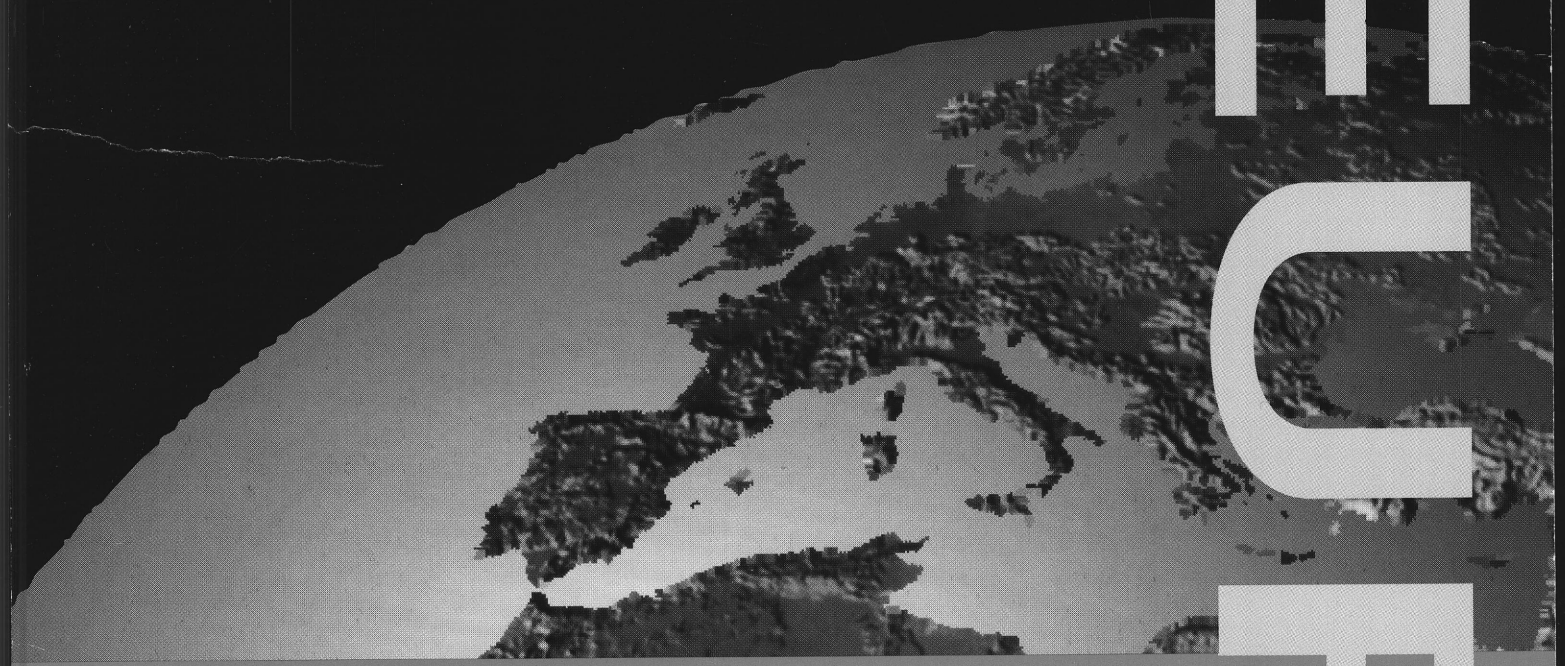
The Single Market Review



EUROPE

SUBSERIES III: DISMANTLING OF BARRIERS

Volume 5:

Capital market liberalization

CEE: XIV / 16

The Single Market Review

DISMANTLING OF BARRIERS

CAPITAL MARKET LIBERALIZATION

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This report is part of a series of 39 studies commissioned from independent consultants in the context of a major review of the Single Market. The 1996 Single Market Review responds to a 1992 Council of Ministers Resolution calling on the European Commission to present an overall analysis of the effectiveness of measures taken in creating the Single Market. This review, which assesses the progress made in implementing the Single Market Programme, was coordinated by the Directorate-General 'Internal Market and Financial Services' (DG XV) and the Directorate-General 'Economic and Financial Affairs' (DG II) of the European Commission.

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List of abbreviations

EC	European Community
EEC	European Economic Community
ERM	European exchange rate mechanism
EMS	European Monetary System
EU	European Union
ICAPM	International capital asset pricing model
IMF	International Monetary Fund
LIBOR	London inter-bank offer rate
OECD	Organization for Economic Cooperation and Development
OEEC	Organization for European Economic Cooperation
SIM	Societá Intermediazione Mobiliare
UCITS	Undertakings for collective investment in transferable securities

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1. Summary

1.1. Introduction

The first stages of economic integration in Europe dealt with barriers to trade in goods. In the 1960s and 1970s the European Commission also addressed issues of competition between firms and the coordination of industrial and trade policy. From 1988 onwards the single market programme turned its attention to barriers to competition and factor mobility in financial and other services. The removal of barriers in financial markets should allow capital to become more mobile and move to the location with the highest return. This is important, because it aids the development of the region with the high return. Competition for resources can also act to galvanize other factors of production in the region that is the source of the capital. All these forces enhance the efficient allocation of resources within Europe.

If capital is perfectly mobile, then prices of capital assets should be similar everywhere. In addition, borrowing and lending should both be facilitated. A country or region should no longer have to rely solely on its own saving to finance investment. If barriers to capital mobility are reduced then we should see a more coherent relationship between asset prices in different economies. At the same time, savings and investment flows between countries should increase. Greater flows allow countries and regions to share the effects of the risks facing them. As a result saving and investment flows within a country should become less immediately linked, with excess borrowing being matched by excess saving some years later.

The remit of this study is further discussed in Chapter 2. Our objective is to analyse the process of the removal of obstacles to the free movement of capital. We also wish to investigate the implications for all the European Union countries. In particular, it is important to understand the role of the single market programme in stimulating capital mobility. There is a great deal of theoretical and empirical literature concerning capital mobility. Much of the recent literature is surveyed here, extending the work of Obstfeld (1995) and Goldstein and Mussa (1993). We also undertake extensive new empirical work on the effects of increased capital mobility on capital asset prices and on saving and investment flows.

As an aid to interpretation of our results, we examine the steps taken by individual EU Member States to dismantle direct capital controls. This process had largely been completed by the early 1990s. However, our empirical work suggests that mobility of capital within the EU is still not entirely free. These findings are supported by the views of market practitioners obtained from a major survey of financial institutions that we have conducted across the EU. The survey also identifies specific measures, such as prudential regulations and fiscal requirements, which indirectly restrict or distort capital flows. We compare these findings with the particular measures notified to the OECD as reservations against their compliance with the OECD Codes of Liberalization.

1.2. Capital mobility

Chapter 3 discusses the theoretical background to the study. In Section 3.2 we discuss the welfare impact of barriers to capital mobility. Financial assets allow lenders and borrowers to separate the timing of income receipts and consumption expenditures. Increases in the scale of 'trade over time' (in capital) are likely to be as beneficial as increases in trade in goods between countries. The removal of barriers to trade in capital may improve overall welfare,

but the distribution of the gains between individuals may be uneven. If world interest rates exceed domestic rates of return, then the removal of a barrier to capital mobility will cause domestic rates to rise. This will improve the welfare of savers, and reduce that of investors. Conversely, if the removal of the barrier reduces domestic rates of return, savers will be worse off and investors better off. These distributional effects may help explain why political pressure groups in society and coalitions within governments emerge in support of barriers, even though they reduce overall welfare.

Trade in assets between countries may also be restricted because of risks from exchange rate changes. Barriers to mobility may also result from biases in tax systems and in financial regulation. This makes it difficult to determine whether the observed 'home-country bias' in the composition of portfolios results from effective barriers constructed by governments, or from other causes. If exchange rates are not fixed then exchange rate-related risk premia may be needed, and this makes it less likely that domestic residents will find it worthwhile to hold foreign assets. The causes of home-country bias are discussed in Section 3.2.1, and are analysed more formally in Appendix A.

The single market programme has attempted to reduce many of the artificial barriers to capital flows. As a result we should expect to see portfolio composition gradually becoming more varied over time. Additionally, countries that have done most to liberalize their markets should also have the most varied portfolios. We discuss the structure of asset holdings at length in Section 3.3. We make a detailed comparison of the underlying structure of portfolios in the UK and Germany in Appendix B. After taking account of their levels of foreign investment, we can conclude that between a third and a half of their assets are held abroad. The liberalization of capital markets in Europe has had an impact, and portfolio compositions are becoming more similar. The diversification of portfolios between 1986 and 1994 proceeded more rapidly in France and Spain than in the UK or the US. The stimulus of the single market programme and the Capital Liberalization Directives (discussed in Chapter 7) was important for the former group of countries. They liberalized their capital markets in the late 1980s and early 1990s, while the latter group have had few overt barriers since the 1970s.

Capital controls may give a country some extra degree of control over its exchange rate in a world of flexible rates, and they may give control over monetary conditions if the exchange rate is fixed. In Section 3.4 we argue that controls can be effective for long periods of time, but that if fundamentals are wrong they can be overwhelmed. We argue that we can distinguish between the effects of different types of control. Flow controls on the movement of capital are useful for fending off speculative attacks. Stock controls on the asset composition of portfolios are more effective in ensuring that domestic monetary conditions are under control.

1.3. The evolution of capital controls in Europe

Capital controls were common in Europe at the end of 1979. Only Germany, the Netherlands and Belgium/Luxembourg had a reasonably long history of low levels of controls, and the United Kingdom had just liberalized. Section 4.2 discusses controls in the Member States of the current European Union. Controls were significant in most countries, and affected asset prices and portfolio flows. The state of controls in 1979 is tabulated in Appendix C, as is their evolution over time. These chronologies have been extracted from the IMF Annual Reports on 'Exchange Arrangements and Exchange Restrictions'. They show how direct controls on

capital movements have been dismantled across the EU. Other more indirect measures may still be in place. Their potential for affecting the free movement of capital can be judged from our analysis of the OECD Liberalization Codes in Chapter 7, and from the results of our own market survey in Chapter 8.

The analysis of short-term interest rates can be very revealing about certain sorts of capital control. The domestic monetary authorities can influence 'onshore' (or domestically located) interest rates, but they cannot so easily influence 'offshore' rates. In Section 4.3 we discuss the work of Obstfeld (1995) and others. They suggest that prior to 1987 the French and the Italian authorities were able to push a wedge between onshore and offshore rates on identical assets, giving themselves some degree of monetary autonomy. In Section 4.4 we analyse the evolution of the European exchange-rate mechanism (ERM) and the pattern of removal of controls. We look at the onshore–offshore differential for most European Union countries in the light of evolving controls, and discuss some statistical analyses of the effects of changes in controls on interest differentials. The details of the tests are reported in Appendix D. We find that controls appear to have had some effects, especially in the early 1980s, but that they are now largely absent. Onshore and offshore interest rates are now similar for most members of the European Union.

1.4. The evolution of equity markets in Europe

Reductions in barriers to capital mobility have increased the relationship between returns on capital of certain assets in different countries. Hence, we should expect that anticipated returns on equities should also become increasingly related to each other over time. In Section 5.2 we discuss the theoretical background to our analysis, and then study the evolution of stocks of portfolio assets in Europe from 1979 to 1994. In the mid-1980s outflows of portfolio investment were highest in the countries with the most liberal capital control regimes, such as the UK and the Netherlands. This suggests that liberal capital market regimes allowed more international diversification of portfolios in this period. However, deregulation of domestic markets, for instance in London in 1986, also helped increase flows. The countries where controls were slowly removed as a consequence exhibited rising outflows and inflows of portfolio investment. Increasing flows have led to rising stocks of assets, and hence greater international diversification of risk-bearing in international capital markets. In the UK, for instance, outward portfolio investment stocks rose from 6% to 60% of GDP between 1979 and 1993, while the inward stock rose from 6% to 42% of GDP over the same period.

We argue that rising stocks of assets should be associated with increasingly related rates of return across equity markets. In order to investigate this proposition we need to construct a proxy for the expected change in equity prices. We construct a simple proxy using one step ahead forecasts from a time series model. Using this proxy we find that (our estimate of) the correlation between expected returns in European markets has been rising over time. The single market programme appears to have had an impact, but other factors may have been at work. Changing technology and increasing international competition in financial and product markets would also have had a similar impact. However, a comparison with returns in the US suggests that there are extra factors at work in Europe, indicating that the process of integration is improving the functioning of markets.

1.5. The effects of greater capital mobility

If rates of returns on assets are becoming more coherent, then it is more likely that trade in assets is increasing the sharing of risks in the world economy. If one economy suffers a temporary reduction in its income, then it should be able to borrow from abroad to maintain consumption and investment. Hence high capital mobility should break the immediate connection between domestic saving and domestic investment. This simple analysis led Feldstein and Horioka (1980) to look at the association between saving and investment in a cross-section of countries, and they found a strong association between domestic saving and investment. They therefore concluded that capital mobility was low. We partially survey the vast literature on saving and investment associations in Sections 6.2 to 6.4. We argue that much of the research in this area has been misleading. As individuals and governments must be solvent, then so must be the nations that they constitute. Hence foreign liabilities (or assets) cannot rise without bounds, and the current account as a percentage of income must be stable. This implies that in the long run there must be a strong association between domestic saving and investment. However, the association may be much weaker over short periods of time. Hence it is possible for us to test for the effects of increasing capital mobility in Europe by investigating saving and investment flows in the short and long run.

In our statistical analysis in Sections 6.5 and 6.6, we attempt to investigate changing patterns of saving and investment in Europe. It is clear from our analysis over the period 1960 to 1994 that there is a considerable degree of heterogeneity in European experience. We look both at individual country experiences and at evidence for mobility within years. Capital mobility appears to be higher in years where the European economy faced impulses from outside that had asymmetric effects. In our statistical analysis we find that solvency tends to hold in the long run, in that saving and investment tend to move together. However, in the short run there is little correlation between saving and investment in countries with liberal capital regimes. For example, a country such as Germany or the UK appears to be able to borrow (or lend) easily when needed. However, countries such as Greece, and for much of the period France and Italy, have used capital controls. In these countries a rise in investment is strongly associated with a rise in domestic saving. This reflects barriers to trade in assets or contingencies. These barriers are being reduced as the single market programme progresses, but increased exchange rate uncertainty in the 1990s appears to have slowed the process of increased risk-sharing. Exchange rate uncertainty seems to some extent to have taken the place of capital controls as a significant constraint on capital movements. This conclusion is consistent with the results of our market survey reported in Section 8.7.

1.6. Analysis of the OECD Codes of Liberalization

All EU Member States subscribe to the two OECD Codes of Liberalization. These require them to eliminate restrictions on capital movements and on current invisible transactions and transfers. OECD members can enter reservations against items specified in the code that it is not yet willing or able to liberalize. It therefore retains the right to maintain its own restrictions on those operations while still benefiting from any liberalization undertaken by others. We analyse these reservations, country by country, in Section 7.3 and find that EU Member States have entered a total of 52 reservations relating to cross-border capital transactions and related financial services. An average of 3.5 reservations per Member State suggests that the EU allows greater overall freedom of capital movement than either the US or Japan. The activities of EU residents are explicitly exempted from a number of the reservations entered by EU Member States. This provides some indication that liberalization

within the EU has in part been motivated by single market legislation. The incidence of liberalization within the EU, however, is very uneven. Two Member States (Luxembourg and the Netherlands) have no reservations at all, while seven Member States account for more than 80% of the EU total.

We also look at the particular types of capital market activity against which reservations have been entered. This analysis, reported in Section 7.4, also reveals marked differences in the degree of liberalization within the single market. More than half of all Member States' reservations have banking and investment services and operations in securities on the capital market as their target. However, operations in money market and collective investment securities appear relatively free. We go on to consider whether restrictions on the freedom of non-resident financial institutions to establish branches should be taken into account as creating indirect obstacles to the free movement of capital. We find that the inclusion in our analysis of the 12 reservations regarding non-residents' freedom of establishment does not affect the restrictiveness ranking of the EU countries.

1.7. A survey of capital market participants

We conducted a postal survey of financial institutions and corporate treasuries across the EU. The survey was designed to obtain the views of market participants on the extent to which freedom of capital movement has in practice been achieved. Our intention was to corroborate and supplement the information obtained from our analysis of reservations under the OECD Codes. We also wished to identify any particular obstacles that remain. We received responses from almost 140 firms in 14 countries. The overall picture that emerges in Section 8.3 is of a substantial increase in the freedom of capital movement in all Member States since 1990. A large measure of openness to inward and outward capital movement has now been achieved, although some margin for improvement remains in several Member States. We also examine the effects of domestic requirements on the activities of residents and non-residents in Sections 8.4 and 8.5. We find that in many Member States these act as an incentive for residents to use foreign markets and for non-residents to come to the domestic market. They do so for buying and selling bonds and equities, and for raising bond finance. On the other hand, non-resident firms are put at a disadvantage over resident firms in their freedom to supply investment services to residents and to operate directly on the local securities markets. In Section 8.8 we conduct statistical tests which confirm that the apparent correspondence between those findings and the results of our analysis of the OECD Codes is statistically significant.

Our survey also obtained information about specific factors that restrict or distort capital movement within the EU. The effect of exchange risk on capital movement is considered in Section 8.6. Our evidence suggests that exchange rate uncertainty in recent years has inhibited and distorted the free movement of capital. The elimination of uncertainty would result in greater borrowing and investment, and increased inward and outward capital flows between the Member States. There are other factors specifically mentioned by respondents, and they are recorded in Section 8.7. The most important appears to be the limited liquidity in some local markets, the tax treatment of non-residents (especially the impact of withholding taxes), local restrictions on institutional investors' portfolios, lead-management of government bond issues and membership of local stock markets and clearing and settlement systems.

1.8. Conclusions

Barriers to the free movement of capital lead to inefficient resource allocation across and within countries. They also limit effective competition in many markets for financial services, reducing the gains from the operation of the market. We have investigated the nature of barriers to mobility in Europe. Despite evidence that a considerable degree of liberalization has taken place in the EU in recent years, we find that capital is not yet fully mobile between countries. However, there are signs that the removal of barriers in some countries is beginning to have the desired effects on the European economy. The effects are most noticeable in the countries that have had liberal capital regimes for some time. In particular, the UK, Germany and the Netherlands have had few external barriers to the free movement of capital for 15 years or more. However, even in these cases, it is clear that prudential regulation and other internal financial market policies have continued to form barriers, albeit more opaque ones than those observed elsewhere in the Union.

The free movement of capital should enable individuals and groups to trade consumption risks and to alter the time profile of their consumption as compared to their income. It is clear that overall national portfolios are more diversified in countries without a history of capital controls. The UK and the Netherlands, for instance, both have stocks of foreign assets and liabilities that exceed the size of their GDP. This suggests that their income and wealth risks are spread over a wider range of possible outcomes than are those of, say, Italy. It is also clear that the gradual removal of controls has been accompanied by an increasing international diversification of portfolios in countries such as France, Spain and Italy. As a result of increasing capital flows and freer markets, rates of return in equity markets within Europe have become more coordinated. This suggests that risk-sharing has risen, and that the increased mobility of capital is beginning to have a real impact on the European economy. However, increased exchange rate uncertainty after 1992 appears to have formed a different sort of barrier, both reducing the coherence of equity markets and causing market operators to be more cautious.

The effects of restrictions on the free movement of capital are clear in the evolution of saving and investment flows over time. In the long run all nations must be solvent, and hence saving and investment must move together. However, in the short run a negative shock to income could be met by foreign borrowing, and positive shocks could be accommodated abroad. It is clear from our study that countries such as the UK and Germany, where barriers to movement are low, can trade in this way. It is also clear that as barriers have declined the possibility of reducing the matching of income and spending flows has increased. This should unambiguously raise welfare, and improve the overall allocation of resources. There does, however, appear to be a long way to go before we can say that we live in a world without barriers. As our analysis of the OECD Liberalization Codes and our survey of market participants indicates, there are still significant barriers to the free movement of capital in many European countries, except for Luxembourg, the Netherlands, the UK, and Germany. The barriers that our survey reveals depend in part on national regulation of financial systems and on divergent tax systems. The process of increasing European integration and the continuing progress of the single market programme should lead to the removal of many of these barriers, but a degree of so far unplanned fiscal coordination may also be necessary in order to remove tax-based barriers to the movement of capital. It is also clear that, in the absence of monetary union, exchange rate uncertainty will continue to inhibit capital flows and restrain the efficient allocation of capital within the single market.

2. Introduction

2.1. The purpose of this study

Global trade in financial assets has been rising rapidly for more than 30 years. The revolution in transcontinental communications that came with extra-terrestrial telecommunications has made financial transactions increasingly easy to effectuate. The computer revolution has made it much easier to undertake the calculation of potential profits on available trades, and hence opportunities for transactions are now greater than they have been in the past. This burgeoning of activity has not always been met with enthusiasm, and there have been a number of theoretical proposals and policy initiatives, for instance by James Tobin, that were designed to help put 'sand in the wheels' of this type of commerce.[1] Arguments advanced in favour of capital controls are based around a desire for either greater control of exchange rates or greater control of domestic monetary conditions, although these two objectives are not unrelated. The counter-argument emphasises the welfare gains from the efficient operation of capital markets and the resulting improvement in the allocation of productive capital.

If there are no official barriers to the process of trade in financial assets, then capital can be said to be freely mobile. We would normally expect this to be the case within a single country, although even in the US interstate banking laws may well provide significant barriers to financial trade. Within a multi-country region such as Europe we would normally expect some officially constructed barriers to free movement of capital to exist, although the process of European integration has been breaking them down. We could say that capital is freely mobile within such a region if transactions costs between countries are no different than those within a country.

If capital is perfectly mobile then we should be able to observe effects on quantities and prices. In particular, various interest parity conditions should be satisfied, and these conditions can be empirically tested. We should also observe countries trading differential consumption risks in order to reduce the impact of shocks. In particular a country ought to be able to finance consumption by foreign borrowing, either when income falls or when other demands on incomes rise. This should mean that as capital mobility rises consumption should become more correlated across countries. Additionally, when capital is perfectly mobile, we should see, at least in the short run, little association between domestic saving and investment rates.

In this report we review the literature on the expected impact of perfect capital mobility, and we also go on to suggest other ways of measuring the effects of mobility by looking at the returns to assets in a number of countries. A large number of empirical studies have been carried out, and many of them have had difficulties with measurement and evaluation of the effects of barriers to mobility. Because of these difficulties we have undertaken our own empirical work to assess the evolution and impact of capital market liberalization in Europe since 1979. We look at interest rates, returns on equities and the behaviour of saving and investment. In each case we look for emerging patterns in response to major policy initiatives such as the EU single market programme. We also think that there is scope to suggest new ways of addressing the problem of measuring the impact of increasing capital mobility, taking

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1 Eichengreen, Tobin and Wyplosz (1995) put 'Two cases for sand in the wheels of international finance' and Garber and Taylor (1995) discuss the case against such interventions.

particular account of the need to test for and incorporate potential changes in the economic structure.

However, empirical work extends beyond the manipulation of published data. Barriers to mobility are very diverse, and their impact is often difficult to determine. Hence there is a role for the investigation of the views of market participants on the impact and strength of barriers as they exist in practice. Such barriers come not just from direct restrictions on capital flows, but also from prudential and other regulations in financial markets.

Differential transactions costs are the central part of barriers to capital mobility, and their construction can take many forms. Quantitative limits and prohibitions on certain types of assets are the most obvious source of differential transactions costs. However, officially constructed barriers can also include cross-border transaction taxes and other fee-based barriers. Perhaps more pervasive, and more difficult to police, are transactions costs that result from prudential financial regulation such as differential reserve requirements. Barriers of these sorts have existed in Europe in the last 30 years, and even the possibility of their re-introduction can form a barrier to mobility. However, some cross-border barriers are more immutable than others, and business and accounting practices and language habits may continue to put a break on the free movement of capital even when there are no officially constructed barriers.

It is useful to understand what might be meant by perfect capital mobility when attempting to analyse the effects of different types of capital control. It is difficult to be sure that we could observe a world where transactions costs were literally zero, and so it is hard to test for the effects of transactions costs on capital mobility. Hence in turn it can be difficult to gauge the gains to be made from the liberalization of capital markets. In a market with no barriers to trade we would expect that the price of an asset should be the same wherever it is traded. If there are official or institutional barriers, then we could expect prices to differ between locations. Hence it would appear to be easy to test for the effects of perfect capital mobility. However, this assumption is perhaps a little strong, as we shall see in this Introduction and in the rest of the report.

2.2. Arbitrage conditions

If we are looking for the effects of restrictions on the movement of capital in a number of markets, then the taxonomy developed by Frankel (1992) is a useful starting place to help us clarify our expectations. He distinguished four possible ways in which we might observe the effects of capital mobility on either prices or quantities, and thereby test for the efficacy of controls. Three of his definitional approaches to capital mobility involved arbitrage conditions between sets of assets in different locations. The Law of One Price might be expected to hold in various markets, and if capital mobility is perfect then we should expect to observe real interest rate parity, uncovered interest parity, and covered interest parity. In each case rates of return should be equalized by capital markets that work perfectly. However, there are ancillary assumptions to be made before we can test for the effects of capital controls, and if these assumptions are false then our tests may be invalid.

Real interest rate differentials should induce capital flows, and these should continue until real rates of return are the same everywhere. We define the (holding period) real interest rate as:

$$R_t = r_t - p^e_t \qquad \textbf{(2.1)}$$

where r_t is the (holding period) nominal interest rate paid on a nominal capital value certain asset, and p^e_t is the rate of inflation expected by the asset holder over the holding period. Real interest rates can be defined for all parts of the liquidity spectrum. In some countries, such as the UK, Canada, Australia and New Zealand, the government issues index-linked bonds, and given that the default risk is low it is possible to calculate real interest rates for a number of different maturities.

Real interest equality would hold when sufficient trades have taken place such that real interest rates are the same in all locations:

$$R_t = R^a_t \qquad \textbf{(2.2)}$$

where the superscript 'a' denotes 'abroad'. It is clear from an inspection of real interest rates in the index-linked markets in the UK and Canada that real interest equality in this simple sense does not hold. This is of course because the real exchange rate is expected to change, and hence returns *ex post* are likely to be equalized. However, it is likely that full arbitrage has not taken place, as real interest rate differentials maintained over 30 years or more imply dramatic changes in the pattern of real exchange rates. Real interest rates represent the real rate of return to productive investment, and as such we might expect that intermediation would take place in equity markets as well as in bond markets. Hence, restrictions on the activities of these markets might mean that real interest rates were not easily equalized. For most countries we do not directly observe the real rate of interest unless we can directly observe inflation expectations.

The real interest parity condition can be manipulated so that we can be clear about what we might observe. It can be usefully augmented to take account of the forward premium on the exchange rate, fp_t, and exchange rate expectations, rx^e_t, which represents the expected rate of depreciation of the domestic currency against the foreign currency.

$$R_t - R^a_t = (r_t - r^a_t - fp_t) + (fp_t - rx^e_t) + (rx^e_t - p^e_t - p^{ea}_t) \qquad \textbf{(2.3)}$$

The first term on the right-hand side represents the covered interest differential, with the difference between domestic and foreign rates matching the forward premium if capital markets work perfectly. The second term on the right-hand side is the exchange rate risk premium, while the third term is the expected rate of real depreciation. Neither of these latter terms are directly observable, and so it is difficult to draw conclusions about real interest rate parity from *ex post* data. Indeed, as Frankel (1992) and Obstfeld (1995) stress, it is only possible to draw firm inferences about the effects of restrictions on capital mobility in studies of either covered interest differentials, or of the onshore–offshore interest differential. If forward cover is not purchased, then an agent with assets in one currency and liabilities in another is bearing some exchange rate risk. If this is the case then we can still test for the effects of constraints on capital mobility, but these tests (on the uncovered interest differential) are conditional on our modelling of unobservable exchange rate expectations.

Over the last 20 years markets for 'offshore' deposits have developed for many currencies. An 'onshore' market is one that comes under the jurisdiction of the monetary authority that issues the currency in question, while an offshore market is one that comes under another jurisdiction. The most common offshore markets used by participants are located in large financial centres such as London. The offshore market exhibits the same currency risk as an onshore market, and hence the unobservable component in the study of uncovered interest

parity is absent. If onshore and offshore assets are in the same risk class and are of the same maturity, then they should bear the same rate of return. If they do not then riskless profitable arbitrage opportunities should be available, and we would expect them to be taken up. Hence any observed interest differential between, say, the onshore and the offshore three-month interbank rate of return for a currency can be seen as a strong indicator of the existence of barriers to capital mobility. As Obstfeld (1995) argues, this market is the most appropriate for direct tests of the effects of capital controls. This is the only place where we can directly observe the effects of controls on the market. Lemmen and Eijffinger (1993, 1994) have studied it for a number of European countries. There is an argument for extending their work by increasing the country coverage of differentials and undertaking statistical tests for a changing structure when barriers to mobility were altered.

2.3. Consumption risk sharing

If domestic capital markets worked well then the removal of barriers to capital mobility at the short end should lead to portfolio adjustments within countries in order to equalize returns at each maturity across all countries. However, internal restrictions and other barriers frequently slow down this process. If markets work well then pressure to equalize returns at the short end should feed up the asset spectrum, obviating the need for large scale long-term capital flows. However, net saving and investment imbalances would still require a (small) transfer of resources.

If capital is mobile there will be effects on quantities as well as prices, and Frankel (1992) and Obstfeld (1995) discuss saving and investment associations. Once capital markets are fully integrated domestic saving should flow to the highest yielding location. In the short term at least we would expect that an increase in saving in a country would more profitably find an outlet outside the country than inside it, and hence there should be little association between saving rates and investment shares. Similarly we might expect that consumption across countries would show stronger associations as barriers to mobility were reduced.

Perfect capital mobility would allow individuals to trade differential consumption risks. In order to investigate the evolving potential for such trades it is possible to analyse either equity markets and the evolution of returns on assets, or consumption patterns and their coherence over time across countries. Equity markets are the major institutions that encourage inter-country risk sharing, and increasing coherence between markets can be a good indicator of financial integration.

The evidence from short-term financial markets is that arbitrage is now much better between onshore and offshore markets, and observed differentials are likely to be due to minor transactions costs. As short-term banking sector funds are mobile, returns are equalized across countries. We would also expect that arbitrage along the liquidity spectrum to bonds is more efficient in the 1990s because of the single market programme. However, more complete price arbitrage does not necessarily mean that risks are being more efficiently shared. Both inward and outward portfolio investment in Europe increased, and it is clear that the process of liberalization has progressed sufficiently for consumption risks to be shared across countries. However, it is necessary to investigate whether or not this has affected the actions of individuals in the economy.

One of the implications of perfect capital mobility, emphasised particularly by Obstfeld (1995), is that countries' marginal utilities of consumption should be proportional to each other and therefore perfectly correlated across states of nature. Thus, in adverse states of the world, all individuals will have low consumption, and conversely in benign states; consumption risks are therefore shared with perfect capital mobility. Observed correlations between consumption across different countries over time are, however, rather low. Obstfeld (1995) found some evidence of an increase in the correlation of consumption across EU countries, but generally the findings were not consistent with the theory. Since the model embodies a number of assumptions, it is not clear whether this is a rejection of the assumption of perfect capital mobility, or of its various other assumptions. The model depends for instance upon the relevance of the representative consumer with stable preferences, and assumes that all risks, including those to human capital, are diversifiable. There are also many other factors that have influenced patterns of consumption over time. There is a large amount of empirical literature that attempts to explain patterns of consumers' expenditure in individual countries, with particular emphasis on the effects of demographic changes, financial liberalization and imperfect domestic capital markets. Any one of these will have had different influences in different countries, and their combined effects, particularly in Europe over the past 20 years, have dominated the influences from increasing capital mobility.

As Obstfeld (1995) notes, 'the representative consumer model . . . gives a misleading picture of how national consumption levels actually are determined . . . imperfect correlations among industrial country consumptions are . . . the result of generalized asset market incompleteness rather than of international capital market segmentation'. This suggests that testing the correlation of consumption across countries is not a very revealing way in which to examine the extent of capital mobility.

2.4. Saving and investment

Capital market liberalization should have a significant impact on the real operations of the economy. There are a number of ways we might investigate this, even given the problems involved with studying the coherence of consumption across countries. It is particularly instructive to look at the coherence of savings and investment flows, and there is a very large body of work examining this association, both across countries and across time. Much of the work stems from a paper by Feldstein and Horioka (1980), who undertook a simple cross-section regression of the ratio of investment to income on the saving to income ratio for 16 OECD countries over the period 1960–74.

$$I_i/Y_i = \alpha + \beta\, S_i/Y_i + \varepsilon_i \qquad \textbf{(2.4)}$$

If a random shock raises investment as a proportion of income in a time period, there is no reason why an individual in an open economy should raise their saving to finance it. Indeed, if risks can be traded, they should have some sort of insurance in place that allows temporary finance from abroad. Similarly, a positive impulse to consumption should lower the saving rate, but there is no reason why an individual or country faced with perfect capital markets should alter their investment plans. A large number of papers have been produced extending the strong association between saving and investment displayed in the first Feldstein and Horioka paper, attempting to overturn it and provide explanations for it. Despite this, the debate has only just begun to acknowledge the constraints on saving and investment in the long run that flow from the need for individuals and governments (and hence nations) to be

solvent. As a result many of the conclusions that have been drawn about the lack of evidence for the effects of increased capital mobility have been rather stronger than can be justified.

2.5. Residual barriers to capital mobility

Empirical studies such as those referred to here can provide strong prima facie evidence of barriers to capital mobility in the past. It is more difficult to use empirical work of this sort to provide an accurate picture of such barriers at the present time. It is also difficult to identify what specific factors in individual countries may be restricting or distorting the movement of capital. Answers to these questions must be found from other sources. Governments are required to provide the IMF with notification of any changes in exchange controls. They also register with the OECD restrictions to capital market operations and transactions that are still applied. Information may also be obtained directly from private sector participants in financial markets. It is clearly useful to ask such actors what restricting or distorting factors they encounter in their cross-border transactions in securities and in their operations in national capital markets. It should be possible to construct indicators of the extent to which free movement of capital exists, and also to ascertain what further steps would need to be taken to achieve perfect capital mobility.

2.6. Conclusions

There are many statistical ways to approach the measurement of capital mobility, and theory gives us a wide range of hypotheses to test. However, our theoretical and empirical categories may not overlap as much as we might like, and any conclusions that we draw will have to be hedged around with caution. Statistical results should also be augmented by direct observation of the opinions of market participants. However, snapshots of opinions do not give us a great deal of information about the dynamics of the evolution of controls. We know that rules have been constantly changing and that the single market programme has changed competition in a number of European industries. There is no need to doubt that the process of continual evolution has affected financial markets as well.

3. Capital mobility

3.1. Introduction

Reducing barriers to trade is generally seen as economically beneficial, increasing welfare and the prospects for production. Financial assets are designed to ensure that trade can take place over time rather than over space, and barriers to trade in financial assets are likely to have similar welfare-reducing effects to barriers to spatial trade. However, trade in assets is also trade in contingencies, with differing risks being associated with differing assets, and different states of the world being associated with different returns. In this section we look first at the micro-economic benefits from the freedom of capital movements, and then at the implications of theory for the structure of portfolios, and discuss the reasons for 'home bias', especially those associated with currency risk. Appendix A gives a more technical version of this. The structure of overall portfolios is discussed, both at an aggregate level for all the EU countries, and in terms of the direct and indirect composition of personal sector portfolios. In particular we look at the role of financial intermediation in diversifying portfolios, and we discuss the role of the multinational corporation in increasing diversification. We also make a comparison of financial intermediation in the UK and Germany in order to highlight how differing financial systems ensure that risk diversification takes place. We then go on to look at the macro-economic impact of capital controls under a variety of assumptions, following Dooley (1995), and then we discuss reasons for the introduction of controls.

3.2. The role of international capital markets

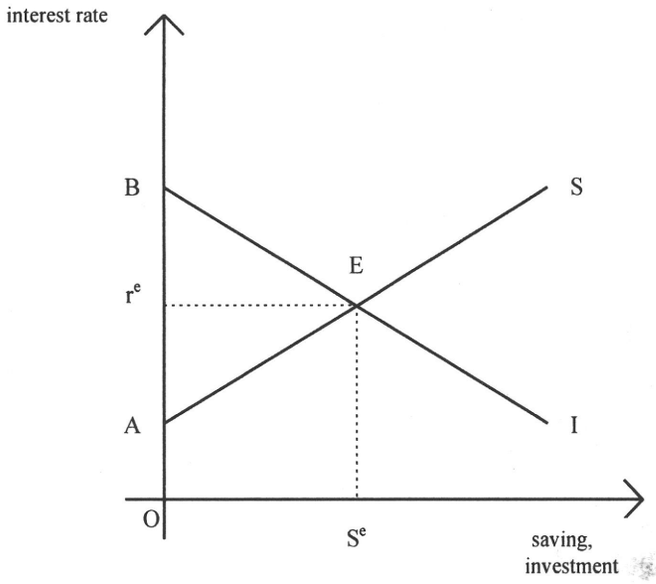
The main purpose of capital markets is to channel resources from savers to investors. They are also used to diversify risks. The advantage of a market which transcends national boundaries is that it enables a more efficient match of saving and investment opportunities and a greater potential for spreading risks. Despite this, over the years many national governments have imposed controls over the international movement of capital. These are likely to have important implications for welfare in the country imposing the control, because domestic suppliers and users of capital are impeded from taking advantage of the opportunities available overseas. In order to illustrate the welfare costs of controls we first discuss the case of a country which moves from a situation of no international trade in capital (autarky) to a regime of free capital movement.

3.2.1. The micro-economic effects of international capital controls

Consider a situation where capital controls are so restrictive that domestic residents are unable to trade on international capital markets. As a consequence, the capital market equilibrium is where desired investment is equal to desired saving. This is shown as the equilibrium E in Figure 3.1. The saving schedule, S, is an upward-sloping function of the interest rate and the investment schedule, I, is a downward-sloping function of the interest rate. The equilibrium rate of interest is r^e and the equilibrium amount of saving and investment is S^e. The diagram is drawn such that the saving and investment schedules cut the vertical axis at points A and B respectively. The area under the (compensated) saving schedule ($OAES^e$) represents the amount of interest that savers would be prepared to accept for giving up current consumption. The equilibrium amount that they actually receive is Or^eES^e. They receive a surplus of Ar^eE. The area under the (compensated) investment schedule ($OBES^e$) represents the amount of

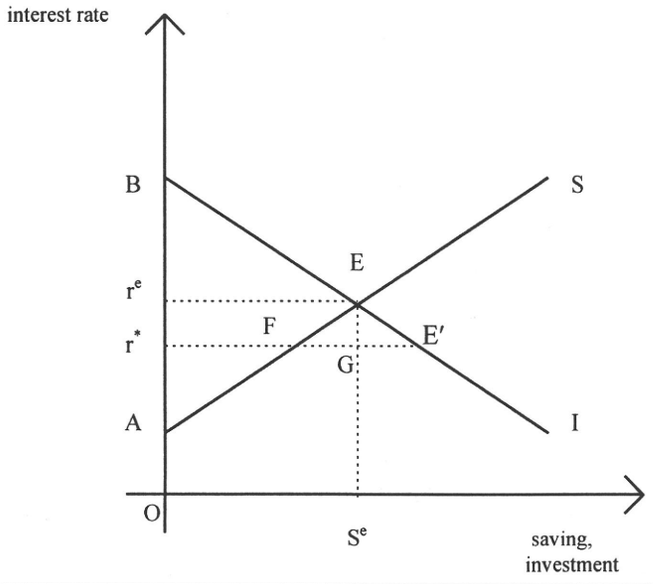
interest that investors would be prepared to pay to acquire funds for investment. The equilibrium amount that they actually have to pay is Or^eES^e. They receive a surplus of Br^eE.

Figure 3.1. Interest rates with autarky



Suppose that outside of the country that has imposed the controls, there is a well-functioning international capital market in which the international real interest rate is established at r^*, which is assumed to be lower than in the economy where capital movements are controlled. This is shown in Figure 3.2. The effect of removing the capital controls is that the domestic real interest rate would fall to r^* if the country is small enough relative to the size of world markets, the equilibrium amount of saving would fall, and the equilibrium amount of investment would increase.

Figure 3.2. Interest rates with financial trade



The investors' surplus increases to Br^*E' and the savers' surplus contracts to Ar^*F as a consequence of the reduction in interest rates. The net increase in national welfare is shown as the area in the diagram designated as FEE'. This can be seen as being made up of two parts. First, there is an improvement in welfare because the investment previously undertaken in the country where capital controls are removed is now financed more cheaply on the international capital markets. Thus investors benefit by the area r^*r^eEG for this reason. Not all of this is a national gain since savers who had been earning r^e for the use of their funds now receive only r^* so they lose the surplus r^*r^eEF, leaving a net gain of area FEG because the previous level of saving is provided more cheaply. There is a further gain in welfare to investors of GEE' representing the extra surplus associated with the increase in investment arising from the reduction in interest rates.

The increase in welfare that arises here is due to the benefits of financial trade with other nations. The fact that the real rate of interest in the world market is lower than in the domestic economy suggests that the rest of the world has a comparative advantage in producing saving, and this is exploited when access to the world market is granted. Welfare would also be increased in the case where the world real interest rate is above the domestic autarky rate. But in that situation, the higher world rate implies that the domestic economy has a comparative advantage in the supply of saving. Domestic saving would rise and benefit from the higher return available elsewhere. Domestic investors would lose and domestic investment would be reduced.

This analysis suggests that for the small open economy, the removal of capital controls improves national welfare. Not all residents benefit, however. Domestic savers lose when the world interest rate is below the domestic interest rate and domestic investors lose when the world interest rate is above the domestic interest rate. Hence, the existence of barriers to capital mobility and their effects depend, at least in part, on the outcome of the political process mediating between different interest groups. The analysis also assumes that the marginal social benefits of investment and savings are equal to their costs. It may be that this is not the case, in which case the welfare analysis would need to be extended to take account of any perceived differences.

It is useful to draw attention to the observable implications of this simple model. First, with free capital mobility, real interest rates should be the same everywhere. Second, trade in capital should lead some countries to be capital exporters and others to be capital importers; there would be no need for savers in a capital importing country to hold foreign assets, as they would have no reasons to prefer domestic over foreign securities. Third, with free capital mobility, shocks to domestic saving should be reflected in changes to capital exports or imports but not to domestic investment. By contrast, without free capital mobility, shocks to domestic saving would need to be reflected in changes to domestic investment.

These implications of the simple model break down to a greater or lesser extent when we go to consider more sophisticated approaches that extend the model to take account of risk. The most obvious extension is to consider the effects of exchange rate uncertainty. This is discussed in technical terms in Appendix A on the international capital asset pricing model (ICAPM).

3.2.2. The effects of exchange rate uncertainty

The most important effect of exchange rate uncertainty as far as trade in capital is concerned is that it makes foreign currency assets and liabilities risky. The implication of this is that risk-averse investors will require a premium above domestic interest rates to hold foreign currency assets, even though those assets might be completely safe in foreign currency terms. Similarly, foreign investors require a premium to hold domestic currency assets. Clearly, in equilibrium both cannot expect to earn a premium, and this suggests that the equilibrium risk premium will be on assets denominated in the currency of the country which is a capital importer.

Suppose that the domestic economy is a capital importer: then the risk premium on domestic currency assets would affect the predictions of the simple model in a number of ways. First, it is no longer the case that real interest rates are expected to be the same everywhere. Instead they are likely to be higher in capital importing countries. As a consequence, investors in capital importing countries do not receive the full advantage of international capital mobility as they need to pay higher interest rates than foreign savers would be prepared to accept on foreign currency assets. There is some offsetting advantage to savers in the capital importing country in that domestic interest rates are higher than would otherwise be the case. Because of this domestic savers would never rationally hold foreign assets which offer a lower expected return and are risky. Third, domestic investment is unlikely to be fully independent of domestic savings since the latter will affect the risk premium on domestic interest rates and therefore domestic investment.

It is possible that the asymmetry in international interest rates engendered by exchange rate uncertainty is sufficiently important so as to prevent trade in capital taking place at all. That is, the domestic interest rate under autarky may lie above the interest rate on foreign currency assets, but below the rate at which foreigners are prepared to hold domestic assets. It is clear then that the effects of exchange rate uncertainty are likely to prevent international trade in capital from realizing its full potential.

3.2.3. Market models for portfolio equilibrium and uncertainty in asset returns

Individuals (and financial intermediaries working on their behalf) have streams of income and commitments that do not necessarily match over time, and hence they have to hold financial and real assets that allow such trade. There are a variety of such assets, and a variety of possible outcomes in a risky world. Individuals can be presumed to hold both safe and risky assets, and the literature on capital asset pricing has set out the conditions under which this can be done optimally. This literature has also been extended to cover a spectrum of assets in a variety of countries and currencies. The individual investor will maximize their returns subject to the costs of increased risk. The structure of their portfolio will depend upon the individual's preferences, which are commonly summarized by a 'coefficient of absolute risk aversion', as well as by the relative supply of assets and their risk characteristics. If the market is in equilibrium then individual asset holdings will be proportional to the supply of assets. The factor of proportionality will depend upon how risk averse an individual is relative to the aggregate degree of risk aversion. If all individuals have the same degree of relative risk aversion then everybody will hold the same portfolio proportions, whereas if absolute risk aversion varies then the proportion of the portfolio allocated to safe assets will vary. However, risky assets will be held in the same ratios by all individuals. Because of the possibility of spreading risks, it is likely that the average risk premium on risky assets is lower

in an integrated capital market than it would be in a number of separated but closed markets. This implies that the cost of capital is likely to be lower for any given level of interest rates on safe assets.

The simple capital asset pricing model can be applied to international portfolios of real and financial assets. All individuals should hold the same structure of risky assets, and hence the portfolios of individuals and institutions in different countries should have asset holdings in the same proportions. Hence, all portfolios should reflect the relative supplies of assets, independent of country of origin of the asset or location of the holder. This is clearly at variance with the observed structure of portfolios. If we consider the structure of financial assets by country in Europe we observe considerable differences that are not likely to be explained by differences in absolute risk aversion. For instance, in 1990 the Austrians held the equivalent of 8% of their GDP in foreign currency portfolio assets, while the Germans held the equivalent of 12.1% of their GDP, and the UK and the Netherlands held 34% and 22.3% respectively.

Significant home-country bias can be explained in a number of ways, and it may result from market-driven transactions costs, or government-constructed barriers in the form of taxes or regulation. As discussed above, the most obvious source of market-driven barrier may well be associated with exchange rate uncertainty. Each individual in the market place may hold assets in domestic currency and in foreign currency, and for equivalent risk category assets there is an additional risk involved in holding a foreign asset. This additional risk may be covered by a risk premium on the foreign denominated asset. However, market equilibrium may then be difficult to attain, as one investor's foreign currency asset with a risk premium built into its yield is another investor's home currency asset with a return above that required for its risk class. Given this potential incompatibility it is not perhaps surprising that we see significant home-country bias. It is necessary to be able to determine whether or not the degree of home-country bias we observe can be justified as a reasonable response to exchange rate uncertainty.

Individual countries have separate tax regimes, and these may induce a home-country bias in the structure of portfolios. Systems for the taxation of capital income are very complex, and tax rates depend upon both the home and host country. The combination of potentially higher tax liabilities from sources such as withholding taxes, and the sheer complexity of dealing with an international tax system may be enough to induce a significant degree of home-country bias. The coordination of corporate tax systems in Europe may well be an important step in the removal of barriers to inter-temporal trade.

Financial regulation for prudential purposes is clearly important both for the conduct of macro-economic policy and for the reputation of a financial system. Individual financial intermediaries may not internalize all the risks associated with their own actions, and regulators attempt to constrain action in order to reduce systemic risk. It is, however, difficult to distinguish between the effects of good prudential regulation and regulation for restricting capital flows for other ends.

Thus it is not only capital controls that cause some of the predictions of the simple model described above to break down. However, there is a difference between capital controls and other types of impediment to free capital movements. Whereas capital controls imply a separation between different national capital markets, the other types of restriction act more as

a tax on capital movements in that they cause distortions but do not prevent trade altogether. Thus they tend to imply that the rates of return on some assets are higher than others but, given this premium, the rates of return should move in a similar way over time. Similarly, they imply that while domestic saving and investment will not diverge by as much, as would be the case without such impediments, they would nevertheless be relatively independent of each other in the short run. By contrast, capital controls imply that a much closer connection between domestic saving and investment should be observed.

Direct capital controls have been imposed for many reasons during the post-second world war period. They are designed to reduce capital flows, either outward or inward, or reduce the volatility of such flows. As such they may well have changed the structure of portfolios and increased home-country bias. Indeed, even the threat of the imposition of controls, or a perceived risk of them being introduced, may be enough to alter behaviour significantly. Controls are easier to measure than the structure of tax systems or the international dimension of prudential controls. Hence, it should be easier to evaluate whether or not their removal has had an impact on the observed structure of asset holdings in Europe.

3.3. The structure of asset holdings

Home-country bias is clear when one looks at individual portfolios. In the UK, for instance, only 1.1% of personal sector net financial wealth is held in overseas assets. However, one should be cautious when looking directly at the structure of portfolios. Individuals can diversify into foreign assets in three ways. Individuals may buy foreign assets themselves, or they can employ intermediaries who pool the individual risks associated with foreign securities. Alternatively they (or their intermediary) can buy assets in companies that have a significant foreign presence. Deposits and assets with intermediaries such as banks and life assurance and pension funds will normally be denominated in domestic currency, as will the equities of domestically resident international companies. However, the value of both these types of assets will reflect the returns from a variety of markets in a variety of countries.

It is instructive to compare asset holding in Britain and Germany, two of the countries with relatively high levels of capital mobility. (Further details can be found in Appendix B.) In both countries the government and the company sector are net debtors, as is the overseas sector. The personal sector is the main creditor. The direct structure of personal sector net financial wealth appears to differ, with UK residents holding 60% of their portfolio in pension funds etc., as compared to only 30% in Germany. However, most assets are held with intermediaries, and these diversify the portfolio that the individual ultimately holds. In both countries around half of personal sector assets are held in the domestic company sector, around a third are held in foreign portfolio assets, and the rest are held in government debt. Even this degree of foreign exposure may underestimate the effects of currency diversity on consumption risk sharing, as in both countries up to a quarter of domestic companies' activities (and hence profit sources) are undertaken abroad.

We can judge the degree of genuine portfolio diversification by looking at the size of foreign assets and liabilities for the European countries in Tables 3.1 to 3.4 and undertake some comparisons with Tables 5.3 and 5.4, which set out the stocks of portfolio assets for countries where data is available.

If we take 1991 as an example, we can compare seven of the 15 Member States of the Union. That year the UK had foreign assets worth 175% of GDP, and portfolio assets worth some 42% of GDP. This may exaggerate genuine diversification as some of the overall assets are in the banking sector and they will be matched by deposits. The same may be true for the Netherlands, where foreign assets were worth 146% of GDP, with portfolio assets covering 30% of GDP. Both countries have large stocks of foreign direct investment, and this explains much of the difference between the two sets of figures. Germany also has large stocks of foreign direct investment, and in 1991 only one-sixth of its foreign assets of 71% of GDP were accounted for by portfolio stocks.

Only 10% of Austrian foreign assets were in portfolios in 1991, as were only about 4% of Finnish foreign assets. Again, both countries hold large amounts of outward foreign direct investment. The same is not true for Spain or Italy, and both have relatively small stocks of foreign assets, with 25% in portfolios for Italy but only 5% for Spain. However, even in these countries, which had relatively stringent outward capital controls, direct investment outflows took place and helped diversify portfolio risks.

Table 3.1. Foreign assets as a percentage of GDP (EU members)[1]

Year	A	B	DK	SF	F	D	I	NL	E	S	UK
1982		227.7	26.9	21.7	54.0	38.1	21.6	96.8	18.4	20.7	137.0
1983		236.5	30.3	22.5	56.3	36.4	22.8	97.2	19.7	25.8	151.7
1984		257.3	33.0	27.6	60.3	38.8	24.9	103.3	24.6	23.9	165.2
1985	78.3	323.3	51.7	33.6	67.6	54.3	28.0	130.4	24.7	31.4	186.0
1986	69.8	305.2	46.1	30.0	57.9	55.8	25.8	119.8	22.1	25.6	187.5
1987	68.3	323.3	51.8	34.1	62.6	59.3	25.7	124.6	25.6	29.7	187.2
1988	59.9	290.1	54.2	30.8	58.9	57.1	24.2	118.9	24.1	30.8	166.3
1989	68.0	343.9	64.8	31.7	82.4	72.3	30.1	141.8	26.3	28.8	181.3
1990	63.8	346.6	72.8	34.9	99.7	72.7	31.3	137.9	27.0	35.3	178.5
1991	62.9		84.3	37.9	101.2	71.3	33.5	145.9	30.5	34.7	174.5
1992	59.6		77.3	39.5	101.3	64.9	30.5	134.6	29.2	29.5	169.2
1993	63.2		89.0	52.2	117.0	73.7	42.2		45.3	41.0	216.2
1994	66.1		77.8	53.5	122.6	78.2	47.0		46.2	44.8	213.9

[1] Abbreviations for countries are as follows: A=Austria; B=Belgium-Luxembourg; DK=Denmark; SF=Finland; F=France; D=Germany; I=Italy; NL=the Netherlands; E=Spain; S=Sweden; UK=United Kingdom.

Table 3.2. Foreign assets as a percentage of GDP (non-EU countries)

Year	Australia	Canada	Japan	Norway	Switzerland	US
1982	5.0	36.5	20.9			31.7
1983	6.7	36.2	22.8			33.2
1984	7.5	39.7	26.9		190.7	30.2
1985	9.1	41.2	32.5		266.2	30.2
1986	12.1	45.8	36.6		246.8	32.3
1987	17.8	50.0	44.4		258.2	33.2
1988	20.4	54.3	50.7	38.7	233.8	34.2
1989	22.1	56.9	61.7	41.5	263.5	35.7
1990	25.3	61.7	63.3	42.5	246.0	35.4
1991	25.7	67.0	59.8	42.5	251.2	35.6
1992	28.4	67.7	55.6	38.0	239.9	34.1
1993	29.3	76.0	52.0	43.2	272.3	36.1
1994	31.0	81.6	52.8	45.4		35.3

The scale of underlying portfolio diversification varies considerably across countries, as can be seen from Tables 3.1 to 3.4. Capital market liberalization has been one of the factors behind the growth of foreign assets. The gradual removal of controls has been a major factor, as has the development of the single market programme. Since 1986 foreign asset positions have been growing much more rapidly in the EU countries than outside (with the exception of Australia), and most of this growth has been in non-portfolio assets, and particularly in foreign direct investment, especially through mergers and acquisitions. Some countries such as the UK, the Netherlands, France and Switzerland already have gross asset stocks that exceed their nominal GDP, and such stocks are large in all countries in Europe. It is noticeable that the growth in the stock of assets as a percentage of GDP between 1986 and 1994 was large in countries such as France (112%), Spain (109%), Italy (82%) and Finland (78%) where significant capital market liberalization took place (or had just taken place) through the removal of controls at the long and short end. Growth rates were much more modest in countries that had liberal regimes throughout the 1980s. US gross assets grew by only 9%, and UK gross assets grew by only 14% over the same time period, even though the UK was also benefiting from the opening of European markets to investment that resulted from the single market programme. Indeed, as France and the UK are countries similar in size, we could say that the US$ 65 billion increase in French assets, as compared to a US$ 27 billion increase in UK assets, allows us to judge the importance of the removal of barriers and controls.

