CHAPTER 17

Common Currency Areas and European Economic and Monetary Union

Or, supposing that the Common Market countries proceed with their plans for economic union, should these countries allow each national currency to fluctuate, or would a single currency area be preferable?

– Robert Mundell, 1961

The crisis in the Euro Area (the Eurozone) since 2010 has led many to question the very viability of a single European currency. From there being almost a consensus within Europe not too many years ago to push ahead with the euro project, there is now widespread doubt as to whether a single currency offers sufficient flexibility for member countries to withstand and mitigate the effects of financial crisis and recession. In countries outside the Euro Area, such as the UK, where there had been consideration by some to join the euro, such a prospect is now firmly off the agenda. In this chapter we look at why the Euro Area was set up and then examine the problems it now faces.

In the late 1990s, a number of European countries decided to give up their national currencies and use a new, common currency called the euro, by forming the European Economic and Monetary Union (EMU). This was one of the most radical steps ever taken in the field of national economic policy in the modern era. Most of the currencies concerned had been legal tender in their respective countries for hundreds of years, and they ceased to exist overnight. Further, in adopting a single currency, each country gave up control over its own monetary policy (since if a group of countries have the same money, clearly they must have the same monetary policy). Why did these countries enter into EMU? The answer to this question is in part political and in part economic, and in this chapter we focus on the economics of EMU.

The underlying economic rationale for a group of countries to adopt a single, common currency was analysed in detail more than 40 years ago by Robert Mundell in his theory of 'optimum currency areas', and we will spend some time

discussing this theory,[1] as well as the costs and benefits of common currencies more generally, and some of the issues regarding fiscal policy that arise in this connection. However, rather than discuss these issues in an abstract way, throughout our discussion we will focus on the Euro Area in order to illustrate the analysis, and we will analyse whether or not Europe is indeed an optimum currency area.

17-1 Common Currency Areas

A **common currency area** is a geographical area through which one currency circulates and is accepted as the medium of exchange. A common currency area is also referred to as a **currency union** or a **monetary union**.[2]

The common currency area that is formed by 17 European countries that have adopted the **euro** as their currency is the **European Economic and Monetary Union**, or **EMU**.[3] The 17 members of EMU (at the time of writing, 2013) are: Belgium, Germany, Spain, France, Ireland, Italy, Luxembourg, the Netherlands, Austria, Portugal, Finland, Greece, Slovenia, Cyprus, Malta, Slovakia and Estonia.[4] These countries make up the **Euro Area**. Figure 17-1 shows a map of the Euro Area.

The single European currency – the euro – officially came into existence on 1 January 1999.[5] On this date, exchange rates between the old national currencies of Euro Area countries were irrevocably locked, and a few days later the financial markets began to trade the euro against other currencies, such as the dollar, as well as trading securities denominated in euros.

Since the EMU countries have a single currency, they also have a single monetary policy. The monetary policy of the Euro Area is formulated and implemented by the **European Central Bank** (ECB), based in Frankfurt, which, together with the national central banks of the countries making up the common currency area, forms the European System of Central Banks (ESCB).

From an economic point of view, monetary union brings with it a number of costs and benefits that can be large or small according to the characteristics of the countries concerned. Let's take a look at the costs and benefits.

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[1] Robert A. Mundell, 'A Theory of Optimum Currency Areas', *American Economic Review*, 1961, vol. 51, no. 4, pp. 657–665. This is the same Robert Mundell who gave us the Mundell–Fleming model that we discussed at length in Chapter 12. In 1999, Professor Mundell was awarded the Nobel Prize in economics 'for his analysis of monetary and fiscal policy under different exchange rate regimes and his analysis of optimum currency areas'.

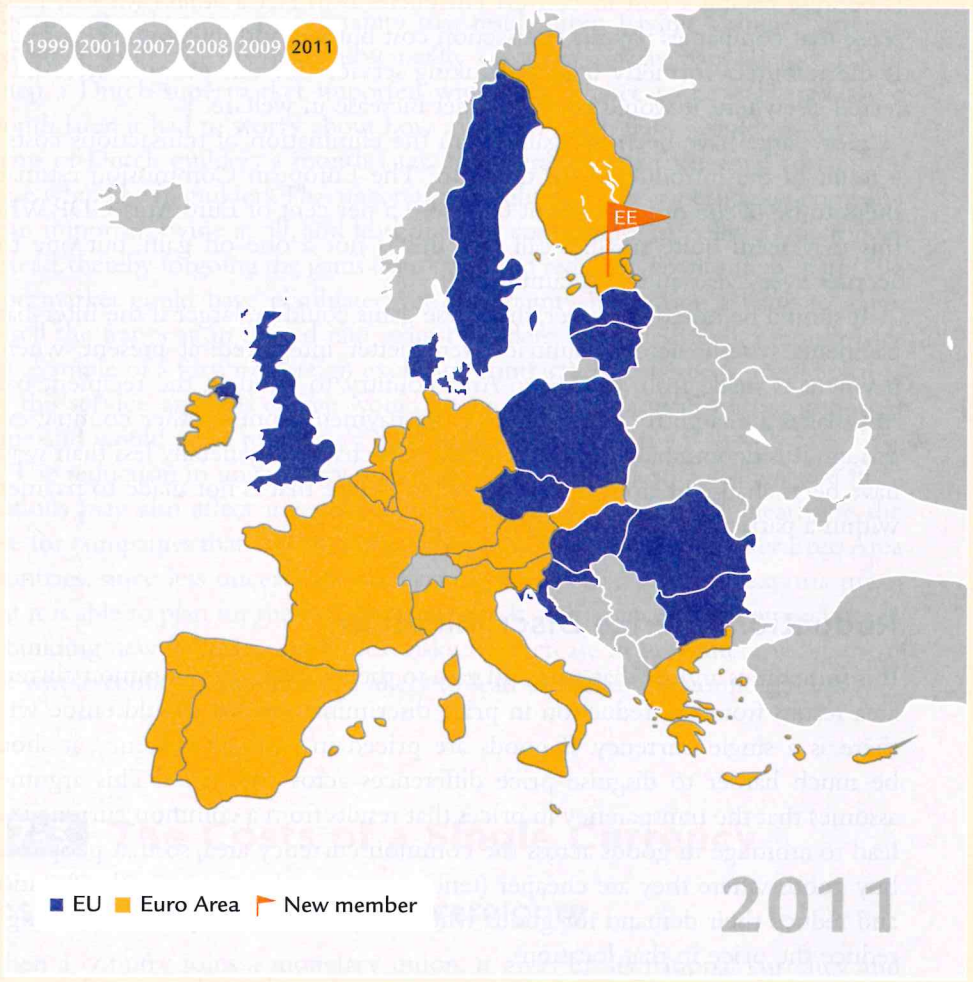
[2] Strictly speaking, a monetary union is a group of countries, all of which have adopted permanently and irrevocably fixed exchange rates among their various currencies. Nevertheless, the terms 'common currency area', 'currency union' and 'monetary union' are now used more or less interchangeably, and in this book we will follow this practice.

