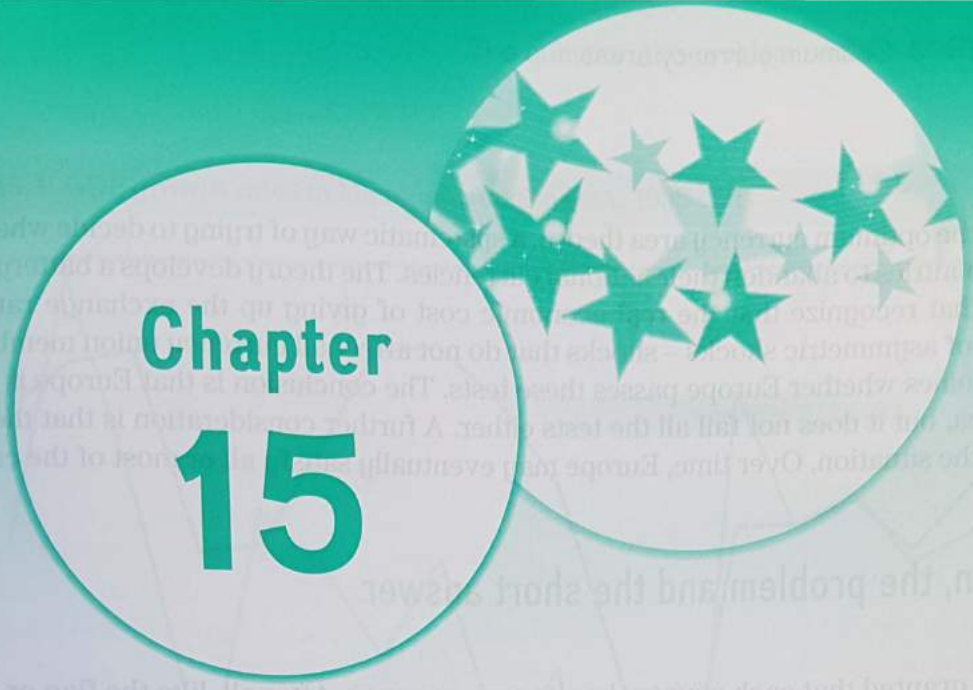


Chapter

15

Optimum currency areas

Chapter Contents

Introduction

This chapter presents the optimum currency area theory, a systematic way of trying to decide whether it makes sense for a group of countries to abandon their national currencies. The theory develops a battery of economic and political criteria that recognize that the real economic cost of giving up the exchange rate instrument arises in the presence of asymmetric shocks – shocks that do not affect all currency union member countries. The chapter then examines whether Europe passes these tests. The conclusion is that Europe is not really an optimum currency area, but it does not fail all the tests either. A further consideration is that the adoption of the euro may change the situation. Over time, Europe may eventually satisfy all or most of the criteria.

15.1 The question, the problem and the short answer

15.1.1 The question

It is usually taken for granted that each country has its own currency. After all, like the flag or the national anthem, a currency is a symbol of statehood. National heroes or rulers are proudly displayed on coins and banknotes, much as kings, emperors and feudal lords had their faces stamped on gold and silver coins. And yet, it is worth asking whether it makes good economic sense for each country to have its own currency.

This chapter provides answers to a simple question: If we forget about nations and focus purely on economic relations, how would we redraw the map of the world? To start with, does the world need more than one currency? Could Zimbabwe, Peru and China share the same currency? Probably not. At the other extreme, should each city have its own currency, as was sometimes the case just a few centuries ago? No, of course not. These answers seem obvious, but exactly why? Box 15.1 presents an example that is suggestive of the issues involved.

15.1.2 The problem

Money is one of humanity's great inventions. Economics textbooks tell you that its key feature is to avoid achieving the 'double coincidence of wants', that is, barter. With money, you can buy what you want without needing to simultaneously sell something else to somebody else who happens to want it. Money is useful

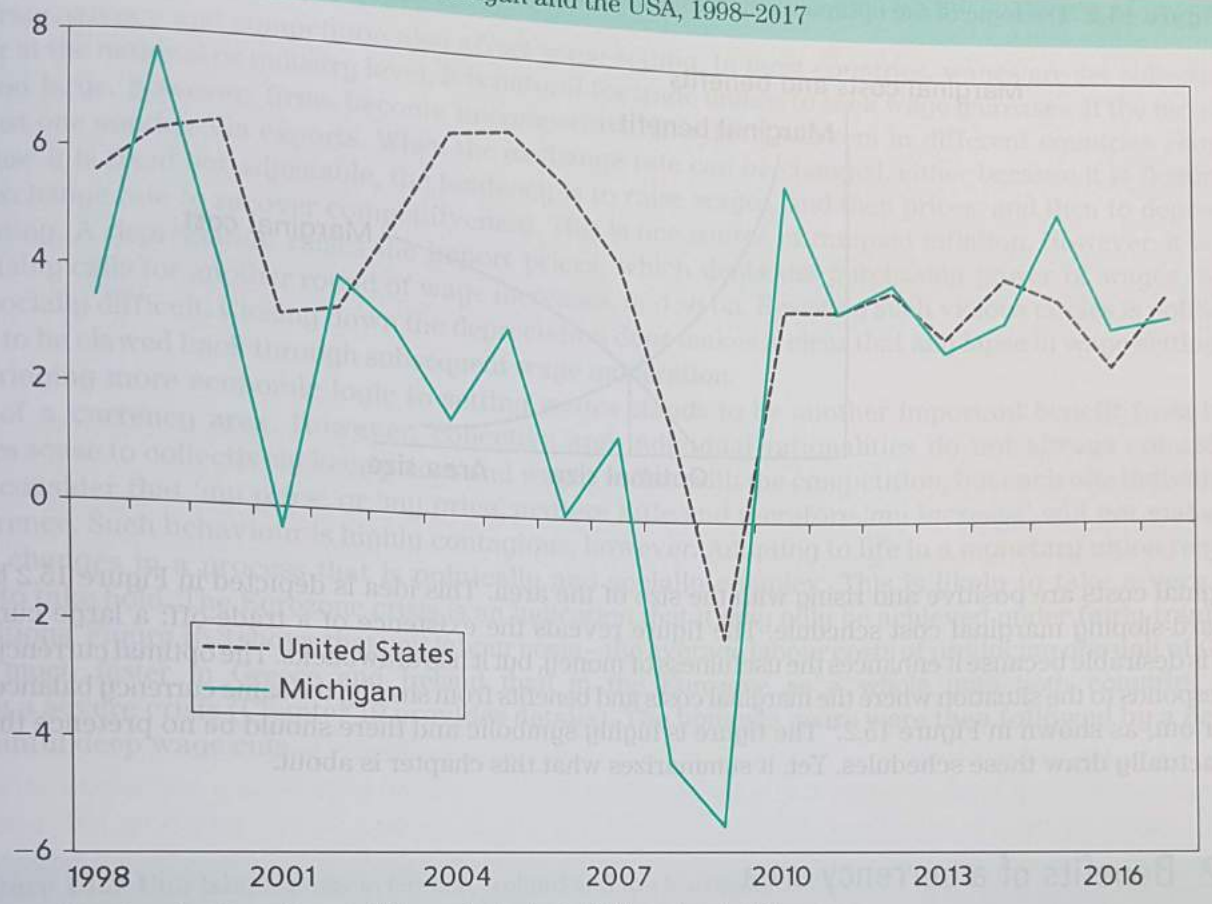
Box 15.1 The case for a Michigan dollar

Michigan is home to Chrysler, Ford and General Motors. For decades, it benefited enormously from being the motor industry state. It drew workers from around the USA, attracted by secure and well-paid jobs. However, for some time now, the US motor industry has not been doing so well and Michigan has suffered alongside it. As can be seen in Figure 15.1, its annual growth rate has underperformed relative to the USA as a whole. In the wake of the global financial crisis, its GDP plunged by more than 8 per cent. Chrysler was sold to Fiat, and both GM and the city of Detroit, the state capital, went bankrupt. Factories were closed and tens of thousands of people left, fleeing high unemployment.

Now imagine that the state of Michigan had its own currency. With a battered economy, the Michigan dollar would most likely have depreciated, and significantly so. Cars made in Michigan would have become cheaper to US and foreign customers and, quite possibly, the US motor industry would have been much better able to fend off competition from Japanese, European and Korean manufacturers. But, although its economy differs from that of most other US states, Michigan cannot use the exchange rate to compete. The cost has been huge, earning the state the unfortunate nickname the 'rust belt of the USA'.

Yet, no one in Michigan seriously envisaged a monetary secession. It is not because the Michigan economy is too small to justify a separate currency. Its GDP approximately equals that of Iran, South Africa and Denmark. Somehow, Michigan citizens consider that belonging to the US dollar currency area provides benefits that far outweigh the costs. Or, maybe, no one really asks the question because most assume that one country means one currency.

Figure 15.1 GDP growth rates in Michigan and the USA, 1998–2017



Source: Based on data from *Bureau of Economic Analysis, US Department of Commerce.*

because it both makes commercial and financial transactions much easier than barter and is immediately recognizable. The more people accept a currency, the more useful it is.[1]

In that sense, the world would benefit from having just one currency. There would be no need to exchange money when travelling, exporting or importing. Exchanging currency is not just bothersome – how many unspent foreign coins lie in one of your drawers? – it is also costly. Indeed, if you buy a foreign currency and re-sell it immediately, you are likely to lose 10 per cent or more. This is how currency dealers and credit card companies get paid for the service that they provide; however, this service would be unnecessary if just one currency existed. In addition, currency transactions are risky as exchange rates fluctuate and seem always to go against you! This is why small currency areas – geographic zones that share the same currency – are clearly not optimal. A currency that is used in a small area is just not very useful.

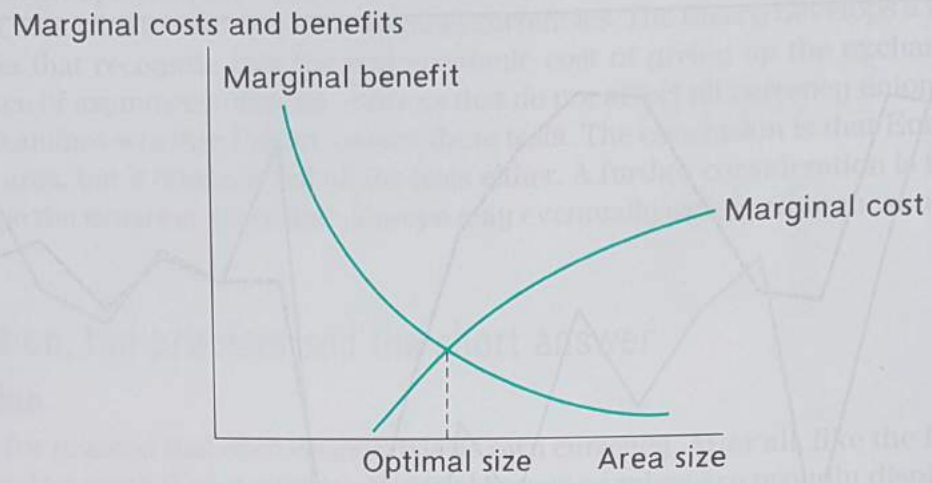
15.1.3 The short answer

The marginal benefit curve in Figure 15.2 symbolically represents this idea. It measures the added advantage of increasing a currency area by one unit, for example one unit of GDP or one more country. Since the usefulness of a currency grows with the size of the area within which it is being used, its marginal benefit is positive. Yet, it is declining as the area expands because the extra benefit from adding one more country to an already large currency area is smaller than when the initial area was small.

If the marginal benefit is always positive, is the world *the* optimal currency area? It would be if there were no costs. What can these costs be? As a currency area grows larger, it becomes more diverse – in standards of living, for instance. If more diversity means more costs when sharing a common currency, the

[1] Technically, money is said to generate network externalities. Network externalities are studied in Chapter 18.

Figure 15.2 The logic of the optimum currency area theory



marginal costs are positive and rising with the size of the area. This idea is depicted in Figure 15.2 by the upward-sloping marginal cost schedule. The figure reveals the existence of a trade-off: a large currency area is desirable because it enhances the usefulness of money, but it has drawbacks. The optimal currency area corresponds to the situation where the marginal costs and benefits from sharing the same currency balance each other out, as shown in Figure 15.2.[2] The figure is highly symbolic and there should be no pretence that we can actually draw these schedules. Yet, it summarizes what this chapter is about.

15.2 Benefits of a currency area

15.2.1 Transaction costs

With the creation of the euro, Austrian exporters can ship goods to Finland and be paid in their own currency, because they share the same currency. Before the euro, the exporters and their customers had to negotiate which currency would be used. The exporter much preferred the Austrian schilling, because that is what she uses every day and she would not have to pay a fee to her bank to exchange Finnish markkas for schillings. Of course, the Finnish customer had the exact opposite preference. No matter what, in the end someone would have to bear the transaction costs. This may seem trivial, but it is not. In a famous example, the European Commission looked at what happened when one started with one EU currency – say, 100 worth of it – and exchanged it successively in all the currencies of the EU before returning to the initial currency. The result, the Commission claimed, was that less than 50 of the initial 100 would be left. Of course, no one would ever do that – except maybe teenagers roaming Europe with an InterRail pass – but the point was that transaction costs are not trivial, even if one is sceptical about the Commission's assertion. Unfortunately, we do not have estimates of how big these effects are.