Table 3.3. Foreign liabilities as a percentage of GDP (EU members)[1]

Year	A	B	DK	SF	F	D	I	NL	E	S	UK
1982		231.3	61.0	39.5	57.3	34.1	26.8	76.9	30.1	38.5	123.6
1983		241.5	64.2	43.0	62.2	32.1	27.1	75.9	33.1	47.4	135.5
1984		261.3	71.5	47.3	67.2	32.7	29.1	79.6	34.7	44.6	145.6
1985	90.5	328.4	99.9	52.3	71.3	46.7	35.6	107.0	36.2	59.5	164.6
1986	80.5	308.0	91.0	48.6	57.7	45.7	31.8	100.2	29.9	47.4	162.3
1987	80.2	324.0	96.7	54.5	62.0	44.8	31.5	105.3	32.5	52.0	171.6
1988	70.9	287.4	95.6	51.1	60.4	40.2	30.8	100.7	31.9	55.5	153.4
1989	77.5	338.7	108.6	55.5	86.7	50.2	39.3	123.4	36.5	64.8	171.7
1990	72.6	340.3	110.8	62.3	107.3	49.6	42.5	121.0	41.3	79.6	180.1
1991	74.4		127.6	74.1	115.1	51.3	46.0	128.6	48.4	79.4	175.4
1992	68.8		112.1	83.7	109.4	49.3	42.3	121.5	45.6	73.5	168.5
1993	73.6		121.0	109.1	130.0	60.2	54.3		61.4	98.2	214.6
1994	77.8		106.4	110.1	133.6	67.1	57.7		65.7	103.3	211.7

[1] Country abbreviations as Table 3.1.

Table 3.4. Foreign liabilities as a percentage of GDP (non-EU countries)

Year	Australia	Canada	Japan	Norway	Switzerland	US
1982	19.8	91.6	18.7			23.5
1983	24.5	91.4	19.8			25.5
1984	26.8	94.7	21.1		111.3	26.2
1985	33.6	100.7	22.9		155.2	29.0
1986	44.1	109.7	27.5		154.4	33.6
1987	55.1	116.2	34.5		150.5	36.3
1988	57.9	120.7	40.7	58.1	136.3	39.2
1989	62.8	125.7	51.5	61.7	163.3	42.5
1990	72.7	135.1	52.2	58.1	153.5	41.8
1991	79.0	146.8	48.4	54.4	152.9	43.4
1992	84.2	150.8	41.6	46.0	145.7	44.2
1993	86.3	167.1	37.5	50.1	170.2	46.3
1994	90.8	176.0	37.8	47.8		46.9

3.4. The macro-economic effects of capital controls

Barriers to the mobility of capital will generally have similar effects whatever the motive for their construction. If there are no barriers to the mobility of capital, then if the exchange rate is fixed the authorities have no control over the money supply or financial conditions (at least in a small open economy). If on the other hand the exchange rate is determined in a free (or managed) float, then the absence of capital controls means the authorities have little or no control over the volatility (or level) of the exchange rate. Capital controls could either help isolate domestic financial conditions from the world market, or give the authorities a greater ability to control the exchange rate, or allow some combination of these.

Barriers to capital mobility have to be evaluated in a theoretical framework, as Dooley (1995) emphasized, and it is clear that it would be inappropriate to use one where all markets cleared instantly. If they did so, then there would be little reason for introducing capital controls to change the outcome. Controls are potentially appropriate when it is felt necessary to change market outcomes because one or more markets do not work well. It is commonly assumed that wages and prices take time to adjust when the determinants of equilibrium change, but that financial markets work quickly. Hence, it is common to work with variants of the Mundell-Fleming model of a small open economy when analysing the effects of capital controls.

If exchange rates are managed, then the authorities cannot control monetary conditions unless they can influence capital movements. This will be true in fixed-rate systems, such as Bretton Woods and the core ERM, as well as managed adjustable systems, such as the pre-ERM snake. However, stabilization can be undertaken using fiscal policy. Hence, as Branson (1993) suggested, the use of capital controls in a managed exchange rate system suggests that the authorities are not completely free to use fiscal policy for stabilization purposes.

If exchange rates are free then monetary policy can be used. However, as Dornbusch (1976) argued, we have to assume that the foreign exchange markets are rational, and that the exchange rate is determined by expectations of future events. Hence, a slight rise in interest rates now, if presumed to be sustained, could cause a significant increase in the exchange rate. As we have to accept that wages and prices take more time to react than the financial markets, then there will be a real appreciation of the currency in question. This causes a loss of competitiveness and raises real interest rates as downward pressure is put on prices. Both of these effects cause a contraction in inactivity. In both these situations the authorities may feel that capital controls would be of use to them. Dooley (1995) suggested that the enthusiasm for controls appears to be strongest amongst those who have not previously operated them, although this remark appears to be more pertinent for US (and developing country) experience than that of the EU, where it is clear that controls have given a number of countries some ability to change macro-economic outcomes for sustained periods.

We can usefully distinguish between stock and flow restrictions on capital mobility, even though in long-run equilibrium they should have the same effects. We also have to consider that such restrictions may not be obviously designed to affect the foreign exchanges, as they may well be dressed up as part of prudential regulation or as elements of the domestic monetary control regime.

Stock controls appear to be largely designed to affect relative rates of return, protecting domestic markets. These controls may be directly aimed at foreign markets, where they have

included restrictions on foreign investment by domestic firms and the purchase of property abroad by domestic residents. Alternatively, they may involve restrictions on the domestic operations of domestic companies. Prudential regulation may restrict the size of foreign assets in domestic portfolios, and banking regulation may affect foreign deposit taking and lending. In general these sorts of controls appear to be designed to force a wedge between domestic and overseas rates of return.

(a) Preventing direct investment outflows may well protect (inefficient) domestic firms, but it is not necessarily optimal to do so.
(b) Similarly, portfolio restrictions reduce the cost of equity finance to domestic firms, and can be criticized for similar reasons.
(c) Banking regulation may well reduce the cost of financing government debt, but at the cost of a welfare-reducing restriction on the allocation of saving.

Flow controls are generally designed to slow down the speed at which foreign or domestic residents can alter their portfolios of assets. They are often invoked in times of financial crisis, especially when there are speculative attacks. However, they have often been maintained for long periods of time. The UK exchange equalization account and the Belgian dual exchange rate system are good examples of long-lasting flow controls. The former was designed to restrict access to 'investment dollars' to limit outflows, while the latter was, at least initially, an attempt to separate the capital and the current accounts in order to reduce the effect of destabilizing speculation on trade flows. Flow controls have also been introduced as temporary measures, as in France in 1981–82, where restrictions were introduced on purchases of foreign securities and on foreign exchange by individuals.

Capital controls appear to have little effect in the long run when there are a sequence of speculative attacks. If the fundamentals are wrong, and the authorities are unwilling to introduce policies to alter them, then an exchange rate policy offers speculators a reasonable chance of large gains but little chance of loss. Controls may work for a reasonable period, giving the authorities time to alter institutions in order to help rectify fundamentals. Stock controls and the regulation of the financial system in order to reduce the costs of public borrowing have had sustained effects. However, as Italian experience demonstrates, the removal of stock controls reduces the ability of the authorities to siphon off excess seignorage, and hence puts additional burdens on the tax system.

3.5. Conclusions

In conclusion we might say that the use of controls can give some degree of macro-economic independence in the short to medium term. However, the micro-economic costs, although hard to measure, are likely to have been considerable; and liberalization and the single market programme are likely to reduce such costs. The extent to which direct controls can give macro-economic independence can be judged from the short-term onshore–offshore differential for any country, and we analyse this extensively below. However, controls have extended beyond the short-term money market, and have come in various forms. Prudential regulation has been extensively used as a disguise for controls, and this appears to have had an impact on the structure of portfolios, and hence will have affected returns. The combination of the removal of stock controls and the process of financial liberalization in Europe has had an impact on asset holdings. In particular the overall foreign asset holdings of countries that

have liberalized have been growing rapidly. This process is likely to continue as the single market programme begins to have an impact on the market for financial services.

There does appear to be considerable 'home-country bias' in the structure of portfolios. This is in part inevitable because of currency risk, but controls do seem to have increased home-country bias in a number of European countries. The removal of controls is leading to more diversified portfolios. Financial intermediaries are central to the process of diversification, as they act as agents for the personal sector, and build on their specialist knowledge. If we look at the behaviour of financial intermediaries in the UK and Germany, then we can say that around a third of the personal sector's portfolio is made up of foreign assets. This currency diversification is enhanced by the role of multinational corporations. There are many reasons for the existence of multi-country firms, with firm-specific economies of scale and comparative advantage being the most obvious. However, the multinational also acts as an agent diversifying currency and locational risks in the portfolio of domestic residents. The decision to produce abroad by a domestic company gives the equity holder a trusted agent in a foreign market, and hence reduces the monitoring costs involved in their portfolio. When we take into account the scale of domestic multinationals' activities in the UK and Germany we can say that up to half of the portfolio of the personal sector represents, directly or indirectly, an equity stake in activities abroad. This degree of diversification reflects a long period of liberal capital markets in these countries, but the single market programme is likely to push the process further.

4. The evolution of the capital control regimes of EU Member States

4.1. Introduction

The process of monetary integration in Europe in combination with the single market programme can be expected to have had a significant impact on the structure of portfolios of monetary, financial and real assets throughout Europe. In this section we look first at the gradual development and then removal of controls in Europe, and their impact on short-term interest rate differentials. We also survey the literature on the evolution of controls and their effects, drawing in part on OECD (1993). We report briefly on some tests we have undertaken on the effects of controls.

In the early post-war period, the European countries that were later to become members of the European Union maintained capital controls in an effort to conserve scarce supplies of foreign exchange which were needed to import vital capital goods to rebuild their economies. The Bretton Woods organizations which were set up at this time to promote a liberal international economic order explicitly sanctioned the use of controls on capital movements for domestic purposes. Article VIII of the Treaty establishing the International Monetary Fund states that 'no member shall, without the approval of the Fund, impose any restrictions on the making of payments and transfers for current international transactions'. No mention was made of capital transactions in this context. It was only with the move to a system of convertible currencies by Western European countries in 1958 that the foundation was laid for eliminating capital restrictions.

A further impetus in this direction was given by the supersession of the Organization for European Economic Cooperation (OEEC) by the Organization for Economic Cooperation and Development (OECD) in 1961. The latter drew up separate codes for the liberalization of the majority of current and capital transactions for member countries, although adherence to these was strictly voluntary. Most countries subscribed to the codes, although with a large number of reservations. Throughout the 1960s and the 1970s the deregulation of the use of foreign exchange proceeded, but at a gradual pace. Only from the end of the 1970s did OECD members make resolute actions to completely abolish the system of exchange controls that still prevailed in nearly all countries.[2]

A parallel initiative was undertaken in the European Economic Community (EEC). Article 67 of the EEC Treaty requires the progressive abolition of all restrictions on the movement of capital between Member States, and a Council Directive to implement this was issued in 1960. Although covering many forms of capital movement, the obligation to liberalize was confined to movements of capital from one Member State to another; a safeguard clause under Article 73 of the Treaty permitted Member States to reintroduce restrictions in the event of disturbances in their capital markets, and liberalization of certain kinds of capital transaction (notably the issuing of securities and transactions in collective investment securities) was not made compulsory. The geographical scope of the Directive expanded subsequently with successive enlargements of EC membership, but the drive to complete liberalization was given

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2 Germany, the United States, Canada and Switzerland had significantly liberalized at an earlier date.

fresh impetus by preparations for the single market. In 1988 a further Council Directive set a deadline of 1 July 1990 for the complete removal of capital controls in all Member States except Ireland, Spain, Greece and Portugal, the deadline for those four countries being extended to 1 December 1992, with a possible further extension of up to three years for Greece and Portugal.

At the end of 1978, the European Monetary System (EMS) began operating within the context of the EEC as an arrangement designed to promote European integration and trade through the linking and stabilization of member countries' exchange rates. While Member States were expected to pursue independent domestic monetary policies, with a degree of coordination of economic policies across members that was unclear, the use of capital controls to protect domestic monetary autonomy and the official parity of the exchange rate was recognized and accepted. It was also thought controls would be helpful in enabling an orderly revaluation of parities when the need arose. It was hoped that this could be achieved by having the new exchange rate margins overlap with those of the old, thus preventing currency speculators from profiting from a one-way bet on the movement of a currency.

4.2. The state of capital controls in 1979

The state of the capital control regimes in various countries just after the inception of the EMS is given in Appendix C. A small group of countries substantially liberalized capital flows around this time. This group included Germany, Belgium and Luxembourg, the Netherlands and the United Kingdom.

4.2.1. Countries with liberal regimes

(a) **Germany** had freed outflows and some inflows of capital as far back as 1958. From the early 1970s until 1974 short- and medium-term restrictions on capital inflows were re-instituted in order to stem the rush into the deutschmark as one of the strong international reserve currencies while the Bretton Woods framework of pegged exchange rates was breaking up. These measures were then partly rescinded as conditions calmed in 1974 and 1975, but the threat remained that they might be re-imposed at a later date to keep German monetary growth moderate, or the deutschmark from appreciating too much, as happened in the first half of 1978.

The instruments used by the Bundesbank to regulate inflows of capital were chiefly the setting of minimum reserve requirements on the level of foreign liabilities of banks (at a higher rate than that levied on domestic liabilities), and the curbing of sales of specified domestic money market paper and short- and medium-term fixed-interest domestic securities to non-residents. The quantitative controls on the sale of these domestic securities was reinforced by a withholding tax of 25%.

Short-term speculative pressures on the deutschmark arising from its strength and reserve currency status often conflicted with the commitment of the Bundesbank to a low inflation target. Flows of medium- and long-term portfolio and direct investment were not interfered with. That the Bundesbank was unwilling to let monetary conditions in Germany become excessive was also clear from its policy of not allowing the unlimited use of deutschmarks in the purchase of weak currencies when the latter were threatened with devaluation.

(b) **Belgium and Luxembourg,** which had already formed an economic union, allowed nearly all capital transactions to take place freely with convertible area countries, subject to the proviso that they occur through the free market of the dual exchange rate system that was operated.[3] The requirement to settle transactions at the unofficial rate, which was usually below the official rate used for commercial purposes, represented an implicit tax, and as such constituted a restriction on capital flows. However, the onshore–offshore three-month interest rate differential never sustained a large deviation from zero, indicating that controls had little impact at the short end of the market.

(c) The situation in the **Netherlands** was similar to that in Germany. Portfolio and direct investment in both directions were liberalized in 1960. Restrictions on credits and borrowing by both banks and individuals were retained, however, and were still being used in 1979 to curtail inflowing funds for purposes of domestic monetary policy. The 'five-million-guilder' regulation, which was in force, prevented banks from accumulating net external liabilities in excess of this amount. Controls remained on the placement by non-residents of foreign guilder bonds and long-term lending in guilders by residents to non-residents, although the controls on inflows were weightier than those on outflows of capital.

(d) Prior to 1979 the **United Kingdom** was primarily concerned with restricting capital outflow in order to protect reserve holdings of foreign currency as well as to encourage residents to invest in the domestic market. In October 1979, virtually all remaining exchange controls were abolished. Pain (1993a, 1993b) argued that this probably had the greatest effect on outward direct and portfolio investment.

4.2.2. Countries with significant controls

The pattern of liberalization in the other countries, either then or more recently members of the EU, was generally predictable. Inflow restrictions were not likely to be as extensive as outflow restrictions if a country was not in much danger of losing control of monetary policy as a result of large inflows. Transactions associated with foreign direct investment appeared to be the least prone to regulation, with the degree of restriction increasing as the term of the financial asset decreased.

(a) **Austria** was not a member of the EC in 1979, but had decided to follow unilaterally a gradual course of external financial liberalization. In 1979, some direct investment and all purchases of Austrian securities by non-residents were freely permitted. Other inward capital transfers, such as the extension of loans and the purchase of Austrian shares, needed prior approval from the National Bank. Capital outflow regulation was less stringent, with direct investment and the purchase of foreign shares and securities allowed, although the latter transactions had to be carried out on a spot basis. Financial loans to non-residents with more than one year's maturity could be made to the extent of using the proceeds of the redemption of previous such loans, plus 7%.

(b) **Denmark's** external capital transactions were restricted more than most others in 1979. All foreign direct investment had to be sanctioned. Non-residents were free to buy

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[3] Permission had to be obtained from the Ministry of Finance for issues of securities on the Belgian capital market by non-residents, as well as the purchase by non-residents of shares issued by Belgian companies.

Danish bonds and shares, while residents were prohibited from acquiring foreign shares. Residents' purchases of foreign bonds were allowed provided the maturity exceeded two years, but the proceeds from the sale or liquidation of all foreign assets had to be repatriated. All borrowing and lending between residents and non-residents was subject to exchange control. The position for domestic banks was that positive net commercial foreign balances could be held up to a limit of Dkr 2 million, or 15% of capital reserves, whichever was higher.

(c) **Finland** maintained very tight controls. All outward transfers of capital required prior approval. Investment by residents in foreign securities was rarely permitted, and lending to non-residents was normally confined to export credits. All inward direct investment and foreign currency loans needed approval, with medium and long-term borrowing by residents additionally subject to a selective deposit requirement. The purchase by non-residents of Finnish securities and shares was open; however, the repatriation of returns needed authorization.

(d) Nearly all capital transfers between **France** and other countries were restricted and subject to prior approval requirements. Most acquisitions of French and foreign securities abroad were permitted, as were capital receipts from foreign countries. However, such receipts could not be used to create a foreign currency asset for a domestic resident. There were, additionally, special controls on outward and inward direct investment and on borrowing abroad.

(e) In **Greece** all external capital transactions were subject to approval, and inward investments were further hampered by restrictions on the transfer of capital, profits and dividends. The purchase abroad of securities for personal use was not normally permitted.

(f) In **Ireland** all outflows of capital required approval. Most capital inflows were subject to a 50% deposit requirement, although this was suspended three months into 1979. Applications had to be made to the Central Bank for all borrowing from non-residents. Further, inflows into the banks might be subject to guidelines and inward direct investment was subject to exchange control permission. No other inflows were restricted.

(g) **Italy** put no restrictions on inward transfers apart from loans from non-residents to residents, which required authorization, and were severely curtailed. The same applied to foreign loans by residents. A deposit requirement, on the other hand, applied to all outward transfers of resident-owned capital, whereby 50% of the amount transferred had to be placed in a non-interest-bearing account. Aside from the deposit requirement, outward direct investment was completely unconstrained whereas the purchase of foreign securities was conditional on approval requirements.

(h) All of **Portugal's** capital transactions with the outside world were controlled, except that inward direct investment was permitted in most sectors of the economy. The repatriation of proceeds of inward foreign direct investment could only take place after five years.

(i) Foreign direct and portfolio investment in **Spain** was freely allowed up to a limit of 50% of the capital of Spanish companies. The acquisition of domestic fixed-income securities by non-residents was freely permitted. The granting of loans by non-residents to residents required authorization. However, all outward transfers needed prior

permission, and were generally restricted. Credit could also be extended by banks to non-residents if it was financed with funds deposited in Spain in non-resident convertible currency accounts.

(j) All capital outflows from **Sweden** in 1979 required authorization, which was not usually given for direct investment (unless it benefited the balance of payments), nor for financial loans abroad, nor for the issuance of bonds and shares in Sweden by non-residents. Inward foreign direct investment was often permitted, although it was subject to authorization requirements. Non-residents could freely purchase domestic holdings of foreign securities. Borrowing abroad required authorization, which was often granted for certain long-term lending. As in other countries, banks had an upper limit placed on their net holdings of foreign exchange. A further impediment to capital inflows was the regulation that non-residents' krona balances in External Krona Accounts could not be abnormal, nor earn interest.

These controls may have had a significant impact on the mobility of capital within Europe, and hence may have reduced the effectiveness of the market mechanisms. Before analysing the process of the removal of controls it is useful to look at the evidence from other studies on their effects on short-term interest rates.

4.3. Evidence for the effects of controls at the short end of the market

Testing for covered interest parity and the directly related onshore–offshore premium is the most direct way of testing for the mobility of capital across national boundaries. Obstfeld (1995) for instance considers it the most appropriate gauge of purely financial market liberalization, whereas the association between domestic savings and investment flows, for example, measures cross-border restrictions to flows of investment not only in financial, but also in physical and human capital.

Covered interest parity compares the rate of return on a financial asset in one currency with the return on an equivalent asset in another currency in a different financial centre, and uses the forward exchange rate between the two currencies to express both rates in a common currency. The comparison can be between two onshore markets, or an onshore and an offshore market,[4] since the idea is to capture the 'country premium' associated with investing in a specific political jurisdiction. Under the hypothesis that there are no restrictions on the free flow of capital, the forward exchange rate between the two currencies could be used to cover exchange risk so that international interest arbitrage would ensure that the two rates be equal when denominated in a common currency. Therefore their differential should be zero.

It is also possible to look for the effects of restrictions on capital flows by comparing onshore and offshore rates on equivalent financial instruments in the same currency. This contains the same form of information as the covered interest parity condition. When countries limit the outflow or inflow of capital, then the rates of return in the two markets will differ as international arbitrage cannot take place to equalize rates. The onshore–offshore differential

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[4] Onshore markets are those under the political jurisdiction of the relevant territorial entity. Offshore markets are those which are not, but which at the same time retain some relation with the onshore market. For example, offshore markets would most likely be the destination of funds which were unable to be invested in onshore markets because of capital controls. The divergence from covered interest parity between assets on an offshore market that are identical apart from their currency of denomination is expected to be very small. It does not, of course, reflect a country premium.

gauges both ongoing transactions costs and the effects of barriers to mobility. If there are no barriers to mobility, the differential should be small. During periods of turbulence they tend to widen appreciably, and hence are good indicators of pressures that might be building up for the introduction of capital controls.

The number of empirical works measuring the size and variability of the country premium is relatively modest. The majority of these have looked at the degree of financial market integration for particular countries over the 1970s and 1980s. We will concentrate on results that are particularly significant for European developments.

(a) Using the covered interest parity measure, capital mobility has significantly increased over time, and by the 1980s the differentials show evidence of near-perfect capital mobility for many industrial countries. Most developing countries, however, which are known to maintain extensive capital controls, have period average differentials of at least several hundred basis points.

(b) Further, data on currency and interest rate swaps, recently made available, has permitted such tests to be carried out at the long end of the financial spectrum (maturities of two years or more). The results of these tests are very similar to those for short-term assets, confirming the finding that for certain industrial countries the movement of capital is more or less free of control.

In the literature on covered interest parity and onshore-offshore differentials it is rare that any formal statistical tests are employed to test for the degree of capital mobility. Instead, the mean and standard deviation of the interest rate differential are simply reported, sometimes together with a 95% band encompassing deviations from covered interest parity. A good rule of thumb is that if the differential is lower than 0.5% in absolute value then the flow of capital is not restricted by government controls. A small differential of this magnitude may be accounted for by such factors as information and transaction costs, regulatory requirements or the perceived risk of default, all of which may differ between different financial centres. Differential tax treatment may have a larger effect on the divergence of interest rates across markets, although it is probably true that this represents a type of control as well.

Frankel (1993a) reported the sample mean and variability of the differential over the period September 1982 to April 1988 for a wide selection of open and closed developed and developing countries. He used local and Eurodollar three-month interest rates and Barclays forward rate data. The group of open economies, including Austria, Belgium, Canada, Germany, Hong Kong, Japan, the Netherlands, Singapore, Sweden, Switzerland and the UK all had insignificant mean differentials in the range of -0.5 to 0.5% over the period. The traditionally more closed European countries, including France, Ireland, Italy, Greece and Portugal, along with Mexico, had higher mean values, suggesting that barriers to capital mobility produce significant effects. The size and variability of the interest rate differential for developing countries was much higher than for the developed countries: the mean differential for the group of closed less developed countries is -6.64, while that for the group of closed European countries is -1.10.

The lack of data prior to the 1980s on forward rates beyond two years had prevented studies of covered interest parity among longer-term financial assets. Once currency and interest rate swap data became available, studies were conducted on bonds of five and seven year

maturities. Popper (1993) undertook a comparison for five- and seven-year domestic and Euromarket bonds, using the US dollar and one of five major currencies from October 1985 to February 1988. For both five- and seven-year bonds, and both the domestic and Euromarket cases, the sample mean absolute differential was never more than 50 basis points for the Canadian dollar, the deutschmark, the Japanese yen, pound sterling and the Swiss franc. Additionally, the sample standard deviations of the long-term assets were nearly the same as those for three-month assets, and were smaller than those for short-term assets for other open developed economies as found by Frankel and MacArthur (1988). Hence, there is strong evidence that capital is free to move even in the longer-term market once currency risk is accounted for.

Short-term markets contain a great deal of relevant information about the effects of barriers to mobility in addition to that provided by the onshore–offshore differential. Obstfeld (1995) looked at daily data on three-month onshore and offshore interest rates for France, Italy, Germany and Japan, and also at the ask-bid spread in both markets. This allowed him to investigate the existence of unutilized opportunities for riskless arbitrage. If there are no such opportunities we would expect the onshore-offshore differential to be very low with a very low variance, and we would expect the ask-bid spread to be both small and the same onshore as offshore. Between 1982 and January 1987 the offshore ask-bid spread for France was significantly higher than the onshore spread, and the observed onshore–offshore differential was around -0.27, which can be considered large, suggesting that capital controls had a noticeable impact. After January 1987 there is no evidence for the effects of controls, although turbulence after the summer of 1992 raised the ask-bid spread, and daily data shows some evidence of the activities of the authorities in France in September 1992. It appears, as Kenen (1995) suggested, that prior to 1987 capital controls in France had some impact.

Daily data for Italy in Obstfeld (1995) also indicated that capital controls had some effects between 1982 and January 1987. Offshore rates exceeded onshore rates, and the ask-bid spread was much larger than in France (or Germany). After 1987 onshore rates rose above offshore rates, and up until June 1990 there was little evidence from this data that barriers to mobility were effective. However, between June 1990 and September 1992 arbitrage profits were available, probably reflecting fears that controls would be reintroduced because of pressure on the lira. Daily evidence for Germany suggests that there were few effects from barriers to mobility between 1982 and 1993. The onshore–offshore differential was low and stable, and the ask-bid spread was very small throughout the period. However, riskless arbitrage profits existed on one-fifth of trading days between September 1992 and April 1993. It was suggested by Goldstein et al. (1993) that these untaken opportunities reflected moral persuasion by the Bundesbank to reduce loans from London branches to German parents.

It has been common to look at covered interest parity conditions (or onshore-offshore differentials) and discuss their evolution in relation to the changing nature of the European Monetary System. This was done for the European 12 in Lemmen and Eiffinger (1994). In the period March 1979 to March 1983 only the Netherlands exhibited a covered interest differential against Germany below 0.5, and the UK was the only other country that had a differential below 1.0. The French, Italian, Spanish and Portuguese differentials all averaged in excess of 3.0 over this period, indicating strong effects from barriers to mobility. These differentials fell during the period April 1983 to September 1987, with only France, at 1.6, Spain at 2.3, and Portugal at 7.3 indicating that barriers remained substantial. Between October 1987 and September 1992 differentials dropped to 0.5 or less in all EC Member States except Greece, suggesting there were few existing or anticipated barriers to mobility at

the short end of the European capital market. A similar picture, only with more variability, emerges after September 1992, but there is also evidence of the effects of temporary controls in Ireland and Portugal.

In spite of the trend towards freer capital mobility, when a country temporarily tightens controls, or when the markets perceive a threat of this happening in the near future, the interest rate differential can undergo a large movement away from zero. It can reach several hundred basis points or more. Giavazzi and Pagano (1985) documented this phenomenon for Italy and France in the early and mid-1980s. Experience has shown that countries cannot sustain such a large differential for more than six months to a year.

4.4. The evolution of the ERM and the control regime

Although the international economic climate became conservative and anti-inflationary at the start of the 1980s, not all of the then members of the EEC shared the goal of containing inflation with the same degree of commitment. France and Italy, in particular, did not raise interest rates as high as the northern European countries, with the consequence that their inflation rates were higher and their currencies weaker than the average. Diverging real exchange rates between Member States led before long to speculative attacks on the weaker currencies. These pressures led some countries to intensify exchange controls from 1980 to 1983, especially at the short end of the market.

If short-term controls have an impact then we should be able to observe this in the inter-bank market for offshore and onshore deposits. Returns on identical assets may diverge because of transactions costs, but we would expect the effects to be small. If markets are 'thin' then we would expect the differential to be more volatile but not necessarily to have a higher mean. Hence high differentials, even for short periods, may indicate that controls were effective. For instance, France, Italy and Spain, although the latter was not a member of the exchange rate mechanism of the EMS at the time, experienced onshore–offshore differentials of 11% to 13% at least once in the early 1980s. In all EMS countries (except Ireland and, perhaps, Italy), the general trend in the 1980s was one of increasing deregulation in the early and mid-1980s, however slow, and notwithstanding the tightening of specific controls. In many cases, however, the net foreign exchange position of banks continued to be supervised and limited. For example, the Bundesbank employed this instrument to curb inflows of capital in 1980, and the Italian authorities introduced a reserve requirement on foreign currency deposits with banks as late as 1987. For most of the economies that were not in the ERM over this period no intensification of capital controls took place, except for Spain and Finland. However, controls may have tightened somewhat in France and Italy in the early 1980s.

Nineteen realignments took place between September 1979 and May 1993, and speculative pressure was often associated with these episodes. The realignment in 1987 was the most comprehensive, and it marked a turning point in the history of the ERM as it became clear that the Bundesbank would not let the inflationary policies in other countries infringe on its tight monetary targets, forcing the weak currency countries to do all the adjustment. For much of the post-1983 period the deutschmark became the focal point of the system as members changed their economic policies to keep the value of their currency in line with it. However, not every attempt to shadow the deutschmark was successful and the return of speculative attacks in 1985 and 1986 on the lira, the French franc and the Irish pound resulted in the temporary use of additional controls.

It is common to follow Ungerer (1990, p. 336) in characterizing the EMS as falling into four phases related to the frequency of realignments. Lemmen and Eijffinger (1993), for instance, used this phasing to analyse interest differentials. The first phase of **trial and orientation** ran from March 1979 to March 1983 and, as Table 4.1 shows, there were frequent realignments. During the **period of consolidation** from April 1983 to September 1987 realignments became less common, and the Bundesbank became the effective reference point for setting monetary policy. The Basle-Nyborg agreements in 1987 ushered in the third phase, from October 1987 to September 1992, when policy became more coordinated, but growing asymmetries meant that this can be considered a **period of re-examination**. The fourth phase followed from the major turbulence in 1992. However, we do not feel that this chronology is particularly useful for the analysis of the effects of restrictions on capital flows.

The process of liberalization has been more gradual than the process of evolution of the ERM, and it has been driven by different forces. Significant events in the process of liberalization occurred at different times in different countries. Liberalization has been driven by the changing attitude to the market within Europe as well as by pressures from international organizations such as the IMF and the OECD. The Commission's desire to increase competition within Europe has also been important, and the effects of the single market programme have probably been as significant in driving liberalization as the evolution of European monetary policy. Additional pressure has come from changing information technology that has made it more difficult to maintain controls, or rebuild them once they have been removed. Hence, our analysis in this chapter draws out the chronology of events country by country, as does our subsequent work.

The Basle-Nyborg agreement of September 1987 sought to strengthen the EMS by promoting increased coordination of members' interest rate policies, among other measures. In particular it involved a commitment by the member central banks to intervene without limit to protect existing parities within the ERM. This commitment was limited only in the case of an agreed realignment, and if taken seriously it could have been seen as a guarantee of the exchange rate structure. However, it has to be recognized that such a commitment can, if acted upon, affect domestic monetary conditions. In particular if all the support came from the stronger, potentially appreciating, currencies such as the deutschmark, then it could become difficult for them to sterilize their interventions. An agreement of this form would work best if pressures on the system were symmetric, which they were not, and the 'Emminger' letter, discussed by Kenen (1995), gave the Bundesbank the right to override its ERM commitment if it thought domestic conditions were in danger.

The agreement ushered in a new phase of the 'hard EMS' where it was thought that realignments would be far less likely to occur. Under these new conditions the maintenance of capital controls had less of a rationale, although it was later recognized that everything depended on market expectations. However, it was the single market programme that created and sustained the momentum to completely dismantle exchange controls. The single market programme, adopted in 1987, took as its key objective in the medium term the freedom of factor movements as an integral part of the single market in goods and services. Another EC Directive on capital movements was adopted at the Madrid summit on 24 June 1988, requiring all members to discontinue restrictions on capital movements by 1 July 1990. Exceptions were provided for Spain, Ireland, Portugal and Greece for which the deadlines became the end of 1992 for Spain and Ireland, and the end of 1995 for Portugal and Greece.

Aside from the impact of the single market programme there were other forces pushing countries to adopt a free external exchange regime. Both the increasing sophistication of financial operations in the 1980s and the long history of capital controls made it easier for agents to evade them. As a result of these and other reasons, there was a widespread perception that such controls were increasingly ineffective, in particular with regard to the stabilization of the domestic exchange rate. Developments such as the increasing use of forward currency arrangements and transfer pricing by multinationals also contributed to undermining the effectiveness of controls. The change in the climate of international economic opinion which favoured the free reign of market forces in determining resource allocation led to a greater willingness to allow international capital to discipline the conduct of domestic economic policy. Finally, the removal of exchange controls was important for both the development of national financial systems and the goal of long-term domestic price stability.

Every member of the EC managed to meet the deadline for the removal of controls as set out in the EC Capital Directive of June 1988. Belgium and Luxembourg unified the official and free exchange rates in March 1990. Denmark removed all controls in October 1988. The period of the most intense liberalization for Austria, although not in the EC at the time, was that from 1986 to 1989, with all controls rescinded by the beginning of 1990. Finland, France and Sweden started liberalizing the core of their permanent exchange control system in 1986 and 1987 and completed the process within five years. Sweden and France more or less achieved this by July 1989 and the beginning of 1990, respectively; Finland completed the reform process by the end of 1991. Italy started its major liberalization efforts in July 1988, and completed them within two years. Portugal, Ireland and Spain tackled the core of their controls in 1991 and 1992. They were more or less completely dismantled by the end of 1992. Greece, finally, liberalized most intensively from 1991 to 1994, removing the last main restrictions in May 1994.

A study by the Bundesbank in July 1985 noted that 'capital transactions in major industrial countries are still subject to a multitude of controls or institutional, legal and tax obstacles which impose quantitative restrictions on them or increase the cost of capital movements in such a way that they cease to occur. The current degree of liberalization is in some areas below the level reached just over 20 years ago . . .'.[5] Controls appeared to be strongest on capital outflow. Only in Denmark, the United Kingdom, the Netherlands and Germany, for instance, could residents purchase foreign quoted securities freely and at the regular exchange rate. The complexity of the potential controls is clear from our analysis of the reservations to the OECD Codes of Liberalization, discussed in Chapter 7.

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5 'Freedom of Germany's Capital Transactions with Foreign Countries'.

Table 4.1. EMS realignments March 1979 – June 1993[1] (% changes)

Date	B/LFR	DKR	DM	DR	ESC	FF	HFL	IRL	LIT[4]	PTA	UK£[4]
24/09/79	-	-3.00	+2.00	-	-	-	-	-	-	-	-
30/11/79	-	-5.00	-	-	-	-	-	-	-	-	-
23/03/81	-	-	-	-	-	-	-	-	-6.00	-	-
05/10/81	-	-	+5.50	-	-	-3.00	+5.50	-	-3.00	-	-
22/02/82	-8.50	-3.00	-	-	-	-	-	-	-	-	-
14/06/82	-	-	+4.25	-	-	-5.75	+4.25	-	-2.75	-	-
21/03/83	+1.50	+2.50	+5.50	-	-	-2.50	+3.50	-3.50	-2.50	-	-
18/05/83[2]	-1.90	-1.90	-1.90	-	-	-1.90	-1.90	-1.90	-1.90	-	-
17/09/84	-	-	-	-	-	-	-	-	-	-	-
22/07/85	+2.00	+2.00	+2.00	-	-	+2.00	+2.00	+2.00	-6.00	-	-
07/04/86	+1.00	1.00	+3.00	-	-	-3.00	+3.00	-	-	-	-
04/08/86	-	-	-	-	-	-	-	-8.00	-	-	-
12/01/87	+2.00	-	+3.00	-	-	-	+3.00	-	-	-	-
08/01/90	-	-	-	-	-	-	-	-	-3.68	-	-
14/09/92[3]	+3.50	+3.50	3.50	-	+3.50	+3.50	+3.50	+3.50	+3.50	+3.50	+3.50
17/09/92[3]	-	-	-	-	-	-	-	-	-	-	-5.00
23/11/92	-	-	-	-	-6.00	-	-	-	-	-6.00	-
01/02/93	-	-	-	-	-	-	-	-10.00	-	-	-
14/05/93	-	-	-	-	-6.50	-	-	-	-	-8.00	-

Symbols: + = revaluation; - = devaluation.

1 Core-EMS countries which participate in the ERM of the EMS are: Belgium, Denmark, Germany, France, Ireland, Italy, France, the Netherlands and Luxembourg (as of 13 March 1979), Spain (as of 16 June 1989), United Kingdom (as of 8 October 1990) and Portugal (as of 6 April 1992). Greece does not participate in the ERM. Belgium, Denmark, Germany, France, Ireland, the Netherlands and Luxembourg have a fluctuation margin of $\pm$ 2.25%, Italy $\pm$ 6% and as of 8 January 1990 $\pm$ 2.25%, Spain, Portugal and the United Kingdom $\pm$ 6%. Greece, Spain, Portugal and the United Kingdom belong to the non-core-EMS countries.

2 Adjustment of the theoretical central rates of the pound sterling based on the market rates of 13 May 1983.

3 The realignment dates of 14 and 17 September 1992 reflect the ERM crisis.

4 The United Kingdom and Italy temporarily suspended ERM participation on 17 September 1992.

Source: Eurostat (1993) p. 99.

We discuss the evolution of controls and their effect on the onshore–offshore differential below. Much of the information we need is clear from Figures 4.1 to 4.13 (where a vertical line indicates a realignment). The differences between countries with and without controls are striking, as are the differences between periods with and without controls. Some of these markets had few trades, especially in the early 1980s, but we cannot conclude from this that they were not efficient. Operators in London and New York would have been continually monitoring them, and we would argue that over the whole period lack of trades indicates lack of profit opportunities.

The characteristic pattern of the short-term interest differentials for all countries is one where the differential exhibits a jagged, 'see-saw' movement, frequently moving up, and then down toward zero. The absence of a sustained negative or positive plateau is noticeable, suggesting there is a continual force pushing the differential towards zero. Nonetheless, the differential is regularly higher than an absolute value of 0.5 when a significant control regime exists. Even if the mean differential is low, a high variance may indicate intermittent controls (or a thin market). After March 1983, in spite of greater policy coordination among ERM members, the interest differential diverged from the narrow band of 0.5% around zero if countries still maintained controls. It is only with the elimination of the core controls that the differential becomes approximately zero continuously. This pattern, together with the narrowness of the large negative spikes representing speculative attacks on weak currencies, is probably consistent with the widely held view that capital controls are effective in the short term, but are increasingly circumvented the longer they are around.

In our statistical work we have looked for significant structural breaks in the onshore–offshore differential, and they are reported in the text below. We undertook (GARCH) regressions of the onshore rate (R(on)) on the offshore rate (R(off)):

$$R(on)_t = \alpha + \beta R(off)_t \qquad \textbf{(4.1)}$$

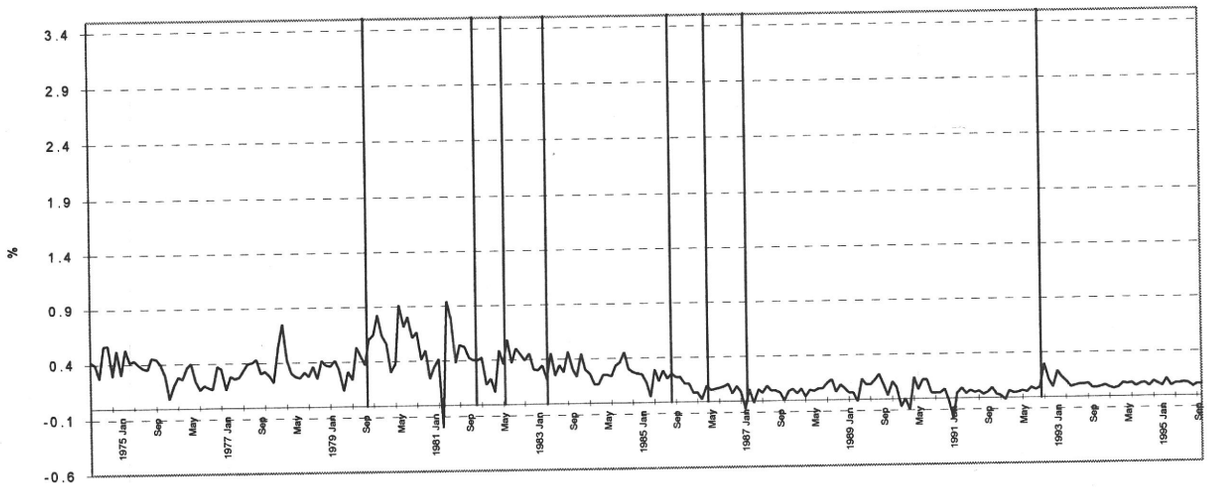
If β was significantly different from 1 we may say that controls reduced the coherence of movements in interest rates across countries, while if β was 1 but α was significantly different from zero, then controls (or other barriers) drove a wedge between rates of return. We used our analysis of the chronology of controls in Appendix C to divide up time periods where we might expect parametric change, and we found them in a number of cases. In particular, we tested to see whether α and β differed in periods where there were controls from periods where there were none.

4.4.1. Countries with liberal regimes

Germany. We can divide the German data into three significant sub-periods, although the slope β is close to 1 in all cases, indicating that interest rate movements on- and offshore were very coherent over the whole period. In the early 1970s there were very large positive differentials as the Bundesbank maintained strict inward controls in the midst of the break-up of the Bretton Woods system of pegged exchange rates. The combination of a strong deutschmark, its use as a reserve currency and the desire of the Bundesbank to keep monetary policy tight meant controls were needed to restrict inward flows if the Bundesbank were to meet its monetary targets. As of 1979, capital outflows were completely free whereas controls remained on non-residents' purchases of money market paper and fixed interest securities. These were rescinded in late 1981, and prior to that date the mean differential was 1.3 with a standard deviation of 2.0, reflecting the operation of restrictions on capital inflows.

The second sub-period we investigated ran from late 1981 until a further act of liberalization in August 1984: the tax on foreign investors' income from German bonds was repealed. That some inward controls persisted after the *de jure* removal of controls in 1981 is confirmed by the magnitude of the differentials, which continue to exceed 0.4 for much of this interval, as can be seen from Figure 4.1.

Figure 4.1. German mark onshore–offshore three-month inter-bank bid rate differential[1]

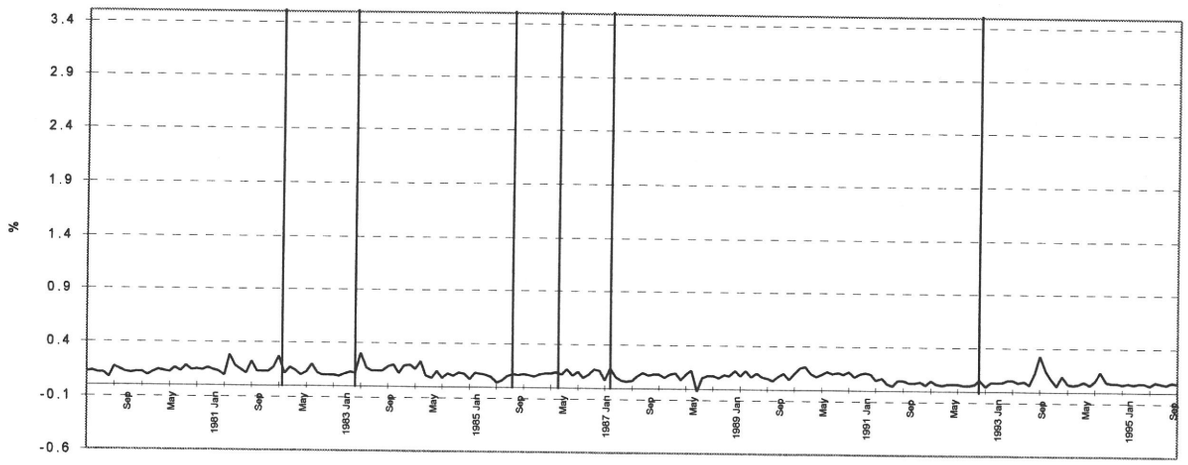


[1] Vertical lines indicate realignments.

A final reform in August 1984 annulled the 25% withholding tax on foreign investors' income from German fixed-interest securities. This tax had previously kept the differential at approximately 0.4%; upon its abolition the differential dropped to roughly 0.2%. After 1984 the mean differential drops to 0.1, and the standard deviation of 0.07 is also low, and together they are indicative of full capital mobility. The revaluation of the deutschmark in September 1992 coincides with a short, small spike in the differential. This is possibly due to the 'gentleman's agreement' between the Bundesbank and commercial banks, whereby the Bundesbank may levy high marginal reserve requirements on loans from the London branches of German banks which exceed the agreed limit. Although, as Chapter 7 shows, Germany has a relatively large number of reservations to the OECD Liberalization Codes, their impact must be limited, especially at the short end of the market.

Belgium–Luxembourg. The onshore–offshore differential is small over the whole period (Figure 4.2), averaging 0.119, and ranging between 0 and 0.3%. The dual exchange rate arrangement distinguishing between capital and current accounts lasted until March 1990, but this does not appear to have influenced the inter-bank market. Capital market transactions with convertible currency countries took place at the market rate throughout the period, and hence for the vast majority of potential trades there were no effective controls, despite the relatively high number of reservations under the OECD Codes discussed in Chapter 7.

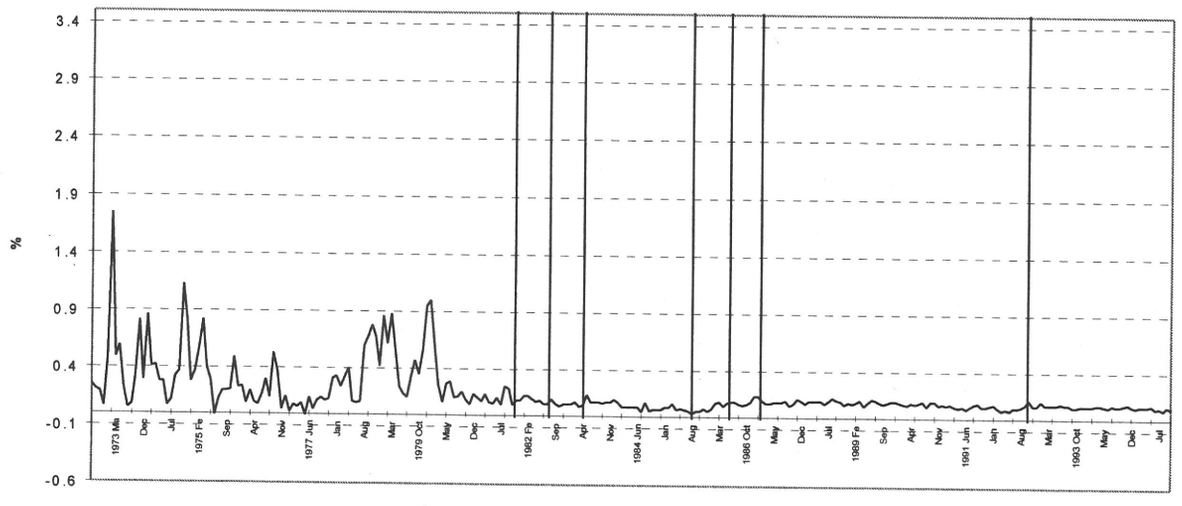
Figure 4.2. Belgian franc onshore–offshore three-month inter-bank bid rate differential[1]



[1] Vertical lines indicate realignments.

The Netherlands liberalized borrowing abroad between 1979 and 1982, and no reservations are now entered under the OECD Codes, as can be seen in Chapter 7. The most significant change in controls came in January 1980, when regulation of commercial banks' foreign position was ended. Prior to this date the differential averaged 0.35, and had a standard deviation of 0.3. The differential dropped to around 0.15 with low variance thereafter. All inward controls were abandoned in July 1983, and the differential remained constantly in the range 0.1 to 0.2. There is strong evidence for complete freedom of movement over the post-1979 period. The remaining restrictions on inflows were removed in July 1983. In October 1986 the remaining controls on longer term outflows, on the purchase of foreign guilder bonds and long-term lending in guilders, were rescinded. It appears from the chart of the interest differential for the Netherlands that these remaining outflow controls were not of great importance anyway, and there is little evidence for the effects of controls on short-term differentials.

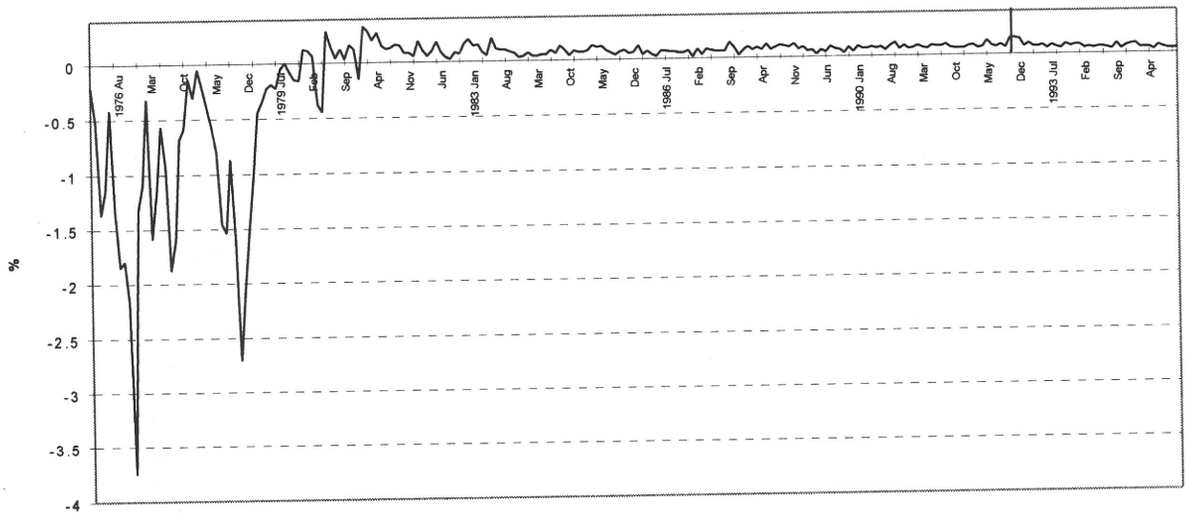
Figure 4.3. Dutch guilder onshore-offshore three-month inter-bank bid rate differential [1]



[1] Vertical lines indicate realignments.

The United Kingdom abolished all controls between June and October 1979 and did not introduce any new controls thereafter. Prior to that date the onshore rate had tended to be below the offshore rate, with the differential averaging -0.97, and the volatility appears relatively high. After the removal of controls the differential averages 0.08, and its volatility appears to have fallen over time.

Figure 4.4. Pound sterling onshore–offshore three-month inter-bank bid rate differential[1]

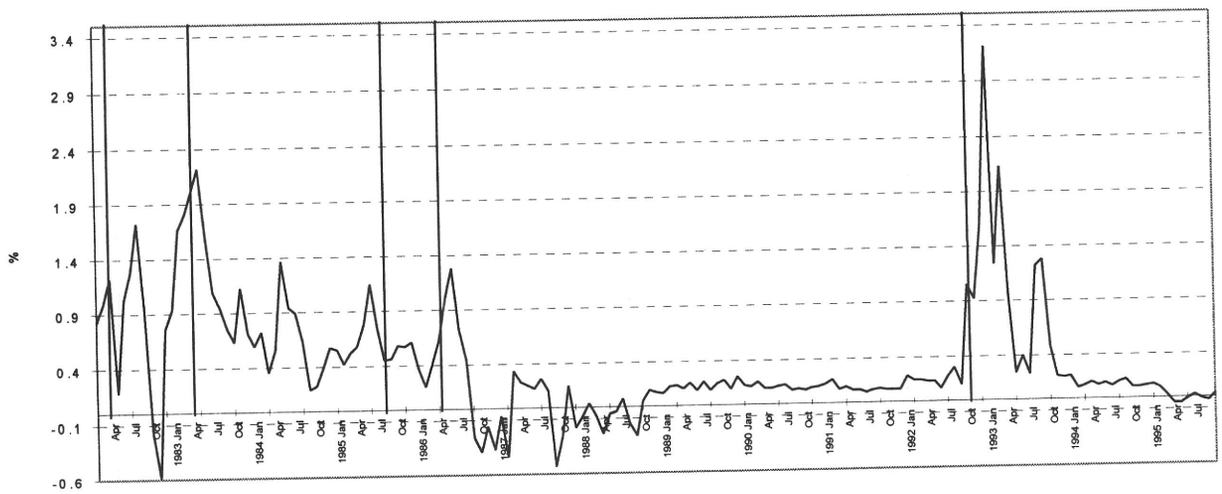


[1] Vertical lines indicate realignments.

4.4.2. Countries with significant controls

Denmark was the first of the remaining four EC members to liberalize. Between 1979 and 1983 the main measures increased upper limits on restrictions on capital inflows and outflows.