[3] Note that 'EMU' stands for 'Economic and Monetary Union', not 'European Monetary Union'.

[4] In January 2014 Latvia will be joining the Euro Area, bringing the number of member countries up to 18.

[5] Greece did not join EMU until 1 January 2001. Slovenia joined the Euro Area on 1 January 2007, Cyprus and Malta on 1 January 2008, Slovakia on 1 January 2009 and Estonia on 1 January 2011.

FIGURE 17-1



A Map of the Euro Area

Source: European Central Bank.

17-2 The Benefits of a Single Currency

Reduction in Transactions Costs in Trade

One direct benefit of a common currency is that there is a reduction in the transactions costs involved in trade between members of the common currency area. When a Belgian company imports French wine, it no longer has to pay a charge to a bank for converting Belgian francs into French francs with which to pay the wine producer – it can just pay in euros. Of course, the banking sector

loses out on the commission it used to charge for converting currencies, but this does not affect the fact that the reduction in transactions costs is a net gain. This is because paying a cost to convert currencies is in fact a *deadweight loss*, in the sense that companies pay the transaction cost but get nothing tangible in return. If the resources formerly used in banking services for this purpose were transferred elsewhere, it would result in a net increase in welfare.

How large have been the gains from the elimination of transactions costs as a result of the introduction of the euro? The European Commission estimates them to be of the order of about 0.25 to 0.5 per cent of Euro Area GDP. While this may seem quite small, recall that this is not a one-off gain, but one that accrues every year and so is cumulative.

It should be noted, however, that these gains could be larger if the inter-bank payments systems across countries were better integrated: at present, when a payment is made from one Euro Area country to another, the recipient bank still makes a charge for the receipt of the payment from another country, even though it is denominated in euros. While this charge is generally less than would have been charged before EMU, it is still a charge that is not made to payments within a particular EMU country.

Reduction in Price Discrimination

It is sometimes argued that a second gain to the members of a common currency area results from the reduction in price discrimination that should ensue when there is a single currency. If goods are priced in a single currency, it should be much harder to disguise price differences across countries. This argument assumes that the transparency in prices that results from a common currency will lead to arbitrage in goods across the common currency area, so that people will buy goods where they are cheaper (tending to raise their price in that location) and reduce their demand for goods where they are more expensive (tending to reduce the price in that location).

Overall, however, EMU does not seem to have brought an end to price discrimination across Euro Area countries. In fact, differences in the prices of goods are still much greater across Euro Area countries than they are across the regions of any particular country. This is especially true of supermarket goods like groceries, but is also true (to a lesser extent) of consumer durables like televisions. On reflection, this is perhaps not very surprising. For items like groceries, having a single currency is unlikely to be much of an impetus to price convergence across the common currency area because of the large transactions costs (mainly involving travelling) involved in arbitraging, relative to the prices of the goods themselves: unless you live near a border, it is clearly not feasible to shop for groceries in another country, even if they use the same currency. Big-ticket items like household appliances and electronic goods, where the transactions costs may be lower as a percentage of the price of the good in question, are also unlikely to be arbitraged heavily across national borders by consumers because of their durable nature and the consequent need for confidence in after-sales service.

Reduction in Foreign-Exchange-Rate Variability

A third argument relates to the reduction in exchange-rate variability and the consequent reduction in uncertainty that results from having a single currency. Exchange rates can fluctuate substantially on a day-to-day basis. Before EMU, when a Dutch supermarket imported wine from France to be delivered, say, a month later, it had to worry about how much a French franc would be worth in terms of Dutch guilders a month later, and therefore what the total cost of the wine would be in guilders. This uncertainty might deter the supermarket company from importing wine at all, and lead them to concentrate on selling Dutch beer instead, thereby forgoing the gains from trade and reducing economic welfare. The supermarket could have eliminated the uncertainty by getting a bank to agree to sell the francs at an agreed rate against guilders, to be delivered a month later (an example of a forward foreign exchange contract). But the bank would charge for this service, and this charge would be equivalent to a tariff on the imported wine and would again represent a deadweight loss to society.

