

The relationship between consumer spending and house prices will be affected by the ability of households to withdraw equity from housing – known as mortgage equity withdrawal. This will reflect the level of owner occupation, the level of housing wealth, the turnover of housing market transactions, and importantly, the degree of liberalisation in financial and mortgage markets.

Mortgage equity withdrawal in the UK averaged 3 per cent of household disposable income between 1979 and 1999. In Germany, France and Italy, by contrast, *injections* to housing equity – ie. the excess of net investment in housing over net flows of borrowing secured against housing – averaged 6 per cent of household income.

With mortgage debt fixed in nominal terms, the relatively strong trend in UK real house prices is an important factor in explaining higher equity withdrawal in the UK. The level of housing transactions in the UK is the highest of the large EU countries, implying increased opportunities for households to withdraw equity when moving home. External estimates suggest that higher market turnover may at least partly reflect the fact that transactions costs are low in the UK compared with other large EU Member States.

The close correlation between mortgage equity withdrawal and the wider housing market cycle since the 1980s also marks out the UK, and appears partly to reflect rapid and extensive deregulation in UK financial and mortgage markets during the 1980s. The Scandinavian economies had a similar deregulation experience to that in the UK. In France and Italy, the deregulation process began later and did not go as far. In Germany, the mortgage market remains heavily regulated.

5.1 The influence of the housing market on household consumption depends on the extent to which housing wealth can be accessed and, in particular, the extent to which homeowners are able to borrow against housing wealth. This is known as mortgage (or housing) equity withdrawal. As set out in Section 2, there are a number of methods by which homeowners can withdraw equity. For example, a homeowner can generate a cash sum by selling a property and moving to a cheaper one which requires a lower mortgage, or the homeowner can borrow against their housing wealth without moving. The ability of households to withdraw housing equity will depend on:

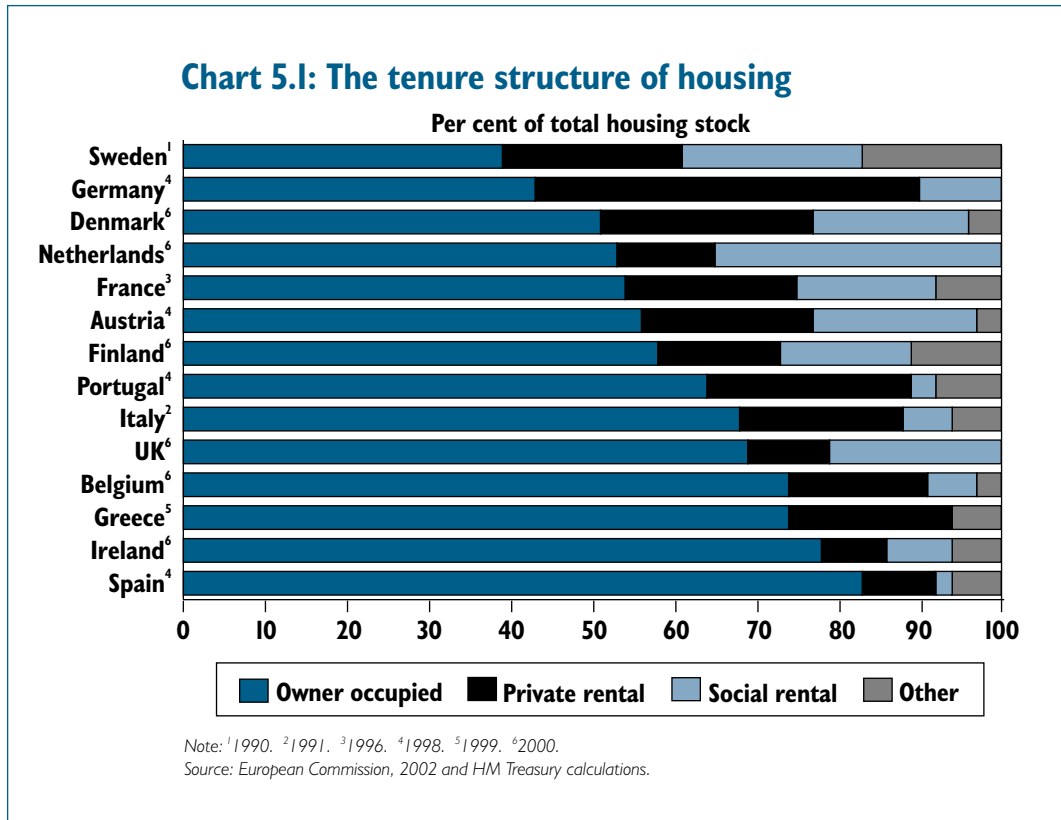
- the degree of owner occupation and housing wealth: households must own a home to be able to withdraw equity from it and there must be equity available to withdraw;
- housing market turnover: a large amount of equity withdrawal occurs when households sell their property; and
- the degree of financial market liberalisation: which increases the ability of households to borrow against housing wealth.

5.2 This section begins with a review of some of the key indicators related to mortgage equity withdrawal across EU countries. It then considers reasons for the relatively high level of equity withdrawal in the UK.

Indicators related to mortgage equity withdrawal in the EU

Tenure structure **5.3** Chart 5.1 shows that the structure of housing tenure varies markedly across EU countries. (Section 3 notes that the UK has a relatively high owner occupation rate, although the position does not stand out compared with the EU average.) The UK's private rented sector is one of the smallest in the EU, while the social rented sector is one of the largest. Germany, which has one of the lowest rates of owner occupation in the EU, has the largest private rented sector as a proportion of the total housing stock.

5.4 Tax incentives, conditions attached to planning consents, controls on rents, interest rates and finance structures have all played a role in determining differences in tenure across the EU. For example, the rental market in Germany has been boosted by tax advantages available to private builders for new builds. Furthermore, life assurance and pension funds own large portfolios of housing for private renting in countries where this form of tenure is large, such as in Germany. Government support through social housing also varies, with the Netherlands showing the highest proportion of social housing.



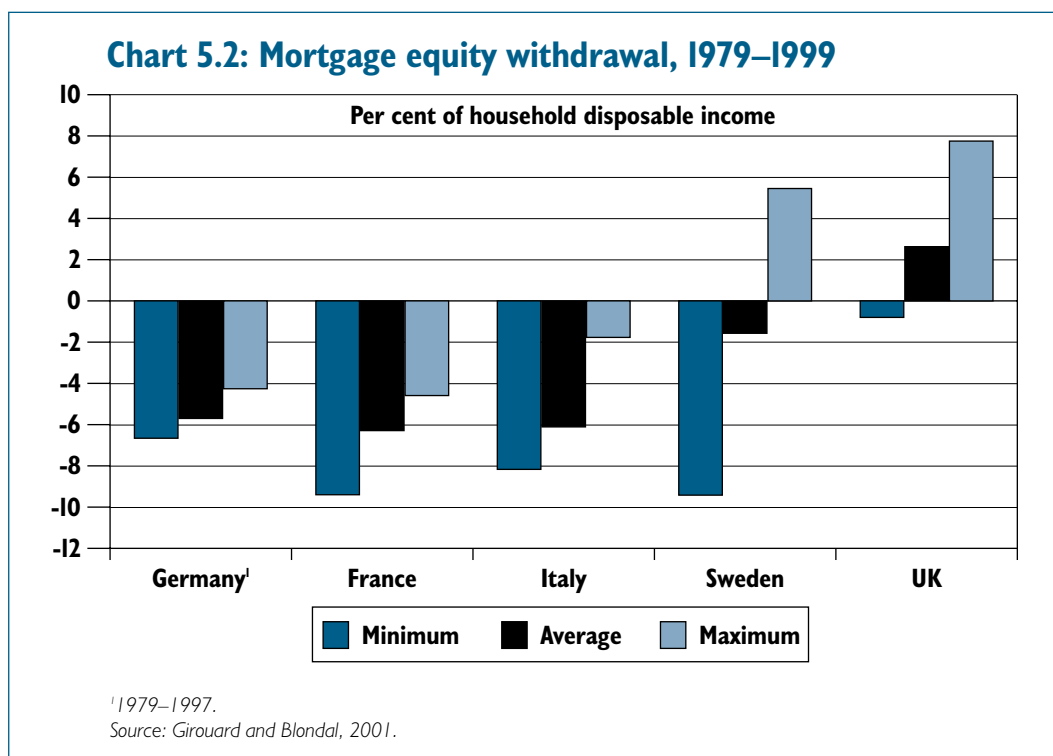
Housing wealth **5.5** Although owner occupation rates vary significantly across the large EU Member States, housing wealth is an important component of the household balance sheet for all. Table 5.1 illustrates that housing accounts for around a third of gross household wealth in the UK, Germany and Italy. In France, the proportion is higher at 40 per cent. However, this picture is complicated by differences between countries in what is included in the measure of total household wealth. In particular, the UK has a greater reliance on private pension funds than most other European countries, and because a relatively large proportion is funded, they appear on the household's balance sheet and hence in the measure of household wealth. By contrast, pay-as-you go state pensions which other countries rely on to a greater degree do not give rise to assets recorded on balance sheets. Thus this difference will tend to reduce the ratio of housing assets to total assets recorded for the UK relative to other countries.

Table 5.1: Housing assets as a per cent of household total assets

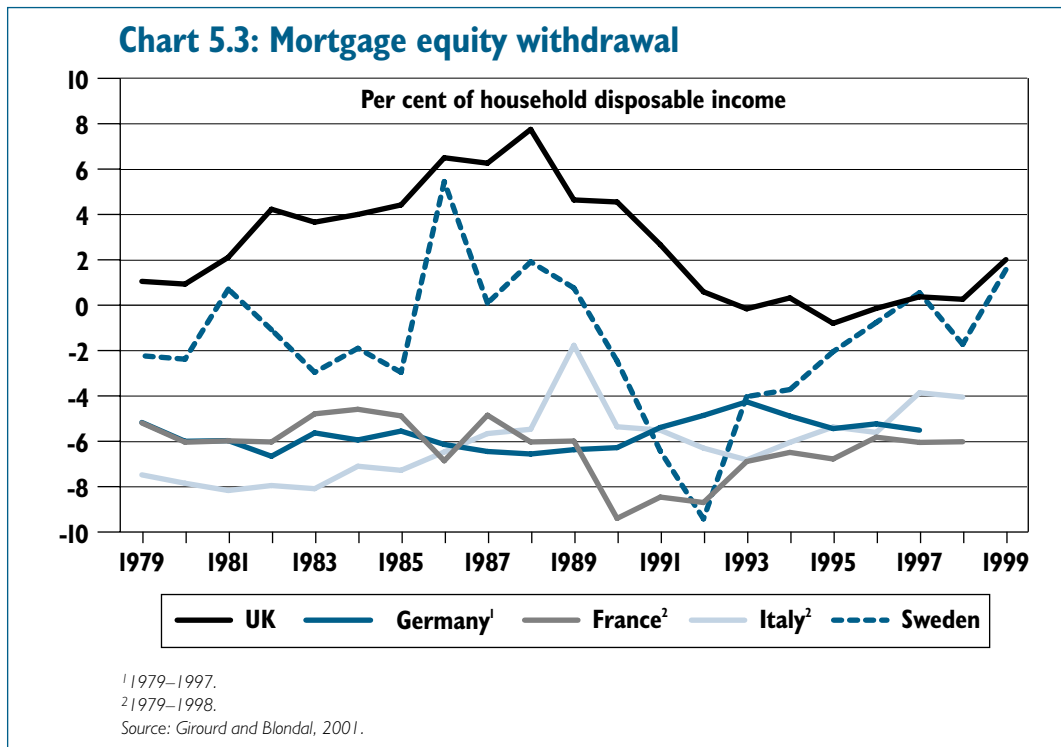
	1970	1980	1990	1995	1998
UK	–	40	44	33	34
Germany	–	–	34	34	32
France	34	44	43	42	40
Italy	36	40	37	35	31

Source: Girouard and Blondal, 2001.

Accessing housing wealth 5.6 Given that the importance of housing wealth is broadly comparable across EU countries (although recognising the caveat in the previous paragraph), differences in the strength of the link between housing wealth and consumption are likely to be related to the ability of consumers to access housing equity. Chart 5.2 shows average rates of mortgage equity withdrawal in the UK and other large EU countries between 1979 and 1999, together with their maximum and minimum levels over the same period. Average equity withdrawal for UK households amounted to almost 3 per cent of household disposable income over this period. In Germany, France and Italy, by contrast, net investment in housing significantly exceeded new flows of borrowing secured against housing over the same period. Indeed, this injection of equity into housing averaged close to 6 per cent of household disposable income in each of these countries.



5.7 Chart 5.3 shows movements in mortgage equity withdrawal over the same period. As well as a much greater average propensity to withdraw mortgage equity, there is also evidence that the UK cycle in equity withdrawal has been more pronounced than in Germany, France and Italy (although less pronounced than in Sweden).



Reasons for high mortgage equity withdrawal in the UK

5.8 Mortgage equity withdrawal is likely to be strongest where both net equity in housing and the number of housing market transactions are high. As discussed in Section 2, the sale of a property provides a clear opportunity for equity withdrawal (for example, if households purchase a property which requires a lower mortgage). In the UK, both net housing equity and housing market turnover show a close correlation with movements in mortgage equity withdrawal over time. However, mortgage equity withdrawal was fairly insignificant in the UK prior to the 1980s. This suggests that liberalisation in UK financial markets has been an important factor in allowing households to access housing equity by increasing their ability to borrow against housing wealth. This section compares developments in the UK with other EU countries.

Housing market turnover

5.9 Table 5.2 compares the volume and costs of property transactions across EU countries. Although there are limitations to comparisons of housing market turnover based on data for a single year, the table suggests that the level of transactions in the UK is high by European standards. At 8.4 per cent of the owner occupier housing stock, UK transactions significantly exceeded those in Germany (3.4 per cent) and France (5.4 per cent), and indeed all other countries in the table. Only in the Netherlands did the rate of housing market turnover come close to UK levels. This implies that UK households have substantially more opportunities to withdraw housing equity when moving property than households in other countries. Chart 5.4 shows that there is a close relationship between mortgage equity withdrawal and the level of housing market transactions in the UK over time.

Table 5.2: Housing transactions and transaction costs

	Transactions as a per cent of owner occupied ¹ housing stock (2000)	Total transaction costs ² as a per cent of purchase price	Tax on housing transactions as a per cent of price
UK	8.4	2.0	1.0
Germany	3.4	7.1	2.0
France	5.4 ³	13.8	10.0
Italy	3.8	7.4	4.2
Spain	–	10.4	6.0
Netherlands	7.8	–	–
Denmark	5.6	–	–
Finland	5.8	–	–
Portugal	5.4 ⁵	–	–
Ireland	8.3	–	–
Sweden	1.7 ⁴	–	–
Belgium	3.4	–	–

¹ Owner occupation rates as in Table 7.4, except Netherlands and UK 2000.

² Transaction costs estimate for the purchase of an £80,000 property (including taxes on housing transactions in 1993).

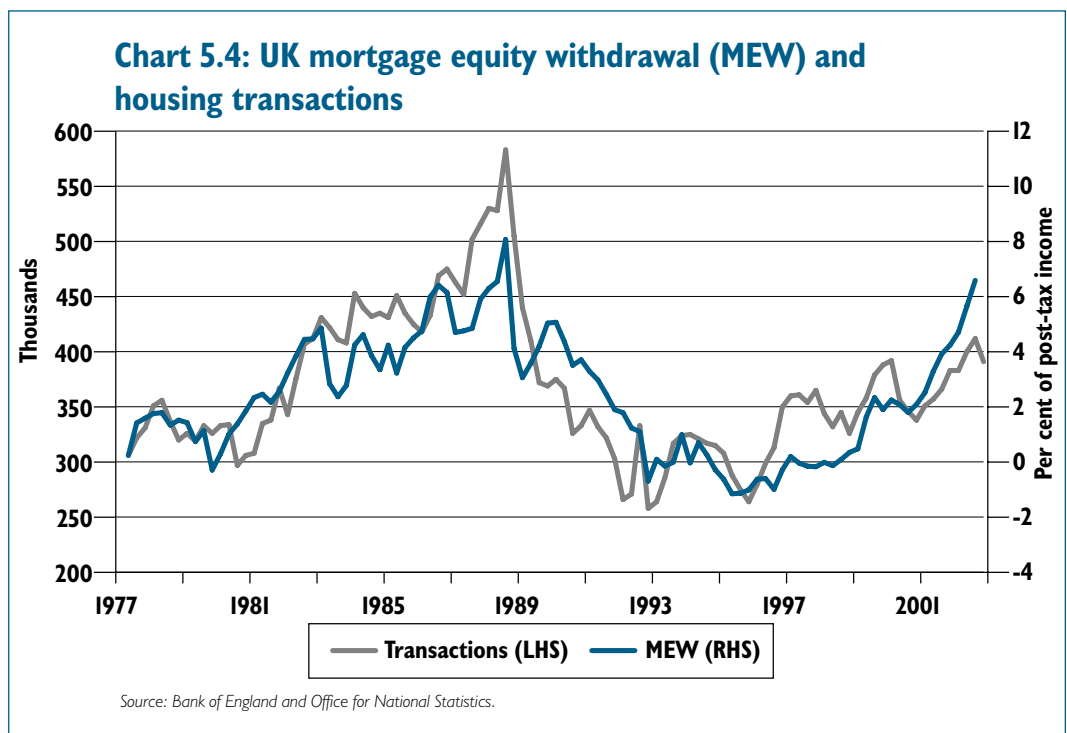
³ 1999

⁴ 1995

⁵ 1991

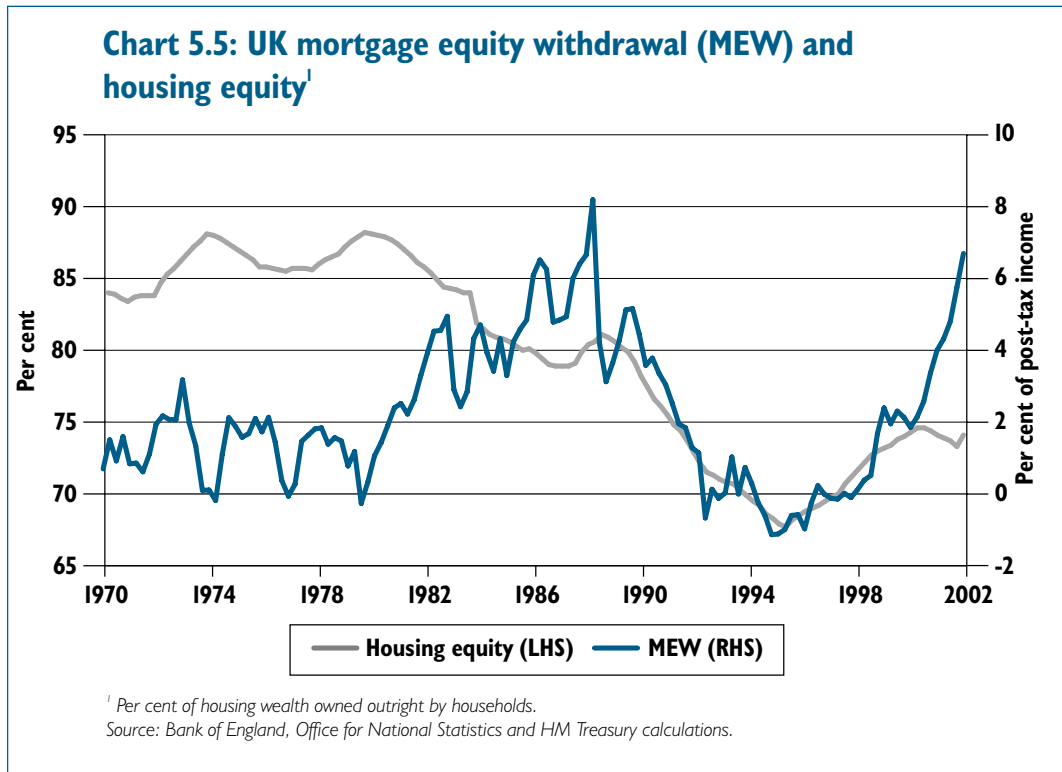
– indicates figure not available.

