

HOUSING MARKETS, BUSINESS CYCLES AND ECONOMIC POLICIES

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Introduction

1. In the vast majority of OECD countries, house prices have risen sharply from the mid-90s to 2006-07 and housing wealth has increased considerably during that period. At the same time, household debt has reached record levels in many countries, largely as a result of the decrease in real and nominal interest rates and a wide range of financial innovations on mortgage markets (product diversification, housing equity withdrawal, securitisation). These evolutions have created new conditions for economic policies, in particular monetary policy: on the one hand, transmission mechanisms may have been reinforced, in particular in countries where mortgage markets are the most developed, contributing to increasing the effectiveness of interest rate cuts during the 2000-01 downturn; on the other hand, these conditions created new challenges for central banks and financial regulators. Central banks need to assess to what extent monetary policy should react to evolutions in asset prices when these deviate from their fundamentals and supervision mechanisms need to adjust to market developments in order to allow an adequate monitoring of systemic risks.

An overview of recent evolutions in OECD housing markets

Large price increases in most countries over the last decade

2. From the mid-90s to the end of 2006 or 2007, house prices have risen sharply in most OECD countries, both in nominal and real terms, often with an acceleration after the turn of the century (Table 1). Several features of the last cyclical upswing are exceptional: the size and duration of the real house price increases; the degree to which they have tended to move together across countries; and the extent to which they have disconnected from the business cycle.

3. The main characteristics of real house price cycles from 1970 to the mid-90s can be summarized as follows (for a more detailed analysis, see Girouard *et al.*, 2006a): the average cycle lasted about ten years. During the expansion phase of about six years, real house prices increased on average by close to 40%. In the subsequent contraction phase, which lasted around five years, the average fall in prices has been on the order of 25%. By implication, at least since 1970, real house prices have fluctuated around an upward trend, which is generally attributed to rising demand for housing space linked to increasing per

1. OECD, respectively Economics Department and Office of the Secretary-General (Contact : christophe.andre@oecd.org). This paper draws extensively on research carried out in the OECD Economics Department, in particular Catte *et al.* (2004) and Girouard *et al.* (2006a, 2006b). The authors would like to thank Jørgen Elmeskov, Vincent Koen and other OECD colleagues for their useful comments. The views expressed in this paper are those of the authors and do not necessarily reflect those of the OECD or the governments of its Member countries.

capita income, growing populations, supply factors such as land scarcity and restrictiveness of zoning laws, quality improvement² and comparatively low productivity growth in construction.³

Table 1. House prices in real terms and relative to rents and income

	<i>Per cent annual rate of change</i>				<i>Level relative to long-term average</i> ¹		
	2000-2005	2006	2007 ²	Latest quarter ³	Price-to-rent ratio	Price-to-income ratio	Lastest available quarter
United States	5.6	4.6	-0.1	-4.1	126	107	Q1 2008
Japan	-4.6	-3.3	-1.1	-1.6	69	66	Q1 2008
Germany	-3.1	-1.8	-2.2	-3.0	71	64	Q4 2007
France	9.4	10.0	4.9	0.8	161	139	Q1 2008
Italy	6.5	4.1	3.1	1.0	127	115	Q1 2008
United Kingdom	9.8	3.8	8.4	-0.6	165	145	Q2 2008
Canada	6.2	9.1	8.7	5.2	189	134	Q1 2008
Australia	7.8	4.1	8.8	3.5	175	145	Q2 2008
Denmark	5.7	19.4	2.9	-5.0	162	148	Q1 2008
Finland	4.0	8.4	5.5	-0.4	150	108	Q2 2008
Ireland	7.9	10.5	-1.8	-8.7	180	147	Q1 2008
Netherlands	2.9	2.9	2.6	1.1	155	159	Q2 2008
Norway	4.5	10.7	11.5	-2.5	162	126	Q2 2008
New Zealand	9.7	6.9	8.3	-0.6	158	151	Q1 2008
Spain	12.2	6.3	2.6	-2.7	192	153	Q2 2008
Sweden	6.0	10.6	8.6	0.7	161	122	Q2 2008
Switzerland	1.7	1.4	1.3	-0.1	85	71	Q2 2008
Euro area ^{4,5}	4.6	4.0	1.7	-1.0	128	113	
Total of above countries ⁵	4.2	3.6	1.6	-2.0	125	108	

Note: House prices deflated by the Consumer Price Index.