15.2.2 Price transparency

Another important benefit is that goods prices become directly comparable across countries that are part of a monetary union. Along with reduced transaction costs, this allows for more competition. Stronger competition in turn is expected to benefit consumers and to encourage producers to keep improving their offerings. There is evidence that the adoption of the euro has led small and medium-sized firms to engage in exporting throughout the area. Opening up trade opportunities to the large

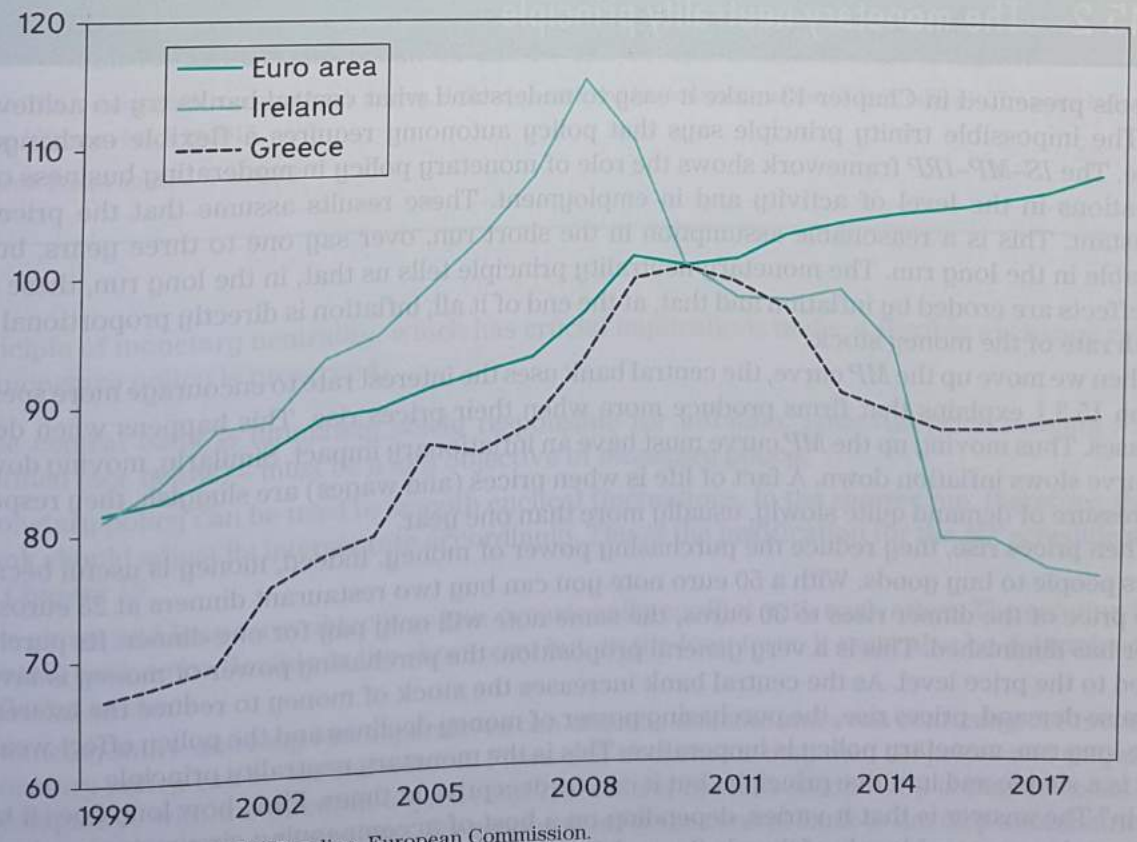
[2] We use marginal, and not total, benefits because the highest net benefits (benefits less costs) occur where marginal benefits and costs are equal. Mathematically, net benefits are $NC = B - C$, where B and C represent, respectively, benefits and costs. The maximum value of NC occurs where $\mathrm{d}\,NC = 0$; that is, when $\mathrm{d}\,B = \mathrm{d}\,C$, where d is the differentiation operator so that $\mathrm{d}\,B$ and $\mathrm{d}\,C$ are the marginal benefits and costs, respectively. This assumes that $\mathrm{d}\,B > \mathrm{d}\,C$ below the maximum point.

number of firms that were previously unable to deal with or intimidated by the challenge of exporting can be a very large benefit.

Transparency and competition also affect wage-setting. In most countries, wages are set collectively, either at the national or industry level. It is natural for trade unions to seek wage increases. If the increases are too large, however, firms become uncompetitive. In effect, workers in different countries compete against one another via exports. When the exchange rate can be changed, either because it is floating or because it is fixed but adjustable, the tendency is to raise wages, and then prices, and then to depreciate the exchange rate to recover competitiveness. This is one source of rampant inflation. However, it is self-defeating. A depreciation raises the import prices, which dents the purchasing power of wages, which inevitably calls for another round of wage increases, and so on. Resisting such vicious circles is politically and socially difficult. Closing down the depreciation door makes it clear that any lapse in wage-setting will have to be clawed back through subsequent wage moderation.

Bringing more economic logic to setting wages stands to be another important benefit from being part of a currency area. However, collective and individual rationalities do not always coincide. It makes sense to collectively keep prices and wages in line with the competition, but each one individually may consider that 'my price' or 'my price' matters little and therefore 'my increase' will not make any difference. Such behaviour is highly contagious, however. Adapting to life in a monetary union requires deep changes in a process that is politically and socially complex. This is likely to take a very long time to take hold. The Eurozone crisis is an indication that it may only be achieved under fairly traumatic conditions. Figure 15.3 shows that unit labour costs – the average labour costs of producing one unit of GDP – rose much faster in Greece and Ireland than in the Eurozone as a whole until both countries were hit by a severe crisis (Chapter 19 provides details). The bonanza years were then followed by a decade of painful deep wage cuts.

Figure 15.3 Unit labour costs in Greece, Ireland and the Eurozone



Source: Based on data from AMECO online, European Commission.

15.2.3 Uncertainty

Another benefit is the elimination of exchange rate risk. When exports are priced in the currency of the exporter, the importer does not know precisely what the exchange rate will be when the time comes to settle the purchase. If the price is set in the importer's currency, it is the exporter that faces the risk. Alternatively, the party facing the risk may purchase financial insurance (through forward contracts), which adds to the cost of converting currencies. This may deter trade across currency boundaries.

Another area likely to be affected by uncertainty concerns foreign direct investment (FDI), that is, investors acquiring firms, partially or completely. Benefits from FDI include transfers of technology, returns to scale, better production structures and more. Exchange rate fluctuations deter FDI because investors intending to have a presence in foreign countries for the long term may suffer losses as a result.

15.2.4 Trade

With easier and more secure payments and more competition, a common currency encourages more trade. This benefits all citizens in many ways. It provides more choice for customers and more customers for successful producers. More intense competition is bound to cut prices of producers who enjoy some degree of monopoly on their home turf. In a nutshell, a common currency eliminates a number of non-tariff barriers. Part II explains why and how this raises economic welfare.

15.2.5 Quality of monetary policy

Joining a monetary union implies a complete loss of national monetary policy autonomy. We will see that this comes with an important cost. On the other hand, swapping a domestic central bank for a collectively run central bank may bring benefits. This is the case if the domestic central bank lacks a tradition of effective policymaking, in which case the collective central bank stands to do a better job. Box 15.2 presents

Box 15.2 The monetary neutrality principle

The tools presented in Chapter 13 make it easy to understand what central banks try to achieve and how. The impossible trinity principle says that policy autonomy requires a flexible exchange rate regime. The *IS–MP–IRP* framework shows the role of monetary policy in moderating business cycles, fluctuations in the level of activity and in employment. These results assume that the price level is constant. This is a reasonable assumption in the short run, over say one to three years, but it is untenable in the long run. The monetary neutrality principle tells us that, in the long run, these short-term effects are eroded by inflation and that, at the end of it all, inflation is directly proportional to the growth rate of the money stock.

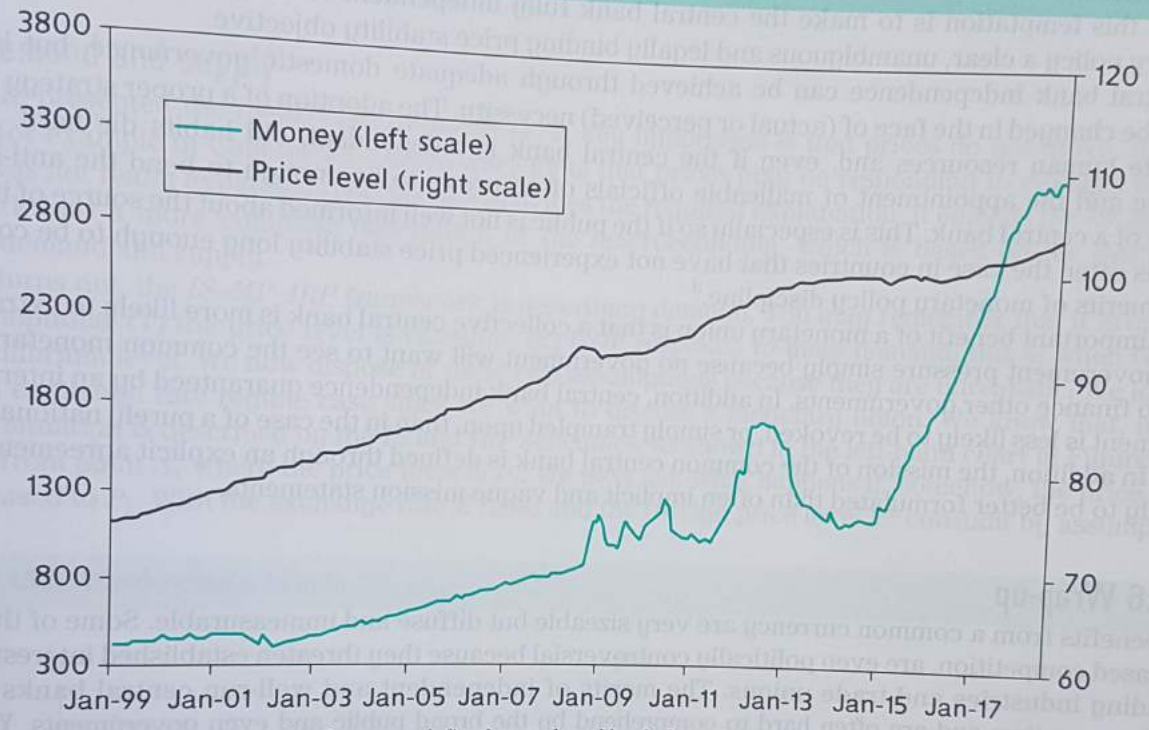
When we move up the *MP* curve, the central bank uses the interest rate to encourage more spending. Section 15.3.1 explains that firms produce more when their prices rise. This happens when demand increases. Thus moving up the *MP* curve must have an inflationary impact. Similarly, moving down the *MP* curve slows inflation down. A fact of life is when prices (and wages) are sluggish, they respond to the pressure of demand quite slowly, usually more than one year.

When prices rise, they reduce the purchasing power of money. Indeed, money is useful because it allows people to buy goods. With a 50 euro note you can buy two restaurant dinners at 25 euros each. If the price of the dinner rises to 30 euros, the same note will only pay for one dinner. Its purchasing power has diminished. This is a very general proposition: the purchasing power of money is inversely related to the price level. As the central bank increases the stock of money to reduce the interest rate and raise demand, prices rise, the purchasing power of money declines and the policy effect wears off. In the long run, monetary policy is inoperative. This is the monetary neutrality principle.

It is a simple and intuitive principle, but it can be deceptive at times. First, how long does it take to kick in? The answer is that it varies, depending on a host of accompanying circumstances; however, five years is a reasonable rule of thumb. Second, is it that simple and automatic? Well, not quite. It tends

to work well, but can be derailed by special circumstances. This is illustrated by the history of the Eurozone as displayed in Figure 15.4. Up until the 2018 financial crisis, money and the price level grow at about the same rate. Afterwards, ECB actions described in Chapter 19 have seemingly broken the monetary neutrality principle. This is explained in Chapter 19 as a sign of profound disturbances in the banking system, not as a failure of the principle. It is a warning that the principle is more subtle than described here.

Figure 15.4 The money stock and the price level in the Eurozone



Note: The money stock is central bank money, defined as cash and bank deposits at the ECB (€ billion). The price index is set to be 100 on average in 2015.

