even though the US is exempt from any reserve constraint, it is still true that the leakage of dollars via the current account deficit $y_1 - y_0$ would eventually have reduced America's money stock and returned it to M_0^s, shifting the aggregate demand curve back to where it started and reinstating equilibrium at the point *a* in Figure 5.6(b). Unless the US money stock was repeatedly increased, the current account balance would by then return to zero and, in the new equilibrium, nothing would have changed except that China would be left holding dollar reserves equal to its cumulative surplus in trade with America over the interim adjustment period.

Indeed, this is exactly what happened – but it is not the end of the story. In the standard textbook analysis, the flood of reserves into China would symmetrically have swollen its own money supply, increasing aggregate demand and sucking in imports from the USA, thereby progressively eroding the current account imbalance. This process did not happen, however. It was either suppressed or, at the very least, damped down by the Chinese authorities, who believed that the country's breakneck growth rate could only be sustained against the background of a more or less permanent trade surplus with the USA. In order to achieve this outcome, they used their growing stock of dollar reserves to buy US Government securities, effectively lending the dollars back to America and preventing the US domestic money stock from ever returning to its original level.[9]

This policy amounts to sterilising China's balance of payments surplus. Its success however should not be seen as challenging the view that, in general, sterilisation is impossible because the policy could not have worked if free capital movements in and out of China had been permitted. With American interest rates kept artificially low (as they were) by the permanent excess supply of money, including the dollars flowing back from China to buy US Treasury Bonds and other low-risk securities, the low interest rates in America would have represented an irresistible attraction to private-sector financial institutions in China, who would in effect have simply borrowed back the dollars lent by their own government by issuing securities on the New York market or going direct to US banks for loans. But with direct, non-market mechanisms to control borrowing and lending both inside and outside the country, the authorities in Beijing were able to block this sort of activity almost entirely and hence make sterilisation work quite effectively, at least in the early years of the decade.

The result was that the short-run equilibrium at points *a* and *K* turned into a decade-long steady-state, as China accumulated an estimated $2.5 trillion in reserves, mostly from surpluses in trade with the USA. For the mass of US consumers, the happy result was that, while their real wages fell in terms of non-traded goods and services, they rose in terms of imported manufactures.

Unfortunately, this blissful state of affairs could not last. With excess liquidity, constant consumer prices and consequently low interest rates, the inevitable effect was to drive up the price of assets in America, thereby setting the scene for the catastrophic events of 2007–8 – a story which will be taken up in Chapter 15.

5.2.2 Income increase under fixed exchange rates

As far as changes in real income and the world price level are concerned, the analysis involves a straightforward application of the results from the floating rate case.

With the price level unchanged, an increase in real income amounts to a rise in the demand for real money balances, other things being equal. Starting from a position of equilibrium, then, the impact will cause domestic residents to spend less, so as to raise their balances to a level commensurate with their new, higher volume of transactions. In doing so, they force the price level down, which with a fixed exchange rate makes the home country's output over-competitive on world markets, leading to a balance of payments surplus and consequent rise in the reserves. This process will come to an end only when the domestic money stock has grown sufficiently to match the new, larger demand.

So, as the reader may confirm by redrawing Figure 5.5 and shifting the aggregate supply line to the right, we can state the following:

Proposition 5.5

Under fixed exchange rates in the monetary model, starting from a position of equilibrium, the result of a rise in (the domestic country's) real income will be to cause an increase in the reserves as a result of a temporary balance of payments surplus, other things being equal. In the new equilibrium, the domestic money stock will have risen and the home price level will have returned to its PPP level.

Again, note the contrast with the DIY model (Section 1.4).

5.2.3 Foreign price increase under fixed exchange rates

As for a rise in the world price level, the effect under a fixed exchange rate is directly to increase the home country's competitiveness, causing a payments surplus and consequent rise in the reserves. (In terms of Figure 5.5, the impact effect is to cause the PPP line to become steeper.) This in turn brings about a rise in the money stock, pushing up the home country price level until it reaches parity with that of the outside world, at which point PPP and external balance are restored. So, for completeness:

Proposition 5.6

Under fixed exchange rates in the monetary model, starting from a position of equilibrium, the result of a rise in the rest of the world's price level will be to cause an increase in the reserves as the result of a temporary balance of payments surplus, other things being equal. In the new equilibrium, the domestic money stock will be greater and the home price level will have risen to its PPP level.

Note the implication: a country that pegs its exchange rate has ultimately to accept the world price level. In the common jargon of the 1960s and 1970s, it is forced to import inflation from the rest of the world. The fact that it cannot control its own money supply means it cannot choose its price level or inflation rate independently of developments beyond its borders.

Hence, an important conclusion of the monetary model is that, subject to one qualification we shall deal with in a moment, *a country cannot follow an independent monetary policy*

under fixed exchange rates – neither, as a consequence, can it choose a price level or inflation rate different from that of the rest of the world.

To see the qualification that needs to be added to this statement, ask yourself the following question: what determines the world price level, P^*? What causes world inflation – at any rate, in this simple model?

The answer must be that world prices rise when the world's money stock increases faster than world demand. Also, world money supply and demand are simply the sum of the supply and demand in all of the countries in the world. It follows that, when we analyse the effect of, say, an increase in the home country's money stock, *we can treat the world price level as exogenous only if the additional money creation is of negligible significance to the world as a whole*. In other words, we have to be able to safely ignore the impact of the home country's money supply increase on the rest of the world's money markets and hence on world prices. Obviously, this assumption makes sense only if the domestic country is small enough in economic terms relative to the world economy for us to be able to ignore the repercussions of its policy measures on the world economy.[10]

5.2.4 Devaluation under fixed exchange rates

Before leaving the analysis of fixed exchange rates, there is one special case that merits attention, because it provides a particularly clear insight into the nature of the monetary model.