1. Long-term average = 100, latest quarter available.

2. Average of available quarters where full year is not yet complete.

3. Increase over a year earlier to the latest available quarter.

4. Germany, France, Italy, Spain, Finland, Ireland and the Netherlands.

5. Using 2000 GDP weights.

Source: National sources. See Girouard et al. (2006a), Table A.1.

4. The current house price cycle differs from past experiences in three important respects:

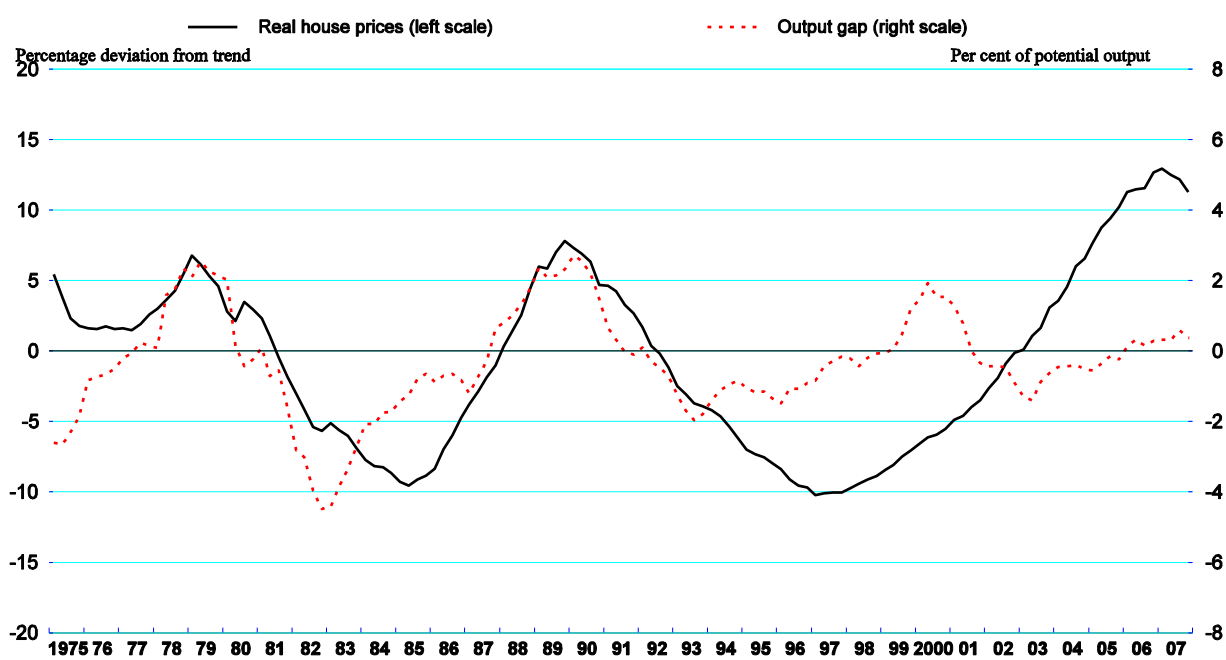
- First, the size of the real price gains during the upturn is striking. In most OECD countries, the cumulative increases recorded in the recent episode have far exceeded those of previous upturns. Real house prices generally peaked – between the end of 2006 and 2007 – at levels well above previous cyclical peaks.
- Second, its duration has surpassed that of similar past episodes of large real price increases for almost all countries. The upswing lasted around ten years from the mid-90s to 2006-07, compared to an average expansion phase of about six years in previous cycles since the 1970s.