Source: Based on data from ECB.

the principle of monetary neutrality, which has crucial implications under a flexible exchange rate regime (when monetary policy is preserved):

- The central bank is ultimately solely responsible for inflation. Long-run price stability – however defined (see below) – must be a key objective of monetary policy.
- Monetary policy can be used to smooth cyclical fluctuations. In the shorter run, therefore, the central bank should adjust its interest rate accordingly. This is the justification for the *MP* schedule presented in Chapter 13.
- The short- and long-term objectives can occasionally conflict with each other. The solution is for the central bank to be flexible in the short term but, in the long term, it must also be determined to keep inflation in check.
- Balancing short- and long-run imperatives can often be delicate and even confusing. A first risk is that monetary policy can be misunderstood. Firms and households may then set prices and wages that are incompatible with the inflation objective of the central bank. A second risk is that financial markets may destabilize the exchange rate. The response is for the central bank to develop a clear strategy and to be as transparent as possible regarding the implementation of that strategy.

An important additional consideration concerns the relation between central banks and their governments. Money creation is very lucrative as it costs very little to produce money. The resulting seigniorage profits accrue to the government for which it represents a sizeable source of income. Seigniorage is a form of taxation, but a painless one, at least as long as inflation remains low. Many governments can be tempted to raise more income through seigniorage. The history is replete with examples of pathologic use of the 'printing press', from the financially desperate German Weimar Republic in the early 1920s to Serbia during the Balkan War in the 1980s and to Venezuela currently. This invariably results in high, sometimes extremely high and devastating inflation rates. But since inflation follows money growth with a long lag – at least two years, often much more – the temptation can be irresistible for hard-pressed governments. The best way to resist this temptation is to make the central bank fully independent of its government and to assign monetary policy a clear, unambiguous and legally binding price stability objective.

Central bank independence can be achieved through adequate domestic governance, but laws can always be changed in the face of (actual or perceived) necessity. The adoption of a proper strategy requires adequate human resources and, even if the central bank is independent, old habits die hard. Political pressure and the appointment of malleable officials often prove to be enough to bend the anti-inflation resolve of a central bank. This is especially so if the public is not well informed about the source of inflation, which is often the case in countries that have not experienced price stability long enough to be convinced of the merits of monetary policy discipline.[3]

An important benefit of a monetary union is that a collective central bank is more likely to extract itself from government pressure simply because no government will want to see the common monetary policy used to finance other governments. In addition, central bank independence guaranteed by an international agreement is less likely to be revoked, or simply trampled upon, than in the case of a purely national central bank. In addition, the mission of the common central bank is defined through an explicit agreement, which is likely to be better formulated than often implicit and vague mission statements.

15.2.6 Wrap-up

The benefits from a common currency are very sizeable but diffuse and immeasurable. Some of them, like increased competition, are even politically controversial because they threaten established interest groups, including industries and trade unions. The merits of independent and well-run central banks emerge slowly over time and are often hard to comprehend by the broad public and even governments. Yet, these benefits are very real.

Importantly, the benefits grow with the size of the currency area. This is why the marginal benefits – the additional benefits – are shown as always positive in Figure 15.2, even if their size declines. It is clear as far as trade and competition is concerned: big markets allow for wider choice and larger increasing returns. In that case, the marginal benefits may not even be declining, but we do not know for sure. It also applies for the *quality* of monetary policy since central bank independence and importance grow with its size, although we will see that big currency areas can incur important policy costs. As noted above, the usefulness and convenience of a currency is deeply associated with the number of people who use it. This may seem a mundane point, but it is not. A currency is chiefly an instrument designed to carry out transactions; after all, that is why money was invented in the first place, as explained in Chapter 14. It is very easy to overlook this benefit, and others too.

15.3 Costs of a currency area

Intuitively, it seems obvious that bringing together into a currency area very diverse countries creates difficulties. The intuition is right. Diversity is costly because a common currency requires a single central bank, and a single monetary authority is unable to react to each and every local event. The optimum

[3] A quick look at Figure 14.5 readily shows that most European countries have not been particularly good at keeping inflation in check following the abandonment of the fixed exchange rate anchor provided by the Bretton Woods system. The reason is that most central banks were under the direct or indirect control of their governments, which did not resist the temptation of seigniorage.

currency area (OCA) theory aims at identifying these costs. The basic idea is that diversity translates into asymmetric shocks and that the exchange rate is very useful in dealing with such shocks.

We proceed thus:

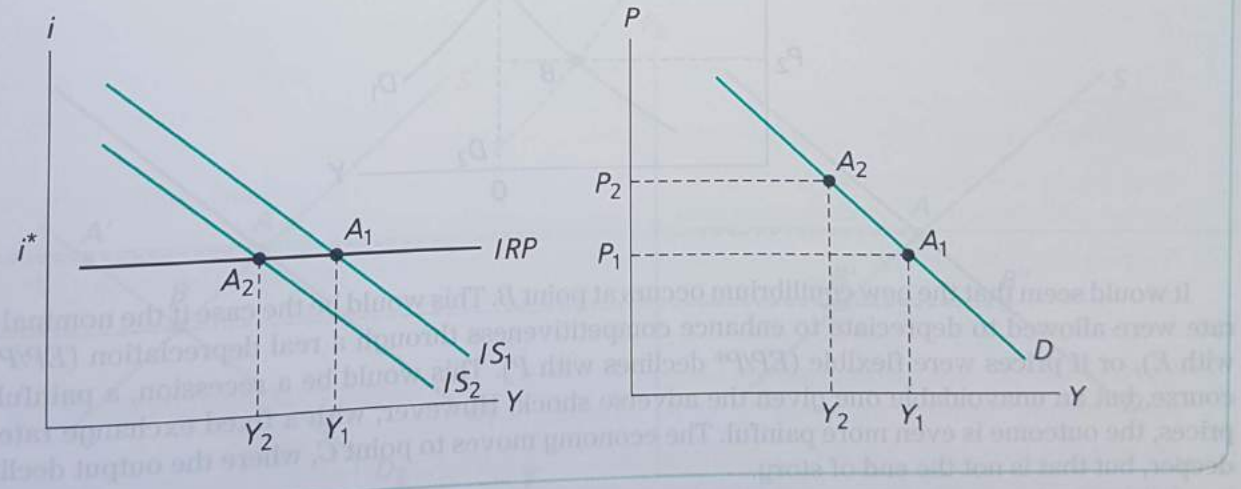
1. First, we provide some theory background.
2. Next, we define and examine the effects of asymmetric shocks.
3. Then we study the problems that arise in the presence of asymmetric shocks in a currency area.
4. Finally, we ask how the effects of asymmetric shocks can be mitigated when national exchange rates are no longer available.

15.3.1 Demand and supply

Chapter 13 presented the *IS–MP–IRP* framework. A key hypothesis is that prices do not move. At some points – for example in Chapter 14 – there were hints that prices may be responding to changes in GDP, but this was not really explained. This section provides the required explanation. It embeds the *IS–MP–IRP* framework into a more complete description of the macroeconomy, which is based on the distinction between demand and supply.

As it turns out, the *IS–MP–IRP* framework is describing demand. You may remember that it is built on two assumptions: (1) the price level is constant; (2) GDP responds to meet demand, this is when GDP is at its equilibrium level. We now dispose of these two assumptions because they are unrealistic. We look at the fixed exchange rate regime case since we want to discuss a monetary union. We know that, in this case, the situation is described by the *IS* and *IRP* schedules, as shown in the left-hand chart in Figure 15.5. We start from point A_1 where the price level is P_1. We next ask what happens if, somehow, the price level has increased to P_2. With the exchange rate E fixed and the foreign price level P^* constant by assumption,

Figure 15.5 The demand schedule



the result is an increase in the real exchange rate EP/P^*. Competitiveness is reduced, which shifts the IS schedule leftward from IS_1 to IS_2. GDP has declined from Y_1 to Y_2. Everything else remaining unchanged, an increase in the price level reduces demand for our domestic goods. This is described in the right-hand chart by the downward-sloping demand schedule D.

Next we explain why the supply curve is upward sloping. When the price rises, it provides an incentive for firms to produce more. This assumes that the costs of production (wages, inputs) are unchanged. We will remove this assumption later on. Another way of expressing the same idea is that for firms to produce more, there must be an incentive. The incentive is higher profitability, provided here by a higher price for their product. The supply curve removes the second assumption behind the *IS–MP–IRP* framework.

It is important to understand how to account for exchange rate changes in this framework. As a first approximation, the supply curve remains unchanged because domestic producers care about revenues

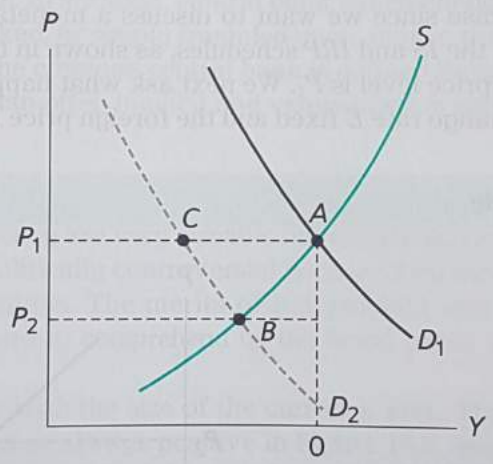
in the domestic currency.[4] Regarding demand, the analysis presented in this chapter concludes that a depreciation raises demand and moves the IS curve to the right. This implies that the demand curve shifts to the right.

15.3.2 Shocks and the exchange rate

Imagine that the world demand for a country's exports declines because tastes change or because cheaper alternatives are developed elsewhere. This opens up a hole in the balance of trade. To re-establish its external balance, the country needs to make its exports cheaper, which calls for enhanced competitiveness. One solution would be for prices and wages to decline; but what if they do not? In this case, a depreciation will do the trick if the country has its own currency. If, however, the country is part of a wider currency area, there is no alternative to lowering prices. Macroeconomic principles tell us that this requires that the economy slows down, deeply enough for long enough.

In order to examine the situation, we turn to Figure 15.6, which brings together the demand and supply schedules developed in the previous section. Starting from point A, the decline in the foreign demand for our goods is captured by the leftward shift of the demand curve from D_1 to D_2. Indeed, a lower demand means that the IS curve shifts to the left in Figure 15.5: at any given price, GDP is lower.

Figure 15.6 An adverse demand shock



It would seem that the new equilibrium occurs at point B. This would be the case if the nominal exchange rate were allowed to depreciate to enhance competitiveness through a real depreciation (EP/P^* declines with E), or if prices were flexible (EP/P^* declines with P). This would be a recession, a painful move, of course, but an unavoidable one given the adverse shock. However, with a fixed exchange rate and rigid prices, the outcome is even more painful. The economy moves to point C, where the output decline is even deeper, but that is not the end of story.

As long as the price level remains P_1, domestic producers continue to supply the output corresponding to point A, this is the meaning of the supply curve. At the same time, at price P_1, demand is represented by point C, on the new demand curve D_1. The distance AC represents the amount of produced but unsold goods. Obviously, domestic firms will not accumulate unsold goods for ever. Something has to give, and it is production that will be curtailed. Over time, the combination of a weakened demand and of rising inventories will generate incentives for producers to cut prices. Eventually, the economy will move to point B. But this is likely to be the outcome of a painful and protracted process, in contrast to a rapid exchange rate depreciation.

[4] As a second approximation, we note that producers also care about their costs. Inasmuch as some inputs (energy, materials, intermediate products) are priced in the foreign currency, a depreciation will raise costs, undermine profitability and could reduce supply. This would shift the supply curve to the left.

The example illustrates why exchange rate fixity, when combined with sticky prices, makes an already bad situation worse. Within a monetary union, the real exchange rate adjustment can come only from changes in prices and wages. If prices and wages are sticky, the adjustment takes time, creating hardship along the way. The solution would be that the common currency be allowed to depreciate, but that is a decision that a single country cannot make. If all countries face the same shock, that decision would be natural for all member countries. The next section examines the case of an asymmetric shock.

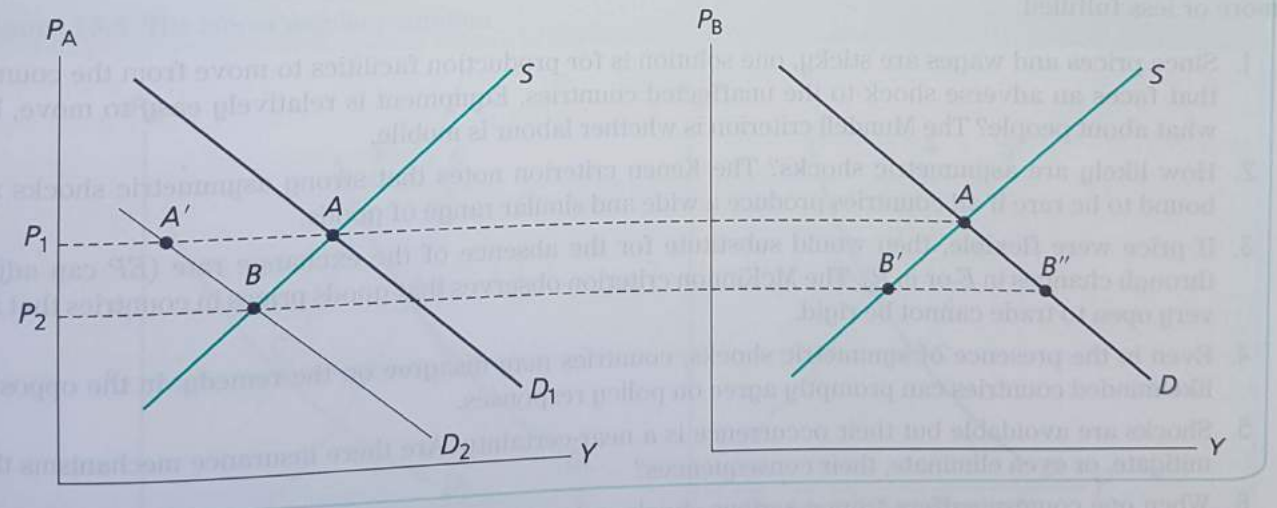
15.3.3 Asymmetric shocks

So far we have thought of one country taken in isolation. What happens in a monetary union when different countries face different shocks? The simplest case is a currency area with two member countries. We call these countries A and B. Within the monetary union, there is no exchange rate, but both countries share the same exchange rate vis-à-vis the rest of the world.