Figure 4.5. Danish krone onshore–offshore three-month inter-bank bid rate differential[1]



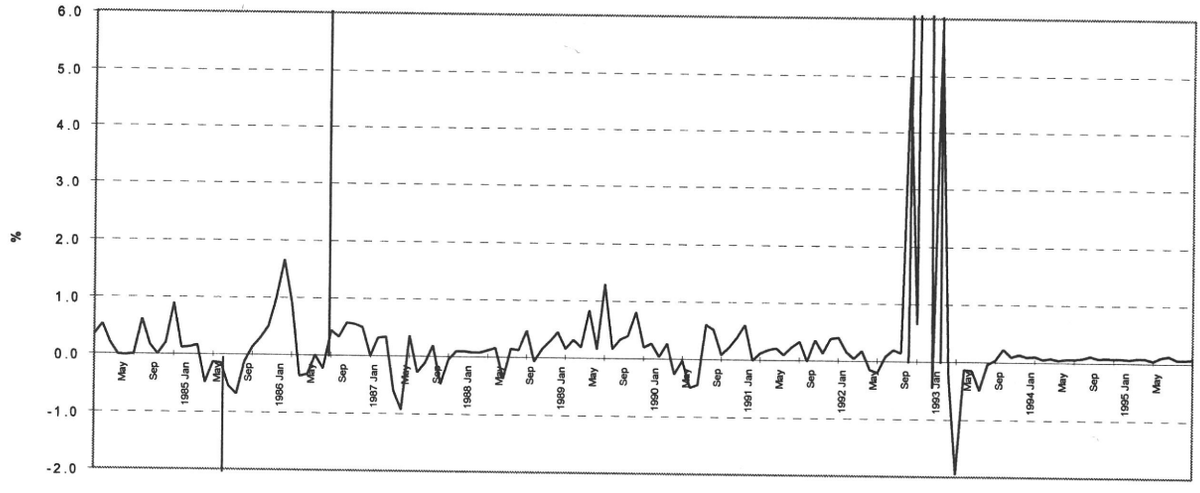
[1] Vertical lines indicate realignments.

The liberalization process began in earnest in 1984 when forward purchases of foreign currencies against the krone were permitted, as was the purchase by residents of foreign shares. Limits on inward and outward direct investment were further raised in June 1985; at the same time the permitted duration of non-residents' foreign exchange accounts with Danish banks was lengthened from one to three months. From 1982 to 1986 the mean differential declined, as can be seen from Figure 4.5. The interest differential for the krone was confined to a margin of 0.4% around zero by the middle of 1986. All inward and outward controls were revoked in October 1988 after the Madrid summit, some 18 months before required by the Single European Act, and there is some evidence that the decline in the mean differential at this date was significant. Few reservations remained in the OECD Liberalization Codes by 1995, and it is clear they were not very pressing on this market.

The differential became significantly positive after the 'no' vote in the referendum in 1992 helped spark a period of exchange rate turbulence. Although controls were not introduced in the markets there was a significant risk that they might be. The turbulence subsided in the autumn of 1993, and, so it appears, did the fears of the re-imposition of capital controls.

Ireland. Outflow controls were in place in 1979, and controls were strengthened in 1983, when action was taken to control the forward market and limit sales and purchases of EC securities. Restrictions were tightened in 1986, but thereafter they were gradually loosened, until all controls were removed at the start of 1992. As can be seen from the chart, the interest differential remained low for much of the period, and hence we could argue that capital controls were not stringent in their effects. The exchange rate crisis in 1992 led to the temporary reintroduction of controls, and the attempt to maintain the punt–deutschmark exchange rate. However, these controls were quickly revoked. There is no evidence of structural change in the observed differential, and the slope coefficient is unity while the intercept is zero. Hence, capital mobility at the short end appears to be very high, and any signs of immobility further along the asset spectrum are likely to be because of domestic market imperfections or regulations on longer term flows.

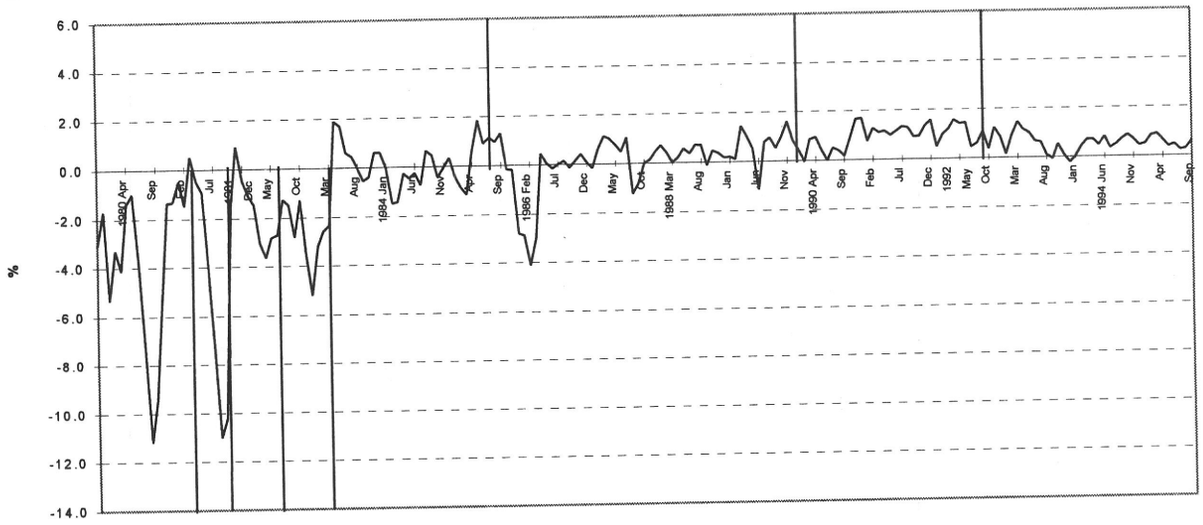
Figure 4.6. Irish punt onshore–offshore three-month inter-bank bid rate differential[1]



[1] Vertical lines indicate realignments.

Italy. Exchange controls were relatively strong for much of the 1980s, with increases in their strength in the first five years of the decade. Outflows, apart from direct investment, were severely controlled at the start of the ERM and loans between residents and non-residents were curtailed. Restrictions on payments abroad were strengthened in May 1981 and banks' foreign asset holdings were capped in July 1984. However, from December 1984 there was a gradual loosening of controls, which were finally abolished in January 1990. The onshore–offshore differential was negative up until 1984, indicating that controls helped keep interest rates low. Thereafter they were small and positive, apart from occasional speculation-related spikes.[6]

Figure 4.7. Italian lira onshore–offshore three-month inter-bank bid rate differential [1]



[1] Vertical lines indicate realignments.

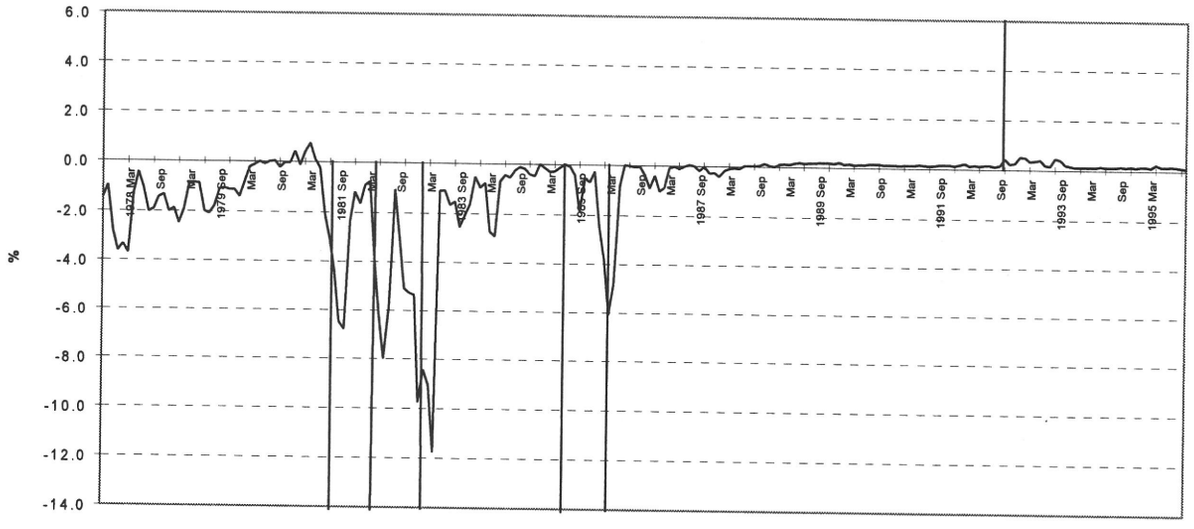
France entered the ERM with a tight control regime on external transactions – nearly all of which required authorization. From 1979 to 1983 reforms restricted capital flows further. In August 1981 forward exchange cover transactions on imports were prohibited, but the restriction was relaxed later in the year. Much stronger restrictions on forward cover were introduced in March 1983. From 1984 to 1986 many of these additional controls were dismantled. Regulation on foreign direct investment into and out of France were eased somewhat in 1984, and restrictions were liberalized further in 1985. The acquisition of foreign securities was also made easier. Between 1978 and 1986 the slope coefficient in onshore–offshore regression was around 0.8, considerably below 1 with a significant positive intercept (reflected in the differential in chart 3.8), suggesting that controls were having an impact on the market.

Liberalization of restrictions on borrowing abroad and French resident lending in francs to customers abroad occurred in 1986. Until June 1986 the onshore–offshore differential averaged -1.93, indicating that exchange controls were holding down onshore inter-bank rates. Clear spikes are visible around realignments. After 1986 the differential was small and

6 Given the data problems with Italian onshore inter-bank rates we have not undertaken stability testing for this data set. The Bank of Italy could only provide a proxy for the correct data, and prior to March 1990 we have used the three-month Treasury bill rate.

positive. During 1986–89 the slope of the onshore–offshore regression stayed significantly below 1, indicating that barriers to mobility persisted. From the middle of 1989 there is no evidence of a sustained effect from barriers on the onshore–offshore differential. All controls were removed at the start of 1990. After the 1992 realignment a positive differential persisted until the crisis of 1993. This appears to reflect a premium to cover the perceived risk of the re-imposition of controls. France had one of the largest numbers of reservations in the OECD Codes in 1995, but there is little evidence of any impact in the inter-bank market.

Figure 4.8. French franc onshore–offshore three-month inter-bank bid rate differential[1]



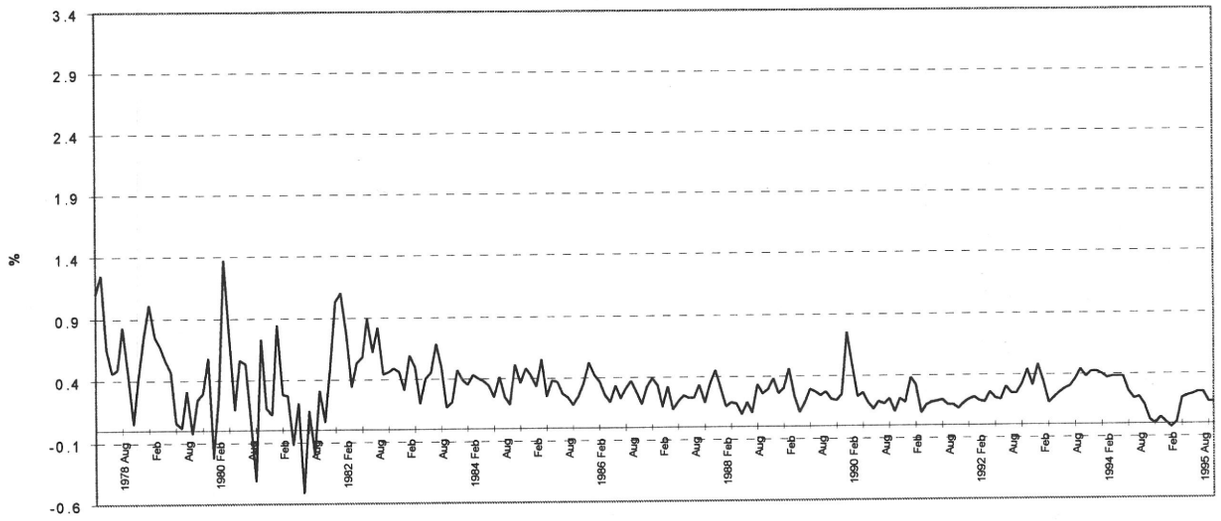
[1] Vertical lines indicate realignments.

Greece maintained capital controls until 1994, although they evolved over time. Interest rates on non-resident accounts were increased in 1979 so that they were less penal. In 1984 non-residents were allowed to open time deposits in convertible drachmas within a duration of six months. At the same time banks were authorized to make convertible drachma loans to credit institutions abroad for periods of up to six months. In 1986 restrictions on the repatriation of proceeds from investments in Greece by residents of other EC countries were eliminated.

4.4.3 Liberalization among the new Member States

The **Austrians** were among the first to undertake significant steps along the road to liberalization. By the middle of 1983 the schilling's onshore–offshore differential had settled down to a value of not more than 0.5%, where it stayed until a small spike of 0.8% in February 1990. Not surprisingly, the main thrust of reforms was to liberalize capital inflows, since these were more heavily regulated in 1979. In 1981 the general licence was extended to the acquisition by non-residents of Austrian securities and shares. The other significant reform to occur by 1986 was the granting of permission to banks to borrow from non-residents in foreign currency over the medium and long-term. The former reform appears to have had a significant impact on the onshore–offshore regression, significantly reducing the intercept term and raising the slope coefficient to one. There is no noticeable structural change after 1981, and mobility at the short end appears to have been unfettered.

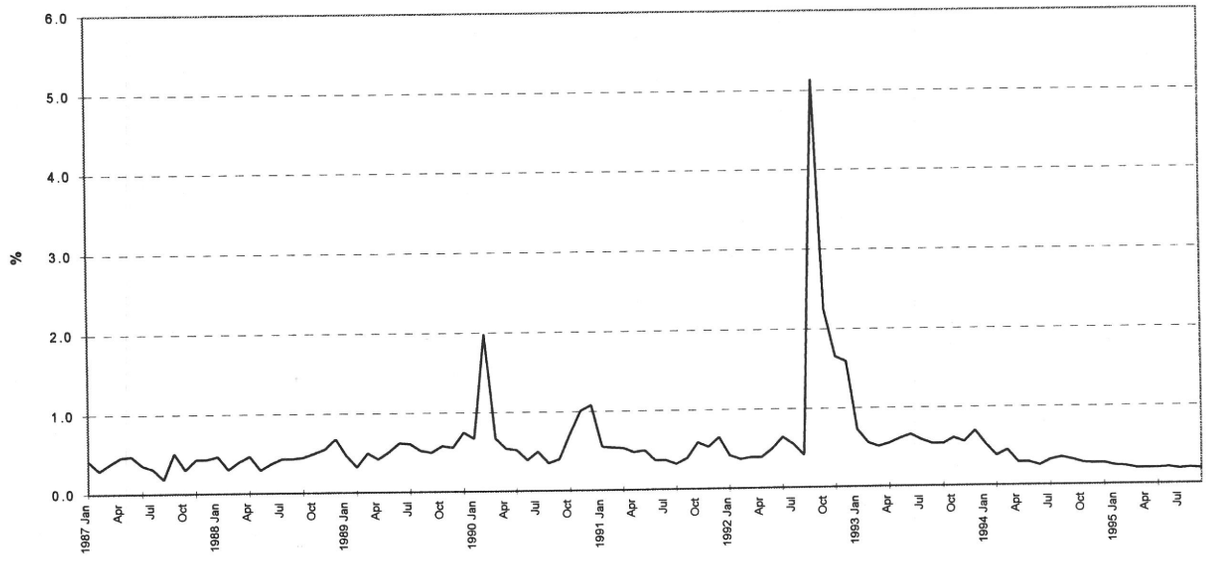
Figure 4.9. Austrian schilling onshore–offshore three-month inter-bank bid rate differential



In **Sweden** in 1979 permission was obligatory for all capital outflows, and often not given. A minor loosening of restrictions on direct investment abroad and the abolition of the foreign currency funding requirement of large direct investments abroad occurred in 1981 and 1986, respectively. There was also a minor liberalization of foreign currency lending abroad in 1986.

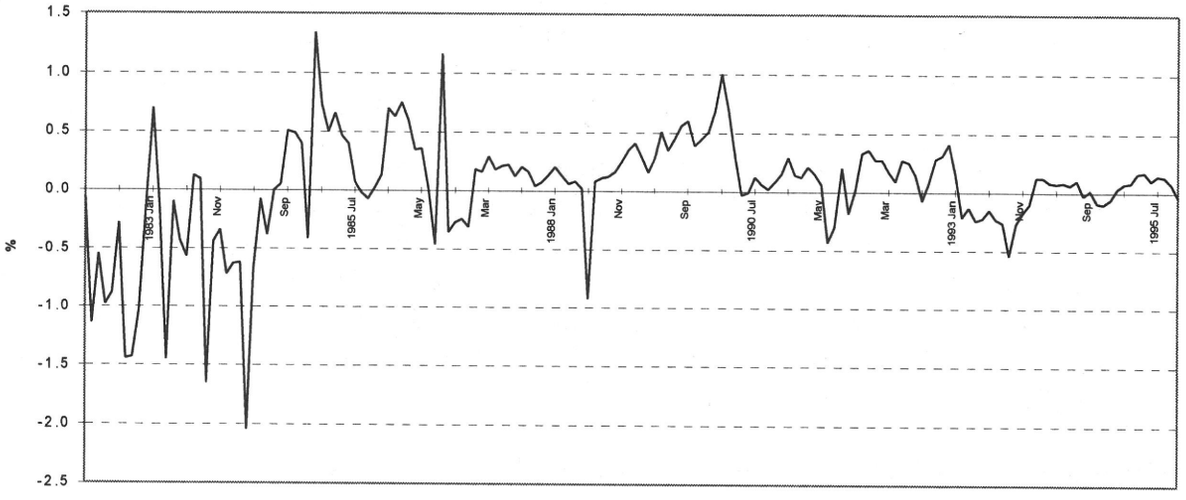
Controls were most extensive on short-term flows into Sweden in the inward direction. Changes in this area included the deregulation of domestic foreign exchange accounts in 1982, and the lowering of the minimum required maturity for borrowing abroad from five to two years in 1984. Although virtually all the remainder of controls were not finally eliminated until July 1989, the pattern of the differential prior and subsequent to this point hardly changes. Large spikes are present around the time of the speculative attacks, and especially when the ERM restructured in 1992.

Figure 4.10. Swedish krona onshore–offshore three-month inter-bank bid rate differential



Finland had a tightly restricted regime in 1979. The authorities decided in the early 1980s that a large part of the banking sector had become a grey area outside of their control. Rather than extend the existing regulations, the authorities deregulated the financial sector in conformity with other countries. In 1983 forward exchange contracts were allowed with foreign banks. Banks were permitted to lend abroad and invest in foreign securities in 1984, and the onshore–offshore differential rose to a positive level. Dividends from non-resident direct investment in Finland were allowed to be transferred abroad. From June 1986 non-residents were able to invest in some Finnish bonds and debentures and this can be identified as a structural break. Capital inflows rose and this may have been responsible for a smaller differential thereafter, although in 1989 it rose to nearly 1%. Most remaining controls were abolished at the beginning of 1991. Prior to June 1986 barriers to mobility kept the slope of the onshoreoffshore regression at around 0.7, significantly below one, with a large positive intercept. These reforms appear to have removed barriers to the mobility of short-term capital.[7]

Figure 4.11. Finnish markka onshore–offshore three-month inter-bank bid rate differential

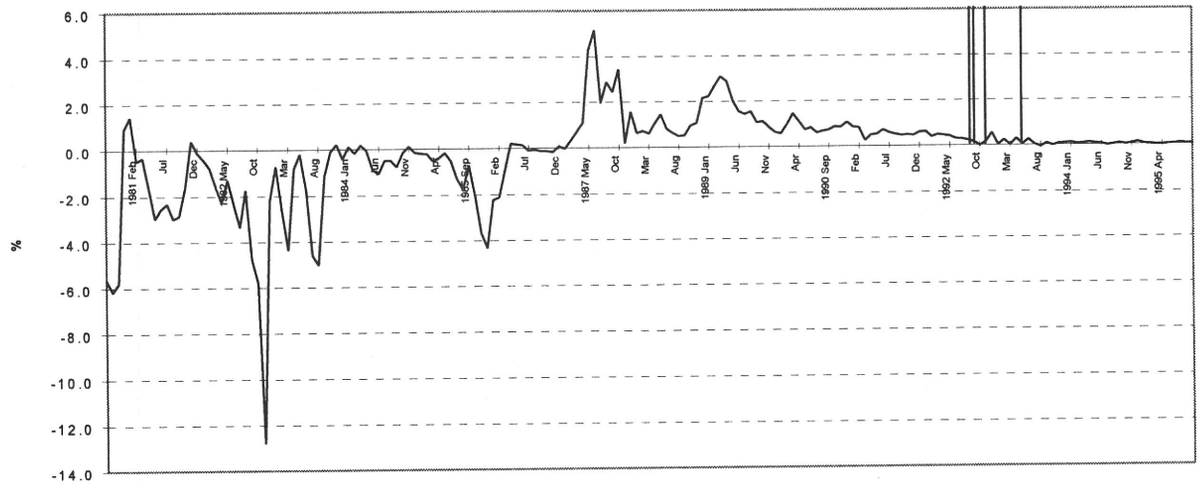


In **Spain** outward transfers of capital of all types required approval in 1979. In September residents could freely purchase fixed-income securities denominated in foreign currencies, although the decree legalizing this was later suspended in 1982. In 1986 there was a reform facilitating direct investment abroad. Liberalization of foreign borrowing of at least one year's maturity and of foreign investments by non-residents occurred in 1980 and 1981. From 1985 all foreign investments had to be declared, and acceptance assumed in the absence of response within 30 days. There is a clear structural break in the onshore–offshore differential around this time. Prior to September 1985 the slope in the onshore–offshore regression was 0.6, and was significantly below one. It rose to 0.9 until the end of 1989, and thereafter to unity. In 1986 foreign investment was further liberalized, and residents were allowed to negotiate loans in foreign currency or convertible pesetas. Restrictions on banks' foreign exposure were eased in January 1987. Gradual easing continued from the late 1980s, but restrictions on direct

7 Our results on the early years of our data for Finland have to be treated with caution, as the onshore Helibor market did not exist, and we have relied on a proxy measure produced by the Bank of Finland.

investment outflows persisted until February 1992, when most controls were abolished. Controls on short-term deposits were reintroduced on 24 September 1992 to protect the peseta, but they proved ineffective, and were removed in early October 1992.

Figure 4.12. Spanish peseta onshore–offshore three-month inter-bank bid rate differential [1]



[1] Vertical lines indicate realignments.

Portugal. Restrictions on capital movement were initially strong, and even by 1995 among the EU members Portugal had entered the largest number of reservations to the OECD Liberalization Codes. In 1982 the transfer abroad of the proceeds from the liquidation of foreign investment was freely permitted. In 1984 authorization was granted for banks to open non-resident term deposit accounts in nine foreign currencies. Purchase of Portuguese bonds and shares by non-residents was permitted in 1986; and new direct investments in Portugal were authorized more freely. Foreign direct investment flows were significant throughout the period, and we report evidence in Chapter 6 suggesting capital mobility in Portugal was high.

Figure 4.13. Portuguese escudo onshore–offshore three-month inter-bank bid rate differential [1]

[1] Vertical lines indicate realignments.

4.5. Conclusions

Ten of the present 15 members of the EU have consistently had their onshore–offshore interest differential below 0.5% since the beginning of 1992. We would regard this as suggesting that there are now few barriers to capital mobility between them. In nearly all cases the differential was continuously slightly positive. The countries which had completely relinquished controls by 1992 did not try to reintroduce them in September 1992, when several currencies in the ERM were once again the target of speculative flows. Thus, their interest differential at this date does not show any significant effects from intervention. However, as Obstfeld (1995) pointed out, even the threat of controls can affect the observed differential, and in late 1992 that for Germany displays some effects of the 'gentleman's agreement' with the Bundesbank. Portugal, Greece and Sweden still maintained some controls by September 1992. The degree of remaining controls can be gauged by an analysis of reservations under the OECD Code of Liberalization of Capital Movements, which are discussed further below. These Codes reveal that some countries, such as Austria, Denmark, Ireland, Luxembourg, the Netherlands and the United Kingdom, have no reservations in relation to the global market. However, the ranking of countries with reservations concerning the internal market in Europe is different, and restrictions remain. It is worth noting that Germany has four reservations each for global and European markets. Capital market liberalization has come slowly to Europe, but the combination of the process of monetary integration and the single market programme has meant that barriers to mobility in the short term inter-bank market are now virtually non-existent. However, controls had significant effects in a number of countries well into the 1980s.

5. The evolution of equity markets in Europe

5.1. Introduction

This chapter investigates the degree of international integration among European stock markets, and between European markets and the US. We specifically address the effects of the slow removal of barriers to international portfolio flows, following Pain (1993a). We utilize our analysis in Chapter 4 in order to identify significant sub-periods. We address a subset of the issues covered in the extensive literature on integration in world capital markets. In particular we ask whether or not financial assets issued in different countries yield the same risk-adjusted return. If yields differ then this could reflect either barriers to the mobility of capital, or other informational and structural imperfections. The degree of integration has implications for the global cost of capital and the degree of portfolio diversification available to cover consumption risks in different locations. A relatively complete survey is contained in Goldstein and Mussa (1993), and we emphasize more recent studies.

It is common to analyse these issues by looking at the degree of correlation among national equity prices. The issue of linkages between equity markets has been analysed by, for instance, Jorian (1989) and Frankel (1993b). More recently, Cashin, Kumar and McDermott (1995), for instance, used Johansen-style cointegration analysis to assess the extent to which equity prices have tended to move similarly across countries and regions in the long run. They also looked at the coherence across countries of the deviations from long-run relationships, and particularly at contagion effects. The literature contains two sorts of studies that are relevant to our work. The first set of studies look at evolution over time. Some, such as Taylor and Tonks (1989), have attempted to look at the effects of policy changes on the degree of integration of pairs of national stock markets, while others, such as Jorion (1989), looked for the evolution of equity price correlations over time. The second strand, which is of less relevance to us, has looked at the propagation of particular shocks such as the 1987 stock market crash. Studies by researchers such as von Furstenburg and Jeon (1989) have found that the coherence between US and foreign stock market prices increased after 1987, giving some indication that the removal of barriers to mobility had some effects.

The timewise correlation literature is well represented by Jorion (1989), who presented correlation coefficients for equity prices in 16 countries for three sub-periods, 1959–70, 1971–78, and 1979–86. Although barriers to mobility fell in the last period, he found that correlations were low and declining, which is contrary to the indications given by theory. Chou, Ng and Pi (1994) used weekly data on stock prices for the US, Japan, Germany, the UK, France and Canada for 1976–89, and found three long-run equilibrium relationships. They also found that the three European markets could be split off, and displayed a common long-run relationship, which strengthened over time. Harris and Smith (1995) also found that European stock markets were more highly integrated in the 1990s than in earlier years. Their cointegration analysis suggests that the UK is, in some sense, the leading market in Europe, with propagation being mainly outward from London.

We would argue that while these studies are insightful, they do not address the core problem, which is whether or not the correlation between rates of return is increasing. All authors agreed that they are attempting to address this problem, and that it cannot be done simply by investigating the relationships between national stock price indices. The rate of return is made

up of the flow return on the equity (the dividend yield) plus the rate of appreciation of the equity price, and markets will move to equalize expected rates of return net of tax. Hence, changes in (unobservable) expected appreciations, or anticipations of (but unobservable) tax changes will both affect equity prices and capital flows. Therefore, any analysis of market equilibrium must deal with the problem of modelling anticipations. It is not sensible to attempt to finesse the problem and study capital flows, as in a market dominated by anticipations there may be no relationship between past price changes and observed flows. The direction of flows could even be perverse, if investors are adjusting their portfolios in the aftermath of unexpected price changes.

In the next section we offer a theoretical justification for the study of the emerging pattern of the correlation between rates of return, and we then attempt to model expectations in order to test for the effects of the removal of barriers to capital mobility on the potential mobility of capital. As in any contestable market, the potential for movement of quantities may be sufficient to generate movements in price that obviate the need for quantity adjustment.

5.2. The analysis of stock markets

In each national economy, there is a spectrum of assets ranging from very short-term to very long-term securities. For any given holding period, the *ex ante* rates of return on these securities will differ according to the riskiness of the securities considered and the effects of barriers to mobility of capital. Greater integration of international capital markets will imply convergence of the rates of return on assets bearing similar risks as the effects of barriers diminish. In a perfectly segmented national financial market, arbitrage should ensure that returns are equalized between domestic assets, but not across countries. As barriers are reduced, expected returns should be increasingly equalized across countries, for a given risk.

So far we have considered the behaviour of the *ex post* rates of interest on short-term nominally certain assets denominated in the same currency in different capital markets. As Obstfeld (1995) pointed out, a comparison of the rates of return on these assets provides the least ambiguous assessment of capital mobility available from a consideration of *ex post* returns. Any comparison of uncovered returns inevitably requires auxiliary assumptions about the formulation of exchange rate expectations and the size (and sign) of risk premia that may or may not be valid. Even if there are no barriers to capital mobility, *ex ante* rates of return to investments in different currencies are unlikely to be equalized because of the presence of risk, which will tend to ensure that a premium is required on certain assets for the market to clear (see Appendix A on the international capital asset pricing model). Thus, in equilibrium, the rate of return relationship between investments in the home and foreign markets is:

$$r_t = r_t^* - d_t + \phi_t \qquad \textbf{(5.1)}$$

where r_t is the rate of return on a domestic currency asset, r_t* is the rate of return on a foreign currency asset, d_t is the expected rate of depreciation of the foreign currency over the holding period of the assets and ϕ_t is the equilibrium risk premium.

This *ex ante* relationship is expected to hold in integrated international capital markets. Letting R_t denote the *ex post* return to an investment in foreign currency assets after taking account of the change in the exchange rate equation 5.1 may be re-written as:

$$r_t = R_t + \phi_t + \varepsilon_t \qquad \textbf{(5.2)}$$

where r_t is the *ex ante* return and ε_t is the error in forecasting the exchange rate or measuring the risk premium.

The *ex post* relationship shown in equation 5.2 emphasizes the main difficulties in attempting to draw conclusions about capital market integration from observations on the rates of return on assets denominated in different currencies. The equation contains two unobservable variables on the right-hand side: the risk premium, and the error in forecasting the exchange rate. Nevertheless some auxiliary assumptions could be made about their behaviour and hypothesis tests carried out. Thus, it might be assumed that the risk premium evolves slowly over time, or it might be modelled by relative asset stocks held in the two currencies concerned. Similarly, the assumption of rational expectations could be invoked, and hence individuals could be assumed on average to get their forecasts correct, so that the forecasting error behaves randomly.

Under these assumptions, there would be a tendency for r_t and R_t to move together over time, even if no capital flows took place. If it were presumed that they would not move together, then rational individuals would assume there would be flows. Hence, they would adapt their actions, obviating the need for flows. If they did not do so, perhaps because their expectations were not rational, then we would expect flows to arbitrage away the difference. By contrast, in separated capital markets, there would be no mechanism to force any sort of convergence in the rates of returns on assets denominated in different currencies. This suggests that a relevant test of the greater integration of capital markets is to examine how the returns in the different markets relate to each other over time. However, it must be acknowledged that greater coherence of stock market prices across countries could be the result of greater economic integration, rather than financial integration.

Tests of this type have been undertaken for a range of capital-certain assets by a number of researchers and are not repeated here. Instead we have considered the coherence over time of movements in the returns generated by investments in international equity markets. This focus can be justified on the grounds that it is in the equity markets that the risks associated with real investments are traded. It is also by trading in these markets that households can arrange their portfolios to offset their income uncertainty.

Appendix A sets out the international capital asset pricing model, showing how in a perfect capital market the expected returns to equity in one country are related to those elsewhere. This indicates that the equilibrium *ex ante* return on an investment in security *i* is related to the return on the market portfolio in the following way:

$$(E(\rho_i) - r) = \beta_i (E(\rho_M) - r) \qquad \textbf{(5.3)}$$

where $\beta_i = \dfrac{\sum_{j=1}^{n} s_j \sigma_{ij}}{\sum_{i=1}^{n} \sum_{j=1}^{n} s_i s_j \sigma_{ij}}$. This indicates that the premium on asset *i* (the difference between the expected return and the return on a safe asset) is equal to the market premium times the 'beta' of the security given by its covariance with the market portfolio, divided by the variance of the return on the market portfolio.

This formula can be applied to explain how the rate of return on a national stock market is related to the rates of return available elsewhere. Thus the relationship between the expected return on two stock markets is given by:

$$E(\rho_i)-E(\rho_j)=(\beta_i-\beta_j)(E(\rho_M)-r) \qquad \textbf{(5.4)}$$

where the market premium, which is related to the risk of the market and the degree of risk aversion in the market, is likely to be relatively constant. This relationship suggests that the premium earned on stock market *i* is equal to that earned on stock market *j* plus a term depending on the relative size of the covariances of each market with respect to the overall market portfolio and the riskiness of that portfolio.

If the relative covariances and the riskiness of the market portfolio are approximately constant over time then the expected returns on the individual markets should be highly correlated. If the ßj's are stable over time, optimal portfolios (across countries) will not change much, and hence convergence of national stock market returns will imply convergence of portfolio returns, and it is the latter which is of greater interest. In the absence of integrated capital markets there is no mechanism to ensure that this is the case. We would expect that the slow process of the removal of barriers within Europe would lead to larger outflows of portfolio investment and, in the longer run, much larger stocks of portfolio assets and liabilities. The adjustment process to any particular change depends upon the speed with which market participants can take up arbitrage opportunities. Some stocks may adjust quickly, with flows overshooting. We would also expect that returns across stock markets would become more coherent over time as barriers to mobility decline. We first discuss the available data on stocks and flows of portfolio investment in Europe, and then we look at the changing pattern of returns in Europe and compare it to North America.

5.2.1. The evolution of portfolio stocks in Europe

We have stressed that the removal of controls has been a slow process, and its effects on stocks and flows of assets is only just beginning to emerge. The removal of capital controls and the advent of the single market programme in Europe do appear to have had some impact, as can be seen from Tables 5.1 to 5.4. We can distinguish between countries with liberal control regimes and those without, and between capital controls and the evolution of domestic prudential regulation. Goldstein and Mussa (1993) detailed domestic liberalization processes in a number of countries, and we draw on their analysis.

Portfolio investment inflows and outflows were less than 1% of GDP in most European countries prior to 1985, with higher flows from countries with few barriers to mobility, such as the UK, Netherlands and Belgium, and also Austria after the liberalizations in 1983. Flows appeared to build up slowly after liberalization in the UK, perhaps reflecting the effects of continuing domestic financial liberalization. The formation of the London International Financial Futures Exchange in 1982 appears to have had an impact on inflows, but the build-up to 'Big Bang' (or systematic reform of the London Stock Exchange) appears to have been more important. This removal or reduction of fees in 1986, along with other changes, appears to have galvanized the market. Outflows from Belgium and Luxembourg were also large as a percentage of GDP, with the upsurge in the early 1990s being a clear response to the removal of barriers under the single market programme, as well as the result of a tax window that made it advantageous for German institutions to pass money in and out of Luxembourg.

Table 5.1. EU foreign portfolio investment outflows (% of GDP)

Year	A	B	DK	SF	F	D	IRL	I	NL	P	S	E	UK
1979	0.3	0.2		0.1	0.3	0.2	0.2	0	-0.3		0	0	0.4
1980	0.2	0.7		0.0	0.3	0.5	0.2	0.1	-0.1		0	0	1.4
1981	0.1	1.7		0.0	0.4	0.4	0.6	0.1	0.1		0	0	1.8
1982	0.1	2.6		0.0	0	0.7	0.5	0	0.9		0	0	2.7
1983	0.8	4.7		0.1	0.3	0.6	0.5	0	0.9		0.1	0	2.4
1984	1.3	5.4		0.1	0.1	0.9	0.5	0.1	0.8		0	0.1	3.0
1985	1.7	7.8		0.4	0.5	1.8	0.7	0.2	1.9		0	0.2	4.7
1986	0.5	6.3	2.7	0.6	0.8	1.1	0.9	0.4	4.1		0.1	0.2	5.8
1987	0.9	3.2	-0.8	0.6	0.4	1.2	1.0	0.5	1.8		0.2	0	-1.3
1988	1.1	8.1	0.5	0.3	0.4	3.5	1.4	0.7	3.0		0.4	0	2.4
1989	1.4	9.2	1.5	0.0	0.7	2.3	3.1	1.0	0.3		2.3	0	7.1
1990	1.1	7.7	0.9	0.1	0.7	0.9	1.0	1.8	1.3		1.6	0.2	3.1
1991	1.1	17.2	3.4	-0.1	1.3	0.9	3.8	2.2	1.7		1.0	0.2	5.1
1992	1.5	28.5	-0.9	0.1	1.5	2.3	0.9	1.9	4.0	0.5	0.6	0.3	4.6
1993	1.0	27.6	0.0	0.3	2.4	1.3	0.6	0.9	3.2	3.4	0	0.9	13.5
1994	2.2	17.9	0.8	-1.0	-0.6	1.5	2.0	3.2	3.6	0.8	1.0	-0.2	-2.8

Notes: Abbreviations for countries are as follows: A=Austria; B=Belgium-Luxembourg; DK=Denmark; SF=Finland; F=France; D=Germany; IRL=Ireland; I=Italy; NL=the Netherlands; P=Portugal; S=Sweden; E=Spain; UK=United Kingdom.

Investment data from *IMF Balance of Payments Yearbook* and *Eurostat Balance Of Payments Quarterly Statistics*. GDP data from *OECD National Accounts*. There are no published figures available for Greece. Combined investment figures for Belgium and Luxembourg are scaled by Belgian GDP.

Outflows from the other relatively unregulated markets were generally smaller, in part because of relatively strong prudential controls on the portfolio composition of pension funds. Inflows into Germany seem to have been more affected by domestic deregulation, with significant reforms to the bond market in 1985 and 1986 leading to relatively large inflows. The single market programme was behind the removal of the securities transfer tax in 1991, but reforms in 1992, including the removal of stamp taxes, the introduction of mutual funds, and the centralization of financial market supervision were probably driven as much by the domestic political agenda. Partly as a result of these measures, inflows rose significantly in 1991–93, although German unification will have affected capital flows.

Table 5.2. EU foreign portfolio investment inflows (% of GDP)

Year	A	B	DK	SF	F	D	IRL	I	NL	P	S	E	UK
1979	0.6	0.7		0.5	0	1.2	-0.5	0	1.3		0.9	0.1	0.8
1980	2.3	1.3		0.5	0.4	1.6	1.1	-0.1	1.8		2.1	0	0.6
1981	2.7	0.9		0.7	0.3	1.5	3.2	0	0.8		1.3	0.1	0.1
1982	2.3	0.3		1.0	1.3	0.7	1.4	-0.1	0.8		2.0	0	0
1983	1.5	0.1		0.7	1.4	1.2	2.4	0.1	1.0		3.4	0	0.6
1984	2.3	0.2		2.6	1.5	1.1	6.8	0.1	0.8		4.2	0.1	0.4
1985	1.6	0.3		2.9	1.7	2.1	5.6	0.2	2.1		2.2	0.3	2.7
1986	2.2	0.4	0.2	2.6	1.1	3.8	7.5	0.2	1.2		0	0.7	3.1
1987	1.2	1.4	2.8	2.2	1.0	1.0	0.3	-0.5	2.7		-0.5	1.3	5.3
1988	2.7	5.1	1.7	3.3	1.2	-0.2	4.3	0.7	4.4		0.4	0.7	3.5
1989	2.6	7.3	-1.2	3.0	3.3	1.9	4.9	1.4	3.4		1.7	2.1	3.1
1990	1.9	3.8	3.2	4.4	3.6	0.8	0.6	1.8	-0.6		2.7	1.2	2.3
1991	1.8	13.6	4.8	7.6	2.4	2.3	1.4	1.7	1.4		3.7	3.7	3.1
1992	2.5	26.7	6.3	7.6	4.0	4.6	-5.4	0.8	1.2	-3.0	1.0	0.1	4.5
1993	5.8	23.7	9.5	7.3	2.7	8.2	5.7	6.2	4.2	5.1	0.7	6.3	7.5
1994	2.2	7.8	-7.3	6.3	-4.8	0.7	-0.6	2.6	0.8	2.3	0	0.2	4.8

Notes: Abbreviations for countries are as follows: A=Austria; B=Belgium-Luxembourg; DK=Denmark; SF=Finland; F=France; D=Germany; IRL=Ireland; I=Italy; NL=the Netherlands; P=Portugal; S=Sweden; E=Spain; UK=United Kingdom.

Investment data from *IMF Balance of Payments Yearbook* and *Eurostat Balance Of Payments Quarterly Statistics*. GDP data from *OECD National Accounts*. There are no published figures available for Greece. Combined investment figures for Belgium and Luxembourg are scaled by Belgian GDP.

The countries where controls were slowly removed exhibit a clear pattern of rising outflows. Outflows from France were low in the first half of the 1980s, and doubled (as a percentage of GDP) by the end of the decade. The reform of the government securities market in 1987 and the deregulation of commissions on the Bourse in 1988 helped raise portfolio inflows. The final removal of all controls led to much larger flows in the early 1990s. Differences between the 1980s and the 1990s are even more marked for Italy, where controls were maintained throughout the earlier period. The removal of exchange controls in 1988 and 1990 helped raise inflows, as did the opening of the government securities market to foreigners in 1990.

Countries such as Spain experienced much higher inflows as controls were removed, with by far the highest flows seen in 1993 when all controls had gone. French and Finnish inflows

also rose as controls were gradually removed. There was a significant increase in inflows in Denmark in 1990, as the single market programme started to address financial services. Even in countries that have been without controls for some time, inflows and outflows have been much higher in the 1990s, reflecting both the removal of inflow controls in potential destinations, and the effects of the single market programme.

Table 5.3. EU outward foreign portfolio investment stocks (% of GDP)

	A	SF	D	I	NL	E	UK
1978			3.1				6.1
1979	2.7		3.0	1.3		0.1	6.4
1980	2.6		3.4	1.3		0.1	8.3
1981	2.4		3.5	1.2		0.1	10.1
1982	2.4	0.2	4.2	1.1	10.2	0.4	14.7
1983	2.6	0.2	5.1	1.0	17.0	0.4	19.7
1984	3.6	0.3	6.3	1.3	18.8	0.6	25.9
1985	5.0	0.7	7.2	1.6	19.9	0.7	27.9
1986	5.2	1.3	7.1	2.2	19.4	1.0	36.5
1987	5.8	1.8	7.3	2.2	19.9	0.8	26.8
1988	6.5	1.9	11.4	2.9	24.9	0.8	31.0
1989	7.5	1.6	13.0	4.1	25.3	0.9	41.9
1990	8.0	1.4	12.1	5.5	22.3	1.1	34.0
1991	7.0	1.5	11.4	7.7	26.1	1.6	42.0
1992		1.9	12.9		30.0	2.1	51.0
1993		2.4	14.6		38.7		69.3
1994							60.9

Notes: Abbreviations for countries are as follows: A=Austria; B=Belgium-Luxembourg; DK=Denmark; SF=Finland; F=France; D=Germany; IRL=Ireland; I=Italy; NL=the Netherlands; P=Portugal; S=Sweden; E=Spain; UK=United Kingdom.

Investment data from *IMF Balance of Payments Yearbook*. GDP data from *OECD National Accounts*. There are no published figures for Belgium, Denmark, Greece, Ireland, Portugal, and Sweden. Data on the net asset position is available for France.

Flows of these magnitudes have led to a major change in the levels of asset stocks, and these still appear to be rising as a percentage of GDP. There is less data available on stocks of portfolio assets than on flows. However, for the UK, outward portfolio stocks have risen from 6% to 60% of GDP between 1979 and 1993, while inward stocks have gone from 6% to 42%

of GDP. This represents a considerable degree of financial risk-sharing. Outflows from the UK may have reached some sort of equilibrium at around 5–6% a year, but given that GDP is growing at a similar rate, this suggests that the stock equilibrium may require a rise to around 100% of GDP. The degree of risk-sharing provided by international capital markets in this area is best judged by the size of the outward stock of portfolio assets, although inward investment also involves a beneficial trade in risks. Even the UK appears to have some way to go before it reaches its market-driven risk-sharing equilibrium.

Table 5.4. EU inward foreign portfolio investment stocks (% of GDP)

Year	A	SF	D	I	NL	E	UK
1978			3.5				5.8
1979	9.6		3.6	1.1		0.3	5.2
1980	10.6		5.0	1.4		0.2	5.1
1981	13.9		6.3	1.4		0.3	4.8
1982	15.3	7.0	6.9	1.2	14.8	0.2	5.5
1983	16.2	7.6	8.1	1.2	24.8	0.2	6.0
1984	17.7	9.7	9.0	0.9	27.4	0.4	6.8
1985	18.0	11.2	13.4	1.4	29.0	0.6	9.3
1986	18.9	13.2	16.3	2.8	28.3	1.3	12.8
1987	18.9	14.0	15.0	2.3	28.3	2.5	16.1
1988	20.2	15.9	15.0	3.8	33.7	3.0	18.5
1989	21.3	16.9	17.2	6.7	39.4	5.0	22.9
1990	21.6	19.1	15.5	9.3	33.5	6.0	21.4
1991	21.8	29.3	15.4	13.0	38.1	8.9	25.4
1992		44.3	18.0		42.4	9.1	32.5
1993		57.5	26.3		55.5		42.6
1994							41.7

Notes: Investment data from *IMF Balance of Payments Yearbook.* GDP data from *OECD National Accounts.* There are no published figures for Belgium, Denmark, Greece, Ireland, Portugal, and Sweden. Data on the net asset position is available for France.

Similar increases are evident in the other early liberalizers such as the Netherlands, and to a lesser extent, Germany. However, outward portfolio stocks remain lower in Germany than the UK, in part because of the different financing system for German industry (this is discussed in Appendix B on the UK and Germany), and different accounting rules, giving greater weight to book values. However, the difference is mainly due to prudential regulation of pension funds, which is still relatively tight; and deregulation of financial services is an area where the single market programme still needs to make progress. There appears to have been much less change in countries that maintained controls much longer, such as Spain. In Spain, inflows started to rise once it joined the European Union, and relatively lax controls on inward equity holdings by foreign residents have meant that by 1993 the inward foreign investment portfolio stock covered 9% of GDP. However, this was the lowest among the countries for which we have data. Outward stocks are particularly low in Spain, Finland (both under 3% in 1993), Austria and Italy (both under 8% in 1993). Consumers were clearly not experiencing the degree of risk diversification offered in either the UK or the Netherlands, or at least not being offered it in the same manner through direct portfolio diversification by financial intermediaries. Even in Germany outward stocks are still sufficiently low, at least compared to the UK, suggesting that it will be some time before portfolio equilibrium is reached.

5.2.2. Empirical assessment

We have argued that well-functioning capital markets should produce an equalization of returns in common currency across equity markets in different countries. Our work in this section measures the total return to investments in different national markets by the dividend yield, plus the rate of change in the price of equities in that market evaluated in US dollars. However, as we have stressed, we do not observe the expected rate of return, and this is the relevant magnitude to take into account when analysing market equilibrium. We have to construct data on the return to holding equities in each of the countries for which we can get adequate data on equity prices and dividend yields. We also need a long time period so that we can make comparisons between sub-periods and test for the effects of controls. We undertake two types of analysis; the first uses our own estimates of expected returns, while the second uses outturns for dividends and equity prices.

In this section we investigate the linkages between ten national stock markets using quarterly data from 1960 to 1994. We construct second order vector auto regressions (VARs) which include all ten stock market indices and a set of event dummies, for instance for the building and destruction of the Berlin Wall. All price indices are in US dollars. There are eight European countries: the UK, France, Germany, Italy, Ireland, Austria, Belgium and the Netherlands, plus the US and Japan. Conventional tests indicate that all ten stock price indices have a unit root. Hence, our first step was to test for the presence of cointegration among them. It is important to do this, as failing to include any long-run equilibrium relationships between the variables in a VAR is likely to result in biased forecasts.

A related approach has been adopted by a number of previous authors. On balance the results indicate that we should expect to find a cointegrating relationship between national stock markets, although the number of such vectors appears to vary according to the countries and time period studied. Corhay et al. (1993) found a single cointegrating vector between equity prices in the UK, France, Germany, Italy and the Netherlands using a weekly data set from 1975 to 1991. Subsequent tests indicated that the Italians did not appear to share common trends with the remaining stock prices. Chou et al. (1994) found a single cointegrating vector

between equity prices in the UK, France and Germany using weekly data over a similar sample period. However, when prices in the US, Canada and Japan were also included, they obtained multiple cointegrating vectors. Cashin et al. (1995) used weekly data from January 1989 to March 1995 on seven major industrialized countries: Australia, Japan, the US, the UK, Germany, France and Spain. They found four cointegrating vectors between the seven countries and two cointegrating vectors between the four European countries. The authors suggested that increasing integration of capital markets would be expected to raise the number of equilibrium relationships found between national stock markets. However, there was no evidence of any change among industrialized countries over sub-periods of their sample, but there was evidence that the degree of integration of some emerging markets has risen.

Our data suggested that two cointegrating vectors were present for the ten stock markets we studied. This finding appeared reasonably robust to estimation over a sub-period from 1979 onwards. We have not yet sought to test whether any different results can be obtained from, say, 1990 onwards. These results indicate that there are two long-run equilibrium relationships that have held between the separate stock markets since 1960. These relationships were imposed in our VAR, and we obtained forecasts for the level of each national equity price index for every quarter from 1973Q2 onwards by updating the available information set and estimating a new VAR for each quarter. Thus the predicted values for 1973Q2 were obtained using a VAR estimated up until 1973Q1, the predicted values for 1973Q3 were obtained from a VAR estimated up until 1973Q2, and so on. This ensures that the predicted values are based only on information available at the time the prediction would have been made.

In order to estimate the expected return we assumed static expectations with respect to the dividend yield, which is strongly persistent everywhere. Hence, in each period the expectation is that the dividend yield next period for the market is the same as it has been this period. However, if the outturn differs from the expected, then the change in outturn is fully fed into expectations in the next period. We have assumed that expectations of growth in equity prices can be adequately modelled by the rolling VAR described above. The rate of return for the next period is calculated by adding the rate of change in equity prices produced by this forecast to the dividend yield. We consider that this is a similar procedure to that which would have been used by an efficient statistical analyst, and represents best behaviour.

Table 5.5 presents correlations for our generated expected, or *ex ante*, yields, while Table 5.6 presents results based on *ex post*, or outturn based, yields. Both should give us significant amounts of information, and we are particularly interested in the evolution of the correlations over time. We divided our expected yields into four periods which represent either exchange rate regimes or periods when there were significant changes in the regulatory regime.

A pre-ERM period from 1973Q2 to 1978Q4, when capital controls and barriers to mobility were common, and exchange rates were floating. We would expect coherence between *ex ante* rates of return to be relatively low in this period.

An early ERM period from 1979Q1 to 1985Q4, when barriers became more common, at least in some continental countries, yet were removed in the UK. Hence, we would expect a decline in coherence between French stock market returns and those in the UK, but an increase in coherence between those in the UK and Germany.

Table 5.5. Correlations between expected one-quarter returns in European stock markets

		Austria	Belgium	France	Ireland	Italy	Netherlands	UK
Germany	73Q2-78Q4	0.41	0.65	0.86	0.31	0.39	0.48	0.06
	79Q1-85Q4	0.65	0.63	0.45	0.47	0.57	0.69	0.20
	86Q1-91Q4	0.81	0.79	0.55	0.38	0.56	0.76	0.23
	92Q1-95Q2	0.84	0.83	0.79	0.79	0.56	0.62	0.44
Austria	73Q2-78Q4		0.48	0.33	-0.26	0.25	0.13	-0.32
	79Q1-85Q4		0.81	0.87	0.71	0.79	0.68	0.20
	86Q1-91Q4		0.80	0.45	0.35	0.66	0.77	0.07
	92Q1-95Q2		0.59	0.52	0.51	0.28	0.44	0.32
Belgium	73Q2-78Q4			0.66	0.63	0.55	0.54	0.48
	79Q1-85Q4			0.78	0.75	0.72	0.77	0.58
	86Q1-91Q4			0.76	0.72	0.75	0.91	0.50
	92Q1-95Q2			0.82	0.88	0.49	0.70	0.72
France	73Q2-78Q4				0.45	0.52	0.39	0.17
	79Q1-85Q4				0.83	0.70	0.58	0.34
	86Q1-91Q4				0.86	0.63	0.70	0.45
	92Q1-95Q2				0.83	0.29	0.58	0.54
Ireland	73Q2-78Q4					0.46	0.38	0.80
	79Q1-85Q4					0.57	0.62	0.53
	86Q1-91Q4					0.59	0.70	0.68
	92Q1-95Q2					0.46	0.52	0.54
Italy	73Q2-78Q4						0.02	0.09
	79Q1-85Q4						0.54	-0.02
	86Q1-91Q4						0.63	0.12
	92Q1-95Q2						0.11	-0.08
Netherlands	73Q2-78Q4							0.59
	79Q1-85Q4							0.43
	86Q1-91Q4							0.49
	92Q1-95Q2							0.72

A **period of relaxation**, where controls were gradually removed from 1986Q1 to 1991Q4. We would expect increasing coherence between markets in this period, as exchange rates became more stable, reducing risk, and controls were largely inoperative.

The period of turbulence and reform where the single market Directives and the Madrid agreements had come fully into force from 1992Q1 to 1995Q2, pushing markets to become more coherent, while the restructuring of the Exchange Rate Mechanism reintroduced a good deal of exchange rate-related uncertainty, reducing potential coherence.

The literature discussed above suggested that the UK stock market led the rest of Europe, as one might expect given its size, and it is useful to look first at the relationship between the stock market in London and those in the rest of Europe. Correlations between expected returns in London and elsewhere are generally higher in the 1990s than they were in the 1970s. The correlation rises uniformly with the two largest markets, Germany and France, and almost uniformly with Austria and Belgium. The highest correlation is observed in the 1970s between the UK and Ireland. During this period the countries effectively shared a common currency and hence many of the risks associated with foreign portfolio investment were absent. The correlation between expected returns in the UK and Italy are uniformly low, suggesting that significant barriers remained into the 1990s. Correlations between expected returns are generally higher in the 1990s than before, but this may reflect more efficient expectations formation rather than the beneficial effects of the removal of barriers to capital mobility. In general we can say that correlations between expected returns were higher after 1985 than they were before, and that they were rising. The most significant exception to this is Italy, where there is no real evidence of increasing coherence with stock market returns in other countries, and the degree of coherence is markedly low over the whole period.

In 14 out of our 24 correlations, the period of the late 1980s and early 1990s exhibits a higher correlation than the subsequent period, despite the fact that both barriers to mobility were lower and competition engendered by the single market programme stronger. We would posit that this reflects the considerably greater degree of exchange rate uncertainty in the period after the restructuring of the ERM. This will have made it more difficult for rational actors to form accurate expectations, and it will have also increased exchange rate-related risk, and hence will have increased home bias somewhat.