2. To the extent it is imperfectly controlled for in house price indices.

3. See for example Evans and Hartwich (2005) and Helbling (2005).

- Third, during the last housing cycle upswing, there has been a disconnect between the evolution of real house prices and the business cycle. Figure 1 compares the deviation of OECD real house prices⁴ from their trend with the output gap, which measures the deviation of real GDP from its potential.⁵ Until 2000, there is a strong connection between the two indicators – peaks in the two indicators roughly coincide, while troughs in house prices lag activity troughs by 3 to 4 years – but in the early years of this century, the divergence between the two indicators is striking. Recently, the two measures have started to move in parallel again, the reversal in the real house price trend being matched by lower levels of activity.

Figure 1. OECD Real house prices and the business cycle



Note: Real house prices have been detrended using a linear trend. The OECD aggregate has been computed using GDP weights in 2000 in purchasing power parities.

Source: OECD Economic Outlook 83 database and OECD calculations.

Price-to-income and price-to-rent ratios are substantially above their long-term averages

5. A summary measure commonly used to assess housing market conditions is the ratio of nominal house prices to *per capita* disposable income, a gauge of whether housing is within reach of the average buyer. If this ratio rises above its long-term average, it could be an indication that prices were overvalued. In that case, prospective buyers would find purchasing a home difficult, which in turn should reduce demand and lead to downward pressure on house prices. As shown in Table 1, even though prices have started to decelerate or even to fall in several countries, current price-to-income ratios, as well as price-to-rent ratios are substantially above their long-term averages in almost all countries. In most countries in the sample, these ratios exceed their long-term averages by at least 25% and sometimes by 60% or more. The main exceptions are the countries which have not participated in the latest housing boom – Japan, Germany and Switzerland – where price-to-income ratios are below average historical values.

4. The OECD real house price index is an aggregate of the 17 countries for which time series start in the early 1970s, computed using purchasing power parity-adjusted GDP weights.

5. On the calculation of output gaps, see Beffy *et al.* (2006).

6. Real house price developments can, to some extent, be explained by changes in fundamental house price determinants, such as real and nominal interest rates, mortgage credit conditions – in particular the lengthening of loan durations, which has loosened the borrowing constraint of households – and in some countries demographic evolutions and supply-side rigidities.⁶ It is, however, likely that overvaluation exists in some countries, although its exact magnitude is difficult to assess as structural changes in housing and mortgage markets are likely to be shifting equilibrium levels. In addition, some changes in fundamentals may be long-lasting while others may prove unsustainable. For example, a reduction of mortgage rates resulting from lower inflation expectations or increased efficiency and competition in financial markets may lower borrowing costs in a durable way and thereby increase equilibrium house prices. But a fall in mortgage rates driven by the underestimation of risks is likely to be reversed sooner or later as risk premiums are reassessed, leading to a correction in house prices.

Households debt and wealth have reached record levels

7. Over the past decade, households have increased their borrowing considerably, mainly to purchase homes, and their debt relative to disposable income has reached record levels in a number of countries (Table 2). As a result, the household sector may have become more vulnerable to adverse macroeconomic or asset price developments. However, total household wealth has increased even more dramatically than debt, reflecting mostly the sharp appreciation of property values and an increase in homeownership rates as well as, after 2001, the recovery in equity markets. This large stock of assets provides households with a financial cushion against a negative shock.⁷ That said, households in a number of countries have leveraged balance sheets and the sensitivity to house price and interest rate developments has likely increased. These evolutions, particularly in countries where mortgage markets are most developed, have significant implications for monetary policy transmission and for financial system supervision.

The role of housing markets in monetary policy transmission

8. Innovations in mortgage markets and the considerable increase of household wealth in the economy imply an increased impact of asset price changes in the monetary policy transmission mechanism, in particular through their influence on private consumption. Housing investment is also sensitive to monetary conditions.

Impact of interest rates on housing investment

9. The sharp reduction in interest rates at the beginning of the 2000s has generated a large increase in housing demand and stimulated residential investment, which reached high levels as a percentage of GDP in several countries (Figure 2). While long-term averages for housing investment relative to GDP are typically in the 4 to 6 per cent range, this ratio exceeded 6% in ten countries of our sample in 2006, reaching even higher levels in Greece, Spain and Ireland. In the latter countries – as in the United States – housing investment has started to retreat (as a percentage of GDP) in 2007.