If countries A and B are hit by the same adverse shock, we know from the previous section that both have to undergo a real depreciation vis-à-vis the rest of the world. If they are similar enough, to a first approximation, there is no need for their bilateral exchange rate to change. Since they are in the same boat, the loss of the exchange rate within the union is of no consequence. The union will simply adjust its common exchange rate vis-à-vis the rest of the world and its member countries are as well off as if they had each independently changed their own exchange rates.

The situation is very different in the presence of an asymmetric shock. Assume, for instance, that country A is hit by an adverse shock, but not country B. What happens then? The situation is examined in Figure 15.7. The vertical axis measures each country's price level, P_A and P_B. Points A in both panels represent the initially nicely balanced situation, both countries having a zero output gap. We also define the price indexes such that, initially, P_A and P_B are both equal to P_1. Prices are assumed to be sticky – otherwise, the exchange rate regime does not matter, as noted above.

Figure 15.7 An asymmetric shock in a currency union



The reduction in foreign demand – from outside the monetary union – affects country A alone. It is represented in the left-hand chart by a leftward shift of the demand schedule from D_1 to D_2. With flexible prices, the price level would decline to P_2 and the economy would land at point B, like in the previous section. With the price level stuck at P_1, if country A were not part of a monetary union, the same situation could be reached through a depreciation, which would mimic the flexible price outcome. The foreign country B would have no reason to change its exchange rate and would remain at point A.

Things are very different when countries A and B belong to a monetary union. The now-common central bank must make a choice on their behalf. If it cares only about country A, it could cut the interest rate and let the common exchange rate depreciate to boost demand back to D_1. This would not suit country B, because the depreciation would shift its demand curve to the right and create excess demand (not shown).

If the central bank instead favours country B, it will keep the common exchange rate unchanged as this country does not face any disturbance and would rather stay at point A. Country A, however, is in a most uncomfortable position. At price P_1, supply is represented by point A but demand is represented by point A'. This means excess supply in country A: the distance $A'A$ represents the inventories of unsold goods that firms accumulate. Clearly, in the presence of an asymmetric shock, what suits one country hurts the other.

Finally, for completeness, we may remember Hume's mechanism presented in Chapter 14. When country A loses market shares abroad, its current account balance worsens. Unless some financing is provided from abroad, money leaves the country, which tends to further reduce domestic demand (the demand curve shifts to the left of D_2, which worsens the asymmetry). As money moves to country B, demand rises there (the demand curve shifts to the right). The result is an expansion and inflationary pressure. The contrast between misery in country A and a boom in country B is disheartening.

That there is no good outcome simultaneously for both countries is a fundamental and unavoidable cost of forming a monetary union. The logic is intuitive. With sticky prices, the nominal exchange rate is the only way of adjusting a country's competitiveness to changing conditions. Within a monetary union, the common exchange rate cannot protect simultaneously all member countries.

Figure 15.7 describes the short run. Over time, prices become flexible and will do what they are expected to do. In this case, prices will fall in country A until point B is reached while country B remains at point A. That the problem solves itself eventually through price adjustments (Figure 15.3 provides an example) means that the cost is temporary, but a few years of misery now and then can be politically challenging.

15.4 The optimum currency area criteria

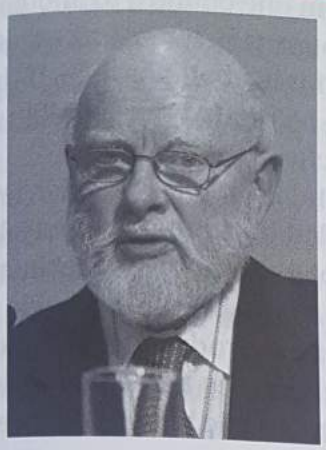
The optimum currency area (OCA) theory brings together the benefits (Section 15.2) and the costs (Section 15.3) to derive practical criteria that can help us answer the question asked at the outset: Which countries should share the same currency? In a way, OCA is a misnomer, for two reasons. First, because the theory does not really deal with optimality (what is best?) as it simply balances costs and benefits. Second, the theory does not even provide yes or no answers to the central question asked above. Rather, it derives criteria that make a common currency acceptable, not optimal; and the criteria are never black or white, they are more or less fulfilled.

1. Since prices and wages are sticky, one solution is for production facilities to move from the country that faces an adverse shock to the unaffected countries. Equipment is relatively easy to move, but what about people? The Mundell criterion is whether labour is mobile.
2. How likely are asymmetric shocks? The Kenen criterion notes that strong asymmetric shocks are bound to be rare if all countries produce a wide and similar range of goods.
3. If price were flexible, they would substitute for the absence of the exchange rate (EP can adjust through changes in E or in P). The McKinnon criterion observes that goods prices in countries that are very open to trade cannot be rigid.
4. Even in the presence of symmetric shocks, countries may disagree on the remedy. In the opposite, like-minded countries can promptly agree on policy responses.
5. Shocks are avoidable but their occurrence is a near-certainty. Are there insurance mechanisms that mitigate, or even eliminate, their consequences?
6. When one country suffers from a serious shock and cannot respond with an exchange rate change, it often is in the collective interest for the other members to rescue it in various ways. This requires a high degree of solidarity among member countries.

The first three criteria involve economic mechanisms. They are the classic criteria, which bear the names of their authors, presented in Box 15.3. The last three criteria involve wider considerations with a strong political flavour.[5] We now consider them one by one.

[5] The three 'political' criteria are not part of classic OCA theory. They were introduced in earlier editions of this textbook. The crisis offers a powerful demonstration of their relevance. There is also a tendency towards the proliferation of criteria. In particular, policies are added to the list while the criteria should only reflect existing structural conditions. Policies can – and should – always be adapted.

Box 15.3 Founders of the optimum currency area theory



Source: Stanford University.

Robert A. Mundell, a Canadian-born economist at Columbia University, won the Nobel Prize in part for having created the OCA theory, and in part for having started the field of open economy macroeconomics. The *IS–MP–IRP* framework is often referred to as the Mundell–Fleming model. (J. Marcus Fleming was an economist working at the IMF; he independently developed the same theory.) He now advocates a single worldwide currency.

Ronald McKinnon, from Stanford University, has made major contributions to the international monetary literature. He is known for his critical appraisal of the European monetary union.

Peter Kenen, from Princeton University, was a leading contributor to our understanding of the international monetary system and a keen observer of European monetary integration.

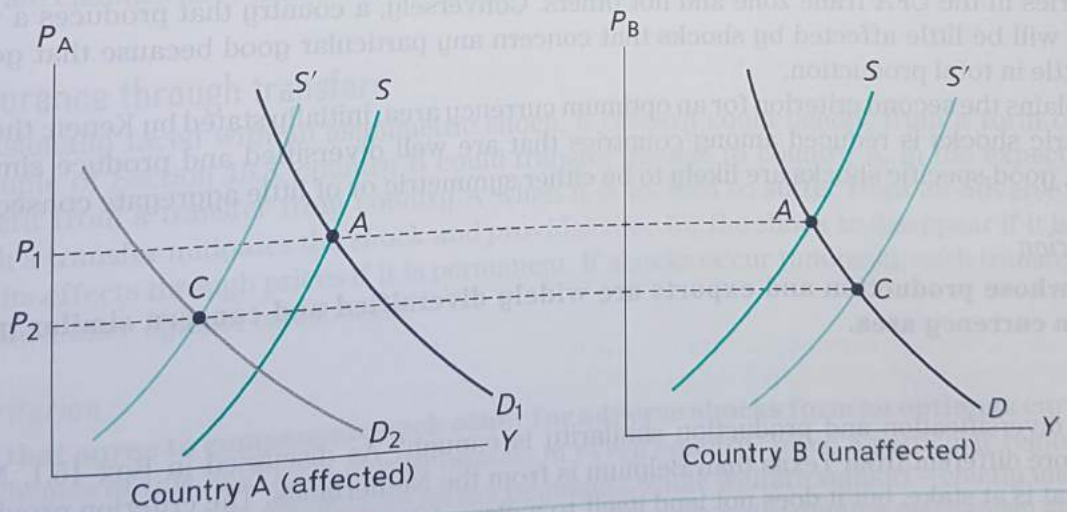
15.4.1 Labour mobility (Mundell)

Mundell criterion

Optimum currency areas are those within which people move easily.

The key result from our study of asymmetric shocks is that one country may undergo excess supply while the other one may face excess demand. Both problems could be solved in one stroke by a shift of the production factors (labour and capital) from the first country to the second. This is shown in Figure 15.8 as a shift of both countries' supply schedules to S', leftward for country A, rightward for country B. The reallocation of productive resources brings both countries to equilibrium points C.

Figure 15.8 The labour mobility criterion



The Mundell criterion makes good sense: why should unemployment rise in some part of a currency area while, in other parts, firms cannot produce enough to satisfy demand? Let people and their equipment simply move to where they are needed!

Criticism

Yet, as always, things are less simple than they look. We need to think a bit harder about what shifting production really means. First, it is no wonder that actual currency areas generally coincide with nation-states. Common culture and language, right and ease of resettling, shared schooling systems, national retirement

systems, and so on, make labour mobility easier within a country than across borders. A national currency is not just a symbol of statehood, it goes hand in hand with the ease to resettle. Across borders, not only do cultural and linguistic differences restrain migration, but also institutional barriers further discourage labour mobility, as explained in Chapter 8. It is inherently much more difficult to move from one country to another.

Second, the goods produced in country A may differ from those produced in country B. It may take quite some time to retrain workers from country A to produce the goods of country B, if it is at all possible. If the shocks are temporary, it may not be worth the trouble of moving, retraining, and so on. Labour mobility is not a panacea, just a factor that mitigates the costs of an asymmetric shock in a currency union.

Finally, labour needs equipment to be productive. The usual answer is that capital is mobile, but this view needs to be qualified. Financial capital can move freely and quickly, unless impeded by exchange controls. Installed physical capital (means of production such as plant and equipment) is not very mobile. Machinery can be transported but it takes time to build plants. Closing plants in country A can be done quickly – although social–political resistance may create stumbling blocks – but creating new production facilities in country B may take months, if not years. Even if labour were highly mobile, which it is not, shifting the supply curves as described in Figure 15.8 may take many years. By then, the asymmetric shock may well have evaporated or even reversed.

15.4.2 Production diversification (Kenen)

How frequent are asymmetric shocks really? If substantial asymmetric shocks happen only rarely, the costs are episodic while the benefits of the currency union accrue every day. The Kenen criterion focuses on the most likely sources of substantial and long-lasting shocks. Long lasting symmetric shocks are typically associated with shifts in spending patterns, which may be a consequence of changing tastes (e.g. German beer consumers find it more fashionable to drink French wine) or of new technology that brings about new products and makes older ones obsolete. Such shocks actually occur continuously, but most of them are hardly noticed outside the affected industries.

Severe shocks are more likely to occur in countries that specialize in the production of a narrow range of goods. For example, many of the African countries that are part of the CFA franc zone primarily export a single agricultural product such as coffee or cacao. A decline in the demand for coffee – which may occur because new producers emerge elsewhere in the world – is an asymmetric shock because it affects some countries in the CFA franc zone and not others. Conversely, a country that produces a wide range of products will be little affected by shocks that concern any particular good because that good weighs relatively little in total production.

This explains the second criterion for an optimum currency area, initially stated by Kenen: the likelihood of asymmetric shocks is reduced among countries that are well diversified and produce similar goods. In that case, good-specific shocks are likely to be either symmetric or of little aggregate consequence.

Kenen criterion

Countries whose production and exports are widely diversified and concern similar goods form an optimum currency area.

Criticism

How much diversification and production similarity is enough? As discussed in Box 15.1, Michigan is probably more different from Texas than Belgium is from the Netherlands. The criterion provides a good sense of what is at stake, but it does not lend itself to a clear delineation. One can argue that Greece, with its focus on tourism and agribusiness, is not well adapted to sharing a currency with industrial Germany, but is that enough to draw a conclusion?