The reduction in uncertainty arising from the removal of exchange-rate fluctuations may also affect investment in the economy. This would clearly be the case for companies that export a large amount of their output to other Euro Area countries, since less uncertainty concerning the receipts from its exports mean that it is able to plan for the future with less risk, so that investment projects, such as building new factories, appear less risky. An increase in investment will benefit the whole economy because it is likely to lead to higher economic growth.

17-3 The Costs of a Single Currency

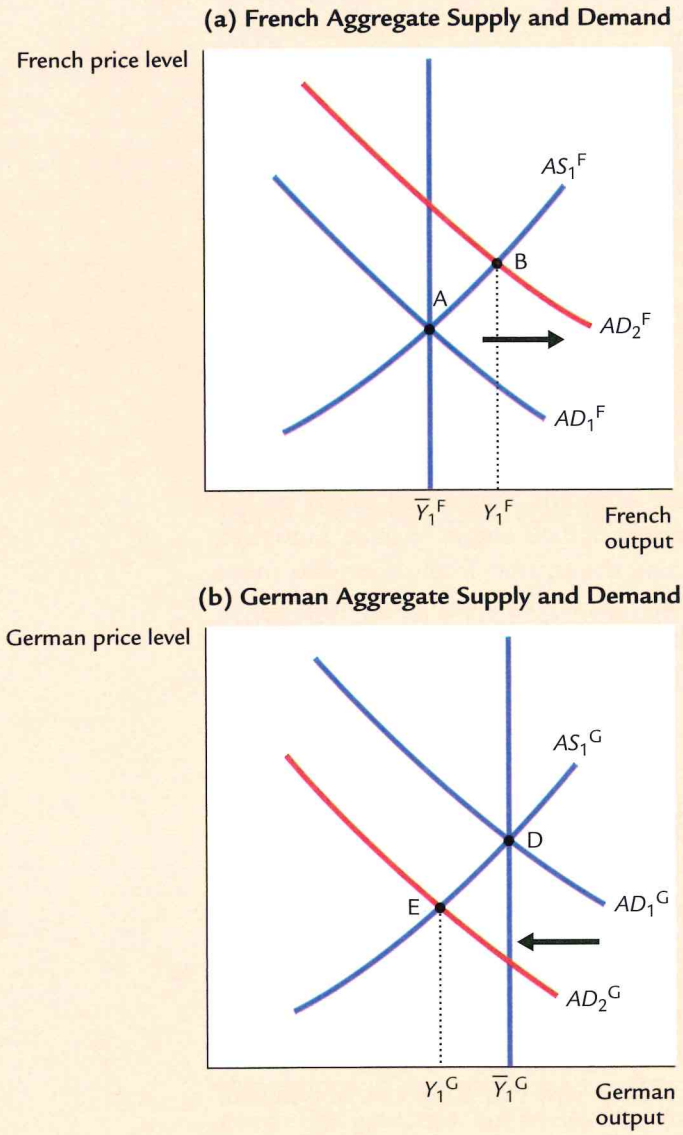
Loss of Monetary Policy Sovereignty

When a country joins a monetary union, it gives up its national currency and thereby gives up its freedom to set its own monetary policy and the possibility of macroeconomic adjustment coming about through movements in the external value of its currency. This is the major cost to an economy in joining a common currency. Below, we investigate two key reasons why this is a potential problem.

Asymmetric Demand Shocks

Suppose, for example, that there is a shift in consumer preferences across the common currency area, away from goods and services produced in one country (e.g. Germany) and towards goods and services produced in another country (e.g. France). This situation is depicted in Figure 17-2, which shows a rightward shift in the French aggregate demand curve (panel (a)) and a leftward shift in the German aggregate demand curve (panel (b)). In France, the economy was initially in equilibrium at the natural rate of output $\overline{Y}_1^F$ at point A in panel (a) of Figure 17-2. The rightward shift of the aggregate demand function from AD_1^F

FIGURE 17-2



An Asymmetric Demand Shock Within a Monetary Union An asymmetric demand shock that raises aggregate demand in France and depresses aggregate demand in Germany, shifts the French aggregate demand curve to the right (panel (a)) and the German aggregate demand curve to the left (panel (b)), so that output falls below the natural rate in Germany and output goes above the natural rate in France.

to AD_2^F moves the economy to a short-run equilibrium at point B, where AD_2^F intersects with the short-run aggregate supply curve AD_1^F and output moves above its natural rate to Y_1^F.

In Germany, the opposite occurs, because aggregate demand has contracted. In panel (b) of Figure 17-2, the leftward shift of the German aggregate demand function from AD_1^G to AD_2^G moves the economy from the initial equilibrium at point D to a short-run equilibrium at point E, with output equal to Y_1^G, below the German natural rate of $\overline{Y}_1^G$.

Thus, Germany moves into recession and France moves into a boom. What should policy makers in France and Germany do about this? In Chapter 14 we discussed three models of aggregate supply: the sticky-wage model, the imperfect-information model and the sticky-price model. Although the three models differ in their assumptions and emphasis, their implications for the behaviour of aggregate supply are similar and can be summarized by the equation

$$Y = \overline{Y} + \alpha(P - P^e),$$

where $\overline{Y}$ is the natural rate and P^e denotes the expected price level. In words: the short-run aggregate supply curve tells us that output can only be above the natural rate of output if the price level is above its expected level, and, conversely, output can only be below the natural rate if the price level is below its expected level.