6. A more detailed analysis of the role of fundamentals in recent house price developments can be found in Girouard (2006a).

7. However, the recent downturn in the United States has caused some concern about homeowners with negative equity, which are more likely to default than others. Mortgage holders with negative equity were about 7% at the end 2006. A further 15% drop in house prices from this point would bring the number of mortgage holders with negative equity to 21% (Greenlaw *et al.*, 2008).

Table 2. Household debt and net wealth
Per cent of annual disposable income

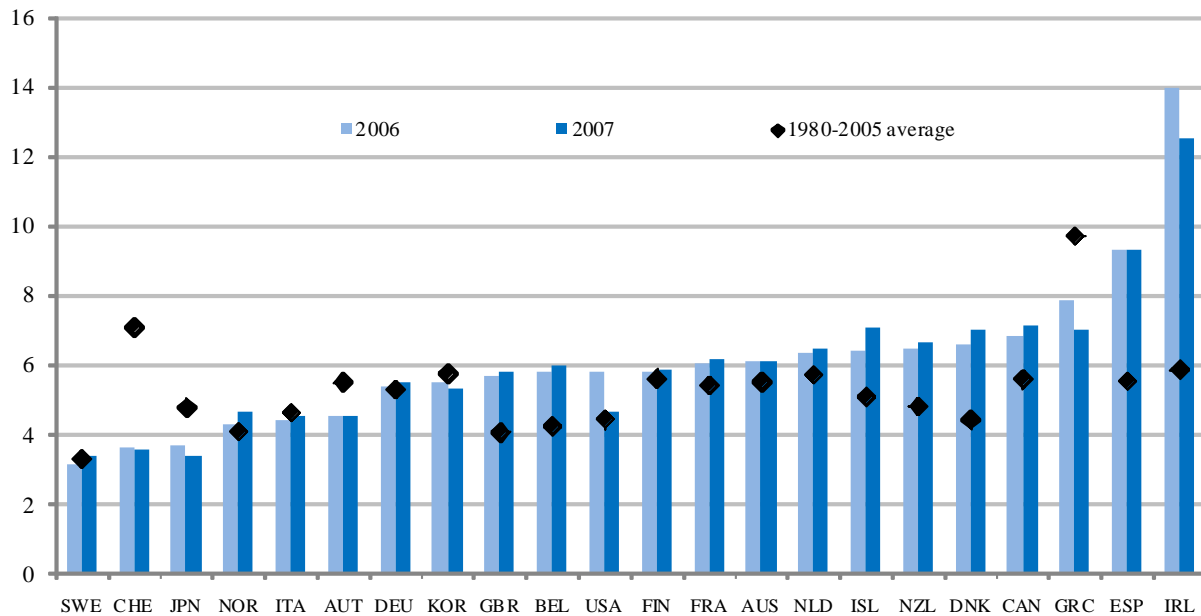
	Debt			Net wealth		
	1995	2000	2005	1995	2000	2005
United States	94	103	134	513	579	570
Japan	130	135	132	736	748	740
Germany	97	114	107	498	548	587
France	66	77	87	463	553	750
Italy	39	52	65	709	826	935
United Kingdom	106	114	155	569	750	787
Canada	103	113	127	477	502	535
Australia	83	120	173	514	567	734
Denmark	188	236	260	357	524	562
Finland	64	66	89	202	302	319
Ireland		81	141		618	775
Netherlands	113	175	246	369	528	515
New Zealand	96	125	181	472	445	670
Spain	59	83	107	540	646	935
Sweden	90	107	134	262	387	436

Note: * for year 2004 instead of 2005. Debt refers to total liabilities outstanding at the end of the period.

Net wealth is defined as non-financial and financial assets minus liabilities.

Source: Girouard et al. (2006b) and OECD Economic Outlook 83.

Figure 2. Housing investment in the main OECD countries
Per cent of GDP



Source: OECD Economic Outlook 83 database.