Source: European Commission, 2002; European Mortgage Federation, 2002; MacLennan et al., 2000; UN Economic Commission for Europe; Deutsche Bank.



5.10 Table 5.2 suggests that the UK's high rate of housing market turnover may have been encouraged by a relatively low level of housing transaction costs. In other large EU countries, the estimated costs of moving home are significantly higher in relation to house prices, particularly in France and Spain where the tax element in total transaction costs is substantial. Average house prices have risen sharply in the UK and stamp duty rates on higher priced properties have also been increased since 1997. But this is not likely to have overturned the general conclusion that high turnover goes hand in hand with relatively low housing transaction costs in the UK.

Housing equity 5.11 The relatively strong trend in UK real house prices has helped to ensure that households have had sufficient net equity in housing to make withdrawals a viable option. In other EU countries, where the trend in real house prices has been much weaker, there is less equity to withdraw. However, as noted by Davey (2001) and others, the relationship between net housing equity and equity withdrawal in the UK appears to have changed over time. Chart 5.5 shows little correlation between the two series up to the mid 1980s, but since then they have moved together much more closely. This suggests that the liberalisation of the UK financial sector during the 1980s may have significantly strengthened the links between house prices, housing wealth and consumer spending by allowing households to manage their assets and liabilities more effectively.



Financial liberalisation in the UK and EU

Financial liberalisation 5.12 Financial liberalisation is an important element in the link between housing wealth and consumption because it enables homeowners to more readily use their housing wealth to fund current spending. Although all EU countries have liberalised their financial markets to some degree in recent years, important differences remain in the degree to which credit constraints have been lifted.

5.13 An important element of financial liberalisation was the removal of regulated interest rates. As Table 5.3 shows, this occurred at different points in time across Europe. The liberalisation process in the UK was rapid and almost completed by the mid-1980s (see Table 5.4). Boone *et al.* (2001) note that this contrasts with some other European countries where “deregulation tended to occur later and was less comprehensive and important” (page 10).

Table 5.3: Interest rate deregulation

	Year of deregulation
UK	1979
Germany	1981
Netherlands	1981
Denmark	1988
Belgium	1990
France	1990
Italy	1990
Luxembourg	1990
Spain	1992
Portugal	1992
Ireland	1993
Greece	1993

Source: European Credit Research Institute, 2002.

Financial liberalisation in the UK...

5.14 Prior to the 1980s, the UK mortgage market was dominated by building societies and formal loan rationing was prevalent through the 'Memorandum of Agreement'. This meant that the range and choice of products offered was limited. Furthermore, building societies had a preference to offer their limited funds to first-time buyers taking out standard loan contracts, rather than funding equity withdrawal from the housing market. But from 1979, a number of key measures were taken to liberalise financial markets, with the result that building societies and banks became unrestricted in competing for mortgages and consumer credit (Table 5.4).

Table 5.4: Financial liberalisation in the UK – key measures affecting the housing market

Year	Measure	Impact
1979	Exchange controls removed	Opened domestic credit markets to international capital movements
1979	Lapse of 'Memorandum of Agreement'	Greater freedom to offer mortgage loans including second mortgages and top-up loans
1980	Removal of the 'corset', a form of direct control over bank lending	Freedom for banks to extend liabilities without control
1981	Abolition of the Bank of England's minimum lending rate	Banks granted freedom to compete with building societies for housing finance
1986	Freedoms granted to building societies to expand into consumer credit	Building societies granted freedom to compete with banks for consumer credit

5.15 The process of liberalisation enhanced the ability of owner-occupiers to withdraw housing equity without having to move house. Miles (1992) argues that this was the most important aspect of the liberalisation of credit markets for the UK household sector. Secured borrowing and equity withdrawal rose rapidly, leading to a sharp fall in the UK household saving ratio during the late 1980s. UK household sector debt as a proportion of disposable incomes more than doubled during the course of the 1980s (Muellbauer and Lattimore, 1995).

... in **5.16** The Scandinavian economies followed a similar financial liberalisation process to the UK. Table 5.5 sets out some of the key measures. Drees and Pazarbaçioğlu (1998) argue that the reaction by households in all cases was quite similar: “*Households began to borrow aggressively and reduced their savings sharply*” (page 12). Edey and Hviding (1995) note that the saving ratio fell sharply in Sweden, Denmark, Finland and Norway in the mid 1980s and highlight the similarities to the UK. Financial liberalisation also facilitated a sharp increase in the demand for housing, which led to a strong boom in house prices in all cases.

Table 5.5: Financial liberalisation in Scandinavian countries

Country	Year	Key measures
Sweden	1978	Ceilings on bank deposit interest rates abolished
	1980	Ceilings on issuing rates for private sector bonds abolished
	1985	Ceilings on bank loan rates abolished
	1990	Foreign banks allowed to operate through branch offices and entitled to participate in clearing system on same terms as Swedish banks
	1991	Cash reserve requirements for finance companies abolished
Finland	1986	Average lending rate restrictions abolished
	1987	Downpayment requirements on housing and consumer loans eliminated
	1988	Floating rates allowed on all loans
Norway	1980	Foreign borrowing by banks liberalised
	1984	Supplementary reserve requirements abandoned – the end of lending controls
	1989-91	Remaining foreign exchange controls removed
	1990	Foreign banks allowed to operate through branch offices

Source: International Monetary Fund, 1998.

...in France **5.17** Key measures in the process of financial liberalisation in France are shown in Table 5.6. These changes were associated with rapid growth of consumer credit and some increase in mortgage credit (Bachetta and Gerlach, 1997). Nevertheless, MacLennan *et al.* (2000) highlight that, even though commercial banks were allowed to enter the mortgage market by 1987, interest rate restrictions meant that the uptake of credit was not as marked as in other countries. French regulators continued to intervene by restricting financial intermediaries from paying interest on current and savings accounts of up to three months liquidity. Overall, the macroeconomic impact of deregulation was less significant in France, reflecting a more gradual and somewhat less wide ranging process than occurred in the UK.

Table 5.6: Financial liberalisation in France

Year	Key measures
1984	Partial reduction of bank specialisation requirements
1987	Elimination of credit controls with the ceiling on bank credit, the <i>encadrement du credit</i> lifted
1987	Commercial banks allowed to enter the mortgage market
1991	Securisation introduced

... and in Germany **5.18** Experience in Germany was again rather different. Exchange restrictions or quantitative lending limits were not in place after the Second World War, suggesting greater freedom than in the UK. However, in terms of mortgage markets, Germany has a more regulated system. The system is complex and involves three different tiers in building up the funds necessary to purchase a house:

- first, *Bausparken*, specialised mortgage lenders, offer low cost mortgage loans. *Bausparken* mortgage loans involve households saving for a number of years before being able to take out a loan towards house purchase. Although interest rates are low for savings, households benefit from subsidised mortgage rates when they borrow. This system tends to encourage households to enter the market at an older age as they need to build up a savings stake;
- second, as households can only borrow approximately half of the final loan they require through the *Bausparken* system, the second stage involves taking out additional mortgages on top of *Bausparken* loans. Mortgage banks, which retain the monopoly right to issue mortgage bonds, provide additional funding but typically add further restrictions to mortgage loans; and
- third, households need to find around 20 per cent of the purchase price themselves.

5.19 The whole process is complicated and involves a prolonged period of time to obtain the necessary financing. Moreover, the regulations and restrictions limit the options available to fund consumption through housing wealth.

5.20 Overall, the process of financial liberalisation has been extensive in a number of European countries, in particular in the UK and Scandinavia. However, the process was less rapid in a number of other large EU countries and less comprehensive in Germany. The upshot is that, where liberalisation has been greatest, households have the benefit of efficient and competitive mortgage markets which allow them greater access to housing wealth.

Conclusions

5.21 This section has considered the importance of housing wealth in EU countries, and the ability of households to access housing wealth – a process known as mortgage equity withdrawal. The UK owner occupation rate is not notably out of line with the EU average and housing is a key asset for households in all large EU Member States. Thus differences in the links between housing wealth and consumption are shown to partly reflect variations in the degree of mortgage equity withdrawal. Mortgage equity withdrawal is more prominent in the UK than in a number of EU countries, reflecting the stronger upward trend in real house prices, a relatively high volume of housing transactions and relatively low transaction costs. The greater degree of financial deregulation in the UK than in some other major EU economies is also likely to help explain the UK's higher rate of mortgage equity withdrawal.

6

HOUSING AND CONSUMPTION: EMPIRICAL EVIDENCE

This section examines empirical evidence on the relationship between short-term interest rates, housing wealth and household consumption across EU economies. It draws on external cross-country comparisons and new HM Treasury analysis.

External studies provide some evidence that house prices and housing wealth exert a stronger influence on household spending in the UK than in other EU countries. Kennedy and Andersen (1994) identify a significant long-run negative influence of real house prices on the UK household saving ratio, matched only in a small number of EU countries including the Netherlands, Denmark and Finland. Working with a small sample of countries, Girouard and Blondal (2001) also identify a short and long-run role for housing wealth in a UK consumption function, though the impacts are estimated to be broadly comparable to France. Henley and Morley (2001) find evidence of a relatively strong link between real house price changes and consumption growth in the UK, as well as wider evidence of cross-country diversity in consumption functions.

To complement existing academic work, new work by HM Treasury models the links from interest rates and housing wealth to consumption. This work also finds that housing wealth has a relatively strong impact on consumption in the UK.

Overall, while the results of empirical studies are not clear cut, on balance they tend to support the view that the sensitivity of household spending to housing wealth and house prices is somewhat higher in the UK than elsewhere. Moreover, these consumption function based studies do not consider the link between interest rates and house prices. Analysis elsewhere in this study suggest this link may also be more sensitive in the UK.

6.1 The previous sections consider structural differences between UK and euro area housing and mortgage markets that may lead to differences in interest rate sensitivity, housing wealth and consumption. This evidence suggests that important differences exist between the UK and the euro area. But it is not possible, on the basis of structural evidence alone, to gauge the overall impact of these differences for interest rate sensitivity and consumption across countries. This section therefore considers empirical studies which attempt to estimate the overall strength of the link between housing markets and consumption in EU countries. It reviews existing external studies in this area, and then presents the results of a new modelling exercise undertaken by HM Treasury.

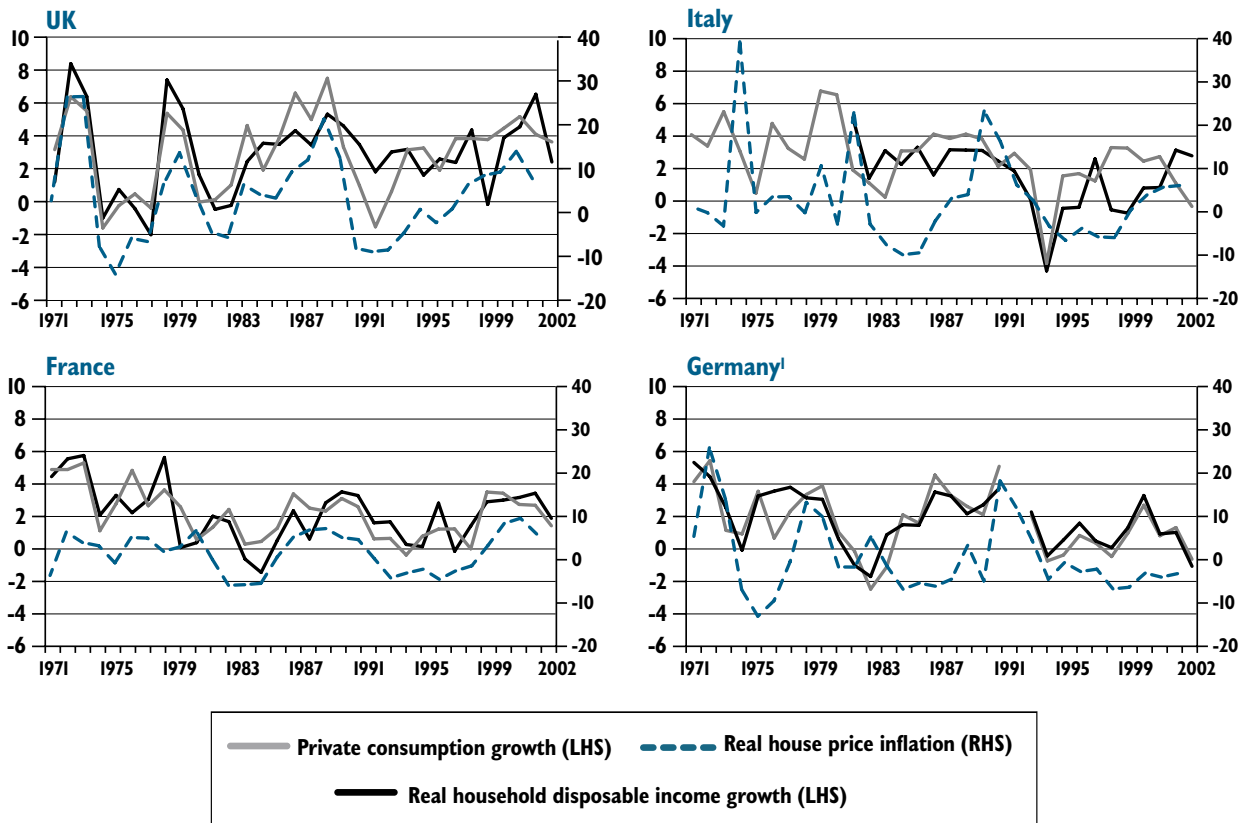
Setting the scene: simple correlations

6.2 Before considering formal econometric studies, this sub-section examines simple correlations between changes in house prices and consumption and saving in the EU.

6.3 Correlations are a useful way to illustrate the relationship between variables, but they do not indicate the strength of any co-movement and nor do they necessarily imply any causality. Cycles in both private consumption and house prices may be driven by other factors, for example, household expectations of future growth in incomes, which are not directly observable. This means it is important to control for the other observable determinants of household spending and saving, including actual incomes, financial wealth, interest rates and measures of household certainty concerning future financial developments (captured, for example, by trends in unemployment). The econometric studies covered later in the section attempt to control for such factors.

House prices and household consumption **6.4** Chart 6.1 plots the growth in household consumption, real household disposable income and house price inflation for large EU countries. For all the countries, growth in consumption sometimes diverges from growth in incomes. Chart 6.1 also shows that house price inflation and consumption growth follow fairly similar paths in the UK.

Chart 6.1: Growth in consumption, income & house prices



¹ Private consumption growth and real household disposable income growth, 1971 to 1990, excluding former East Germany; Real house price inflation excluding former East Germany.
Source: OECD and Bank for International Settlements (using national data).

6.5 Table 6.1 confirms that the link between changes in house prices and spending has been close in the UK. The simple correlation between annual household consumption growth and real house price inflation in the UK is the strongest of any of the countries presented in the table, and strongly exceeds that in France and Germany. However, there is a stronger relationship between spending and one-year lagged house price inflation in a number of other EU countries than in the UK. This is consistent with private consumption reacting more quickly to changes in house prices in the UK, and with the effects being less drawn out compared with other EU countries.

Table 6.1: Correlation coefficients between private consumption growth and house price inflation, 1971-2001

	Correlation coefficient of private consumption and:	
	House price inflation	House price inflation one year earlier ¹
UK	0.85	0.21
Germany	0.33 ³	-0.11 ⁴
France	0.50	0.36
Italy	0.14	-0.20
Spain ²	0.55	0.55
Netherlands	0.73	0.61
Belgium	0.38	0.16
Ireland	0.66	0.48
Finland	0.64	0.21
Sweden	0.73	0.48
Denmark	0.64	0.28

¹House price inflation 1970–2000.

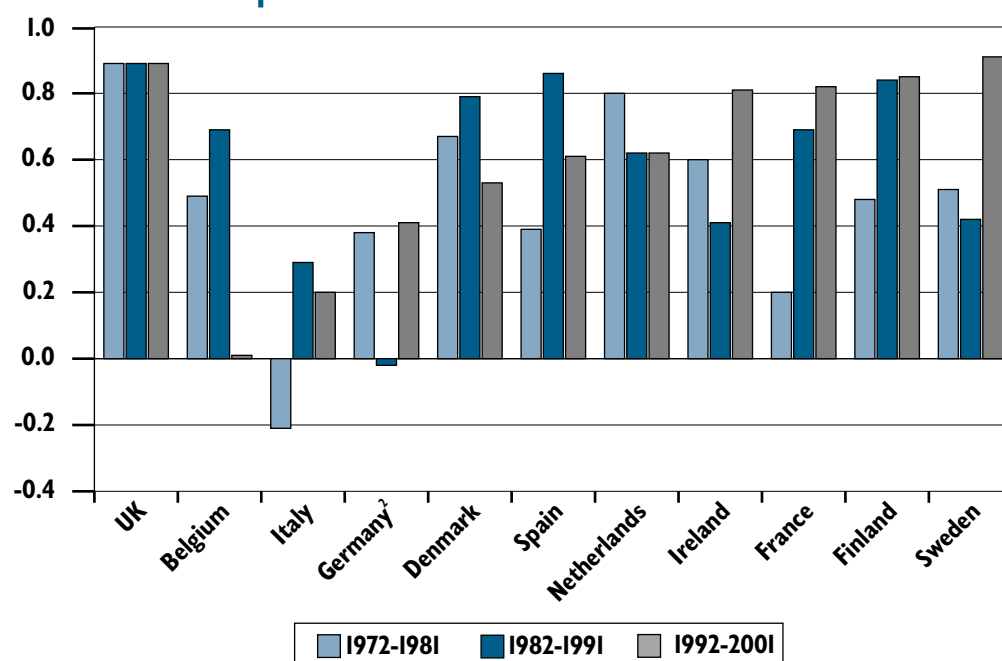
²House price inflation 1972–2001, private consumption growth 1973–2002.