At point B in Figure 17-2, the increase in aggregate demand raises French prices, but we remain at point B so long as people do not perceive the price rise and price expectations are lower than the actual price level. But this cannot persist for ever; once people notice that the price level has risen, the gap between expected and actual prices disappears, the short-run aggregate supply curve shifts to the left and we move to a new equilibrium, depicted by point C in panel (a) of Figure 17-3, where French output is back at the natural rate.

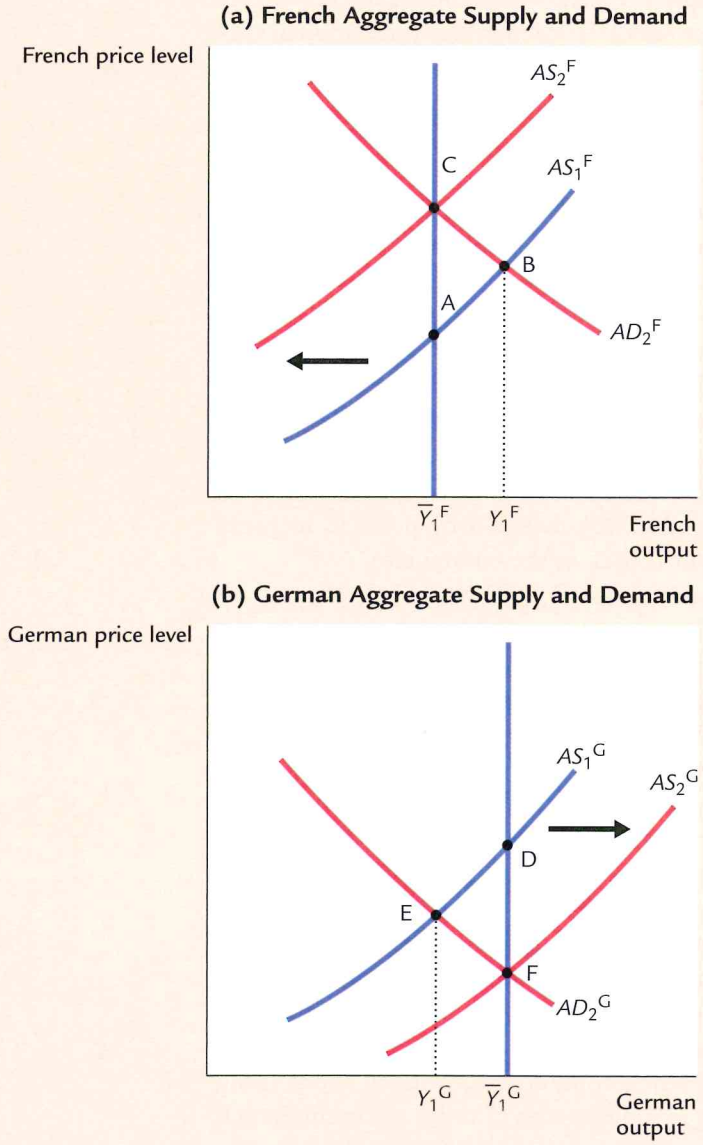
In Germany, the converse happens. At point E in Figure 17-2, prices have fallen because of the fall in aggregate demand, but price expectations have not yet adjusted. Once German residents revise downward their expectations of the price level to match the actual price level, the short-run aggregate supply curve shifts rightward, as in panel (b) of Figure 17-3, and the economy moves back to equilibrium at the natural rate of output at point F.

Because each of the two economies has a long-run vertical supply curve, output will eventually return to the natural rate in response to demand shocks. The only cost to the two economies is therefore in terms of the short-term fluctuations in output. While this may not seem problematic in theory, in practice the resulting fluctuations in output and unemployment in each country will tend to create tensions within the monetary union, as unemployment rises in Germany and inflation rises in France. German policy makers, dismayed at the rise in unemployment, will favour a cut in interest rates in order to boost aggregate demand in their country, while their French counterparts, worried about rising inflation, will be calling for an increase in interest rates in order to curtail French aggregate demand. The European Central Bank, which sets interest rates for the whole of the Euro Area, will not be able to keep both countries happy. Most likely, it will set interest rates higher than the German desired level and lower than the French desired level. All that is possible is a 'one-size-fits-all' monetary policy.

Note, however, that if Germany and France had maintained their own currencies and a flexible foreign exchange rate between them, the short-term fluctuations in aggregate demand would be alleviated by a movement in the exchange rate. In fact, as we know from previous chapters, net exports are a component of aggregate demand and are a function of the real exchange rate:

$$Y = C + I + G + NX(\varepsilon).$$

FIGURE 17-3



The Long-Run Supply Response to an Asymmetric Demand Shock Within a Monetary Union The positive demand shock in France leads to rising prices and, as expected prices catch up with actual prices, the short-run aggregate supply curve shifts leftward and French output returns to the natural rate (panel (a)). In Germany (panel (b)), the converse happens: the negative demand shock leads to falling prices and, as price expectations catch up, the short-run aggregate supply curve shifts to the right and output returns to the natural rate.