Impact of interest rates on households consumption

10. In addition to their impact on the consumption of durable goods, changes in interest rates affect household consumption via three channels: income, wealth and liquidity effects. A drop in interest rates

lowers the financial burden on indebted households and hence increases their disposable income (income effect). However, revenues of creditor households are reduced and the global effect on consumption ultimately depends on the relative proportion of indebted and creditor households, the level and structure of their debts and assets and their respective marginal propensity to consume. As indebted households tend to have a greater marginal propensity to consume than creditor households, it is likely that the income effect of a fall in interest rates is positive.

11. A reduction in interest rates generally triggers a rise in asset prices and consequently an increase in the value of housing wealth, which can lead to an increase in household consumption (wealth effect). However, because households both own housing assets and consume the housing services deriving from them, capital gains to the owner are partly or fully offset by the higher discounted value of future imputed rents when house prices rise.⁸ Unlike a rise in equity prices, which can reflect an increase in the economy's expected productive potential, and thus of future income, higher house prices may simply reflect increased scarcity owing to higher demand, with no net change in either the quantity or the quality of the services they can provide. In that case, there would be no change in national wealth. Nevertheless, even if aggregate wealth is unchanged, house price increases usually affect the relative positions of specific groups of people – for example, of current home-owners vis-à-vis would-be home buyers. These wealth transfers can have macro-economic effects if these categories' propensities to spend differ. Furthermore, a change in the relative price of housing can induce consumers to substitute towards non-housing expenditure.

12. According to the life-cycle theory, consumption depends on households' lifetime income and wealth. In order to keep their consumption level fairly constant over their lifetime, households tend to borrow when they are young and earn a relatively low income, to repay their debt as they get older and their income increases and finally to accumulate assets which will allow them to maintain their consumption level during retirement. However, in an uncertain world with imperfect financial markets, some households have only limited access to borrowing: even when available, uncollateralized consumer credit tends to be prohibitively expensive. Since housing assets constitute the most important form of collateral available to households, an increase in their value allows more borrowing to finance current consumption (liquidity effect).

Magnitude of housing wealth effects

13. Estimates based on the life-cycle model (the methodology and detailed results are described in Catte *et al.*, 2004) suggest that the long-run marginal propensities to consume out of financial wealth are between 0.01 and 0.02 for France, Germany, Italy and Spain and vary between 0.03 and 0.07 for Australia, Canada, Japan, the Netherlands, the United Kingdom and the United States (Table 3). The estimated long run marginal propensity to consume out of housing wealth is in the range of between 0.05 and 0.08 for Australia, Canada, the Netherlands, the United Kingdom and the United States while it is between 0.01 and 0.02 in Italy, Japan, and Spain and statistically insignificant in France and Germany. In the former five countries, the housing wealth effect appears to be larger than the financial wealth effect.

14. Having established an empirical link between housing wealth and household consumption, it is necessary to investigate the transmission mechanisms at work. There could be a "pure" wealth effect, whereby an increase in the value of household wealth would trigger a reassessment by households of the level of their permanent income and therefore of their desired consumption. But there could also be a

8. The extent of the offset depends on the owners' effective time horizon, that is, on whether they intend to sell their housing assets during their lifetime or to pass it on to their offspring. If current wealth holders fully internalize the welfare of future generations, so that their economic planning horizon is effectively infinite, the expected cost of future imputed rents fully offsets the value of housing assets (a conclusion that has some analogy with the Ricardian equivalence proposition on the effects of government debt).

liquidity effect, the increase in housing wealth providing collaterals for additional borrowing by liquidity-constrained households.⁹

Table 3. Short-term and long-term impact of financial and housing wealth on consumption

Estimated short-term and long-term marginal propensities to consume out of financial and housing wealth

	Short-term		Long-term	
	Housing	Financial	Housing	Financial
Australia	0.02	..	0.07	0.03
Canada	0.03	0.03	0.06	0.04
France	0.02
Germany	..	0.01	..	0.02
Italy	..	0.01	0.01	0.01
Japan	0.01	..	0.01	0.07
Netherlands	0.02	..	0.08	0.06
Spain	0.01	..	0.02	0.02
United Kingdom	0.08	0.03	0.07	0.04
United States	..	0.02	0.05	0.03

Source: OECD estimates (Catte et al., 2004).