³Excluding former East Germany except private consumption growth 1992–2001. 1991 figures excluded due to German reunification.

⁴Excluding 1991 and 1992 figures for reunification effects.

Source: Bank for International Settlements (using national data), OECD and HM Treasury calculations.

6.6 Chart 6.2 indicates that the correlation between house prices and consumer spending across different sub periods has been very stable in the UK. The correlation coefficients in other EU countries for example Germany, France and Italy have been less stable. Overall, the strength and consistency of the relationship between house price inflation and private consumption growth marks the UK out from most other large EU countries.

Chart 6.2: Correlation between private consumption growth and house price inflation¹

¹ 10 year correlation.

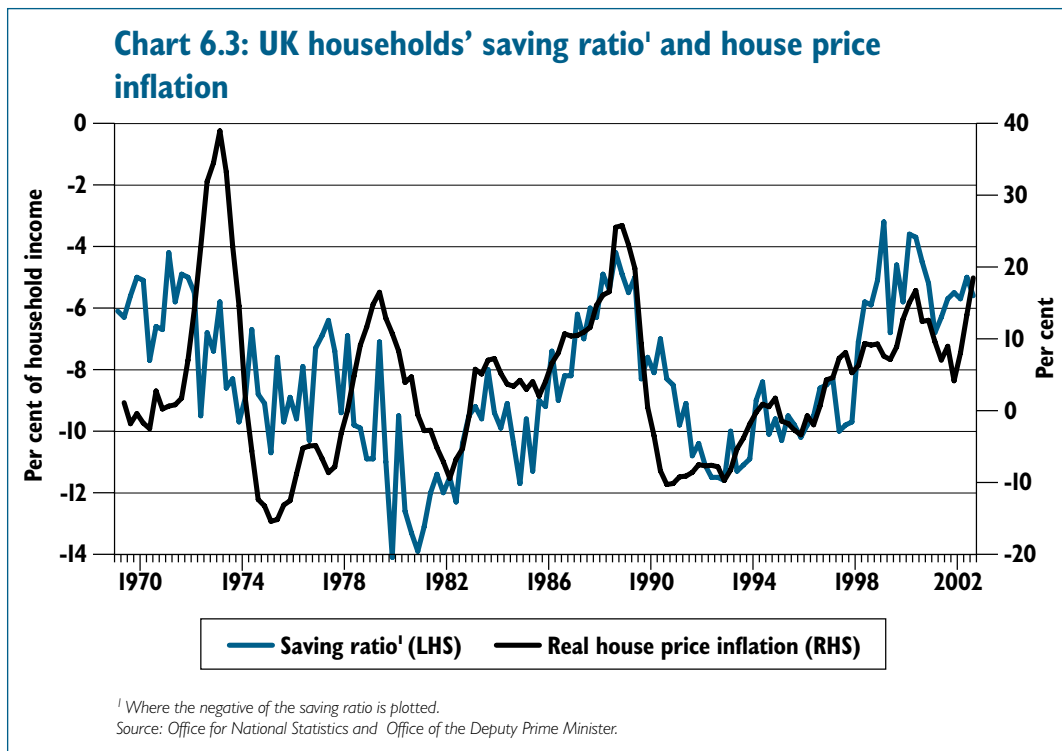
² Excluding former East Germany.

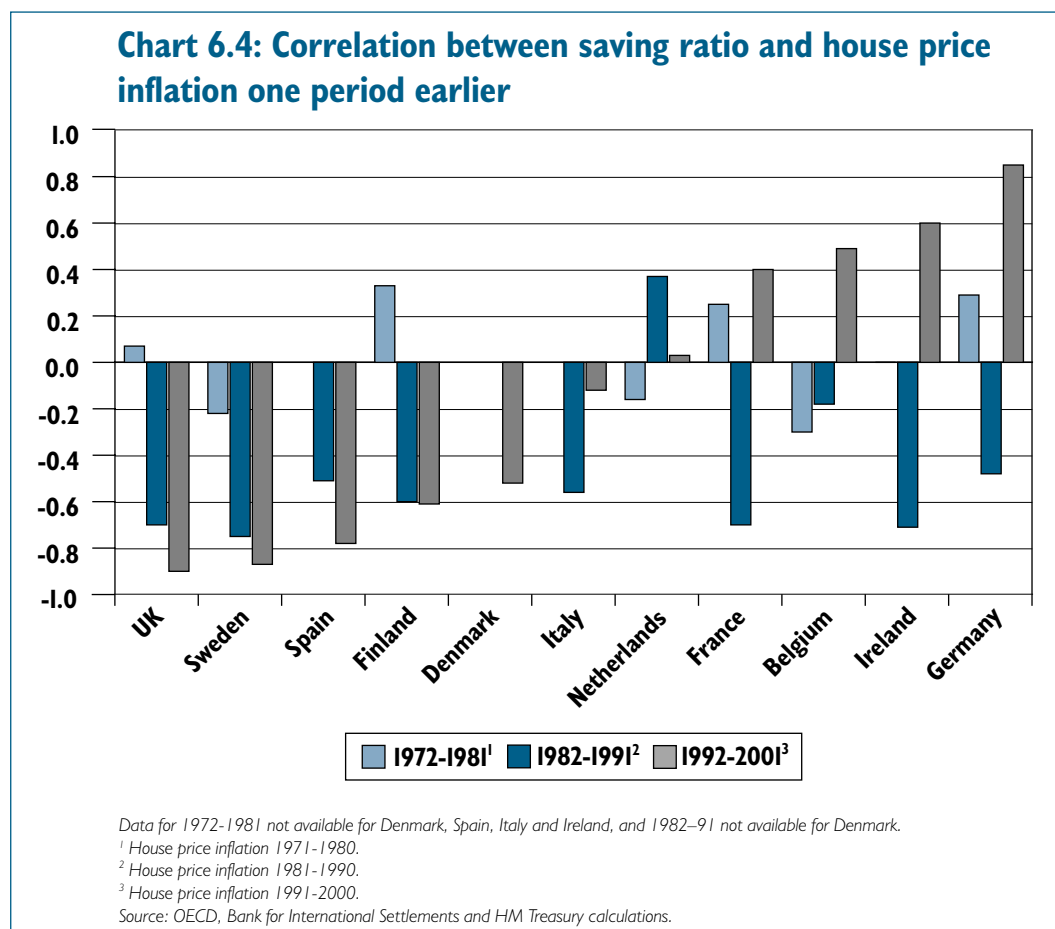
Source: OECD, Bank for International Settlements (using national data) and HM Treasury calculations.

House prices and household saving

6.7 Consumers face a choice between spending their income today or saving it to fund future consumption. This suggests that household saving ratios should be related to house price movements. This link is not clear-cut, as not all increases in measured housing wealth imply future consumption possibilities for all. For non-householders there may be negative income effects of such an increase in wealth. Higher house prices may increase non-householders' costs in the future if they decide to enter the housing market and thus must increase their savings.

6.8 The link between the household saving ratio and house price inflation is investigated in Chart 6.3, which indicates a strong negative relationship between the saving ratio and house price inflation in the UK since the early 1980s. Prior to this, movements in the two variables were not strongly correlated. This point is brought out more clearly in Chart 6.4, which shows correlation coefficients between house price one period earlier and the saving ratio for a number of EU Member States. This suggests a strong negative relationship between saving ratios and house prices in the UK, and a number of other EU countries. In Germany, Ireland, France, the Netherlands and Belgium, the correlation between house price inflation and the saving ratio is positive in the period 1992-2001.





6.9 Overall, the negative correlation appears strongest for the UK, Spain and Scandinavian countries, and it has become stronger since the 1980s. One reason for this, as discussed in Section 5, is that prior to financial liberalisation in the 1980s, households could not easily access the increased wealth that resulted from increasing house prices unless they sold their property. The process of liberalisation served to relax credit constraints, allowing households to borrow more easily in response to changes in housing wealth. This impact is summarised by Aron and Muellbauer (2000), who note that, “Effectively, such liberalisation of credit conditions increases the ‘spendability’ or liquidity of previously more illiquid housing wealth” (page 9).

Econometric studies of housing and consumption

6.10 Having established some basic stylised facts through the use of correlation coefficients, this section reviews econometric studies of the link between the housing market and consumption. Following this, the results of a new modelling exercise undertaken by HM Treasury are presented. As an introduction, the more formal general approach used in most of the academic studies and in the HM Treasury exercise is set out.

General approach used in studies

6.11 Most of the studies reported in this section have estimated macroeconomic consumption functions based on the approach by Davidson *et al.* (1978) and Hendry and von Ungern-Sternberg (1981). This approach is based on the life cycle hypothesis developed by Modigliani (1949), whereby consumption depends on households’ lifetime income and wealth, so that in the long run, trends in consumption are closely related to trends in income and wealth. Household consumption can deviate from this long-run equilibrium relationship in the short run, but will tend gradually to revert to equilibrium over time. In modelling, this latter process is termed the error correction mechanism. The short-run dynamic terms that can lead to deviations from the trends can include lagged values of income and wealth, along with other factors such as interest rates and inflation.

6.12 This approach only partially addresses answers the question raised in this study as it does not shed any light on the strength of the link between interest rates and house prices. The full impact of changes in interest rates on consumption depends critically on this link, as discussed in Section 2.

6.13 Most of the models reviewed in this section allow for permanent long-run effects from real house prices or housing wealth on household consumption. As Section 2 discussed, this is controversial (see Box 2.2). However, it was also noted that the dynamics of a change in real house prices on household saving and consumption are likely to be drawn out over very long periods. Ultimately, the persistence of such effects is an empirical question. Certainly, over the length of samples available for econometric analysis, it seems quite reasonable to attempt to identify long-run or levels relationships between real house prices or housing wealth and household consumption or saving.

6.14 Another issue arising in the estimation of consumption functions is whether to impose theoretical restrictions on the parameters. In most consumption modelling exercises, homogeneity is imposed on the long-run relationship between consumption and income and wealth. This property is desirable as it ensures that changes in income and wealth should ultimately be consumed. Thus, for example, a doubling of income and wealth leads to a doubling of consumption in the long run. However, *estimates* of the long-run relationship with income and wealth can deviate significantly from homogeneity over limited sample periods. While imposing homogeneity may be useful for model building, it creates problems for hypothesis testing. Imposing restrictions on parameters, particularly if this affects the estimated response of consumption to housing wealth, would obviously not freely test for cross-country transmission mechanism differences, and could also affect all of the model's estimated parameters. It is partly for this reason that models that impose theoretical restrictions on consumption functions in each country are not cited as relevant evidence in this section.

6.15 Nevertheless, in order for reasonable inferences to be drawn, estimated consumption functions need to be interpretable, and hence should not deviate excessively from the long-run relationships suggested by economic theory. They also need to pass the usual statistical tests for a well-specified model.

6.16 Finally, there are two possible approaches to estimating consumption functions across countries – testing country-specific forms or a common form. If the exercise were aiming to develop the best model of consumption in each country, then building country-specific models would be the more appropriate approach to take. But this approach could lead to significantly different results due solely to the specification adopted, and for drawing inferences about differences between countries it may be informative to impose a common form, thereby allowing a more straightforward assessment of the relative importance of variables across countries.¹ This is the approach that most of the studies, including the HM Treasury exercise, have used.

Two elements to examine: direct links from interest rates to consumption...

6.17 The sensitivity of consumption to interest rate changes can be broken down into two distinct elements. First, the direct impact of interest rates needs to be tested. The prior supposition is that the relationship would be stronger in the UK than in other countries due to the high level of household debt, mainly on mortgages, and the greater dependence on variable rates. However this is partly offset by the ownership of interest-bearing assets and the greater availability of credit that can smooth fluctuations in income, including changes in interest rates. The scale of the coefficient is therefore difficult to prejudge, although it would be expected to be negative.

¹ These modelling issues are also explored in the EMU study by HM Treasury *EMU and the monetary transmission mechanism*.

... and indirect links **6.18** The second hypothesis to test is the indirect link between interest rates and consumption through changes in housing wealth. This tests the ability of households to extract increases in housing wealth for the purpose of consumption. This relationship is expected to be stronger the greater the level of owner-occupation and the more liberal the financial regime. While the coefficient might be expected to be positively signed, this is not unambiguous. Gains for homeowners from rising house prices are offset by losses for renters who have to pay a higher price for housing services. In addition to providing a measure of the indirect effect of interest rates on consumption, the coefficient also reflects the wider interaction between housing wealth and consumption.

6.19 There are two important caveats to be borne in mind when considering the analysis which then follows.

6.20 First, in so far as the full impacts of a change in short-term interest rates on consumer spending are the focus of interest, analysis of single equation consumption function relationships provides only a partial view. The indirect impacts of short-term interest rates on household spending through housing are critically dependent on the behaviour of house prices. Interest rates are an important influence on housing demand, and therefore have the potential to have a much wider impact on household spending than that identified from a consumption function, as a result of their effect via house prices. In other words, a full overview could only be gained through the estimation of housing and consumption systems, incorporating equations not only for consumers' expenditure, but also for the link between interest rates and house prices (involving housing demand and supply relationships). Single equation consumption function analysis, by contrast, provides a guide only to the direct impact of short-term interest rates on consumer spending (incorporating income and substitution effects) and the influence of given levels of housing wealth on spending.

6.21 Thus the responsiveness of household consumption to changes in housing wealth does not on its own reflect the relative importance across countries of housing wealth in the transmission mechanism from interest rates to consumption. For example, the overall transmission could be relatively weak despite a strong link between housing wealth and consumption if the link between interest rates and housing wealth were relatively weak.

6.22 Second, econometric estimates reflect relationships over the past. Given that joining the euro would be a major policy regime change, relationships would possibly be subject to significant change. These issues are discussed in greater detail in Section 7.

Cross-country external studies

Kennedy and Andersen (1994) **6.23** Kennedy and Andersen (1994) analyse the relationship between real house prices and the household saving ratio for 15 OECD countries, including all the large EU Member States. Equations for the household saving ratio are estimated for each country using data over the period 1970 to 1992. Because saving is the inverse of consumption, using the saving ratio gives similar relationships to those for consumption, but with the opposite signs. The model is grounded in the life-cycle model of household saving, and allows for the following long-run influences on the household saving ratio:

- **real house prices and real equity prices** are included as proxies for housing and financial wealth respectively, and hence would be expected to be inversely related to household saving;
- higher **long-term real interest rates** might be expected to boost household saving, reflecting both the intertemporal substitution effect and the income effect described in Section 2;

- the ratio of **household debt** to disposable income² is included as an inverse proxy for credit or liquidity constraints. Higher levels of debt are posited as evidence of a loosening of such constraints, and so the relationship between credit constraints household saving is expected to be negative; and
- **the rate of unemployment** is taken as a proxy for the strength of the precautionary motive to save, on the grounds that people are likely to save more when income prospects are uncertain.

6.24 The model is estimated in error correction form, which allows separate identification of both the shorter-term and long-run influence of each of these variables on household saving. Focusing on the key variables of interest for this study, the model takes the form:

$$\Delta\left(\frac{S}{Y}\right) = a_0 + \beta_1\left(\frac{S}{Y}\right)_{-1} + \beta_2PH_{-1} + \beta_3\left(\frac{D}{Y}\right)_{-1} + \text{other levels terms} \quad [1]$$

$$+ \gamma_1\Delta PH + \gamma_2\Delta\left(\frac{D}{Y}\right) + \text{other dynamic terms}$$

where:

$\frac{S}{Y}$ = household saving divided by disposable income;

PH = real house price index;

$\frac{D}{Y}$ = ratio of household debt to disposable income.

6.25 The model's proxy for the effects of financial liberalisation (the ratio of household debt to disposable income) may remove some of the potential bias in the relationship between housing wealth and consumption during a period where borrowing constraints are relaxed. In line with the earlier scene setting sub-section, this shows a negative influence on household saving over the short run for most countries (coefficient γ_2 above). Indeed the results suggest that this transitory effect has been relatively strong in the UK, but more permanent impacts are only identified in the case of Sweden and Denmark (coefficient β_3). France and Germany have the lowest coefficients for this term, which may reflect greater rigidities in their financial systems. However, as the authors acknowledge, using debt to income ratios gives an imperfect proxy for financial liberalisation, as it might capture other factors unrelated to the housing market.

6.26 Kennedy and Andersen's findings on the relationship between the saving ratio and real house prices are summarised in Table 6.2. Since the saving ratio is measured in percentage points and real house prices in index form, the estimated coefficients require careful interpretation. The short-run coefficient on lagged house prices for the UK, for example, implies that a one-unit change in the real house price index in the previous period lowers the saving ratio in the current period by about 0.07 percentage points. The table also presents the model estimates of the long-run sensitivity of the saving ratio to both the level and change in house prices for the various countries. The latter can be thought of as an approximation of the dynamic steady state, that is allowing for long-run growth in house prices, and would normally be evaluated with reference to the average house price inflation over the full sample period.

²Debt decisions cannot be considered truly independent of household saving decisions. The variables are closely linked by identity. Household saving in any period is equal to the change in household assets less the change in household liabilities.

Table 6.2: Impact of real house prices on the household saving ratio

Country Parameter	Short-run impact		Long-run impact	
	Change in house prices (ΔPH) γ_1	Lagged house prices ($PH-1$) β_2	House prices (PH) $-\beta_2/\beta_1$	Change in house prices (ΔPH) $-\gamma_1/\beta_1$
UK	-	-0.069	-0.049	-
Germany	-0.017	-	-	0.025
France	-	0.013	0.033	-
Italy	-	0.028	0.255	-
Netherlands	-0.05	-0.050	-0.045 to -0.014 ¹	-0.149
Belgium	0.148	0.106	0.223 to 0.266 ¹	0.310
Ireland	-	0.058	0.106	-
Sweden	-0.085	0.047	0.047	-0.085
Finland	-0.039	-0.021	-0.031	-0.058
Denmark	-0.116	-0.025	-0.030	-0.138

¹ For these countries the authors identified a shift in the coefficient on house prices for the sub-period 1980 to 1992. The long-run sensitivity of the saving ratio to real house prices is therefore presented as a range.
Source: Kennedy and Andersen, 1994.