15.4.3 Openness (McKinnon)

The next relevant question is whether the exchange rate is at all helpful in the presence of an asymmetric shock. If it is not, little is lost by giving it up. In the analysis so far, the distinction between 'domestic' and 'foreign' goods refers to where the goods are produced and priced. However, many standard goods, such as

paper sheets or electric bulbs, although produced in different countries, are virtually identical. Consider the example of electric bulbs produced in Sweden and think of the German market. Competition forces producers to set the same price in euros, say €2.50. Pricing to market, as this is called, means that if the krona's exchange rate vis-à-vis the euro changes, Swedish bulbs will still sell for €2.50 in Germany. If the krona depreciates from 9 to 9.50, the Swedish manufacturer will just let its selling price rise from SKR 22.50 to SKR 23.75. If the krona appreciates from 9 to 8.50, the Swedish manufacturer will have to absorb the difference as the selling price declines from SKR 22.50 to SKR 21.25. Presumably, the same applies to German goods exported to Sweden.

For such a standard good, therefore, we expect trade competition to force prices to be flexible so that they are the same, or nearly so, everywhere. Formally, for good i, whose price is P_i at home and P_i^* abroad, $EP_i = P_i^*$ quite independently of the exchange rate E. In addition, modern trade takes the form of value chains whereby finished products incorporate many parts produced literally all over the world. It becomes increasingly difficult to talk about national goods. In all those cases, losing the exchange rate is of little consequence and the two countries can form a currency area without suffering much hardship in the presence of asymmetric shocks.

McKinnon criterion

Countries that are very open to trade and trade heavily with one another form an optimum currency area.

Criticism

Price equalization is not innocuous. When the domestic price of exports (like bulbs) changes to make up for exchange rate movements, profitability is affected. In the previous example, in response to an exchange rate depreciation, the domestic-currency export price increases (from SKR 22.50 to SKR 23.75). This raises profits for exporters. Conversely, an appreciation eats into the profit margin of exporters. Even when prices are flexible, exchange rate changes still affect the economy.

This is true, but not necessarily the end of the story. Consider the growing instances when a good incorporates parts produced in other countries. Profits rise through a higher domestic-currency price but they are simultaneously reduced because imported components become more expensive when their prices are set internationally in the foreign currency. Some gain here, some loss there; once again, we find that exchange rate changes have little or no effect.

15.4.4 Insurance through transfers

When occasionally faced with an asymmetric shock, a country could benefit from a form of insurance. In the example of Section 15.3, country B could transfer income to country A, in the expectation that it would benefit from a transfer from country A when it is its turn to suffer from an adverse asymmetric shock. Such a transfer mitigates the shock and provides time for the shock to disappear if it is temporary, or to work its effects through prices if it is permanent. If shocks occur randomly, such transfers work like a common insurance against bad shocks.

Transfer criterion

Countries that agree to compensate each other for adverse shocks form an optimum currency area.

Transfer schemes of this kind exist across regions in every country. When a particular region suffers an asymmetric shock, as income declines, so do tax payments, while welfare support – chiefly unemployment benefits – rises. Such transfers are implicit, part-and-parcel of the redistributive mechanism at work in the country. They may be explicit as well, as is the case in federal countries, such as Germany and Switzerland, which operate elaborate transfer systems among regions.

Criticism

Insurance inevitably raises the delicate issue of moral hazard, namely the risk that the prospect of receiving income reduces effort to avoid shocks or to deal with the consequences of the shock. Thus, during the Eurozone crisis, the Northern countries have opposed transfers to the crisis countries from the South, because they considered that the shocks were the consequence of high public debts (Greece, Portugal) or

of poor oversight of banks (Ireland, Spain, Cyprus). They also argued that price and wage flexibility was inadequate due to labour market rigidities, or that bank restructuring was insufficient because of vested interests. They feared that transfers would reward poor policies adopted before the crisis and discourage unpopular but much needed reforms after the crisis. Moral hazard means that the shocks may not be totally random, being instead concentrated on some countries that do not adequately manage their economic and social affairs. This would break the notion that transfers that go in one direction at some point will go in the opposite direction at another point, with the risk that insurance becomes assistance.

Transfers can be achieved publicly or privately. So far, we have focused on public transfers, those that exist at the national level via the welfare system and explicit regional arrangements which can be extended in a currency union to international arrangements. The alternative to such transfers is to borrow in bad years and pay back in good years. This can be done by governments to provide support to their citizens who suffer from an adverse shock. Alternatively, it can be done privately by firms and households. Borrowing avoids moral hazard, but not everyone can borrow enough or at all. The governments of Eurozone crisis countries suddenly loss access to financial markets. As banking systems collapsed in these countries, private borrowing became very difficult, effectively impossible by those hardest hit who needed it most. In the end, transfer mechanisms had to be created, as is explained in Chapter 19.

15.4.5 Homogeneous preferences

A monetary union implies a single central bank, and more as we will see in subsequent chapters. Member countries must therefore agree on a common monetary policy and a host of other features. Part V describes in detail how this has been done in Europe. However, there must be an agreement on how to use these collective instruments, including monetary policy, which can prove to be challenging and potentially divisive.

Disagreements are an inherent consequence of asymmetric shocks, as Section 15.3 shows, but the problem is deeper. It might seem that symmetric shocks are easy to deal with, since all countries face the same situation. Unfortunately, this is not always the case. Countries rarely agree on how to deal with each and every possible shock, because there rarely is a 'best way'. Differences of opinions exist within countries too. They are dealt with through the confrontation of political parties, trade unions and lobbies. History and institutions, including the political forces at play, shape national preferences, which differ from one country to another. Disagreements naturally emerge among countries. If the disagreements are frequent and sharp, sharing a common currency can be excessively divisive. Currency union member countries must be able to routinely reach consensus on the best way to manage the economy, which is possible only if national preferences are not too different.

Homogeneity of preferences criterion

A high degree of homogeneity of national preferences is required in a currency union.

Criticism

Once again, this is a very broad statement that cannot lead to a black-and-white assessment. Besides, the official position of a country may be reviewed when power changes hands. The criterion must refer to shared national values that are not the same from one country to another, which is even harder to pinpoint.

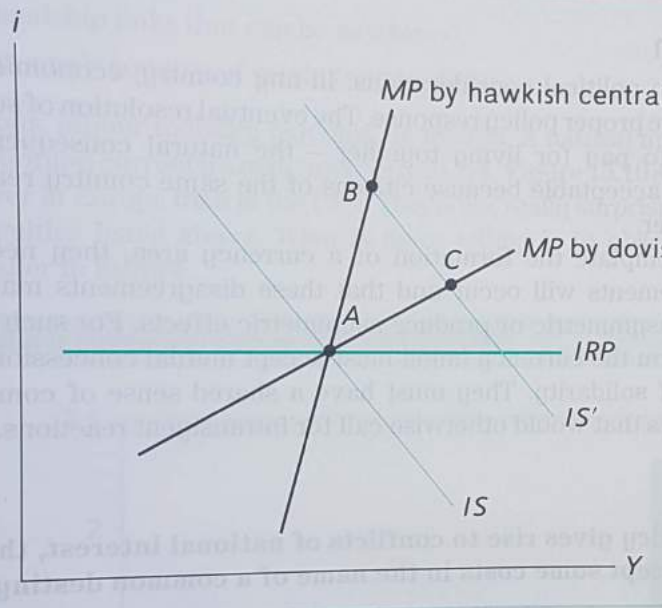
We look at issues that have been a source of disagreement amount European countries. Some of them concern the impossible trinity, summarized in Figure 13.10. They have been sharp enough to prevent some countries like Denmark, Poland, Sweden or the UK, from adopting the common currency. These countries consider that exchange rate stability is less important than monetary policy autonomy, while the decision to join the Eurozone is based on a preference for exchange stability over monetary policy autonomy. Predictably, within the Eurozone, other differences have emerged. We look at some of them.

Inflation

The Eurozone member countries have completely given up national monetary policies but they share a common central bank that is autonomous since the euro is freely floating. We know from Section 15.2 that inflation is eventually determined by monetary policy. Some countries demonstrate little tolerance towards inflation. They are less prone to actively use monetary policy to smooth business cycles than are countries that take a more benign view of inflation.

This is illustrated with the *IS–MP–IRP* framework in Figure 15.9. We look at the Eurozone as a whole. Starting from point *A*, imagine a shock that increases demand, so that the *IS* curve shifts to the right to *IS'*. We know from Chapter 13 that eventually the *IS* curve will move back to its initial position because the euro will appreciate, which will reduce competitiveness and reduce exports while increasing imports. This takes time, however. In the meantime, the logic of the supply curve in Figure 15.6 is that a higher level of activity puts pressure on domestic prices and therefore raises the inflation rate. A country very concerned with inflation will want the common central bank to act according to a steep *MP* schedule. A 'hawkish' ECB will take the economy to point *B*, with little increase in demand. Another country will prefer a 'dovish' ECB that will take the economy to point *C*, tolerating a higher demand and therefore more inflation. Heterogeneous preferences for inflation lead to disagreement on the common monetary policy.

Figure 15.9 Hawks and doves in central banks



Labour markets

A defining characteristic of a monetary union is that external competitiveness must be upheld the hard way – keeping costs and prices low – rather than through recurrent devaluations. Labour costs lie at the heart of this process; Chapter 8 explains the importance of labour market institutions in determining wages and employment. These institutions include the influence of trade unions, the existence and level of a minimum wage, the system of unemployment benefits, rules for dismissals, and so on. Labour market institutions have been built over time, often in response to workers' actions, and are an integral part of a country's social history. Unsurprisingly, they differ widely across countries.

We have repeatedly observed that full price flexibility makes the exchange regime irrelevant. Conversely, price rigidity is the reason why fixing the exchange rate can be a source of serious hardship. Price flexibility, in turn, is only possible if wages are also flexible. A monetary union with full price and wage flexibility would work (almost) without any cost. Labour market differences may result in very different costs of adopting a common currency.

A good example is provided by Figure 15.3. After the crisis, wages in Ireland and Greece had to seriously climb down. This was achieved smoothly, without any major strike, in Ireland. In Greece, resistance was fierce, marked by massive strikes and occasional violence. This is one reason why Ireland quickly recovered from the crisis while it took years for Greece to start its economic recovery.

Deficits and debts

Section 15.2.5 explains how a central bank makes profits through money creation. It turns over its profits, called seigniorage, to its government. Central bank independence is designed to prevent the government from succumbing to the eternal temptation of using this cash machine to plug holes in the budget.

Yet, central bank independence is always fragile, even if it is guaranteed by high-level legislation. Laws can be changed. At the very least, the government can exercise political pressure on a reluctant central bank. This is why every central banker is concerned by budget deficits, for good reason. Since budget deficits are financed by public borrowing, mostly from financial markets, they raise the public debt. The time may come when the debt is so high that it becomes unsustainable. At that stage, the government cannot borrow any more. Historically, money printing then takes over, which invariably leads to run-away inflation.

This is the case in any country and in a monetary union as well, with a twist. In a monetary union, central bank independence is protected by the fact that it faces many governments, which reduces the influence of any one of them. On the other hand, a government may be tempted to let its debt grow in the anticipation that it will somehow be able to absorb a bigger amount of seigniorage, at the cost of slightly higher inflation throughout the union. This calculation involves a host of preferences about deficits, public spending and taxation, inflation and individual behaviour in a collective undertaking.

15.4.6 Solidarity vs. nationalism

The final criterion goes deeper into political considerations. In any country, economic shocks generate political disagreements regarding the proper policy response. The eventual resolution of such disagreements is usually accepted as the price to pay for living together – the natural consequence of statehood. The outcome is ultimately seen as acceptable because citizens of the same country readily accept some degree of solidarity with one another.

When separate countries contemplate the formation of a currency area, they need to realize that there will be times when disagreements will occur and that these disagreements may follow national lines, especially if the shocks are asymmetric or produce asymmetric effects. For such disagreements to be manageable, the people who form the currency union must accept mutual concessions. This will come easily when they share a sense of solidarity. They must have a shared sense of common destiny that outweighs the nationalist tendencies that would otherwise call for intransigent reactions.

Solidarity criterion

When the common monetary policy gives rise to conflicts of national interest, the countries that form a currency area need to accept some costs in the name of a common destiny.

Criticism

In a way, this is obvious. A currency union is not a free ride and costs are bound to arise now and then, when asymmetric shocks occur. One reason to accept occasional costs is that, over time, they are more than compensated for by the benefits from the monetary union. This is the essence of OCA theory. Another reason is that solidarity makes some sacrifices acceptable for the better common good. When the benefits are too diffuse to be fully felt, solidarity becomes essential. This argument is sometimes used to show that a monetary union can only come about after a political union. A political union, it is asserted, creates the necessary sense of solidarity. However, the European experiment challenges this view. It is a bet that solidarity can be achieved across nations.