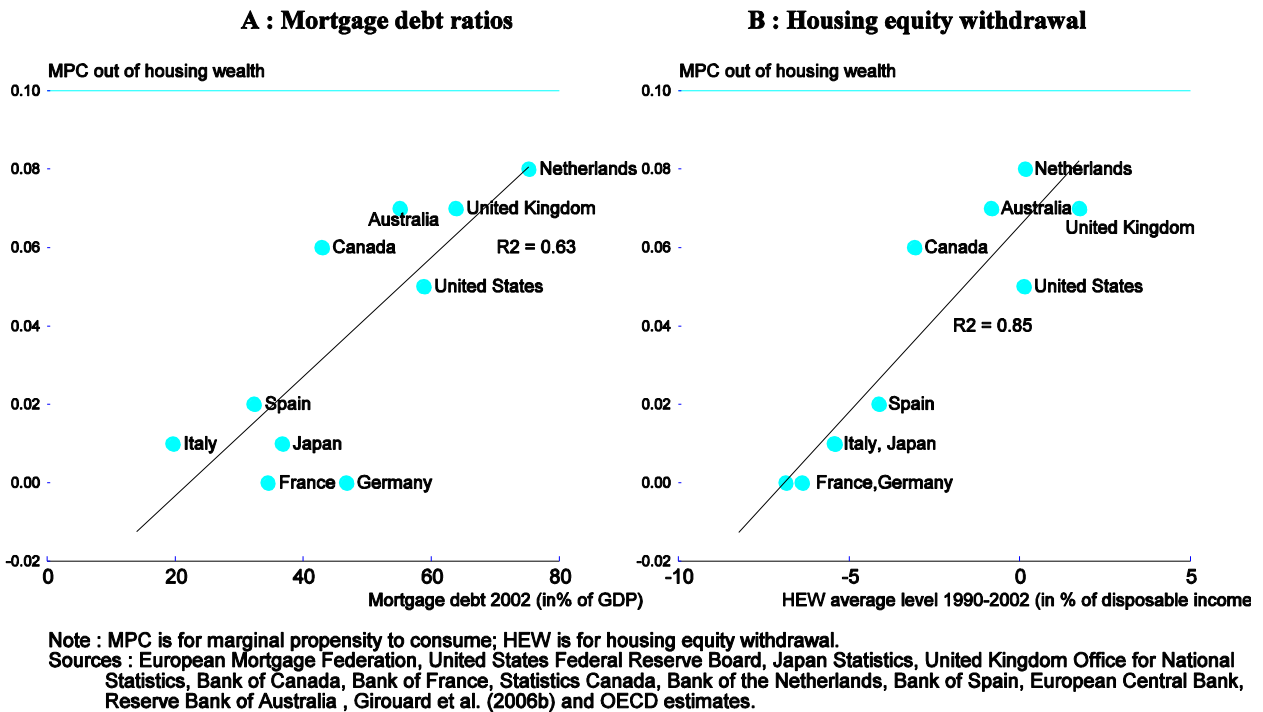
The role of mortgage debt and housing equity withdrawal

15. The size of the long-run effect of housing wealth on consumption appears to be positively correlated with indicators of mortgage market size, such as household mortgage debt ratios, suggesting that the mortgage market is pivotal in translating house price shocks into spending responses (Figure 3, panel A). The influence of housing market developments on consumption as well as the rapidity of the response of private consumption to changes in housing wealth depends on the extent to which homeowners are able to borrow against housing assets. Housing equity withdrawal (HEW) is usually calculated by subtracting the household sector's residential investment from the net increment in its mortgage debt. HEW indicates the extent to which the household sector as a whole is extracting liquidity from the housing market. It is more likely to be positive when households are able to renegotiate existing mortgage loans or to contract second mortgages on the same property to take advantage of an increase in housing wealth. Again, the size of housing equity withdrawal is closely correlated with the impact of housing wealth on consumption (Figure 3, panel B).