No fixed exchange rate is fixed forever. Sooner or later the authorities find themselves forced to move the rate to a new level, higher or lower. That is why a fixed exchange rate regime is sometimes referred to as an adjustable peg. What happens when the peg is adjusted?

Figure 5.7 shows the effect of a devaluation – an announced, once-and-for-all rise in the price of foreign currency. It must be emphasised that the analysis is applicable only to a devaluation that is an isolated event, and perceived as such, and not one that generates the expectation of further devaluation (or revaluation) to come.

Following the pedagogic convention in economics, we start the analysis from a position of equilibrium, which is somewhat unrealistic in this case because countries usually alter a fixed exchange rate only when absolutely necessary to correct an obvious disequilibrium. None the less, it is easy to see how the conclusions could be modified to deal with an initial balance of payments deficit.

The economy starts off in equilibrium at points A, a and G in the three diagrams in Figure 5.7, with, as before, an exchange rate of $\bar{S}_0$, a price level under PPP of P_0, and a money supply of M^s_0, made up of domestic credit in the quantity DC_0 and reserves of FX_0.

The home country then devalues, raising the price of foreign currency to $\bar{S}_1$.

The overnight impact effect is to move the economy instantaneously to a point like C. In other words, with a given foreign price level and, as yet, with no time for domestic prices to change (suppose the devaluation took place over a weekend, as became the fashion in the European Monetary System), the home country is now over-competitive. Had it started off from a position of being uncompetitive (that is, above the PPP line), the impact effect would have been to move it to the right, making it more competitive than previously, which would, presumably, have been the object of the whole exercise in the first place.

The interim verdict has to be: so far, so good. With both domestic and foreign prices unchanged, it is the *real* as well as the nominal exchange rate that has been devalued.

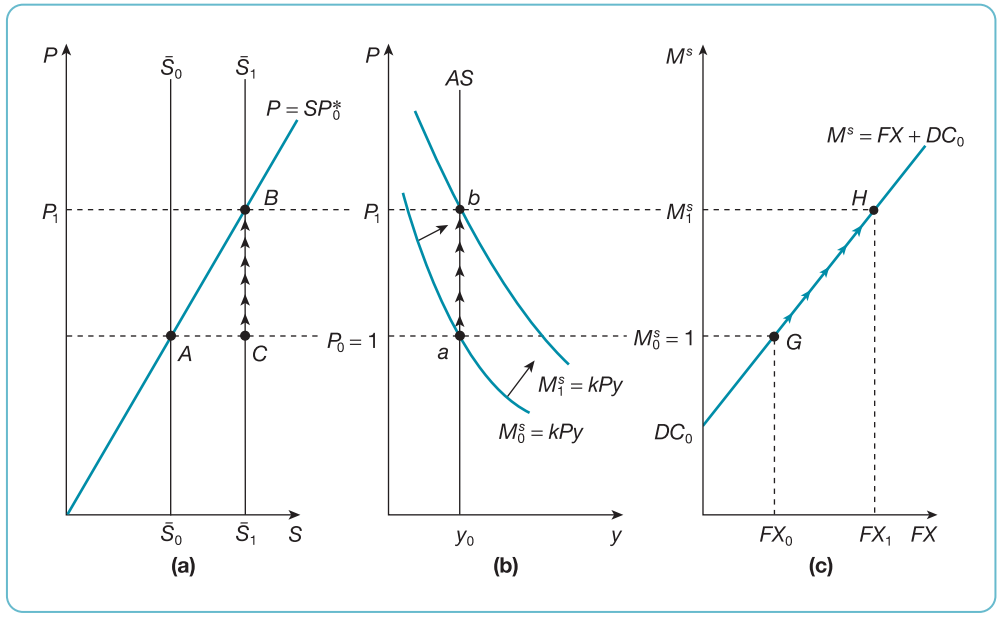

Figure 5.7 Devaluation under fixed rates ($M^s_0 = P_0 = 1$)

Foreign goods now cost more, while domestic goods are unchanged in price. The result must be a tendency for home country consumers to buy more domestically produced output than previously and fewer imports. Conversely, foreigners find the home country's products more attractively priced, on average, than before the devaluation.

Starting from equilibrium, the outcome has to be a balance of payments surplus. If we had started, more realistically, from a position of deficit, we would have been able to assert only that the result would be a less unfavourable foreign balance.

The story of what happens during the next stage, as the economy adjusts to the devaluation, can be told in several different ways, each focusing on the adjustment process in a different sector, and all leading inexorably to the same conclusion.

First, consider what is happening to the money supply when the economy is 'bounced' over to *C*.[11] With its balance of payments in surplus, the country must be accumulating reserves – hence, the arrows on the path from *G* to *H* in the money supply diagram (Figure 5.7(c)). Since the volume of domestic credit is unchanged, the money supply must be growing, shifting the aggregate demand schedule upwards. In terms of the money market, with real income and output constant, and hence an unchanged demand, the price level must be bid up as agents attempt to reduce their excess real balances by buying additional goods. As the price level rises, of course, the competitive advantage and consequent external surplus is eroded, until the new equilibrium is reached at *B* in Figure 5.7(a).

In terms of the goods market, if output is pegged at y_0, the increased demand by domestic residents (for cheaper import substitutes) and by foreigners (for the home country's exports) cannot be satisfied. The excess demand must simply generate an inflation, which persists until enough of the additional demand has been priced out of the market in order to restore equilibrium.

The version of this process that gained wide acceptance in the early 1970s, particularly in the UK, emphasised the reaction of labour markets to devaluation. It was argued that