Increasing coherence between returns in stock markets could be the result of changing technology, with faster transfer of information allowing individuals to form expectations more rapidly. New technology should also be reducing non-governmental barriers to capital flows, and hence stock markets should become more integrated as a result.

In order to test this proposition, we need to consider a market that has been subject to similar non-governmental forces but which has faced a different regulatory environment, and the US is the obvious comparator. We have undertaken a similar VAR exercise for the US and generated best-practice expectations one period at a time. We have then calculated correlations between expected returns in the US market and in each of the European markets. Table 5.7 presents our *ex ante* results, while Table 5.8 presents *ex post* correlations. The correlations between expected returns in European markets were lowest in the first period in 75% of cases, whereas this period was the lowest in only four cases for the European comparison with the US, suggesting that there has been a greater increase in coherence between markets over time within Europe.

Table 5.6. Correlations between actual one-quarter returns in European stock markets

		Austria	Belgium	France	Ireland	Italy	Netherlands	UK
Germany	73Q2-78Q4	0.53	0.73	0.58	0.56	0.43	0.85	0.70
	79Q1-85Q4	0.73	0.70	0.62	0.66	0.53	0.78	0.42
	86Q1-91Q4	0.71	0.59	0.72	0.68	0.62	0.62	0.39
	92Q1-95Q2	0.83	0.83	0.63	0.55	0.45	0.80	0.60
Austria	73Q2-78Q4		0.55	0.37	0.23	0.54	0.41	0.54
	79Q1-85Q4		0.52	0.57	0.50	0.55	0.54	0.50
	86Q1-91Q4		0.16	0.28	0.40	0.38	0.17	0.02
	92Q1-95Q2		0.70	0.68	0.68	0.39	0.81	0.69
Belgium	73Q2-78Q4			0.74	0.66	0.63	0.73	0.73
	79Q1-85Q4			0.68	0.56	0.40	0.73	0.46
	86Q1-91Q4			0.81	0.60	0.62	0.86	0.67
	92Q1-95Q2			0.69	0.61	0.35	0.81	0.56
France	73Q2-78Q4				0.55	0.69	0.52	0.65
	79Q1-85Q4				0.45	0.41	0.73	0.41
	86Q1-91Q4				0.68	0.75	0.78	0.58
	92Q1-95Q2				0.58	0.04	0.80	0.91
Ireland	73Q2-78Q4					0.42	0.55	0.88
	79Q1-85Q4					0.50	0.57	0.63
	86Q1-91Q4					0.64	0.50	0.62
	92Q1-95Q2					0.30	0.79	0.73
Italy	73Q2-78Q4						0.26	0.41
	79Q1-85Q4						0.61	0.59
	86Q1-91Q4						0.49	0.35
	92Q1-95Q2						0.17	0.03
Netherlands	73Q2-78Q4							0.77
	79Q1-85Q4							0.50
	86Q1-91Q4							0.72
	92Q1-95Q2							0.79

Table 5.7. Correlations between expected one-quarter returns in US and European stock markets

	Austria	Belgium	France	Germany	Ireland	Italy	Netherlands	UK
73Q2-78Q4	-0.54	0.06	-0.19	-0.28	0.46	0.05	0.37	0.66
79Q1-85Q4	0.27	0.09	0.19	0.20	0.29	-0.05	0.23	0.17
86Q1-91Q4	0.07	0.09	0.11	0.24	0.22	0.05	0.27	0.31
92Q1-95Q2	0.44	0.37	0.42	0.34	0.25	-0.45	0.74	0.65

Table 5.8. Correlations between actual one-quarter returns in US and European stock markets

	Austria	Belgium	France	Germany	Ireland	Italy	Netherlands	UK
73Q2-78Q4	0.09	0.54	0.54	0.43	0.47	0.27	0.64	0.66
79Q1-85Q4	0.20	0.09	0.27	0.34	0.24	0.45	0.49	0.45
86Q1-91Q4	0.12	0.69	0.73	0.49	0.57	0.45	0.81	0.68
92Q1-95Q2	0.29	0.19	0.44	0.05	0.22	-0.27	0.42	0.35

Correlations between the US and UK markets are generally quite high, although not as high as between the UK and some Europeans. However, correlations of expected returns between the two large continental markets, France and Germany, and their neighbours are much higher than between these two markets and the US. In general we would conclude that correlations are higher between European markets than between Europe and the US, and that these correlations have risen more in Europe than they have between Europe and the US. These conclusions appear to hold both for *ex ante* and *ex post* returns. Hence, we would conclude that the single market programme (and possibly the ERM) have acted as additional factors in increasing the integration of stock markets. However, we should acknowledge that this could be driven by increasing economic, as well as financial, integration.

5.3. Conclusions

The removal of barriers to capital mobility has proceeded at a slow and variable pace throughout Europe. In countries where barriers were removed some time ago, it is now possible to observe some of the effects we might expect. Stocks of foreign portfolio assets are building up, allowing genuine sharing of consumption risks between countries. Asset prices are also becoming more coherent, with *ex ante* stock market returns tending to move together in Europe. We would expect to begin to see some effect on patterns of saving and investment, but only in countries where there is clear evidence of the removal of barriers.

6. The effects of increasing capital mobility in the EU

6.1. Introduction

We have discussed the process of the removal of barriers to capital mobility in Chapter 4. The combination of changing exchange rate arrangements and the development of competition through the single market programme has meant that barriers in the 1990s are much lower than they were in the early 1980s. The evidence from short-term financial markets is that arbitrage is now much better between onshore and offshore markets, and observed differentials are likely to be due to minor transactions costs. As short-term banking sector funds are mobile, returns are equalized across countries. We would also expect that arbitrage along the liquidity spectrum to bonds is more efficient in the 1990s because of the single market programme. However, more complete price arbitrage does not necessarily mean that risks are being shared more efficiently. We have discussed the increasing levels of both inward and outward portfolio investment in Europe in the previous chapter, and it is clear that the process of liberalization has proceeded sufficiently far for consumption risks to be shared across countries. However, we also have to investigate whether or not this has affected the actions of individuals in the economy.

One of the implications of perfect capital mobility, emphasized particularly by Obstfeld (1995), is that countries' marginal utilities of consumption should be proportional to each other and therefore perfectly correlated across states of nature. This arises from the standard optimality condition that the marginal rate of substitution between any two (state contingent) commodities is equal to their relative price. This should be equalized across countries which share perfectly mobile international capital. Thus in adverse states of the world all individuals will have low consumption, and conversely in benign states, so consumption risks are therefore shared with perfect capital mobility.

Empirical evidence on the correlations between consumption across different countries over time indicates a less than perfect correlation. Obstfeld documents correlation coefficients for 47 countries, split into different groups, over two time periods, 1951–72 and 1973–88. He found some evidence of an increase in the correlation of consumption across EU countries, but generally the findings were not consistent with the theory. This suggests that the theoretical model, which has the implication that consumption should be perfectly correlated across countries, is false. Since the model embodies a number of assumptions, it is not clear whether the rejection of the model is a rejection of the assumption of perfect capital mobility, or of its various other assumptions. These include the assumption that aggregate consumption is determined as if by a representative consumer with stable preferences, and that all risks, including those to human capital, are diversifiable. Clearly these are strong assumptions and there is little doubt that even if there were perfect mobility of capital across countries there would remain an imperfect correlation between levels of consumption. There are also many other factors that have influenced patterns of consumption over time. There is a large amount of empirical literature which attempts to explain patterns of consumers' expenditure in individual countries, with particular emphasis on the effects of demographic changes, financial liberalization and imperfect domestic capital markets. Any one of these will have had different influences in different countries, and their combined effects, particularly in Europe over the past 20 years, has dominated the influences from increasing capital mobility.

As Obstfeld noted, 'the representative consumer model ... gives a misleading picture of how national consumption levels actually are determined ... imperfect correlations among industrial country consumptions are ... the result of generalized asset market incompleteness rather than of international capital market segmentation.' This suggests that testing the correlation of consumption across countries is not a very revealing way in which to examine the extent of capital mobility.

We feel that it is more instructive to look at the coherence of savings and investment flows, and there is a very large body of work looking at this association, both across countries and across time. Much of the work stems from a paper by Feldstein and Horioka (1980), who undertook a simple cross-section regression of the ratio of investment to income on the saving to income ratio for 16 OECD countries over the period 1960–74.

$$I_i/Y_i = \alpha + \beta S_i/Y_i + \varepsilon_i \qquad \textbf{(6.1)}$$

If a random shock raises investment as a proportion of income in a time period, there is no reason why an individual in an open economy should raise their saving to finance it. Indeed, if risks can be traded, they should have some sort of insurance in place that allows temporary finance from abroad. Similarly, a positive impulse to consumption should lower the saving rate, but there is no reason why an individual or country faced with perfect capital markets should alter their investment plans. Indeed, one could argue that Feldstein and Horioka were only attempting to apply the Fisher separation theorem on consumption and investment to nations in a world economy. In doing this they suggested that the slope coefficient, β, in the regression above could be interpreted as an indicator of capital mobility and, as it was 0.868, the authors interpreted this as evidence of limited capital mobility.

A large number of papers have been produced extending the strong association between saving and investment displayed in the first Feldstein and Horioka paper, attempting to overturn it and provide explanations for it. We provide a selective summary of these papers, and we attempt to put a particularly European gloss on the results. Additionally, we provide some new results that suggest that the process of the removal of barriers to capital mobility has changed the saving and investment association in Europe. However, it is important to understand how the initial results should be interpreted before we can assess our contribution.

6.2. An assessment of work on the saving and investment association

There are a number of potential criticisms of the Feldstein-Horioka approach to testing for perfect capital mobility. There are a number of reasons why, even with perfect capital markets, saving and investment should be associated. For instance, a temporary productivity shock changes (raises) both domestic output and the productivity of capital. Hence, more investment takes place but, as the increase is temporary, forward-looking consumers would also raise their saving. A natural resource discovery, for instance North Sea oil, would induce a similar response. Additionally, if the government targets the current account then it will attempt to offset increased outflows when saving increases with the (changing) intercept in equation 6.1 giving the target current account. Finally, and probably most importantly, simple national income accounting suggests that the difference between national saving and investment is the current account. If the individual residents of a country and the government are solvent, as they must be if they are to borrow, the country is solvent. Hence, the current account as a percentage of GDP must not rise without bound, and indeed it must be a

stationary process. Hence, the Feldstein-Horioka regression above must cointegrate, and in the longer run the slope coefficient must be around 1, even if capital markets are perfect. A non-zero intercept indicates that in the long run national solvency is associated with an equilibrium stock of assets (or liabilities) that is stationary but non-zero.[8]

Another way of making this last point is to recognize that an open economy faces an inter-temporal budget constraint relating its current account (which is national saving minus national investment) to the net external asset position. In the steady state we might expect that the ratio of net assets to GDP would achieve some sort of equilibrium, and hence the current account is constrained by this equilibrium. If the private sector has a determinate wealth to income ratio, and public debt as a percentage of GDP is constant then we would expect there to be a determinate net foreign assets to income ratio (or trajectory). Hence, in the long run we might expect that saving and investment would move together, even if capital mobility were perfect.

A look at the historical pattern of the current account of most countries shows it to be approximately stationary. This could be because the government targets the current account to bring it into balance over the medium or long term. Alternatively (and additionally) feedback mechanisms linking a deteriorating current account with a worsening risk premium and a declining private sector wealth to income ratio could be at work. As Obstfeld (1995) and Sinn (1992) argue, these feedbacks, and especially those from wealth, may operate only slowly, but as long as the private sector wealth to income ratio is stable, we would expect in the long run to find investment and saving to be stationary variables that cointegrate.

However, in the shorter term we would expect low correlations between saving and investment in countries with free capital markets. If an event occurs that causes a temporary rise in desired investment, but does not require a matching (optimal) change in saving, then it is probably efficient to borrow from abroad, knowing that it will be possible to pay back the borrowing later. Hence, we would argue that high levels of capital mobility should be associated with low levels of association between saving and investment in the short run but, for reasons to do with solvency, in the longer term we should observe relatively strong relations between these ratios. Although this point has been recognized in the literature, there has not been an adequate attempt to reconcile the strong association expected in the long term with the possibility of little association in the short term.

6.3. Cross-sectional studies

It is clear from the large amount of literature on the topic that the close association between investment and savings is relatively robust across the majority of the cross-sectional studies. Different sample periods and different sample compositions generally yield estimates ranging from 0.65 to 0.90. It is also the case, however, that the inclusion or exclusion of a few countries can considerably alter the magnitude of the coefficient. Thus Wong (1990) found that the savings coefficient dropped from 0.613 to 0.110 when Jordan, St Lucia and Yemen

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[8] Numerous models have been developed that show that even with high capital mobility savings and investment could be closely related in the long run. They include general equilibrium models (Backus, Kehoe and Kydland (1992), Baxter and Crucini (1993), Cardia (1991), Finn (1990), Mendoza (1991), Obstfeld (1986), Stockman and Tesar (1995) and Tesar (1993)); current account approaches (Argimón and Roldán (1994), Artis and Bayoumi (1991), Ballabriga, Dolado and Vinals (1991), Bayoumi (1990), Coakley, Kulasi and Smith (1995), Ghosh (1995) and Glick and Rogoff (1993)); and hysteresis of factor supplies and corporate financing restrictions (Obstfeld (1995)).

were added to his sample of 40 developing countries for the period 1975–81. Most studies find that the savings parameter declines over time: 0.58 over 1981–88 for Artis and Bayoumi (1990), 0.636 over 1981–90 for Obstfeld (1995) and 0.628 over 1980–92 for Coakley, Kulasi and Smith (1994). The decline in the coefficient value in the 1980s has been seen as support for this approach since it is undoubted that capital mobility became much higher at the time.

There have been attempts to investigate whether or not the association between saving and investment holds in the short run. For instance, Caprio and Howard (1984) averaged data over the medium term of four to five years to remove the influence of business cycles. They constructed their dependent variable as the change in the current account ratio (the current account divided by GDP) divided by the change in the savings ratio. The change is measured from one trough to another, and its value calculated to be around a half for 23 OECD countries for the 1961–81 period. They concluded that there is a larger degree of net medium-term capital mobility than the long-term measure given by the Feldstein-Horioka estimates. However, when they undertook a regression in levels, the coefficient is much closer to unity. Feldstein and Bacchetta (1991) re-estimated the savings-investment equation over the later period 1974–86 and found a similar value of 0.868. They enlarged the sample composition to include France, Iceland, Norway, Portugal, Spain, Switzerland and Turkey, in addition to the original 16 countries. Obstfeld (1995) also estimated the cross-section equation over a nearly comparable period and obtained somewhat lower results. His sample was the same as that for Feldstein and Bacchetta except that he dropped Turkey. The coefficient on savings is 0.715 (s.e. 0.13) for the period 1974–90, 0.867 (0.17) for 1974–80, 0.636 (0.11) for 1981–90, 0.567 (0.15) for 1981–85 and 0.636 (0.09) for 1986–90.

The association between national savings and investment is weaker for developing countries than for industrial countries. This is considered counter-intuitive since it is well known that developing countries restrict capital transfers more than other nations, but this finding may attest to the ineffectiveness of the controls or the sustained external borrowing necessary to supplement meagre domestic savings. Dooley, Frankel and Mathieson (1987) obtained values of 0.455 and 0.610 for 48 developing countries over the periods 1960–73 and 1974–84 respectively. Goldstein and Mussa (1993) broke the period 1971–92 up into three-year sub-periods and obtained values ranging from 0.07 to 0.34 for 17 fuel-exporting developing countries and 0.43–0.72 for 73 non-fuel-exporting developing countries respectively

Cross-country estimates can be compared with the estimates obtained from data on regions within large countries and from the gold-standard period, both cases in which capital mobility is thought to be high. Estimates over the gold-standard period reveal that the lowest value of the coefficient obtained is still as high as 0.567. However, a study by Bayoumi (1990), using different data sources, found significantly lower coefficient values. On the other hand, results from regional studies point to the opposite conclusion. Four regional studies failed to find a positive relationship between savings and investment, and that by Sinn (1992) detected a negative relation. Sinn focused on 48 US states and Alaska; Bayoumi and Rose (1993) examined 11 British regions; Bayoumi and Sterne (1993) looked at Canadian provinces; and Obstfeld (1995) reported a study on 45 Japanese prefectures.

However, regional data suffers from being of poorer quality than national data, and in particular it is difficult to get income rather than output data. Hence, at a regional level both property and employment income from outside the region and governmental transfer are excluded, and we should expect that this would reduce the association between saving and

investment. Hence, it is difficult to make strong inferences from the two sets of results on the appropriate value for the savings coefficient in a world of perfectly mobile capital.

We might expect that the choice of countries to study will affect the correlation, in part because some groups of countries are much more economically integrated than others. For instance, Feldstein and Bacchetta (1991) show that the link between savings and investment is much weaker for a sub-sample of the EC countries. Their results were ambiguous, although they found that the savings coefficient was generally lower and declined more sharply over time for the EC countries when net savings was used as the measure of savings, but this is no longer true when gross savings are used instead. Gross savings is possibly the more appropriate measure, and the one most widely used in the literature. Artis and Bayoumi (1991) found more robust evidence in favour of an EC effect by focusing on six ERM countries for which they found a lower response of 0.58. Armstrong, Balasubramanyam and Salisu (1996) analyse capital flows within the EU over the period 1971–91. They find that the cross-country, five-year average regression coefficient is low, or even negative, and take this as strong evidence of high capital mobility.

A number of other studies have attempted to investigate the effects of barriers to mobility on saving and investment relationships in Europe. The problem of national solvency is acknowledged in Argimón and Roldán (1994), who investigate the cointegration of saving and investment in the Community from 1960–88, concentrating on the nine largest countries. They divide Europe into two groups. The UK, Germany and the Netherlands were seen as displaying a high degree of capital mobility because simple stationarity tests rejected cointegration between saving and investment. They posited that the other countries, Spain, France, Italy, Denmark, Belgium and Ireland, had low mobility because of capital controls, and hence they displayed cointegration. However, we would argue that the conclusions drawn in this paper are too strong, and we address these issues further below.

Lemmen and Eijffinger (1994) also undertook cross-section analyses of saving and investment in Europe, and found that the association declined for the nine larger EC members between the 1970s and the 1980s. They also found that the core-ERM members displayed considerably less association between saving and investment over the whole period 1967–90. They also undertook short time period regressions for individual countries in Europe and argued that a declining coefficient over time indicates that capital mobility has been increasing. Although we would agree with their conclusion, we extend their work below, and attempt to test for mobility in a more coherent framework.

6.4. Time series studies

Obstfeld (1995) produced time series estimates of equation 6.1 for all the OECD economies for the period 1975–90. These estimates for individual countries lead to greater variation in the short-run response of investment to savings, with values ranging from -0.450 to 1.803. Australia and New Zealand have both been major capital importers, and have run current account deficits for most of the period, but still exhibit strong correlations between domestic investment and national saving. On the other hand, Norway ran a deficit for much of this period, importing capital to exploit oil discoveries, and there is a negative association. However, the average is close to that for the cross-sectional estimates. The study by Jansen and Schulze (1995) is informative. They discuss the Norwegian experience, emphasizing the removal of capital controls in the 1970s and 1980s, and also discuss the implications of the

discovery of oil in the middle of their data period. They demonstrate that the failure to properly take into account structural breaks of this sort severely distorts the picture, and argue there is no Feldstein-Horioka puzzle to solve, at least for Norway.

Panel data estimates show less variation, and generally the estimates of β fall in the same range as those from the cross-sectional studies (0.55 to 0.80). A major exception to this is the finding by Coakley, Kulasi and Smith (1994) that estimation of a saving investment regression by a random coefficients model gives a significantly lower value of 0.20 to 0.35 (with a standard error of 0.04), as does estimation taking into account the influence of common factors by various panel data methods. Fujiki and Kitamura (1995) also utilized panel data techniques and estimated five-year rolling regressions by one- and two-way fixed effects models on a sample of 23 OECD countries, and found evidence of the response rate dropping from 0.53 to 0.67 in the 1960s, to 0.35 to 0.49 in the 1970s, and to 0.30 to 0.54 in the 1980s. However, as with other studies, we would claim that these estimates are too low, given the need for individual countries to be solvent. They are low because not enough attention has been paid to dealing either with structural change, or to addressing the differences between the short- and long-term associations that we argue we should observe.

6.5. The integration of time series and cross-section results

Cross-section results have generally been regarded as producing the long-run relationship between saving and investment. Most investigators have either averaged across the whole of their time period or have cut it up into blocks of five years. Time series regressions generally capture the short-run relationship between national saving and domestic investment. It is necessary to evaluate both if we are to analyse capital mobility, and this can be done in a panel framework, much as Janson and Schulze (1995) suggested.

In the literature it has been common to recognize that there might be differences between short-run and long-run relationships. However, this recognition has only extended to the estimation of levels equations and change equations. It is possible that both are separately valid, but it does require that the dynamic terms are independent of the long-run solution, and this is unlikely if adjustment is slow. It is much better to set up the problem in an error correction form, with the dependent variable being the change in the investment-income ratio, and the long run being embedded in the error correction mechanism or levels terms. This also allows us to acknowledge that the approach to equilibrium may take some time. We can estimate the dynamic error correction model for a panel of countries, and hence we avoid the aggregation bias involved in combining time periods.

In this section we look at saving and investment associations in Europe. In order to be able to decide on the structure of the panel regression we have to investigate the order of the dynamics needed for an adequate specification. We have undertaken time series analyses on the individual countries over the period 1961–93, or 1962–93, with data from the most recent OECD annual national accounts. We have used whole economy gross saving and gross investment, thus avoiding problems from the changing definition of the private sector and of the measurement of depreciation.[9] We started with the basic model:

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[9] In each case we have tested for first order serial correlation, and where it is significant we have included the lagged dependent variable. The core coefficients are generally high, suggesting low mobility.

$$\Delta(I/Y)_t = \alpha + \beta_0\Delta(S/Y)_t - \beta_1[(I/Y) - \beta_2(S/Y)]_{t-1} + \beta_3\Delta(I/Y)_{t-1} \qquad \textbf{(6.2)}$$

Our formulation gives all the information we need in order to encompass other tests for capital mobility and the effects of changing capital market regulation. The coefficient β_2 in the error correction mechanism is the long-run Feldstein-Horioka coefficient, while β_0 gives an estimate of the true dynamic term that change regressions have attempted to estimate. Although the coefficient β_1 gives an indication of the speed of adjustment, the response profile over time depends upon all three coefficients, β_0, β_1, β_3. The simple time series reported in Table 6.1 gives us some information about capital mobility and cointegration. Generally, individual country β_2's are quite close to 1, suggesting that either national solvency holds, or that the current account target has not changed. The dynamic (im)mobility term, β_0, varies much more, and is highest for Greece, while the error correction term, β_1, varies across countries. Adjustment speeds, as measured by β_1, appear to be high in Greece, France and Finland, and low in Germany, the Netherlands and Denmark. This is much as we would expect, given our analysis in Chapter 4. Strong barriers to mobility, as in the former group, raise the intermediate association between saving and investment, and hence raise β_1. There appears to be a significant degree of heterogeneity across countries in our sample with respect to the dynamic pattern of response of saving to investment, and hence it is unlikely that we could impose common patterns on them.

As we have 15 countries, it is possible to look at simple cross-section regressions to see if there is a degree of heterogeneity over time. We undertook two sets of regressions, reported in Tables 6.2 and 6.3, one including Luxembourg, and one excluding it, and this exclusion does affect our results. If we include Luxembourg, the cross-sections suggest that capital mobility, at least as measured by the association between saving and investment within a time period, was lower in the 1960s than in the 1970s and 1980s, and that it fell again in the 1990s. If we exclude Luxembourg, the results have a less obvious time pattern, and mobility appears lower. Hence, we decided to proceed using only 14 countries, as the smallest in our sample is clearly an outlier. The cross-section results are themselves of interest, especially when we exclude the outlier, because considerations of solvency should not apply one year at a time, and hence we should gain information about mobility. We would hope that the association within the year should be low, and that it should be lowest around the time of asymmetric shocks. Both 1974 and 1979, the years when oil shocks changed patterns of saving and investment, display low associations, and 1990, the year of German unification, is also a locally low value. This suggests that capital moved between countries in these years.

We should also remember that shocks are not only negative events, and the fall in the oil price in 1986 should have also necessitated capital flows in Europe where some countries are energy producers. Patterns of energy demand vary, and we do observe a local low point in this year. In general the association coefficients are significantly different from one, and they are not significantly different from zero in 1969, 1970, 1974, 1976, 1977, 1979, 1981, 1982, and 1985, suggesting that capital mobility was relatively high in these years.

Table 6.1. Individual country saving investment regressions

Country	β_0	β_1	β_2	β_3	$\bar{R}^2$	LM(1)
Austria	0.46 (3.63)	0.44 (3.23)	0.94 (5.41)		0.82	0.17
Belgium	0.40 (3.50)	0.17 (1.54)	0.97 (2.58)		0.88	0.35
Denmark	0.31 (1.65)	0.14 (1.07)	1.07 (1.99)		0.85	0.01
Finland	0.21 (1.45)	0.46 (3.32)	1.28 (4.53)		0.78	4.89
	0.02 (.017)	0.65 (4.92)	0.85 (5.38)	0.56 (3.51)	0.84	1.99
France	0.18 (1.76)	0.61 (5.71)	0.90 (13.9)		0.94	3.83
	0.09 (0.86)	0.59 (5.27)	0.86 (13.3)	0.30 (2.26)	0.95	0.13
Germany	0.26 (1.42)	0.22 (2.02)	0.94 (2.28)		0.82	12.80
	0.13 (0.85)	0.30 (3.36)	0.76 (3.06)	0.59 (4.11)	0.88	1.17
Greece	0.53 (5.44)	0.67 (3.86)	0.70 (8.54)		0.84	0.89
Ireland	-0.12 (0.73)	0.13 (1.81)	2.05 (1.21)		0.85	3.24
Italy	-0.10 (0.64)	0.23 (1.80)	0.85 (2.88)		0.83	7.45
	-0.16 (1.32)	0.41 (3.93)	0.67 (5.83)	0.65 (4.42)	0.90	0.40
Luxembourg	-0.13 (1.03)	0.46 (3.18)	-0.16 (1.61)		0.38	2.30
Netherlands	0.21 (1.06)	0.10 (1.03)	0.90 (1.00)		0.87	0.01
Portugal	0.11 (1.29)	0.23 (1.78)	0.19 (0.58)		0.51	5.28
	0.08 (0.83)	0.34 (2.34)	0.01 (0.02)	0.37 (1.99)	0.55	1.08
Spain	0.17 (1.13)	0.31 (2.92)	0.99 (3.35)		0.79	10.10
	0.20 (1.56)	0.36 (3.87)	0.82 (4.08)	0.54 (3.82)	0.85	2.62
Sweden	0.30 (2.85)	0.48 (3.40)	0.97 (7.52)		0.90	7.64
	0.17 (1.63)	0.52 (4.11)	0.85 (8.52)	0.49 (3.07)	0.92	0.10
UK	-0.11 (0.81)	0.16 (1.37)	0.56 (0.79)		0.60	8.73
	-0.20 (1.66)	0.27 (2.37)	0.31 (0.93)	0.56 (3.45)	0.72	0.54

Notes: 't' statistics in brackets, LM(1) is a test for first order serial correlation.

Table 6.2. Cross-sectional analysis of saving and investment *with* Luxembourg

$$I_t/Y_t = \alpha + \beta.S_t/Y_t$$

Year	α	β	R^2
1960	0.11 (2.87)	0.48 (2.85)	0.38
1961	0.13 (3.74)	0.44 (2.89)	0.39
1962	0.07 (2.92)	0.69 (6.30)	0.75
1963	0.07 (3.74)	0.71 (8.45)	0.85
1964	0.10 (8.14)	0.60 (11.7)	0.91
1965	0.15 (5.30)	0.39 (3.29)	0.45
1966	0.11 (3.38)	0.55 (4.09)	0.56
1967	0.13 (4.66)	0.43 (3.72)	0.52
1968	0.17 (4.95)	0.24 (1.64)	0.17
1969	0.22 (7.40)	0.04 (0.34)	0.01
1970	0.22 (7.00)	0.08 (0.61)	0.03
1971	0.15 (5.32)	0.37 (3.40)	0.47
1972	0.14 (4.92)	0.39 (3.69)	0.51
1973	0.19 (6.37)	0.24 (2.19)	0.27
1974	0.24 (8.82)	0.04 (0.40)	0.01
1975	0.19 (5.53)	0.22 (1.56)	0.16
1976	0.22 (8.49)	0.05 (0.46)	0.02
1977	0.22 (7.81)	0.05 (0.40)	0.01
1978	0.21 (5.82)	0.09 (0.60)	0.03
1979	0.21 (6.90)	0.07 (0.56)	0.02
1980	0.29 (6.32)	0.19 (1.43)	0.14
1981	0.19 (4.85)	0.16 (0.90)	0.06
1982	0.19 (6.76)	0.10 (0.82)	0.05
1983	0.19 (7.23)	0.06 (0.50)	0.02
1984	0.19 (10.7)	0.02 (0.29)	0.01
1985	0.20 (12.7)	-0.03 (0.41)	0.01
1986	0.18 (11.6)	0.07 (1.12)	0.09
1987	0.16 (8.36)	0.20 (2.47)	0.32
1988	0.15 (7.27)	0.25 (2.79)	0.37
1989	0.18 (7.98)	0.17 (1.75)	0.19
1990	0.19 (9.37)	0.11 (1.32)	0.12
1991	0.16 (7.96)	0.22 (2.52)	0.33
1992	0.15 (7.45)	0.22 (2.37)	0.30
1993	0.12 (5.31)	0.34 (3.34)	0.46

Notes: 't' statistics in brackets.

Table 6.3. Cross-sectional analysis of saving and investment *without* Luxembourg

$$I_t/Y_t = \alpha + \beta.S_t/Y_t$$

Year	α	β	R^2
1960	0.05 (1.72)	0.80 (6.48)	0.78
1961	0.11 (3.07)	0.56 (3.57)	0.52
1962	0.06 (2.53)	0.76 (7.29)	0.82
1963	0.06 (2.69)	0.78 (8.40)	0.85
1964	0.10 (6.60)	0.59 (8.83)	0.87
1965	0.14 (4.54)	0.43 (3.14)	0.45
1966	0.09 (2.83)	0.64 (4.66)	0.64
1967	0.11 (4.83)	0.54 (5.87)	0.74
1968	0.12 (4.52)	0.47 (4.08)	0.58
1969	0.17 (5.77)	0.27 (2.19)	0.29
1970	0.15 (4.69)	0.39 (2.91)	0.41
1971	0.12 (3.80)	0.50 (3.92)	0.56
1972	0.11 (3.96)	0.52 (4.75)	0.65
1973	0.13 (4.16)	0.47 (3.76)	0.54
1974	0.16 (4.14)	0.38 (2.18)	0.28
1975	0.09 (1.64)	0.66 (2.52)	0.35
1976	0.15 (2.96)	0.38 (1.52)	0.16
1977	0.14 (2.18)	0.43 (1.40)	0.14
1978	0.09 (1.44)	0.63 (2.18)	0.28
1979	0.15 (2.97)	0.37 (1.53)	0.16
1980	0.10 (1.96)	0.64 (2.52)	0.35
1981	0.12 (1.66)	0.56 (1.59)	0.17
1982	0.12 (1.87)	0.54 (1.61)	0.18
1983	0.06 (1.07)	0.80 (2.98)	0.42
1984	0.10 (2.97)	0.52 (2.96)	0.42
1985	0.13 (5.22)	0.38 (3.00)	0.43
1986	0.11 (4.65)	0.42 (3.49)	0.50
1987	0.06 (2.60)	0.69 (5.76)	0.73
1988	0.06 (1.75)	0.71 (4.03)	0.57
1989	0.11 (3.02)	0.54 (3.18)	0.46
1990	0.12 (3.13)	0.49 (2.70)	0.38
1991	0.08 (2.36)	0.63 (3.53)	0.51
1992	0.08 (2.67)	0.62 (3.96)	0.57
1993	0.06 (1.74)	0.64 (3.55)	0.51

Notes: 't' statistics in brackets.

6.6. Systematic testing for capital mobility

It appears obvious that we should pool all of the relevant European countries into a single panel, but care has to be taken in its construction. There are a number of reasons why we should not expect to be able to pool all of the countries in our sample. First, there are a number of potential shifts in regime within our sample period. We have a rather long time domain, and hence we can look for several break points. We could first look at the fixed exchange rate period toward the end of the Bretton Woods system and then at the floating exchange rate regime before the formation of the ERM. We could also look for a break point around the time of the major liberalization in the mid-1980s. Second, although it may be valid to impose a common long-run parameter, or a common first difference parameter, dynamics could differ between countries. This is particularly important, as Dooley (1995), for instance, suggested that capital controls affect the dynamics of adjustment, but have little, or no, long-run effect. The common long-run parameter picks up common solvency effects, while a common first difference parameter would reflect common capital controls.

Our panel model is the same as for the individual country regressions in Table 6.1. It allows us to test a number of important hypotheses while avoiding biases from omitting variables. We allow four exchange rate regimes, breaking the regression at 1972, 1978 and 1986. Our first period covers the fixed exchange rate Bretton Woods era, while the second is the period of free floating. The third and fourth cover the ERM, with the former period having stronger controls on capital flows. Table 6.4 describes our model selection strategy. We attempted to set up a sequence of hypotheses to be evaluated, and have made clear priorities.

We start with a model where all parameters are different both between countries and time periods, and we attempt to restrict the parameter space.

(a) **Model 1** We first attempt to impose common slopes across all time periods and countries, and then to impose common slopes across all time periods, but allow them to differ across countries. As can be seen, both fail. We can however, impose common parameters across all countries in the middle two periods, but allow them to differ at either end. We take this as the end of model 1 testing, and use it as the starting point for model 2 testing.

(b) **Model 2** We cannot impose a common long-run parameter across all three time periods (model 1 allowed us to aggregate 1973–78 with 1979–86), but it is possible to impose common long-run parameters across countries within time periods. Dynamic terms differ between countries in the first and last periods.

(c) **Model 3** We look for possible groupings of countries where we can impose common dynamics. We can also impose a common long-run slope over the first two sub-periods. We can group the countries into those with high factor mobility and those without, and impose common dynamics by grouping. Our groupings are based in part on our earlier results on dynamics, and also on our analysis of the process of the removal of capital controls. The high mobility group includes Germany, the UK, Netherlands, Denmark, Portugal and Ireland. Germany, the UK and Portugal are grouped together because of common dynamics in Table 6.1, as are Denmark, the Netherlands and Ireland. We can impose common dynamics after 1986, but not prior to that date. The inclusion of Ireland and Portugal in the high mobility group can be justified by the high factor mobility both have experienced. Ireland displays considerable labour mobility over the economic cycle. This will weaken the association between domestic saving and investment in the short run. Portugal has unusually high investment rates and these have been supported by very high

levels of foreign direct investment. This recently reached 4% of GDP, and private sector flows have been augmented in the past ten years by EU transfers. For these reasons Portugal can be seen as a high capital mobility country. The low mobility groups are Finland, France, Italy, Spain and Sweden, and Austria, Belgium and Greece, all of which had significant controls for some or all of our period. We can impose common dynamics after 1986, but prior to that date the coefficients on the change in the savings rate differ noticeably, with contemporaneous associations (B_0) being much higher in Austria, Belgium and Greece.

(d) **Model 4** Taking our three time period models with grouped dynamics, we attempt to impose common intercepts within periods (or current account targets), but we are unable to do this. This is not surprising given that countries such as the UK, the Netherlands and Denmark are in our sample. These are temporarily resource-rich and may well have targets that change over time. We can, however, make the dynamics more parsimonious in places.

Table 6.4. Testing for capital mobility

Restriction	Test statistic
Model 1	
No breaks, common slopes	F(223,207)=1.958*
No breaks, no common slopes	F(171,207)=1.613*
Common parameters 1973–86	F(57,207)=1.313
Model 2	
Common long-run parameter 1962–93	F(41,264)=2.06*
Common within-period long-run parameter	F(39,264)=1.291
Model 3	
Common within-group dynamics & common long-run parameter 1962–86	F(97,303)=1.233
Model 4	
Common intercepts	F(13,401)=3.719*
Additional dynamic restrictions	F(15,401)=0.563

Notes: 'f' statistics with degrees of freedom, a * denotes a significant result.

It is possible to make further comments about the speed of adjustment by looking at the mean lag, for instance. We would expect countries with stronger controls/less mobility to show more coherence between saving and investment in the short run, even if they have the same long-run parameter. Hence, we would expect them to have smaller mean lags. In order to investigate this we have to delete some of the insignificant dynamic terms in Table 6.4 as they will distort our calculations. Table 6.5 reports the results of our regressions after we have

made the dynamics more parsimonious. The underlying long-run structure is not altered by the removal of insignificant dynamics.

Table 6.5. Panel estimates for 1962–93 with some common slope restrictions

Using $\Delta(I_i/Y_i)_t = \alpha_i + \beta_0\Delta(S_i/Y_i)_t - \beta_1[(I_i/Y_i) - \beta_2(S_i/Y_i)]_{t-1} + \beta_3\Delta(I_i/Y_i)_{t-1}$

Time period	β_0	β_1	β_2	β_3
Austria, Belgium, Greece				
1962–72	0.5539 (4.61)	0.5044 (7.34)	0.8377 (2.57)	0.1638 (0.99)
1973–86	0.3640 (3.80)	0.4066 (7.16)	0.8377 (2.57)	-0.0023 (0.02)
1987–93	0.2880 (2.18)	0.4238 (6.02)	0.6309 (6.88)	0.7138 (5.99)
Finland, France, Italy, Spain, Sweden				
1962–72	0.1337 (1.04)	0.5311 (7.57)	0.8377 (2.57)	0.6845 (4.25)
1973–86	-0.1962 (2.09)	0.4143 (7.30)	0.8377 (2.57)	0.3754 (2.70)
1987–93	0.2880 (2.18)	0.4238 (6.02)	0.6309 (6.88)	0.7138 (5.99)
Germany, UK, Portugal				
1962–72	0.3373 (4.78)	0.3104 (4.35)	0.8377 (2.57)	0.0718 (0.54)
1973–86	0.0787 (1.34)	0.1822 (5.28)	0.8377 (2.57)	0.4372 (4.11)
1987–93	-0.1756 (1.14)	0.1890 (3.41)	0.6309 (6.88)	0.4855 (3.03)
Denmark, Netherlands, Ireland				
1962–72	-0.0836 (0.52)	0.2431 (4.59)	0.8377 (2.57)	-0.2631 (1.57)
1973–86	0.0063 (0.07)	0.1607 (4.54)	0.8377 (2.57)	0.2659 (2.61)
1987–93	-0.1756 (1.14)	0.1890 (3.41)	0.6309 (6.88)	0.4855 (3.03)

Our parsimonious equations show a relatively clear pattern between groups. In each time period, group one has the lowest mean lag, averaging under a year, while group two has a very slightly higher mean lag in the middle period. The countries in these groups generally maintained strong controls over much of our estimation period. The exception is Belgium, but Chapter 8 suggests that there are other restrictions to the free movement of capital into and out of that country.

The groups with no controls and/or high factor mobility have noticeably (and probably significantly) longer mean lags. For instance, in the third period the mean lag in years is -0.37 for groups one and two, while it is 3.11 in groups three and four. The higher mean lag in the high mobility group suggests that in the short run capital is able to move freely, as saving and investment fluctuations are not strongly related. In the longer term a common parameter, (B_2), embedding a solvency constraint, as well as indicating mobility, makes all countries similar.

Table 6.6. Panel estimates with some common slopes and parsimonious dynamics, 1962–93

Using $\Delta(I_i/Y_i)_t = \alpha_i + \beta_0\Delta(S_i/Y_i)_t - \beta_1[(I_i/Y_i) - \beta_2(S_i/Y_i)]_{t-1} + \beta_3\Delta(I_i/Y_i)_{t-1}$

Time period	β_0	β_1	β_2	β_3
Austria, Belgium, Greece				
1962–72	0.5423 (4.57)	0.4866 (7.53)	0.8475 (2.87)	0.0
1973–86	0.3304 (4.78)	0.3994 (7.88)	0.8475 (2.87)	0.0
1987–93	0.3304 (4.78)	0.3994 (7.88)	0.6586 (9.99)	0.6467 (7.45)
Finland, France, Italy, Spain, Sweden				
1962–72	0.0	0.4962 (7.63)	0.8475 (2.87)	0.6467 (7.45)
1973–86	-0.1917 (2.07)	0.3994 (7.88)	0.8475 (2.87)	0.3750 (3.20)
1987–93	0.3304 (4.78)	0.3994 (7.88)	0.6586 (9.99)	0.6467 (7.45)
Germany, UK, Portugal				
1962–72	0.3382 (4.87)	0.3072 (4.43)	0.8475 (2.87)	0.0
1973–86	0.0778 (1.37)	0.1810 (5.66)	0.8475 (2.87)	0.4365 (5.10)
1987–93	0.0	0.1810 (5.66)	0.6586 (9.99)	0.4365 (5.10)
Denmark, Netherlands, Ireland				
1962–72	0.0	0.2370 (4.65)	0.8475 (2.87)	0.0
1973–86	0.0	0.1457 (4.76)	0.8475 (2.87)	0.2584 (2.58)
1987–93	0.0	0.1810 (5.66)	0.6586 (9.99)	0.4365 (5.10)

6.7. Conclusions

In general, we would conclude that careful attention to the heterogeneity of the European economies indicates that overall Feldstein-Horioka style regressions can be misleading. First, experiences of capital mobility differ significantly among countries, and pooling them all together may be misleading. Second, capital mobility has changed over time. Third, we need to distinguish between indicators of mobility for the short and the long run. In the short run there appears to be much less association between saving and investment in countries without capital controls (or with high factor mobility) than in countries with controls. In the longer run the standard Feldstein-Horioka coefficient is a measure of solvency, not mobility. We conclude that the removal of barriers to the mobility of capital has reduced the short-run association between saving and investment in Europe. This is a strong indicator that the single market programme has had an impact on risk-sharing in Europe.

7. Analysis of the OECD Codes of Liberalization

7.1. Introduction

As has been pointed out in Chapter 4, since the removal in 1994 of all remaining capital restrictions in Greece, in accordance with the Council Directive of 24 June 1988,[10] and with Articles 73a–73g of the EEC Treaty (as amended by the Treaty on European Union), there are no longer formal exchange controls in any EU Member State. Nevertheless, there remain in force in most Member States a number of measures, generally of an administrative nature, designed to protect the interests of domestic markets, institutions or residents, which qualify the freedom of access of non-residents to domestic markets, customers or financial instruments or of residents to foreign financial markets, institutions or instruments. Member States are under no obligation to notify the European Commission or any other Community body of such measures. As members of the OECD, however, all EU Member States subscribe to two Codes of Liberalization which do carry with them a notification obligation. Thus, even though the information may not be available at the Community level, it is possible to infer from notifications given under the OECD Codes, for each EU Member State and in respect of each type of cross-border operation, how fully the capital liberalization requirement is being met within the single market and between the single market and the rest of the world.

In Section 7.2 below, the basic principles and structure of the two codes are described and also the nature of the information that may be derived from them. Section 7.3 examines this information to provide an overview of the extent to which, in individual Member States, cross-border operations are not yet fully liberalized, while in Section 7.4 these remaining imperfections are analysed by type of market activity.

7.2. The OECD Codes and the information they provide

Since December 1961, OECD member countries have subscribed to the Code of Liberalization of Capital Movements (hereafter, Capital Movements Code) and the Code of Liberalization of Current Invisible Operations (hereafter, Current Invisibles Code), thereby undertaking to remove restrictions on specified lists of cross-border capital transactions and current invisible transactions and transfers. These lists, attached as annexes to the two Codes (in each case Annex A) very closely resemble the Nomenclature attached (as Annex I) to the EU Council Directive of June 1988. The objective of liberalization under the Codes is that residents of different OECD countries should be as free to deal with each other as are residents of the same country. An exception to the basic principle of non-discrimination between OECD members permits members of a special customs or monetary system (such as the European Community, the EMS and, presumably, a future EMU) to extend additional measures of liberalization to one another without extending them to other OECD members as well (Article 10 in each Code). The Codes provide for progressive liberalization, allowing countries to move towards the final objective in varying ways and speeds according to their particular economic

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10 First Council Directive for the implementation of Article 67 of the Treaty (OJ L 43, 12.7.1960); 85/583/EEC: Council Directive of 20 December 1985 amending the Directive of 11 May 1960 on the implementation of Article 67 of the Treaty (OJ L 372, 31.12.1985); 86/566/EEC: Council Directive of 17 November 1986 amending the First Directive of 11 May 1960 on the implementation of Article 67 of the Treaty (OJ L 332, 26.11.1986) 88/361/EEC: Council Directive of 24 June 1988 for the implementation of Article 67 of the Treaty (OJ L 178, 8.7.1988); Council Directive 92/122/EEC of 21 December 1992 authorizing the Hellenic Republic to defer liberalization of certain capital movements pursuant to Article 6 (2) of Directive 88/361/EEC (OJ L 409, 31.12.1992).

circumstances. By lodging a reservation against specific items under the Code which it is unable or unwilling to liberalize, a member country retains the right to maintain restrictions on those operations while still benefiting from liberalization undertaken by other members.[11]

The OECD recently published, in separate volumes, the Capital Movements and Current Invisibles Codes, together with the reservations entered under each Code by individual OECD member countries.[12] These provide a snapshot, as at 19 May 1995, of the degree of liberalization achieved by each member country in regard to capital movements and current international transactions in accordance with the two Codes. The reservations recorded there do not identify specific restrictions or special conditions which may be in force but they do provide a clear indication of where, in respect of each country and each kind of operation, the liberalization obligation is being disapplied and, by implication, where such restrictions or special conditions exist. In the analysis which follows it is therefore possible to pinpoint where there exist measures which might hamper or distort the free movement of capital within the European Union, even though the precise measures themselves are not identified. Unfortunately, similar information relating to restrictions in previous years has not been published, and it is therefore not possible to obtain from the OECD data a picture of the extent to which these restrictions may have been reduced in recent years. This issue was therefore specifically addressed in a question included in our EU-wide survey of financial and other institutions, as reported in Chapter 8.

The range of activities covered by the two Codes (see Appendix E), and hence the scope of the reservations, runs more widely than the mandate for the present study, which is required to focus only on operations in capital market securities, money market securities and collective investment securities (UCITS) and the physical import and export of securities, as defined in the Nomenclature of the EU Council Directive of June 1988. In the following sections, the analysis of reservations entered under the Capital Movements Code is confined to those relating to operations in securities on capital markets and money markets and in collective investment securities, and to other operations in negotiable instruments and non-securitized claims. Excluded from the analysis are any reservations entered under the OECD Codes in respect of direct investment, operations in real estate, credits linked to commercial transactions or the rendering of international services for financial credits and loans and the operation of deposit accounts. Operations in foreign exchange, capital transfers arising under life assurance contracts and the physical movement of capital assets are all free without any reservation entered by any Member State. Similarly, only those reservations entered under the Current Invisibles Code that are directly relevant to the cross-border movement of capital are included in the analysis: banking and investment services for securities; settlement, clearing and custodial and depository services; asset management; advisory and agency services; and, as a separate consideration, establishment and operation of branches by foreign insurers, banks and other financial institutions in respect of activities closely related to capital transactions. No Member State has entered any reservation in respect of income from capital.

The information that can be obtained from the reservations is essentially binary in form. It is not possible directly to attach a value other than unity to any given reservation or zero to the absence of a reservation. For the same reason it is not possible to say whether a narrowly

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11 For a brief description of the Codes, see OECD, Economic Outlook No 58, December 1995. For a fuller overview, see OECD, *Introduction to the Codes of Liberalization,* Paris, 1995.

12 OECD, *Code of Liberalization of Capital Movements,* Paris, 1995 and OECD, *Code of Liberalization of Current Invisible Operations,* Paris, 1995.

circumscribed reservation against a particular activity in a large country is more or less important than a widely drawn reservation in a smaller country. For the purposes of the analysis here, however, a preliminary subjective filtering was conducted in order to exclude any reservation that was clearly of only the most marginal significance and also to attribute a weight of only one half (0.5) rather than unity (1.0) to those reservations which, while of potential significance in relation to the specific activity to which they apply, are clearly of much narrower application than other reservations entered in respect of that class of activity. In addition, in a small number of instances where a particular category of activity is subdivided into several sub-categories, and some countries have entered a general reservation against the main category while others have registered reservations against several of the sub-categories, each country is treated equally as if it had entered only one reservation. This necessarily subjective and somewhat arbitrary approach could result in a degree of misrepresentation: countries entering a small number of reservations in respect of particularly important forms of capital transactions might appear to be less restrictive than countries entering a larger number of restrictions in respect of relatively less important kinds of transactions. This question is considered further in the context of the comparison of the results of our examination of the OECD Codes and the findings of our survey, which is undertaken in Section 8.8.

All the reservations entered by EU Member States under the Current Invisibles Code apply to all countries, without any distinction drawn between residents of other EU countries and non-EU countries. Several EU Member States have reservations under the Capital Movements Code, however, which apply only to, and so discriminate against, third countries. This suggests that the requirements of the single market, as embodied in the 1988 Directive and subsequently in the Maastricht Treaty on European Union which emphasize the obligation of Member States to liberalize capital movements to and from third countries, has been a potent motive force in the liberalization that has taken place so far within the OECD. To this extent, however, and contrary to the *erga omnes* principle of equal liberalization towards all, there is rather less freedom of capital movement between the single market and the rest of the world than there is within the single market (given that no Member State has entered any reservation which applies only to other Member States). This is taken into account in the analysis that follows by treating all reservations which apply without distinction to both other EU and non-EU countries as qualifying the freedom of capital movements within the 'single market'; and treating those same reservations together with any reservations which apply only to non-EU countries as constituting constraints on the freedom of capital movements within the 'global market'.

7.3. Overview of EU Member States' reservations under the OECD Codes

The number of reservations entered by each EU Member State under the Capital Movements Code and under the Current Invisibles Code are shown in Table 7.1. Reservations registered in the columns headed 'single market' are those which apply to other EU Member States as well as to third countries (none of the reservations applies only to EU Member States). The columns headed 'global market' include, in addition to these reservations, reservations which apply only to non-EU countries. Taking the two Codes together, EU Member States have entered a total of 44 reservations (an average of almost three per Member State) that apply to the single market as well as to third countries and a further eight (all under the Capital Movements Code) that apply only to third countries. Of the resulting total of 52 reservations (an average of 3.5 per Member State) that relate to the global market, rather more than half are

under the Current Invisibles Code. The EU as a whole would thus appear to be rather less liberal in respect of capital movements to and from third countries than in respect of movements within the single market. The average of 3.5 reservations per Member State compares favourably with the 4.5 scored, on a similar basis, both by Japan and by the US.

Table 7.1. Freedom of capital movements in EU Member States: number of reservations entered under OECD Codes of Liberalization

Country	Capital movements		Current invisibles		Current and capital	
	Single market	Global market	Single market	Global market	Single market	Global market
Austria	0	0	4	4	4	4
Belgium	0	4	2	2	2	6
Denmark	0	0	1	1	1	1
Finland	0.5	0.5	2	2	2.5	2.5
France	3	4.5	1	1	4	5.5
Germany	5	5	1	1	6	6
Greece	0.5	0.5	4	4	4.5	4.5
Ireland	0	0	1.5	1.5	1.5	1.5
Italy	0	2	5	5	5	7
Luxembourg	0	0	0	0	0	0
Netherlands	0	0	0	0	0	0
Portugal	4.5	5	4	4	8.5	9
Spain	0.5	0.5	3	3	3.5	3.5
Sweden	0.5	0.5	0	0	0.5	0.5
UK	0	0	1	4	1	1
EU total	14.5	22.5	29.5	29.5	44	52
EU unweighted average	1.0	1.5	2.0	2.0	2.9	3.5

Under the **Capital Movements Code**, Germany and Portugal have entered the greatest number of reservations, in respect both of the single market and of the global market, closely followed by France. Eight Member States have no reservations which apply to the single market under the Capital Movements Code – Austria, Belgium, Denmark, Ireland, Italy, Luxembourg, the Netherlands and the United Kingdom – and of these countries only Belgium (4) and Italy (2) have reservations which apply solely to third countries. Greece, Spain and Sweden each have one reservation, of limited scope, which applies equally to other EU and non-EU countries. The relative position of each of the Member States is shown in Table 7.2.

Table 7.2. Reservations under OECD Capital Movements Code: ranking in ascending order of number of reservations

Country	Single market[1]	Global market[2]
Austria *	1	1
Belgium	1	12
Denmark *	1	1
Ireland *	1	1
Italy	1	11
Luxembourg *	1	1
Netherlands *	1	1
United Kingdom *	1	1
Finland *	9	7
Greece *	9	7
Spain *	9	7
Sweden *	9	7
France	13	13
Portugal	14	14
Germany *	15	14
EU total number of reservations	14.5	22.5
EU unweighted average	1.0	1.5

* All reservations (if any) apply equally to all non-residents without distinction between 'other EU' and 'non-EU' residence.

[1] Reservations which apply equally in respect of both EU Member States and third countries.

[2] Includes reservations which apply to third countries but not to EU Member States

Under the **Current Invisibles Code**, all the reservations entered by EU Member States apply equally to other EU and to non-EU countries. Italy has entered the greatest number of reservations (5) followed by Austria, Greece and Portugal (4 each). Only three countries – Luxembourg, the Netherlands and Sweden – have no reservations. The relative position of each country is shown in Table 7.3.

Table 7.3. Reservations under OECD Code of Current Invisible Operations: ranking in ascending order of number of reservations

Country	All reservations: single market and global market
Luxembourg	1
Netherlands	1
Sweden	1
Denmark	4
France	4
Germany	4
United Kingdom	4
Ireland	8
Belgium	9
Finland	9
Spain	11
Austria	12
Greece	12
Portugal	12
Italy	15
EU total number of reservations	29.5
EU unweighted average (number)	2.0

* All reservations (if any) apply equally to all non-residents without distinction between 'other EU' and 'non-EU' residence.

Taking the two codes together, three countries – Portugal, Italy and Germany – account for over 40% of all reservations entered by EU Member States in respect of the single market and also of the global market. Seven countries – Portugal, Italy, Germany, Belgium, France, Greece and Austria – account for over 80% of the reservations in respect of the global market. Only two countries, Luxembourg and the Netherlands, have no reservations. While the reservations of most Member States apply equally to all non-residents (following the *erga omnes* principle) without distinction between other EU and non-EU residence, Belgium, France, Italy and (marginally) Portugal have some reservations which apply only to third countries. This is indicated in Table 7.4, which also ranks EU Member States according to their degree of openness, as measured by the number of reservations entered under the two OECD Codes.