15.5 Is Europe an optimum currency area?

In principle, the OCA theory should tell us whether it did make sense to establish a monetary union in Europe. As already noted, the answer is most unlikely to be black and white. The benefits are hard to quantify, as are the six OCA criteria, which may be only partly fulfilled. Looking at each of the six OCA criteria, this section distils that rich and unending debate, which has been rekindled by the Eurozone crisis.

15.5.1 Labour mobility

There are always people who move, but do they move enough and as the Mundell criterion wants them to, in response to asymmetric shocks? Do they promptly take advantage of any difference in earnings, and move to where they can earn more? Is moving better than being unemployed? There are many impediments to migration.

Migrants have to consider many economic issues, such as:

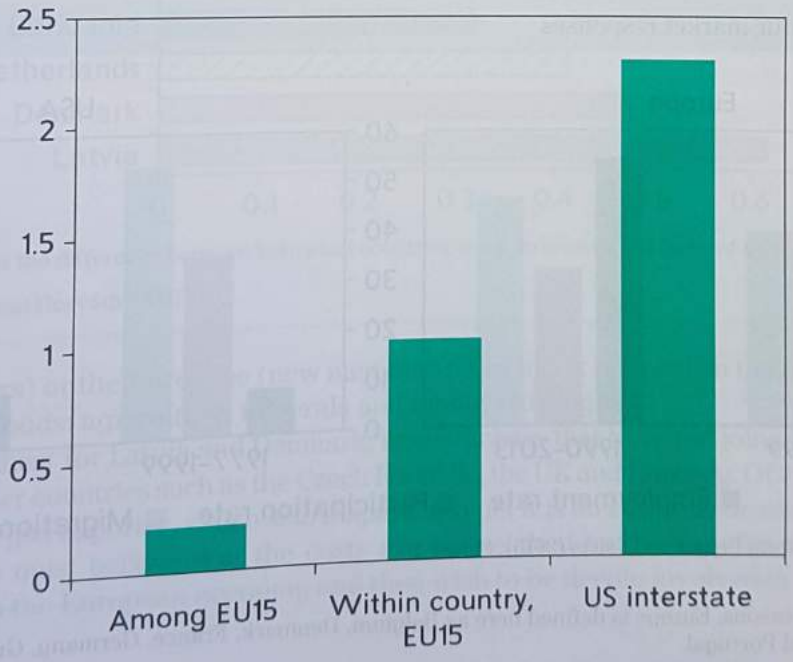
- the cost of moving, possibly including the selling and buying of dwellings;
- the prospect of becoming unemployed, both in the country of origin and in the country of immigration;
- career opportunities, which means not only current but also future earnings;
- family career prospects, including the spouse and children and sometimes even more distant relatives;
- social benefits, including unemployment, health and retirement;
- taxation of earnings from both labour and savings.

Labour mobility is also subject to non-economic incentives, such as:

- cultural differences (language, religion, traditions, possibly racism and xenophobia) in the country considered for immigration;
- family and friendship links that can be weakened;
- commitment to one's country of origin (nationalism).

For these reasons, labour mobility can only be limited. A natural approach is to compare Europe with existing, well-functioning currency areas, such as the USA. Figure 15.10 shows that mobility across countries is considerably lower in Europe than in the USA. This is not really surprising; moving across countries entails many of the difficulties listed above. What is more telling is to observe that mobility within countries remains much smaller in Europe.

Figure 15.10 Labour mobility in Europe and the USA, 2008



Note: Mobility is measured as the proportion of the population that has moved from another country in Europe, from another state in the USA. The EU15 refers to the 15 members of the Eurozone in 2008.

Source: Based on data from European Commission, *Geographic Mobility in the European Union*, Directorate for Employment, Social Affairs and Equal Opportunities, April 2008.

Why do Europeans move so little? Across countries, there are many reasons, some obvious such as language and tradition, others less well appreciated, such as health insurance, retirement pension systems or the fact that housing tends to be more expensive and the housing market less fluid in Europe than in the USA. But within countries? Cultural issues and welfare protection – which alleviates the pain of unemployment – seem to matter.

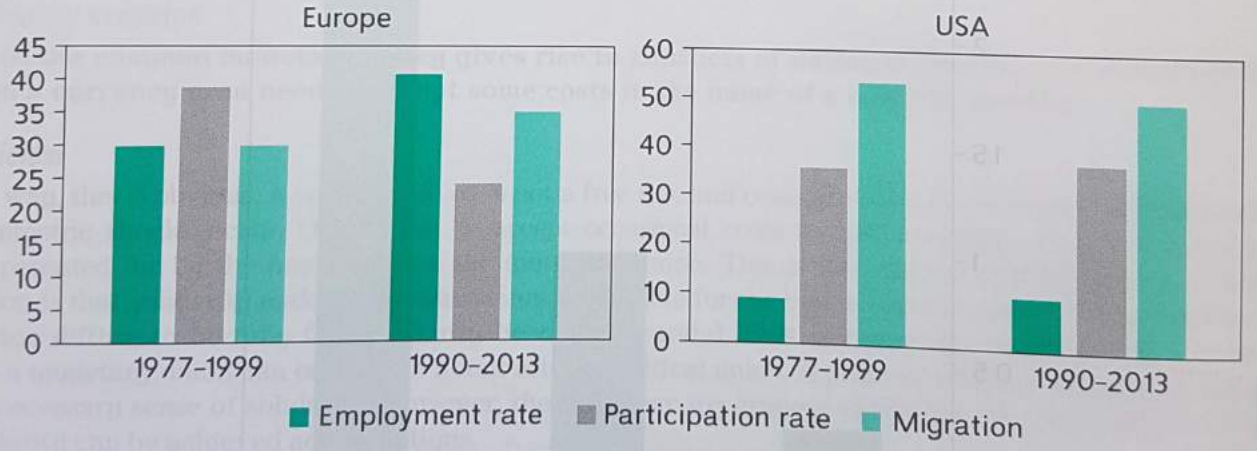
Low migration by European nationals could be compensated by immigration from outside the EU.[6] If immigrant workers were to move to where job offers exceed supply, some of the costs of a monetary union would be reduced. Even viewed this way, immigration – a big political issue in Europe – is relatively limited in Europe, as shown in Chapter 8.

In summary, Europe is far from fulfilling the labour mobility criterion. An important implication is that asymmetric shocks, when they occur, are likely to be met by unemployment in countries facing a loss of competitiveness. Box 15.8 reports that, indeed, when asymmetric shocks occur, migration plays a smaller role in Europe than in the USA, with the unfortunate result that employment takes most of the burden.

Box 15.8 The effects of asymmetric shocks in Europe and the USA

A study by Breyer and Smets (2015) compares how changes in employment required by an asymmetric shock work out in Europe[1] and in the USA. In Europe, the shock affects a country while in the USA it affects one of the 51 states. The study considers a shock that results in the creation of new jobs over five years. These jobs can be filled by a reduction in unemployment, by inactive people who decide to join the labour force, and by migration. Figure 15.11 shows the evolution of the employment rate, which is defined here as the opposite of the unemployment rate; the participation rate, which is the proportion of working-age people who are either employed or unemployed (leaving out those who are inactive); and migrant workers.[2] All three margins play a role but migration is clearly more important in the USA than in Europe. Interestingly, the study distinguishes periods before and after the creation of the euro. Europeans have become more mobile in the second period while Americans moved less. Europe is becoming a bit more of an OCA and the USA a bit less.

Figure 15.11 Labour market responses



Source: Based on data from Breyer and Smets (2015), Figure 4.

[1] For data availability reasons, Europe is defined here as Belgium, Denmark, France, Germany, Greece, Italy, Ireland, the Netherlands, Spain and Portugal.

[2] Box 8.1 defines employment, unemployment and participation rates.

15.5.2 Diversification and trade dissimilarity

The Kenen criterion rests on the idea that asymmetric shocks are less likely among countries that share similar production patterns and whose trade is diversified. Figure 15.12 presents an index of dissimilarity within European trade. The index looks at how each country's trade structure differs from the situation in

[6] See Chapter 8 for an analysis of immigration.

Figure 15.12 Trade dissimilarity index

Note: The index measures the difference between individual countries' trade structures and those of their partners.

Source: Based on data from Horváth (2007).

Germany (old members) or the Eurozone (new members). The index is based on the decomposition of trade into three classes of goods: agriculture, minerals and manufacturing.

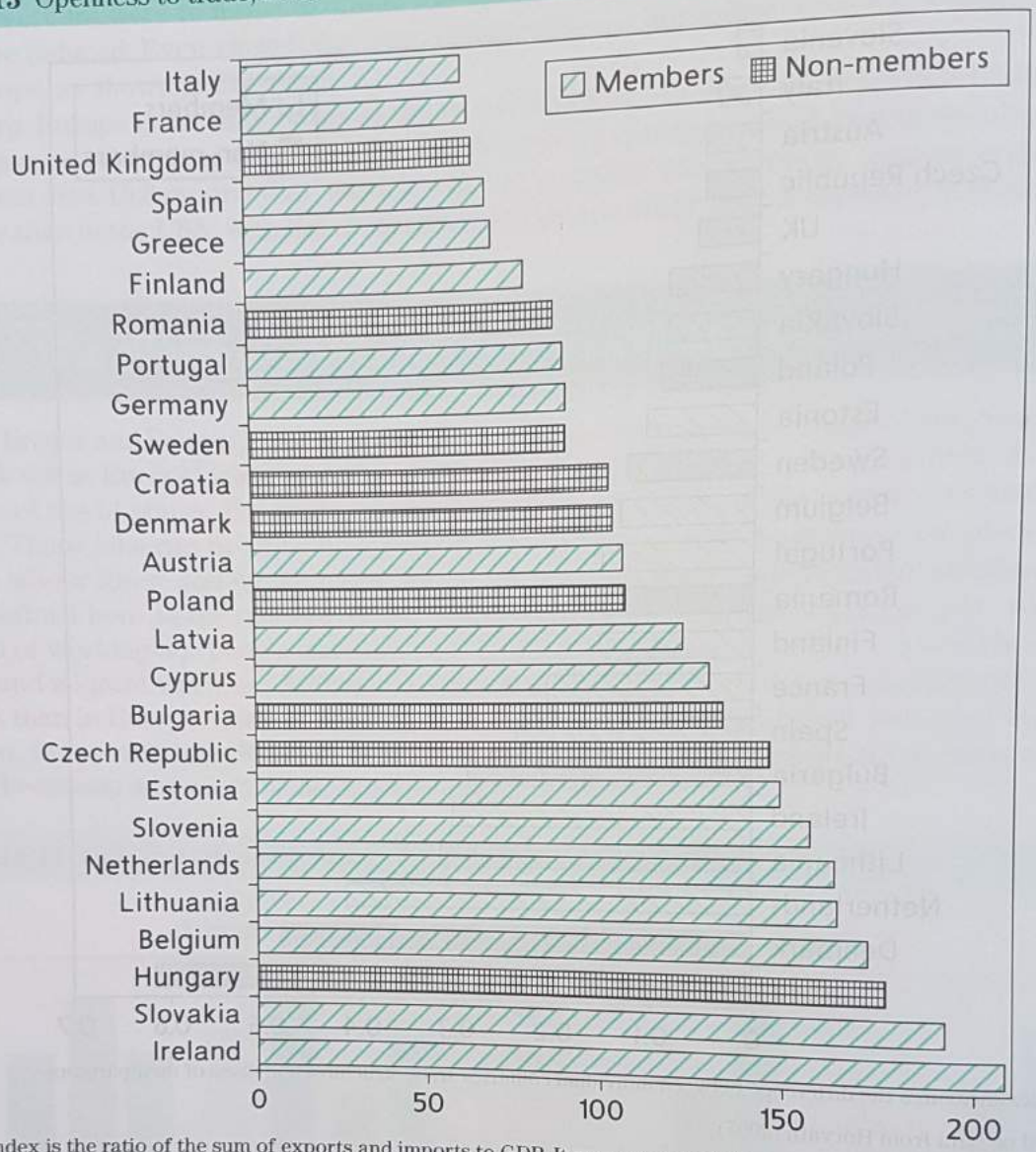
Dissimilarity is highest for Latvia and Denmark, two countries that have not joined the Eurozone, but it is also low for non-member countries such as the Czech Republic, the UK and Hungary. Of interest is the case of the Netherlands, a natural gas exporter, which sets it apart, and yet it is an enthusiastic member of the Eurozone. The Dutch authorities must believe that the costs are outweighed by the benefits since their economy is deeply integrated with the European economy and they wish to be deeply involved in European integration.

15.5.3 Openness

Openness, which may reduce the usefulness of an independent exchange rate, is usually defined as the share of economic activity devoted to international trade. The ratio of exports to GDP measures the proportion of domestic production that is exported. The ratio of imports to GDP measures the proportion of domestic spending that falls on imports. The openness index presented in Figure 15.13 sums up both (and therefore can go beyond 200 per cent). Most European countries are very open, the more so the smaller they are, which explains why the smaller countries have traditionally been the most enthusiastic supporters of the monetary union. This applies to both old and new EU member countries.

