

Part I

Costs and Benefits of Monetary Union

Chapter 1

The Costs of a Common Currency

Introduction

The costs of a monetary union derive from the fact that when a country relinquishes its national currency, it also relinquishes an instrument of economic policy, i.e. it loses the ability to conduct a national monetary policy. In other words, in a full monetary union the national central bank either ceases to exist or will have no real power. This implies that a nation joining a monetary union will not be able any more to change the price of its currency (by devaluations and revaluations), to determine the quantity of the national money in circulation, or to change the short-term interest rate.

One may raise the issue here of what good it does for a nation to be able to conduct an independent monetary policy (including changing the price of its currency). There are many situations in which these policies can be very useful for an individual nation. The use of the exchange rate as a policy instrument, for example, is useful because nations are different in some important senses, requiring changes in the exchange rate to occur. In the next section we analyse some of these differences that may require exchange rate adjustments. In later sections we analyse how the loss of monetary independence may be costly in some other ways for an individual nation.

The analysis that follows in this chapter is known as the ‘theory of optimum currency areas’. This theory which has been pioneered by Mundell (1961), McKinnon (1963), and Kenen (1969) has concentrated on the cost side of the cost-benefit analysis of a monetary union.¹

1 Shifts in demand (Mundell)

Consider the case of a demand shift developed by Mundell (1961) in his celebrated article on optimum currency areas.² Let us suppose first that two countries which we call France and Germany form a monetary union. By that we mean that they have abandoned their

¹ For surveys of this literature see Ishiyama (1975), Tower and Willett (1976), and Mongelli (2002).

² See Mundell (1961).

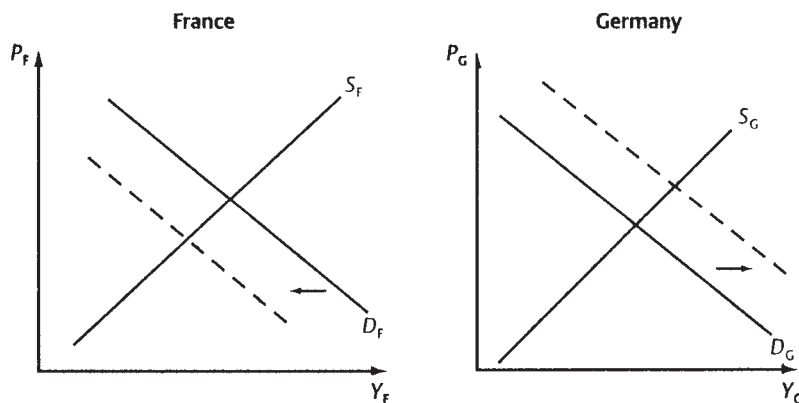


Figure 1.1 Aggregate demand and supply in France and Germany

national currency and use a common currency, the euro, which is managed by a common central bank, the ECB. Let us assume further that for some reason consumers shift their preferences away from French-made to German-made products. We present the effects of this asymmetric shock in aggregate demand in Fig. 1.1.

The curves in Fig. 1.1 are the standard aggregate demand and supply curves in an open economy of most macroeconomics textbooks.³ The demand curve is the negatively sloped line indicating that when the domestic price level increases the demand for the domestic output declines.⁴

The supply curve expresses the idea that when the price of the domestic output increases, domestic firms will increase their supply, to profit from the higher price. These supply curves therefore assume competition in the output markets. In addition, each supply curve is drawn under the assumption that the nominal wage rate and the price of other inputs (e.g. energy, imported inputs) remain constant. Changes in the prices of these inputs will shift these supply curves.

The demand shift is represented by an upward movement of the demand curve in Germany, and a downward movement in France. The result is that output declines in France and that it increases in Germany. This is most likely to lead to additional unemployment in France and a decline of unemployment in Germany.

Both countries will have an adjustment problem. France is plagued with reduced output and higher unemployment. Germany experiences a boom which also leads to upward pressures on its price level. The question that arises is whether there is a mechanism that leads to automatic equilibration.

The answer is positive. There are two mechanisms that will automatically bring back equilibrium in the two countries. One is based on wage flexibility, the other on the mobility of labour.

³ See Dornbusch and Fischer (1978) or Parkin and Bade (1988).

⁴ This is the substitution effect of a price increase. In the standard aggregate demand analysis, there is also a monetary effect: when the domestic price level increases, the stock of real cash balances declines, leading to an upward movement in the domestic real interest rate. This in turn reduces aggregate demand (see De Grauwe, 1983). Here we disregard the monetary effect and concentrate on the substitution effect.

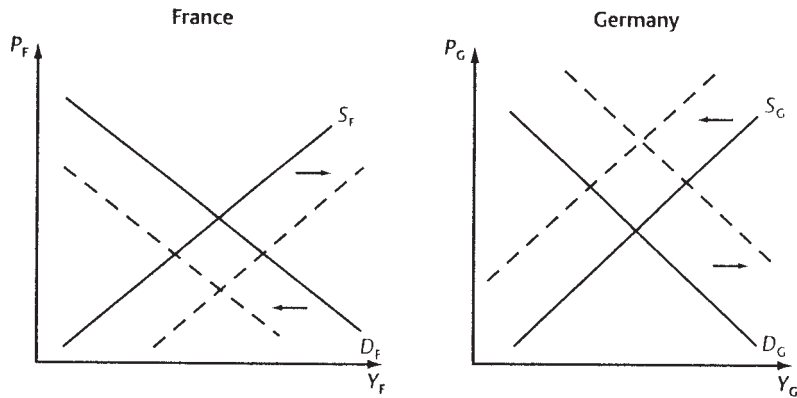


Figure 1.2 The automatic adjustment process

1 *Wage flexibility.* If wages in France and Germany are flexible the following will happen. French workers who are unemployed will reduce their wage claims. In Germany the excess demand for labour will push up the wage rate. The effect of this adjustment mechanism is shown in Fig. 1.2. The reduction of the wage rate in France shifts the aggregate supply curve downwards, whereas the wage increases in Germany shift the aggregate supply curve upwards. These shifts tend to bring back equilibrium. In France the price of output declines, making French products more competitive, and stimulating demand. The opposite occurs in Germany.