Table 7.4. Freedom of capital movements in EU Member States: ranking in descending order of openness according to number of reservations lodged under both OECD Codes

Country	Single market[1]	Global market[2]
Luxembourg *	1	1
Netherlands *	1	1
Sweden *	3	3
Denmark*	4	4
United Kingdom*	4	4
Ireland *	6	6
Belgium +	7	12
Finland *	8	7
Spain *	9	8
Austria *	10	9
France +	10	11
Greece *	12	10
Italy +	13	14
Germany *	14	12
Portugal +	15	15
EU Total number of reservations	44	52
EU unweighted average (number)	2.9	3.5

* All reservations (if any) apply equally to all non-residents without distinction between 'other EU' and 'non-EU' residence.

+ Some reservations apply only to non-EU residents or markets.

[1] Reservations which apply equally in respect of both EU Member States and third countries.

[2] Includes reservations which apply to third countries but not to EU Member States.

A further categorization of Member States is shown in Table 7.5, where countries are grouped according to whether they are among the more liberal or less liberal in respect of both the single market and the global market. Two countries are among the more liberal in respect of one (Belgium (the single market) and Finland (the global market)), and among the less liberal in respect of the other. Five of the six countries appearing at the less liberal end of the spectrum were identified either in our empirical investigation of onshore–offshore interest differentials in Chapter 4 or in our study of the association between saving and investment in

Chapter 6 as displaying a lesser degree of capital mobility than other EU Member States. The exception is Germany; it is possible that the overall size and international importance of the German financial markets outweigh the effects that a relatively large number of restrictions may have on the inward and outward movement of capital. Conversely, Sweden appears in Table 7.5 as being among the most liberal, and yet both the interest differential and the saving and investment analyses suggest that Sweden is a country with relatively low capital mobility.

Table 7.5. Freedom of capital movements in EU Member States: countries grouped according to degree of single market and global market liberalization

***Both* single market *and* global market[1]**	***Either* single market *or* global market[2]**	***Neither* single *nor* global market[3]**
Luxembourg *	Belgium +	Spain *
Netherlands *	Finland *	Austria*
Sweden *		France +
Denmark *		Greece *
United Kingdom *		Italy +
Ireland *		Germany*
		Portugal +

* All reservations (if any) apply equally to all non-residents without distinction between 'other EU' and 'non-EU' residence.

+ Some reservations apply only to non-EU residents or markets.

[1] Countries ranked in upper half of both columns in Table 7.4.

[2] Countries ranked in upper half of one of the columns in Table 7.4.

[3] Countries ranked in lower half of both columns in Table 7.4.

7.4. Analysis of reservations by type of market activity

Reservations against the conduct of banking and investment services connected with capital market activities (under the Current Invisibles Code) and against operations in securities on capital markets (under the Capital Movements Code) together account for more than half the total number of reservations entered by EU Member States under the two codes (see Table 7.6), both in relation to the single market and to the global market. Operations on money markets and in collective investment securities are subject to comparatively few reservations (under the Capital Movements Code), in each category 11 Member States entering no reservations. This again is broadly consistent with the findings of the empirical work reported in earlier chapters; that only in a few instances did there appear to be restrictions operating at the short end of the market (Chapter 4), but that the movement of capital more broadly defined (in terms of the saving/investment relationship) was relatively restricted in a larger number of

countries (Chapter 6). The relative degree of openness of each of the six main types of activity covered in this study is shown in Table 7.7.

Table 7.6. Number of reservations lodged under OECD Codes by type of market activity

Market activity	Single market[1]	Global market[2]
Capital movements		
Capital market securities	8.5	11.5[3]
Money markets	5.0	6.0
Collective investment securities	1.0	5.0
Total	14.5	22.5
Current invisibles		
Banking and investment services	16.0	16.0
Asset management	7.5	7.5
Settlement, clearing, custody and depository services	6.0	6.0
Total	29.5	29.5
Total (both Codes)	44.0	52.0
Unweighted average	2.9	3.5

[1] Reservations which apply equally in respect of both EU Member States and third countries.

[2] Includes reservations which apply to third countries but not to EU Member States.

[3] Includes one reservation by Belgium in respect of other operations in negotiable instruments and non-securitized claims.

Table 7.7. Degree of openness by type of market activity: ranked in ascending order by number of reservations entered under both OECD Codes

Market activity	Single market	Global market
Collective investment securities	1	1
Money market operations	2	2
Settlement, clearing, custody and depository services	3	2
Capital market securities	4	5
Asset management	5	4
Banking and investment services	6	6

The reservations against each of these activities in turn is analysed in greater detail in sub-sections 7.4.1 to 7.4.6 below. This information is also shown in summary form in Tables F.1 to F.4 in Appendix F. In sub-section 7.4.7, consideration is given to additional reservations, applied in ten Member States, which qualify the right of non-resident insurers, banks and other financial institutions to establish and operate branches under the same conditions as their resident counterparts (i.e. to receive national treatment) under the Current Invisibles Code and which relate closely to their freedom to conduct capital and money market operations.

The number shown in parenthesis at the end of the heading of each sub-section below is the total number of reservations, after adjustment for those of restricted scope which are given a weight of 0.5, entered by EU Member States in respect of the activity concerned.

7.4.1. Operations in collective investment securities

Only four EU Member States have entered reservations under the Capital Movements Code concerning the admission (i.e. the introduction to dealings on a stock exchange and their issue by placing or public sale) of foreign collective investment securities on their domestic securities markets. In Belgium, France and Italy, the reservations apply only to collective investment securities of non-EU origin. In Portugal, the reservation applies only to foreign (other EU or non-EU) collective investment securities whose Articles or Rules do not require that more than 50% of their assets consist of securities quoted on a recognized securities market of an OECD country. In addition to its reservation against introduction and issue, Italy has a reservation against the sale of collective investment securities of non-EU origin in Italy by non-residents. No reservations have been entered by any EU country in respect of the purchase or sale of collective investment securities by residents on foreign markets, the admission of domestic collective securities on foreign markets, or their purchase by non-residents on the domestic market.

7.4.2. Money market operations

With regard to the admission of foreign securities on the domestic money market, again only four countries have entered reservations against the Capital Movements Code: Belgium in respect of the issue of or trading in money market instruments that are not of EU origin; France, the issue of CDs by all non-resident (i.e. other EU and non-EU) banks; Germany, the issue of DM-denominated money market securities by all non-resident banks; Portugal, the issue of commercial paper by all non-residents. In addition, both France and Germany have reservations against the issuing abroad (whether elsewhere in the EU or in third countries) of money market instruments denominated in their domestic currencies. No country has entered any reservation in respect of the purchase or sale of money market securities either by non-residents on the domestic market or by residents on foreign markets.

7.4.3. Settlement, clearing, custody and depository services

Six EU Member States have entered reservations under the Current Invisibles Code in respect of the provision of these investment services – which are intimately associated with the performance of capital transactions – by non-residents on the domestic market: Austria, Belgium and Spain in respect of the provision of custodial services; Denmark in respect of custodial and depository services; Italy, the provision of or access to centralized custodial services; and Greece, the administration of interest and principal payments on securities issued

in Greece. Each of these reservations applies to all non-residents, without distinction between other EU and non-EU residence.

7.4.4. Asset management

The provision of asset management services including, variously, portfolio management and pension fund management in the domestic market by non-residents is subject to widely-drawn reservations under the Current Invisibles Code in seven EU Member States: Austria, Belgium, Finland, Greece, Italy, Portugal and Spain. The reservation entered by Ireland is solely in respect of the provision of trust services in Ireland by non-residents and the access of Irish residents to trust services provided abroad by non-residents.

7.4.5. Operations in securities on capital markets

Eight EU countries have entered a total of 14 reservations under the Capital Movements Code in relation to various kinds of capital market securities operations. Three of these reservations are in respect of the issuing of domestic securities on foreign capital markets (whether in other EU or non-EU countries): that of Germany, in respect of deutschmark-denominated securities; France, in respect of Euro-franc issues; and Portugal, without qualification as to currency. Three countries have entered reservations against the admission of foreign securities on the domestic market: Belgium, in respect of bonds and other debt securities of non-EU origin; Germany, the issuing by banks of deutschmark-denominated bonds of less than two years' maturity; Portugal, the issuing of securities by other EU and non-EU residents, and also the trading in securities issued by non-EU residents which are not quoted on a recognized market. Additionally, a reservation was entered by Belgium against the admission on the domestic market of other negotiable instruments and non-securitized claims that are not of EU origin. The further seven reservations (entered by Finland, France, Germany, Greece, Portugal, Spain and Sweden) concern non-resident purchases of securities on the domestic market. All except one (France) apply to other EU residents as well as to non-EU residents and all except one (Germany) relate to concerns about foreign control (direct investment) or foreign competition or reciprocity (establishment); in the case of Sweden, the reservation is confined to two sectors (fishing and civil aviation). The German reservation relates to the purchase of Federal savings bonds by non-resident households.

7.4.6. Banking and investment services, etc.

Covered under this heading, in addition to banking and investment services, are underwriting, broker/dealer services and financial market information, communication and execution systems. Ten of the 15 members of the Community have entered 16 reservations under the Current Invisibles Code in relation to one or several of these activities. In respect of the management by non-residents of debt issues on domestic markets, four countries have entered reservations: Germany and the UK with regard to the lead-management by non-residents of debt issues denominated in their domestic currencies, and Portugal (lead-management or co-lead-management) and France (management) without qualification as to currency denomination. Another four countries – Austria, Greece, Italy and Spain – have reservations in respect of underwriting activity (syndication and distribution of new financial assets).

Reservations concerning the provision of broker/dealer services by non-residents (other EU and non-EU residents alike) have been entered by seven countries: Austria, Finland, Greece, Ireland, Italy, Portugal and Spain. Of these, Ireland and Portugal also have reservations in

respect of access by residents to such services provided abroad by non-residents. Additionally, Italy has a reservation against access by non-residents to financial market communication and execution systems.

7.4.7. Conditions for the establishment and operation of branches of foreign banks, financial services firms and insurance companies

The Current Invisibles Code makes extensive provision for the freedom of non-resident insurance companies and banks and financial services firms to establish branches in the domestic market of any OECD country and to operate in that market on the same legal, regulatory and administrative footing as domestic enterprises (i.e. that they be accorded national treatment). However, ten of the 15 EU Member States have entered a total of 14 reservations against these national treatment provisions, with a rather greater incidence on banks and other financial institutions (eight) than on insurance companies (six) and only four countries – Austria, France, Italy and Portugal – having entered reservations against both (see Table 7.8 and Appendix Table E.4).

While the act of establishment by a non-resident in the domestic market is not of itself a capital transaction or capital movement, the initial investment it entails may be. Furthermore, to the extent that establishment is discouraged or that restrictions are placed on foreign firms (with a foreign customer base) whose business is in whole or in part the conduct of capital market or money market transactions, the reservations entered against national treatment may be regarded as indirect obstacles which may restrict or distort the free movement of capital. While they have not been included in the statistics and analysis of the preceding sections, these reservations are examined here in order to give a further indication of the degree of freedom of capital movement between individual EU Member States and in the Community's internal market as a whole.

The reservations concerning **foreign banks and financial services firms** specify fairly precisely (with the exception of Austria) the scope of activity to which they relate and they apply equally (with the exception of Germany) to both other EU and non-EU firms. For the most part the reservations relate to some form(s) of capital market activity, the conduct of which is restricted to locally incorporated entities: local incorporation is required in Denmark for trading on the Copenhagen Stock Exchange, in France (by implication) for the management of franc-denominated debt issues, in Italy (by implication) for the activities of non-bank financial institutions (the SIM requirement), in Portugal for the provision of venture capital, enterprise development, pension fund management and broker-dealer services, and in the United Kingdom for the performance of stock exchange money broking and of inter-dealer broking services on the government debt market.

The German reservation concerning foreign banks and financial services firms, which applies only to non-EU financial institutions, concerns the role of the depository bank for investment funds of capital investment companies. The Austrian reservation is non-specific, against the general requirement of national treatment. The reservation entered by Spain relates to limits placed on the number of branches that non-resident banks may open and on the amount of local financing they can obtain outside the inter-bank money market.

Table 7.8. Freedom of establishment and operation of branches of foreign insurers, banks and other financial institutions (national treatment)

	Insurers	Banks etc.	Total	Single market[1]	Global market[2]
Austria *	0.5	1	1.5	1.5	1.5
Belgium *	0	0	0	0	0
Denmark *	0	1	1	1	1
Finland *	0.5	0	0.5	0.5	0.5
France	1	0.5	1.5	0.5	1.5
Germany	0	0.5	0.5	0	0.5
Greece *	0	0	0	0	0
Ireland	1	0	1	0	1
Italy	1	1	2	1	2
Luxembourg*	0	0	0	0	0
Netherlands *	0	0	0	0	0
Portugal	1	1	2	1	2
Spain*	0	1	1	1	1
Sweden *	0	0	0	0	0
UK *	0	1	1	1	1
Total	5.0	7.0	12.0	7.5	12.0

NB: Data relates to reservations entered under OECD Code of Liberalization of Current Invisible Operations.

* All reservations (if any) apply equally to all non-residents without distinction between 'other EU' and 'non-EU' residence.

[1] Reservations which apply equally in respect of both EU Member States and third countries.

[2] Includes reservations which apply to third countries but not to EU Member States.

Of the reservations that concern the establishment and operation of branches of **foreign insurance companies**, four – those of France, Greece, Italy and Portugal – are non-specific reservations against the general requirement of national treatment. That of Finland applies solely to statutory insurances. Austria is noted as having entered no reservation under the Current Invisibles Code but as imposing a reciprocity requirement (as allowed under the Capital Movements Code) for the establishment of branches both of foreign banks and securities houses and of foreign insurance companies. Most of the countries mentioned above as having reservations against national treatment, in relation either to banks and other financial services firms or to insurance companies, have also reserved the right to impose reciprocity requirements, but without their necessarily exercising that right at present.

Adjusting the earlier statistics to reflect these additional reservations would result in very little change in the ranking of countries in terms of their relative openness to capital movement, especially with respect to the global market (see Table 7.9). The grouping of countries according to the degree of single market and global market liberalization remains identical to that shown in Table 7.5 above.

Table 7.9. Openness of national financial markets: comparison of rankings before and after allowance for freedom of establishment

Country	Single market[1]		Global market[2]	
	Excluding establishment	Including establishment	Excluding establishment	Including establishment
Austria*	10	12	9	10
Belgium	7	5	12	11
Denmark*	4	5	4	4
Finland*	8	8	7	7
France	10	9	11	13
Germany	14	13	12	12
Greece*	12	9	10	8
Ireland	6	4	6	6
Italy	13	13	14	14
Luxembourg*	1	1	1	1
Netherlands*	1	1	1	1
Portugal	15	15	15	15
Spain*	9	9	8	8
Sweden*	3	3	3	3
UK*	4	5	4	4

NB: Ranking in ascending number of reservations under OECD codes.

* All reservations (if any) apply equally to all non-residents without distinction between 'other EU' and 'non-EU' residence.

[1] Reservations which apply equally in respect of both EU Member States and third countries.

[2] Includes reservations which apply to third countries but not to EU Member States.

7.5. Conclusions

The emphasis of the above analysis has been on the number of reservations entered by EU Member States against the full application of the OECD Codes of Liberalization. While these are fairly numerous – 52 in weighted terms – they nevertheless imply that a considerable degree of capital liberalization has already been achieved within the European Union; on average each Member State has only 3.5, mostly quite specific, reservations registered under the codes, compared with a figure of 4.5 both for Japan and the US. The incidence of liberalization, however, is very uneven, two Member States having no reservations under either code, while seven Member States account for more than 80% of the Union total. There is a fairly close correspondence between the countries with the greatest number of reservations and those identified in earlier chapters as displaying less capital mobility. There are fewer reservations with regard to capital movements in respect of the single market than in respect of the global markets. This indicates that the single market programme has so far been a greater stimulus to the liberalization of capital flows between EU Member States than between the EU and third countries.

There are pronounced differences in liberalization between different categories of market activity. Operations in collective investment securities and in money-market securities are relatively free of reservations; operations in securities on capital markets and the provision of banking and investment services together account for over half the total number of reservations entered by EU Member States under the two OECD Codes. In addition, ten Member States have entered reservations against the freedom of establishment and operation of branches of foreign insurers, banks and other financial institutions which qualify their freedom to conduct capital market or money market operations. If these are also taken into account, the total (weighted) number of reservations entered by EU Member States rises to 64, an average of 4.3 reservations per Member State, but the classification of countries according to the degree of single market and global market liberalization is unchanged.

8. A survey of capital market participants

8.1. Introduction

The dismantling of controls on the movement of capital between EU Member States, stimulated in part by the single market programme and the prospect of EMU, has been described in Chapter 4. By 1994 all explicit exchange controls had been eliminated within the EU. As we have shown in Chapter 7, however, most Member States still retain some reservations against the full implementation of the OECD Codes of Liberalization. These reservations reflect the continuing existence of national measures which, although not directly regulating capital flows, could have the indirect effect of impeding or distorting the free movement of capital or the conduct of certain kinds of cross-border capital transaction. They provide an indication of the kinds of activity which are affected, and together give an overall impression of the incidence of imperfect capital mobility, but they do not identify specific measures behind the reservations or the relative significance of any particular measure in practice. Furthermore, there may be other factors, such as differences in tax treatment or local market structures, customs or practice that restrict or distort capital flows but which do not require notification under the OECD Codes. Capital market participants, however – banks, securities houses, fund managers, insurance companies and corporate treasuries – form views from their own experience as to which national markets are more, and which less, accessible, and what kinds of obstacle are encountered when conducting cross-border business, and which are the most important in practice. To tap this knowledge, we constructed a postal survey of market practitioners throughout the European Union.

The methodology adopted for the survey is described below. We then present a general overview of the openness of national capital markets within the EU, as perceived by respondents to the survey, and the degree to which this has improved since 1990. The extent to which domestic regulation and similar factors currently inhibit or encourage the use of foreign capital markets by the residents of individual Member States is examined and the freedom of non-residents to utilize domestic markets on the same terms as residents is analysed. We also consider the influence of exchange rate uncertainty on cross-border capital movements and capital market activity and we investigate other factors, specifically cited by respondents to the survey, which appear to be directly or indirectly restricting or distorting the movement of capital. We then examine the comparability of our survey findings with the results of our analysis in Chapter 7 of reservations entered under the OECD Codes.

8.2. Questionnaire design and survey coverage

A questionnaire was designed which presented 14 main questions (see Appendices G and H) covering four sets of topics:

(a) the overall openness of each Member State to capital movement and market access, distinguishing between the freedom of residents to operate abroad and that of non-residents to operate on the domestic market, and the change in openness since 1990;
(b) whether the domestic requirements of individual Member States restrict or distort capital movements, distinguishing between different types of capital market transaction and between residents and non-residents;
(c) the effects of exchange rate uncertainty on non-resident investment in and borrowing on domestic markets, distinguishing between different kinds of securities, and the effects

that eliminating exchange risk might have on yields and on investment and borrowing activity by residents and by non-residents; and

(d) the identification and quantification of specific restricting or distorting factors, distinguishing between those relating to prudential requirements or consumer/investor protection, differential tax treatment and national differences in corporate tax regimes, accounting rules or company law. In this section, respondents were asked to indicate whether the restrictions applied only to the residents or markets of non-EU Member States, or also to EU residents or markets.

This was sent to 286 major firms active in European capital markets, including banks, insurance companies, fund managers and non-financial corporations with treasury operations. All 15 Member States were represented. Replies were received from 76 firms, an initial response rate of 27%. In order to raise the response and to supplement the detailed information already obtained, a second, shorter questionnaire was then sent out, posing in simplified form six of the key questions contained in the original questionnaire as well as again soliciting details of any specific restricting or distorting factors in particular markets (see Appendix I). This second EU-wide survey was supplemented with telephone and face-to-face interviews with firms in the four largest financial centres of the EU, and produced an additional 63 responses in the form of completed follow-up questionnaires, raising the total of responses to the survey to 139 (an overall response rate, including the Don't Knows, of 49%) and the total number of completed questionnaires to 92, representing a return rate of 32%.

Table 8.1. Country distribution of survey responses

Country	Number of respondents	Relative importance as foreign capital market[1]
Austria	13	1.26
Belgium	4	2.50
Denmark	10	1.93
Finland	3	1.41
France	9	4.93
Germany	13	5.97
Greece	0	0.67
Ireland	6	1.04
Italy	15	2.67
Luxembourg	4	2.21
Netherlands	1	3.90
Portugal	6	1.29
Spain	8	2.36
Sweden	3	2.87
UK	44	6.67
All EU	139	n/a

[1] Results from detailed questionnaire only; excluding home markets of respondents; scores from 10 (most important) to 0 (negligible importance).

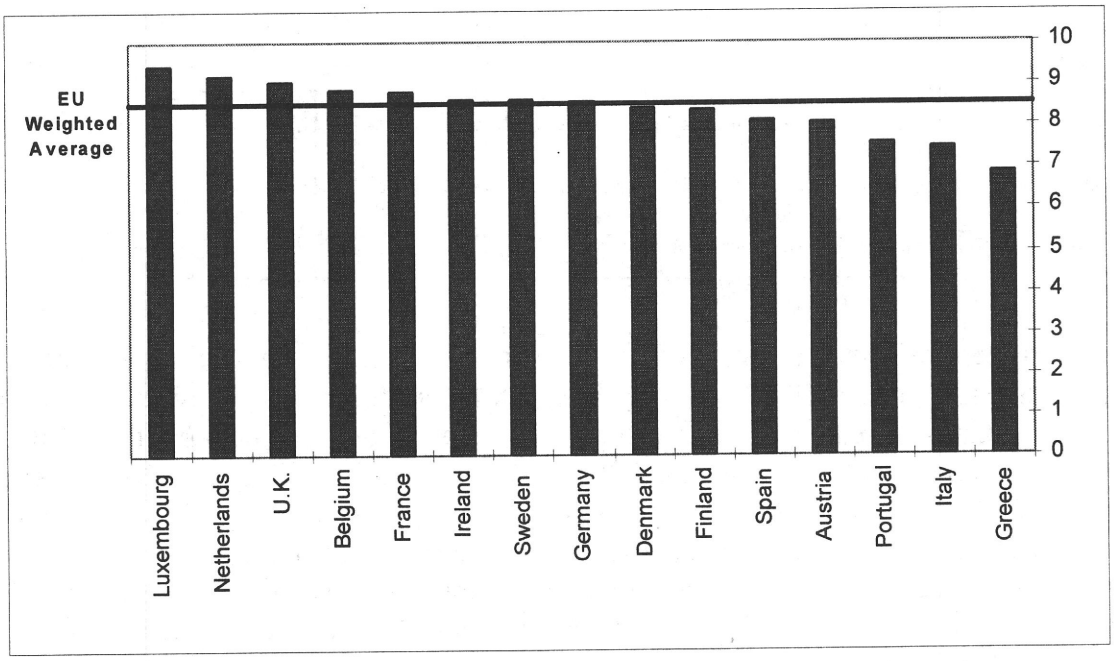
The geographical coverage of responses is shown in Table 8.1. The only country from which no response was forthcoming was Greece, where both questionnaires had been sent to 11 of

the largest banks and insurance companies. It is possible nevertheless to obtain some information about the freedom of capital movement in Greece from the survey: although the views of resident Greek firms about ease of access to foreign markets cannot be assessed, information on the accessibility of Greek capital markets to non-residents is available from the responses of firms in the other Member States. Also shown in Table 8.1 is the relative importance of each Member State to the capital markets business of the respondent firms (excluding activities on their domestic markets): the most important foreign capital markets within the EU for EU-resident firms (including the EU-based subsidiaries or branches of non-EU firms) who responded to the survey are the United Kingdom, Germany and France, followed by the Netherlands and Sweden.

8.3. Freedom of capital movement and market access: overview

Responses to the two questionnaires indicate that there has been a significant and widespread improvement in the freedom of capital movement within the European Union since 1990, and that a large measure of openness has now been achieved, although there remains some margin for improvement in a number of Member States. Taking the present freedom of inward and outward movement together, the weighted average score registered for the Union as a whole is 8.5 out of 10, where 10 represents completely open and zero completely closed, but individual countries' scores range from 9.5 to 6.9 (see Figure 8.1 and Table 8.2, columns 1 and 3). The overall ranking of countries corresponds quite closely with the picture that emerged in our empirical investigations and the analysis of the OECD Codes which are reprinted in earlier chapters of this report.

Figure 8.1. Overall accessibility of markets: pooled results from detailed questionnaire, questions 4.1 and 4.2, and short questionnaire, questions 1 and 3



The freedom of residents to use foreign currency and foreign financial instruments and markets, and to obtain investment services abroad, without domestic penalty (see Table 8.2, columns 1 and 2) is perceived as being greatest in Luxembourg and the Netherlands, with six

other countries also scoring more than the (weighted) EU average. Foreign access for residents appears to be most restricted in Greece and Italy. Four other countries score (only slightly) less than the EU average: Austria, Denmark, Portugal and Spain.

Table 8.2. Overall freedom of capital movements

Country	Access of residents to foreign securities and markets[1]		Access of non-residents to domestic securities and markets[2]		Ability of non-residents to participate directly on local markets[3]	
	Score	Rank	Score	Rank	Score	Rank
Austria	8.11	13	7.97	10	8.00	7
Belgium	8.89	5	8.78	4	8.00	6
Denmark	8.32	10	8.53	7	7.92	10
Finland	8.82	7	7.90	11	7.92	10
France	8.86	6	8.71	5	8.00	5
Germany	8.55	9	8.58	6	7.63	11
Greece	7.50	15	6.26	15	6.82	15
Ireland	8.97	3	8.21	9	8.79	3
Italy	7.65	14	7.32	13	7.00	14
Luxembourg	9.77	1	9.15	2	9.29	2
Netherlands	9.44	2	8.94	3	8.56	4
Portugal	8.18	12	6.93	14	7.25	13
Spain	8.53	11	7.69	12	7.71	12
Sweden	8.97	3	8.21	8	7.93	8
UK	8.76	8	9.39	1	9.50	1
All EU	8.67	n/a	8.95	n/a	8.06	n/a
EU weighted average	8.55	n/a	8.42	n/a	7.94	n/a

[1] Pooled results of detailed questionnaire (question 4.1) and short questionnaire (question 1).

[2] Pooled results of detailed questionnaire (question 4.2) and short questionnaire (question 3).

[3] Results from detailed questionnaire only (question 4.3).

The freedom of non-residents' access to domestic financial instruments and services on equal terms with residents is generally perceived to be much the same as that of residents' access abroad. The greatest freedom for non-residents appears to be accorded by the United Kingdom, Luxembourg and the Netherlands, followed by Belgium, France, Germany and Denmark (see Table 8.2, columns 3 and 4). Greece, Italy, Portugal and Spain are seen as relatively restrictive. Foreign firms are considered to have rather less freedom in the EU as a whole to operate directly on local markets on equal terms with local firms (see Table 8.2, columns 5 and 6). The United Kingdom and Luxembourg allow the most freedom in this respect, and Ireland, the Netherlands, France, Belgium and Austria are also relatively liberal. Portugal, Italy and Greece trail some way behind. Non-residents appear to be far more constrained in their ability to operate directly on the domestic market than in their access to domestic financial instruments and services in Belgium, Denmark, France and Germany.

The progress that has been made in liberalizing capital movements and freeing market access since 1990 to some extent reflects countries' starting points, although the results are not clear-cut (see Table 8.3). Evidence from the short questionnaire suggests that, with the exception of Portugal, those countries whose markets were seen as the most restrictive in 1990 have made the greater strides over the past five years – Greece, Italy, Spain and Sweden – in opening their markets to securities transactions by non-residents, while the two countries whose capital markets were already the most open to non-residents – Luxembourg and the United Kingdom – are shown to have undertaken less liberalization than elsewhere. The two other large financial markets – France and Germany – progress at the EU average. Evidence from the detailed questionnaire, relating to the liberalization of foreign transactions by residents as well as domestic transactions by non-residents, shows much less differentiation, with Italy and Greece, as well as Belgium, Denmark, France and the Netherlands, perceived as having undertaken less liberalization since 1990 than either Luxembourg or the UK.

Table 8.3. Change in accessibility of domestic markets for non-residents since 1990

Country	Short questionnaire		Detailed questionnaire
	Accessibility in 1990[1]	Change in accessibility 1990–95[2]	Change between 1990 and 1995[3]
Austria	5.92	1.50	1.06
Belgium	7.00	1.58	0.69
Denmark	6.87	1.36	0.75
Finland	6.10	1.92	1.06
France	7.00	1.63	0.75
Germany	6.59	1.72	0.84
Greece	3.32	1.88	0.75
Ireland	6.21	1.63	1.12
Italy	5.03	2.03	0.74
Luxembourg	8.13	0.90	0.88
Netherlands	7.47	1.34	0.63
Portugal	4.52	1.63	0.94
Spain	4.97	2.24	1.05
Sweden	5.77	1.93	0.88
UK	8.14	1.03	1.00
EU weighted average	6.50	1.66	0.84

[1] Scores ranging from 10 (completely open) to 0 (completely closed): question 4.

[2] Differences between scores (out of 10) for 1990 and 1995: question 3 minus question 4.

[3] Scores ranging from +2 (much easier all round) to -2 (much harder all round): question 5.

The overall picture of the liberalization of capital movements given by responses to our survey is broadly consistent with that emerging from the business survey of 20,000 companies in the services and manufacturing sectors which was conducted by Eurostat as part of the 1996 Single Market Review. The business survey covers a wide range of questions relating to most aspects of the single market, but one question is directed specifically at the impact capital liberalization has had on individual firms. Eurostat's survey indicates that across the EU as a

whole (excluding Austria, Finland and Sweden) 25.7% of respondents in the manufacturing industry judge the impact of capital liberalization on their firm to be positive, the greatest frequency of positive responses coming from firms in Greece, Italy, Portugal and Spain and the least from firms in France and the United Kingdom.

In the services sectors across the EU as a whole (excluding Germany, Austria, Finland and Sweden) only 14.7% of respondents to the Eurostat survey judge the impact of capital liberalization on their firm to be positive, but in the financial services sectors specifically (which account for only 10.5% of total respondents in the service industries) the positive response rate rises to about the same as that in manufacturing. Again, the greatest frequency of positive responses arises in Greece, Italy, Portugal and Spain. The lowest frequency is registered in the United Kingdom, while in contrast in Luxembourg a much higher proportion of respondents have recorded a positive impact (perhaps reflecting the relative weight of financial services within the Luxembourg economy).

8.4. Freedom of residents to use foreign markets, instruments and institutions

From the survey results it would appear that domestic requirements have the effect in almost all Member States of encouraging residents to use foreign rather than domestic markets, instruments and institutions for the buying, selling and holding of securities in general. This possibly counter-intuitive finding may derive from the interaction between relative freedom from domestic restrictions of foreign activities by residents and the incidence of domestic taxation.

The countries where there is the greatest incentive for residents to conduct securities transactions (buying, selling and holding) abroad are Luxembourg, the United Kingdom and Germany, while the incentive is least in Finland and Italy; and there is actually a disincentive to the conduct of transactions abroad in Portugal and Greece (see Figure 8.2). Indeed, the incentive to use foreign markets seems relatively strongly associated with the degree of liberalization of capital markets. The group of countries ranked after Luxembourg, the UK and Germany share some of their characteristics. The Netherlands, Austria and Denmark all have reasonably free capital markets, although our analysis in Chapter 4 indicates that this is relatively recent in the case of Denmark. Of the subsequent group of countries in the ranking of access to foreign markets, Spain, Sweden and France have all relatively recently removed barriers to the free operation of their international capital markets.

Perhaps for similar reasons, the residents of Luxembourg, the United Kingdom and the Netherlands are seen as having most incentive to borrow abroad. In contrast, not only Greek but also Italian, Austrian, Finnish and Spanish residents are positively discouraged (see Figure 8.3) from foreign borrowing. Also noteworthy is that the incentive for German residents to borrow abroad is seen as less pronounced than their incentive to buy, sell or hold securities abroad.

Figure 8.2. Freedom of residents to use foreign markets for securities transactions: results from detailed questionnaire, question 6.1

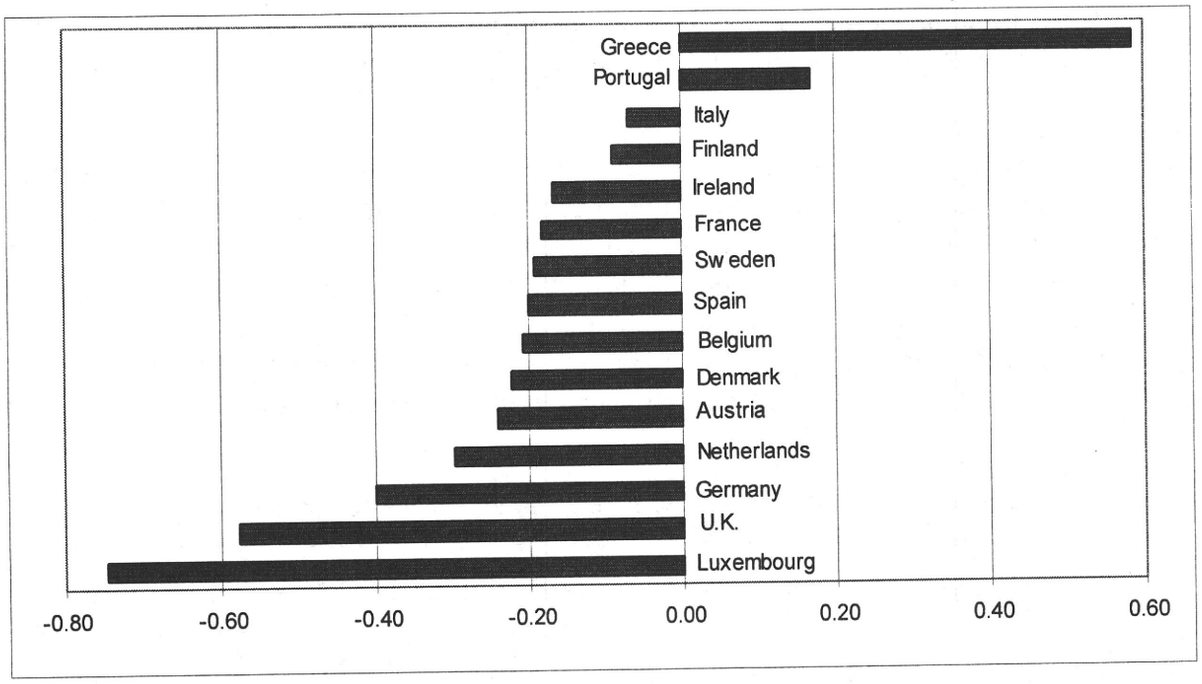
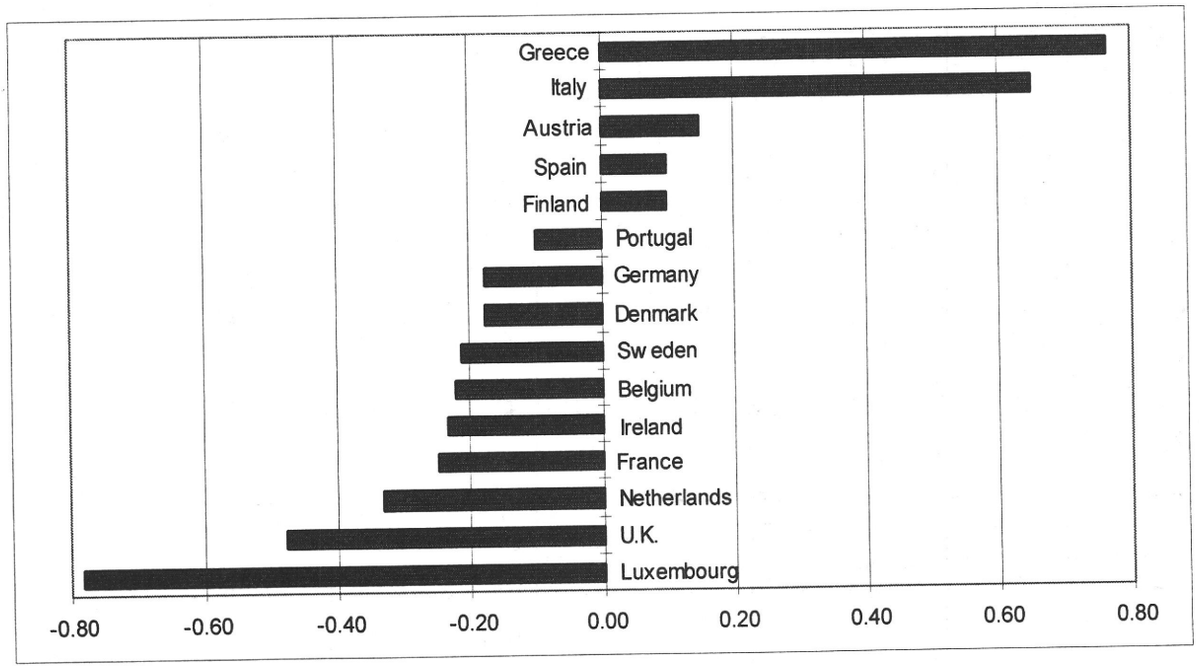


Figure 8.3 Freedom of residents to borrow on foreign securities markets: results from detailed questionnaire, question 6.2



For most Member States there would appear to be quite a marked distinction between the treatment of operations (buying, selling and holding) in equities and bonds, for which there is a modest but noticeable incentive for residents of all Member States (except Greece and, for bonds, Portugal) to go abroad, and the treatment of operations in other kinds of securities (see Table 8.4), for which there is often little or no incentive, or even a disincentive, to operate abroad.

With the exception of Luxembourg, the United Kingdom, the Netherlands and Ireland, there is appreciably less incentive to consider money-market transactions abroad and there is seen actually to be a disincentive for residents of Greece, Denmark, Finland, Portugal and Spain to conduct futures and options transactions abroad. With regard to buying, selling and holding UCITS, rather surprisingly it is only in Luxembourg and Ireland that there appears to be a significant advantage in going abroad – in almost all other countries, domestic requirements seem to encourage residents to conduct such transactions on the home market.

Table 8.4. Freedom of residents to use foreign markets for securities transactions[1]

Country	Equities	Bonds	Money market instruments	Futures, swaps and options	Collective investment securities	All instruments (in aggregate)
Austria	-0.27	-0.26	-0.22	-0.11	0.22	-0.22
Belgium	-0.33	-0.24	-0.14	0.00	0.22	-0.18
Denmark	-0.22	-0.36	0.00	0.14	0.33	-0.20
Finland	-0.10	-0.17	0.00	0.14	0.25	-0.08
France	-0.27	-0.31	-0.11	-0.33	0.20	-0.26
Germany	-0.50	-0.49	-0.22	-0.38	0.00	-0.46
Greece	0.44	0.27	0.57	0.57	1.00	0.52
Ireland	-0.10	-0.07	-0.25	-0.13	-0.30	-0.15
Italy	-0.33	-0.19	0.18	-0.27	0.20	-0.15
Luxembourg	-0.60	-0.55	-0.78	-0.56	-0.55	-0.67
Netherlands	-0.33	-0.36	-0.29	0.00	0.33	-0.26
Portugal	0.20	-0.02	0.00	0.14	0.80	0.15
Spain	-0.30	-0.28	-0.13	0.13	0.33	-0.18
Sweden	-0.38	-0.23	-0.17	0.00	0.38	-0.17
UK	-0.50	-0.42	-0.36	-0.54	0.00	-0.45
EU weighted average	-0.37	-0.34	-0.14	-0.26	0.15	-0.30

[1] Results from detailed questionnaire, question 6.1; scores ranging from +2 (strongly discouraged) to -2 (strongly encouraged) to use foreign markets.

When it comes to tapping the domestic or foreign markets for equity, bond or money-market finance, in the majority of Member States foreign markets are generally seen as preferred to domestic markets, with the exception of Austrian, Greek and Italian residents and (for bond

and equity finance) residents of Finland and Spain and (for equity finance only) France (see Table 8.5 and Figure 8.3). Luxembourg and the UK again appear at the other end of the spectrum, with domestic requirements providing a relatively strong incentive for residents to issue securities abroad.

Table 8.5. Freedom of residents to borrow on foreign securities markets[1]

Country	Equities	Bonds	Money market instruments	All instruments
Austria	0.29	0.14	0.00	0.15
Belgium	0.00	-0.17	-0.50	-0.22
Denmark	-0.17	-0.17	-0.20	-0.18
Finland	0.29	0.14	-0.17	0.10
France	0.14	-0.43	-0.50	-0.25
Germany	0.00	-0.33	-0.20	-0.18
Greece	0.83	0.83	0.60	0.76
Ireland	-0.17	-0.33	-0.20	-0.24
Italy	0.75	0.50	0.71	0.65
Luxembourg	-0.75	-0.75	-0.86	-0.78
Netherlands	-0.29	-0.25	-0.50	-0.33
Portugal	-0.14	0.00	-0.17	-0.10
Spain	0.14	0.14	0.00	0.10
Sweden	-0.20	-0.20	-0.25	-0.21
UK	-0.13	-0.50	-0.86	-0.48
EU weighted average	0.11	-0.18	-0.22	-0.09

[1] Results from detailed questionnaire, question 6.2; scores from +2 (strongly discouraged) to -2 (strongly encouraged).

8.5. Effects of domestic requirements on non-resident access

Taking the single European market as a whole, while domestic regulations and other requirements have the effect of encouraging residents to conduct capital market activities abroad rather than on their home market, as described in the previous section, they appear at the same time to place non-residents at a relative advantage, although this inward incentive would appear in general to be less marked than the outward incentive facing residents. The differential treatment of non-residents and residents on the domestic markets of the Member States may therefore be acting to some extent as an artificial stimulus to cross-border transactions in securities in both directions.

Local requirements, however, are judged to place non-residents at a disadvantage in both the buying and selling and the issuing and placing of securities on the domestic markets of Greece, Italy and Portugal (see Table 8.6). In France, non-residents appear to be at a slight disadvantage when buying and selling securities but at a slight advantage when issuing or placing securities on the domestic market. All these countries, except perhaps France, have

only recently removed controls on their capital markets, and institutions giving non-residents access to domestic markets may be taking some time to develop.

On the domestic markets of the other Member States, non-residents are seen as being at a slight advantage in both types of activity, the advantage typically being rather greater in respect of the issuing and placing of securities than in buying, selling and holding. This advantage appears to be related both to the sophistication of domestic financial institutions and the history of low barriers to the movement of capital, as in the UK and Germany.

Table 8.6. Freedom of non-residents to use domestic securities markets[1]

Country	Buying, selling or holding financial instruments	Borrowing on equity, bond and money markets	Investment services
Austria	-0.26	-0.18	0.39
Belgium	-0.27	-0.35	0.21
Denmark	-0.23	-0.35	-0.03
Finland	0.02	-0.30	0.04
France	0.16	-0.15	0.50
Germany	-0.05	-0.53	0.40
Greece	0.30	0.47	0.71
Ireland	-0.32	-0.19	0.11
Italy	0.31	0.18	0.32
Luxembourg	-0.46	-0.45	-0.07
Netherlands	-0.21	-0.35	-0.08
Portugal	0.25	0.18	0.33
Spain	-0.07	0.10	0.37
Sweden	-0.23	-0.50	-0.05
UK	-0.27	-0.60	0.04
EU weighted average	-0.02	-0.28	0.31

[1] Results from detailed questionnaire, questions 7.1, 7.2, and 7.3 – 7.8; scores from +2 (non-residents at a major disadvantage) to -2 (non-residents at a major advantage).

In the overall conduct of investment services business (lead management, market-making, management of privatization issues, membership of exchanges and access to payment and settlement systems), near equality of treatment between resident and non-resident firms is offered in Denmark, Finland, Luxembourg, the Netherlands, Sweden and the United Kingdom (although non-residents are at some disadvantage in the management of privatization issues in Denmark, Finland and the United Kingdom and in respect of access to payment and settlement systems in Luxembourg, the Netherlands, Sweden and the United Kingdom).

In the other nine Member States, domestic requirements are judged to place non-residents at an overall disadvantage in the conduct of investment services business, with the following exceptions: lead management of debt issues in Belgium; market-making in Ireland; management of privatization issues in Italy and Portugal; and membership of exchanges in

France, Germany and Ireland. At the level of the EU as a whole, non-residents appear to face most restriction in the management of privatization issues and to a lesser degree in their access to payment and settlement systems, lead management and market-making.

Analysing the freedom of non-residents to buy, sell and hold securities according to the separate kinds of capital market activity, Greece, Italy and Portugal appear as relatively restrictive in each market segment (see Table 8.7). In most other countries, however, for most kinds of capital market activity non-residents are judged to be free from discrimination or even to be at an advantage compared with residents. There are, however, indications that non-residents are at a disadvantage in the buying, selling and holding of UCITS in Denmark, France and Spain, in use of the money-markets in Finland, and in the conduct of equity and bond transactions (including the purchase of privatization issues) in France.

Table 8.7. Freedom of non-residents to use domestic markets for securities transactions[1]

Country	Equities	Privatization issues	Bonds	Money market instruments	Futures, swaps and options	Collective investment securities
Austria	-0.11	-0.13	-0.41	-0.38	-0.14	0.00
Belgium	-0.38	-0.29	-0.28	-0.29	-0.17	-0.14
Denmark	-0.22	-0.25	-0.30	-0.29	-0.33	0.14
Finland	-0.11	0.00	0.03	0.25	0.00	-0.17
France	0.36	0.40	-0.01	0.10	0.11	0.38
Germany	0.00	0.10	-0.13	-0.11	-0.13	0.17
Greece	0.25	0.43	0.28	0.29	0.17	0.43
Ireland	-0.56	-0.50	-0.36	0.00	0.14	-0.44
Italy	0.09	0.30	0.37	0.20	0.33	0.57
Luxembourg	-0.56	-0.50	-0.47	-0.50	-0.57	-0.22
Netherlands	-0.30	-0.22	-0.27	-0.25	0.00	0.00
Portugal	0.13	0.38	0.16	0.29	0.50	0.29
Spain	-0.22	-0.25	-0.04	-0.25	0.00	0.29
Sweden	-0.13	-0.14	-0.30	-0.33	-0.20	-0.17
UK	-0.38	-0.25	-0.30	-0.17	-0.27	-0.22
EU weighted average	-0.03	0.07	-0.08	-0.06	-0.02	0.18

[1] Results from detailed questionnaire, question 7.1; scores ranging from +2 (major disadvantage) to -2 (major advantage) for non-residents to use domestic markets.

At the level of the EU as a whole, it would appear that non-residents experience the greatest freedom in conducting transactions in the domestic bond and money markets, followed by derivatives and equity transactions, with transactions in UCITS trailing some way behind (see Table 8.8). When it comes to the issue or placement of securities, however, it appears to be slightly easier for non-residents to raise funds in the money markets than on the bond or equity markets.

Table 8.8. Overall freedom in the EU for non-residents to use domestic markets for securities transactions

	Buying, selling or holding				Borrowing	
Financial instrument	I[a]		Ii[b]		III[a]	
	EU MP/ØP	Rank	EU MP/ØP	Rank	EU MP/ØP	Rank
Equities	-0.03	4	8.21	4	-0.21	3
Bonds	-0.08	1	8.94	1	-0.26	2
Money market instruments	-0.06	2	8.40	2	-0.38	1
Futures, swaps and options	-0.02	3	8.23	3	n/a	n/a
Collective investment	0.18	5	7.67	5	n/a	n/a

[a] Refers to results from the detailed questionnaire, questions 7.1 and 7.2; scores ranging from +2 (major disadvantage) to -2 (major advantage) for non-residents to use domestic markets.

[b] Refers to results from the short questionnaire, question 5; scores ranging from 0 (completely closed) to 10 (completely open).

8.6. Effects of exchange rate uncertainty on capital movements

The greater uncertainty in exchange rates within Europe since the disruption of the exchange rate mechanism of the EMS in 1992–93 appears to have resulted in an increase in investment by non-residents in the domestic markets, for all types of securities, of Austria, Denmark, Germany, Ireland and the Netherlands (see Table 8.9). It would seem to have caused a corresponding and generalized reduction in non-resident investment in the domestic securities of Greece, Italy, Portugal and Spain. The remaining six Member States have seen an increase in non-resident investment activity concentrated in their domestic money markets and derivatives markets. Exchange rate uncertainty is perceived as having stimulated borrowing by non-residents in the securities markets (especially the bond markets) of all Member States except Greece, Italy, Portugal and Spain.

A majority of survey respondents declined to attach numbers to the likely increase or decrease in nominal interest rates in individual Member States which might result from the elimination of exchange risk between them, such as might be expected to occur if they were to participate in a sound and stable monetary union. Instead of figures, these respondents indicated where they expected interest rates to rise or to fall.

Views diverged on the likely direction of change in interest rates if exchange risk were eliminated by participation in a monetary union. A small number of respondents were even in the position to be able to envisage overall an increase in rates (perhaps on the grounds that the standing of the stronger currencies would be weakened and increased credit risk would replace exchange risk in the weaker countries), while other respondents saw overall a levelling down of rates in the high-interest-rate countries and some (generally modest) rise in the low-interest-rate countries.

Table 8.9. Effects of exchange rate uncertainty since 1992/93[1]

Country	Investment by non-residents in domestic securities	Borrowing by non-residents in domestic capital markets
Austria	0.18	0.30
Belgium	-0.01	0.24
Denmark	0.13	0.20
Finland	-0.08	0.13
France	0.06	0.16
Germany	0.53	0.36
Greece	-0.32	-0.24
Ireland	0.19	0.25
Italy	-0.52	-0.12
Luxembourg	0.17	0.32
Netherlands	0.30	0.36
Portugal	-0.31	-0.04
Spain	-0.34	-0.11
Sweden	-0.11	0.16
UK	-0.06	0.31
EU weighted average	0.08	0.19

[1] Results from detailed questionnaire, question 8; scores from +2 (major increase) to -2 (major decrease).

In order to be able to present a meaningful and manageable picture of these responses in summary form, it was decided to express, for each country, the net positive or net negative balance of responses as a percentage of the total number – including those indicating no change – of responses for that country. These results are shown in Table 8.10: a substantial proportion of respondents would expect the elimination of exchange rate uncertainty within a monetary union in Europe to result in a rise in both short-term and, especially, long-term interest rates in Germany and, with rather less emphasis, in the Netherlands and (in short-term rates) in Austria.

There is a moderate expectation of a fall in both short- and long-term rates in Belgium, France and Luxembourg and (in short-term rates) in Denmark. The balance of opinion is much more strongly in favour of a fall in long-term rates in Denmark, and in both short- and long-term rates in all the other eight Member States. The obverse of these results may be taken as an indication of the extent to which exchange rate uncertainty is currently distorting the movement and allocation of capital within the single market. However, it may also reflect views on the effect of overall government borrowing on interest rates in the potential monetary union. If there were a widespread belief that on average borrowing would be higher than has historically been the case in Germany, the Netherlands and Austria, then interest rates would also be expected to be higher. If the Maastricht fiscal criteria successfully held back such borrowing beyond market expectations then interest rates in these core countries would also be lower than currently indicated by our survey responses.

Table 8.10. Overall direction of the effect on yields of eliminating exchange risk in monetary union: balance of responses as a percentage of total responses[1]

Country	In the money markets	In the long-term bond markets
Austria	+ 14.3%	0%
Belgium	- 25.0%	- 31.3%
Denmark	- 22.1%	- 64.7%
Finland	- 76.5%	- 87.5%
France	- 44.4%	- 47.4%
Germany	+ 31.3%	+ 44.4%
Greece	- 85.7%	- 85.7%
Ireland	- 100.0%	- 86.7%
Italy	- 75.0%	- 87.5%
Luxembourg	- 15.4%	- 8.3%
Netherlands	+ 28.6%	+ 21.4%
Portugal	- 86.6%	- 86.7%
Spain	- 77.8%	- 88.9%
Sweden	- 88.2%	- 87.5%
UK	- 87.5%	-77.8%
EU weighted average	-31.38%	-31.12%

[1] Results from detailed questionnaire, questions 9.1 and 9.2; balance between positive and negative responses expressed as a percentage of total responses, including 'No Change'.

It is expected that the elimination of exchange risk between participating currencies would result in a substantial increase in both resident and non-resident borrowing and investment in securities in each Member State if it took part in a successful monetary union (see Table 8.11). The increase in residents' foreign activities (both investment and borrowing abroad) is shown as likely to be more marked than the increase in inward activity in Austria, Belgium, Germany, Luxembourg and the Netherlands, while the United Kingdom is thought likely to see a greater increase in non-residents' activity on the domestic market than in residents' activities abroad.

In Austria, Greece, Italy, Portugal, Spain and Sweden there is a suggestion that the increase in resident borrowing abroad and non-resident investment in the domestic market would be greater than any increase in resident investment abroad and non-resident borrowing on the domestic market – a result which would indicate net capital inflows to those countries resulting from the elimination of exchange risk. Conversely, Germany is shown as likely to experience some net investment by residents abroad and some net borrowing by non-residents at home, resulting in a modest net capital outflow. These results again point to exchange rate uncertainty as a factor currently inhibiting and distorting the free movement of capital within the single market.

Table 8.11. Effect of eliminating EU exchange rate uncertainty on investment and borrowing[1]

Country	On foreign markets within a monetary union by residents		On domestic markets by non-residents from elsewhere within a monetary union	
	Investing	Borrowing	Investing	Borrowing
Austria	0.64	0.75	0.57	0.50
Belgium	0.67	0.80	0.58	0.70
Denmark	0.77	0.64	0.77	0.64
Finland	0.85	0.73	0.77	0.55
France	0.93	0.83	0.71	0.67
Germany	0.86	0.92	0.71	0.75
Greece	1.08	1.09	1.08	0.55
Ireland	0.92	0.82	0.85	0.73
Italy	0.93	1.00	1.00	0.69
Luxembourg	0.67	0.70	0.50	0.60
Netherlands	0.58	0.73	0.54	0.55
Portugal	1.17	1.10	1.17	0.90
Spain	1.00	1.09	1.08	0.82
Sweden	1.00	1.10	0.92	0.80
UK	0.50	0.54	0.62	0.67
EU weighted average	0.83	0.86	0.76	0.70

[1] Results from detailed questionnaire, question 10; scores from +2 (major increase) to -2 (major decrease).

8.7. Specific restrictions or distorting factors

The short questionnaire that was sent to market participants in all countries provided a list of six different kinds of factor which might have the effect of constraining or distorting the cross-border securities business of firms operating within the EU. These were local incorporation requirements; local prudential regulations; tax treatment of non-residents; national differences in company law or accounting requirements; exchange rate risk; and the liquidity of the local capital market. Respondents were asked to indicate which, if any, of these factors was either a major constraint or some significant constraint on their cross-border business. The responses are summarized in Table 8.12.