As the demand for French goods rises and the demand for German goods falls, the demand for French francs would increase and the demand for German marks would be depressed, making the value of francs rise in terms of marks in the foreign-currency exchange market. Assuming that the prices of goods and services are sticky, this would affect the real exchange rate, making French goods more expensive to German residents and German goods less expensive to French residents. Therefore, French net exports would fall, leading to a fall in aggregate demand. In fact, if the response of net exports is fast enough, this effect will stop the aggregate demand curve from shifting altogether: the appreciation of the real

exchange rate in France will lead to a fall in net exports which exactly offsets the initial demand shock that raised French aggregate demand. In terms of Figure 17-2, therefore, having a flexible exchange rate means that the French economy never moves away from point A. Similarly, in Germany, the real exchange-rate depreciation stimulates net exports so that they offset exactly the initial negative demand shock and Germany stays at point D in Figure 17-2, with output at the natural rate. In practice, of course, the effect of a real depreciation may take a little while to affect net exports, but the principle remains the same: a flexible exchange rate can insulate an open economy from asymmetric aggregate demand shocks.

(In terms of the Mundell–Fleming model that we examined in Chapter 13, the effect of a shock to aggregate demand is formally similar to the effect of fiscal policy – that is, there is no effect on output in a small open economy with sticky prices and a floating exchange rate.)

In a currency union, however, this automatic adjustment mechanism through the exchange rate is not available, since, of course, France and Germany have the same currency (the euro). The best that can be done is to wait for French and German wages and prices to adjust fully to the asymmetric demand shocks so that the aggregate supply curve shifts in each country, as in Figure 17-3.

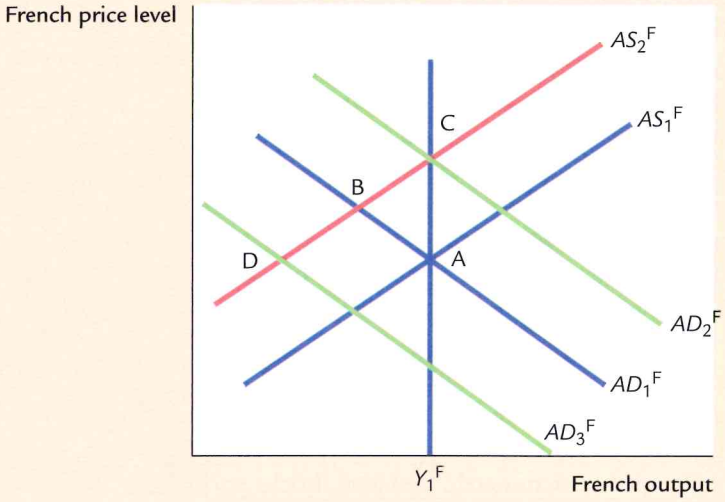
Asymmetric Supply Shocks

Countries within a monetary union may also be subject to asymmetric supply shocks. A good example of this would be as a result of increased oil prices, or more generally, energy prices, often because of political instability in regions where such energy is produced. These supply shocks can also lead to a divergence in GDP and unemployment between member states. However, the response by a central bank can also have important consequences. Suppose that France is hit by an adverse supply shock. This shifts the French aggregate supply curve leftwards on Figure 17-4 from AS_1^F to AD_2^F. The short-run equilibrium will move from point A to point B. The adverse supply shock has increased the French price level and reduced output. If the European Central Bank responds by loosening monetary policy in order to mitigate the output effect, then the aggregate demand curve will move rightwards to AS_2^F, moving the equilibrium point from B to C, restoring output back to the original level. However, if the Central Bank responds by tightening monetary policy in order to control inflation, then aggregate demand will move leftwards to AD_3^F, moving the equilibrium point from B to D, bringing inflation down but at the cost of an even greater fall in output. This is a good example of when an independent central bank with a sole anti-inflation objective may not always be desirable. Taking cognisance of this, it is notable that the Bank of England and the European Central Bank have not increased interest rates during the recent recession period, despite inflation being above target levels.

Loss of Fiscal Policy Sovereignty

We can use the demand shocks example from earlier in this chapter to analyse the effect of fiscal policy. If France operates an expansionary fiscal policy there is

FIGURE 17-4



An Asymmetric Supply Shock Within a Monetary Union An adverse supply shock in France shifts the French aggregate supply curve leftwards, increasing the French price level and reducing output. If the European Central Bank responds by loosening monetary policy in order to mitigate the output effect, then the aggregate demand curve will move rightwards, restoring output back to the original level. However, if the ECB responds by tightening monetary policy in order to control inflation, then aggregate demand will move leftwards, bringing inflation down but at the cost of an even greater fall in output.

a rightward shift in the French aggregate demand curve, taking us to the short-run equilibrium point B in panel (a) of Figure 17-2. This leads to a rise in French output, and the French price level. Point B in Figure 17-2 cannot persist for ever since as soon as people notice that the price level has risen, the short-run aggregate supply curve shifts to the left and we move to a new equilibrium, depicted by point C in panel (a) of Figure 17-3, where French output is back at the natural rate, but at a higher price level. If exchange rates had been flexible, the short-term fluctuations in aggregate demand would have been alleviated by a movement in the exchange rate – in this case a real appreciation, making French goods less competitive in comparison with German goods. With a fixed exchange rate, the exchange rate can no longer insulate the economy from aggregate demand fluctuations. Thus, differences in output and unemployment will exist between member states until wages and prices adjust. Moreover, rising prices in France will increase pressure on the ECB to increase interest rates in order to curtail French aggregate demand and control inflation. Any increase in interest rates would not be welcome in Germany. Such a monetary contraction would decrease German aggregate demand to the short-run equilibrium point E in panel (b) of Figure 17-2, and eventually to long-run equilibrium, point F in panel (b) of Figure 17-3. Thus the expansionary fiscal policy in France, and the response of the ECB to control inflation, has had an adverse impact on Germany – depressing output and increasing unemployment in the short run. The output gap between the two countries has widened. This is often referred to as a 'beggar thy neighbour' policy and has clear political and social implications in terms of cohesion between nations. For this reason, and to limit the potential of member states to run up levels of debt that may be ultimately unsustainable, monetary union in practice normally implies some degree of fiscal