Note also that the second-order effects on aggregate demand will reinforce the equilibrating mechanism. The wage and price increases in Germany make French products more competitive. This leads to an upward shift in the French aggregate demand curve. Similarly, the decline in French costs and prices makes German products less competitive and shifts the German aggregate demand curve downwards.

2 *Mobility of labour.* A second mechanism that will lead to a new equilibrium involves mobility of labour. The French unemployed workers move to Germany where there is excess demand for labour. This movement of labour eliminates the need to let wages decline in France and increase in Germany. Thus, the French unemployment problem disappears, whereas the inflationary wage pressures in Germany vanish.

Thus, in principle the adjustment problem for France and Germany will disappear automatically if wages are flexible, and/or if the mobility of labour between the two countries is sufficiently high. If these conditions are not satisfied, however, the adjustment problem will not vanish. Suppose, for example, that wages in France do not decline despite the unemployment situation, and that French workers do not move to Germany. In that case France is stuck in the disequilibrium situation as depicted in Fig. 1.1. In Germany, the excess demand for labour puts upward pressure on the wage rate, producing an upward shift of the supply curve. The adjustment to the disequilibrium must now come exclusively through price increases in Germany. These German price increases make French goods more competitive again, leading to an upward shift in the aggregate

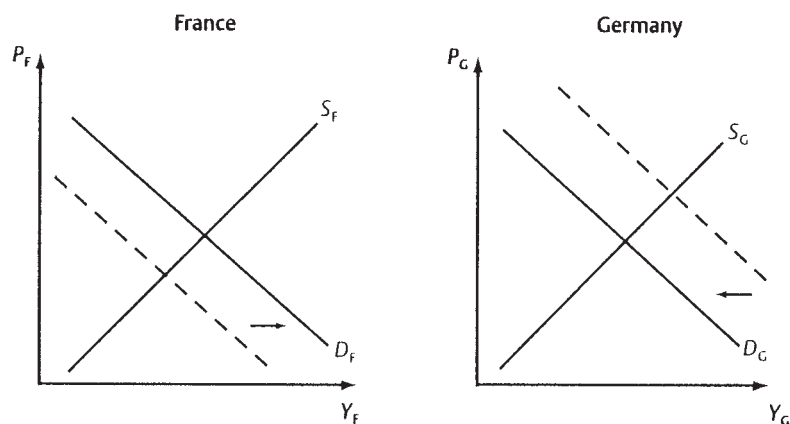


Figure 1.3 Effects of a revaluation of the DM

demand curve in France. Thus, if wages do not decline in France the adjustment to the disequilibrium will take the form of inflation in Germany.

What would have happened if the two countries had not been in a monetary union? In that case they would have been free to use their national monetary policy tools to adjust to the asymmetric shocks. In particular, France would have been able to devalue the franc against the mark. The effects of this exchange rate adjustment are shown in Fig. 1.3. The devaluation of the franc increases the competitiveness of the French products. This shifts the French aggregate demand curve upwards. In Germany the opposite occurs. The revaluation of the mark reduces aggregate demand in Germany, so that the demand curve shifts back to the left.

The effects of these demand shifts is that France solves its unemployment problem, and that Germany avoids having to accept inflationary pressures. This remarkable feat is achieved using just one instrument. (The reader may sense that this is too good to be true. And indeed it is. However, for the moment we just present Mundell's theory. We come back later with criticism.)

In contrast, when France is part of a monetary union with Germany it relinquishes control over its exchange rate. If it is saddled with a sustained unemployment problem, that can only disappear by deflation in France. In this sense we can say that a monetary union has a cost for France when it is faced with a negative demand shock. Similarly, Germany will find it costly to be in a monetary union with France, because it will have to accept more inflation than it would like.

Let us recapitulate the main points developed in this section. If wages are rigid and if labour mobility is limited, countries that form a monetary union will find it harder to adjust to asymmetric demand shifts than countries that have maintained their own national money and that can devalue (revalue) their currency. In the latter case, the exchange rate adds some flexibility to a system which is overly rigid. Put differently, a monetary union between two or more countries is optimal if one of the following conditions is satisfied: (a) there is sufficient wage flexibility, (b) there is sufficient mobility of labour.

From this analysis one might be tempted to conclude that the conditions for forming a monetary union between, say, France and Germany are most probably not satisfied. This would, however, be too rash a conclusion. The analysis is not complete. We have to add another dimension, which has to do with insurance. This we do in the next section.

2 Monetary union and insurance against asymmetric shocks

When countries are hit by asymmetric shocks it is important not only that there is flexibility and mobility in the labour markets, but also that there are mechanisms in place that allow for income transfers to those countries, so as to alleviate the pain of the shock to the residents of these countries. In the absence of such insurance mechanisms the costs of a monetary union may become high. Thus in the scenario illustrated in Fig. 1.1 where France is hit by a negative demand shock and Germany by a positive one, a transfer of income from Germany to France would certainly alleviate the French economic problem. The issue, however, is how such a transfer can be organized. The answer is not obvious because this transfer must also be in the interest of Germany. It is not evident a priori that Germany will voluntarily transfer income to France.