6.27 These results suggest that:

- real house prices have a negative impact on household saving in the UK over the long run, implying that the impact of housing wealth on consumer spending is relatively strong;
- among the other EU countries, comparable long-run impacts are identified only for the Netherlands, Finland and Denmark;
- a short-term negative influence from house prices on saving is identified for Germany, the Netherlands, Finland, Denmark and Sweden; but
- for France, Sweden, Ireland, Belgium and Italy the long-term influence of real house prices on household saving is estimated to be positive. There is no strong rationale for this type of result, though in some cases the authors suggest it may reflect more stringent requirements in terms of deposits for house purchase as real house prices rise.

Girouard and Blondal (2001) **6.28** Girouard and Blondal (2001) examine the impact of housing wealth on household consumption for the UK, France and Italy. The sample period used for estimation was 1970 to 1999. The specification of the model is conventional, with consumption determined by real disposable incomes and wealth in the long-run:

$$\left(\frac{c}{y}\right) = \alpha_1 + \alpha_2 \left(\frac{fw}{y}\right) + \alpha_3 \left(\frac{hw}{y}\right) + \alpha_4 \left(\frac{ow}{y}\right) \quad [2]$$

where (all variables real):

c = private consumption;

y = disposable income;

fw = net financial wealth;

hw = housing wealth; and

ow = other household wealth (total net worth minus fw and hw)

6.29 All variables are entered in logs so the parameter estimates can be interpreted as long-run elasticities of household consumption with respect to the various components of household wealth: a one per cent increase in housing wealth, for example, is estimated to lead to a long-run percentage increase in private consumption equal to α_3 . Estimation of the model with all variables expressed as ratios to disposable incomes means that the sum of the coefficients on income and the various components of wealth are constrained to sum to unity. As discussed earlier, this could bias the results. The authors do not test whether these restrictions are accepted by the data. The authors also allow for a long-run influence from interest rates and inflation on the level of private consumption, though in the cases of France and Italy the estimated impacts are either insignificant or perversely signed.

6.30 The study adopts a two-step error correction estimation approach in which the residuals from the long-run levels relationship above are included in a second dynamic specification modelling growth in private consumption. The coefficient on this error correction term can be interpreted as a measure of the speed at which private consumption adjusts to any deviation in its level relative to the equilibrium implied by the estimated levels relationship. The second stage regression also allows for dynamic or short-run influences on private consumption from changes in the various components of wealth.

6.31 Table 6.3 shows the key elasticities of consumption with respect to housing wealth. The key findings are:

- that housing wealth exerts a positive influence on household consumption in the UK and France in the short and long run. For the UK, the estimated long-run elasticity of household spending with respect to changes in housing wealth is in line with the results of some other studies that have attempted separately to identify the influence of housing wealth as opposed to total household wealth;
- Italy appears to have a negative relationship between housing wealth and consumption; and
- given the small number of countries analysed, it is impossible to reach firm conclusions concerning the importance of housing wealth to spending in the UK relative to the EU more generally. It is also worth noting that the UK results are estimated over a sample period beginning in the second quarter of 1982, and may be heavily influenced by the impact of financial deregulation on housing wealth and consumption. These results are broadly consistent with the findings of Kennedy and Andersen for the UK and Italy, but suggest the opposite relationship between housing wealth and consumption in France.

Table 6.3: Long and short-run elasticities of consumption with respect to housing wealth¹

	UK	France	Italy
Long run			
Change in housing wealth	0.06 (2.2)	0.08 (3.3)	-0.06 (-4.4)
Marginal propensity to consume out of housing wealth	0.027	0.037	-0.03
Short run			
Change in housing wealth	0.15 (4.8)	0.11 (1.8)	-0.06 (-4.4)
Change in housing wealth (lagged two periods)			-0.10 (-4.9)
Memo:			
Error correction term lagged one period	-0.37 (-3.1)	-0.34 (-2.8)	-0.23 (-2.0)

¹ Where figures in brackets are t-values
Source: Girouard and Blondal, 2001.

Henley and Morley (2001)

6.32 Henley and Morley (2001) use the approach developed by Attfield *et al.* (1992) based on a model of consumption growth to test for the impact of housing wealth on consumption. Consumption is modelled as adjusting partially each period to changes in permanent income. The model used is:

$$\Delta c_t = \alpha_0 + \alpha_1 \Delta hp_t + \alpha_2 \Delta hp_{t-1} + \eta_t \quad [3]$$

and

$$\eta_t = \beta_1 \eta_{t-1} + \beta_2 \eta_{t-2} + \varepsilon_t \quad [4]$$

where:

Δc = change in the log of real consumption;

Δhp = change in the log of real house prices; and

η = decay parameter capturing the partial adjustment rate to permanent income shocks.

6.33 The sample period used for estimation was typically 1972 to 1996. Dummy variables were included for Finland and Germany, which excludes East Germany for the full sample period. The results are shown in Table 6.4 with significant results shown in bold along with t-ratios in brackets.

Table 6.4: Consumption growth and changes in real house prices

Country	Constant (trend)	Change in house prices Δhp_t α_1	Lagged change in house prices (Δhp_{t-1}) α_2	Adjustment to change in permanent income (η_{t-1}) β_1	Lagged adjustment to change in permanent income (η_{t-2}) β_2
UK	0.020 (7.22)¹	0.268 (11.32)¹	-0.062 (-2.54)¹	0.359 (1.53)	0.122 (0.58)
Germany	0.021 (4.90)¹	0.052 (1.05)	-0.119 (-3.11)¹	1.448 (4.28)¹	0.448 (1.44)
Italy	0.028 (5.14)¹	-0.039 (-1.30)	0.038 (1.35)	0.916 (2.02)¹	-0.084 (-0.42)
Netherlands	0.017 (3.24)¹	0.134 (2.44)¹	-0.008 (-0.13)	0.583 (2.64)¹	0.244 (1.27)
Ireland	0.027 (4.81)¹	0.431 (2.38)¹	-0.146 (-0.81)	-0.159 (-0.44)	
Sweden	0.018 (4.36)¹	0.252 (3.24)¹	-0.137 (-1.65)	-0.008 (-0.04)	0.191 (1.00)
Finland	0.021 (6.07)¹	0.149 (4.11)¹	0.013 (0.45)	0.723 (1.63)	-0.277 (-0.64)

¹ Denotes statistically significant at 5% significance level.

Source: Henley and Morley, 2001.

6.34 The results suggest a significant degree of diversity in consumption functions and impacts from housing wealth:

- the constant term picks up most of the trend in consumption in all countries;
- however, the specification of the gradual adjustment to innovations in permanent income was only significant for Germany, Italy and the Netherlands;
- the UK, Netherlands, Finland, Sweden and Ireland all show positive relationships between consumption growth and changes in house prices, consistent with these countries' tendencies towards liberal financial markets and a higher proportion of owner-occupiers than private renters. These results appear plausible, and contrast with the negative response of consumption growth to changes in house prices for Sweden and Ireland implied by the results reported by Kennedy and Andersen, suggesting that results may be sensitive to model specification and the data samples used; and
- the results also suggest that Germany and Italy stand apart from the other countries. Neither show much of a relationship between house prices and consumption, and for Germany what relationship there is appears to be negative (the significant term on lagged house price changes). This is consistent with the greater proportion of private renters in Germany, who tend to lose from increases in house prices, than owner-occupiers, who tend to gain. Furthermore, both Germany and Italy have rigid structures for mortgage borrowing that might have deterred households from accessing gains in housing wealth. Once again, the sign on the coefficient for house prices differs to the Kennedy and Andersen study, but the negative coefficient for Italy is consistent with the results from Girouard and Blondal in other studies.

6.35 While these results are consistent with differences in housing market structures discussed in Sections 3 to 5, they should only be taken as indicative. The model specification allows no more than a broad test of the importance of housing wealth. Important elements of a consumption function have been left out, with the adjustment term used to try and proxy changes in permanent income. Such an approach does not explain the long-run determinants of consumption, nor allow for other important dynamic terms. Explicitly adding such terms could change some of the results, particularly where housing wealth may be related to other explanatory factors such as income, financial wealth and interest rates. Nevertheless, the consistency between structural differences and the simple test results is notable.

Carruth et al. (1999) **6.36** Carruth *et al.* (1999) attempt to test whether aggregate consumption relationships are similar across the European Union. While wealth is not included in the relationships that are tested, the results are still weakly relevant to the issue of whether housing wealth matters for consumption and whether any such effects differ between the UK and other EU countries. For example, in the event that the estimated consumption functions pointed to commonality across countries, that would at least tend to leave unproven the case for the UK standing out because of housing market effects. On the other hand, evidence against commonality might be taken to suggest that housing wealth effects might be a possible source of the differences.

6.37 The equation form used for each country, i , relates consumption to income and inflation as follows:

$$\Delta c_{i,t} = \beta_{0,i} + \beta_{1,i} \Delta y_{i,t} + \beta_{2,i} c_{i,t-1} + \beta_{3,i} y_{i,t-1} + \beta_{4,i} \Delta p_{i,t} + u_{i,t} \quad [5]$$

where:

c = log of real consumption;

y = log of real household disposable income;

p = log of the consumer spending deflator; and

- $\beta_{3,i} / \beta_{2,i}$ is the long-run elasticity of consumption with respect to income.

6.38 Although the model excludes wealth terms, the inflation term was intended to pick up the effect of capital loss on nominally denominated assets. The models were tested with and without imposing a unit elasticity between consumption and income, and statistical tests were applied to establish whether there was any evidence of commonality in estimated parameter values across countries.

6.39 The coefficients were compared for all 15 EU countries, and then for a core group of countries that might have been expected to be most similar – France, Germany, Netherlands, Belgium and Luxembourg (tests were also conducted excluding Luxembourg). The results showed that there was no support for any commonality in short-run responses or long-run elasticities for either the 15 EU countries together or within the core group.

Iacoviello (2000) **6.40** Iacoviello estimated a Structural Vector Autoregression³ (SVAR) to investigate the strength of the linkage between house prices and the economy for France, Germany, Italy, Spain, Sweden and UK. The sample period was from 1973 to 1998 for all but France and Sweden. The approach uses the common trend vector-error-correction method (VECM). This approach is able to differentiate between structural shocks with permanent effects, called common stochastic trends, and temporary shocks. Such an approach is useful for looking at the different ways house prices may impact on the economy. The SVAR comprises the vector:

$$X_t = [y, mp, hp, i, \pi] \quad [6]$$

where:

y = log of real income;

mp = log of real money balances;

hp = log of real house price indices;

i = a short-term nominal interest rate; and

π = annual consumer price inflation.

Three long-run relationships were used:

$$mp_t = b_y y_t - b_i i_t \quad [7]$$

$$hp_t = \tau y_t \quad [8]$$

$$i_t = v + \pi_t \quad [9]$$

6.41 The long-run relationship $hp_t = \tau y_t$ is of most relevance, although house prices also enter in the short-run dynamics. The cointegration vector between real house prices and GDP shows a consistent trend upwards for house prices. However, as Table 6.5 shows, point estimates of the coefficient τ range from 0.06 in Germany to 1.71 in Spain. While Germany has the weakest link, the more surprising result is that the UK appears to have the second weakest response. But this probably reflects the sample period: the start year, 1973, was a year when house prices were close to a strong cyclical peak. So caution is needed in interpreting these results which are not wholly consistent with other studies and qualitative evidence based on structural evidence.

Table 6.5: Long run impact of a permanent supply shock on house prices

	UK	Germany	France	Italy	Spain	Sweden
Long-run elasticity of real house prices to GDP (τ)	0.48	0.06	0.52	0.95	1.71	1.06

Source: Iacoviello, 2000.

6.42 The SVAR also considers temporary shocks. For monetary, demand and inflation shocks, the greatest impact on house prices tended to be for the UK. The reaction of house prices tended to be far less in France, and less again in Germany. However, all countries appear to show distinct and different patterns. Variance decompositions also show that volatility of house prices in the UK is far more influenced by demand shocks even at the ten-year horizon. This is consistent with the low responsiveness of housing supply leading to high and volatile house price inflation in the UK.

³ The EMU study by HM Treasury *The exchange rate and macroeconomic adjustment* has a detailed explanation of the SVAR methodology.

6.43 Although the results imply significant differences between the houses price responses in the UK on the one hand and France and Germany on the other, the overall effect on output of a temporary monetary shock is very similar. This might suggest that other factors offset the house price effect, an issue which the EMU study by HM Treasury on *EMU and the monetary transmission mechanism* investigates.

6.44 Furthermore methodological limitations may explain some of the unusual results. The model takes no account of the effect of financial liberalisation on the relationships. In addition, the SVAR does not model changes in the monetary policy regime that could have affected overall relationships. Variables that are undoubtedly important in the relationship are omitted, which may also bias coefficients. Finally, as is typical for SVAR analysis, the choice of appropriate identifying restrictions is crucial to the results, but to some degree arbitrary.

Conclusion on empirical studies

6.45 The studies generally show a relatively strong relationship between housing wealth and consumption in the UK compared to other European countries. Kennedy and Andersen (1994) show significant differences between the UK, the Netherlands and Scandinavia on the one hand and the rest of Europe on the other. However, these studies have some technical limitations. For example, the sample for the Kennedy and Andersen study finishes at 1992 and therefore misses changes that have occurred over the past decade. The Girouard and Blondal study is limited by only including the UK, France and Italy. Henley and Morley used a perhaps over-simplified first difference model, while nevertheless producing plausible results broadly in line with what theory and the structural cross-country evidence would suggest. Carruth *et al.* do not include wealth terms in their consumption functions, while the results of Iacoviello are likely to be limited by the usual methodological issues surrounding SVARs which are particularly apparent when trying to model housing in this way.

HM Treasury econometric analysis

6.46 HM Treasury has undertaken a new modelling exercise which estimates and compares standard consumption functions for the UK, France, Germany, Italy and the Netherlands in order to assess the direct effects of interest rate changes on consumption, and the indirect effects through changes in housing wealth. The approach taken is set out in Box 6.1.

6.47 In the HM Treasury modelling work, the same form of consumption function is estimated for each country, with real household disposable income, real net financial wealth, real housing wealth and real interest rates used as explanatory variables. The key results are:

- the estimated equations for the UK and Germany produced perhaps the most plausible – and indeed similar – results, with consumption estimated to be close to homogeneous in income and wealth (housing plus net financial wealth) in both countries. The long-run elasticity of consumption with respect to real household disposable income was estimated as 0.8-0.9 in both economies, with real housing wealth and real net financial wealth having estimated long run elasticities of around 0.1 and 0.05 respectively. Thus, perhaps surprisingly, housing wealth was estimated to have a larger long-run effect upon consumption than net financial wealth in both economies;

- in both the UK and France, housing wealth was estimated to have a relatively strong positive impact on consumption in the short-run, with a 1 per cent rise in real housing wealth estimated to increase consumption by up to 0.3 per cent. In contrast, real housing wealth was estimated to have insignificant short-run effects on consumption in Germany and Italy;
- however, the long-run effects of changes in real housing wealth on consumption were estimated to be notably smaller than these short-run effects in both the UK and France, particularly so in France, where real housing wealth was estimated to have an insignificant long-run effect on consumption;
- in contrast, in Italy, the long-run elasticity of consumption with respect to real housing wealth was estimated to be around -0.1 , consistent with those found in Boone *et al.* (2001) and Girouard and Blondal (2001);
- real net financial wealth was estimated to have a stronger long-run impact on consumption than real housing wealth in both Italy and France, contrasting with the results obtained for the UK and Germany. However this may in part have been attributable to the relatively – and perhaps implausibly – small estimated long-run coefficients on household disposable income in both the Italian and French consumption functions;
- in the short run, changes in real household disposable income were estimated to have positive and significant effects upon consumption in all economies except the Netherlands, with the impact being particularly strong in Germany and France. No plausible results could be found for the Netherlands, as the majority of the explanatory variables in the equation were estimated to be insignificant; and
- in the long run, an increase in interest rates was estimated to raise consumption by similar proportions in the UK, Germany and France, but lower consumption in Italy. In the short run however, increases in interest rates were estimated to have the opposite effect: dampening consumption in the UK, Germany and France, but having insignificant effects in Italy. Housing wealth is found to have a relatively strong impact on consumption in the UK.

Conclusions on HM Treasury modelling work

6.48 Overall this analysis finds that while some countries exhibited similarities with respect to the effects of certain variables on consumption, they showed notable differences with respect to the effects of others. Hence, these unrestricted estimates of common-form consumption functions did not suggest widespread similarities in the determinants of consumption across the UK, Germany, France, Italy and the Netherlands. This may in part be symptomatic of genuine differences in the transmission mechanism from interest rates and housing wealth to consumption across different countries, but could equally reflect data limitations (standardising data across countries can be difficult, particularly for housing wealth, as the methodology for measuring house prices varies across countries), or various country-specific effects omitted from the model, which would lead to misleading parameter estimates. One such factor could be financial liberalisation, which Section 5 shows occurred at different times and to different extents across countries.

6.49 Nevertheless, perhaps the most notable result from this analysis is the strong estimated effect of housing wealth on consumption in the UK, both in an absolute sense and relative to the other countries in the sample.

Box 6.1: HM Treasury model of the link between housing and consumption

This box sets out the methodology used by HM Treasury to model the link between housing and consumption in the UK and other EU countries. The data used was obtained from the National Institute Global Econometric Model (NiGEM), apart from estimates of physical wealth which were obtained from the OECD. Given limitations in the data, the sample period used was from 1981 to 2000 for all countries except Germany, where, because of the effect of data problems associated with unification, the sample period was shortened to 1992 to 2001.

The estimated equations had the same common form for each country, with consumption estimated as a function of real income, wealth and interest rates. An error correction model was used to estimate the consumption functions, and no restrictions were placed upon the coefficients in the model (in particular consumption was not restricted to be homogenous in income and wealth), so that the relationships between the explanatory variables and consumption could be freely estimated. The equation estimated was of the form:

$$\begin{aligned} \Delta \log C = & \alpha_1 + \alpha_2 \log C_{(-1)} + \alpha_3 \log Y_{(-1)} + \alpha_4 \log FW_{(-1)} + \alpha_5 \log HW_{(-1)} \quad [10] \\ & + \alpha_6 R_{(-1)} + \alpha_7 \Delta \log Y_{(t-i)} + \alpha_8 \Delta \log FW_{(t-i)} + \alpha_9 \Delta \log HW_{(t-i)} \\ & + \alpha_{10} \Delta R_{(t-i)} \end{aligned}$$

where:

C = real private consumption;

Y = real disposable income;

FW = real net financial wealth;

HW = real housing wealth (proxied by physical wealth); and

R = real interest rates.