coordination. The Maastricht criteria are the most obvious evidence of this in the practical implementation of the Euro Area. These state that government budget deficits should not exceed 3 per cent of GDP, and government debt relative to GDP should not exceed 60 per cent. Thus, while it may seem obvious that when two countries join in monetary union they lose control of their own monetary policy, it is also the case that countries effectively lose fiscal policy sovereignty too.

We know from recent experience following the financial crisis of 2008 that some countries have been especially hard hit by recession, in particular by high levels of unemployment. Some countries in the Euro Area are less economically developed than others and as such are more vulnerable to economic crises. Suppose we have a country hit by just such a recession. Normally this could be mitigated by a loosening of fiscal stance – borrowing more to invest in job creation or cutting taxes to encourage spending – and allowing the exchange rate to depreciate so as to boost exports and reduce imports in favour of domestic goods. With a single currency these are no longer options. So, GDP falls and unemployment rises. Thus the GDP and unemployment gap between the countries in the single currency area will widen. In other words, living standards diverge. As we saw in the previous section, in the long run this will lead to prices falling and pressure for interest rate cuts. Such interest rate cuts may, however, not be welcome by more economically developed nations within the Euro Area. In other words, the common monetary policy will be put under strain. In the absence of high degrees of labour mobility, the only solution to these tensions is fiscal transfers between states – from those who are doing well to those who are not. In other words, monetary union implies some degree of fiscal union. Within the EU, such fiscal transfers do exist, but they are dwarfed in comparison with, say, federal transfers between US states. Whereas these transfers have been accepted within the US over a long period of time, such large-scale transfers are politically contentious between Euro Area members, as evidenced recently by the relationship between Germany and Greece. We discuss issues surrounding fiscal federalism in further detail in section 17-6.

Loss of monetary policy sovereignty may be a major problem for one further reason – if it becomes less certain that the central bank will bail out a high-debt country by supplying more money and thus deflating the real value of public debt. This makes public debt more risky.

17-4 The Theory of Optimum Currency Areas

Optimum currency area theory attempts to set down a set of criteria for a group of countries, such that, if the criteria were satisfied, it would in some sense be 'optimal' for the countries to adopt a common currency. The qualifier 'optimal' here refers to the ability of each of the countries to limit the costs of monetary union and enhance the benefits. It is generally used loosely, since there is no way of ensuring whether it is indeed optimal for a group of countries to form a currency union, and, more often than not, countries will fulfil some but not all

of the optimum currency area criteria. An **optimum currency area** is therefore best thought of as group of countries for which the benefits of adopting a single currency heavily outweigh the costs.

Characteristics that Reduce the Costs of a Single Currency

Consider first the characteristics of a group of countries that would reduce the costs of adopting a common currency. As we have discussed, the main cost to participating in a monetary union is the loss of monetary policy autonomy for the individual countries concerned, as well as ruling out the possibility of macroeconomic adjustment through exchange-rate movements. One way in which the economic (and political) tensions arising from the loss of the exchange-rate instrument and the imposition of a one-size-fits-all monetary policy will be alleviated is if the economies in question move rapidly to long-run equilibrium following a macroeconomic shock. Since we know there is only a short-run trade-off between inflation and unemployment, the faster the economies concerned can get to the long run – in other words, return to their natural rates of output and unemployment – the better. This speed of adjustment to long-run equilibrium will be high if there is a high degree of wage flexibility in the common currency area, and/or if there is a high degree of labour mobility.

Another way in which tensions across the common currency area would be alleviated would be if all countries in the currency union were prone to the same kind of demand shocks (e.g. if aggregate demand fell in all countries simultaneously), since each would then favour similar macroeconomic policy decisions (e.g. a reduction in interest rates).

We consider each of these types of characteristics in turn.

Real Wage Flexibility Suppose there is a high degree of wage flexibility in each of the member countries, so that wages respond strongly to rises and falls in unemployment. This means that the adjustment to long-run equilibrium, as shown in Figure 17-3, occurs very quickly. In our example, the shift in aggregate demand in Germany leads to falling wages, so that firms make more profit for any given level of prices, the aggregate supply curve shifts to the right and Germany returns to the natural rate of output. If wages are very flexible, this adjustment may be very rapid, so that the short run is very short indeed. Similarly for France: the rightward shift in aggregate demand leads to rapidly rising wages and firms find it less profitable to produce any given level of output, so that the supply curve shifts leftward and a new long-run equilibrium is established at the natural rate of output. Hence, by compressing the short-run, tensions across the monetary union are ironed out very quickly.

Note that it is the real wage that is of importance here: it is real wages that must adjust in order to affect the aggregate supply curve by making it more (or less) profitable for firms to produce a given level of output at any given level of prices.