Before discussing the different insurance schemes it is useful to formulate an important principle that should guide these schemes. This is that the income transfers should not prevent the adjustment mechanism (through wage changes and mobility) from operating. If transfers have this effect, the receiving country is saddled by permanent disequilibria, and the transfer obtains a permanent character. In the end such an insurance scheme would become unsustainable. This problem is especially important when the asymmetric shock is permanent, as in the case presented in Fig. 1.1, where consumers change their preferences in favour of German goods and away from French goods. In this case, a system of transfers from Germany to France risks reducing the pressure on France to adjust wages so as to eliminate the disequilibrium. This is called the 'moral hazard problem' implicit in insurance schemes. Note that this moral hazard problem is less important when the asymmetric shocks are temporary, e.g. when the business cycles between France and Germany are desynchronized.

One can distinguish two broad insurance mechanisms that are important for alleviating the problems of countries that have been hit by negative asymmetric shocks. The first is organized by governments, the second by private markets.

2.1 Public insurance systems

There are essentially two ways in which public insurance systems can be organized. In the first one, a large part of the government budgets of France and Germany is centralized at the European level. Thus, let us suppose that a European government exists that directly levies taxes (including social security taxes) and directly transfers revenues (e.g. pensions,

unemployment benefits) to residents in France and Germany. As a result of such budgetary centralization, a decline in output in France leads to a reduction in the tax revenues of the European government from France, while the tax revenues from Germany increase because German output has increased. At the same time, however, the European government increases its spending (unemployment benefits) in France and reduces these in Germany. The net result of all this is that the central budget automatically redistributes income from Germany where output has increased to France where output has declined.⁵ Put differently, this budgetary centralization allows French citizens to smooth consumption following a negative output shock. Note that there is also consumption smoothing in Germany, but in the other direction. As a result, the cost of the monetary union is reduced, i.e. French and German citizens can stabilize their consumption over time despite asymmetric shocks in output. The reason for Germany's interest in such a scheme is that it can profit from it when it suffers a negative shock.

The main problem of this insurance scheme is that it often leads to the problem of moral hazard. This is made clear by its operation within countries. In many countries (e.g. Belgium, Germany, Italy) the national budget automatically transfers income from regions with high output growth to regions with low growth. These transfers tend to reduce the pressure on regions to adjust. As a result they become permanent. The use of such schemes at the European level would certainly be problematic. There is, however, no danger that this will happen soon. The European budget amounts to only 1.4% of EU GDP, while national budgets typically absorb 40% to 50% of GDP. There is also no prospect for centralization of national budgets at the European level in the foreseeable future. As a result the insurance mechanism through budgetary centralization is simply not available in the European monetary union.

There is a second way in which public insurance mechanisms can operate. This can be described as follows, again using the example of an asymmetric shock affecting France and Germany. Suppose now that, despite the existence of monetary union between France and Germany, the national budgets have not been centralized. The asymmetric shock is then likely to have the following effects. In France the decline in output reduces the French government's tax revenues. At the same time it increases the French government's spending on unemployment benefits. Thus the French government budget deficit increases, and so does the government debt. Exactly the opposite happens in Germany, where the increased tax revenues and reduced social spending reduce the German government budget deficit. These budgetary changes occur automatically. They have the effect of smoothing consumption in France and Germany. Thus, the operation of automatic stabilizers in the budget allows the asymmetric shocks to be absorbed with lesser cost. As a result, the cost of the monetary union declines. Note that in this case the transfers are inter-generational and not interregional, i.e. the consumption smoothing in France is made possible because the French increase consumption today relative to output knowing that in the future they will have to do the opposite.

The advantage of this automatic stabilizing force of national budgets is that it reduces

⁵ In some federal states there also exist explicit regional redistribution schemes. The best known of these is the German system of 'Finanzausgleich'. It is described in box 1.

Box 1 Fiscal equalization between *Länder* in Germany

The system of fiscal equalization ('Finanzausgleich') came into existence after the Second World War. Its basic philosophy is that *Länder* (states) whose tax revenues fall below some predetermined range should receive compensation from *Länder* whose tax revenues exceed that range. The way this range is computed is rather technical (for more detail see Zimmerman (1989)). Simplifying, it consists in first calculating what the normal tax revenue should be for each state. A state whose tax revenues fall below 92% of this norm receives compensation. To cover these transfers the states whose tax revenues exceed the norm by 2% or more contribute to the system. In Table B1.1 we show the amount of redistribution achieved by this system in 1995.

Table B1.1 Amount of redistribution (in millions of DM) through the system of Finanzausgleich in Germany (1995)

<i>Contributing Länder</i>	
North Rhine-Westphalia	3,442
Baden Württemberg	2,804
Bavaria	2,533
Hessen	2,154
Schleswig-Holstein	142
Hamburg	118
Total	11,193
<i>Receiving Länder</i>	
Berlin	4,209
Saxony	1,783
Saxony-Anhalt	1,123
Thüringen	1,017
Brandenburg	865
Mecklenburg-Vorpommern	771
Bremen	562
Rheinland-Palatinate	229
Lower Saxony	451
Saarland	180
Total	11,190

Source: Bundesministerium der Finanzen (1996), 146.

With German unification the system was expanded to incorporate the new *Länder*. These have all become net receivers of transfers. This system of redistribution (together with the automatic redistribution resulting from the centralization of the Federal budget) has led to a remarkable reduction of regional income inequalities in Germany.

the risk of moral hazard. The reason is that if the French government keeps its deficit high indefinitely, its debt would keep increasing and would become unsustainable. As a result, the pressure to adjust to the shocks is greater. This advantage is, however, also the source of a new problem. The nationally based insurance mechanism is not always available. In particular, governments with a high debt, which face a negative asymmetric shock, cannot easily allow their budget deficit to increase. Thus, the insurance mechanism will often not function well when countries need it most. We will return to some of the issues relating to fiscal policies in a monetary union in Chapter 9. Here we conclude that national budgetary policies can in principle provide some insurance against asymmetric shocks in a monetary union, but that their use is restricted by the existence of high government debts. As a result, this insurance mechanism may not be available when one needs it.