16. The addition of a variable representing housing equity withdrawal in the consumption equation allows the examination of this effect. The results support the hypothesis that rising HEW may have increased the consumption level in Australia, Canada, the Netherlands, the United Kingdom and the United States (Table 4). In these countries the marginal propensity to consume out of HEW (approximating a liquidity effect since this variable represents a cash flow) appears significant, and its magnitude ranges between 0.20 for the Netherlands and the United States and 0.89 for the United Kingdom. By contrast, no effect of HEW is found for France, Germany, Italy, Japan and Spain. Where the housing equity withdrawal variable is significant, it seems to capture most of the impact of housing wealth on consumption, suggesting that such impact is channelled to a large extent through greater access to liquidity. In fact, when housing equity withdrawal is included among the explanatory variables, the effect of housing wealth is generally no longer statistically significant. This is consistent with the fact that in the countries where housing equity withdrawal plays an important role (Australia, Canada, the Netherlands, the United Kingdom and the United States) it is also strongly correlated with house prices.

9. CBO (2007) provides an overview of the main recent studies on this subject in the United States.

Figure 3. Marginal propensities to consume out of housing wealth and mortgage market indicators



Structural factors behind differences in housing wealth effects

17. Summing up, it is possible to identify a group of countries (Australia, Canada, the Netherlands, the United Kingdom and the United States) where changes in housing wealth have a significant effect on consumption, exceeding the effect of changes in financial wealth. This effect seems to work mainly through the interaction of house prices and mortgage lending. By contrast, in France, Germany, Italy, Japan and Spain the housing wealth effect appears to be smaller or in some cases statistically insignificant and HEW does not help explain consumption behaviour. The different role of housing equity withdrawal in the two groups of countries suggests that the mortgage market is pivotal in translating house price shocks into spending responses. However, such aggregate indicators are the result of deeper structural differences in the functioning of national housing and mortgage markets, which may help explain observed cross-country differences in marginal propensities to consume out of housing wealth.

18. In particular, consumption responses to changes in housing wealth can be expected to be higher, *ceteris paribus*, in countries where:

- Financial markets provide easy access to mortgage financing and to financial products that facilitate equity withdrawal.
- There is a high rate of owner-occupation, which implies a wider distribution of housing wealth.
- There are low housing transaction costs and housing wealth is exempted from capital gains taxes, both of which would encourage owners to perceive housing assets as more liquid.

Table 4. Estimates of the long-term equations with housing equity withdrawal

	Australia	Canada	Netherlands	United Kingdom	United States
<i>Marginal propensity to consume</i>					
Financial wealth	0.33	0.06	0.11	0.08	0.03
Housing wealth	--	0.05	--	--	--
Housing equity with drawal	0.63	0.63	0.20	0.89	0.20
<i>Sample</i>	1989:1 1999:2	1970:1 2002:2	1981:2 2003:1	1978:1 2002:2	1977:1 2002:2

Source: OECD estimates (Catte et al., 2004).

Importance of mortgage market “completeness”

19. In general, less regulated and more competitive mortgage markets can be expected to offer a greater variety of mortgage products, to serve a broader range of borrowers and to apply lower mortgage interest rate spreads.¹⁰ A systematic cross-country comparison along these dimensions is available only for a group of eight European countries.¹¹ Among these, Denmark, the Netherlands and the United Kingdom appear to have the most complete mortgage markets in terms of the range of products offered, such as second mortgages and equity release products, as well as a choice between alternative interest rate adjustment and repayment structures (Table 5). They are also able to cover a broader range of potential borrowers, including for example younger or older households, and borrowers unable to certify their income. Some of these product or borrower coverage options exist also in the traditionally less sophisticated markets such as Italy and Germany, but they are less common, having been introduced more recently.

20. A synthetic measure of these characteristics of mortgage markets is the “completeness” index presented in Table 5. The index is calculated as a weighted average of several criteria, including levels of loan-to-value ratios, product variety, borrower types and loan purposes covered, as well as distribution channels and the quality of information and advice offered to customers.¹² The close relationship of mortgage market “completeness” with real house price/consumption correlations (Figure 4, panel A) and housing equity withdrawal (panel B) seems to confirm the crucial role played by the provision of liquidity in connection with housing assets.