It is also worth noting that, in terms of our discussion of the determination of the short-run aggregate supply curve in Chapter 14, we are implicitly assuming

the *sticky-wage model* of aggregate supply in this discussion. Greater wage flexibility simply means less wage stickiness and, if the sticky-wage model of short-run aggregate supply is correct, a faster adjustment towards long-run equilibrium.

Labour Mobility Alternatively, suppose that labour is highly mobile between the member countries of the currency union: unemployed workers in Germany simply migrate to France and find a job. Again, the macroeconomic imbalance is alleviated, since unemployment in Germany will fall as many of the unemployed have left the country, and inflationary wage pressures in France decline as the labour force expands with the migrants from France. Therefore, it is clear that labour mobility may in some measure cushion a currency union from asymmetric shocks.

Note that labour mobility does not affect the speed of adjustment of short-run aggregate supply, as in the case of wage flexibility. Instead, it actually shifts the natural rate of output. Consider an example. Suppose the size of the labour force in France is 28 million and the natural rate of unemployment is 10 per cent. In long-run equilibrium there will be 2.8 (= 10 per cent of 28) million people unemployed and 25.2 (= 28 − 2.8) million people in employment. Now suppose that the recession in Germany causes 2 million workers to migrate to France to find a job (this is, admittedly, an extreme example). The labour force in France has now grown to 30 million and, in long-run equilibrium at the natural rate of unemployment of 10 per cent, there will be 27 million people in work. But we know that aggregate output is determined by the production function

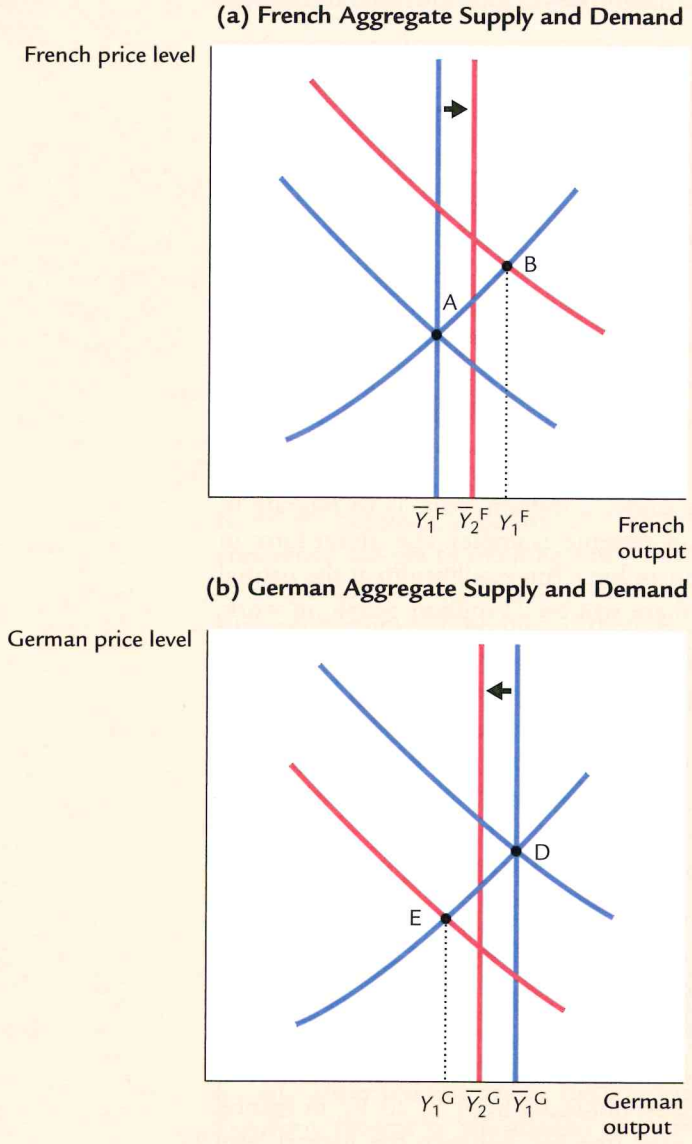
$$Y = F(L, K),$$

which states that the more labour that is hired, the more output is produced. Hence, increasing employment in long-run equilibrium from 25.2 million to 27 million workers will increase the natural rate of output (while keeping the natural rate of unemployment unchanged). The converse happens in Germany, where the exodus of 2 million workers shrinks the labour force and so reduces the natural rate of output.

In terms of our diagrams, the rightward shift of the natural rate of output in France and its leftward shift in Germany, as in Figure 17-5, narrows the gap between the short-run levels of output and the natural rate. The migration of labour from depressed Germany to booming France leads to the natural rate of output falling from $\overline{Y}_1^G$ to $\overline{Y}_2^G$ in Germany, and rising from $\overline{Y}_1^F$ to $\overline{Y}_2^F$ in France. Thus, the absolute size of the output gaps (the gap between the natural level of output and the actual level of output) arising from the asymmetric demand shocks are reduced from $(\overline{Y}_1^G - Y_1^G)$ to $(\overline{Y}_2^G - Y_1^G)$ in Germany, and from $(Y_1^F - \overline{Y}_1^F)$ to $(Y_1^F - \overline{Y}_2^F)$ in France. Because the output gaps are smaller in absolute size, this means that there is less fluctuation in output and unemployment in each country, and the adjustment to the long-run equilibrium will be faster.

Capital Mobility Sometimes economists argue that capital mobility can also compensate for the loss of monetary autonomy and the absence of exchange-rate adjustment among the members of a common currency area. A distinction should be made here between physical capital (plant and machinery) and financial capital (bonds, company shares and bank loans).