Conclusions on empirical evidence on housing and consumption

6.50 Overall, while the results of empirical studies are not as clear cut as the evidence of structural differences, on balance they tend to support the view that the sensitivity of household spending to housing wealth and house prices is somewhat higher in the UK than elsewhere. Moreover, these consumption function based studies do not consider the link between interest rates and house prices. Analysis elsewhere in this study suggest this link may also be more sensitive in the UK.

The analysis in this study suggests that, on the basis of housing market structures alone, households' disposable income after mortgage payments is likely to be more interest rate sensitive in the UK than in euro area countries, and that UK households are able to access housing wealth relatively easily. However, this could change if the UK were to enter EMU. Joining the single currency could set in train a process which could make the UK housing and mortgage markets more similar to those in the euro area. The experience of countries that adopted the euro in 1999 provides evidence of any early signs of convergence.

There is some evidence that differences in house price inflation across the euro area countries has fallen since 1999. However, there is little sign of convergence to date in housing market structures, such as the level of mortgage debt, housing transaction rates or owner occupation rates.

Although nominal mortgage rates have converged in EMU, due to the adoption of a single monetary policy, some differences remain. Furthermore, different rates of inflation have resulted in very different real mortgage rates.

Overall, the evidence suggests that mortgage market convergence in the euro area to date has been relatively modest – domestic markets remain largely segmented. However, Single Market initiatives and technological change within the retail banking sector will probably promote greater convergence over the longer-run.

The evidence from the euro area to date suggests that, if the UK were to enter EMU, differences in housing market structures would not be removed immediately. Significant variations in trends and cycles in house prices across European countries are likely to persist irrespective of mortgage market convergence.

7.1 The analysis in this study suggests that, on the basis of housing market structures alone, households' disposable income after mortgage payments is likely to be more interest rate sensitive in the UK than in euro area countries, and that UK households are able to access housing wealth relatively easily. However, this could change if the UK were to enter EMU. The single currency has the potential to set in train a convergence process that could erode some of the differences between housing and mortgage markets in the UK and other European countries. The experience of the countries that joined EMU in 1999 provides initial evidence on whether such a process is occurring. The key issues are whether differences are likely to persist in:

- house price trends and volatilities;
- mortgage rate and term structures in the UK and the rest of Europe; and
- use of housing wealth as security to borrow for consumption.

7.2 This section focuses on the first two of these issues. Unfortunately data on recent trends in mortgage equity withdrawal are not available.

Developments in housing markets and consumption since 1999

Extent of housing market convergence since 1999

7.3 Section 4 shows that there is no evidence of synchronisation in house price cycles across the EU, and that the UK stands out with one of the highest trends in real house prices and more volatility than in Germany and France. Evidence since 1999 does not suggest there has been any convergence in euro area housing markets. While house price inflation has been rapid in Ireland, the Netherlands and Spain, it has been more muted in Italy and Belgium, and house prices have continued to fall in Germany.

7.4 Rapid growth in house prices has tended to occur in economies with more liberal financial regimes. Recent data on trends in mortgage equity withdrawal across countries are unavailable, so no direct inferences can be drawn on the extent to which gains in housing wealth have boosted consumption since the start of EMU. However, consumption growth has tended to be stronger in countries with high house price inflation, such as the UK, Ireland and Spain, and lower in countries with low house price inflation, such as Germany and Denmark. This may to some degree reflect higher income expectations, which could boost both house prices and consumption.

House prices and consumption

7.5 Table 7.1 compares growth in house prices, private consumption and income in selected European countries over the periods 1995–1998 and 1999–2002 (1999–2001 for house prices). Differences in house price inflation appear to have fallen since the start of EMU in the countries presented in Table 7.1. The coefficient of variation for house price inflation across these euro area countries fell from 2.96 in 1995–1998 to 0.89 in 1999–2001. Germany remains the major outlier, with falling real house prices in contrast to the major gains across most countries. Income growth also appears to have become less varied. However, variations in consumption growth remain as pronounced as in the period prior to EMU, indicating that other factors have offset the convergence in house prices and incomes. This highlights that the impact of interest rates through housing wealth is only one of many factors, such as economic cycles and changes in credit constraints, that affect consumption.

Table 7.1: Average annual growth: house prices, consumption and income

	Average annual growth (per cent) in:					
	House prices		Consumption		Household disposable income	
	(1995-1998)	(1999-2001)	(1995-1998)	(1999-2002)	(1995-1998)	(1999-2002)
Belgium	2.9	3.2	2.0	1.8	0.5	1.7
Finland	5.8	1.9	4.3	2.6	4.3	2.5
France	-1.6	7.4	1.6	2.7	1.8	2.9
Germany	-4.4	-3.3	1.4	1.5	0.9	1.5
Ireland	11.2	9.3	6.3	6.7	7.7	6.6
Italy	-4.9	4.4	2.3	1.5	0.3	1.9
Netherlands	6.8	11.4	3.4	2.6	2.6	3.0
Spain	-0.4	10.2	2.8	3.2	2.8	2.6
Mean of euro area countries shown	1.9	5.6	3.0	2.8	2.6	2.8
Coefficient of variation of euro area countries shown	2.96	0.89	0.55	0.60	0.93	0.56
Denmark	7.6	3.7	2.2	0.7	2.3	0.9
Sweden	2.2	8.1	1.7	2.6	-0.4	3.7
UK	3.2	10.3	3.3	4.3	2.3	4.3

Source: Bank for International Settlements (using national data), OECD and HM Treasury calculations.

Mortgage debt 7.6 One consequence of rising house prices in many countries has been increased indebtedness. Table 7.2 indicates that mortgage debt has risen particularly sharply in the Netherlands, Portugal, Spain and Ireland. In Germany, mortgage debt has remained broadly constant as a proportion of GDP since 1998 reflecting the weak housing market. The coefficient of variation shows that debt levels of the euro area countries in Table 7.2 increased slightly over the period 1995 to 2001. Such differences will continue to underpin variations in the sensitivity of households' finances to interest rate changes.

Table 7.2: Outstanding residential mortgage debt

Per cent of GDP	1995	1998	2001
Austria ¹	5.2	5.0	3.8
Belgium	21.8	24.6	26.9
Finland	32.4	30.3	29.9 ²
France	18.6	18.3	19.1
Germany	46.2	53.0	54.6
Greece	4.4	6.5	12.0
Ireland	23.8	27.4	33.2
Italy	7.3	7.9	10.2
Netherlands	40.5	62.9	79.2
Portugal	18.7	33.4	46.6
Spain	16.9	25.3	31.6
Mean of euro area countries shown	21.4	26.8	31.6
Coefficient of variation of euro area countries shown	0.64	0.69	0.70
Denmark	58.7	69.4	70.2
Sweden	60.3	48.9	48.5
UK	54.6	53.0	59.5

Source: European Mortgage Federation, 2001.

¹ Outstanding residential and commercial mortgage debt.

² Data are for 2000.

Housing transactions 7.7 Table 7.3 shows that strong growth in many European housing markets appears to have had only a modest effect on transactions, with little change in the proportion of houses sold since 1998. However, movements in transactions are difficult to assess. There are significant differences across Europe, with a relatively high level of transactions in the UK and the Netherlands. The level of housing transactions in Germany is relatively low at under half that in the UK. One of the reasons why the level of transactions seem unlikely to converge to similar levels across Europe is transaction costs, which vary widely across the EU countries (see Section 5 for further details).

Table 7.3: Housing transactions as per cent of owner occupied dwelling stock

Per cent	1995	1998	2000
Belgium	3.8 ¹	3.4	3.4
Germany	5.5 ²	3.9	3.4
France	4.1	4.8 ¹	5.4 ³
Netherlands	7.4	8.6	7.5 ⁴
Finland	4.6	6.3	5.8
Mean of euro area countries shown	5.4	5.9	5.5
Coefficient of variation of euro area countries shown	0.27	0.35	0.30
Denmark	5.8	6.1	5.6
UK	7.1	8.1	8.5 ⁴

¹ 1996.² 1993.³ 1999.⁴ 2001.

Source: European Mortgage Federation, European Commission, UN Economic Commission for Europe, Federal Statistical Office (Germany), Deutsche Bank and HM Treasury calculations.

Tenure structures **7.8** Housing wealth tends to be more closely linked to consumption the higher the level of owner occupation and the lower the level of private renting in a country. Professor John Muellbauer in his contribution to the EMU study *Submissions on EMU from leading academics* notes that the German Government's policy of raising owner occupation, the reduction in the tax bias against owner occupation in Germany, and the easing of credit constraints to small landlords in the UK may lead to convergence in tenure structures in the two countries. However, tenure tends to change only gradually over time, as only a small proportion of the housing stock changes hands each year and significant financial incentives are required to dramatically alter tenure choice. Muellbauer concludes that "*tenure structures can evolve only gradually so that existing differences will narrow slowly*". Table 7.4 shows that owner occupation rates across EU countries have changed little since 1995, with practically no change in the coefficient of variation.

Table 7.4: Owner occupation rate

Per cent	1995	1998	2000
Belgium	65 ¹	74	74
Germany	39 ²	41	42
France	54	54 ¹	55 ³
Ireland	79	79 ³	78
Netherlands	48	50	53 ⁴
Finland	62	59	58
Italy	65	66	68
Spain	80	83	81
Mean of euro area countries shown	62	63	64
Coefficient of variation of euro area countries shown	0.22	0.23	0.22
Denmark	52	51	51
UK	67	68	69 ⁴

¹ 1996.² 1993 (excluding former East Germany).³ 1999.⁴ 2001.

Source: European Mortgage Federation, European Commission, UN Economic Commission for Europe, Federal Statistical Office (Germany), Deutsche Bank and HM Treasury calculations.

Summary 7.9 Overall, since the introduction of the euro, cross-country differences in house price inflation have fallen, but in all other respects housing markets in the euro area have remained diverse. A number of smaller countries have seen house prices and consumption growing strongly, and the UK housing market has been more in line with these countries than with the larger euro area countries such as Germany and France.

Developments in euro area mortgage markets since 1999

7.10 If there is little evidence that housing market structures are converging, is there instead evidence that mortgage markets are converging in the euro area? The adoption of a single currency, combined with other measures to unify capital markets, has the potential to prompt convergence in mortgage markets, with borrowers making use of mortgages with similar terms. If this were to happen, the relatively high sensitivity of consumption to interest rate changes in the UK could fall if the UK were to join EMU.

Interest rates 7.11 There are a number of reasons why a single monetary policy will not lead to exactly the same mortgage rate across countries:

- the balance of variable, short-term fixed and long-term fixed rate mortgages differs across countries;
- security attached to mortgage debt varies across countries and this may lead to a premium in some countries;
- other terms attached to mortgages will vary across countries;
- differences in the efficiency of mortgage lenders will result in variations in mortgage rates;
- the extent to which base rate changes are passed through to mortgage rates will vary between countries; and
- even with perfect convergence of nominal mortgage rates, real mortgage rates will vary due to differences in inflation rates.

7.12 The move to a single monetary policy has markedly reduced differences in nominal mortgage rates across euro area countries.¹ As Table 7.5 indicates, in 1998, the average mortgage rate was 6.3 per cent in the euro area countries shown, with a maximum of 13.8 per cent and minimum of 4.9 per cent. By the third quarter of 2002, the average had fallen to 5.4 per cent, while the range around this had narrowed to 4.5 per cent to 6.9 per cent.

7.13 While nominal rates have shown a great deal of convergence, differences in inflation between euro area countries have led to an increase in variations in real mortgage rates since 1995. Real mortgage rates were relatively low in Ireland and Spain in 2002 Q3, further stimulating housing markets in countries where housing demand was already high given strong income growth. This compares with the restraining influence of relatively high real mortgage rates in Germany and Belgium.

¹ The EMU study by HM Treasury *EMU and the cost of capital* considers in detail the convergence of nominal interest rates in a monetary union.

Table 7.5: Comparison of real¹ and nominal mortgage rates

Per cent	Nominal mortgage rates			Real ¹ mortgage rates		
	1995	1998	2002 Q3	1995	1998	2002 Q3
Austria	7.0	5.0	5.6	5.9	4.5	5.1
Belgium	7.8	5.8	6.9 ²	6.6	5.0	6.2 ²
Finland	8.2	6.9	4.6	8.6	6.1	3.8
France	8.6	5.8	5.3	6.3	5.5	5.0
Germany	7.5	5.3	5.7		5.1	5.5
Greece	17.5	13.8	5.6	7.9	9.7	1.8
Ireland	7.2	5.7	4.8	4.3	3.5	2.6
Italy	12.8	5.5	5.6	6.7	3.7	3.8
Netherlands	6.3	5.1	5.5	5.0	3.5	3.9
Portugal	12.4	5.7	5.0	8.6	2.8	2.1
Spain	7.8	4.9	4.5	3.4	3.5	3.1
Mean of euro area countries shown	9.4	6.3	5.4	6.3	4.8	3.9
Coefficient of variation of euro area countries shown	0.36	0.40	0.12	0.28	0.40	0.30
Denmark	8.3	6.6	6.0	6.4	5.4	4.9
Sweden		4.6	5.3		4.6	5.3
UK	7.5	7.3	5.0	4.4	5.6	3.3

¹Real mortgage rates calculated using (end-quarter) HICP inflation rates.

² 2002 Q2.

Source: European Mortgage Federation, national sources, ONS, and HM Treasury calculations.

7.14 Evidence for convergence in the transmission of base rate changes to mortgage rates is sparse. The convergence in mortgage rates reflects overwhelmingly the replacement of individual central bank base rates with the single euro area base rate, rather than wider mortgage market integration. Kleimeier and Sander (2002) investigate whether there was a single long-run equilibrium between individual countries' mortgage rates and the EU average, and whether EMU had led to a structural break. The results show that the pass-through of changes in base rates to mortgage rates is still far from perfect and exhibits strong asymmetries across countries, consistent with a segmented mortgage market. The EMU study by HM Treasury *EMU and the monetary transmission mechanism* presents evidence that the speed and strength of the pass-through of changes of base rates to changes in retail bank rates, including mortgage rates, has increased since the start of EMU.

Market integration

7.15 As well as introducing a single monetary policy, the euro has the potential to accelerate the pace towards a single mortgage market. This would complement the drive to create a Single Market in financial services in the EU. For example, the EU Second Banking Directive (1989) allowed mortgage lenders to sell across borders subject to supervision in their domestic market. Greater freedom to enter other mortgage markets has the potential to increase convergence through cross-border competition. For example, Bank of Scotland entered the Irish market in 1999, offering the same types of products available in the UK. Abbey National has entered the Italian mortgage market, offering significantly higher loan-to-value ratios than Italian lenders, and allowing borrowers to extend terms to 25 years. The resulting increase in competition has reduced mortgage rates towards the European average and moved the terms closer to those in the UK. However, these examples have tended to be the exception rather than the norm.

7.16 An alternative means of entry to other countries' mortgage markets is via mergers and acquisitions. Cross-border transactions accounted for 22 per cent of mergers and acquisitions in banking between 1990 and 2001. These mergers are part of a wider banking industry restructuring. Significant numbers of banks have pursued strategies of vertical integration to offer a full range of financial services. These have tended to have a domestic focus, although some larger banks, such as HSBC, have entered a number of European markets. Nevertheless, Kleimeier and Sander (2002) conclude that, "*consolidation is still taking place on a national, rather than international level*". Even where there has been a change of ownership, lenders appear to have retained mainly local characteristics, including pricing differences.

7.17 It is clear that significant barriers to mortgage market convergence continue to exist in the euro area. Muellbauer, in his contribution to the EMU study *Submissions on EMU from leading academics* states that "*there is considerable institutional inertia with insiders resisting change*". The following are the main obstacles to full integration:

- large branch networks have traditionally been important for collecting funds for mortgage lending;
- different laws and regulations, particularly with respect to repossession;
- knowledge of the local housing market and the risks of default;
- preferential treatment of certain lenders, such as *Landesbanks* in Germany, and rigidities in the financial system; and
- differences in preferences, such as frequency of house moves and attitudes to debt.

7.18 Cabral *et al.* (2002) are more optimistic on prospects for mortgage market convergence. They find that the average margin on mortgage rates fell by over a third, while the standard deviation across countries halved, between 1998-99 and 2001-02. Nevertheless, there are still significant differences, suggesting, even in their results, that some degree of market segmentation remains.

7.19 Looking forward, the integration of EU financial markets, through initiatives such as the Financial Services Action Plan (FSAP) which aims to enshrine a number of important directives by 2005, is likely to continue. The FSAP aims both to open retail financial markets, including mortgage lending, and to integrate wholesale markets where mortgages can be funded. A voluntary code of conduct has also been introduced to harmonise the information across European mortgage markets to further enhance transparency. But there are still a number of obstacles which could deter competition, such as the ability for Member States to protect legitimate interests, including national lending regulations, and to favour domestic consolidation of banking. Nevertheless, the overall impact of these policies should be to promote cross-border competition.

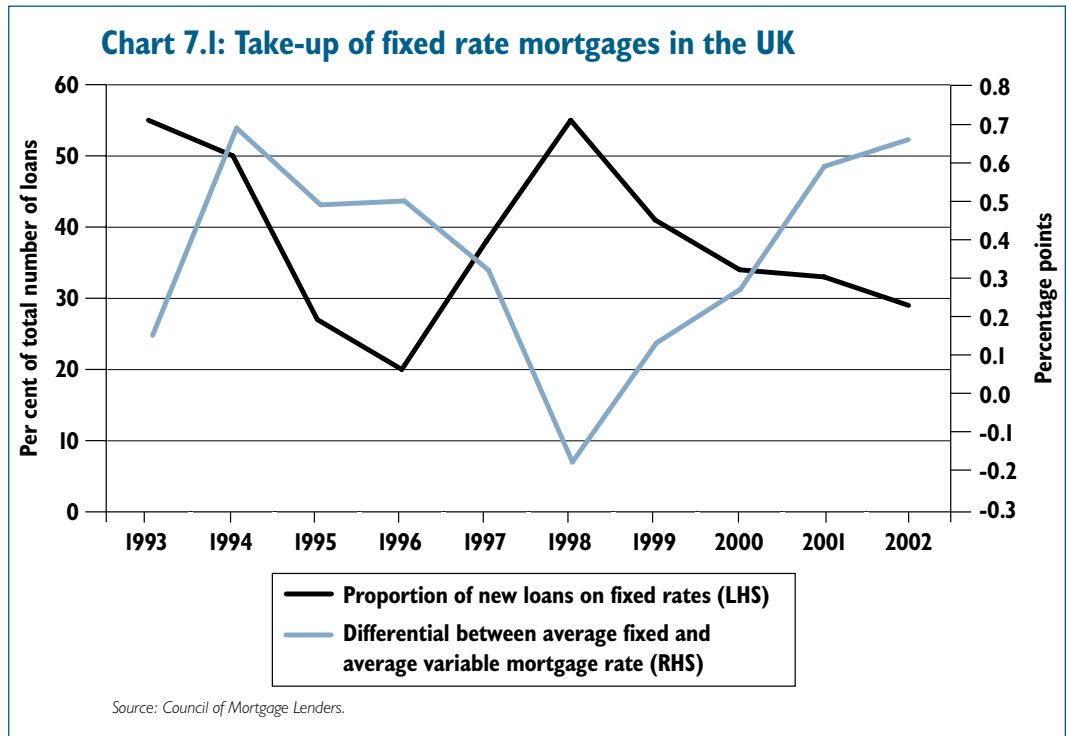
7.20 In addition, technological change within the financial sector is likely to encourage convergence in the future. The need for a costly branch structure is being challenged by the development of Internet banking services and the increasing use of wholesale markets to fund mortgages. Remote access to banking services has the potential to offer savings relative to those that rely on a branch network and also makes it easier for customers to compare competing products. Households may, therefore, become more mobile in their choice of mortgages and deposits. Furthermore, the development of mortgage bonds and mortgage-backed securities allows lenders to access funds without a branch network. The use of such instruments is increasing, with mortgage bonds likely to develop in all euro area countries except Greece, which has yet to provide legal underpinning for mortgage bonds. It seems likely that these pressures on lenders' profitability may encourage a process of regulatory convergence in the future, though there remains the possibility of regulatory protectionism of existing national lenders.