2.2 Private insurance schemes

There is a second way to organize an insurance scheme in a monetary union.⁶ This scheme operates through the financial markets. We assume, as before, an asymmetric shock hitting France negatively and Germany positively. Suppose (and this is a crucial assumption) that the financial markets of France and Germany are completely integrated. Thus, there is one bond market and one equity market, and the banking sector is also completely integrated.

Let us concentrate here on how integrated bond and equity markets facilitate the adjustment.⁷ As a result of the negative shock, French firms make losses, pushing down French stock prices. Since the equity market is fully integrated, French stocks are also held by German residents. Thus, the latter pay part of the price of the drop in economic activity in France. Conversely, the boom in Germany raises stock prices of German firms. Since these are also held by French residents, the latter find some compensation for the hard economic times in France. Put differently, an integrated stock market works as an insurance system. The risk of a negative shock in one country is shared by all countries. As a result, the impact of the negative output shock in one country on the income of the residents of that country is mitigated.

A similar mechanism works through the integrated bond market. As a result of the negative shock, firms in France make losses, some also go bankrupt. This lowers the value of the outstanding French bonds. Part of these French bonds are held by German residents, so that they also pay the price of the economic duress in France.

The advantage of this insurance scheme based on private financial markets is that it reduces the danger of moral hazard. However, there is also a large drawback. The poor unemployed in France who do not hold financial assets issued in Germany will obtain little compensation from this private insurance scheme. Instead the well-to-do French citizens with large portfolios of assets are more likely to obtain most of the transfers. As a result, such a private insurance scheme without a public one is certainly going to provide insufficient coverage for a large majority of the French citizens.

⁶ The importance of financial market integration for a monetary union to function well was first stressed by Ingram (1959).

⁷ In Chapter 10 we go into more detail and also analyse the banking sector.

We can summarize the preceding discussion as follows. Countries in a monetary union which are hit by asymmetric demand shocks need wage flexibility and labour mobility to correct for these shocks. It helps to have an insurance mechanism which allows for income transfers to the country experiencing a negative demand shock. This insurance mechanism, however, does not substitute for adjustment when the demand shock is permanent. What it does, is to give countries more time to effect the needed adjustment. To the extent that countries face rigidities and have poorly organized insurance systems the costs of the monetary union will be substantial.

3 Different preferences of countries about inflation and unemployment

Countries differ also because they have different preferences. Some countries are less allergic to inflation than others. This may make the introduction of a common currency costly. The importance of these differences has been analysed by Corden (1972) and Giersch (1973). We present the problem using a simple graphical representation taken from De Grauwe (1975).

Consider two countries. For a change, let us call them Italy and Germany. In Fig. 1.4 we represent the Phillips curves of these two countries, on the right-hand side. The vertical axis shows the rate of change of the wage rate, \dot{w} , the horizontal axis the unemployment rate, u . (We assume for a moment that these Phillips curves are stable, i.e. they do not shift as a result of changes in expectations of inflation. The modern reader will have difficulties swallowing this. Let him/her be patient. We will ask how the analysis is affected once we take into account the fact that these Phillips curves are not stable.)

On the left-hand side we represent the relation between wage changes and price changes. This relationship can be written as follows for Italy and Germany respectively:

$$\dot{p}_I = \dot{w}_I - \dot{q}_I \quad (1.1)$$

$$\dot{p}_G = \dot{w}_G - \dot{q}_G \quad (1.2)$$

where \dot{p}_I and \dot{p}_G are the rates of inflation, \dot{w}_I and \dot{w}_G are the rates of wage increases, and \dot{q}_I and \dot{q}_G are the rates of growth of labour productivity in Italy and Germany. Equations (1.1) and (1.2) can be interpreted by an example. Suppose wages increase by 10% and the productivity of labour increases by 5% in Italy. Then the rate of price increase that maintains the share of profits in total value added unchanged is 5%. Thus equations (1.1) and (1.2) can be considered to define the rate of price changes that keep profits unchanged (as a percentage of value added).⁸ These two equations are represented by the straight lines

⁸ Suppose a perfect competitive environment. Then profit maximization implies that $w/p = \partial X/\partial L$. If the production function is Cobb–Douglas, $w/p = \alpha X/L$, where α is the labour share in value added. Taking rates of change yields $\dot{w} - \dot{p} = \dot{q}$ (assuming a constant α).