As far as the McKinnon criterion is concerned, most EU economies qualify for joining a monetary union. They are very open and well integrated within Europe.

Figure 15.13 Openness to trade, 2018



Note: The index is the ratio of the sum of exports and imports to GDP. It may exceed 200% as some imports are re-exported and therefore double-counted. Luxembourg (433%) and Malta (240%) are excluded.

Source: Based on data from AMECO, European Commission.

15.5.4 Fiscal transfers

Up until the debt crisis, there was no cyclical transfer system in the EU. The EU budget is small, slightly above 1 per cent of GDP, and almost entirely spent on three items: the Commission's operating expenses, the Common Agricultural Policy and the Structural Funds which support the poorer regions irrespective of whether they are hit by shocks. The crisis has led to the creation of the European Financial Stability Facility (EFSF), transformed into the European Stability Mechanism (ESM), as explained in Chapter 19. Initially designed specifically to deal with public debt crises, the EMS can also be used for bank recapitalization. It may evolve over time to deal with a wider set of disturbances. On this criterion, Europe is definitely not an optimum monetary union, although a first small step has been taken and other schemes are being debated.

15.5.5 Homogeneous preferences

Do all countries share similar views about the use of monetary policy? On the basis of past inflation rates, this does not seem to be the case. Low-inflation Germany and formerly high-inflation Italy or Greece have very little in common. Similarly, looking at public debt (Chapter 18), a gulf separates European countries'

approaches to fiscal policy. So, is the verdict negative? It may be too early to tell but the crisis shows that these concerns are real.

Why has the quality of macroeconomic policies been so diverse in Europe? Is it in the genes? Medical research has not yet revealed any clues! But economic research has a lot to say about the incentives facing policymakers. Broadly defined, political institutions shape their reactions to various events, and policymaking institutions differ from one country to another. This includes the respective roles of the executive and the parliament, the number of political parties and trade unions, the role of ideology and much more.

The solution has been to accompany integration steps with the setting up of common institutions. In fact, one reason why the inflation-prone countries have been eager to join the monetary union is that it provides for a degree of monetary policy discipline that has been elusive in the past. As far as the single currency is concerned, Chapter 17 shows that a key preoccupation has been to guarantee macroeconomic stability. The European Central Bank is strongly independent and constitutionally committed to price stability. National deficits are bound by an excessive deficit procedure. Still, although all countries are increasingly operating under common institutions, they do not fully share the same views on each and every issue that arises.

The result is occasional friction among governments and a sense of estrangement expressed in public opinion, which was particularly visible when the Constitution was rejected in the spring of 2005. More seriously, these divergences have been on public display during the debt crisis. As recounted in Chapter 19, they explain the inadequacy of policy responses.

We can conclude that there remains some heterogeneity among national preferences. This criterion is only partly fulfilled.

15.5.6 Solidarity vs. nationalism

How deeply do European citizens feel a sense of solidarity? Put differently, to what extent are they willing to give up elements of national sovereignty in the pursuit of common interest? There is no simple, uncontroversial way to measure the willingness of European citizens. An indication is given in Figure 15.14, however, based on the results of opinion polls that asked respondents whether they felt they were European citizens. Country by country, the figure shows the proportion of people who answered 'yes, definitely' in 2010 and 2018. Clearly, enthusiastic European citizenship is not a widely felt sentiment. Interestingly, in most countries, the percentage has declined since the onset of the Eurozone crisis in 2010. A larger number of people indicated that they felt they were European citizens 'to some extent'. Together, these two groups represent a majority of respondents in every single country. For the whole of the EU, they represent 70 per cent of respondents in 2018, up from 62 per cent in 2010. While these results suggest that the anti-Europe sentiment is not as widespread as is sometimes asserted, it does not bode well for far-reaching solidarity.

The European debt crisis offers a real-life test of this question. As Chapter 19 explains, the initial reaction to the Greek debt crisis was to extend collective support, very explicitly in the name of solidarity. As the crisis deepened, however, nationalistic sentiments started to be expressed. According to Reuters, the German newspaper *Bild* 'lambasted Greece as a nation of lazy cheats who should be "thrown out of the euro on their ear"'. To which slur some Greek deputies responded: 'By their statements, German politicians and German financial institutions play a leading role in a wretched game of profiteering at the expense of the Greek people.'[7]

All in all, Europe is not scoring very highly on this criterion; neither, however, is it failing badly.

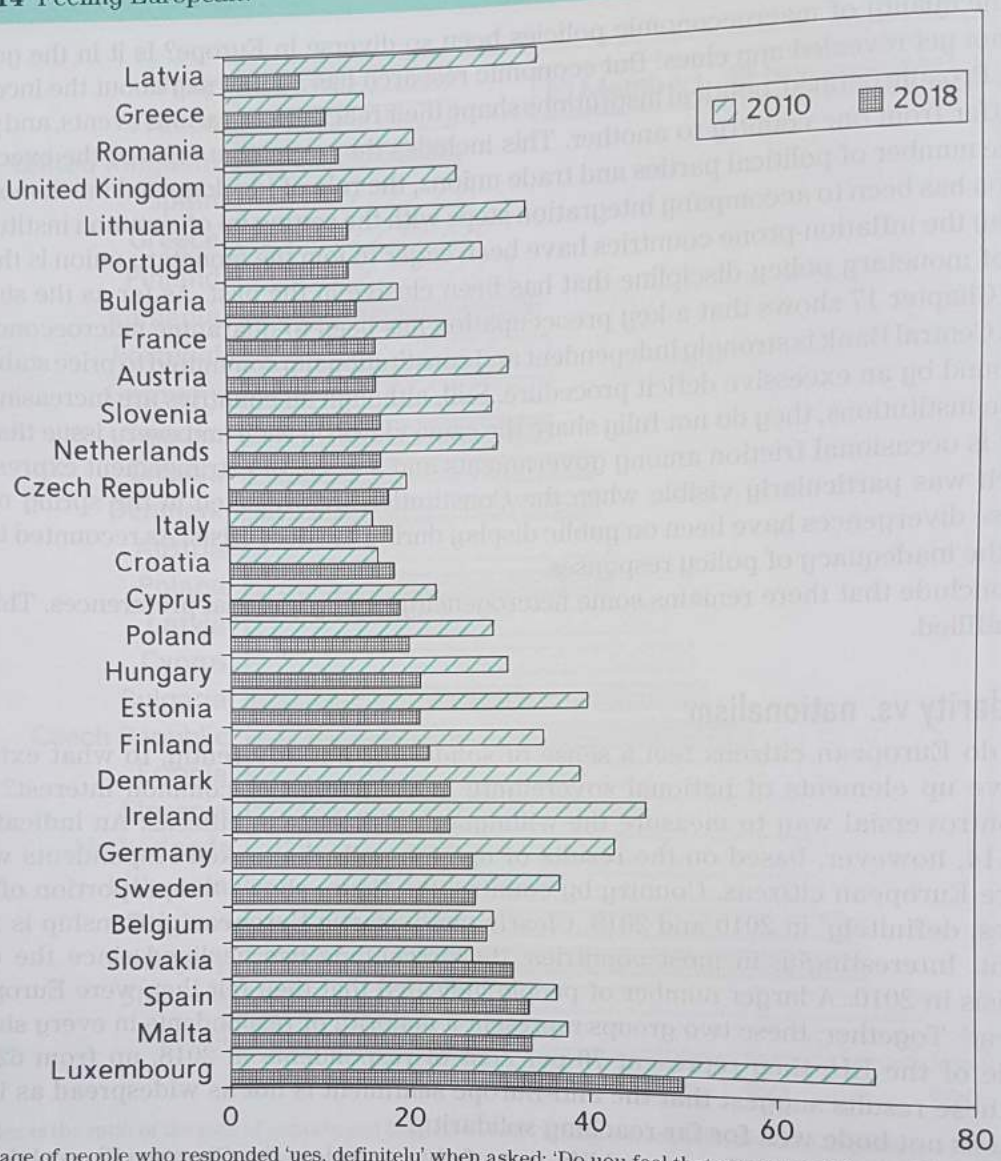
15.5.7 So, is Europe an optimum currency area?

In the end, most European countries do well on openness and diversification, two of the three classic economic OCA criteria, and fail on the third, labour mobility. Europe also fails on fiscal transfers, with an unclear verdict on the remaining two political criteria. Table 15.1 summarizes this appraisal. The mixed performance that it reveals can be interpreted in two ways.

First, the table explains why the single currency project has been and remains controversial. Neither the supporters nor the opponents have been able to produce an overwhelming case. That was only to be expected, however. A monetary union entails costs and benefits, neither of which can be measured nor

[7] http://www.reuters.com/article/2010/02/18/greece-germany-idUSLDE61H1IZ20100218.

Figure 15.14 Feeling European?



Note: Percentage of people who responded 'yes, definitely' when asked: 'Do you feel that you are a citizen of the EU?' The other possible answers were: 'yes to some extent', 'no, not really', 'no, definitely not' and 'don't know'.

Source: Based on data from Eurobarometer (http://ec.europa.eu/public_opinion/cf/index.cfm).

Table 15.1 OCA scorecard

Criterion	Satisfied?
Labour mobility	No
Trade openness	Yes
Product diversification	Yes
Fiscal transfers	No
Homogeneity of preferences	Partly
Commonality of destiny	?

even compared. The OCA criteria themselves are not clear-cut. They are unlikely to be entirely satisfied or entirely violated. Ultimately, the economic case is undecided, and the decision to create the monetary union must rest on political considerations.

Second, the partial fulfilment of the OCA criteria implies that, given that the decision to go ahead has been taken, costs will have to be borne. The OCA theory identifies these costs and suggests two main conclusions: the costs will mainly arise in the labour markets and fiscal transfers will have to be rethought. It is sometimes argued that the Eurozone crisis is proof that Europe is not an optimum currency area. That, we knew. The crisis rather reminds us that asymmetric shocks do happen and that they can be painful. This is the fate of every large monetary union, as Box 15.1 reminds us.

15.6 Is Europe becoming an optimum currency area?

The degree of fulfilment of the six OCA criteria is not a given, it may change over time. A puzzling question is whether, because it exists, a currency area that is not an OCA can become one? This possibility is called the endogeneity of the OCA criteria. This is a logical possibility. The fact that some criteria are not well satisfied implies that asymmetric shocks will be painful. The pain itself may change countries and people.

15.6.1 Labour markets and mobility

European labour mobility is low but the crisis has shown that it can increase in dramatic circumstances. Spanish engineers and Greek physicians have moved in large numbers to Germany and some may not return. Yet, these are highly specialized professions. Few expect labour mobility to increase dramatically in the near future. An alternative to mobility is labour market flexibility. European labour markets are noticeably less flexible than their US counterparts. For example, in the USA firms are quite free to fire workers when economic conditions worsen, whereas in most Eurozone countries firing is costly because it entails severance pay and adherence to numerous regulations. In addition, US unemployed workers receive less generous welfare support, which encourages them to find and accept another job as soon as possible, sometimes elsewhere in the country, possibly less well paid and in a different activity. Can the loss of the exchange rate encourage reforms in this area?

One possibility is that the single currency increases the costs involved in the 'European way' and reduces opposition to measures that aim at making labour markets more flexible. When each country had its own currency, workers advocated using monetary policy and the exchange rate to boost the economy. This is now impossible, at least at the national level, and to date there are no pan-European trade unions. In addition, the increasing transparency in goods prices should benefit countries where labour markets are more flexible. Thus competition on the goods markets could lead to competition among national welfare programmes. The opposite, a hardening of labour market rigidities, is possible too. Advocates of a high degree of labour protection emphasize the need for a 'Social Europe' alongside an 'Economic Europe', including the adoption of Union-wide minimum standards.

Since the creation of the euro, a number of countries, including Germany, France, Italy and Spain, have reformed their labour markets. Most of these reforms have been implemented after the Eurozone crisis. With the return of quiet times, the verdict remains wide open,

15.6.2 Effects on trade and specialization

The trade openness and diversification criteria were reasonably well fulfilled. The endogeneity assumption suggests that operating within a monetary union may further enhance both. Indeed, many European policymakers strongly believe that stable exchange rates promote trade integration.

When the monetary project was initially mooted, this issue was intensely debated. Policymakers were understandably keen to promote the view that intra-Eurozone trade would quickly deepen, and they may well have oversold the case. A body of economic research, reviewed in Box 15.9, backed this view. While the results back the hypothesis that a common currency deepens trade links, the magnitude of the effect remains controversial.

While the McKinnon criterion may be increasingly satisfied, there is some uncertainty about the Kenen criterion. In theory, more trade integration may enhance or reduce diversification. Trade may lead to more specialization if each country or region focuses on its comparative advantage, If, instead, trade integration

Box 15.9 The Rose and border effects

Andrew Rose, from the University of California at Berkeley, initially found that trade within a pair of countries that belong to a currency area is three times larger than trade within otherwise similar countries (Rose 2000). Another approach has been to look at trade in border areas. Engel and Rogers (1996) focused on the border between the USA and Canada. They observed that the prices of the same goods in different cities become increasingly different the further apart are the cities. Their calculations imply that just crossing the border has the same effect as travelling 3000 km within the same country. Further work has shown that, among the various reasons why borders matter, the fact that currencies differ plays a powerful role. A recent reappraisal by Glick and Rose (2016) concluded that trade grows by 50 per cent after the adoption of a common currency.