7.21 Overall, the evidence for mortgage market convergence in the euro area to date has been relatively modest. While adoption of the single euro area base rate has inevitably led to significant convergence of nominal mortgage rates, significant segmentation persists. It is clear that the single currency alone has not created a fully integrated retail mortgage market.

**Convergence in
the use of long-
term fixed rate
mortgages**

7.22 The sensitivity of the UK to interest rate changes could be reduced if, were the UK to adopt the single currency, borrowers switched to long-term fixed rate mortgages as widely held in euro area countries. Section 3 argues that greater reliance on variable rate mortgages is an important explanation of the greater sensitivity of the UK to interest rate changes. Financial innovation, and the greater stability of inflation and interest rates, has led to periods in which fixed rate mortgages have been attractive to UK borrowers, with, for example, over half of new loans in 1998 being at fixed rather than variable rates (see Chart 7.1). Nevertheless, the length of fix remains well below that in Europe, at between two and five years, compared with an average of between five and ten years in euro area markets.

7.23 Products with fixed rates of 10 and 25 years have recently become available in the UK. Although the availability of such products has the potential to lead to some convergence with the euro area countries, the relatively high premium on these long-term fixed rates of around 2 percentage points compared with the cheapest discounted variable rates is likely to limit their take up to borrowers who place a very high value on the predictability of their mortgage outgoings. Meanwhile, falling base rates have boosted the take up of variable rate mortgages in Denmark, Sweden and Ireland. Muellbauer in the aforementioned EMU study notes that "*On the continent, variable rate mortgages became more popular in the last two years, at least for part-financing, given falling interest rates*".



7.24 The experience of Ireland suggests that the structure of the UK mortgage market would be unlikely to change quickly if the UK were to join EMU. Like the UK, Ireland has a liberal market for mortgages. Borrowers have continued to shift between variable and fixed rate products depending on which is expected to be the cheaper. In 2002, the proportion of fixed rate mortgages was around 30 per cent in the UK and 44 per cent in Ireland. However, the figure for Ireland has fallen from nearly 70 per cent in 1999, reflecting the fact that short rates have fallen sharply in recent years. Like the UK, fixed rates in Ireland tend to be predominantly for a period of less than five years.

7.25 Overall, the UK is unlikely to see a significant voluntary shift in the use of long-term fixed rate mortgages, unless they become financially attractive and offer significant scope to redeem a fixed rate mortgage early.

Conclusion

7.26 EMU has the potential to lead to convergence in mortgage and housing markets. Convergence in mortgage markets would allow borrowers to have the same choice of mortgage products and ability to use housing wealth to fund consumption across countries. But there is little evidence of any convergence of housing market structures, nominal mortgage rates excepted, within the euro area to date. Serious impediments to the development of a single mortgage market still exist and evidence suggests considerable segmentation remains.

7.27 Any convergence in mortgage markets would not remove differences due to underlying housing market structures. Interest rates are only one factor affecting the demand for housing. Other factors that determine demand and supply, such as planning policies, are domestically determined. Significant variations in trends and cycles in house prices across European countries are, therefore, likely to persist, irrespective of mortgage market convergence. Overall, as Muellbauer's contribution to the EMU study *Submissions on EMU from leading academics* concludes, "Institutional difference between European countries will be slow to dissipate; some sources of asymmetric shocks will always remain".

- 8.1** This study considers whether there are structural features of the UK housing market which could lead to differences in the interest rate sensitivity of UK and euro area households, and to differences in the sensitivity of consumption to housing wealth. The study first examines evidence on key structural aspects of housing and mortgage markets in the UK and euro area: house price trends, the structure of mortgage debt, tenure patterns and the extent of mortgage equity withdrawal. It then reviews empirical studies of the link between housing and consumption, and presents the results of new modelling by HM Treasury. Finally, the study considers whether EMU entry could lead to convergence of housing market structures.
- 8.2** House prices have grown more strongly over the long term in the UK than in most euro area countries. They have been more volatile over the short term than in both France and Germany, although the degree of volatility is not unusual compared to other euro area countries. One factor affecting both these trends in the UK may be a low supply response to demand pressures.
- 8.3** The UK's combination of high levels of mortgage debt and heavy exposure to variable rates of interest (around 60 per cent of mortgage debt) is striking. Furthermore, where rates are fixed in the UK, they tend to be for a relatively short period of time.
- 8.4** The UK's level of mortgage debt and its heavier reliance on variable rate mortgages suggest that the sensitivity of housing-related interest payments to changes in interest rates is higher in the UK than elsewhere in the EU and far higher than in the other large EU economies.
- 8.5** The UK owner occupation rate is above the levels in Germany and France, although lower than in Spain and a number of smaller EU countries.
- 8.6** There is evidence that the link between house prices and consumption is relatively strong in the UK. Households appear to be able to withdraw mortgage equity more easily to support current spending. Higher housing market turnover may partly explain the extent of mortgage equity withdrawal in the UK. Furthermore, liberalisation of mortgage markets during the 1980s appears to have greatly enhanced the ability of households to access housing wealth in the UK.
- 8.7** Differences in housing and mortgage markets between the UK and euro area countries suggest the potential for greater sensitivity of household spending to interest rates in the UK. Empirical estimates of the sensitivity of UK consumption to housing wealth are not as clear cut as the evidence of structural differences, but on balance they support the view that the sensitivity of household spending to housing wealth and house prices is higher in the UK than elsewhere.
- 8.8** Past relationships may not be a good guide to what might happen in EMU; entry might lead to convergence in housing market structures and behaviour. However, there is little evidence of significant convergence to date in the euro area. Such convergence may take time to feed through.

8.9 These conclusions are drawn on in the EMU study by HM Treasury *EMU and the monetary transmission mechanism*, which considers the overall interest rate sensitivity of the UK compared to the euro area. That study finds that there are other structural factors, in addition to housing, which may make the UK more interest rate sensitive than euro area economies, but that there are also factors which work in the opposite direction. Overall, it finds that there is more evidence for structural factors that will increase the strength of the transmission mechanism in the UK relative to other countries. While empirical econometric studies at the aggregate level, examined in *EMU and the monetary transmission mechanism*, do not demonstrate consistently that the UK transmission mechanism stands out, these techniques are not always the best way of considering specific areas which may have special characteristics and particular importance and risk.

8.10 This is a key motivation for the current study, which has revealed high sensitivity of incomes after mortgage payments to interest rate changes in the UK and high house price growth and volatility, reflecting to a significant extent the low supply response of house building in the UK. This is a combination which may mean that deviations in UK interest rates from their appropriate level could lead to particularly large swings in the housing market (implying correspondingly large swings in the distribution of wealth between home owners and others) and hence in the wider economy in the UK, while similar deviations would be less problematic in some other EU countries. In EMU, interest rates are set in relation to conditions in the euro area as a whole, rather than in relation to conditions in any individual country. The resulting gap between what is appropriate for the euro area and what could be appropriate nationally could matter more in the UK than elsewhere.

8.11 These conclusions are considered further in the convergence test – the first of the Government's five economic tests for EMU entry.

REFERENCES

- Aoki, K., Proudman, J. and Vlieghe, G. (2001) 'Why House Prices Matter', *Bank of England Quarterly Bulletin*, Winter 2001.
- Aron, J. and Muellbauer, J. (2000) 'Financial Liberalisation, Consumption and Debt in South Africa'. Centre for the Study of African Economies Working Paper No. 22.
- Attfield, C., Demery, D. and Duck, N. (1992) 'Partial Adjustment and the Permanent Income Hypothesis', *The European Economic Review* 36, pp. 1205-22.
- Bachetta, P. and Gerlach, S. (1997) 'Consumption and Credit Constraints: International Evidence', *Journal of Monetary Economics* 40, pp. 207-238.
- Ball, M. and Grilli, M. (1997) *Housing Markets and Economic Convergence in the European Union*. A report for the Royal Institute of Chartered Surveyors and the European Institute, London: South Bank University.
- Ball, M. and Wood, A. (1999) 'Housing Investment: Long Run International Trends and Volatility', *Housing Studies* 14 (2), pp. 185-209.
- Boone, L., Girouard, N. and Wanner, I. (2001) 'Financial Market Liberalisation, Wealth and Consumption'. OECD Working Paper No. 308.
- Britton, E. and Whitley, J. (1997) 'Comparing the Monetary Transmission Mechanism in France, Germany and the United Kingdom: Some Issues and Results', *Bank of England Quarterly Bulletin*, Spring 1997.
- Bush, J. (ed) (2001) *The economic case against the euro*. London: New Europe.
- Cabral, I., Dierick, F. and Vesala, J. (2002) 'Banking Integration in the Euro Area'. European Central Bank Occasional Paper Series No. 6.
- Carruth, A., Gibson, H. and Tsakalotos, E. (1999) 'Are Aggregate Consumption Relationships Similar Across the European Union?', *Regional Studies* 33 (1), pp. 17-26.
- Davidson, J., Hendry, D., Srba, F., and Yeo, S. (1978) 'Econometric Modelling of the Aggregate Time-Series Relationship Between Consumers' Expenditure and Income in the United Kingdom', *Economic Journal* 88, pp. 661-92.
- Davey, M. (2001) 'Mortgage Equity Withdrawal and Consumption', *Bank of England Quarterly Bulletin*, Spring 2001.
- Deaton, A. (1977) 'Involuntary Saving through Unanticipated Inflation', *American Economic Review* 67(5), pp. 899-910.
- Drees, B. and Pazarbaçioğlu, C. (1998) 'The Nordic Banking Crises: Pitfalls in Financial Liberalisation?'. IMF Occasional Paper No. 61.
- Edey, M. and Hviding, K. (1995) 'An Assessment of Financial Reform in OECD Countries', OECD Working Paper No. 154.
- Englund, P. and Ioannides, Y. (1997) 'House Price Dynamics: An International Empirical Perspective', *Journal of Housing Economics* 6, pp.119-136.
- European Central Bank (2003) 'Structural factors in the EU Housing market', available at www.ecb.int.
- European Commission (2002) *Housing Statistics in the European Union 2002*. Brussels: Directorate General of Planning, Housing and Heritage.

- European Mortgage Federation (2002) *'Hypostat 1991-2001: Mortgage and Property Markets in the European Union and Norway'*. Brussels: European Mortgage Federation.
- Girouard, N. and Blondal, S. (2001) 'House Prices and Economic Activity'. OECD Working Paper No. 279.
- Hall, R. (1978) 'Stochastic Implications of the Life Cycle-Permanent Income Hypothesis: Theory and Evidence', *Journal of Political Economy* 86 (6), pp. 971-87.
- Hendry, D. and von Ungern-Sternberg, T. (1981) 'Liquidity and Inflation Effects on Consumers' Expenditure' in A.S. Deaton (ed.), *Essays in the Theory and Measurement of Consumers' Behaviour*, pp. 237-261. Cambridge: Cambridge University Press.
- Henley, A. and Morley, B. (2001) *'European House Price Volatility and the Macroeconomy: The Implications for European Monetary Union'*. Aberystwyth: University of Wales, School of Management and Business.
- Holmans, A. (2001) *'Housing and Mortgage Equity Withdrawal and their Components Flows'* Forthcoming.
- Iacoviello, M. (2000) 'House Prices and the Macroeconomy in Europe: Results from a Structural VAR Analysis'. ECB Working Paper No. 18.
- Kasparova, D. and White, M. (2001) 'The Responsiveness of House Prices to Macroeconomic Forces: A Cross-country Comparison', *European Journal of Housing Policy* 1 (3), pp. 385-416.
- Kennedy, N. and Andersen, P. (1994) 'Household Saving and Real House Prices: An International Perspective'. Bank for International Settlements Working Paper No. 20.
- Kleimeier, S. and Sander, H. (2002) 'Consumer Credit Rates in the Eurozone. Evidence on the Emergence of a Single Retail Banking Market'. European Credit Research Institute Research Report No. 2.
- Layard, R., Buiters, W., Huhne, C., Hutton, W., Kenen, P. and Turner, A. (2002) *'Why Britain Should Join the Euro'*. London: Britain in Europe Campaign Ltd.
- Lea, M.J., Welter, R. and Dübel, R. (1997) 'Study on Mortgage Credit in The European Economic Area Structure of the Sector and Application of the Rules in the Directive 87/102 and 90/88', European Commission Report.
- Leach, G. (2002) 'UK Mortgages and the Euro', The No Campaign.
<<http://www.no-euro.com/factsfigures/pdf/mortgages.pdf>>
- Maclennan, D., Muellbauer, J. and Stephens, M. (2000) 'Asymmetries in Housing and Financial Market Institutions and EMU', *Housing Outlook Paper*.
- Meen, G. (1996) 'Ten propositions in UK housing macroeconomics: An Overview of the 1980s and Early 1990s', *Urban Studies* 33 (3), pp. 435-444.
- Meen, G. (1998) 'Preparing for EMU: how to make the UK housing market more continental', *Oxford Economic Forecasting UK Economic Prospects*, Winter 1998.
- Meen, G. and Andrew, M. (1998) *'Modelling Regional House Prices: A Review of the Literature'*. A report for the Office of the Deputy Prime Minister.
- Miles, D. (1992) 'Deregulation of European Financial Markets', in P. Newman, M. Milgate and J. Eatwell (eds), *New Dictionary of Palgrave of Money and Finance, vol. I*. Macmillan: London.

- Modigliani, F. (1949) 'Fluctuations in the Saving-Income Ratio: A Problem in Economic Forecasting', *Studies in Income and Wealth* 11, pp. 371-442.
- Muellbauer, J. and Lattimore, R. (1995) 'The Consumption Function: A Theoretical and Empirical Overview' in Pesaran, M. and Wickens, M. (eds), *Handbook of Applied Econometrics, Vol. I: Macroeconomics*, pp. 221-311. Oxford, Cambridge: Blackwell Publishers.
- Muellbauer, J. and Murphy, A. (1997) 'Booms and Busts in the UK Housing Market', *Economic Journal* 107, pp. 1720-46.
- Nederlandsche Bank, The (1999) 'The Dutch Housing and Mortgage Markets: A Risk Analysis', *Quarterly Bulletin*. Amsterdam: DNB, September.
- Nederlandsche Bank, The (2000) 'Survey Among Dutch Mortgage-Holders on the Use of Mortgage Credit', *Quarterly Bulletin*. Amsterdam: DNB, June.
- Nederlandsche Bank, The (2002) 'Spotlight on Household Wealth Management in the Netherlands', *Quarterly Bulletin*. Amsterdam: DNB, June.
- Stephens, M., Burns, N. and McKay, L. (2002) *Social Market or Safety Net?: British Social Rented Housing in a European Context*. University of Bristol: The Policy Press.
- Swank, J., Kakes, J. and Tieman, A. (2002) *The Housing Ladder, Taxation and Borrowing Constraints*. DNB Staff Reports No. 9.

A1 The concept of the user cost of housing describes the opportunity cost of investing in housing. Financial saving and consumption of other goods and services jointly determine such decisions. To purchase a property, households must put down a deposit, and service and repay a mortgage, which implies lower consumption of other goods and services at present or at some point in the future. Households will therefore equate the marginal gain from buying more housing services with the marginal gain of extra consumption. The following equation sets out formally the main components of the user cost of housing (uc_t).

$$uc_t = (P_t) [\beta r_m \{\alpha(1-t_y) + (1-\alpha)\} + (1-\beta)r_i + \tau_p + \delta + \mu - E_t(\dot{p}_t)] \quad [1]$$

Where:

P_t = the price of a unit of housing at time t

r_i = real interest rate earned on deposits

r_m = real interest rate paid on mortgages

α = is the proportion of the loan available for tax relief

t_y = is tax relief on mortgage interest payments

β = the proportion of the property that is paid for by a mortgage

$1-\beta$ = the deposit

τ_p = housing taxes

δ = depreciation rate

μ = maintenance, insurance and repair costs

$E_t(\dot{p}_t)$ = expected change of house prices between t and t+1 (the expected return on buying a house)

A2 Therefore, $(\beta r_m \{\alpha(1-t_y) + (1-\alpha)\})$ represents the interest payments on mortgage debt with an element for any deductions against income tax, and $((1-\beta)r_i)$ is the opportunity cost of the deposit i.e. the returns on other investments.

A3 There are more complex forms of this equation, but this version is sufficient to highlight the key variables that will influence housing demand.

A4 Households will increase demand for housing if the cost of interest payments falls, returns on alternative assets fall, taxes on housing are reduced, housing becomes more durable, maintenance costs fall or house prices are set to increase. The latter element implies that house price expectations can have powerful effects on the demand for housing. If households anticipate that housing costs will fall, for example if interest rates are lowered, they will increase demand beforehand in anticipation of future price rises. This highlights that cycles can develop based on expectations of future economic conditions.