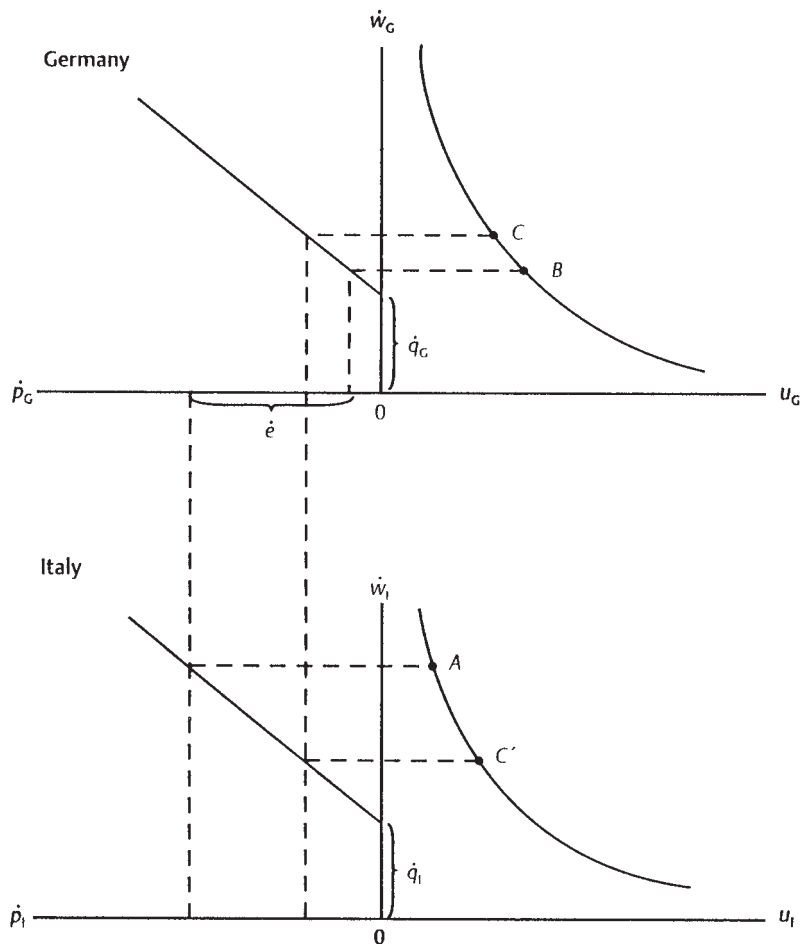


Figure 1.4 Inflation-unemployment choices in Italy and Germany

on the left-hand side. Note that the intercept is given by \dot{q}_I and \dot{q}_G respectively. Thus, when the rate of productivity increases in Italy, the line shifts upwards.

The two countries are linked by the purchasing power parity condition, i.e.:

$$\dot{e} = \dot{p}_I - \dot{p}_G \tag{1.3}$$

where \dot{e} is the rate of depreciation of the lira relative to the mark. Equation (1.3) should be interpreted as an equilibrium condition. It says that if Italy has a higher rate of inflation than Germany, it will have to depreciate its currency to maintain the competitiveness of its products unchanged. If Italy and Germany decide to form a monetary union, the exchange rate is fixed ($\dot{e} = 0$), so that the rates of inflation must be equal. If this is not the case, e.g. inflation in Italy is higher than in Germany, Italy will increasingly lose competitiveness.

Suppose now that Italy and Germany have different preferences about inflation and unemployment. Italy chooses point *A* on its Phillips curve, whereas Germany chooses *B*. It is now immediately obvious that the inflation rates will be different in the two countries, and that a fixed exchange rate will be unsustainable. The cost of a monetary union for the two countries now consists in the fact that if Italy and Germany want to keep the exchange rate fixed they will have to choose another (less preferred) point on their Phillips curves, so that an equal rate of inflation becomes possible. Such an outcome is given by the points *C* and *C'* on the respective Phillips curves. (Note that many other points are possible, leading to other joint inflation rates.) Italy now has to accept less inflation and more unemployment than it would do otherwise, Germany has to accept more inflation and less unemployment.

This analysis, which was popular in the 1960s and the early 1970s, has fallen victim to the demise of the Phillips curve. Following the criticisms of Friedman (1968) and Phelps (1968), it is now generally accepted that the Phillips curve is not stable, i.e. that it will shift upwards when expectations of inflation increase. Thus, a country that chooses too high an inflation rate will find that its Phillips curve shifts upwards. Under these conditions the authorities have very little free choice between inflation and unemployment. This has also led to the view that the Phillips curve is really a vertical line in the long run, with far-reaching consequences for the costs of a monetary union. We will return to this issue in Chapter 2 when we critically examine the theory of optimum currency areas.

4 Differences in labour market institutions

There is no doubt that there are important institutional differences in the labour markets of European countries. Some labour markets are dominated by highly centralized labour unions (e.g. Germany). In other countries labour unions are decentralized (e.g. the UK). These differences may introduce significant costs for a monetary union. The main reason is that these institutional differences can lead to divergent wage and price developments, even if countries face the same disturbances. For example, when two countries are subjected to the same oil price increase the effect this has on domestic wages and prices very much depends on how labour unions react to these shocks.

Macroeconomic theories have been developed that shed some light on the importance of labour market institutions. The most popular one was developed by Bruno and Sachs (1985).⁹ The idea can be formulated as follows. Supply shocks, such as an oil price increase, have very different macroeconomic effects depending upon the degree of centralization of wage bargaining. When wage bargaining is centralized (Bruno and Sachs call countries with centralized wage bargaining 'corporatist'), labour unions take into account the inflationary effect of wage increases. In other words, they know that excessive wage

⁹ It should be stressed that these theories were already available and widely discussed in many European countries before Bruno and Sachs discovered them. Their advantage was that they wrote in English, and thereby succeeded in disseminating the idea internationally.

claims will lead to more inflation, so that real wages will not increase. They will have no incentive to make these excessive wage claims. Thus, when a supply shock occurs, they realize that the loss in real wages due to the supply shocks cannot be compensated by nominal wage increases.

Things are quite different in countries with less centralized wage bargaining. In these countries individual unions that bargain for higher nominal wages know that the effect of these nominal wage increases on the aggregate price level is small, because these unions only represent a small fraction of the labour force. There is a free-riding problem. Each union has an interest in increasing the nominal wage of its members. For if it does not do so, the real wage of its members would decline, given that all the other unions are likely to increase the nominal wage for their members. In equilibrium this non-cooperative game will produce a higher nominal wage level than the co-operative (centralized) game. In countries with decentralized wage bargaining therefore it is structurally more difficult to arrive at wage moderation after a supply shock. In such a non-cooperative set-up no individual union has an incentive to take the first step in reducing its nominal wage claim. For it risks having the others not follow, so that the real wage level of its members will decline.