FIGURE 17-5



The Effect of Labour Migration Following an Asymmetric Demand Shock Within a Monetary Union If, following the positive shock to French aggregate demand and the negative shock to German aggregate demand, labour migrates from Germany to France, the effect will be to raise the natural rate of output in France from $\overline{Y}_1^F$ to $\overline{Y}_2^F$ (panel (a)), and to reduce the natural rate of output in Germany from $\overline{Y}_1^G$ to $\overline{Y}_2^G$ (panel (b)), thereby reducing the depth of the recession in Germany (as measured by the output gap), from $(\overline{Y}_1^G - Y_1^G)$ to $(\overline{Y}_2^G - Y_1^G)$, and lessening the strength of the boom in France, from $(Y_1^F - \overline{Y}_1^F)$ to $(Y_1^F - \overline{Y}_2^F)$.

In terms of cushioning a currency union from asymmetric shocks, movements in *physical capital* can help by expanding productive capacity in countries experiencing a boom as firms in other member countries build factories there. Increasing the amount of capital stock in a country means that labour would become more productive and the natural rate of output would increase. However, given the long lags involved in the installation of plant and equipment, physical capital mobility is likely to be helpful mainly for narrowing persistent regional disparities rather than offsetting short-term shocks.

The mobility of *financial capital* may be more useful in cushioning economies from short-term output shocks. For example, residents of a country experiencing a recession may wish to borrow money from the residents of a country experiencing a boom in order to overcome their short-term difficulties. In our two-country example, German residents would effectively borrow money from French residents in order to make up for their temporary fall in income. Clearly, this would require that German residents can easily borrow from French residents through the capital markets, so that financial capital mobility will be highest between countries whose capital markets are highly integrated with one another. For example, if a bank has branches in more than one country of a currency union, then borrowing and lending between boom and recession countries will be more or less automatic, as residents in the booming country increase the money they are holding in the bank as their income goes up and residents of the country in recession increase their overdrafts (or reduce their money holdings) as their income goes down.

Of course, although we have discussed only bank loans, there are other forms of financial capital, such as bonds and company shares, but the principle of the recessionary economy being able to obtain funds from the booming economy remains the same. In effect, therefore, financial capital market integration across countries allows households to insure one another against asymmetric shocks so that the variability of consumption over the economic cycle can be reduced.

Symmetric Macroeconomic Shocks Note that, in describing the costs of belonging to a monetary union, we have used the example of a positive demand shock in one country and a simultaneous negative demand shock in another. A similar analysis would have followed if we had simply allowed either a positive or a negative demand shock in one country and no shock at all in the other country. The central point was that the demand shock was asymmetric in the sense that it impacted differently on different members of the currency union, requiring different short-run policy responses. Clearly, if the shock were symmetric (the same in both countries) there would be no policy problem across the monetary union. If, for example, aggregate demand rose simultaneously in all member countries, increasing expected future inflation, then a policy of raising interest rates would be welcomed by all members of the monetary union. This would be the case if the economic cycles of each of the countries making up the currency were synchronized in the sense that the various economies tended to enter recession at the same time and enter the recovery phase of the cycle at the same time, so that disagreements about the best interest-rate policy are less likely to occur.

Characteristics that Increase the Benefits of a Single Currency

High Degree of Trade Integration The greater the amount of trade that is done between a group of countries (i.e. the greater the degree of trade integration), the more they will benefit from adopting a common currency. One of the principal benefits of a currency union (and the most direct benefit) is the reduction in transactions costs that are incurred in trade transactions between the

various countries when there is a constant need to switch one national currency into another on the foreign-currency exchange market. Clearly, therefore, the greater the amount of international trade that is carried out between member countries – and the greater the amount of foreign currency transactions – the greater the reduction in transactions costs that having a common currency entails.

The reduction in exchange-rate volatility – another benefit of a currency union – will also clearly be greater with a higher degree of intra-union trade, since more firms will benefit from knowing with certainty exactly the revenue generated from their sales to other currency union members, rather than having to bear the uncertainty associated with exchange-rate fluctuations.

17-5 Is Europe an Optimum Currency Area?

Having determined what characteristics of a group of countries would make the benefits of a single currency stronger and the costs weaker, we can take a closer look to see whether Europe – and in particular the group of 17 countries that form the Euro Area – forms an optimum currency area in the sense of the benefits of having a single currency heavily outweighing the costs.

Trade Integration To get a measure of the openness of the Euro Area countries to trade with the rest of Europe, we will adapt the measure of openness that we used in Chapter 6. Recall that (as in Figure 6-1 of Chapter 6), we measured the degree of openness of an economy to trade by taking an average of exports and imports (i.e. adding exports and imports together and dividing by 2), and then expressed the resulting figure as a percentage of GDP. To measure the degree of trade integration with other EU countries, we can do something similar. Table 17-1 shows the average of intra-union imports and exports of goods (i.e. the sum of imports from and exports of goods to other European Union countries, divided by 2) for the EU-27 countries (i.e. the 17 countries that make up the Euro Area plus the other European Union countries that are not members of Euro Area) for each year from 2003 to 2012, expressed as a percentage of GDP. Taking an average of intra-union imports and exports is appropriate here because transactions costs in trade between countries are incurred on both imports and exports. Thus we can think of this percentage as an index of trade integration of each of the countries with the rest of Europe and a measure of the gains to the reduction of transactions costs in trade.

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