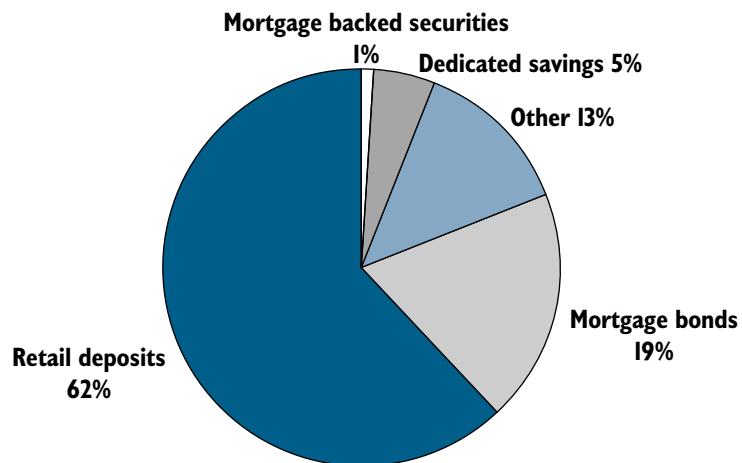
Funding methods

B1 Mortgage funding can be categorised in two ways:

- retail deposits; and
- wholesale capital markets (through the sale of bonds or securities).

B2 As Chart B.1 shows, the bulk of mortgage lending in the EU is still based on retail deposits. Mortgage bonds have become more popular in recent years, while mortgage backed securities are in their infancy. Other sources of funds are available, e.g. use of equity capital (retained profits or reserves), but external funding remains the main type of mortgage funding.

Chart B.1: Funding methods used in the EU (volumes outstanding as a per cent of total, end 1998)



Source: European Mortgage Federation, 2001.

B3 The following sections consider three sources of finance: retail deposits, mortgage bonds and mortgage backed securities. While retail deposits remain the dominant source of funds, the rapid expansion in mortgage debt has resulted in lenders increasingly using wholesale markets. The use of bonds or securities is likely to be determined by the needs of lenders, history, legal framework, financial market sophistication and the domestic mortgage market structure. The impact of the EU Single Market Programme and latest trends are also assessed.

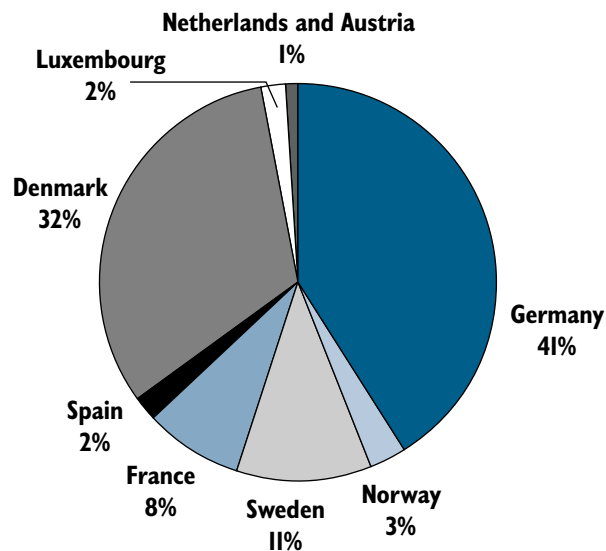
Retail deposits

B4 Retail deposits remain the dominant form of mortgage funding across the EU. Financial institutions make profits by setting interest rates on mortgage debts higher than those on deposits. As most deposits can be withdrawn at short notice, such funds tend to be used for mortgage products with variable rates of interest. Fixed rate mortgages would involve risks, as the costs of (short-term) funds could rise above the revenue from fixed rate mortgages. However, lenders can use financial markets to offset those risks, using special derivative swaps to allow them to lend at fixed rates for relatively short periods.

B5 The dedicated savings system is a special case of retail deposits, accounting for 5 per cent of the EU market. Households agree to save a given amount every month towards buying a house in return for the guarantee of a mortgage at pre-specified terms. The process of building a deposit is seen as a signal of the creditworthiness of the borrower. In Germany (and Eastern Europe), such banks are termed *Bausparkassen*. The rate of interest is either subsidised or benefits from tax relief from the state. Although costs of borrowing are low, the length of time it takes develop enough funds to borrow and the requirement to use money saved limits the development of such funds.

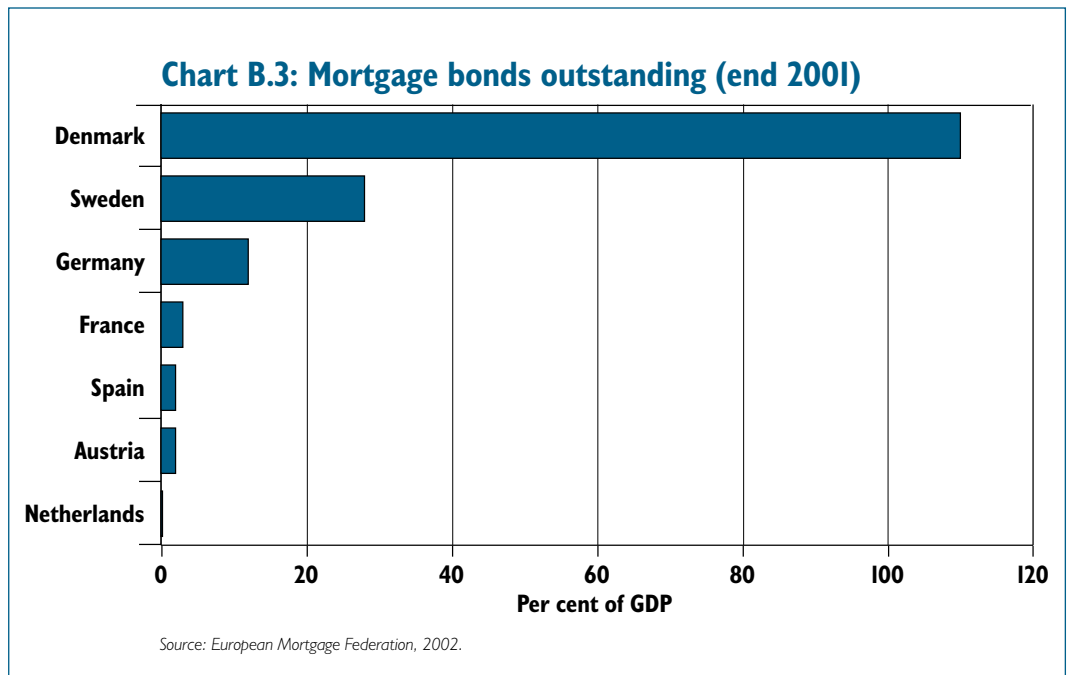
Mortgage bonds B6 Mortgage bonds (also termed covered bonds) are the second largest category of funds for mortgages. Mortgage bonds are the dominant means of funding a mortgage in Denmark and Sweden. However, due to its size, Germany has the largest market, accounting for 41 per cent of the total EU market for mortgage bonds, as shown in Chart B.2.

**Chart B.2: European mortgage bonds outstanding by country
(volumes outstanding as a per cent of total, end 2001)**



Source: European Mortgage Federation, 2002.

B7 Chart B.3 shows that mortgage bonds as a per cent of GDP are significant in Denmark, Sweden and Germany. As the chart shows, there is great diversity across the EU in the reliance on mortgage bonds.



B8 Maturities for mortgage bonds range from two to 30 years. In all countries other than Denmark, bonds tend to be fixed between five years and ten years. Given the rules on matching assets to liabilities, mortgages funded in this way tend to be fixed rate.

B9 Countries such as France, Spain, Luxembourg and Finland are actively promoting mortgage bonds and they are being developed in Belgium and Ireland. Beyond 2002, the UK will be in a minority of EU countries who do not have mechanisms for the creation of mortgage bonds. Although other countries have had to enshrine the principles of mortgage bonds into law (generally following the German system *Pfandbrief*), there appears to be no explicit legal impediment to their development in the UK,

Pfandbrief B10 *Pfandbrief* was developed in Germany and has since been adopted more widely. The system is well known to international investors and commands a relatively low rate of interest as it imposes tough conditions to ensure risks are low. The terms give bondholders precedence where a lender becomes insolvent, and only allows mortgage bonds to fund mortgages that cover 60 per cent of the value of a property on average. This is not as restrictive as it sounds, as lenders can package together loans with high and low percentage loan-to-values ratios. Borrowers can also use top-up mortgage loans. Lower risks enable lenders to set a lower proportion of funds aside for prudential purposes than required for financial and corporate bonds. Furthermore, due to their security, the EU directive 'Undertaking for Collective Investments in Transferable Securities (1988)' allows unit trusts to invest up to 25 per cent in a tranche of mortgage bonds, rather than usual restriction of no more than 10 per cent in one single investment.

Box B.1: Pfandbrief in Ireland

The Asset and Covered Securities Bill 2001 passed committee stage in the *Dail* in Ireland in mid-July 2002. The Bill will give legal underpinnings to the *Pfandbrief* concept in Ireland. This allows Irish financial institutions to ring-fence part of their assets, such as mortgages or public sector debt, to be used as collateral for AAA-rated bonds.

The move is designed to allow Irish mortgage lenders to offer long term fixed rate mortgages at relatively low cost. Latest data suggest that the spread over Irish government bonds is around 25 basis points for five-year bonds and 50 basis points for ten-year bonds. Costs tend to be low due to the high level of security offered to bondholders. Should a financial institution suffer difficulties, bondholders would have first call on the assets of the institution (even ahead of their Revenue Commissioners).

The Irish proposals have an important innovation relative to the standard German model. In Germany, *Pfandbrief* issuers are designated in law and have tended to be underpinned by local state banks. The Irish are relying on their tight insolvency laws on banks to provide the necessary solidity for the collateralisation process.

Pressure to introduce legislation to underpin *Pfandbrief* in Ireland has come from Dublin's International Financial Services Centre. German banks based in Dublin are extremely keen to develop the market in Ireland, while reports suggest that native Irish banks are likely to take time before issuing *Pfandbrief*.

B11 The relative low risk of *Pfandbrief* bonds and their slightly higher rates of return than Government bonds tend to make them an attractive asset for long-term investors such as insurance and pension funds, and as they offer a fixed stream of income, they make a good match for long-term liabilities. Pension funds, insurance corporations and credit institutions hold between 50 per cent and 70 per cent of mortgage bonds. With fewer Government bonds available and increased pension liabilities, mortgage bonds are likely to become more popular in the future.

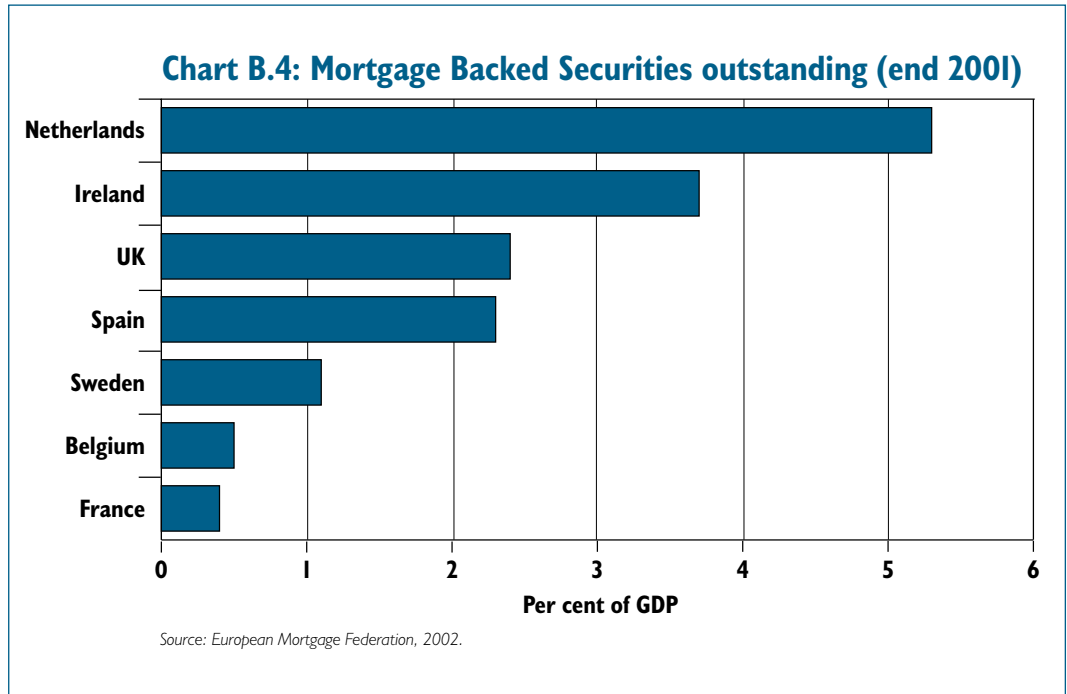
B12 Liquidity in the mortgage bond market has been increased by the development of a secondary market. Investors can sell or buy mortgage bonds on the market, so that they do not have to hold the bond for the full term. Efforts have been made to increase transparency through developing price indices, measures of returns and audits by credit rating agencies. In Germany, bond issues have increased in size, reducing transaction costs. Repurchase markets have also developed in a number of countries, but as yet there have been no cross-border repurchase transactions. Markets are continuing to develop, improving the attraction of bond finance for mortgages.

B13 One major disadvantage of *Pfandbrief* is that they include heavy penalties for early repayment. Such penalties increase the security of the bond, therefore reducing costs, but may reduce compensation in the mortgage market. In Germany, the result is that outstanding mortgages are transferred as part of the sale of a property. In other instances, buyers have to pay a fee equivalent to buying back bonds to the value of their mortgages at the latest market values.

Mortgage backed securities

B14 Securitisation is the process of turning cash-generating assets into securities that can be sold to investors. By selling as a security, lenders remove the risk from their balance sheet and pass it on to investors. This form of funding is in its infancy in the EU. Mortgage backed Securities (MBS) accounted for only 1 per cent of the total value of residential loans outstanding in the EU as a whole at the end of 1998. In the UK, the market is slightly more developed, accounting for 4 per cent of outstanding mortgages in 2002.

BI5 As Chart B.4 indicates, the Netherlands and Ireland have relatively large MBS markets as a per cent of GDP. The buoyancy of the Irish housing market has led mortgage banks to free up their balance sheets to provide new additional loans. These products are significantly less developed than in the US where they are the main form of funding for mortgages.



BI6 Investment in MBS depends on the quality of the underlying mortgage assets to generate the cash flows, particularly risk. This depends on the state of the market, legal protection and the strength of the securitisation structure. Fixed rate products are attractive as investors have greater certainty over future cash flows, as long as inflation remains stable. Markets are more able to price risk if there are large homogenous pools of securities with a long track record of similar assets to gauge the likelihood of default. The UK is generally seen as the most established model in Europe, with other countries adopting the main aspects of the UK system.

C1 The data set for house prices used in this study was obtained from the Bank for International Settlements (BIS) (using national data). The data sources used by BIS to construct house price indices for EU countries are repeated below.

C2 The BIS data are the most comprehensive available. However, they do have some limitations. It is not evident whether the series focus mainly on owner-occupied home prices, second-hand or new prices, or a mixture of the two; or whether any attempt at mix adjustment has been carried out. Since the comparisons of trends of data are based on different concepts there may be some bias involved. However, using individual national statistics would be likely to lead to the same kind of biases.

Belgium

Annual transaction reports, excluding public auctions (10 per cent of total) on small and medium sized dwellings from the entire country. Data is collected from the Statistical Office and reported from the local notary's offices (valued by size, location and imputed yield). Excluding the top and bottom 25 per cent (quartiles) of the price range, a simple average is calculated for the country total. Available annually.

Denmark

The average cash value of single-family houses (ordinary sales) compared with the latest valuation of the same house, thus implicitly correcting for size, location etc. Includes only sales by physical persons, by private persons and by private corporations to physical persons. Excludes sales between family members, forced sales and sales involving local or central government. Available quarterly.

Finland

The average price for existing flats and terraced houses as an average of prices per square metre recorded in the individual transactions by real estate agencies (30 per cent of all transactions). The overall country index is constructed as a weighted average of regional mean prices. Available quarterly.

France

BIS's own estimated index based on annual values for the Paris region, adjusted by a four-year survey for entire country. Available annually.

Germany

Transactions prices in DM per square metre of owner-occupied flats medium residential locations (2½ -3 rooms, 70 square metres, 'average' area), and actual market prices (median) obtained by local real estates that are members of Ring Deutscher Makler (around 40–50 per cent of total number of agents in Western Germany). Realtors from the four largest cities. Available annually.

Ireland

Average gross prices of second-hand houses for which loans were approved by all lending agencies (building societies, associated banks, local authorities, other agencies). Available annually and quarterly.

Italy

Average prices of new and completely reconstructed dwellings in large and middle-sized cities and touristic places. Collected by real estate agents and weighted by demographic criteria. Available annually.

Netherlands

Average selling prices of existing single and multi-family houses, weighted by the number of sales. Based on reports of the members of the Netherlands Association of Real Estate Agents (about 50–60 per cent of the total transactions). Available annually.

Sweden

Price index of owner-occupied one and two-dwelling buildings, weighted by the distribution of houses in the stock. Based on reports of the Local Boards of Registrations of Title. All transactions except purchases made by relatives covered.

Spain

A residential property price index, using price per square metre of living space. Available quarterly.

United Kingdom

Index of house prices (new and old dwellings) collected in a 5 per cent sample survey of building society mortgages. Weighted with respect of type, size, location and age of the dwelling. Available annually.

Why the Netherlands? **D1** There are a number of reasons why it is interesting to examine recent trends in the housing market in the Netherlands and compare them with those in the UK. These include:

- the recent strength of the housing market in both countries;
- the apparent support this has provided to consumer spending; and
- some similarities between the two countries in underlying housing market structures, combined with one key difference.

D2 House price inflation has been very strong in both the Netherlands and the UK in recent years, partly reflecting low interest rates and sharp reductions in unemployment in both countries; the Netherlands has also experienced structural change to mortgage lending criteria. Evidence on mortgage equity withdrawal suggests that households in both countries have used increased housing wealth to support current spending. Section 3 of this study shows that households in the UK and the Netherlands both face relatively large mortgage debt burdens. However, there is a key difference in the term structure of mortgages between the two countries. Mortgages in the Netherlands are predominantly longer-term fixed rate, with over 70 per cent fixed for over five years and just under 10 per cent fixed for a shorter period (one to five years). By contrast, UK mortgages are predominantly variable rate, with over 60 per cent of mortgages exposed to variable rates, and most of the remainder fixed for short periods (one to five years).