The analogy with the spectators in a football stadium is well known. When they are all seated, the individual spectator has an incentive to stand up so as to have a better view of the game. The dynamics of this game is that they all stand up, see no better, and are more uncomfortable. Once they stand up, it is equally difficult to induce them to sit down. The individual who takes the first step and sits down will see nothing, as long as the others do not follow his example. Since he is sitting, most spectators in the stadium will not even notice this good example.

This co-operation story has been extended by Calmfors and Driffill (1988) who noted that the relationship between centralization of wage bargaining and outcomes is not a linear process. In particular, the more we move towards the decentralized spectrum the more another externality comes to play a role. For in a very decentralized system (e.g. wage bargaining at the firm level), the wage claims will have a direct effect on the competitiveness of the firm, and therefore on the employment prospects of individual union members. Excessive wage claims by an individual union will lead to a strong reduction of employment. Thus, when faced with a supply shock, unions in such a decentralized system may exhibit a considerable degree of wage restraint.

This insight then leads to the conclusion that countries with either strong centralization or strong decentralization of wage bargaining are better equipped to face supply shocks, such as oil price increases, than countries with an intermediate degree of centralization. In these 'extreme' countries there will be a greater wage moderation than in the intermediate countries. As a result, the countries with extreme centralization or decentralization tend to fare better, in terms of inflation and unemployment, following supply shocks, than the others.

Some empirical evidence for this hypothesis is shown in Fig. 1.5. On the horizontal axis we show the degree of centralization of labour markets in a group of industrial countries. (These indices were computed by Calmfors and Driffill (1988).) On the vertical axis the changes in the 'misery' indices of the same countries from the 1970s to the 1980s are rep-

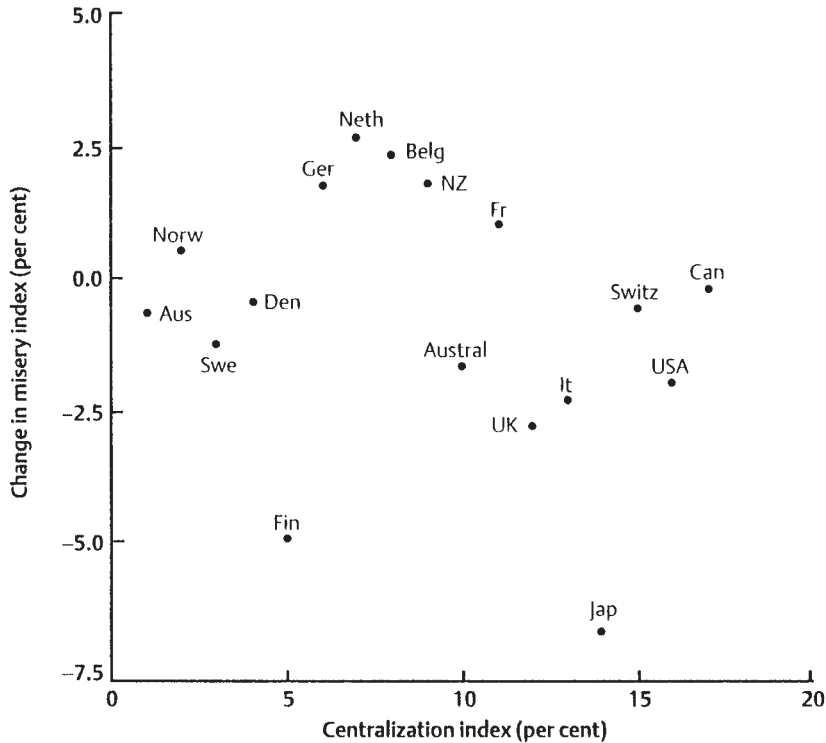


Figure 1.5 Change in misery indices (from the 1970s to the 1980s) and labour market centralization

Note: The misery index is the sum of the inflation rate and the unemployment rate. The change in the index is measured from 1973–9 to 1980–8. The centralization index measures the degree of centralization of labour unions. A low number implies a high degree of centralization.

Source: Misery index computed from OECD, *Economic Outlook*; index of centralization of wage bargaining from Calmfors and Driffill (1988).

resented.¹⁰ These misery indices are the sum of the inflation rate and the unemployment rate. One can see that intermediate countries seem to have experienced a greater worsening of their misery indices than the countries with extreme centralization or decentralization. In other words the labour market institutions of these countries may have made it more difficult to reduce inflation without losses in output following the oil price increases of 1979–80.

It follows that a country might find itself in a situation where wages and prices increase faster than in other countries even when the shock that triggered it all is the same. In terms of the two-country model that we used in Section 1 the supply curve shifts upwards more in one country than in the other country. This will lead to macroeconomic adjustment problems of the same nature as the ones we analysed in Section 1.

¹⁰ De Grauwe (1990) presents econometric evidence giving some support to the non-linear relationship between economic performance and the degree of centralization of labour markets.

We conclude that countries with very different labour market institutions may find it costly to form a monetary union. With each supply shock, wages and prices in these countries may be affected differently, making it difficult to correct for these differences when the exchange rate is irrevocably fixed.

5 Differences in legal systems

Despite decades of integration in the European Union (EU), legal systems continue to be very different in the member states. These differences run deep and sometimes have profound effects on the way markets function. We concentrate on just a few examples.