Almost half of all respondents to the short questionnaire cited liquidity of the local market as a constraining factor, a third of those who did so considering it to be a major constraint on their cross-border activities. Nearly as many respondents (45%) regard the tax treatment of non-residents as a constraint, with 12% seeing it as a major constraint. Only slightly fewer saw exchange rate risk as an obstacle, 10% identifying it as a major constraint and 31% as some significant constraint. Each of the other three factors was identified as a constraining factor by between 25% and 35% of respondents, in most instances as some significant constraint rather than as a major constraint on cross-border business.

Both the short and the detailed questionnaires invited respondents to describe any specific factors in individual Member States which significantly restrict or distort the movement of capital. Half the responses to this part of the survey identified tax obstacles of various kinds, a quarter related to regulatory requirements and a quarter were concerned with matters of local market structure, custom or practice. The only obstacle which was identified as affecting non-EU, but not EU firms, was the authorization requirements for the opening of branches by non-EU financial institutions in France and Germany.

The role of restrictions on the opening of branches by non-EU financial institutions is consistent with the reservations against freedom of establishment entered by France and Germany under the OECD Cases of Liberalization. Similar reservations have been entered by Ireland, Italy and Portugal, but survey respondents did not identify third-country authorization requirements as a specific obstacle in these three countries.

Since almost 20% of all the reservations under the OECD Codes (including those relating to freedom of establishment) which were analysed in Chapter 7 related solely to the activities of residents of non-EU countries, it is perhaps surprising that so few references were made by respondents to any discrimination between non-residents on domestic markets according to whether they were from other EU Member States or from third countries. Part of the explanation for this may lie in the fact that the great majority of respondents were resident within the EU and that, for those respondents who were of non-EU origin, the overriding concern was the restrictions on establishment.

Table 8.12. Factors which constrain the amount of cross-border securities business[1]

Factors	Percentage of respondents who identified the factor as:		Total (%)
	'A major constraint'	'Some significant constraint'	
Local incorporation requirements	4.8	21.0	25.8
Local prudential regulations	3.2	32.3	35.5
Tax treatment of non-residents	11.3	35.5	46.8
Differences in company law or accounting requirements	1.6	25.8	27.4
Exchange rate risk	11.3	32.3	43.5
Liquidity of local market	21.0	29.0	50.0

[1] Results from short questionnaire; question 6.

8.7.1. Tax obstacles

By far the most frequently cited restricting or distorting factor affecting cross-border securities business was the incidence of **withholding tax**, both as a widespread feature of Member States' financial markets and in respect of particular countries; Belgium, France, Germany, Greece, Italy, Luxembourg, Spain, Portugal and the United Kingdom being specifically named. Most commonly mentioned was Italy, where the withholding tax of 12.5% on government and corporate bonds, although in principle reimbursed to non-residents under double-taxation agreements between the Member States, in practice can only be recovered after considerable delay and a major expenditure of administrative effort on the part of the investor.[13] Several respondents emphasized that it was not only the incidence of the particular tax liability itself but also the administrative burden, and associated costs, of compliance that constituted an obstacle. The cash-flow penalty suffered by holders of bonds yielding 11% would be almost 1.4% per annum, representing an opportunity cost (at a short-term interest rate of 10%) of over 0.125%. This was described variously as a prohibitive, very serious or serious constraint on non-resident investment in Italian securities.

As regards the general incidence of withholding tax within the EU it was also noted that not all tax treaties within the EU include provision for a zero rate of withholding on interest paid to non-residents (a similar point made specifically in relation to collective investment securities is discussed in a separate paragraph below). A further anomaly identified is the co-existence of two different approaches to the collection of tax on interest income in the EU – withholding at source and third-party reporting to the tax authorities, the scope of which varies considerably between Member States. An additional complication noted specifically as a significant constraint on cross-border bank lending is that, while withholding tax is levied on gross interest income, income tax is computed on net interest margin and that the former may exceed the latter, resulting in a net tax charge in excess of the income tax rate.

Various aspects of national **corporate tax regimes** also inhibit or distort the cross-border capital movement. The double taxation of dividends arising from the non-recoverability of corporate income tax paid was a disincentive to non-resident investment in the domestic equity markets of the Member States. Specifically in relation to the German market it was noted that tax credits on dividends were only available to non-residents if the equities were actually held within Germany on behalf of the investor. (The same kind of consideration is seen as a barrier to cross-border sales of collective investment securities, as described in the next paragraph.)

The corporate tax regimes of some countries also have the effect, directly or indirectly, of discriminating against non-resident firms, especially in the financial sector. It is noted that in Belgium and Germany the income of branches of foreign firms is taxed at a higher rate than the income of locally incorporated firms and their branches (in Belgium, respective rates of 42% and 39% are cited). In the Netherlands, the imputation by the tax authorities of deemed equity in respect of local branches of non-resident financial institutions results in a tax penalty – measured as the product of the excess of deemed equity over actual equity, LIBOR and the corporate tax rate – which is seen as contravening the branch 'passport' principle of single market legislation (a threat of similar treatment by national tax authorities is said to exist in

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[13] A major reform of withholding tax arrangements came into effect at the beginning of 1997, which allows the payment of bond interest gross to non-residents.

Belgium, Ireland and the United Kingdom). Both these forms of differential tax treatment were regarded as constituting very serious distortions. A similar kind of distortion is noted in Greece, where firms face a tax rate of 40% if they are not quoted on the Athens Stock Exchange but only 30% if they are quoted.

The tax structures of most Member States were identified by one respondent as effectively constituting a barrier to residents' investment in **foreign collective investment securities** such as those of UCITS, despite an extensive single market framework for UCITS in Community and national law. A domestic fund can pass on to local investors the benefit of foreign dividend withholding tax credits arising under the relevant tax treaty but such a flow-through of tax credit is not available to the same investor buying a foreign fund, even where a tax treaty exists between the country which is the source of the original dividend and the investor's country of residence. In similar fashion, in most Member States a resident buying a domestic-based fund will benefit from a flow-through of corporate income tax credits on dividends paid on domestic equity investments, but no such flow-through is available to a resident buying a foreign-based fund on dividends paid on the same or similar domestic equities.

Other forms of discriminatory tax treatment to which foreign UCITS are subject are specified in respect of Austria, Denmark, France, Italy and the United Kingdom. In Austria, distributions paid by cash and bond funds are subject to a 22% withholding tax. This represents a final tax for Austrian investors in Austrian-based funds; but for investments in non-Austrian based funds they will still be liable for tax up to their marginal rate (up to 50%) and, in addition, they will be taxed on a share of the non-distributed income. Danish investors in Danish-based UCITS are liable to tax at a rate of 30% to 40% in respect of capital gains on disposal of fund shares, subject to a tax-free allowance and relief of capital losses, but for investments in foreign-based UCITS gains and disposals are treated as capital income which is taxable at higher rates (43% to 64%) without allowances or relief. In France, foreign UCITS funds invested in French equities are eligible investments under the rules for personal equity (PEA) schemes but they, unlike French-based firms, are not entitled to pass on 'avoir fiscal' tax credits, which are equal to 50% of the gross dividend. Italian-based UCITS are exempt from all Italian taxes on income and capital gains but are subject to an annual net asset tax of between 0.05% and 0.25%, and individuals resident in Italy are exempt from tax on distributions and realized capital gains deriving from Italian-based funds. Distributions and realized capital gains relating to foreign UCITS, however, are subject to tax at 12½%.

The United Kingdom's regime for personal equity plans (PEPs), which are exempt from all UK income and capital gains tax, allows investments in UK-resident unit trusts and investment trusts but specifically excludes shares in foreign open-ended investment companies.

Among the other restraining or distorting effects of taxation on cross-border securities transactions, the need to avoid **non-recoverable tax charges** (on borrowers or investors) required the construction of special (and even foreign) vehicles or structures, and hence the incurring of other costs, for the issuing of Eurobonds was instanced by respondents in respect of Italian and UK companies. In Spain, it is noted that **'coupon washing'** is prohibited. **Stamp duty** on particular kinds of security transactions and financial products was mentioned as another obstacle in Ireland and Portugal. Differences between Member States in **value**

added tax regulations were also cited as having a significant adverse effect on cross-border securities transactions.

8.7.2. Regulatory obstacles

Concern about regulatory obstacles to the free movement of capital within the single market focused particularly on restrictions on the portfolio allocations of institutional investors (and especially insurance companies and pension funds) and a variety of constraints on UCITS. Other obstacles relating to local authorization and incorporation requirements and on money market activities were also mentioned. In relation to portfolio restrictions on institutional investors (described variously as serious or very serious), constraints on foreign holdings and on equity holdings (generally in favour of domestic government bonds) were seen as imparting an inefficient allocation of resources, reducing the liquidity of domestic equity and private sector bond markets and raising the cost of capital to resident firms and subjecting investing institutions to lower returns coupled with higher (undiversified) risk. In addition to descriptions of this as a general problem within the EU, countries where a particular problem existed were Denmark (where the ceiling on foreign investments was 20%), France (where the principal concern was the absence of a legal framework for funded pensions), Germany and Spain. It was noted by one respondent that while such restrictions existed in Germany, in practice they were non-binding in that institutional investors held less than the permitted maximum amounts of restricted classes of asset; but the respondent considered that even so, under a more permissive regime and in the face of external competition, a change of culture would almost certainly occur.

Among other restraints on fund management activities (and especially the activities of non-resident UCITS) which respondents regarded as serious or very serious, requirements in Italy were the most frequent source of concern. The requirement that fund managers must establish a locally incorporated and separately capitalized 'SIM' in order to do business in Italy was mentioned by several respondents, one respondent estimating the annual cost of so doing as ECU 400 000. Also said to be a (prohibitive) obstacle in Italy was the prohibition on the establishment of a 'Fund of Funds'. More generally, the lack of a 'passport' and uniformity of treatment of UCITS throughout the EU was regarded as a significant constraint, as were the regulatory delays inherent in the UCITS authorization process.

Other regulatory requirements were mentioned either as a general constraint or as affecting money market operations in particular. Local regulation, authorization, incorporation and capital requirements were a general concern within the EU. Specific reference was made to local incorporation requirements in Greece and Portugal, and to onerous authorization requirements for the opening of branches and subsidiaries by non-EU financial institutions in France and Germany. Also, in respect of Germany, minimum reserve requirements prevented the full development of the money markets, specifically in respect of repos and stock lending, and the Bundesbank's opposition to the issuing of short-term government securities; thus non-residents have only limited access to short-term deutschmark instruments, and German residents have to approach foreign rather than domestic markets for their short-term needs.

8.7.3. Local market structure, custom and practice

Apart from a general charge that Member States provide covert protection for their local financial institutions, restrictions on non-resident operations in government securities were

seen as a significant constraint on cross-border business specifically in Belgium and France and, for non-EU firms, Germany. In Belgium, only Belgian institutions can be primary dealers in government bonds. It was noted that lead management and issuing of government securities in France was restricted to only a handful of foreign banks (subject to reciprocity requirements) and that access to 'open market' repos, tenders and five- to ten-day 'pension' facilities with the Banque de France was confined to French resident banks. In Germany non-EU firms are unable to underwrite government bond issues through their local branches.

Among other restrictions on market access, the membership rules for local clearing systems in all Member States which require *de facto* a local presence are a serious constraint. It was also noted that membership of the Belgian stock market is not open to foreign firms. Other market requirements or practices which constitute a significant restriction or distortion are the stock market rules for issuing securities in Denmark; the distinction between Class A and Class B shares in Finland; the dual language requirement for issue prospectuses in Belgium; and restrictions on non-resident purchases of floating rate notes in Portugal. In Germany, the difference between two-day settlement for domestic transactions and seven-day settlement for international equities was distorting inward and outward capital movement, as was the extra day allowed for foreign exchange delivery.

Some more general characteristics of particular national markets were also noted. The Bundesbank operates monetary policy in a way that ensures that real bond yields never fall below 4%, which has the effect of discouraging the growth of the German equity market. The high yields offered on government bonds in France likewise discourage residents from investing in domestic and foreign equities and in foreign bonds. Lack of adequate information to non-residents about local issuers was regarded as favouring domestic investors in German and Italian equities. French investment firms were seen as favouring their domestic clients by providing them with information before their foreign clients. Lack of transparency and information was also seen as inhibiting foreign investment in Greek, Portuguese and Spanish securities; currency risk and the insufficient liquidity of local markets were considered to be a further disincentive in these countries, especially Greece and Portugal.

8.8. Comparability of survey results with the analysis of OECD Codes

In conducting the initial analysis of the results obtained from the survey of market participants described in the preceding sections, it became apparent that respondents' perceptions of which markets were more and which were less free of restrictions and distorting factors broadly corresponded to the findings of the analysis of the OECD Codes of Liberalization, which are set out in Chapter 7. It was therefore decided to conduct a statistical comparison of these two quite different approaches to the question of freedom of capital movement within the European Union. The purpose was not to establish any direct causal link between the two: respondents to the survey are unlikely to have based their answers on a close study, or even an awareness, of the OECD Codes and reservations entered by OECD governments are not induced by market perceptions.

It was considered that if two quite independent ways of assessing the extent to which capital is free to move within the single European market yielded similar results, greater confidence could be placed in any specific conclusions drawn from either approach than if only one approach had been followed or if the findings of one were to contradict the findings of the other. Furthermore, if a close correspondence were established, any significant exceptions to

the general rule could be highlighted and appropriate qualifications entered to the conclusions which might otherwise be drawn from one approach alone.

The analysis of the OECD Codes described in Chapter 7 was conducted in terms of the number of specific reservations concerning particular kinds of activity entered by 15 individual governments against their overall agreement to abide by the liberalization requirements of the Codes. The survey results analysed in the present chapter derive from the various responses of a much larger number of market participants; 88 expressed their individual perceptions of the freedom of capital movement. The required comparison, therefore, is between a relatively small set of ostensibly objective data[14] provided by a 100% sample of the population (the 15 EU Member States) relating to the number of reservations actually entered, which typically was a small proportion of the possible total, and a much larger set of subjective data (scored either on a scale of 1 to 10 or in a range from +2 to -2) provided by a sample of 86 respondents out of an unknown, but much larger population of financial institutions active in cross-border securities transactions.

Table 8.13. Relationship between analysis of OECD Codes of Liberalization and survey results in respect of non-residents: Spearman rank correlation coefficients

Survey question	Reservations under OECD Codes in respect of:			
	Single market (without establishment)	Single market (with establishment)	Global market (without establishment)	Global market (with establishment)
Freedom to transact (4.2)[1]	-0.836	-0.713	-0.704	-0.714
Freedom to transact (4.2 +Q3)[2]	-0.727	-0.607*	-0.588*	-0.552*
Freedom to transact and to operate directly on markets (4.2+Q3, 4.3)	-0.780	-0.664	-0.663	-0.620*
Relative disadvantage in transactions (7.1, 7.2)	0.916	0.843	0.863	0.848
Relative disadvantage in transactions and supply of investment services (7.1,7.2,7.3-7.8)	0.888	0.814	0.820	0.798

* Significant at the 5% level but not the 1% level of confidence.

[1] Data from detailed questionnaire only.

[2] Data from short questionnaire included.

The grand total of relevant entries recorded in the analysis of the OECD Codes numbered was 52 (an average per EU Member State of 3.48), or 64 (an average per Member State of 4.3) if freedom of establishment is also taken into account. The potential total of numerical responses to any individual question, country by country, in the survey was 139 x 15 = 2,085.

14 As was noted in Chapter 7, a modest degree of judgement as to which restrictions were more or less significant was exercised by the analyst.

Given these differences in sample size, representativeness, scoring systems and objectivity, it was considered appropriate in the first instance to consider the rank correlation between the scores recorded by each country under the OECD Codes (number of reservations, or potential restrictions, recorded) and the average for each country of the scores recorded by respondents to the survey (degree of liberalization perceived or discrimination experienced). The two data sets to be compared are thus the order in which the 15 Member States are ranked, on the one hand in terms of the number of reservations each has entered under the OECD Codes (the country with the greatest number of reservations, and hence on this measure the most restrictive, being ranked highest) and on the other hand in terms of the average score awarded to each country in respect of non-residents' freedom of access to its domestic markets (the country with the highest score, and hence the most liberal, being ranked highest) or to the relative disadvantage experienced by non-residents compared to residents (the country with the highest positive score, and hence the most restrictive, being ranked highest).

Spearman rank correlation coefficients were calculated, comparing in turn the country rankings derived from each of the relevant survey questions (4.2, 4.3, 7.1, 7.2 and 7.3 to 7.8) with those derived from the four different formulations of restrictions under the OECD Codes (single market and global market, with and without the reservations concerning freedom of establishment). In addition, individual countries' scores on two or more related questions were also combined as simple averages for each country. The principal results are shown in Table 8.13. The great majority of the coefficients are significant at the 1% level and all have the expected sign and are significant at the 5% level. Making adjustment for tied rankings in the OECD data yielded very similar results. It is therefore possible to conclude that the two separate analytical approaches are coherent and complement each other.

In order to provide a conventional visual representation of the degree of association between the two approaches and an indication of the respective positions of individual countries, regression equations were calculated using the underlying data (actual number of reservations and average scores recorded) in place of ranks. Again, most results were significant at the 1% level. Two illustrative examples are shown in Figures 8.4 and 8.5. Some of the disparities (notably those relating to Greece and Germany) observed in these charts are common to a number of the regression results. They may be attributable in part to forms of constraint not covered by the OECD codes and other factors, such as market liquidity and the availability of information, which survey respondents consider important, as well as to the inherently subjective nature of their responses. Thus part of the explanation of why Germany and Greece often appear as outliers may be the great differences in the liquidity and transparency of the two markets and the degree of currency stability in each – the Greek capital market being therefore perceived by survey respondents as much less accessible than that of Germany, despite the fact that Greece has registered fewer reservations than Germany under the OECD Codes. It is also to be noted that the relatively liberal position of Germany compared with the EU average is eliminated if account is taken of restrictions on establishment (see Figure 8.5).

Figure 8.4. Association between results of survey and reservations under OECD Codes

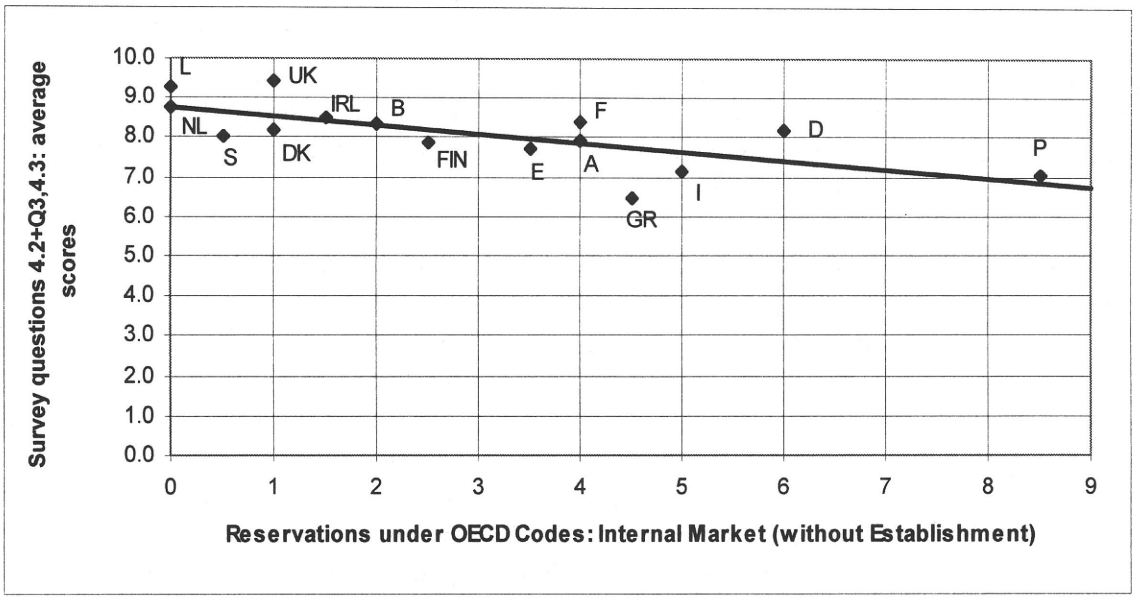
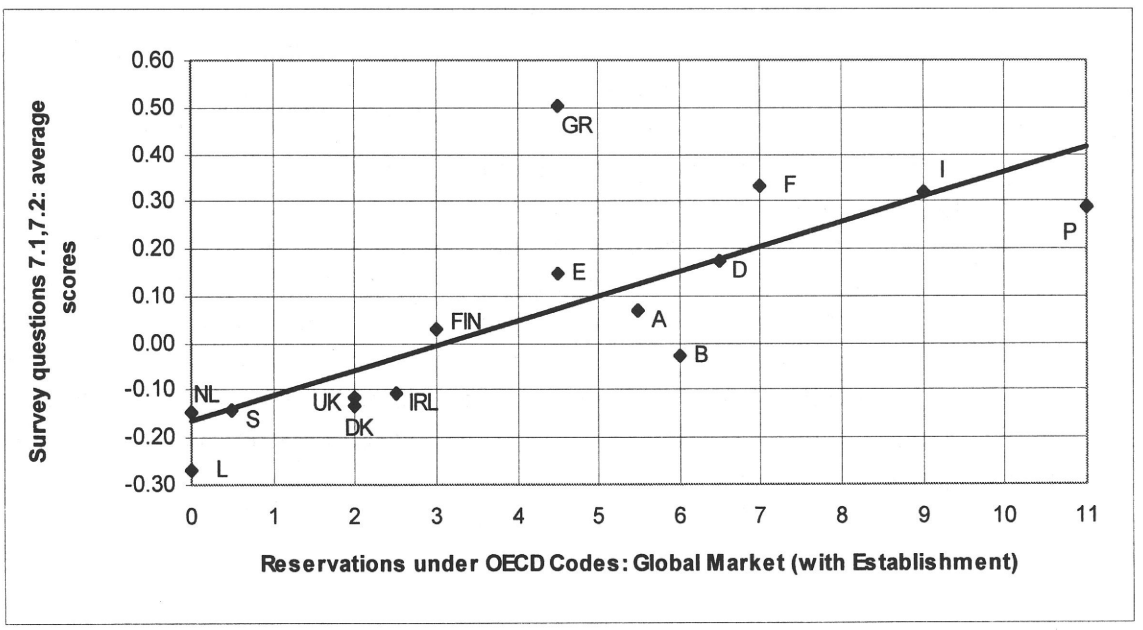


Figure 8.5. Association between results of survey and reservations under OECD Codes



8.9. Conclusions

The results of the survey of market practitioners point to a substantial increase in freedom of capital movement in all EU Member States since 1990. In the EU as a whole, the freedom of capital movement is judged by survey respondents to score 8.5 out of 10, compared with 6.5 in 1990. While there is still a significant margin for improvement in some countries, there are indications that the pace of liberalization has been greatest in the more restricted markets. The incidence of capital liberalization among the Member States indicated by these results matches quite closely that which emerged from the empirical investigations and our analysis of the

OECD Codes of Liberalization, which are reported in previous chapters. The freedom of residents' access to foreign markets is viewed as being much the same as the freedom of non-residents' access to domestic markets. This result appears to be consistent with the separate judgement that domestic requirements encourage residents to buy, sell and hold bonds and equities abroad rather than at home while, to a lesser extent, placing non-residents at an advantage over residents with respect to similar transactions on the home market. There may thus be an artificial (and unevenly distributed) stimulus to capital movement in both directions which distorts the efficient allocation of capital.

In general, non-residents encounter least constraint in their transactions on domestic bond and money markets. They are least free in respect of transactions in collective investment securities such as UCITS and in the conduct of investment services, especially management of privatization issues, lead management of bond issues, market-making and access to payment systems. Exchange-rate uncertainty since 1992 is seen as having stimulated non-resident borrowing on the domestic bond markets of all except the most inflation-prone Member States, and a switch of non-resident investment into the securities markets of the strongest currency countries at the expense of the other Member States. Elimination of exchange risk is expected to result in lower interest rates in most Member States and in more generalized and more evenly distributed cross-border borrowing and investment.

Of the various kinds of factors which are seen as inhibiting or distorting capital movement, those most frequently cited (by 45%–50% of respondents) were insufficient liquidity of local markets and the tax treatment of non-residents and exchange rate risk. Between 10% and 20% of respondents regarded these as major constraints on cross-border business. Local prudential and incorporation requirements and national differences in company law and accounting frameworks were also regarded as significant constraints. Withholding taxes are of particular concern and, especially for UCITS, the non-recoverability of tax credits. In several countries, differential treatment of non-resident firms for corporate income tax purposes also causes distortions. Among regulatory obstacles, local restrictions on institutional investors' portfolios, generally in favour of domestic government bonds, reduce the liquidity of domestic equity and private sector bond markets, raising the cost of capital to local firms and subjecting the institutions to lower returns and higher risk. A number of specific constraints arising from local market structures, customs and practice were also identified in respect of specific countries, notably in relation to the management of government bond issues and membership of local stock markets and clearing systems.

APPENDIX A

The international capital asset pricing model

A.1. Introduction

There is a large body of literature on the international capital asset pricing model (ICAPM) which extends the standard capital asset pricing model (CAPM) to the international arena. This was surveyed extensively by Adler and Dumas (1975). This section sets out a simple portfolio model that explains both the asset demands of individual investors and the equilibrium determination of asset prices in an international context. It then goes on to suggest some reasons why this simple model fails to explain the facts, and examines some of the extensions to the model that might improve its empirical performance.

The standard approach is to begin at the level of the individual investor, who is assumed to choose a portfolio of assets to maximize a utility function defined over the mean and variance of his end of period wealth. Let the individual investor be indexed by m and allocate his initial wealth W^m over a safe asset B and n risky assets X_i. The budget constraint of the investor is:

$$W^m = B^m + \sum_{i=1}^{n} X_i^m \qquad \textbf{(A.1)}$$

Suppose that the rate of return to the safe asset is r and the rate of return to each risky asset is ρ_i. Then the end of period value of the portfolio is:

$$W_{+1}^m = (1+r)B^m + \sum_{i=1}^{n}(1+\rho_i)X_i^m \qquad \textbf{(A.2)}$$

The mean and variance of the end of period value of the portfolio are:

$$E(W_{+1}^m) = (1+r)B^m + \sum_{i=1}^{n}(1+E(\rho_i))X_i^m \qquad \textbf{(A.3)}$$

$$Var(W_{+1}^m) = \sum_{i=1}^{n}\sum_{j=1}^{n} X_i^m X_j^m \sigma_{ij} \qquad \textbf{(A.4)}$$

where $E(.)$ is the expectations operator and σ_{ij} is the covariance of the return of asset i with that of asset j.

Maximizing a utility function defined over the mean and variance of end of period wealth subject to the budget constraint **A.1** leads to the following first order conditions:

$$\begin{aligned} U_1^m(1+r)+\lambda &= 0 \\ U_1^m(1+E(\rho_i))+U_2^m 2\sum_{j=1}^{n} X_j^m \sigma_{ij} + \lambda &= 0 \end{aligned} \qquad \textbf{(A.5)}$$

where $U^m{}_1$ is the derivative of the utility function with respect to the mean portfolio return, $U^m{}_2$ is its derivative with respect to the variance, and λ is the Lagrange multiplier on the budget constraint.

The first order conditions may then be solved for the individual's asset demands:

$$E(\rho_i)-r=\gamma^m\sum_{j=1}^{n}X_j^m\sigma_{ij} \qquad \textbf{(A.6)}$$

where $\gamma^m = -2U_2/U_1$ is the coefficient of absolute risk aversion on individual m. The asset demands may be derived by solving the n asset demand equations in terms of the risk premia. This is most easily achieved by writing **A.6** in matrix notation:

$$(E(\rho)-\iota r)=\gamma^m\Gamma\mathbf{X^m} \qquad \textbf{(A.7)}$$

where ρ is the n x 1 vector of rates of return, ι is an n x 1 vector of ones, Γ is the variance – covariance matrix of asset returns and $\mathbf{X^m}$ is the n x 1 vector of demands for risky assets. Thus the demand by individual m for risky assets is:

$$\mathbf{X^m}=\Gamma^{-1}(E(\rho)-\iota r)/\gamma^m \qquad \textbf{(A.8)}$$

The demand for the safe asset is determined by residual from the budget constraint. This shows the relationship between asset demands, asset prices, risk and risk aversion. In equilibrium, aggregate asset demands are equal to the supply of assets. Summing equation A.6 over all investors and equating aggregate asset demands with supplies gives:

$$(E(\rho_i)-r)\sum_{m=1}^{M}(1/\gamma^m)=\sum_{j=1}^{n}X_j\sigma_{ij} \qquad \textbf{(A.9)}$$

where X_j is the aggregate supply of asset j. The right-hand side of this expression represents the riskiness of asset i, showing its contribution to aggregate risk as measured by the covariance of its return with that of a portfolio consisting of all available risky assets. This expression may be used to derive some familiar properties of the CAPM.

First, the return on the market portfolio may be thought of as the return on a portfolio of one pound invested in each risky asset according to its share in the total stock of risky assets. This is derived from equation A.9 by multiplying through by the share of each asset in the market portfolio and then summing over all risky assets:

$$(E(\rho_M)-r)\sum_{m=1}^{M}(1/\gamma^m)=W^R\sum_{i=1}^{n}\sum_{j=1}^{n}s_is_j\sigma_{ij} \qquad \textbf{(A.9a)}$$

where W^R is the total supply of risky assets and s_i s_j are the shares of assets i and j in the market portfolio. Substituting back into equation A.9 gives:

$$(E(\rho_i)-r)=\beta_i(E(\rho_M)-r) \qquad \textbf{(A.9b)}$$

where $\beta_i=\dfrac{\sum_{j=1}^{n}s_j\sigma_{ij}}{\sum_{i=1}^{n}\sum_{j=1}^{n}s_is_j\sigma_{ij}}$. This indicates that the premium on asset I is equal to the market premium times a constant, the 'beta', given by the covariance of asset i with the market portfolio, divided by the variance of the return on the market portfolio.

Second, equation A.9 may be written in matrix notation to determine equilibrium asset prices as functions of asset supplies:

$$(E(\rho)-\iota r)=\Gamma \mathbf{X}/\sum_{m=1}^{M}(1/\gamma^{m}) \qquad \textbf{(A.10)}$$

The solution for equilibrium yields, equation A.10 may then be substituted into the solution for individual asset demands to determine equilibrium asset holding. This gives:

$$\mathbf{X^{m}}=\mathbf{X}/\gamma^{m}\sum_{m=1}^{M}(1/\gamma^{m}) \qquad \textbf{(A.11)}$$

This equation provides one of the key predictions of the CAPM, namely that the asset holdings of the typical investor are proportional to asset supplies. The factor of proportionality depends upon how risk-averse is the investor in question relative to aggregate risk aversion. In general, those with above average aversion to risk hold below average quantities of risky assets and *vice versa*. The coefficient of relative risk aversion, γ^{rm}, is related to the coefficient of absolute risk aversion by $\gamma^{rm}=\gamma^{m}W^{m}$. If this is the same for all investors, then A.11 reduces to:

$$\frac{\mathbf{X^{m}}}{W^{m}}=\frac{\mathbf{X}}{W} \qquad \textbf{(A.12)}$$

The shares of assets in individual *m*'s wealth are proportional to the shares of those assets in total wealth.

This result is not general, as when investors have different degrees of risk aversion the more risk-averse hold less risky assets; however, even with different degrees of risk aversion, all investors are expected to hold the range of risky assets in the same proportions.

The implication of this model when applied to international portfolios is that investors should hold assets in proportion to their size. This means that the portfolios of investors from different countries should contain the same portfolio shares. This is clearly at variance with what is observed in practice where there is a very substantial home-country bias in asset holding.

There is a sizeable literature attempting to explain the home-country bias. Without attempting to survey this literature here, it is worth noting that the home-country bias must be due to some asymmetries in the international capital system. Any departures from the assumptions of the portfolio model described above that affect different investors in the same way can be factored into equilibrium prices without affecting equilibrium portfolio shares. Thus if a tax was placed on the returns to one asset only and the utility functions of investors were defined over the mean and variance of post-tax income, then the outcome for the equilibrium post-tax return would be unaffected and the tax would affect the before-tax price of that asset. For taxes and other imperfections to have an effect on asset holding so as to generate a home-country bias, they must have different effects on different investors. In fact there are several possible asymmetries present in the international capital markets which have the potential to create such a bias. These include capital controls, exchange rate uncertainty, taxes and a simple preference for domestic assets. These can all be modelled in a very similar way. We

first consider the implications of exchange rate uncertainty and then go on to analyse the effects of asymmetries in the international tax system.

A.2. Exchange rate uncertainty

The model described above takes it for granted that there is a safe asset regarded as such by all investors. However, in practice, this assumption is not correct when considering international capital markets. There, dollar denominated bills may be considered safe by those wishing to consume goods denominated in dollars, but are risky for those who wish to consume goods priced in sterling. The converse is true for sterling denominated assets. It is possible to demonstrate formally the difficulties that this causes. It is easiest to do this by simplifying the investor's problem to one of choosing between two assets which are safe in their own currency but, because of exchange rate uncertainty, risky to those who want returns in a different currency. The expected return and variance to investor *m* are:

$$E(W_{+1}^{m}) = (1+r)B^{m} + (1+E(r^{*}-d))B^{m^{*}} \qquad \textbf{(A.13)}$$

$$Var(W_{+1}^{m}) = B^{m^{*2}}\sigma_{d}^{2} \qquad \textbf{(A.14)}$$

where a * indicates a foreign variable, d is the rate of depreciation of the foreign currency.

In choosing the optimum portfolio, it shall be assumed that the investor faces the additional constraint that he cannot hold negative quantities of either domestic or foreign currency assets. The optimization leads to the following equilibrium condition:

$$E(r^{*}-d) - r = \gamma^{m} B^{m^{*}} \sigma_{d} + \frac{(\lambda^{m} - \lambda^{m^{*}})}{U_{1}^{m}} \qquad \textbf{(A.15)}$$

where $\lambda^{m} \geq 0$ is the Kuhn-Tucker multiplier on the non-negativity constraint on domestic assets.

If the inequality constraints are not binding, λ^{m} and $\lambda^{m^{*}}$ equal to zero, then the risk-averse investor will require a premium on risky foreign assets if he is to hold a positive quantity of them.

It is possible to derive similar conditions for foreign investors:

$$E(r+d) - r^{*} = \gamma^{f} B^{f} \sigma_{d} + \frac{(\lambda^{f^{*}} - \lambda^{f})}{U_{1}^{f}} \qquad \textbf{(A.16)}$$

where *f* superscripts indicate variables applying to foreign investors. Clearly foreign investors require a premium to hold what to them are risky domestic assets.

This creates a problem in describing the market equilibrium since exchange rate uncertainty means that a premium on foreign assets is required for domestic investors to hold foreign assets, whereas a premium on domestic assets is necessary for foreign investors to hold domestic assets. Both cannot be true at the same time. This suggests that the market will tend to become segmented, in that if asset supplies are such that domestic wealth is insufficient to

hold the entire stock of domestic assets, then it will be necessary for there to be a premium on domestic assets. In this case domestic residents will hold only domestic assets as foreign assets do not provide any reward for taking on the extra risk.

The asymmetry introduced into the market by exchange rate uncertainty seems to be an obvious explanation for the home-country bias in investment portfolios. However, in the literature this has tended to be dismissed as an explanation for the lack of international portfolio diversification because of the possibility that it can be eliminated entirely by covering the exchange rate risk in the forward markets. In this case there is no uncertainty so that equilibrium is attained when the forward premium is equal to the interest differential between two markets.

However, there is a cost associated with purchasing forward cover that may be treated in a similar way to a tax. Taxes are the next source of asymmetry to be considered.

A.3. International taxation of capital

We next consider the implications for international capital markets of asymmetries in the international taxation of capital. This same framework can also be used to take account of other asymmetries such as a preference for domestic capital or capital controls.

The taxation of the capital income belonging to the residents of one country (the home country) that is generated in another country (the source country) tends to be very complicated in that it reflects aspects of the tax system in each country. An implication of this is that tax rates on capital income depend on both the home country of the investor and the host country of the investment. The asymmetries that this implies might be sufficient to explain the home-country bias of international investment portfolios.

To investigate this further, assume that covered interest parity holds so that the gross return on the safe asset in each country is equalized at the rate r. Assume further that the interest income provided by the safe asset is taxed at the rate t^m and that the income provided by risky assets is taxed at the rate $t^m{}_i$, where, as before, m refers to the individual and i refers to the asset. The incorporation of taxation leads to the amendment of equations A.3 and A.4 for the mean and variance of the end of period value of the portfolio as follows:

$$E(W^m_{+1}) = (1+(1-t^m)r)B^m + \sum_{i=1}^{n}(1+(1-t^m_i)E(\rho_i))X^m_i \qquad \textbf{(A.17)}$$

$$Var(W^m_{+1}) = \sum_{i=1}^{n}\sum_{j=1}^{n} 2(1-t^m_i)(1-t^m_j)X^m_i X^m_j \sigma_{ij} \qquad \textbf{(A.18)}$$

Solving as before leads to the following equilibrium condition for the investor:

$$A^m E(\rho_i) - B^m_i r = \sum_{j=1}^{n}(1-t^m_j)X^m_j \sigma_{ij} \qquad \textbf{(A.19)}$$

where A^m is $1/\gamma^m$ and $B^m_i = \dfrac{T^m_i}{\gamma^m} - \dfrac{\lambda^m_i - \lambda^m}{rU^m_1(1-t^m_i)}$, where the $\lambda^m{}_i$ represent Lagrange multipliers on the inequality constraints that asset holdings must be positive, which may or may not be

binding and $T_i^m = \frac{(1-t^m)}{(1-t_i^m)}$. is a measure of how highly taxed is asset i in relation to other assets from the perspective of individual m.

To solve for equilibrium asset demands, it is necessary to sum A.19 over all investors and set aggregate demands equal to the available supply. Thus in equilibrium:

$$AE(\rho_i) - B_i r = \sum_{j=1}^{n} \sum_m (1-t_j^m) X_j^m \sigma_{ij} \qquad \textbf{(A.20)}$$

where $A = \sum_m A^m, B_i = \sum_m B_i^m$. This expression may be written in a slightly different way as:

$$AE(\rho_i) - B_i r = \sum_{j=1}^{n} (1-\bar{t}_j) X_j \sigma_{ij} \qquad \textbf{(A.21)}$$

where $\bar{t}_j = \sum_m t_j^m \frac{X_j^m}{X_j}$ is a weighted average of the tax rates paid by all investors on asset j . It is possible to use this expression to develop a model of how the risk premium on any particular asset is related to the risk premium on the market portfolio. Multiplying equation A.21, the share of asset i in the market portfolio, summing over all risky assets and rearranging gives:

$$(1-\bar{\bar{t}}_m) E(\rho_M) - r(1-\bar{\bar{t}}_M) = \sum_{i=1}^{n} s_i (1-\bar{t}_i) r \left[\frac{B_i}{A} - 1 \right] + \frac{W}{A} \sum_{i=1}^{n} \sum_{j=1}^{n} s_i s_j (1-\bar{t}_i)(1-\bar{t}_j) \sigma_{ij}$$

(A.21a)

where $(1-\bar{\bar{t}}_M) = \sum_{i=1}^{n} \frac{s_i (1-\bar{t}_i) E(\rho_i)}{E(\rho_M)}$ is a weighted average of the tax rates paid on all assets, where the weighting is slightly different to that used to calculate $\bar{t}_M$. Re-writing this expression and substituting back into A.21 gives:

$$(1-\bar{t}_i)(E(\rho_i) - r) = \beta_i \left[(1-\bar{\bar{t}}_M) E(\rho_M) - r(1-\bar{\bar{t}}_M) \right]$$

(A.21b)

$$+ (1-\bar{t}_i) r \left(\frac{B_i}{A} - 1 \right) - \beta_i \sum_{i=1}^{n} s_i (1-\bar{t}_i) r \left(\frac{B_i}{A} - 1 \right)$$

where $\beta_i = \frac{\sum_{j=1}^{n} (1-\bar{t}_j) s_j \sigma_{ij}}{\sum_{i=1}^{n} \sum_{j=1}^{n} s_i s_j (1-\bar{t}_i)(1-\bar{t}_j) \sigma_{ij}}$.

This expression is equivalent to the standard CAPM equation given earlier as equation A.9b and indicates how the required rate of return on asset i is related to the return on the market as a whole. In the absence of risk ($\beta = 0$), this shows how the gross return on relatively highly taxed assets must be higher so that the net return is equalized.

It is useful to draw attention now to the various effects that taxes might have on the asset returns.

Solving for r from A.21 and then substituting into A.19 gives:

$$B_i^m\left(\frac{A^m}{B_i^m}-\frac{A}{B_i}\right)E(\rho_i)+\frac{B_i^m}{B}\sum_{j=1}^{n}(1-\overline{t_j})X_j\sigma_{ij}=\sum_{j=1}^{n}(1-t_j^m)X_j^m\sigma_{ij} \qquad \textbf{(A.22)}$$

The n asset demand equations of investor m may then be stacked to solve for the optimum asset holdings. In matrix notation A.22 may be written:

$$E(\boldsymbol{\rho}^{\mathbf{a}})+\mathbf{B}\boldsymbol{\Gamma}\mathbf{X}^{\mathbf{a}}=\boldsymbol{\Gamma}\mathbf{X}^{\mathbf{ma}} \qquad \textbf{(A.23)}$$

where $\boldsymbol{\rho}^{\mathbf{a}}{}_j=B_i^m\left(\frac{A^m}{B_i^m}-\frac{A}{B_i}\right)E(\rho_i)$, $\mathbf{B}$ is an nxn diagonal matrix with jth element given by $\frac{B_i^m}{B}$, $\mathbf{X}^{\mathbf{a}}{}_j=(1-\overline{t_j})X_j$ and $\mathbf{X}^{\mathbf{am}}{}_j=(1-t_j^m)X_j^m$. Individual m's portfolio is then given by:

$$\mathbf{X}^{\mathbf{am}}=\boldsymbol{\Gamma}^{-1}E(\boldsymbol{\rho}^{\mathbf{a}})+(\boldsymbol{\Gamma}^{-1}\mathbf{B}\boldsymbol{\Gamma})\mathbf{X}^{\mathbf{a}} \qquad \textbf{(A.24)}$$

In a world with symmetry of taxation and equal relative risk aversion across investors, the first term is equal to zero and, as before, the individual investor's portfolio will be equal to the market portfolio. In practice, differences in the tax treatment of different investors will cause the first term to be non-zero in a particular way. Consider the case of asset i,

$$B_i^m\left(\frac{A^m}{B_i^m}-\frac{A}{B_i}\right)=\frac{W^m}{\gamma^{rm}}\left(1-\frac{T_i^m}{\overline{T_i}}\right) \qquad \textbf{(A.25)}$$

where $\overline{T_j}=\sum_m\frac{W^m}{W}T_i^m$, is a weighted average of the tax disadvantage of asset i to all investors.

What this expression indicates is that the asset holding of a particular investor depends upon the comparative advantage that the investor has in particular assets. It may be that asset i is relatively highly taxed from m's perspective in that $t^m{}_i > t^m$ so that $T^m{}_i > 1$, but if investor m is less highly taxed in this asset than other investors ($T_i^m < \overline{T_i}$) then he will tend to hold more of it in his portfolio.

In general domestic residents have a comparative advantage in assets issued in their own country, and this partly explains the home-country bias.

APPENDIX B

Finance in Germany and the UK

B.1. Introduction

The purpose of this Appendix is to attempt to describe the current disposition of portfolios of borrowers and investors in the UK and Germany. The reason for wishing to do this is partly to consider what descriptive statistics might be most useful in portraying the different financial positions in the various European countries. It is also to draw attention to the role of equity in transferring funds from one sector to another, and to emphasize the influence from foreign sources in each country. Questions of this type can be addressed by considering both the suppliers of funds, mainly households, and asking what proportion of their portfolio is invested in equity or debt, domestic or overseas assets; and by considering the users of funds, mainly non-financial companies, and considering what proportion of their funding comes in the form of equity and debt and what proportion comes from the domestic or overseas economies. In attempting to answer these types of questions, it is immediately clear that financial intermediaries play a key role in channelling funds from their source to their use. This is certainly the case here and some allowance needs to be made for this. It should also be noted that in an open economy there is no necessity that the portfolio of assets held by domestic investors need reflect the portfolio of assets issued by domestic users of funds.[15]

B.2. Net financial wealth by sector

Table B.1. shows estimates of the net financial wealth of the various economic sectors. The table shows a fair degree of similarity across the two countries in that funds are transferred from the personal sector to companies and the government in both countries. The various financial companies have relatively small net positions. In the UK, the net contribution of the overseas sector is negligible, whereas in Germany the overseas sector is a substantial user of savings. This largely reflects the history of current account positions in the two countries. It should be stressed therefore that the foreign influence in each country is best judged by the gross holdings of different instruments rather than the net position. Following on from this, it is useful to look at the type of financial instruments used to bring about a transfer of funds from persons to companies and the government. This is shown in Table B.2.

There is a slight difficulty in making comparisons across these two countries, in that the German accounts identify a separate housing sector which includes borrowing undertaken by owner-occupiers which is therefore excluded from the accounts of the household sector. To make comparisons more meaningful, therefore, the outstanding value of loans secured on dwellings in the UK is shown separately and net asset holdings are shown as a proportion of net financial wealth plus loans secured on dwellings.

One of the more striking similarities between the two countries is the extent to which savings are intermediated through institutions. In broad terms, short-term assets in each country are the liabilities of a bank or similar financial intermediary (building society in the UK). In the

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15 Data is from *Financial Statistics* for the UK and *OECD Financial Statistics Part 2* for Germany. The data sources are not standardized so that in some places only rough comparisons are being made. Nevertheless some of the differences are sufficiently large that different classifications used do not affect the conclusions drawn.

UK, close to 80% of net wealth (excluding mortgages) is invested in banks and building societies or pensions funds and unit trusts. In Germany, over 75% of net wealth is invested in this way. Direct holding of securities is therefore much less important in both countries. However, there is a large difference in the share of funds allocated to banking type institutions and pension funds in each case. In Germany, close to 50% of net financial wealth is held in short-term assets whereas in the UK almost 60% is held in pension fund and unit trust assets.

The final allocation of household portfolios is dependent upon how the various institutional investors entrusted with household savings allocate their portfolios. Table B.3 shows the allocation of the portfolios of the banking institutions in each country. These figures show that, in broad terms, banking institutions in both countries deal mainly in debt instruments. They show that substantial maturity transformation is carried out by German banks who have a large net deficit in short-term assets and a corresponding surplus in long-term assets. This appears to happen less in the UK, although the figures do not distinguish long-term and short-term maturities to sufficient degree. These institutions in both countries have a positive net position in equity largely reflecting their need for capital. The German figures do not distinguish foreign from domestic securities, but the UK evidence suggests a large proportion of equities held by these institutions is in overseas equities. This will partly reflect the international nature of the UK banking system which is not brought out in the above table because it does not show who are the holders of the assets and liabilities. It is useful to use the information from other sectors to build up a profile of the holders and suppliers of the instruments generated by the banking institutions. This is shown in Table B.4.

In reading Table B.4, it should be noted that the total stock of assets in these instruments when the holdings of domestic banking institutions are included is equal to the total stock of liabilities. However, the total gross stock of liabilities of the banking institutions does not correspond exactly to the outstanding gross stock of assets of the other sectors. In Germany, the non-bank sectors have claims in excess of the liabilities of the banking institutions, whereas the opposite is the case in the UK. Nevertheless, the correspondence is fairly close and the information may be used to estimate the importance of different sectors in the banking institutions' portfolios.

Table B.4 shows the important international role of the banking system in each country. In Germany, most short-term lending by the banking system is to overseas residents and while short-term deposits from overseas are of a similar magnitude this is a much smaller proportion of the total. In the UK, the overseas element is substantial on both sides of the balance sheet. The important point to note here is that while the net contribution of the overseas sector is relatively small, the gross level is substantial. The other main intermediary function is provided by the pension funds. Table B.5 shows the portfolio composition of these institutions in each country.

There is a clear difference in the portfolio allocation of UK and German pension funds. Pension funds in the UK invest heavily in equity whereas those in Germany invest in long-term bonds. UK pension funds also invest heavily in overseas securities. Unfortunately the OECD figures do not split out the holdings of equity into foreign and domestic assets, so it is not possible to make a direct comparison between the pension funds holding of foreign securities in the two countries. However, the relatively low total holding of equity would suggest that they hold rather a small proportion of their portfolios in foreign equities.

The figures set out above make it possible to provide a rough estimate of the significance of company securities in the ultimate portfolios of personal investors. One way of doing this is to assume that the allocation of the gross portfolio of the financial intermediaries is independent of the source of their funds. Thus working from the supply of funds from households, it is possible to estimate the ultimate destination of these funds. Three possible destinations are considered: non-financial companies, the public sector and overseas. Flows to households themselves are netted out in the process. This leads to the rough estimate that 49% of household saving is ultimately invested in UK company securities, 17.1% in British government securities and 33.9% overseas.

A similar approach, which also makes an assumption about the allocation of long-term assets, leads to an estimate for Germany that 9.5% of household wealth is ultimately invested in shares, 36.7% in the debt of non-financial enterprises, 32.4% in public sector securities and 21.4% overseas. If one assumes that all of the shares are those of German non-financial companies then these figures suggest that roughly half of the wealth of the household sector in each country is invested in domestic companies, with the rest being invested either abroad or in the securities of the government. However, there is a large difference in the role of equity finance, with most of the investment in UK companies being in the form of equity investments held indirectly through pension funds, whereas in Germany, the role of debt is much more important. These differences can be gauged by considering the balance sheets of non-financial companies. Table B.6 highlights the different financial position of companies in the two countries. In Germany, finance is very largely supplied by debt. In the UK, equity is more important.

Table B.1. Net financial wealth by sector in Germany and the UK

Germany	DM billion in 1992	United Kingdom	UK£ billion in 1995 Q2
Non-financial enterprises	-1048.99	Industrial and commercial companies	-928.3
Public sector	-855.70	Public sector	-277.2
Central bank	30.44	Banks and building societies	40.3
Other monetary institutions	148.25		
Insurance companies and pension funds	59.78	Life assurance and pension funds and remaining FIs	-32.8
Social security funds	170.22		
Households	3231.18	Personal sector	1211.2
Housing	-1103.46		
Overseas	-632.46	Overseas	-14.0

Note: The table uses the classification of sectors used in the sources from which the figures are drawn.

Table B.2. Allocation of personal sector net financial wealth by instrument, Germany and the UK

Germany	DM billion	in 1992	United Kingdom	UK£ billion in 1995 Q2	
Shares (8)	183.56	[5.7]	UK company securities (a)	204.5	[12.8]
Pension fund assets (10)	918.82	[28.4]	Pension fund and unit trust assets (b)	942.2	[59.1]
Long-term assets (7), (9)	515.56	[16.0]	Government securities (c)	89.4	[5.6]
Short-term assets (2), (3), (4), (5), (6)	1520.53	[47.1]	Short-term assets (d)	321.3	[20.1]
			Loans secured on dwellings (e)	-384.1	
			Overseas securities (f)	17.4	[1.1]
Miscellaneous (1) and (11)	92.71		Miscellaneous (g)	20.5	
Total	3231.18		Total	1211.2	

Notes: Figures in parentheses for Germany refer to the line numbers in *OECD Financial Statistics*. For the UK all information is derived from Table 9.1A in *Financial Statistics* where (a) refers to UK company securities, (b) to unit trust units and life assurance and pension funds, (c) to public sector assets and liabilities, (d) is all non-public sector instruments other than those specifically identified and includes bank and building society instruments, trade credit, (e) is loans secured on dwellings, (f) is overseas securities and (g) includes miscellaneous instruments, accruals adjustments and direct investment.

Figures in square brackets are the shares of total net assets plus loans secured on dwellings.

Table B.3. Allocation of assets and liabilities of domestic banking institutions by instrument in Germany and the UK

Germany	DM billion in 1992		United Kingdom	UK£ billion in 1995 Q2	
	Assets of other sectors	Liabilities of other sectors		Assets of other sectors	Liabilities of other sectors
Shares (8)	92.95	155.31	UK company securities (a)	81.8	43.2
		[3.1]			[2.3]
Pension fund assets (10)	20.9	0	Pension fund and unit trust assets (b)		
Long-term bonds (7), (9)	1078.97	3556.78	Government securities (c)	6.4	45
		[70.6]			[2.4]
Short-term assets (2), (3), (4), (5), (6)	3662.7	1269.2	Short-term assets (d)	1757.3	1277.5
		[25.2]			[67.0]
			Loans secured on dwellings (e)		384.1
					[20.1]
			Overseas securities (f)	0	138.9
					[7.3]
Miscellaneous (1) and (11)	2.69	55.51	Miscellaneous (g)	21.3	18.4
		[1.1]			[1.0]
Total	4858.21	5036.8	Total	1866.8	1907.1

Notes: Figures in parentheses for Germany are for the Central Bank and other monetary institutions and refer to the line numbers in *OECD Financial Statistics*. For the UK all information is derived from Table 9.1A in *Financial Statistics* where (a) refers to UK company securities, (b) to unit trust units and life assurance and pension funds, (c) to public sector assets and liabilities, (d) is all non-public sector instruments other than those specifically identified and includes bank and building society instruments, trade credit, (e) is loans secured on dwellings, (f) is overseas securities and (g) includes miscellaneous instruments, accruals adjustments and direct investment.

Table B.4. Holders and suppliers of short-term assets and liabilities in Germany and the UK

Germany	DM billion in 1992		United Kingdom	UK£ billion in 1995 Q2	
	Assets of other sectors	Liabilities of other sectors		Assets of other sectors	Liabilities of other sectors
Non-financial enterprises	1046.96	702.89	Industrial and commercial companies	181.4	271.7
	[25.6]	[41.3]		[10.8]	[17.1]
Public sector	204.99	62.45	Public sector	34.4	16.7
	[5.0]	[3.7]		[2.0]	[1.1]
Insurance companies and pension funds	337.78		Life assurance and pension funds and remaining FIs	215.3	142.1
	[8.2]			[12.8]	[9.0]
Social security funds	102.74	0.33			
	[2.5]	[-]			
Households	1599.3	78.77	Personal sector	444.3	507.1
	[39.0]	[4.6]		[26.4]	[32.0]
Housing	24.15	21.71	O/w loans secured on dwellings		384.1
	[0.6]	[1.3]			[24.2]
Overseas	779.83	835.45	Overseas	805.0	648.7
	[19.0]	[49.1]		[47.9]	[40.9]
Total	4095.75	1701.6	Total	1681	1586.3
memo:			memo:		
Domestic banking institutions	1269.3	3662.7	Domestic banking institutions	1661.6	1757.3

Note: Figures in parentheses indicate the share of each sector in the total.