The strength of the housing market and consumption

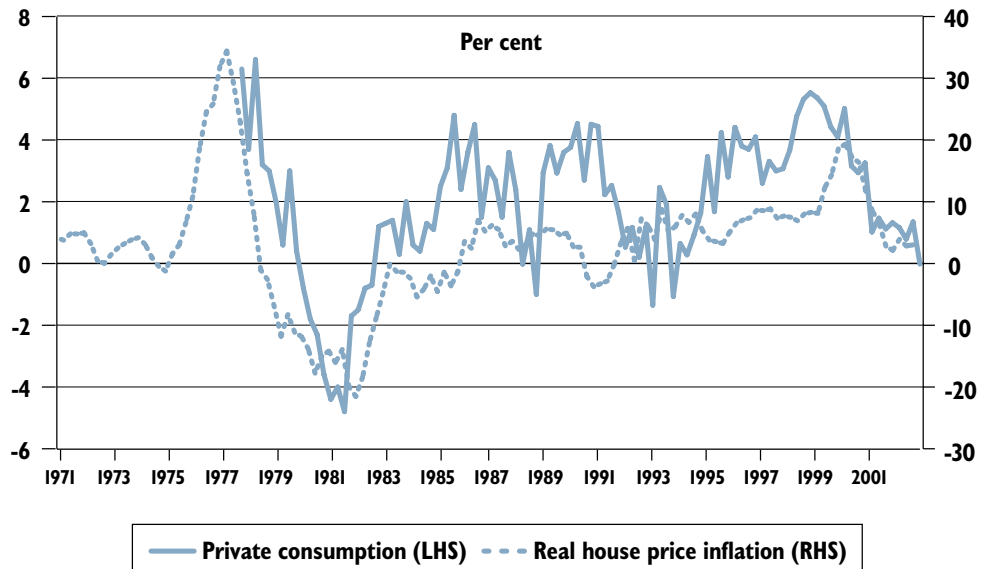
Strong housing markets and... **D3** Both the UK and the Netherlands have experienced an extended period of strong house price growth in recent years. Over the five years from the third quarter of 1997, house price inflation averaged just over 10 per cent a year in the UK and just over 9 per cent a year in the Netherlands. Both countries have experienced annual rates of house price inflation close to 20 per cent at some point in recent years. For the Netherlands, the peak was between late 1999 and mid 2000, while for the UK house price inflation reached around 25 per cent in the fourth quarter of 2002.

...strong household consumption... **D4** Aside from recent high rates of house price inflation, the most pertinent similarity is the apparent link between the housing market and household spending in both countries. This is demonstrated in Charts D.1 and D.2, which show real house price inflation and real household consumption growth in the Netherlands and the UK respectively. The correlation coefficient between the two growth rates over the period 1978Q1 to 2002Q3 is 0.65 for the Netherlands and 0.72 for the UK.

...through mortgage equity withdrawal **D5** Bank of England figures show that, as a per cent of post-tax income, mortgage equity withdrawal in the UK rose from zero at the beginning of 1998 to 6.6 per cent in 2002Q3. Over the same period, real house price inflation averaged over 10 per cent a year, compared to an average of less than 3 per cent since 1975.

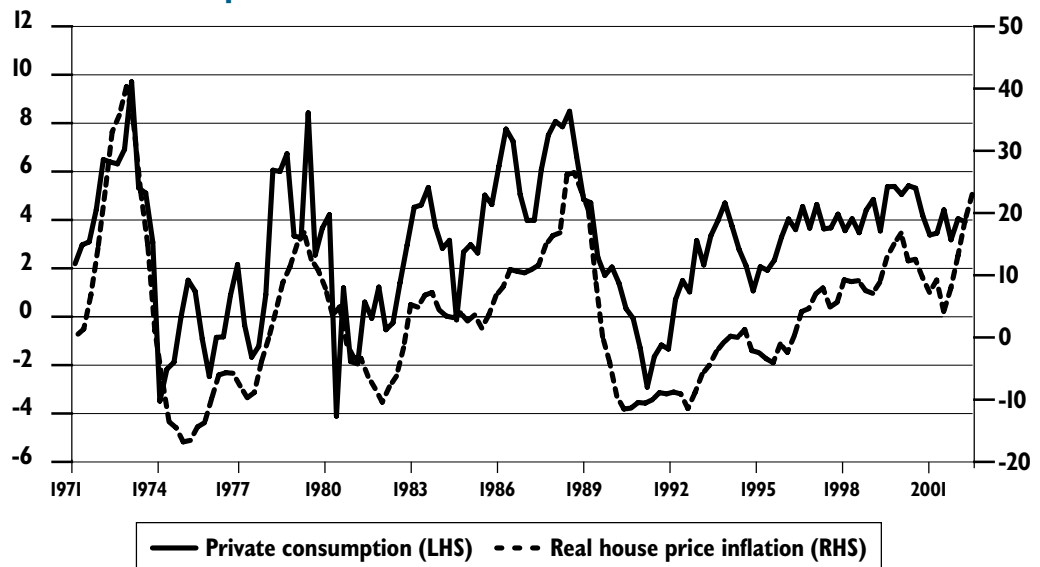
D6 The Nederlandsche Bank (DNB) uses survey evidence to assess the importance of mortgage equity withdrawal in the Netherlands. The most recent survey in early March 2002 showed that over a third of homeowners had released some equity in the previous six years, with homeowners withdrawing an average of €31,000 (DNB, 2002). Some €33 billion was released in total over the six years, of which €28 billion (2.5 per cent of household disposable income)¹ was spent on home improvements,² consumer durables and holidays.

Chart D.1: The growth of real household consumption and real house prices in the Netherlands



Source: Eurostat and Bank for International Settlements (using national data).

Chart D.2: The growth of real household consumption and real house prices in the UK



Source: Eurostat and Office of the Deputy Prime Minister.

¹ Using OECD Economic Outlook figures.

² The UK definition of mortgage equity withdrawal excludes investment in housing.

D7 Further evidence of the importance of mortgage equity withdrawal in the 1990s comes from mortgage data. In 1993, around 65 per cent of new mortgages in the Netherlands were for house purchase. By the first half of 1999 this had fallen to 42 per cent (DNB, 1999). Further analysis suggests that 31 per cent of mortgages taken out on the surplus value of property were done so either partly or entirely to fund consumption (DNB, 2000).

D8 The peak years for withdrawal were 1999 and 2000, in which mortgage equity withdrawal rose to over 4 per cent of household disposable income.³ This coincides with the peak in house price inflation in the Netherlands. Using their macroeconomic model, DNB estimate that spending of mortgage equity added one percentage point to GDP growth in 1999 and 2000. Therefore, rising house prices appear to have supported consumer spending and hence overall economic activity in the Netherlands, while sharply reduced spending of housing equity in 2001 reduced GDP growth by 0.5 percentage points.

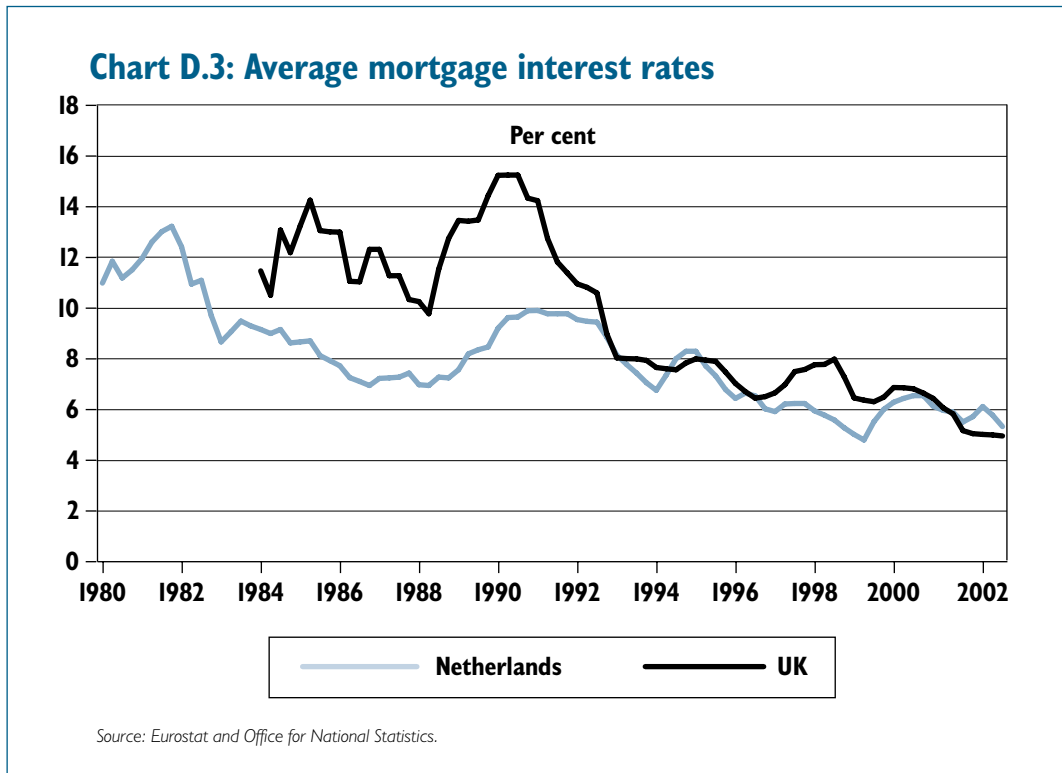
D9 Professor Geoffrey Meen's contribution to the EMU study *Submissions on EMU from leading academics* also highlights the important role equity withdrawal plays in both the UK and the Netherlands. This contrasts to the situation in Ireland, where Meen argues that mortgage equity withdrawal has not been significant, despite house prices doubling and consumers' expenditure growing by over 7 per cent a year between 1997 and 2001. The experience of Ireland shows that mortgage equity withdrawal is not an inevitable consequence of strong house price growth, suggesting that it is the particular structures and cyclical developments of the housing markets in the UK and the Netherlands that have made it more likely to occur.

What has driven the UK and Dutch housing markets?

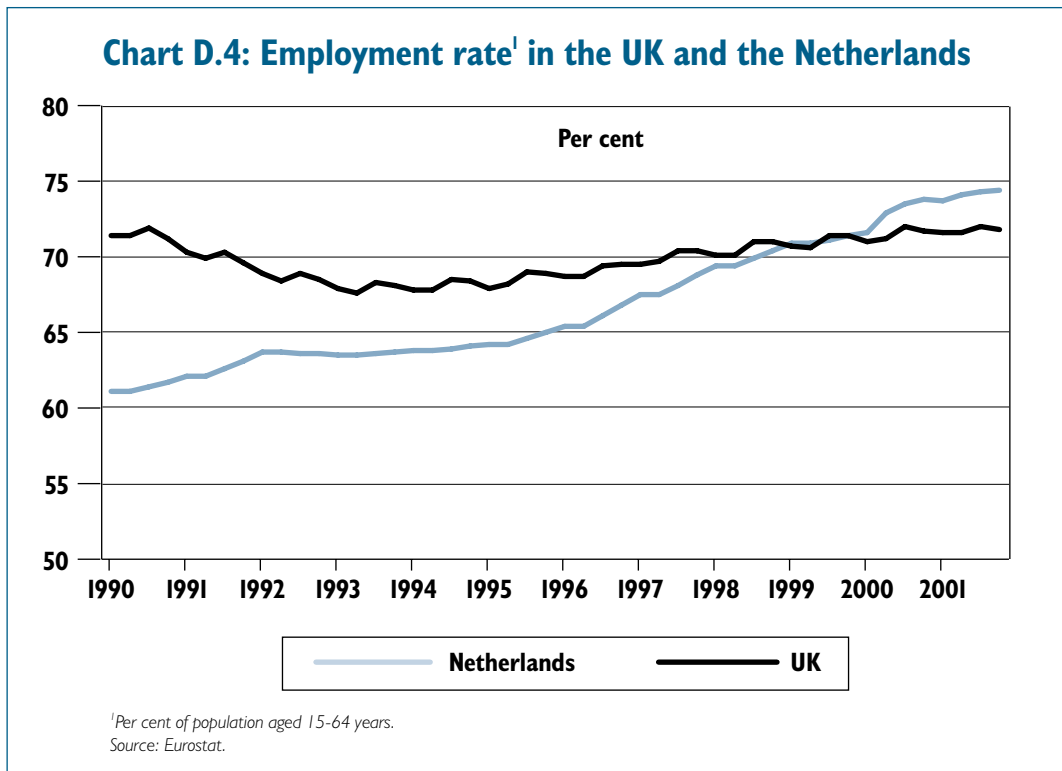
Interest rates **D10** Recent housing market performance in the UK can partly be attributed to the significant reduction in interest rates since the early 1990s, and specifically the sharp fall in rates since the end of 1998. Despite a 50 per cent increase in real house prices since the end of 1998, typical monthly mortgage interest payments as a per cent of household income have fallen over the period. Interest rates have also fallen in the Netherlands, as shown in Chart D.3. DNB (1999) argue that "*Lower interest rates and, as a result, continuing low financing costs are a main contributory factor to the high level of house prices*" (page 25).

Employment **D11** The UK and Dutch economies have experienced sustained periods of robust economic growth allied with strong labour market performance during the 1990s. In the UK, unemployment fell from over 10½ per cent at the beginning of 1993 to just over 5 per cent in 2002. Similarly, since the end of 1994, unemployment in the Netherlands has fallen from over 7 per cent to under 3 per cent. This has undoubtedly contributed to strong growth in household consumption and house prices.

³ Calculated using figures from DNB (2002).



DI2 Chart D.4 shows employment rates in the UK and the Netherlands. Over the past ten years, the employment rate in the Netherlands has increased by over 10 percentage points. Increasing female labour market participation has been a major factor behind this trend; it has also created many more two-income households.



DI3 These employment gains coincided with a change in regulatory lending policies in 1993 allowing two incomes to be counted when applying for a mortgage. These factors combined to underpin a sharp expansion in housing demand in the Netherlands, leading to rapid growth in house prices.

Supply side DI4 For increased demand for housing in the Netherlands and the UK to translate into house price rises, housing supply would need to be relatively inelastic. Section 4 of this study argues that the UK has a low responsiveness of new housing supply with respect to house prices, reflected for example in a low ratio of housing investment to GDP compared to other EU countries. Cross-border evidence from Swank *et al.* (2002) shows that new housing supply in the UK and the Netherlands responds only weakly to changes in house prices compared to Germany, France and, also, the US.

DI5 This lack of supply responsiveness to increases in house prices is evident in the upward trend of real house prices in the UK and the Netherlands. Table 4.1 in Section 4 shows that real house price inflation averaged around 3 per cent a year between 1970 and 2001 in both countries. The average for most other EU countries was lower.

Mortgage market structures

DI6 One similarity between the UK and the Netherlands is the high level of mortgage debt held by households. In 2001, the Netherlands had the highest level of mortgage debt to GDP in the EU at 79 per cent, while the UK was third highest at 60 per cent. This suggests that households in both countries may be highly exposed to movements in interest rates. But as Table D.1 illustrates, the term structure of mortgages differ in the UK and the Netherlands.

Table D.1: Mortgage market structures

	UK	Netherlands
Mortgage debt/GDP	60 per cent	79 per cent
Term structure	92 per cent variable/short fix	73 per cent long fix (most for over 10 years)

Source: European Mortgage Federation, 2002.

DI7 In contrast to the UK, the term structure of mortgage debt in the Netherlands is biased towards fixed rates. Work by DNB suggests that most mortgage holders opt for a fixed interest period of around ten years though, at any one time, a third of all mortgages will have less than five years left to run (DNB, 2000). This contrasts sharply with the situation in the UK in which nearly all mortgages are of a variable or short fix type. Section 3 of this study establishes that over 60 per cent of the UK mortgage stock is subject to variable rates of interest.

DI8 This means that UK households are more exposed to shorter-term, or cyclical, movements in interest rates. Other things being equal, this means that house prices and household consumption are likely to be more sensitive to monetary policy in the UK than in the Netherlands.

DI9 The greater the prevalence of fixed mortgage interest rates, the less sensitive the real economy will be to monetary policy via the housing market through the direct interest rate channel. For households with fixed rate mortgages, a fall in interest rates would not alter the burden of mortgage interest payments unless they were at the end of the fixed-rate period. However, a fall in interest rates could still affect the housing market indirectly (see Section 2) by increasing housing affordability and thus raising housing demand. Given that housing supply responds relatively slowly to changes in demand, house prices would be expected to rise in response. Wealth effects could then stimulate consumption by encouraging the withdrawal of housing equity.

Tax D20 A further difference between mortgage structures in the UK and Netherlands is the tax regime. In the Netherlands there is 100 per cent mortgage interest payment tax relief. In the UK, tax relief on mortgage interest payments has been progressively phased out. The removal of tax relief in the UK has had a positive impact on housing market stability, perhaps partially offsetting the difference in term structures.

D21 From 2001, homeowners in the Netherlands have been required to prove that they are releasing equity for home improvement in order to qualify for mortgage interest relief on their remortgaged properties. Moreover, mortgage interest relief is now only applicable on homeowners' first homes. These policy changes may reduce the significance of the link between house price changes and consumption by reducing the ability of households to withdraw equity from housing. However, the fall in home equity release in 2001 to under €4.5 billion, from €9.9 billion the previous year, mirrors the fall in residential property price increases, which peaked at 20 per cent a year in 2000 and then fell to under 10 per cent a year in 2001 (DNB, 2002). This suggests that links remain significant.

Impact of the euro on the Netherlands housing market

D22 The experience of the Netherlands provides insights into the impact of the euro on an economy with a liberal financial system and a strong housing market. However, given that EMU only began in January 1999, this evidence must be considered with care.

D23 Prior to the euro, the Dutch guilder was pegged to the Deutschemark in the Exchange Rate Mechanism (ERM) and interest rates were closely tied to those in Germany. The change in monetary policy regime when the euro was introduced may have affected the relationship between mortgage interest rates and house prices. However, Chart D.5 provides little evidence of such an effect in the short time period since the start of EMU. Moreover, it is difficult to disentangle any euro effect from the impact of other factors over the period: reduced credit constraints, increases in employment and weak housing supply are also likely to have underpinned strong house price inflation up to 2000. Since 2000, economic conditions have become more uncertain. This is likely to have dampened both mortgage rates and demand for housing. Mortgage rates have stabilised and, therefore, may have less of an influence on house prices than in the past.

D24 Prior to 1999, the Netherlands had shown a strong, but unstable, link between house prices and consumption. As discussed previously, evidence suggests that the rise in real house prices after EMU entry coincided with a sharp rise in mortgage equity withdrawal in the Netherlands. This suggests that rising house prices may have boosted consumption in the Netherlands after EMU entry.

D25 Furthermore, as interest rates have fallen, the incentive to increase borrowing has risen, compounded by the generous tax relief on mortgage interest in the Netherlands discussed above. The authorities have attempted to dampen the effects of mortgage equity withdrawal on consumption by requiring receipts for building work if loans are to be eligible for tax relief. As yet it is uncertain how effective these controls will be in weakening the link between housing wealth and household spending.