The mortgage markets operate very differently in the EU countries. The main reason is that legal systems differ. The law protects the banks extending mortgage loans better in some countries than in others. As a result, mortgages are very different products, with different degrees of risk from one country to another. Because of these differences, banks require mortgages to be backed by 100% collateral in some countries, while in others the collateral is substantially below 100% of the value of the loan. Legal differences also lead to differences in the frequency with which interest rates are adjusted. Thus, there are countries where banks offer mortgage loans with a floating/changing interest, and others where mortgage rates are fixed for the whole maturity of the loan. As a result of these differences, the same shocks (e.g. an increase of the interest rate by the European Central Bank) are transmitted very differently across the member states of the monetary union. Recent empirical studies confirm that these differences in the transmission of the same shocks can be substantial (see Dornbusch, Favero, and Giavazzi (1998); Cecchetti (1999); Maclennan, Muellbauer, and Stephens (1999); Peersman and Smets (2001); Mojon (2000)).

The ways in which companies finance themselves are very different across the EU. In countries with an Anglo-Saxon legal tradition, firms tend to go directly to the capital market (bond and equity markets) to finance investment projects. As a result, these markets are well developed, sophisticated, and very liquid. In countries with a continental legal tradition firms attract financial resources mainly through the banking system. As a result, capital markets are less developed. Here again these differences lead to the result that the same interest rate disturbances are transmitted very differently. To give an example, take an increase in the interest rate. In countries with an Anglo-Saxon type of financial system, this is likely to lead to large wealth effects for consumers. The reason is that consumers hold a lot of bonds and stocks. An interest rate increase lowers bond and stock prices, so that the wealth of consumers is likely to decline. Wealth effects will be less pronounced in countries with Continental-type financial markets. In these countries the interest rate increase will affect consumer spending mainly through the bank-lending channel. A sufficiently high increase in the interest rate will induce banks to start rationing credit.¹¹

¹¹ For a classic analysis of credit rationing see Stiglitz and Weiss (1981). For an analysis of the implications for monetary union see Cecchetti (1999).

Table 1.1 Average yearly growth rates of GDP in the EU, 1981–2001

Country	%
Austria	2.30
Belgium	2.05
Denmark	1.94
Finland	2.55
France	2.12
Germany	1.99
Greece	1.60
Ireland	5.36
Italy	1.92
Luxembourg	4.66
Netherlands	2.55
Portugal	2.98
Spain	2.72
Sweden	1.99
United Kingdom	2.48

Source: EU Commission, *European Economy*, various years.

We conclude that the way the same interest rate increase is transmitted into consumption and investment spending will be very different across Union members.

6 Growth rates are different

Some countries grow faster than others. This is made clear in Table 1.1. We find that during 1980–2001 some southern European countries (and Ireland) experienced GDP growth rates which were higher than those in the northern part of Europe. (The same phenomenon may be observed for the 1970s.)

Such differences in growth rates could lead to a problem when countries form a monetary union. We illustrate this with the following example. Country A's GDP is growing at 5% per year, country B's GDP at 3% per year. Suppose that the income elasticity of A's imports from B is one, and that similarly B's income elasticity of imports from A is equal to one. Then country A's imports from B will grow at 5% per year, whereas B's imports from A will grow at only 3% per year. This will lead to a trade balance problem for the fast-growing country A, whose imports tend to grow faster than its exports.

In order to avoid chronic deficits in its trade account, country A will have to reduce the price of its exports to country B, so that the latter country increases its purchases of goods from country A. In other words, country A's terms of trade must decline so as to make its products more competitive. Country A can do this in two ways: a depreciation of the currency or a lower rate of domestic price increases than in country B. If it joins a monetary

union with country B, however, only the second option will be available. This will require country A to follow relatively deflationary policies, which in turn will constrain the growth process. Thus, a monetary union has a cost for the fast-growing country. It will find it more advantageous to keep its national currency, so as to have the option of depreciating its currency when it finds itself constrained by unfavourable developments in its trade account.

7 Different fiscal systems and the seigniorage problem

Countries differ also because they have different fiscal systems. These differences often lead countries to use different combinations of debt and monetary financing of the government budget deficit. When these countries join a monetary union, they will be constrained in the way they finance their budget deficits.

In order to show this, it is useful to start from the government budget constraint:

$$G - T + rB = dB/dt + dM/dt \quad (1.4)$$

where G is the level of government spending (excluding interest payments on the government debt), T is the tax revenue, r is the interest rate on the government debt, B , and M is the level of high-powered money (monetary base).

The left-hand side of equation (1.4) is the government budget deficit. It consists of the primary budget deficit ($G - T$) and the interest payment on the government debt (rB). The right-hand side is the financing side. The budget deficit can be financed by issuing debt (dB/dt) or by issuing high-powered money, dM/dt .

The theory of optimal public finance now tells us that rational governments will use the different sources of revenue so that the marginal cost of raising revenue through these different means is equalized.¹² Thus, if the marginal cost of raising revenue by increasing taxes exceeds the marginal cost of raising revenue by inflation (seigniorage), it will be optimal to reduce taxes and to increase inflation.

The preceding also means that countries will have different optimal inflation rates. In general, countries with an underdeveloped tax system will find it more advantageous to raise revenue by inflation (seigniorage). Put differently, a country with an underdeveloped fiscal system experiences large costs in raising revenue by increasing tax rates. It will be less costly to increase government revenue by inflation.

This reasoning leads to the following implication for the costs of a monetary union. Less developed countries that join a monetary union with more developed countries that have a low rate of inflation will also have to lower inflation. This then means that, for a given level of spending, they will have to increase taxes. There will be a loss of welfare. Some economists (e.g. Dornbusch (1988)) have claimed that this is a particularly acute

¹² See Fischer (1982) and Grilli (1989).