Table B.5. Allocation of net assets of insurance companies and pension funds by instrument in Germany and the UK

Germany	DM billion in 1992	United Kingdom	£ billion in 1995 Q2
Shares (8)	55.7	UK company securities (a)	419.7
	[6.4]		[45.9]
Pension fund assets (10)	-670.77	Pension fund and unit trust assets (b)	-933.5
Long-term bonds (7), (9)	478.22	Government securities (c)	142.7
	[54.9]		[15.6]
Short-term assets (2), (3), (4), (5), (6)	337.02	Short-term assets (d)	73.2
	[38.7]		[9.0]
		Overseas securities (f)	278.3
			[30.4]
Miscellaneous (1) and (11)	-140.39	Miscellaneous (g)	-13.2
Total	59.78	Total	-32.8

Notes: Figures in parentheses for Germany refer to the line numbers in *OECD Financial Statistics*. For the UK all information is derived from Table 9.1A in *Financial Statistics* where (a) refers to UK company securities, (b) to unit trust units and life assurance and pension funds, (c) to public sector assets and liabilities, (d) is all non-public sector instruments other than those specifically identified and includes bank and building society instruments, trade credit, (e) is loans secured on dwellings, (f) is overseas securities and (g) includes miscellaneous instruments, accruals adjustments and direct investment.

Figures in parentheses show the share of each security as a percentage of net assets invested in securities (that is rows 1, 3, 4 and 5).

Table B.6. Balance sheet of non-financial companies by instrument in Germany and the UK – net liabilities

Germany	DM billion in 1992	United Kingdom	£ billion in 1995 Q2
Shares (8)	273.45	UK company securities (a)	830.6
Pension fund assets (10)	227.86	Pension fund and unit trust assets (b)	0
Long-term bonds (7), (9)	933.36	Government securities (c)	-5
Short-term assets (2), (3), (4), (5), (6)	-334.07	Short-term assets (d)	90.3
		Overseas securities (f)	-2.2
Miscellaneous (1) and (11)	-41.61	Miscellaneous (g)	14.6
Total	1048.99	Total	928.3

Notes: As in Table B.5.

APPENDIX C

Chronology

C.1. The state of controls in 1979

Austria

State as of 1/1/79:

Some inward capital transfers are at present restricted: loans and credits by non-residents to residents require prior approval by the National Bank, as does the acquisition by non-residents of Austrian shares and real estate. Non-residents' purchase of Austrian securities is freely allowed, as is some inward direct investment.

The short-term foreign assets of authorized banks are not subject to limitation. In 1978, the National Bank licensed financial loans to non-residents with maturities of more than one year only to the extent that funds were made available through the redemption of loans outstanding on 31/12/77, plus 7%. Residents are also allowed to purchase foreign securities, although transactions must be carried out on a spot basis, together with shares and real estate. Direct investment abroad is freely permitted too.

Belgium and Luxembourg

State as of 1/1/79:

All capital transactions with convertible area countries may be carried out through the free market.

A two-tier exchange rate system is operated.

The prior approval of the Ministry of Finance is required for issues of securities on the Belgian capital market by non-residents and for public bids by foreign companies or individuals for the purchase or exchange of shares issued by Belgian companies.

Denmark

State as of 1/1/79:

Both inward and outward transfers of capital and all borrowing and lending between residents and non-residents are subject to exchange control.

A positive net commercial foreign position for foreign exchange dealers and banks is, in principle, allowed only as long as it does not exceed Dkr2 million, or 15% of capital and reserves, whichever is higher. Portfolio investment abroad is generally not allowed. Residents may subscribe to or purchase listed foreign bonds with an original maturity above two years, although sale or redemption does not entitle the seller to reinvest the proceeds in other foreign securities. No special permission is required for residents to make transfers abroad, within certain limits, in connection with most direct investments or with private acquisitions of real estate abroad. Residents have an obligation to repatriate proceeds realized from the sale or liquidation of assets abroad.

The sale to non-residents of bonds and shares listed on a Danish stock exchange is freely permitted, as long as they do not constitute direct investment. Inward direct investments do not require approval, within strict limits. Permission is granted liberally in accordance with Denmark's obligations as a member of the EU and OECD.

Licensing practice *vis-à-vis* residents of member countries of the EEC is based on EEC Directives on capital movements.

Finland

State as of 1/1/79:

Outward transfers of capital by residents require individual approval; investment by residents in foreign securities or real estate is rarely permitted. Lending to non-residents is normally restricted to export credits.

Foreign currency borrowing by Finnish residents requires specific approval. Medium-term and long-term borrowing abroad is subject to a selective deposit requirement.

Non-residents may purchase bonds, debentures or stocks quoted on the Helsinki Stock Exchange through an authorized bank by debiting a convertible or capital account, but in the latter case any returns may not be transferred abroad without permission.

All incoming capital transactions regarding direct investment must be approved by the Bank of Finland.

France

State as of 1/1/79:

Capital transfers between France and all other countries are subject to exchange control approval.

Except for purchases of French and foreign securities abroad (though not equities with a maturity of less than five years issued by foreign governments), outward transfers of resident-owned capital are generally restricted. Capital receipts from foreign countries are permitted freely (except for some special controls), provided that the foreign exchange proceeds are surrendered by sale in the exchange market.

Authorized banks' liabilities in francs and foreign currency to non-residents are free from limitation.

Special controls (additional to any exchange control requirements that may be applicable) are maintained over borrowing abroad and over inward and outward direct investment.

Germany

State as of 1/1/79:

Residents and non-residents may export capital freely without a licence.

Domestic and foreign securities of all types may be imported or exported freely.

The prior approval of the Bundesbank is required for sales to non-residents of specified domestic money market paper and of fixed-interest securities of German issuers with less than four years remaining to maturity (the latter is also subject to a withholding tax of 25%). At present, such approval is not being given.

Banks are subject to minimum reserve requirements on the level of their foreign liabilities with maturities of less than four years.

Greece

State as of 1/1/79:

Nearly all investments in Greece by non-residents are subject to approval. There are extensive restrictions on the repatriation of capital, profits and dividends.

Transfers of capital abroad by residents require approval. The purchase abroad of securities for personal use is not normally permitted.

Ireland

State as of 1/1/79:

Exchange control approval is required for all transfers of capital to non-residents.

There are no restrictions on the inflow of capital, but inward direct investment requires exchange control approval and net inflows into the banks may be subject to guidelines. The following guidelines are in force at this time: banks are required to deposit with the Central Bank 50% of most net capital inflows. Application must be made to the Central Bank for public sector and non-bank private sector borrowing from non-residents.

Italy

State as of 1/1/79:

Inward and outward movements of non-resident capital are free. Nearly all loans, however, from non-residents to residents, and from residents to non-residents, require specific authorization, and are severely curtailed.

A deposit requirement applies to outward transfers of resident-owned capital: the transferor must lodge a lira deposit equivalent to 50% of the amount transferred in a non-interest-bearing account. Direct investment in OECD countries by residents is permitted in any form and without any limit; other direct investment and residents' purchases of foreign securities require prior approval.

Netherlands

State as of 1/1/79:

Most external capital transactions are free.

The inward transfer of capital originating from short-term and medium-term borrowing from abroad by non-bank residents continues to be restricted for reasons of monetary policy. Long-term borrowing abroad for domestic use by resident enterprises is generally permitted. Apart from this, the inward transfer of foreign capital (other than for portfolio investment in listed securities or the purchase of real estate) is permitted only if the capital constitutes a direct investment.

The curtailment of external borrowing is also applied to authorized banks. Any net foreign indebtedness on their part is restricted by the 'five million regulation'.

Portugal

State as of 1/1/79:

All private capital transactions between Portugal and foreign countries are subject to prior authorization by the Bank of Portugal.

Foreign direct investments are permitted in all sectors except those which, under the general law, are closed to private enterprise corporations. The transfer abroad of the proceeds from the liquidation of foreign investments is authorized after five years.

Spain

State as of 1/1/79:

The granting of loans by non-residents to residents requires authorization. Purchases by non-residents of bonds and other fixed-income securities are unrestricted when financed either with convertible pesetas or with pesetas resulting from the conversion of foreign currencies. As a general rule, there are no restrictions on foreign capital investments – both foreign direct and portfolio – that lead to the ownership of up to 50% of the capital of Spanish companies. In some cases this limit may be exceeded.

Outward transfers of capital of all types require approval by the regulatory body concerned. This is granted liberally for loans and direct investment provided they contribute to the expansion of Spanish exports. Furthermore, authorized banks may extend various types of credit to non-residents, provided that this credit is financed with funds deposited in Spain in non-resident convertible currency accounts.

Sweden

State as of 1/1/79:

Direct investment abroad by residents requires authorization, which normally is granted only if the investment is considered likely to benefit the balance of payments. Residents are not normally permitted to extend financial loans to non-residents. Permission is needed for the issuance of bonds and shares in Sweden by non-residents; bond issues by other Scandinavian countries have been admitted.

Residents who wish to receive loans or credits from non-residents must receive authorization to do so. Borrowing abroad for periods of at least five years for purposes that are considered likely to benefit the balance of payments is normally permitted. Under certain conditions, authorized banks may be allowed to borrow abroad at long-term for purposes of on-lending to residents. Residents do not need authorization to sell portfolio holdings of foreign securities to non-residents. Foreign direct investments in Sweden require authorization, which is usually given. Ceilings are placed on the net foreign exchange holdings of each authorized bank. Non-residents' holdings of krona in external krona accounts must not be abnormal and they cannot earn interest.

United Kingdom

State as of 1/1/79:

There are no restrictions on capital transfers by residents into the beneficial ownership of residents of other scheduled territories.

All capital transfers by residents to countries outside the scheduled territories require approval.

C.2. The imposition and the removal of short-, medium- and long-term capital controls: 1969–95

Austria

17/9/69: The special licence required for the public to enter into savings programmes or capital accumulation programmes with foreign investment funds was not being issued; however, it was issued again on 16/2/70.
21/1/70: Residents were again permitted to transfer funds to their bank accounts abroad, provided that amounts so transferred were used immediately for permitted payments.
18/8/71: A gentleman's agreement provided for the sterilization of 75% of the growth in banks' external liabilities (extended until 30/6/74).
24/8/71: Approval required for the crediting to free schilling accounts of schilling proceeds arising from sales of freely convertible foreign currencies for the account of non-residents.
9/10/72: A gentlemen's agreement was concluded between the National Bank and the domestic banks on the restriction of sales of domestic fixed-interest-bearing securities to non-residents, allowing, however, a small quota (30/9/72 – 31/12/74).
27/11/72: The liberalization of inward capital movements was suspended until 31/12/75.
25/9/73: A new general licence for the sale of domestic securities to non-residents, for which there was a global quota of S641 million.
29/11/73: The gentleman's agreement calling for banks to abstain from the conversion of foreign currency or the advance repatriation of foreign assets was extended until 30/6/74.
7/74: Some easing of the restrictions on inflows regarding the granting of licences for inward direct investment in the secondary sector and for commercial credits granted by non-residents to residents on exports and imports.
12/12/74: Temporary suspension of the gentleman's agreement requiring interest-free deposits with the National Bank equal to 75% of any increase in banks' schilling liabilities to non-residents. However, the credit institutions were to continue to abstain from increasing domestic liquidity by taking up foreign currency funds.
1/1/75: The National Bank indicated that applications for additional sales of domestic securities to non-residents would be granted liberally once the quota had been taken up in full.
20/6/75: Slight liberalization of capital inflows and outflows.
1/1/76: The restrictions imposed in 1972 on inward direct investment, inward portfolio investment and inward commercial credits of less than one year maturity were lifted. In most cases this concerned transactions with 'multilateral member countries'.
30/1/78: Foreign currency loans to non-residents with a maturity of more than one year could be made only up to a limit of 7% over the redemption of existing loans.
2/11/79: Under a new gentleman's agreement, banks undertook not to increase their net foreign position up to mid-1980, except for hedging transactions to cover exchange risks.
31/12/79: Agreement whereby commercial banks undertook not to convert assets denominated in foreign currencies into Austrian schillings for the sole purpose of increasing their liquid schilling assets.
1/1/80: Authorization granted for the additional participation of non-residents in domestic enterprises raising their capital to the legal minimum.
24/4/81: Restrictions on free schilling accounts lifted.
1/8/81: General licence extended to the acquisition by non-residents of domestic securities, shares and real estate.
1/1/82: The National Bank specified that foreign currency credits by domestic banks to non-residents could not be more than 15% above the level outstanding at the end of 1981.
1/1/83: Foreign currency credits to non-residents by domestic banks during 1983 cannot be more than 15% of the stock of such credits outstanding at the end of 1982.
1/11/86: Major banks permitted to borrow from non-residents in foreign currency over the medium and long term.

The free purchase of quoted securities was extended to cover all securities quoted on a recognized securities exchange.

Long-term borrowing from non-residents for investment purposes was further liberalized, as was long-term borrowing by domestic enterprises from non-resident equity holders.
1/2/89: Virtually all restrictions on long-term capital transfers were abolished. The only remaining restrictions concerned the issuance of securities on foreign capital markets and of foreign securities on domestic capital markets; and the acquisition of real estate by non-residents.
1/1/90: The exchange control system was substantially liberalized, and most restrictions on capital transfers were eliminated.
4/11/91:All foreign exchange controls were abolished. There remain two restrictions under the OECD Capital Movements Code, reflecting restrictions concerning inward direct investment and real estate purchase by non-residents.

Belgium and Luxembourg

24/3/71: Authorized banks were requested not to allow their net external spot debtor position to deteriorate below that for a base period (request was withdrawn on 16/9/71).
11/5/71: The official and the free exchange markets to be completely separated.
26/11/71: The ceilings established on 1/10/69 for each authorized bank on the long spot position in foreign currencies relating to the official market were suspended.
9/3/72: Banks not to allow their net debtor spot positions *vis-à-vis* non-residents in francs to increase beyond the level at the close of business on that date.
20/11/72: A new gentleman's agreement was concluded with all banks whereby a part of all their liabilities was to be sterilized by transfer to a non-interest-bearing blocked account at the National Bank (30/9/73).
26/2/73: The marginal reserve requirement against the growth in the net liabilities of financial institutions on convertible accounts in Belgian francs over the level in the base period (August 1972) was to increase gradually from 70% to 100% by 20/4/73, while the average reserve requirement against such liabilities in the same base period was to increase from the equivalent of 17.5 to 25% by 20.4.1973.
18/9/73: A limit was established on the net debtor position of each bank.
19/9/73: Belgian banks re-imposed the negative interest charge on non-resident holdings of Belgian francs in convertible accounts.
1/1/74: The Belgian banks decided to suspend the negative interest charge on holdings in convertible accounts exceeding the reference ceiling.
25/1/74: A ceiling was imposed on the net foreign asset position of Belgian and Luxembourg banks.
28/1/74: The prohibition of 11/5/71 on the payment of interest by banks in Belgium and Luxembourg on balances in convertible accounts was lifted.
1/2/74: The elimination of the reserve requirements relating to convertible accounts, both with respect to their level and any increases or decreases therein.
20/2/75: The banks were asked not to encourage the expansion of Belgian franc deposits in foreign countries.
1/4/76: Exchange controls over forward exchange transactions were tightened.
31/3/78: The Belgo-Luxembourg Exchange Institute has powers to take action against speculative capital movements: e.g. to limit or prohibit the payment of interest on non-resident-owned deposits and claims, etc.
25/11/81: The minimum period of foreign ownership of quoted bonds redeemable through the official market was increased from six to 18 months.
18/3/83: Authorization for major commercial banks to keep long positions in spot foreign currency on the official market in excess of a ceiling of BF20 million withdrawn.
5/3/90: The dual exchange rate system was eliminated, and all existing restrictions on payments and transfers were eliminated.

Denmark

28/5/71: The annual ceiling of Dkr1 million on long-term borrowing abroad was raised to Dkr5 million.
29/11/71: The net 'commercial' foreign position of authorized foreign exchange dealers was required to be between zero and Dkr2 million, or 15% of equity capital.
13/1/72: The 1972 'bond' quota for non-residents' purchases of Danish kroner bonds was fixed at Dkr100 million, the same amount as in 1971; for the first half of 1973 a quota of Dkr125 million was set.
1/1/73: Portfolio investment by non-residents in Danish shares was almost completely liberalized.

The net commercial foreign position of authorized dealers was allowed to be negative (up to a limit) for the first time.
19/3/73: A complete revision of the foreign exchange regulations came into force.

The provisions on direct investments were relaxed.

The purchase by non-residents of Danish shares for portfolio investment was fully liberalized.

The issue of shares and certificates abroad by residents was partially liberalized.
1/1/74: The taking up of financial loans abroad was made subject to more stringent conditions. The maximum permitted amount remained unchanged at Dkr5 million per borrower per year.
13/9/74: The ceiling of Dkr5m per borrower per year on financial loans taken up abroad was raised to Dkr20m, and the conditions for raising such loans were eased somewhat.
1/12/74: Sales to non-residents of Danish bonds dealt in on stock exchanges and denominated in Danish kroner were fully liberalized.
11/12/75: The restrictions on non-bank residents' forward exchange transactions were relaxed considerably.
29/12/76: The maximum amount that a non-resident could maintain in his krone accounts increased from Dkr75,000 to Dkr200,000.
1/1/78: Residents permitted to purchase or subscribe to listed foreign bonds with an original maturity above two years, issued by certain international organizations. The use of the redemption proceeds thereof was restricted.
22/3/78: Authorized foreign exchange dealers' commercial net balances in accounts with foreign currencies may be negative to the extent of an amount equal to the loans which the authorized dealer has granted to residents in foreign currency, with a limit for banks of up to 5% of net worth.
6/2/79: Non-residents no longer permitted to purchase from residents Danish Government krone bonds issued since 1975 except with permission from the National Bank, which was not normally granted.
1/5/81: Regulations on the foreign exchange market were relaxed such that exchange rates would be set by dealers and commercial buyers of foreign exchange (previously, all transactions had to be carried out at fixed rates set at midday for major foreign currencies).
25/3/82: Sales of long-term bonds to non-residents would not be restricted.
1/7/82: The upper limits on inward and outward direct investment were doubled to Dkr2 million and Dkr500,000, respectively.
22/12/82: The maximum amount which normally may be held in a krone-denominated account by a resident with an authorized bank was increased from Dkr200,000 to Dkr300,000.
1/5/83: Upper limits on various restrictions on capital inflows and outflows were increased: residents were permitted to acquire not only bonds issued by international organizations but also bonds listed on a stock exchange; the limit on direct investments in Denmark by non-residents was raised from Dkr2 million to Dkr5 million a year, and that on direct investments abroad by residents from Dkr500,000 to Dkr2 million; and authorization was granted for residents to borrow abroad without restriction, provided that the maturity of each such loan was at least five years.

The ban on the sale abroad of Danish government bonds was lifted.
1/1/84: Forward purchases of foreign currencies against Danish kroner from residents and non-residents allowed, as are all forward transactions (purchases and sales) not involving Danish kroner.

Purchases by residents of foreign shares listed on the stock exchange were freed from restrictions, as were foreign investments by residents in financial and commodity futures.
11/6/85: The length of the period during which residents could maintain foreign exchange accounts with Danish banks extended from 30 days to three months.

Minimum permissible maturity for finance loans contracted abroad lowered from five years to one year.

The Central Bank would introduce a liberal procedure for approving residents' purchases of unlisted foreign securities.

The upper limits on inward and outward direct investment raised to Dkr10 million.
1/10/88: Foreign exchange dealers became subject to the regulation that they must maintain a net position in foreign currency in a range equivalent to plus or minus 10% of their equity capital.

All restrictions on inward and outward capital transfers eliminated.
1/1/92: The limit on the net foreign exchange positions of banks and other financial intermediaries to 10% of own capital was abolished.

Finland

15/6/73: Medium-term and long-term borrowing abroad under loan agreements approved by the Bank of Finland after 14/6/73 became subject to a selective deposit requirement.
25/9/75: More restrictive approval criteria for borrowing abroad for investment purposes.
4/80: Bank of Finland terminates its convertible currency operations in the forward exchange market and turns over operations to authorized banks.

Banks allowed to raise forward cover for foreign exchange risks.
1/81: Banks are permitted to sell foreign exchange for current transactions.
1/81: The right of authorized banks to sell Finnish bonds and debentures to non-residents was enlarged to include new issues.
11/3/83: Authorization was granted for residents to conclude forward exchange contracts with foreign banks.
30/8/83: The maturity limit on import-financing credit was raised from three to six months.
12/84: Banks are permitted to lend abroad and invest in foreign securities.
1/3/85: Dividends from non-resident direct investment in Finland allowed to be transferred abroad through an authorized bank without prior approval.
24/6/85: The Central Bank prohibited until further notice the sale abroad of bonds and debentures quoted in the Helsinki Stock Exchange.
1/9/85: New guidelines issued on operations in the forward market granting firms the right to hedge against the foreign exchange risk arising from the difference between their foreign currency claims and liabilities.
1/1/86: Authorization granted for residents of Finland to invest in foreign listed securities.

The upper limit on lending abroad through a non-resident markka account doubled. Restrictions on import and suppliers' credits loosened.
16/5/86: Restriction on banks' use of domestic foreign currency deposits.
16/6/86: Prohibition on sale of Finnish bonds and debentures to non-residents partly rescinded.

Banks and other securities agents permitted, within limits, to sell foreign securities to residents.
8/86: Foreign credits with a maturity of at least five years for financing own operations of manufacturing and shipping companies exempted from exchange control regulations.
6/87: Restrictions relaxed on direct foreign investment, purchases of foreign housing, and foreign investments in quoted securities.
1/8/87: The Central Bank extended the exemption from the regulations of foreign credits with a maturity of at least five years to most companies.
1/10/87: The Central Bank allowed residents to enter into forward exchange and currency option contracts.
1/8/88: Restrictions relaxed on direct investment and purchases of foreign securities by raising the ceiling to Fmk0.3 million.

Direct foreign investment by non-financial enterprises will no longer require special permission.
1/6/89: Regulations on direct investments in financial and insurance sector liberalized.
1/9/89: Regulations on outward and inward capital transfers liberalized, except for outward capital transfers by private individuals for which regulation would enter into effect no later than 1/7/90; with respect to inward capital flows foreign loans of more than one year's maturity are now permitted.
1/2/90: Further liberalization of the purchase of securities in Finland and abroad.
1/3/90: Finance companies permitted to raise foreign loans to the extent allowed by limits on their foreign currency position.
1/7/90: Scope of financial sector enterprises to engage in foreign operations expanded.
1/1/91: All remaining foreign exchange controls, except those relating to the contracting of loans abroad by private individuals and comparable corporate entities, were abolished.
1/10/91: Exchange controls on the contracting of loans abroad by private individuals and comparable corporate entities were abolished.
1/1/92: Most non-residents were permitted to own shares in Finnish investment trusts.
1/1/93: Non-residents were allowed to purchase Finnish securities and own Finnish corporations without restriction.

The restriction on the acquisition of real estate by foreigners was liberalized.

France

20/1/69: Resident banks' net foreign currency position *vis-à-vis* non-residents brought under control: if it was negative on 31/1/69, they had to maintain a negative position of at least the same amount; if positive, henceforth it had to be negative or balanced.
3/3/70: Relaxation of the types of direct investments that US companies would be permitted to make in France.
1/7/70: The requirement that authorized banks with net foreign currency positions above certain limits make US dollar deposits with the Bank of France was terminated.
4/12/70: The amount up to which a firm could make transfers for commercial and industrial investment abroad was raised from F2.5 million to F5 million a year.
22/2/71: Member countries of the EEC were exempted from the special transaction controls over inward and outward direct investment, but such investment between France and other EEC countries henceforth required prior approval under the exchange control regulations; prior authorization was required for all operations that might involve a capital movement.
18/5/71: Reserve requirements against non-residents' deposits with French banks increased beyond the previous 15% upper limit, up to 100%, and to restrict the remuneration of such deposits.
3/8/71: Foreign exchange would be granted more liberally for the financing of French direct investment abroad.

Banks to prevent in future any deterioration from the 3/8/71 level in their overall net position in foreign currencies.
21/8/71: A dual exchange market was created.
2/9/71: The financing requirements for inward and outward direct investment were eased.
20/10/71: Residents were freely permitted to purchase foreign securities abroad, provided that settlement took place in the financial franc market.
16/11/71: The sales proceeds of non-resident-owned French or foreign securities could be transferred abroad.
3/12/71: Lending of francs to non-residents for periods of up to two years fully liberalized. Approvals were granted liberally for loans with a maturity in excess of two years.
20/12/71: Non-resident franc accounts permitted to bear interest again; reserve requirements on non-resident accounts reduced to levels applicable to residents' deposits; and the banks' overall external position in francs and foreign currencies ceased to be subject to limitation.
20/3/72: Further relaxation of restrictions on outward direct investment.
3/1/73: Restrictions in force since late 1971 on borrowing abroad by banks and industrial or commercial companies to finance direct investment in France or abroad eased.
16/3/73: The Bank of France prohibited banks and other financial institutions from remunerating any accounts in francs, at sight or with a maturity of up to 180 days, opened for non-residents.

Reserve requirement of 100% applied against any increases in non-residents' demand and time deposits in francs.

The use of financial accounts in francs for the purchase of French short-term securities prohibited.
5/10/73: Restrictions on short-term capital inflows introduced on 16/3/73 were removed.
20/1/74: All lending of francs to non-residents was made subject to authorization, and such authorization was not normally granted. Previously, such lending was freely permitted up to periods of two years. The general permission to authorized banks to credit non-resident franc accounts with the amount of loans in francs granted by residents was revoked.

Forward cover facilities for outgoing payments were again limited to imports.
21/1/74: The remaining reserve requirements against non-resident-owned franc deposits were rescinded.

Most franc lending to non-residents was prohibited.
21/3/74: The dual exchange market was unified by the abolition of the financial franc market.
17/8/74: The regulations governing French direct investment abroad as well as in France were relaxed slightly.
28/9/75: French non-bank firms would not be permitted to borrow abroad in foreign currency for the remainder of the year.
10/8/76: The controls on inward and outward investment were eased, relating to the amount of investment that could be made and the provision of guarantees.
13/10/76: Borrowing abroad would be restrained.
1/10/79: Lending limits on certain forms of credit, including medium-term and long-term export financing, would be imposed for the period January–June 1980.
11/7/80: Relaxation of certain minor foreign exchange controls, including easing of rules governing transactions abroad by individuals and relaxation of restrictions on direct investment by non-residents in France and by residents abroad.
9/8/80: Foreign companies domiciled in an EC member country would be free to take over any participation in the equity capital of a French company (previously, purchases of 20% or more needed official approbation).
7/11/80: Commercial banks were instructed to deposit with the Bank of France compulsory reserves of 5% of their non-residents' deposits.

France (continued)

16/5/81: The 5% reserve requirement on non-residents' deposits at the commercial banks was abolished.
21/5/81: Minor exchange control regulations introduced: the time limit on forward positions for most imports was reduced from two months to one month; the limit on direct foreign investment without prior authorization reduced from F5 million to F1 million, and three quarters of direct foreign investment was required to be financed from foreign borrowing; the *devise titre* was reintroduced, under which purchases of foreign securities by residents had to be matched by proceeds from sales of foreign securities by residents.
18/9/81: Forward exchange covers for imports were suspended.
12/11/81: The ban on forward exchange cover for imports was relaxed somewhat.
25/3/82: A requirement was introduced that 75% of direct investment abroad should be financed by borrowing in foreign currency.
24/3/83: Authorized international traders could no longer make forward purchases of foreign exchange to cover operations on foreign commodity markets.
25/3/83: Forward exchange coverage was prohibited in respect of term transactions in foreign currency on commodity markets, and forward cover of spot transactions in commodities was limited to eight days with the obligation to redeem foreign exchange receipts after the eight-day period.
28/3/83: The limit on external borrowings that residents could contract without prior official authorization was raised from the equivalent of F10 million to F50 million.
1/1/84: Some liberalization of the restrictions on foreign direct investment into and leaving France.
5/10/84: The withholding tax of 25% on dividend earnings by non-resident holders of French bonds was abolished.
14/11/84: Access of EC institutions to the Paris financial market was improved.

The proportion of foreign direct investment that should be financed from abroad reduced from 75% to 50% for direct investment in EC countries.
30/11/84: The period for obligatory review of applications for direct investment in France was reduced to one month in all cases.
1984: Foreign exchange controls rescinded in part.
3/4/85: Authorization granted for issues of Eurobonds denominated in French francs.
1/9/85: The proportion of investment outside the EC that can be made by residents in francs doubled to 50%.
2/12/85: Liberalization of restrictions on direct investment inflows and outflows, and the purchase of securities abroad: transactions under the *devise titre* system could in future be made in any foreign security; the obligation to obtain foreign currency loans to finance at least 50% of outward direct investment was abolished; and the threshold value of outward foreign investment requiring prior official authorization was increased from F2 million to F15 million.
1985: Capital market fees and taxes reduced.
16/4/86: Easing of restrictions on direct foreign investment and borrowing abroad, eliminating the need for prior authorization under certain conditions.
22/5/86: Residents' purchase of foreign securities made easier, involving the repeal of the *devise-titre* system.
4/7/86: The duration limits of allowable forward cover for purchases of goods invoiced in foreign exchange eliminated.
18/11/86: Subject to certain restrictions, French banks were allowed to make loans in francs to non-residents.
1986: Interest rates on deposits longer than three months liberalized.

Abolition of credit ceilings.
21/5/87: Foreign exchange accounts may be held in France or by exporters abroad, subject to the requirement that credit balances do not exceed three months' foreign exchange turnover in foreign transactions. Enterprises were allowed to freely contract foreign currency loans.

The limit for borrowing abroad in francs increased to F50 million per operation.
22/7/87: Investments by non-residents in domestic Treasury bonds and bills in book-entry form were regulated, and short-term 'repos' by non-residents on domestic financial assets were prohibited.
1/6/88: Domestic enterprises were permitted to operate foreign currency accounts in France or abroad in foreign exchange or French francs without any restriction.

The restriction on borrowing abroad in excess of F50 million was abolished.
24/9/88: Prior authorization was no longer required for direct investments by residents of non-EC countries, except in cases where acquisition of existing French firms is involved.
9/3/89: All exchange restrictions applicable to capital transactions by banks and enterprises engaged in international trade were eliminated.
1/1/90: Exchange controls lifted allowing residents to hold accounts in foreign currency.

Firms based in OECD countries were permitted to issue securities on the French capital market.

Foreign direct investment completely liberalized.
15/1/90: Administrative procedures for the acquisition of existing French enterprises were simplified.

Germany

27/2/69: Prior approval no longer required for the acceptance of new deposits from non-residents and for the raising of new loans and credits from non-residents by German financial institutions. The minimum reserve requirements (100%) on new foreign funds were maintained.
25/7/69: The imposition of reserve requirements of up to 100% on banks' external liabilities permitted.
6/11/69: The 100% minimum reserve ratio on additions to German banks' liabilities to non-residents was abolished, and the minimum reserve ratios to be maintained by banks on existing liabilities to non-residents were brought back in line with those against liabilities to residents.
4/12/69: Banks were requested to exercise restraint in lending at home and abroad and to repatriate maturing foreign placements.
20/12/69: Restrictions on the payment of interest on non-residents' deposits and on the sale of domestic money market paper to non-residents abolished.
1/12/70: A 30% additional reserve requirement on increases in banks' liabilities to non-residents was imposed.
9/5/71: Banks require permission to pay interest on domestic or foreign currency deposits placed with them by non-residents; such permission would not normally be granted.

Non-residents needed authorization for all purchases from residents of domestic money market paper and for certain domestic fixed-interest securities.
1/1/72: Cash deposit law of 23/12/71 came into force, permitting the administration to require residents, including banks, to lodge for a certain period non-interest-bearing cash deposits in deutschmarks, with the Bundesbank corresponding to at most 50% of their loans and other credits taken from non-residents.
1/3/72: The cash deposit requirement on certain borrowing by residents from non-residents was set at 40% of the liabilities covered.
29/6/72: Prior approval was required for the acquisition by non-residents of deutschmark-denominated and foreign currency-denominated bearer and registered bonds. Applications would not normally be granted.
1/7/72: The rate of the cash deposit requirement was increased from 40% to 50%.
6/7/72: The Bundesbank addressed letters concerning the defence against foreign funds to the associations of the credit industry, the German branches of foreign banks and the associations of the insurance industry.
1/1/73: The exemption from the cash deposit requirement available to each debtor was reduced from DM500,000 to DM50,000.
5/2/73: Sales of German shares, borrowing by residents from non-residents and certain inward direct investment operations became subject to approval.
23/2/73: The maximum permissible rate of cash deposit increased from 50% to 100%.

The sale and purchase of German shares and investment certificates were included in the 'non-residents' quota arrangements (constituting a restriction).
1/5/73: The minimum reserve requirements on banks' foreign liabilities were tightened.
1/1/74: Borrowing from non-residents by importers to finance imports became exempt from approval by the Bundesbank, provided the payment terms did not exceed six months.
11/1/74: Reserve requirements against liabilities to non-residents were reduced.
30/1/74: Approval ceased to be required for borrowing abroad by residents, the acquisition by non-residents against payment of domestic securities and inward direct investment.

Rate of cash deposit requirement reduced from 50% to 20%.
11/2/74: The Bundesbank revoked its 1972 request to credit institutions not to sell their own holdings of 'foreign' deutschmark bonds to non-residents.
11/9/74: The abolition of both the cash deposit requirement and the approval requirement for the acquisition by non-residents, against payment, of claims on residents.
14/10/74: Tightening over the credit institutions' open forward exchange commitments.
14/8/75: Abolition of the authorization requirement for the payment of interest on credit balances on bank accounts held by non-residents.
1/9/75: The Bundesbank would authorize the acquisition by non-residents of domestic fixed-interest securities, provided that the maturity was between two and four years and that it was part of an issue not put into circulation prior to 15/8/75.
1/1/78: The minimum reserve requirements on the level of banks' foreign liabilities was raised to nearly twice their level.

An additional marginal reserve requirement of 80% was imposed on the increase in banks' foreign liabilities above a certain level.

Bundesbank would no longer approve the acquisition by non-residents of domestic securities with a remaining maturity of above two and up to four years.
1/6/78: The measures taken in 1/1/78 were repealed.
2–3/79: A six-month gentleman's agreement involving the credit institutions agreeing not to place deutschmark bonds abroad. (It was extended for a further six months in September.)
1/2/80: Regulations limiting the open foreign exchange positions of banks were extended to cover their open positions in precious metals.
14/2/80: The banks agreed not to place borrowers' notes with maturities of five years or less abroad. In early 1979, banks had

Germany (continued)

already declared themselves ready to forego bond issues denominated in deutschmark through their foreign subsidiaries.
17/3/80: The minimum maturity for domestic fixed-interest securities eligible for sale to non-residents lowered from four to two years.
4/11/80: The minimum maturity for domestic fixed-interest securities eligible for sale to non-residents further lowered from two years to one year.
19/12/80: Major commercial banks agree to voluntary curbs on capital exports to remain in force through the end of March 1981.
12/3/81: *De facto* abolition of the remaining restrictions on capital transactions (the Bundesbank would hereafter grant all applications for the sale by residents to non-residents of certain money market papers, bills and domestic fixed-interest securities with a maturity of up to two years).
27/8/81: *De jure* abolition of restrictions on capital transactions.
6/9/83: The Bundesbank requested German banks to endeavour to prevent proceeds of newly issued Eurobond loans denominated in deutschmark from being used in currency swap operations by borrowers.
1/8/84: The 25% withholding tax on foreign investors' income from German fixed interest securities was abolished.

Greece

21/11/79: Interest rates on non-resident accounts were increased.
1/8/80: Banks were permitted freely to set the period and other terms for deposits in convertible currencies.
12/11/80: The inter-bank foreign exchange market replaced the quotation of exchange rates by the Bank of Greece.
14/9/84: Permission granted for non-residents to open time deposits in convertible drachmas, within a duration of six months.
Banks were authorized to make convertible drachma loans to credit institutions abroad for periods of up to six months.
6/5/86: The maximum spread between buying and selling rates offered by the commercial banks was set at the level of 4%.
19/5/86: All restrictions applying to residents of other EC countries on the liquidation of investments and the repatriation of profits and dividends on such investments were abolished.
22/4/87: Slight easing of restrictions on borrowing in foreign currency from abroad for certain enterprises.
23/11/88: Direct investment in EC countries by Greek residents was liberalized.
Residents were allowed to purchase securities issued by the EC up to a global limit of ECU50 million per annum.
27/3/90: Permission to borrow in foreign exchange without prior approval extended to firms in the service sector.
20/8/90: The reform of 19/5/86 was extended to non-EC residents.
1/5/91: Residents were permitted to invest freely in securities and real estate in other EC markets.
11/6/92: The reform of 1/5/91 was extended to non-EC countries.
17/6/92: Domestic credit institutions were allowed to lend to non-residents with their own resources.
22/7/92: All reaming restrictions on current payments and transfers were eliminated.
30/6/93: Residents permitted to open accounts in foreign currency with EU and non-EU financial institutions, provided these accounts have an original maturity of at least one year.
23/3/93: All capital transactions with EU member countries were liberalized, except financial credits and loans with an original maturity of less than one year.
30/6/93: The reform of 23/3/93 was extended to non-EU countries.
1/5/94: Abolition of the compulsory importation and conversion into drachmas of foreign exchange within a specified period.
16/5/94: Authorized domestic credit institutions were allowed to conduct any transaction (including derivatives) in foreign exchange with non-residents and residents.
Ceilings on the foreign exchange exposure of credit institutions were removed.
Remaining controls on short-term capital movements and some forward and swap contracts were abolished.
Authorized domestic credit institutions were allowed to extend loans in any form and currency for non-residents on freely negotiated terms.

Ireland

31/8/71: Authorized banks require approval for opening external accounts for non-residents of the Sterling Area.

Exchange control approval was also required for the sale to, or acquisition on behalf of, non-residents of the Sterling Area of certain short- and medium-term securities.

21/12/71: Removal of restrictions introduced on 31/8/71.

6/2/72: Guidelines for 1971/72 had suggested that no net inflow of capital into the banks from outside Ireland should occur.

Requirement that 50% of capital inflows after 16/1/73 be deposited in accounts which would not be included in the calculation of primary liquidity ratios. Banks were asked to bring about no net capital inflow over the 16/1/73 position.

1/1/73: Measures to relax controls between Ireland and member countries of the EEC. The use of official exchange allowed for all new investments, subject to a limit of IR£250,000 a project a year.

6/2/73: All banks were requested to ensure that they bring about no net capital inflows compared to the position at mid-January 1973. At least 50% of any net inflows occurring after that date should be deposited with the Central Bank. These arrangements were still in force at the end of the year.

21/6/74: The capital inflow deposit requirement could be waived for capital inflows that would assist in the financing of major industrial development projects.

1/1/75: Direct investment by residents in EEC countries was formally liberalized, with the use of official exchange allowed for all approved new direct investments.

10/5/76: Banks no longer required to deposit with the Central Bank 50% of any net capital inflows.

23/6/77: New regulation that 50% of any net capital inflow (with a few exemptions) to banks occurring after 18/5/77 should be deposited with the Central Bank.

01/1/78: Slight easing of the controls on the purchase and sale of foreign currency securities.

30/3/79: A 50% deposit requirement on the inflow of capital through banks was suspended.

13/1/83: Measures adopted to strengthen Central Bank surveillance of forward exchange transactions in the Irish pound.

24/3/83: All sales of existing holdings of EC securities and future purchases of such securities were made subject to exchange control approval.

4/4/86: Restrictions on forward currency transactions by commercial banks were tightened.

13/11/87: Slight easing of restrictions on purchasing securities from non-residents.

88: Institutional investors permitted to increase foreign investments to 12% of net annual cash flows (previously 10%).

Unit trusts permitted to invest 12% of net annual cash flows for the first time.

IR£5,000 private investors' allowance introduced up to a ceiling of IR£30 million in foreign securities.

Forward cover opened to importers and exporters of services.

1/1/89: All restrictions on purchases of foreign securities with maturities exceeding two years eliminated, and exchange controls applied to the sales of existing holdings of securities issued by the EC were abolished.

1/4/90: The regulation of forward cover was loosened.

Minor easing of outflow restrictions.

Domestic financial institutions permitted to accept Irish pound deposits, without limit, from bank and non-bank residents without prior reference to the Central Bank, if these deposits carry fixed terms of at least three months.

90: Non-residents free to invest in domestic securities and to place Irish pound deposits in excess of three months without restriction.

Foreign currency borrowing for trade purposes fully liberalized.

Direct inward and outward investment requirements relaxed further.

Individuals permitted to invest in medium- and long-term foreign securities.

Forward cover rules relaxed further.

1/1/91: Outward direct and portfolio investment somewhat liberalized.

All forms of lending to non-residents were permitted, provided that the maturity is longer than five years.

1/4/91: Changes legislated that reduced restrictions on inward and outward direct investment, and outward portfolio investment.

1/6/91: Residents were permitted to operate personal foreign currency accounts with domestic financial institutions.

91: Personal transactions fully liberalized.

Greater freedom to invest outside EC using Irish pounds.

Futures and options for 'bona fide' purposes allowed.

1/1/92: Residents were allowed to obtain forward cover for financial outflows not related to trade.

Non-residents were allowed to maintain deposits in Irish pounds without restriction.

Residents were permitted to undertake financial investments in non-EC countries;

- to purchase foreign securities issued on a foreign market without restriction;
- to lend in domestic currency with maturities of more than one year to non-residents without restriction;
- to borrow in foreign currency for non-trade purposes without restriction.

Residents permitted to operate personal foreign currency deposit accounts on certain conditions.

1/1/93: All remaining exchange controls were abolished.

Italy

22/3/69: Authorized banks directed to liquidate their net creditor position abroad and balance their net foreign position by 30/6/69.
1/4/69: Authorized banks require prior authorization to participate in syndicates placing or underwriting new issues of foreign securities. Such permission is granted restrictively, while previously authorization was automatic.
5/8/69: Loans could be granted by residents to non-residents, and vice versa, up to LIT250 million for each applicant and repayment must be guaranteed by a well-known bank.
12/1/71: Residents' purchases of foreign financial institutions' shares require prior authorization.
13/12/71: Commercial banks requested to stop paying interest on all non-resident lira accounts. The major banks complied.
28/6/72: Italian banks, which previously were required to maintain a balanced foreign position, were allowed to incur net foreign liability positions.
30/6/72: Banks instructed not to maintain net foreign asset positions.
22/1/73: A dual exchange market came into operation. Capital transactions to be settled in the financial exchange market.
27/7/73: A 50% deposit was introduced against outward transfers of resident-owned capital for direct investments, portfolio investments, financial loans and personal capital movements.
22/3/74: The dual exchange market was unified by the abolition of the financial exchange market.
19/7/74: Ceiling imposed on banks' spot and forward positions in relation to non-residents in foreign and domestic currencies.
16/6/75: The July 1974 ceiling on banks' net external liability positions removed.
6/5/76 All purchases of foreign exchange, spot or forward, by residents and the crediting of any kind of non-resident lira accounts subject to a 90-day non-interest-bearing lira deposit equivalent to 50% of the transaction (extended until April 1977).
28/5/81: An advance deposit requirement was imposed on most exchange payments abroad, equivalent to 30% of the value of the transaction, to be posted in a non-interest-bearing deposit for 90 days (extended to February 1982).
17/12/83: Some direct investments abroad would be exempted from the non-interest-bearing deposit requirement.
20/7/84: A ceiling on the foreign indebtedness of domestic banks was imposed.
3/12/84: The non-interest-bearing deposit on investments abroad was reduced to 40% for OECD countries, 30% for securities of EC institutions, and abolished in respect of investments in foreign securities by mutual funds.
11/6/85: The acquisition by non-residents of shares in Italian mutual funds permitted, and limits on borrowing abroad by residents raised somewhat.
23/11/85:The non-interest-bearing deposit requirement was reduced to 25% in respect of portfolio investment abroad, and abolished for direct investment abroad.
5/12/85: Limitations on the foreign debt exposure of banks were lifted.
11/4/86: Constraints on forward operations were eased.
14/4/86: The non-interest-bearing deposit was lowered to 15% in respect of the acquisition of foreign securities.
8/8/86: Residents allowed to borrow abroad within limits of LIT1 billion to LIT5 billion.
20/3/87: A reserve requirement was introduced on bank deposits in foreign currency.
13/5/87: The 15% compulsory non-interest-bearing deposit was abolished, and the maximum holding periods for funds credited in foreign exchange accounts were doubled.
13/9/87: The reserve requirement on net increases in foreign currency deposits was abolished.
The maximum periods for funds credited to foreign exchange accounts were reduced.
1/10/88: Residents were prohibited from conducting forward currency transactions in foreign exchange with non-residents.
20/1/88: All restrictions on commercial and financial transactions by residents with non-residents were abolished, with the following exceptions: residents were not allowed to hold funds in bank accounts abroad, and non-bank residents were not allowed to extend credit lines to non-residents and to purchase money market instruments abroad with a maturity of less than 180 days.
Commercial banks no longer required to balance foreign exchange position against the lira on a daily basis and free to provide forward cover to residents. The prohibition to lend lire to non-residents abolished, up to a limit set by the amount of lira deposits received from non-residents.
17/2/89: The marginal reserve ratio on authorized banks' net foreign currency deposit liabilities was raised to 25%.
19/1/90: Residents allowed to purchase bonds and money market instruments issued or payable abroad with remaining maturity terms of less than 180 days.
27/4/90: Decree completing the liberalization of capital transfers and the implementation of EC Directive 88/361 issued. Residents able to hold foreign exchange and lire in any form in Italy and abroad, and authorized to carry out forward transactions in foreign exchange.
14/5/90: Remaining restrictions on authorized banks' exchange management were abolished.
12/5/91: Reserve requirement on the increase in net foreign currency deposits by residents was abolished.
23/10/92: Reserve requirement on lira-denominated inter-bank deposits held by non-resident banks with Italian banks was eliminated.

Netherlands

22/4/70: The ceiling on the net foreign asset position of the authorized banks was suspended.
1–3/71: The placement of guilder bond issues by non-residents was eased by the granting of a number of licences.
21/5/71: The banks suspended interest payments on guilder demand deposits (maturities of 30 days or less) held by non-residents.
1/6/71: The general permission allowing the sale to non-residents of domestic treasury paper and guilder bank acceptances with payment to the debit of convertible guilder accounts was revoked.
6/9/71: The purchase of officially listed guilder bonds by non-residents could only be effected with the proceeds of sales of such bonds by non-residents.
9/3/72: The payment of interest on guilder demand deposits held by non-residents was prohibited. (A partial prohibition had been in effect since 21/5/71.)
17/7/72: The Netherlands Bank ceased in principle to issue licences allowing non-bank residents to take up financial credits abroad, including long-term loans extended within a multinational corporation.
10-11/72: The scope of the OECD reservation on the issue of foreign securities in the domestic capital market was limited somewhat.
16/11/72: The rules tightened concerning the 'five-million-guilder regulation' which prohibits each bank from incurring a net external liability position in excess of f5 million.
1/2/74: The obligation on non-residents to finance their purchases from residents of listed guilder bonds with the proceeds from non-residents' sales of such bonds was abolished.
4/6/75: Relaxation of the restrictions on guilder bond issues by non-residents.
24/12/75: The prohibition on the payment of interest on non-resident-held guilder demand deposits would be withdrawn, as well as that on the establishment by non-residents of guilder time or savings deposits.
1/1/77: The private placement market was reopened subject to certain conditions, one of which was that lenders would be required to deliver in foreign currency.
12/10/77: A ceiling of f900 million was the total amount of Euroguilder notes to be licensed for placements by residents and non-residents.
28/12/78: The regulations on long-term borrowing abroad by domestic enterprises were relaxed so that the proceeds, under certain conditions regarding maturities, could be employed in the Netherlands as well as abroad.
1/6/79: Commercial banks permitted to incur a net external liability position to an extent that was related to the total of their gross foreign assets at the end of 1978. The minimum net external liability to any bank would be f20 million.
1/8/79: The limit on freely permitted financial borrowing abroad by non-bank residents raised from f300,000 for one calendar year to f500,000.

The regulations on long-term borrowing abroad for domestic use by resident enterprises were liberalized.
28/1/80: The Netherlands Bank lifted the foreign position regulation under which external liabilities of resident commercial banks were not allowed to exceed their external assets by more than a specified franchise.
1/5/81: Loans to non-residents with a maturity of less than two years would be free of licence.
14/7/81: Borrowing from non-residents by domestic enterprises for domestic use would generally be licensed if the average maturity were to be at least two years – instead of the previous $5^{1}/_{2}$ years – under certain conditions (interest rates should be fixed; and no guilder notes in bearer form should be issued).
1/1/82: Some restrictions on borrowing from abroad by non-residents removed.
1/7/83: Many of the remaining restrictions on international capital movements were eliminated: short-, medium- and long-term capital imports were completely liberalized.
1/1/86: A number of measures aimed at deregulating the capital market were introduced.
1/10/86: The issuance of foreign guilder bonds on the Dutch capital market, the purchase by residents of unquoted foreign guilder bonds and long-term lending in guilders to non-residents no longer need prior approval. The lifting of all remaining controls on capital export.

Portugal

5/2/71: Limits were imposed on the foreign currency balances held by authorized banks. 24/8/77: A new Foreign Investment Code provided for improved facilities for the repatriation of capital and eased restrictions on remittance of profits. 29/8/77: Non-resident accounts in foreign currencies were permitted. 23/3/82: The tax on sales of foreign exchange was raised from 0.3% to 0.5%. 12/5/82: The transfer abroad of the proceeds from the liquidation of foreign investment would henceforth be freely permitted. 10/5/84: Authorization was granted for banks to open non-resident term deposit accounts in nine foreign currencies without prior authorization. 5/86: The inter-bank spot foreign exchange market was made more flexible. 6/86: Purchase of listed shares and bonds by non-residents allowed. 18/6/86: New direct investments in Portugal were subject to prior declaration, but in the absence of a reply within 60 days could be considered to have been approved. 1/2/87: A forward foreign exchange market was established. 11/88: Direct investment in EC countries not exceeding Esc20 million, and in other OECD countries up to an amount not exceeding Esc10m, permitted. 30/11/88: The regulations on opening and operating demand accounts of non-residents in escudos were liberalized.	1/89: Purchase by resident institutional investors of listed foreign securities up to certain limits. 2/2/89: The limit above which medium- and long-term capital transactions would require approval was increased from Esc580 million to Esc5 billion. 28/3/89: Restrictions on the acquisition of foreign currency by residents were liberalized. 29/4/89: The limits applicable to investments in EC and OECD countries that are allowed freely were increased to Esc50 million. 20/9/89: Regulations governing investment in foreign securities were liberalized, whereby the limits for institutional and individual investors were raised to Esc4 million. 4/90: Partial liberalization of foreign currency-denominated accounts held by residents with resident credit institutions. 6/90: Forward purchases of foreign currency from non-residents against escudos suspended. 1/7/90: Portfolio investments by residents in foreign currency securities that are officially listed in recognized stock exchanges abroad were fully liberalized. Enterprises drawing financial credits from abroad were required to deposit the equivalent of 40% of these credits in a non-remunerated account with the Bank of Portugal. 9/1/91: The restrictions on purchases by non-residents of indexed-coupon securities, which have been subject to prior authorization from the Banco de Portugal, were extended up to 30/4/92.	2/91: Restrictions introduced on repurchase operations with non-residents involving Portuguese securities. 6/91: Minor reforms involving purchase of unlisted securities and direct investment abroad. 7/91: Restrictions on the purchase of floating-rate Portuguese securities by non-residents. 8/91: Maximum maturity on forward foreign exchange transactions abolished. 12/91: Complete liberalization of foreign currency-denominated accounts held by residents and non-residents. 8/92: Financial loans made available to non-residents, with the exception of loans denominated in escudos with a maturity not exceeding one year. 1/9/92: The contracting of short-, medium- and long-term financial credits from abroad was liberalized. The compulsory deposit requirement against deposits in foreign currency was abolished. 16/12/92: The remaining exchange restrictions (falling within the authority of the Banco de Portugal) on capital transactions were lifted. 28/2/94: Foreign participation in the capital of wholly privatized companies was not allowed to exceed 25%. 2/4/94: The withholding tax on the interest earned on government securities owned by non-residents was eliminated. 2/8/94: The issue of securities by non-residents in the domestic capital market was liberalized.

Spain

15/10/71: Banks were permitted without special authorization to grant peseta credits to non-residents for periods in excess of 18 months.
19/10/71: Banks were required to make non-interest-bearing deposits at the Bank of Spain in an amount equivalent to 100% of any increases in non-resident-held deposits in convertible pesetas.

Banks prohibited from paying interest on non-resident-held peseta deposits withdrawn within three months from the date of deposit.
1/6/72: Certain liberalization measures for non-resident-owned investments and blocked funds in Spain.
29/7/72: Private banks were required to deposit with the Central Bank 50% of any increases in non-resident-held deposits in convertible pesetas with a maturity of three months or more. (They were already required to deposit the full amount of any increase after 18/10/71 in convertible peseta deposits at sight or at less than three months' notice.)
7/2/73: All day-to-day increases in credit balances on external accounts (and A and B accounts later in March) in convertible pesetas became subject to a reserve requirement of 100%.
1/3/73: Easing of restrictions on outward direct investment, relating to registered Spanish exporting enterprises.
11/10/73: Tightening of controls over inward direct investment: henceforth, foreign participation in excess of 50% of the capital in all industries required prior authorization.
1/8/74: Authorized banks could without prior approval open accounts for sight and time deposits, denominated in convertible currencies, on behalf of non-residents.
31/10/74: Prior authorization was no longer required for foreign majority investments in specified sectors of the economy.
31/1/75: The rules governing external accounts in internal pesetas were modified: the kind of assets in which balances held by non-residents could be invested was extended to include private and government fixed-interest securities. The principal invested in these assets was made transferable, provided that the investment had been maintained in the same securities for at least three consecutive years.
10/4/75: Spanish companies with foreign participation were allowed to obtain domestic credit for up to 18 months on the same conditions as wholly Spanish-owned firms.
21/1/77: Direct foreign investment for the purpose of establishing Spanish companies with more than 50% of foreign capital was authorized automatically. Previously, automatic authorization was limited to 50% or less of the capital of a new company.
23/6/78: Foreign banks allowed to open branches in Spain.
12/7/78: The Bank of Spain introduced a special deposit requirement of 100% in respect of the increase in certain non-resident accounts. Accounts of these types opened since 22/6/78 would not bear interest.
28/4/79: A non-interest-bearing deposit requirement equal to 25% of the value of all foreign loans and credits, both in foreign currency and foreign accounts in pesetas, from foreign accounts of Spanish and foreign firms and individuals resident in Spain.
14/9/79: Liberalization of direct and portfolio investments abroad by residents. Spanish residents could freely purchase fixed-income securities denominated in foreign exchange, and banks could purchase foreign securities up to a limit.
27/10/79: The requirement of prior authorization for current payments for invisibles was replaced by a general liberalization for listed transactions.
31/10/79: The 25% non-interest-bearing deposit requirement on foreign loans and credits from abroad was abolished.
1/27/80: The forward peseta position of an individual bank need not reflect a net buying or selling balance at the close of each day.
11/11/80: Foreign borrowing by residents of at least a year's duration made easier.
23/1/81: The requirement that banks redeposit with the Bank of Spain all increases in non-residents' deposit accounts was rescinded, as was the prohibition on interest on such accounts.