These effects are huge, so huge that they are unbelievable. A large literature has explored the robustness of these results. Reviewing the Rose effect, Baldwin et al. (2008) conclude that, so far, the euro has probably increased trade by some 5 per cent. This is much smaller than initially found, yet it remains a significant effect and the process is likely to be unfolding, often by drawing small firms into external trade. The same study also attributes to the common currency an increase in cross-border investments and mergers and acquisitions. This means that firms increasingly operate by assembling parts manufactured in different countries.

takes the form of intra-industry trade, then diversification increases. This would occur if exports and imports include increasingly similar goods. In that case, every country produces the whole range of goods, simply with different brands, offering customers more choice. The jury is still out, but the evidence accumulated so far seems to support the view that diversification increases with trade integration. In that case, the Eurozone is becoming more of an OCA.

15.6.3 Fiscal transfers

In a previous edition of this book we wrote: 'There is at present no political support for established extensive and automatic intra-European transfers, but proposals regularly surface. . . . It is reasonably certain that, in the not-too-distant future, Europe will have adopted some form of transfer scheme.' The crisis has brought the issue to the forefront. An emergency transfer mechanism has been created, as explained in Chapter 19. Non-emergency schemes are being hotly debated. The European monetary union has taken steps towards becoming more of an OCA.

15.6.4 Politics: preferences and common destiny

Given that Europe does not check all the boxes of an optimum currency area, it is natural therefore to ask why the European heads of state and government who gathered in Maastricht in 1991 still decided to take the risk to adopt a common currency. The answer is: politics.[8] Interestingly enough, Harvard economist Martin Feldstein, a sharp critic of the single currency, sees it as a source of conflict:

> *Political leaders in Europe seem to be prepared to ignore these adverse consequences because they see EMU as a way of furthering the political agenda of a federalist European political union. . . . The adverse economic effects of EMU and the broader political disagreements will nevertheless induce some countries to ask whether they have made a mistake in joining. Although a sovereign country could in principle withdraw from the EMU, the potential trade sanctions and other pressures on such a country are likely to make membership in EMU irreversible unless there is widespread economic dislocation in Europe or, more generally, a collapse of peaceful coexistence within Europe.*
>
> Feldstein (1997, p. 41)

[8] For a detailed discussion, see the exchange between Feldstein (1997) and Wyplosz (1997) in the *Journal of Economic Perspectives*.

In Feldstein's view, the euro is not only unjustified on economic grounds (it is not an OCA) but its survival will require a major step towards a federal Europe, including common defence and foreign policies as well as a generalized harmonization of taxation and labour market regulations. In every member country of the Union, a large number of people are adamant in their desire to preserve the nation-state.

Indeed, political considerations have been paramount in launching the euro. It is fair to say that the political leaders who agreed on the monetary union did not consider the OCA theory at all (see Box 15.10). They were largely focusing on the symbolic nature of the undertaking. Precisely because money and statehood are intertwined, their intention was to move one step further in the direction of an 'ever-closer union'.

The Eurozone crisis has revealed the dangers of overlooking the OCA principles. Labour mobility has increased, but it has affected mostly highly qualified professionals; less qualified workers were left out in the cold. Crucially, political criteria have suddenly taken centre stage. Countries have taken opposing views on what the ECB should do. Crisis-hit countries have clamoured for transfers, but the better-off countries have offered only loans that add to existing debts. The migration crisis has generated further acrimony. Countries have criticized one another, sometimes fiercely. This has led to open debate about whether Europe really has a *common* destiny. The popularity of anti-Europe parties has surged in virtually every country, even those outside the Eurozone, such as most of Central and Eastern Europe. Brexit is another signal, even if it does not concern the monetary union proper.

15.7 Summary

The OCA theory seeks to determine over what geographic area it is desirable to establish a single currency. The key insight is that the usefulness of money grows with the size of the area but costs arise when the area becomes too diverse.

Diversity matters mostly because it is a source of asymmetric shocks. In the presence of price and wage rigidity, however, the exchange rate can be a powerful instrument to deal with shocks. This is why giving up the exchange rate can be costly. The OCA theory asks what characteristics may either reduce the incidence of asymmetric shocks or take the edge off them.

The logic of OCA theory is summarized in Figure 15.15. The first question is whether asymmetric shocks are likely to occur often enough, and strongly enough, to be a serious concern. If the answer is negative, the cost of adopting a common currency is low. The McKinnon and Kenen criteria provide the answer. The McKinnon criterion says that the exchange rate is of limited use if the countries are very open. The Kenen criterion concludes that countries that produce and trade a wide range of similar goods are unlikely to face asymmetric shocks on a frequent basis.

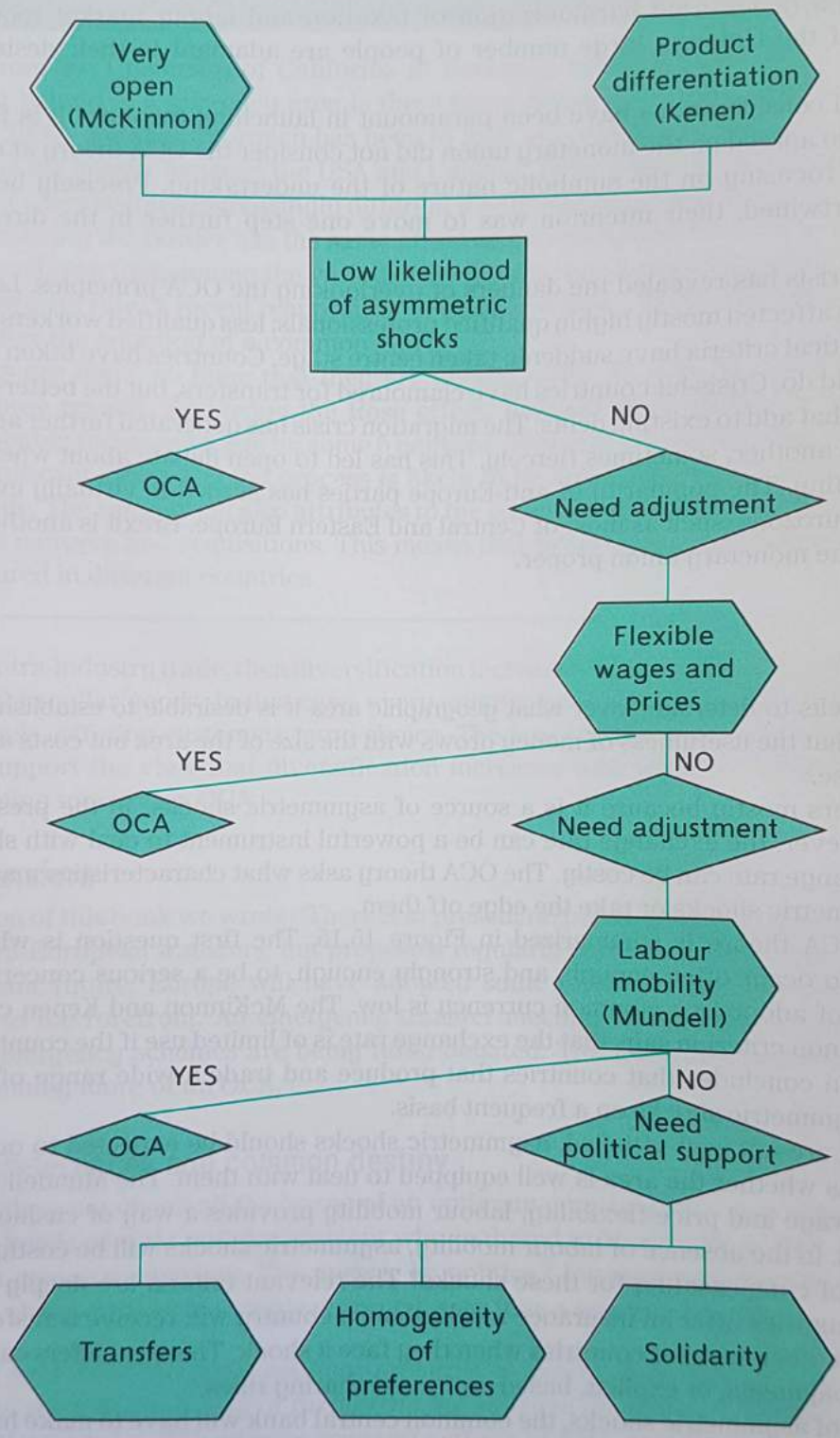
If these criteria are not well satisfied, asymmetric shocks should be expected to occur now and then. The next question is whether the area is well equipped to deal with them. The Mundell criterion says that, in the absence of wage and price flexibility, labour mobility provides a way of cushioning the impact of asymmetric shocks. In the absence of labour mobility, asymmetric shocks will be costly.

Is there a way of compensating for these shocks? The relevant criteria are deeply political. Financial transfers among countries offer an insurance mechanism; a country will receive transfers when adversely hit, and will support other member countries when they face a shock. These transfers can be automatic, via taxes and welfare payments, or explicit, based on formal sharing rules.

In the presence of asymmetric shocks, the common central bank will have to make hard choices. It must decide how it caters to the varied needs of individual member countries. This is bound to be a controversial decision, which can sap support for the common currency unless a common ground can be found. Support for the central bank will be more likely if there is broad agreement on its aims, that is, if policy preferences are reasonably homogeneous, and if there is a sense of solidarity across the currency area, that is, if the costs are accepted because 'we are in the same boat'.

Fulfilment of the OCA criteria is generally not black or white. It is unlikely, therefore, that several independent countries can be identified as forming an optimal currency area. In the end, some judgement must be passed on how to balance the important benefits of a common currency and the potentially severe costs of giving up national monetary policy. In addition, adopting a common currency may trigger changes

Figure 15.15 The logic of OCA theory



that enhance the degree of satisfaction of the criteria. The degree to which the OCA criteria are satisfied could well be endogenous.

Europe does well on three criteria: openness, diversification and homogeneity of preferences. It does not pass the labour mobility and fiscal transfer conditions.

Self-assessment questions

1 Reconsider Figure 15.7 but now examine the case of a positive demand shock. Carefully interpret your results.
2 What happens in Figure 15.7 if prices are perfectly flexible in country A but rigid in country B?
3 What happens in Figure 15.7 if prices are perfectly flexible in country B but rigid in country A?
4 Imagine that country A in Figure 15.7 is hit by a shock that negatively affects productivity so that the supply curve shifts to the left (for instance, a sharp drop in public or private investment or a devastating earthquake). What happens in each country?
5 In Figure 15.7 the demand shock originates from outside the currency union. Draw the case when the shock takes the form of a shift in demand away from country A's goods and towards country B's goods.
6 The labour mobility criterion implicitly assumes that the labour force is homogeneous, which is not the case as workers are most often specialized. How should this criterion be refined?
7 In Figure 15.4 an adverse asymmetric shock is met by a depreciation. What does the size of the depreciation depend upon?
8 Trade increases among two countries can take two forms: each country becomes more specialized and therefore exports and imports different goods (e.g. France sells wine and Germany sells beer), or both countries compete more directly on similar goods (e.g. France and Germany sell cars to each other). How do these alternatives affect the OCA criteria?
9 The new Member States are likely to be affected by the Balassa–Samuelson effect presented in Chapter 13. What does this imply for their inflation rates once they join the Eurozone?
10 Why are transfers among countries acting as an insurance?

Essay questions

1 Could immigration be a solution to the labour immobility problem?
2 Can you imagine other regions in the world that could also adopt a common currency?
3 You are given the task of designing a transfer system to cope with asymmetric shocks within the Eurozone. Consider both how to collect and how to spend these resources.
4 'Admission of more countries into the Eurozone is likely to increase the risk of asymmetric shocks.' Comment.
5 Are business cycles and economic structures compatible so that we and others could live comfortably with euro interest rates on a permanent basis?
6 If problems emerge, is there sufficient flexibility to deal with them?
7 Would joining the EMU create better conditions for firms making long-term decisions to invest in the UK?
8 What impact would entry into the EMU have on the competitive position of the UK's financial services industry, particularly the City's wholesale markets?
9 In summary, will joining the EMU promote higher growth, stability and a lasting increase in jobs?
10 Would the EMU benefit from more members?
11 Write a fictional story in which the EMU is dissolved. Carefully explain each step in the process.
12 Imagine that you are the governor of the central bank of Poland (or Hungary or the Czech Republic). Would you be for or against your country adopting the euro?

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An advanced treatment of the OCA theory:

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Mongeli, F.P. (2002) *New Views on the Optimum Currency Area Theory: What is EMU Telling Us?*, Working Paper 138, ECB, April, https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp138.pdf.

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