Table 1.2 Seigniorage revenues as a percentage of GNP

	1976–85	1986–90	1993
Germany	0.2	0.6	0.5
Greece	3.4	1.5	0.7
Italy	2.6	0.7	0.5
Portugal	3.4	1.9	0.6
Spain	2.9	0.8	0.6

Sources: Dornbusch (1988); Gros (1990); Gros and Thygesen (1992).

problem for the southern EU countries. By joining the low-inflation northern monetary zone they have to increase taxes, or let the deficit increase further. For these countries the cost of the monetary union is that they have to rely too much on a costly way of raising revenues.

Table 1.2 gives some empirical evidence on the size of the seigniorage for these southern countries, and compares it with Germany. We observe that up to the middle of the 1980s the southern European countries had high seigniorage revenues. These revenues amounted to 2–3% of GNP in all these countries. This was certainly much more important than in the northern countries. Since the middle of the 1980s, however, the seigniorage revenue of these countries has declined significantly, mainly because of the reduction in their inflation rates. This leads to the conclusion that when these countries joined EMU with the low-inflation countries in the 1990s, the additional cost (in terms of public finance) was not very important. The problem could still be a significant one for the Central European countries when they join EMU.

8 Conclusion

In this chapter we discussed differences between countries. We observed that countries can use exchange rate changes, or other monetary policies, to correct for these differences. We found that in most cases there is an alternative to using the exchange rate as a policy instrument. For example, when confronted with a loss of domestic competitiveness, countries can use contractionary demand policies aiming at regaining competitiveness. However, these alternatives are often more painful, and therefore less desirable. To the extent that these alternative policies are more painful than changing the exchange rate we concluded that the country under consideration does not gain from relinquishing its money and joining a currency union. (Note, however, that we still have not introduced the benefit side of the analysis. It is still possible that even if there are costs associated with relinquishing one's national money, the benefits outweigh these costs.)

The analysis of this chapter which is based on the theory of optimum currency areas has been subjected to much criticism. This has led to new and important insights. In the next chapter we turn our attention to this criticism.

Box 2 Symmetric and asymmetric shocks compared

We have seen that the occurrence of asymmetric shocks creates costs of adjustment in a monetary union if there is a lack of flexibility in the labour markets. Things are very different when symmetric shocks occur. We illustrate this using the same two-country model of aggregate demand and supply as in Fig. 1.1. We now assume that the demand shocks are symmetric. More specifically, we assume that in both France and Germany the demand curve shifts to the left in equal amounts. The result is shown in Fig. B2.1.

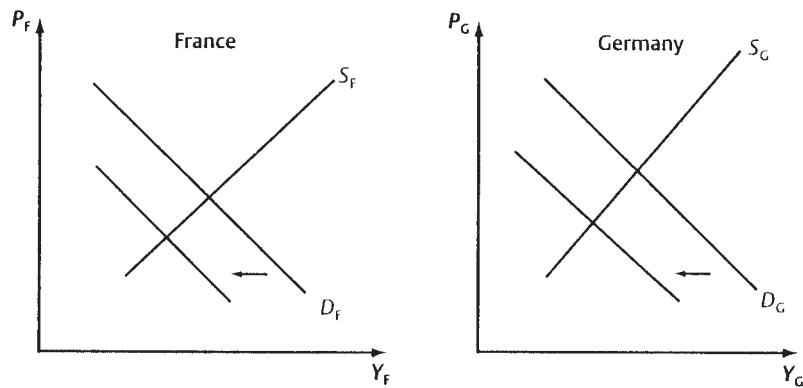


Figure B2.1 Symmetric shocks

Can France and Germany deal with this negative demand shock when they are in a monetary union? The answer is yes, at least in principle. In a monetary union, monetary policy is centralized in the hands of the union central bank. Call it the European Central Bank (ECB). In addition, in a monetary union there is only one interest rate as the money markets are perfectly integrated. The ECB can now lower the interest rate thereby stimulating aggregate demand in both countries. This contrasts markedly with the case of asymmetric shocks. There the ECB will be pretty much paralysed, because it has only one instrument to deal with two problems. If it reduces the interest rate so as to stimulate aggregate demand in France, it increases inflationary pressure in Germany. If on the other hand it increases the interest rate so as to deal with the inflationary pressure in Germany, it reduces aggregate demand in France, and intensifies that country's problem.

It is also interesting to analyse what would happen if the two countries that face a symmetric shock were not in a monetary union. Would a devaluation then be an attractive policy option? The answer is no. Suppose that France were to devalue. This would stimulate aggregate demand in France, at the expense of Germany. In France, the aggregate demand curve would shift to the right. The French devaluation would, however, shift the German aggregate demand curve further to the left. The French would essentially solve their problem by exporting it to Germany. It is likely that the latter would react. The danger of a spiral of devaluations and counter-devaluations would be real. In the end the effectiveness of changing the exchange rate would be greatly reduced. In order to avoid such a spiral the two countries would have to coordinate their actions, which is difficult among independent nations. In a monetary union, in contrast, this monetary cooperation is

institutionalized. We conclude that a monetary union is a more attractive monetary regime than a regime of independent monetary authorities if shocks that hit the countries are symmetric. When shocks are asymmetric, however, this advantage of a monetary union disappears.

It should be noted that we have assumed that the ECB can manipulate aggregate demand in the union. There are reasons to believe that the effectiveness of monetary policy in raising aggregate demand is limited. The same criticism, however, applies as far as the effectiveness of devaluations is concerned. When countries are independent and they use the exchange rate as an instrument to deal with asymmetric shocks, they face similar limitations on the effectiveness of exchange rate policies. We return to these issues in Chapter 2.