The purchase by non-residents of certificates of deposit issued by banks in Spain was made subject to authorization. The purchase by non-residents of bonds issued by banks with a maturity of five years or more was permitted freely.
30/1/81: Minor easing of restrictions on the forward positions of banks.
27/3/81: Restrictions lifted on investments in pesetas by foreign residents in Spain. Liberalization of foreign investments by non-residents.
14/4/81: Spanish firms with foreign participation in excess of 25% authorized to avail themselves of local bank credit up to five times their capital stock.
15/6/82: The regulation governing the limits on banks' forward positions in convertible currencies slightly liberalized.
28/6/82: The Bank of Spain imposed a freeze on requests for the early repayment of loans denominated in foreign currency.
14/8/82: The 1979 decree liberalizing portfolio investments was temporarily suspended.
25/3/82: The minimum capital requirement for branches of foreign banks increased twofold.

Spain (continued)

10/2/83: The suspension of a 1979 decree liberalizing outward portfolio investments was extended for a period of 12 months; prior authorization would thus continue to be required to transfer funds abroad for investments in foreign bonds and other financial instruments.
25/3/83: The minimum capital requirement for foreign banks was increased from Pts750 million to Pts2 billion.
29/5/85: Administrative authorization for investments in companies with more than 50% Spanish ownership was eliminated (henceforth, all foreign investments need only be declared and could be taken as accepted in the absence of response within 30 days).
1/1/86: Residents allowed to negotiate loans in foreign currency or convertible pesetas.
6–9/86: New legislation further liberalized foreign investment in Spain.
7/11/86: Direct investments abroad by residents were further liberalized.
7/1/87: Liberalization of commercial banks' foreign exposure: restrictions lifted on specific spot and forward positions, and banks were allowed to take short foreign currency positions.
27/4/87: Commercial banks were prohibited from paying interest on convertible peseta account balances exceeding Pts10 million.
25/5/87: Investments abroad by non-residents were liberalized.
2/7/87: The limitations (e.g. trade-related clauses) on foreign direct investments authorized before the 1985 liberalization measures were abolished.
20/10/87: Existing limitations on access to the forward market and cover periods were removed.
10/7/88: The minimum maturity period of foreign currency borrowing not subject to official authorization raised from one to three years.
19/12/88: Direct investments abroad in companies engaged in portfolio and real estate investment activities were permitted.
31/1/89: A 30% non-remunerated deposit requirement imposed on all new net foreign borrowings by Spanish residents.
4/2/89: Spanish residents were permitted to buy without restriction securities denominated in pesetas that are issued by international organizations and foreign governments.
27/7/89: All restrictions on forward cover to be provided to non-residents were eliminated.
26/9/89: Spanish residents permitted to maintain accounts in ECUs at authorized banks.
4/4/90: Prohibition against payment of interest on non-resident convertible accounts with balances exceeding Pts10 million was removed.
4-7/90: Most restrictions on residents' and non-residents' purchases of domestic and foreign securities removed.
27/12/90: Most of the remaining regulations limiting portfolio investments by residents abroad and by non-residents in Spain were abolished.
Foreigners exempted from income tax on dividends and capital gains.
15/3/91: The 30% non-remunerated deposit requirement that applied to all loans contracted by Spanish residents abroad was abolished.
16/4/91: The limitations on financial loans in pesetas by authorized banks to non-residents were abolished.
Residents were allowed to maintain accounts in foreign currencies in authorized banks, and authorized banks were allowed to grant financial loans to residents without restriction.
25/9/91: The maximum limit on direct foreign investment abroad was increased from Pts25 million to Pts250 million.
1/7/92: Most controls on capital transfers were abolished.
24/9/92: A compulsory one-year, non-interest-bearing deposit to be held at the Bank of Spain was introduced against the increments from the 22/9/92 level of long positions taken against the peseta in foreign exchange markets and in peseta-denominated lending to non-residents.
5/10/92: The measure introduced on 24/9/92 was abolished.

Sweden

11/9/69: Applications to make direct investments in industrial countries henceforth were rejected when they were not clearly of importance to the Swedish foreign exchange position. Previously, all bona fide applications for direct investment abroad were approved.
12/1/71: Long-term borrowing abroad by industrial enterprises and by the Investment Bank would henceforth be permitted when it benefited industrial expansion.
4/2/72: The condition that large outward direct investments be financed abroad at medium term was abolished.
28/3/72: The ceilings on the net foreign assets of authorized banks were raised.
22/3/74: The restrictions on regular accounts held by non-resident banks and banking firms that had been imposed on 20/3/73 were revoked.
18/6/74: The authorities henceforth required to an increasing extent that outward direct investment be financed with foreign credit with a minimum average maturity of five years.

The supervision of inward direct investment was tightened to ensure that not more than 50% of any individual investment was financed by domestic credit.
15/8/74: Advance repayment of most types of debt to non-residents was restricted.

Long-term borrowing abroad was slightly liberalized.
30/12/76: The regulations concerning transactions in securities were eased.

General licence for the repurchase of Swedish securities from abroad.
22/9/77: Interest would no longer be paid on residents' foreign currency accounts.
18/3/80: Minor reform of inflow controls.
17/6/80: The time limit on forward sales of currency was abolished.
20/10/81: Minor loosening of restrictions on direct investment abroad.
20/1/82: Deregulation of domestic foreign exchange accounts.
21/2/84: The minimum required maturity for borrowing abroad was lowered from five to two years.
18/3/85: Authorization was granted for foreign banks to open subsidiaries in Sweden.
85: Authorized exchange banks obtain wider possibilities of trading in foreign currency futures.
25/3/86: Minor liberalization of foreign currency lending abroad.
24/6/86: The requirement that Swedish direct investment abroad exceeding Skr10 million had to be financed by foreign borrowing was eliminated.
1/2/87: All foreign exchange transactions, spot and forward, were permitted without restriction.
1/3/87: The minimum average maturity period for foreign loans was shortened from two years to one year.

The upper limit on foreign borrowing by enterprises was abolished.
87: Some of the restrictions on the acquisition of foreign shares are removed in this and the following year.

The Swedish market for stock and index bonds is opened to non-residents.

The right to extend permits for outward and inward direct investment is further delegated to the authorized exchange banks.

Swedish banks are allowed to establish branches abroad.
12/2/88: The restriction whereby at least 50% of direct foreign investment in Sweden had to be financed from abroad was abolished.

A general exemption was announced for the sale to non-residents of Swedish quoted shares.
88: Abolition of the ban on providing credit against collateral of foreign guarantees.

Authorized banks allowed to extend credit to non-residents without a Swedish connection and to procure foreign currency bonds.

Acquisition of units in foreign mutual funds that hold at least 75% of assets in equity permitted.
19/1/89: All restrictions on the acquisition of foreign equity abolished.

Direct investments, both inward and outward, could be made without prior approval.
1/7/89: The abolition of virtually all the remaining currency regulations. Residents may now lend and borrow abroad, and invest in all foreign securities. Non-residents may invest in domestic securities and money market instruments denominated in Swedish krona and make deposits in Swedish krona in interest-bearing accounts in Swedish banks.
1/7/90: Residents are generally not permitted to deposit capital in foreign bank accounts.
90: Foreign owned banks allowed to open branches in Sweden.
1/1/92: The regulations governing through what channels capital transactions must be conducted were abolished.
31/12/92: The prohibition on depositing funds in accounts with foreign banks was eliminated.

All remaining modalities on cross-border payments are abolished.

Residents are permitted to have deposit accounts abroad.

United Kingdom

14/2/69: The nationalized industries to be encouraged to meet part of their capital requirements by medium-term or long-term borrowing outside the Sterling Area.
14/4/70: The voluntary programme of restraint on overseas investment was continued without change for a further year.
30/4/70: Control over institutional investment in foreign currency offshore funds was tightened.
25/9/70: The controls over investment in offshore funds by institutional investors were formalized and liberalized: the portion was raised from the informal ceiling of 10% to a formal ceiling of 20% of total investment in foreign currency securities.
3–4/72: Minor liberalization of the financing of outward direct investment in the EC, and the domestic financing of inward direct investments.
23/6/72: Controls and restrictions were imposed on resident capital outflows from the United Kingdom to other Overseas Sterling Area countries.
22/5/73: Relaxation of restrictions on sterling lending to non-residents.
19/10/73: The minimum maturity normally prescribed for foreign currency borrowing for the private sector was reduced from five to two years.
12/8/75: Bank of England authorized the payment of interest on external sterling loans of two years' maturity or more when the rate was not fixed for the term of the loan.
10/2/76: The rules covering sterling lending to non-residents for the financing of trade were tightened.
21/12/76: The supervision over sales of foreign currency securities for sterling was tightened.
28/6/77: The EEC Commission extended the authorization given to the UK to restrict capital outflow.
27/10/77: Permission to borrow domestically extended to non-resident-controlled direct investments in the UK.
21/12/77: Relaxation of capital outflow restrictions on the availability of official exchange for foreign direct investment and foreign currency transactions.
29/6/78: Institutional investors investing in foreign currency securities were no longer restricted as to the amount of such assets which might be held in such foreign currency securities. The 20% limit on the acquisition of foreign currency securities carrying voting rights remained.
12/6/79: A number of exchange control relaxations including the abolition of virtually all controls on the financing of direct investment.
18/7/79: Remaining restrictions on outward direct investment removed; steps were also taken to liberalize outward portfolio investment.
23/10/79: The removal of all remaining exchange controls.
4/2/80: The issue of London certificates of deposits in currencies other than those already permitted (sterling and US dollars) would henceforth be countenanced, and subject to approval by the Bank of England.
24/4/81: New guidelines for banks and other deposit-taking institutions concerning the control of risks arising from their foreign exchange exposure.
1/1/82: There are no restrictions on capital transfers by residents of the United Kingdom into the beneficial ownership of residents of other countries.
24/4/82: New guidelines for banks and other deposit-taking institutions concerning the control of risks arising from their foreign exchange exposure. Net spot liabilities in foreign currency form part of a bank's eligible liabilities that are subject to a one-half of 1% non-interest-bearing deposit requirement with the Bank of England, and may also to be subject to calls for special deposits to be placed with the Bank. There is currently no special deposit call.

APPENDIX D

Interest differentials in Europe

Chapter 4 discusses short-term interest rates in Europe, and concentrates on the onshore–offshore differential on three month inter-bank deposits. We can abstract from expectations effects when we study this market, as Chapter 2 emphasizes. As a result we can say that any observed differential must be the result of the imposition of, or the threat of the imposition of, a control of some sort. In this Appendix we undertake a statistical analysis of onshore and offshore inter-bank rates in Europe, all of which are monthly averages and have been provided by the European Monetary Institute or by the relevant Central Bank.

An inspection of the charts on onshore–offshore differentials in Chapter 4 suggests that the onshore–offshore differential demonstrates shifts in both its mean and its variance, and it is important for us to be able to test whether or not this is the case. Standard time series techniques are inapplicable here, and we have to use variants of GARCH and ARCH techniques as discussed in Bollerslev et al. (1992). These techniques are specifically designed to deal with time series where the error on a driving process can be seen as consisting of autoregressive and moving average components. We can estimate GARCH models under the assumption that the long run of the error process is a constant, and hence we could estimate them over the whole of the data period. However, we have a sequence of known structural breaks in our time series at the points where capital controls are changed. If there is significant evidence that the error process changes then we have to analyse sub-periods to look at the structure of the time series, and we have to test whether there is significant structural change.

We estimate a simple model where the onshore rate depends on the offshore rate, with a slope coefficient hypothesised as 1.0 if there are no capital controls, and a constant, which should be 0. Our models are estimated with moving average and autoregressive components and we allow the data to determine the order of the process, and in some cases more than one result is reported. A significant slope dummy would imply that capital controls insulated domestic interest rates from turbulence, and hence allowed the authorities to fight off speculative attack. A significant intercept dummy would imply that the onshore rate could be held higher (or lower) than the offshore rate, allowing monetary policy to be tighter (or looser) than it would otherwise have been. This can be particularly effective in reducing inflation, as the change in the exchange rate in any period would be determined by the lower offshore, or free market, differential. Tables D.1 to D.12 report our full sample and sub-sample GARCH estimates for all the countries where we have sufficient data, and we base our structural breaks on Appendix C. Our simple model can be written as

$$ON_t = a*(1.0+d1+d2+d3+.....) + b*(1.0+d1+d2+d3+.....)*OFF_t + w_t \qquad \textbf{(D.1)}$$

Where ON_t is the onshore rate at time t, OFF_t is the offshore rate at time t, a is the intercept, b is the slope, and d1 etc. are dummies that are zero prior to a presumed structural break, are one thereafter until the next structural break, and are subsequently zero. In each table the first column reports the underlying regression over the whole period. The subsequent columns report differences in the coefficients over sub-periods where controls had a significant impact. Hence the regression coefficients in the first column can be seen as describing periods where there were no capital controls.

Austria: February 1978 – September 1995

Table D.1. Summary statistics and test results of the distribution of the three-month interest rate differential: Austria

	78:7-95:9*	78:7-81:12	82:1-95:9
Summary statistics of the distribution of the three-month interest rate differential			
Mean	...	0.39	0.31
Standard deviation	...	0.42	0.17
Skewness	...	0.16	1.55
Kurtosis-3	...	0.15	4.28
Normality(12)†	...	0.21 [.90]	165.00 [.00]
Summary statistics and diagnostic test results of the GARCH normalized residuals			
Skewness	0.69	0.46	0.50
Kurtosis-3	1.21	0.04	1.14
Serial correlation LM(12)†	47.50 [.00]	11.90 [.45]	58.90 [.00]
Normality(12)†	28.50 [.00]	1.50 [.47]	15.80 [.00]
ARCH(12)†	4.17 [.98]	9.42 [.67]	8.43 [.75]
Constant and slope coefficients in full period / (significant full period level and slope dummy coefficients)			
Constant / (sign. level dummies)	0.27	(0.57)	
Slope / (sign. slope dummies)	1.00	(-0.07)	

* ... Denotes entry not appropriate.
† Values in parentheses are p-values.

Inward and outward capital controls were present in 1979, and there was a major reform in August 1981. There was a largely positive differential over the first sub-period to August 1981, when the mean and standard deviation of the differential indicate imperfect capital mobility. Foreign exchange controls were only completely eliminated in 1991, but the behaviour of the differential is more or less homogeneous after 1981. The differential distribution is non-normal, unlike the initial sub-period, due to both positive skewness and kurtosis. The considerable positive skewness probably reflects the operation of mild inward controls of varying intensity. Capital mobility appears greater as the mean differential and the standard deviation drop. The structural break in 1981 is associated with a fall in the intercept from 0.84 to 0.27, indicating a significant fall in the effectiveness of capital controls in allowing the authorities to hold rates above offshore rates.

Belgium and Luxembourg: January 1979 – September 1995

The Belgian differential for the entire sample period is consistently small and positive, ranging from 0 to 0.3%. By 1977 all external capital transactions with convertible currency countries could be carried out through the free market. However, the pattern of differentials did not change when the distinction between convertible and bilateral area countries was removed in the late 1980s. The cessation of the dual exchange rate arrangement in March 1990 (capital transactions previously occurred at the market exchange rate) also had no noticeable effects on the observed differential. The mean differential and the standard deviation indicate a high degree of mobility.

Table D.2. Summary statistics and test results of the distribution of the three-month interest rate differential: Belgium and Luxembourg

	79:3-95:9
Summary statistics of the distribution of the three-month interest rate differential	
Mean	0.12
Standard deviation	0.05
Skewness	1.02
Kurtosis-3	2.85
Normality(12)†	68.60 [.00]
Summary statistics and diagnostic test results of the GARCH normalized residuals	
Skewness	1.02
Kurtosis-3	2.06
Serial correlation LM(12)	16.33 [.18]
Normality(12)	25.32 [.00]
ARCH(12)	8.60 [.74]
Constant and slope coefficients in full period / (significant full period level and slope dummy coefficients)	
Constant	0.06
Slope	1.01

† Values in parentheses are p-values.

Denmark: January 1982 – September 1995

Although there was a gradual removal of controls in Denmark, we consider the reforms of October 1988 to be the most significant. The trend of liberalization was particularly designed to remove inward controls. Two significant reforms led to the narrowing of the differential to small fluctuations around zero from August 1986 to October 1988, although this is temporarily masked by high onshore rates before the third revaluation (fourth realignment). The mean differential is high, as is the standard deviation, suggesting that capital controls had

an impact up until 1988. All controls on inward and outward capital transfers were revoked in October 1988, a year and a half before it was necessary under the Single European Act.

Table D.3. Summary statistics and test results of the distribution of the three-month interest rate differential: Denmark

	82:4-95:9*	82:5-88:10	89:3-95:9
Summary statistics of the distribution of the three-month interest rate differential			
Mean	...	0.51	0.29
Standard deviation	...	0.60	0.49
Skewness	...	0.54	3.74
Kurtosis-3	...	0.11	15.90
Normality(12)†	...	4.02 [.13]	999.00 [.00]
Summary statistics and diagnostic test results of the GARCH normalized residuals			
Skewness	1.58	0.01	2.67
Kurtosis-3	6.36	-0.19	10.20
Serial correlation LM(12)†	90.70 [.00]	39.50 [.00]	28.60 [.01]
Normality(12)†	341.00 [.00]	0.12 [.94]	437.00 [.00]
ARCH(12)†	13.60 [.00]	6.80 [.87]	15.10 [.24]
Constant and slope coefficients in full period / (significant full period level and slope dummy coefficients)			
Constant / (sign. level dummies)	-0.65	(-0.04)	
Slope / (sign. slope dummies)	1.10		

* ... Denotes entry not appropriate.
† Values in parentheses are p-values.

The 'No' to further European integration in the Danish referendum in the third quarter of 1992 led to a period of turbulence in the foreign exchange markets, with the krone being revalued in September 1992. This accounts for the large, narrow positive spike in the differential, for capital inflow controls must have been unofficially introduced to keep the domestic interest rate from falling. It seems they were kept in place for an entire year until the exchange range margins were widened. After this, evidence of perfect capital mobility at the short end reappeared, with the differential hovering around zero at the end of the period. Not surprisingly, the distribution over the latter sub-period is non-normal because of high positive skewness and kurtosis. The mean and standard deviation would have been considerably lower had it not been for the realignment, and are lower than those for the former sub-period.

Finland: March 1982 – October 1995

The Finnish authorities decided unilaterally to embark on a course of financial deregulation at the beginning of the 1980s. The liberalization in June, 1986, when non-residents were allowed to invest in some Finnish bonds and debentures can be identified as a first structural break, and both the intercept and slope dummies for the first sub-period are significant. Most remaining controls were abolished at the beginning of 1991. The pace of reform in the intervening period was fairly gradual, so this represents a relatively large liberalization effort. The intercept dummy for this second breakpoint is significant at the 5% level. Its magnitude indicates that the onshore–offshore differential was on average 0.2% lower post-January 1991 than over the entire previous period.

Table D.4. Summary statistics and test results of the distribution of the three-month interest rate differential: Finland

	82:7-95:9*	82:7-86:6	86:8-91:3	91:5-95:9
Summary statistics of the distribution of the three-month interest rate differential				
Mean	...	-0.17	0.19	0.03
Standard deviation	...	0.71	0.32	0.20
Skewness	...	-0.53	-0.12	-0.53
Kurtosis-3	...	-0.58	2.80	0.02
Normality(12)†	...	2.44 [.30]	18.70 [.00]	2.57 [.28]
Summary statistics and diagnostic test results of the GARCH normalized residuals				
Skewness	-0.70	-0.22	-1.28	0.75
Kurtosis-3	2.42	-0.38	6.11	0.66
Serial correlation LM(12)†	38.70 [.00]	23.40 [.03]	14.50 [.27]	21.00 [.05]
Normality(12)†	36.90 [.00]	0.67 [.72]	102.00 [.00]	5.92 [.05]
ARCH(12)†	8.86 [.00]	17.30 [.14]	2.15 [.00]	12.10 [.44]
Constant and slope coefficients in full period / (significant full period level and slope dummy coefficients)				
Constant / (sign. level dummies)	0.11	(3.89)	(0.19)	
Slope / (sign. slope dummies)	0.99	(-0.32)		

* ... Denotes entry not appropriate.
† Values in parentheses are p-values.

France: September 1977 – September 1979

Over the period September 1977 to June 1986 the onshore–offshore differential was consistently negative. Capital flows were significantly restricted, and it is likely that the negative differential can be ascribed to the greater relative importance of restrictions on capital outflows, depressing domestic interest rates relative to offshore counterparts. However,

offshore rates could also be higher to reflect a risk premium associated with the new, unregulated Euromarket, or because of market thinness. Substantial sharp spikes in the differential occur around the time of realignments as the French authorities introduced controls to prevent capital outflows. The instability of the differential, as measured by the standard deviation, was high, due to the large divergences attendant on devaluations. In the first half of 1986 there was a significant loosening of restrictions on outward controls. The first set of slope and intercept dummies, which test for a breakpoint at this date, are both statistically significant. The second sub-period is marked by a progressive dismantling of controls, beginning with an easing of restrictions on residents' purchases of foreign securities and culminating in the total abolition of controls in 1990. The mean and standard deviation of the differential are much reduced, but there appears to be significant non-normality. The kurtosis coefficient is relatively large, indicating significant regime shifts or changes in the extent of capital controls within a sub-period. After the removal of controls there is no intercept, and the slope is around 1, significantly higher than before 1989. It appears that controls were on average effective in driving a wedge between offshore and onshore rates, and also helped insulate domestic interest rates from those abroad.

Table D.5. Summary statistics and test results of the distribution of the three-month interest rate differential: France

	78:2-95:9*	78:2-86:6	86:9-89:3	89:6-95:9
Summary statistics of the distribution of the three-month interest rate differential				
Mean	...	-1.93	-0.20	0.17
Standard deviation	...	2.36	0.31	0.09
Skewness	...	-1.96	-1.54	2.38
Kurtosis-3	...	3.89	1.19	4.72
Normality(12)†	...	128.00 [.00]	14.00 [.00]	143.00 [.00]
Summary statistics and diagnostic test results of the GARCH normalized residuals				
Skewness	-0.59	-0.12	-0.18	0.99
Kurtosis-3	2.18	-0.80	0.77	3.30
Serial correlation LM(12)†	103.00 [.00]	55.90 [.00]	13.80 [.31]	21.00 [.05]
Normality(12)†	54.20 [.00]	2.92 [.23]	0.92 [.63]	642.00 [.00]
ARCH(12)†	32.40 [.00]	19.60 [.08]	12.90 [.38]	11.00 [.53]
Constant and slope coefficients in full period / (significant full period level and slope dummy coefficients)				
Constant / (sign. level dummies)	ns	(2.02)	(1.65)	
Slope / (sign. slope dummies)	1.02	(-0.18)	(-0.23)	

* ... Denotes entry not appropriate.
† Values in parentheses are p-values.
ns Not statistically significant at a 5% level.

Germany: January 1970 – September 1995

In the early 1970s there were very large positive onshore–offshore differentials as the Bundesbank maintained strict inward controls during the break-up of the Bretton Woods system. The combination of a strong deutschmark, its use as a reserve currency and the desire of the Bundesbank to keep monetary policy tight necessitated controls to restrict inward capital flows. In 1979 capital outflows were completely free, whereas some controls remained on non-residents' purchases of money market paper and fixed-interest securities. These were rescinded in March 1981. The high mean and standard deviation over the first sub-period reflect the restrictions on capital inflows. A second sub-period runs from the elimination of these controls until a further act of liberalization in August 1984, when the tax on foreign investors' income from German bonds was repealed. Some inward controls persisted after the *de jure* removal of controls in 1981, as confirmed by the magnitude of the differentials, which exceed 0.4 for much of this interval. The mean and standard deviation are correspondingly moderately high. Over the last sub-period the mean differential and the standard deviation are low, indicating full capital mobility. Although the slopes and intercepts differ between our sub-periods, they remain close to 1 and zero respectively, suggesting that those controls that remained had little effect on short-term monetary conditions.

Table D.6. Summary statistics and test results of the distribution of the three-month interest rate differential: Germany

	76:4-95:9*	76:4-81:3	81:6-84:8	84:12-95:9
Summary statistics of the distribution of the three-month interest rate differential				
Mean	...	1.31	0.36	0.10
Standard deviation	...	1.98	0.13	0.08
Skewness	...	2.61	0.68	0.01
Kurtosis-3	...	6.23	1.13	1.79
Normality(12)†	...	371.00 [.00]	5.35 [.07]	17.80 [.00]
Summary statistics and diagnostic test results of the GARCH normalized residuals				
Skewness	-0.40	-0.57	-0.17	-0.15
Kurtosis-3	1.61	2.00	-0.48	3.13
Serial correlation LM(12)†	28.20 [.01]	42.40 [.00]	14.20 [.29]	29.70 [.00]
Normality(12)†	31.30 [.00]	29.20 [.00]	0.55 [.76]	53.50 [.00]
ARCH(12)†	9.27 [.68]	18.40 [.00]	8.73 [.73]	4.86 [.96]
Constant and slope coefficients in full period / (significant full period level and slope dummy coefficients)				
Constant / (sign. level dummies)	0.18	(-0.14)	(0.11)	
Slope / (sign. slope dummies)	0.99	(0.04)	(0.02)	

* ... Denotes entry not appropriate.
† Values in parentheses are p-values.

Ireland: January 1984 – September 1995

The Irish short-term interest rate differential points to a high level of financial integration since at least since the start of 1984. The bulk of the few remaining controls were removed in 1991 and 1992. The large liberalization effort at the end of 1992 seemed like a good date at which a structural break might occur. Both the intercept and slope dummies for the period when controls are in place are significant. On average the differential in the period preceding January 1993 was 2.48% lower than in the subsequent period, while the onshore and offshore rates were less strongly related. After the removal of controls there appears to be complete coherence between onshore and offshore rates, with an insignificant intercept and a slope of 1. This suggests that capital mobility was very high, at least at the short end of the market.

Table D.7. Summary statistics and test results of the distribution of the three-month interest rate differential: Ireland

	84:2-95:9*	84:2-93:1	93:2-95:9
Summary statistics of the distribution of the three-month interest rate differential			
Mean	...	0.48	-0.03
Standard deviation	...	2.50	0.37
Skewness	...	8.87	-4.54
Kurtosis-3	...	83.20	20.70
Normality(12)†	...	999.00 [.00]	683.00 [.00]
Summary statistics and diagnostic test results of the GARCH normalized residuals			
Skewness	9.35	8.31	-2.32
Kurtosis-3	99.10	76.90	11.80
Serial correlation LM(12)†	18.30 [.11]	17.70 [.13]	9.93 [6.2]
Normality(12)†	592.00 [.00]	279.00 [.00]	214.00 [.00]
ARCH(12)†	0.37 [.00]	3.54 [.00]	5.79 [.93]
Constant and slope coefficients in full period / (significant full period level and slope dummy coefficients)			
Constant / (sign. level dummies)	ns	(-2.48)	
Slope / (sign. slope dummies)	0.99	(0.28)	

* ... Denotes entry not appropriate.
† Values in parentheses are p-values.
ns Not statistically significant at a 5% level.

The Netherlands: October 1972 – September 1995

The Netherlands had relatively free capital markets over our whole period. The only significant break appears to be in January 1980 around the time of the deregulation of commercial banks' foreign positions as measured by external assets and liabilities. After this reform the differential drops down to a steady value between 0.1 and 0.2. There are still some minor positive peaks in the early half of this second sub-period, as some inward controls remained. They were not thoroughly eliminated until July 1983, which is our second breakpoint. The mean and standard deviation in the second sub-period decreased, and they fell further after 1983, indicating very high levels of (short-term) capital mobility.

Table D.8. Summary statistics and test results of the distribution of the three-month interest rate differential: the Netherlands

	73:4-95:9*	72:10-80:1	80.6:83:7	84:2-95:9	83:11-95:9
Summary statistics of the distribution of the three-month interest rate differential					
Mean	...	0.35	0.13	0.14	0.11
Standard deviation	...	0.30	0.04	0.05	0.03
Skewness	...	1.67	1.04	1.24	-0.45
Kurtosis-3	...	3.99	0.72	0.79	0.29
Normality(12)†	...	99.10[.00]	7.68[.02]	11.90[.00]	5.46[.07]
Summary statistics and diagnostic test results of the GARCH normalized residuals					
Skewness	0.39	2.09	0.58	0.32	0.35
Kurtosis-3	2.13	7.48	-0.12	0.29	0.29
Serial correlation LM(12)†	43.60[.00]	25.10[.01]	17.00[.15]	48.90[.00]	51.10[.00]
Normality(12)†	58.00[.00]	275.00[.00]	2.14[.34]	2.89[.24]	3.35[.19]
ARCH(12)†	28.80[.00]	11.70[.47]	7.90[.79]	11.70[.47]	10.20[0.60]
Constant and slope coefficients in full period / (significant full period level and slope dummy coefficients)					
Constant / (sign. level dummies)	0.10	(-0.09)			
Slope / (sign. slope dummies)	1.00	(0.04)			

* ... Denotes entry not appropriate.
† Values in parentheses are p-values.

Spain: January 1981 – September 1995

Spain was not a member of the ERM in our first sub-period, and maintained strong outward capital flow controls. The second sub-period begins in January 1987, with the liberalization of banks' foreign exposure, allowing banks to take short foreign currency positions for the first time. Both dummies covering this break are significant. As this constitutes an important easing of restrictions on capital outflows at the short end of the spectrum of financial assets, it is understandable that the differential moves sharply positive after this point. The second sub-period ends at the beginning of 1990, when there were two liberalizations of capital inflow transactions. Thereafter the differential steadily declined as the remaining controls were gradually dismantled. Their virtual complete abolition in 1992 marks the beginning of the fourth sub-period. Neither of the dummies for the third break are significant. The four realignments of the peseta in 1992 and 1993 were not associated with a large rise in the differential. There is strong evidence of free movement of capital after 1990.

Table D.9. Summary statistics and test results of the distribution of the three-month interest rate differential: Spain

	81:1-95:9*	81:1-85:9	81:2-85:9	85:12-89:12	90:2-92:8	92:9-95:9
Summary statistics of the distribution of the three-month interest rate differential						
Mean	...	-1.57	-1.57	1.56	0.65	0.07
Standard deviation	...	2.17	2.17	1.18	0.26	0.11
Skewness	...	-2.30	-2.30	1.19	0.90	2.23
Kurtosis-3	...	7.91	7.91	0.55	0.90	6.08
Normality(12)†	...	274.00[.00]	274.00[.00]	10.00[.01]	6.26[.07]	89.90[.00]
Summary statistics and diagnostic test results of the GARCH normalized residuals						
Skewness	0.18	-0.63	-0.57	1.31	0.73	0.60
Kurtosis-3	2.31	1.70	0.13	1.51	2.18	0.20
Serial correlation LM(12)†	44.90[.00]	18.70[.10]	18.80[.10]	19.30[.08]	13.40[.34]	4.95[.96]
Normality(12)†	40.20[.00]	10.60[.01]	3.03[.22]	18.70[.00]	8.63[.01]	2.28[.32]
ARCH(12)†	30.50[.00]	012.10[.44]	10.90[.53]	4.81[.96]	15.10[.23]	8.35[.76]
Constant and slope coefficients in full period / (significant full period level and slope dummy coefficients)						
Constant / (sign. level dummies)	ns	(3.58)	(3.58)			
Slope / (sign. slope dummies)	1.02	(-0.40)	(-0.40)	(0.09)		

* ... Denotes entry not appropriate.
† Values in parentheses are p-values.
ns Not statistically significant at a 5% level.

Sweden: January 1987 – September 1995

Virtually all controls were finally eliminated in July 1989. However, there was little impact on the differential. Sweden maintained some controls until the end of 1992, which enabled the large positive differential of 5.2% to emerge in 1992. The end of 1992 was posited as a possible structural break. The significance of both slope and intercept dummies confirm this choice. One year afterwards the differential starts to decline to settle down between 0 and 0.3%. The period from early 1993 exhibits the characteristics of a market free of capital controls.

Table D.10. Summary statistics and test results of the distribution of the three-month interest rate differential: Sweden

	87:3-95:9*	87:3-93:1	93:3-95:9
Summary statistics of the distribution of the three-month interest rate differential			
Mean	...	0.63	0.38
Standard deviation	...	0.64	0.17
Skewness	...	5.30	0.37
Kurtosis-3	...	32.50	-1.39
Normality(12)†	...	999.00 [.00]	3.31 [.19]
Summary statistics and diagnostic test results of the GARCH normalized residuals			
Skewness	2.38	3.71	-0.06
Kurtosis-3	13.00	19.40	-0.72
Serial correlation LM(12)†	11.50 [.49]	19.00 [.09]	9.98 [.62]
Normality(12)†	822.00 [.00]	999.00 [.00]	0.68 [.71]
ARCH(12)†	1.47 [1.0]	4.34 [.98]	16.20 [.18]
Constant and slope coefficients in full period / (significant full period level and slope dummy coefficients)			
Constant / (sign. level dummies)	ns	(-1.22)	
Slope / (sign. slope dummies)	1.04	(0.13)	

* ... Denotes entry not appropriate.
† Values in parentheses are p-values.
ns Not statistically significant at a 5% level.

United Kingdom: January 1976 – September 1995

A major bout of exchange control liberalization occurred between June and October 1979, so a natural breakpoint arises in October 1979. The controls that were dismantled in this period were predominantly outward controls. The relative preponderance of outward controls prior to this period help explain the continuously negative differential. After October 1979, there is a fair amount of volatility in the size of the differential for the next year and a half, which may be due to lingering interference by the authorities in the workings of the capital market. The opening of the London market to the placement of foreign certificates of deposit in February 1980 intensified the liberalization of controls on outflows and may account for the rise in the differential, with a two-month lag, to a virtually continuously positive value. The mean differential after 1979 is small and displays little volatility. The regression slope is 1, and the intercept is negligible. There is strong evidence for perfect capital mobility, at least at the short end of the market.

Table D.11. Summary statistics and test results of the distribution of the three-month interest rate differential: United Kingdom

	76:7-95:9*	76:4-79:10	80:1-95:9
Summary statistics of the distribution of the three-month interest rate differential			
Mean	...	-0.97	0.08
Standard deviation	...	0.81	0.07
Skewness	...	-1.12	-2.77
Kurtosis-3	...	1.43	21.70
Normality(12)†	...	13.20 [.00]	999.00 [.00]
Summary statistics and diagnostic test results of the GARCH normalized residuals			
Skewness	0.19	-0.44	0.46
Kurtosis-3	1.07	0.02	0.76
Serial correlation LM(12)†	41.00 [.00]	23.20 [.03]	26.60 [.01]
Normality(12)†	12.40 [.00]	1.40 [.50]	11.30 [.00]
ARCH(12)†	8.08 [.78]	11.50 [.49]	17.90 [.12]
Constant and slope coefficients in full period / (significant full period level and slope dummy coefficients)			
Constant / (sign. level dummies)	0.06		
Slope / (sign. slope dummies)	1.00	(-0.06)	

* ... Denotes entry not appropriate.
† Values in parentheses are p-values.

Conclusions

It appears possible to identify periods when capital controls had a significant effect in the onshore and offshore markets. Controls can raise or lower the mean differential, and they can also make it more volatile. We examine this for the majority of European economies, and we can see that the single market programme and the general pressure to liberalize have increased the coherence of interest rates in these markets. It is also clear that controls have on occasion inserted a wedge between onshore and offshore rates, and they have also at times caused movements in onshore rates to become more or less decoupled from offshore, and hence world rates. These effects of controls will also have had a clear effect on the efficiency with which resources are allocated within Europe.

APPENDIX E

OECD Codes of Liberalization: lists of types of operation

E.1. Capital movements

I. Direct investment

II. Liquidation of direct investment

III. Operations in real estate

IV. Operations in securities on capital markets

V. Operations on money markets

VI. Other operations in negotiable instruments and non-securitized claims

VII. Operations in collective investment securities

VIII. Credits directly linked with international commercial transactions or with the rendering of international services

IX. Financial credits and loans

X. Sureties, guarantees and financial back-up facilities

XI. Operation of deposit accounts

XII. Operations in foreign exchange

XIII. Life assurance

XIV. Personal capital movements

XV. Physical movement of capital assets

XVI. Disposal of non-resident-owned blocked funds

E.2. Current invisible operations

I. Business and industry

II. Foreign trade

III. Transport

IV. Insurance (including conditions for establishment and operation of branches and agencies of foreign insurers)

V. Banking and financial services

VI. Payment services

VII. Banking and investment services (including underwriting, broker/dealer services, financial market information, communications and execution systems)

VIII. Settlement, clearing and custodial and depository services

IX. Asset management

X. Advisory and agency services

XI. Fees, commissions and other charges

XII. Conditions for establishment and operation of branches, agencies etc. of non-resident investors in the banking and financial services sector

XIII. Income from capital

XIV. Travel and tourism

XV. Films

XVI. Personal income and expenditure

XVII. Public income and expenditure

XVIII. General

APPENDIX F

Scores and rankings in the OECD Codes

Table F.1. Freedom of capital movements in EU Member States: individual country scores and rankings according to number of reservations entered under OECD Codes of Liberalization

	Capital movements				Current invisibles				Current and capital operations			
	Single market		Global market		Single market		Global market		Single market		Global market	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Austria	0	1	0	1	4	12	4	12	4	10	4	9
Belgium	0	1	4	12	2	9	2	9	2	7	6	12
Denmark	0	1	0	1	1	4	1	4	1	4	1	4
Finland	0.5	9	0.5	7	2	9	2	9	2.5	8	2.5	7
France	3	13	4.5	13	1	4	1	4	4	10	5.5	11
Germany	5	15	5	14	1	4	1	4	6	14	6	12
Greece	0.5	9	0.5	7	4	12	4	12	4.5	12	4.5	10
Ireland	0	1	0	1	1.5	8	1.5	8	1.5	6	1.5	6
Italy	0	1	2	11	5	15	5	15	5	13	7	14
Luxembourg	0	1	0	1	0	1	0	1	0	1	0	1
Netherlands	0	1	0	1	0	1	0	1	0	1	0	1
Portugal	4.5	14	5	14	4	12	4	12	8.5	15	9	15
Spain	0.5	9	0.5	7	3	11	3	11	3.5	9	3.5	8
Sweden	0.5	9	0.5	7	0	1	0	1	0.5	3	0.5	3
UK	0	1	0	1	1	1	4	4	1	4	1	4
EU total	14.5		22.5		29.5		29.5		44		52	
Unweighted average	1.0		1.5		2.0		2.0		2.9		3.5	

Table F.2. Reservations lodged by EU Member States to the OECD Code of Liberalization of Capital Movements: summary

Country	Operations in securities on capital markets		Operations on money markets		Other operations in negotiable instruments and non-securitized claims	Operations in collective investment securities		All operations	
Austria									
Belgium		1*		1*	1*		1*		4*
Denmark									
Finland		(1)							0.5
France	1	(1*)		2			1*	3	1.5*
Germany		3		2					5
Greece		(1)							0.5
Ireland									
Italy							2*		2*
Luxembourg									
Netherlands									
Portugal	2,	(1) (1*)		1			1	4.5	0.5*
Spain		(1)							0.5
Sweden		(1)							0.5
UK									
EU total	8.5	2*	5	1*	1*	1	4	14.5	8*

1 Denotes number of reservations that are applicable to all members.

1* Denotes number of reservations that are not applicable to members of the EU.

( ) Indicates that the reservation is weighted as 0.5.

Table F.3. Reservations lodged by EU Member States to the OECD Code of Liberalization of Current Invisible Operations: summary

Country	Type of operation			
	Banking and investment services*	Settlement and clearing systems, custodial and depository service	Asset/cash/portfolio/ pension fund management**	All operations
Austria	2			2
Belgium		1	1	4
Denmark		1	1	2
Finland		1		1
France	1		1	2
Germany	1			1
Greece	2			1
Ireland	1	1	1	4
Italy	3		(1)	1.5
Luxembourg		1	1	5
Netherlands				
Portugal	2	1		
Spain	2		1	4
Sweden			1	3
UK	1			1
Total	16	6	7.5	29.5

NB: All reservations entered apply to all OECD members, without distinction between EU and non-EU members.

* Includes underwriting, broker/dealer services, financial market information.

** Includes safekeeping of assets and trust services.

( ) Indicates that the reservation is weighted as 0.5.

Table F.4. Reservations lodged by EU Member States to the OECD Code of Liberalization of Current Invisible Operations, Insurance and Banking: establishment and operation of branches and agencies of foreign insurers and banks and other financial institutions

Country	When subject to authorization foreign insurers will be accorded equivalent treatment to that applied to national insurers	When subject to authorization foreign banks will be accorded equivalent treatment to that applied to national banks	Total	
			Single market (a)	Global market (b)
Austria	(**)	**	1.5	1.5
Belgium				
Denmark		**	1.0	1.0
Finland	(**)		0.5	0.5
France	*	(**)	0.5	1.5
Germany		(*)		0.5
Greece				
Ireland	*			1.0
Italy	*	**	1.0	2.0
Luxembourg				
Netherlands				
Portugal	*	**	1.0	2.0*
Spain		**	1.0	1.0
Sweden				
UK		**	1.0	1.0
EU total	1.0 4.0	6.5 0.5	7.5	12.0

**Denotes a reservation applicable to all members.

* Denotes a reservation not applicable to members of the EU.

( ) Denotes a reservation weighted as 0.5.

APPENDIX G

Survey methodology and coverage

In designing a postal questionnaire to be sent to market practitioners, the principal problem to be overcome was the multi-dimensional nature of the enquiry. If the answers obtained were to be more useful than the anecdotal generalizations often obtained by large-scale postal surveys, the questions would need to distinguish, for each of the 15 Member States, between residents' outward and non-residents' inward operations, between the principal kinds of security (equities, bonds and notes, money market instruments, derivatives and collective investment securities such as UCITS) and between different types of capital market activity (buying, selling and holding securities, borrowing through the issue or placement of securities, market-making, lead management etc.). It was also desirable to introduce a time dimension – to what extent freedom of capital movement has increased since the 1988 Directive came into force – and to assess the effect of exchange risk on cross-border capital movements. In addition, provision had to be made for respondents to identify specific obstacles in particular countries, whether these arise from legal, regulatory or administrative requirements, taxation provisions or differences in accounting rules or company law.

This matrix of issues was reduced to 14 main questions (see Appendices G and H) grouped under four broad headings, after a section which provides basic information about the respondent firm. These four headings relate to:

(a) the overall openness of each Member State to capital movement and market access, distinguishing between the freedom of residents to operate abroad and that of non-residents to operate on the domestic market, and the change in openness since 1990;
(b) whether the domestic requirements of individual Member States restrict or distort capital movements, distinguishing between different types of capital market transaction and between residents and non-residents;
(c) the effects of exchange rate uncertainty on non-resident investment in and borrowing on domestic markets, distinguishing between different kinds of securities, and the effects that eliminating exchange risk might have on yields and on investment and borrowing activity by residents and by non-residents; and
(d) the identification and quantification of specific restricting or distorting factors, distinguishing between those relating to prudential requirements or consumer/investor protection, differential tax treatment and national differences in corporate tax regimes, accounting rules or company law. In this section, respondents were asked to indicate whether the restrictions applied only to the residents or markets of non-EU Member States, or also to EU residents or markets.

Since, where there may be only indirect obstacles rather than explicit and prohibitive exchange controls, the freedom of capital movement and the openness of capital markets are relative concepts, it was necessary to have a scoring system for respondents to use. For some questions they were asked to rate a country on a scale of 0 to 10. For others, they were asked to indicate, with a mark from one to five, the direction and intensity of the effect in question (three being the neutral point) or, equivalently, to tick one of five boxes: for the purposes of analysis and presentation, three has been subtracted from each of these marks to show scores in a range from negative two to positive two, zero being the neutral point. The overall score

for each country or each market sector was calculated as the mean value of the scores registered by the individual respondents. For most questions, summary scores for the EU as a whole were also calculated, as the weighted average of the overall scores for each country, the weights used being country shares of EU-15 GDP in 1994.

The questionnaire, together with an explanatory letter, was sent at the end of 1995 to 286 major firms active in European capital markets, including banks, insurance companies, fund managers and non-financial corporations with treasury operations. All 15 Member States were represented. In view of the detailed and specialized nature of the survey, it was decided that it was more important to ensure that the questionnaire received serious consideration by experts in the subject than to attempt extensive coverage or a statistically representative sample. It was therefore sent in most instances to named individuals at these firms – senior economists, heads of European strategy or capital market operations and corporate treasurers – who were either personal contacts or personally recommended.

Replies were received from 76 firms, an initial response rate of 27%. Of these, however, some 46 firms admitted that they did not have available to them centrally the information needed to provide answers in the detail sought by the questionnaire and that their internal organizational structure did not enable them to obtain such information, despite its strategic importance to their firm. In order to improve the overall response to the survey and to supplement the detailed information already obtained, a second, shorter questionnaire was devised, posing in simplified form seven of the key questions contained in the original questionnaire as well as again soliciting information on any specific restricting or distorting factors in particular markets (see Appendix I). A combination of a repeat mailing to all Member States and telephone and face-to-face interviews conducted with firms in the four largest financial centres of the EU produced a further 63 responses in the form of completed follow-up questionnaires, raising the total of responses to the survey to 139 (an overall response rate, including the Don't Knows, of 49%) and the total number of completed questionnaires to 92, representing a return rate of 32%.

APPENDIX H

Initial questionnaire

A. Respondent profile *(All information will be handled in the strictest confidence)*

1. Respondent firm:
(Name and address; Country of incorporation; Country of incorporation of parent company)

2. Person in charge of response:
(Name; Position in firm; Telephone and fax)

3. Scale and geographical spread of capital market activity:

3.1. What is the approximate magnitude (expressed in ECU mns) of your firm's total gross annual transactions and total stock of assets held (on both own and clients' account) in medium and long-term securities, money-market instruments, derivatives and units of Undertakings for Collective Investment in Transferable Securities (UCITS)?
(Annual transactions: ECU mns; Year . Stock of assets held: ECU mns; Year .)

3.2. What proportion of these transactions is:
1. With/between local residents or domestic market?
2. Cross-border involving another EC country?
3. Cross-border involving a non-EC country?

3.3. What proportion of this total stock consists of liabilities:
1. Of local residents?
2. Of residents of other EC?
3. Of residents of non-EC countries?
4. Denominated in local currency?
5. Denominated in other EC currencies or ECUs?
6. Denominated in non-EC currencies?

3.4. What is the relative importance for your firm at present of each of the 15 EC Member States as a market for capital transactions and associated investment services?
(Please mark each country on a scale from 0 to 10, where 0 represents no or negligible importance and 10 the most important for your firm.)

3.5. How much more or how much less capital market business has your firm undertaken in the year shown in 3.1. above compared with 1990 in each Member State?
(Please show approximate percentage increase (+)/decrease (-).)

B. Overall openness to capital movement and market access

4. In the light of your firm's experience of acting both on own account and on behalf of clients, now that direct capital controls have been removed in every EC Member State, how open is each Member State in respect of:
(Please mark each country on a scale from 0 to 10, where 0 denotes completely closed and 10 completely open.)

4.1. Freedom of residents to buy, to sell, and to raise funds by means of financial instruments abroad or in foreign currency at home and to obtain investment services abroad, without financial or administrative penalty being imposed by their national authorities?

4.2. Freedom of non-residents to buy, to sell, and to raise funds by means of financial instruments in local or foreign currency and to obtain related investment services, on equal terms with residents in these markets?

4.3. Freedom of foreign firms to conduct all kinds of capital transaction directly on local markets on equal terms with local firms?

5. How much easier is it now compared with five years ago (i.e. 1990), to perform the operations covered in questions 4.1. – 4.3. above?
(Please place a tick (✓) against the most appropriate answer for each country.)

C. Restrictions or distortions of capital movement, by type of transaction

6. Do domestic legal, prudential, fiscal or other administrative requirements discourage or encourage the use of foreign (compared with domestic) financial markets, firms and instruments by **residents** undertaking the following activities:
(Please mark from 1 to 5 as follows: Strongly discourage, 5; Discourage, 4; Neutral, 3; Encourage, 2; Strongly encourage, 1.)

6.1. Buying, selling or holding:
(equities; bonds and notes; money-market instruments; futures, swaps, options; units of UCITS)

6.2. Borrowing through issue or placement of:
(equities; bonds and notes; money-market instruments)

7. Do domestic legal, prudential, fiscal or other administrative requirements place non-residents at an advantage or a disadvantage over residents in the domestic market for the following activities?
(Please mark from 1 to 5 as follows: Major disadvantage, 5; Some disadvantage, 4; Neutral, 3; Some advantage, 2; Major advantage, 1.)

7.1. Buying, selling or holding:
(equities; privatization issues; bonds and notes; money-market instruments; futures, swaps, options; units of UCITS)

7.2. Borrowing through issue or placement of:
(equities; bonds and notes; money-market instruments)

7.3. Lead-management of debt issues?
7.4. Market-making?
7.5. Management of privatization issues?
7.6. Membership of stock market?
7.7. Membership of futures/options exchange?
7.8. Access to payment/settlement system?

D. Effects of exchange rate uncertainty on capital mobility

8. Has greater exchange rate uncertainty since the disruption of the Exchange Rate Mechanism in 1992/93 resulted in an increase or decrease in investing or borrowing activity by non-residents in the domestic capital or money markets of any particular Member State?
(Please mark from 1 to 5 as follows: Major increase, 5; Some significant increase, 4; Neutral impact, 3; Some significant decrease, 2; Major decrease, 1.)

8.1. Investment by non-residents in:
(equities; bonds and notes; money-market instruments; futures, swaps, options; units of UCITS)

8.2. Borrowing by non-residents in:
(equities; bonds and notes; money-market instruments)

9. For each EC Member State, if it joined with others in a sound and stable monetary union in a few years' time, eliminating foreign exchange risk between participating currencies, what would be the impact on yields:
(Please show expected percentage point increase (+) or decrease (-).)

9.1. In its domestic money market? 9.2. In its long-term bond market?

10. For each EC Member State, if it joined with others in a sound and stable monetary union in a few years' time, eliminating foreign exchange risk between participating currencies, what effect would this have on investment and borrowing activity?
(Please mark from 1 to 5 as follows: Major increase, 5; Some significant increase, 4; Neutral impact, 3; Some significant decrease, 2; Major decrease, 1.)

10.1. By residents of the country shown on markets elsewhere in the monetary union?

10.2. By residents of other countries in monetary union on the markets of the country shown?

E. Specific factors restricting or distorting the movement of capital

11. Are there legal, regulatory or administrative requirements relating to prudential supervision, consumer/investor protection or the maintenance of orderly markets in any EC Member State which, directly or indirectly, restrict or distort the movement of capital or the supply of associated investment services?

Yes ____ – **Please go to Question 11.1** (below).
No ____ – **Please go to Question 12** (next page).

11.1. Please specify below the country in which the requirement is imposed; the nature of the requirement; how it constitutes a significant restriction or distortion and whether it is applied in respect of other EC countries or only in respect of non-EC countries. Please also indicate the degree of importance you attach to the restriction/distortion and, if possible, the financial cost to your firm in terms of e.g. cost of compliance or estimated amount of business diverted or foregone.

12. Has your firm encountered any differential tax treatment – according to residential status, geographical location or currency – of income from investment, capital gains or capital transactions which significantly restricts or distorts the movement of capital or the supply of associated investment services among EC Member States?

Yes ____– Please go to Question 12.1.
No ____– Please go to Question 13.

12.1. Please specify below the country in which the tax treatment is applied, the nature of the tax requirement, how it constitutes a significant restriction or distortion and whether it is applied in respect of other EC countries or only in respect of non-EC countries. Please also indicate the degree of importance you attach to the restriction/distortion and, if possible, the financial cost or benefit to your firm in terms of e.g. effect on margins, income or amount of business diverted or foregone.

13. Among EC Member States are there any national differences – or differentiation according to size of firm – in corporate tax regimes, accounting rules or company law which restrict or distort the movement of capital or the supply of associated investment services?

Yes ____– Please go to Question 13.1.
No ____– Please go to Question 14.

13.1. Please specify below the country which you judge to be the source of the restriction/distortion, the nature of the difference, and its effect and whether it applies in respect of other EC countries or only in respect of non-EC countries. Please also indicate the degree of importance you attach to this effect and, if possible, the financial cost or benefit in terms of e.g. effective tax rate, cost of compliance, or amount of business diverted/foregone.

14. Do any other factors in EC Member States (including access to local facilities not covered in Question 10 above) restrict or distort the movement of capital or the supply of associated investment services?

APPENDIX I

Follow-up questionnaire

1. How free – in terms of regulations, tax treatment or other requirements applied by the authorities in your country – are financial institutions and other *residents* to conduct capital and money-market transactions in other EU countries? *Please mark [X] in appropriate box:*

   Completely free; Free in most major respects; Restricted in some major respects; Very restricted.

2. How does this compare with the situation five years ago (e.g. in 1990)? *Please mark [X] in appropriate box:*

   Much more free now; Some significant increase in freedom; No change; Less free now.

3. How accessible to *non-residents* are the domestic capital and money markets of the other EU Member States for the buying, selling and issuing of securities? *Please mark each country on a scale from 0 ('completely closed') to 10 ('completely open').*

4. How would you have scored the accessibility of these markets to *non-residents* five years ago (e.g. in 1990)? *Please mark each country on a scale from 0 ('completely closed') to 10 ('completely open').*

5. How open to *non-residents* are domestic markets, in the EU overall, for transactions in the following kinds of securities? *Please mark on a scale from 0 ('completely closed') to 10 ('completely open').*

   Equities; Bonds; Money-market instruments; Futures, swaps, options; Collective investment securities.

6. Which, if any, of the following factors currently constrains the amount of cross-border securities business that your firm conducts with other EU Member States? *Please mark the appropriate box, where relevant, with [XX] ('major constraint') or [X] ('some significant constraint').*

   Local incorporation requirements; Local prudential regulations; Tax treatment of non-residents; Differences in company law or accounting requirements; Exchange rate risk; Liquidity of local market.

Thank you for answering these questions. It would also be very helpful to us if you were able to provide answers to the following question:

7. Please list and describe below any specific factors in individual Member States which have significantly restricted, or diverted elsewhere, the conduct of cross-border transactions by your firm.

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