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10. While restrictive regulations may hamper the development of mortgage markets, excessively weak ones, providing incentives to extend mortgage lending beyond reasonable levels, can lead to a deterioration in the quality of collaterals. In such a situation, the transmission of monetary policy through the mortgage market channel will be seriously impaired.
11. See Mercer Oliver Wyman (2003). The countries covered are: Denmark, France, Germany, Italy, the Netherlands, Portugal, Spain and the United Kingdom.
12. See Mercer Oliver Wyman (2003) for further details.

Table 5. Mortgage market completeness: range of mortgage products available and of borrowers served in eight European countries

	Denmark	France	Germany	Italy	Netherlands	Portugal	Spain	United Kingdom
a) LTV ratios								
Typical	80	70	70-80	60	90	85	80	87
Maximum	80	100	80	80	115	90	100	110
b) Variety of mortgage products								
Rate structure								
Variable	**	**	**	**	**	**	**	**
Variable (referenced)	**	**	-	**	**	**	**	**
Discounted	-	**	-	*	-	-	**	**
Capped	**	**	*	*	**	-	*	**
Range of fixed terms								
2-5	**	**	**	**	**	*	*	**
5-10	**	**	**	**	**	*	*	*
10-20	**	**	**	*	**	-	*	*
20+	**	*	*	*	*	-	*	-
Repayment structures								
Amortising	**	**	**	**	**	**	**	**
Interest only	*	**	**	*	**	-	-	**
Flexible	*	**	-	*	**	-	*	**
Fee-free redemption ^a	**	-	-	-	-	-	-	*
Full yield maintenance fee	**	*	**	*	**	*	*	*
c) Range of borrower types and mortgage purposes								
Borrower type								
Young household (<30)	**	*	**	*	*	**	**	**
Older household (>50)	**	*	*	*	**	*	*	**
Low equity	-	**	*	-	*	*	*	**
Self-certify income	-	-	-	-	*	-	*	*
Previously bankrupt	*	-	-	-	-	-	-	*
Credit impaired	*	*	-	*	*	-	*	**
Self employed	**	*	**	**	*	**	**	**
Government sponsored	*	**	*	*	*	**	*	*
Purpose of loan								
Second mortgage	**	*	**	**	**	**	**	**
Overseas holiday homes	**	**	*	**	*	-	-	**
Rental	**	**	**	**	**	**	**	**
Equity release	**	-	*	**	**	-	*	**
Shared ownership	**	*	*	*	*	**	-	**
Mortgage market completeness index^b	75	72	58	57	79	47	66	86

Note: Readily available means that products are actively marketed with high public awareness; Limited availability means that only a small subset of lenders provide this product, often with additional conditions; No availability means that no lenders surveyed offered the product. See Mercer Oliver Wyman (2003) for further details on the sample and criteria of the survey.

Key: ** Readily available * Limited availability - No availability

a) On fixed-rate products only.

b) See Mercer Oliver Wyman (2003) for details on the calculation of the index.

Source: Mercer Oliver Wyman (2003), National sources, Scanlon and Whitehead (2004), EMF (2006).

21. The composition of mortgages as between fixed-rate and variable-rate is also potentially important, since mortgage rates can react differently depending on what is happening to the yield curve. Not surprisingly, in countries with mostly fixed-rate mortgages the pass-through to rates on new loans depends on whether the change in short rates is accompanied by a shift in long rates (de Bondt *et al.*, 2003). The short-term interest rate has a stronger impact in countries where variable-rate mortgages prevail, while the long-term rate is relevant in those with mostly fixed-rate mortgages. In the latter case it may be costly to refinance. In France, for example, fixed rate mortgages have typically been available for a term of 15 years, but refinancing penalties amount to up to six months interest or 3 per cent of the balance that is being prepaid. That makes refinancing unattractive when interest rate declines are small. In

Germany, rates on mortgages are typically fixed for ten years, and it is very difficult to refinance. The Italian market is a hybrid of fixed and floating rates. By contrast, in Denmark and the United States, where most loans are also fixed-rate, penalty-free prepayment options are common, as mortgage lending is largely funded through callable mortgage-backed securities. In Ireland, Spain and the United Kingdom, mortgage rates are usually variable and interest rate changes feed through rapidly to changes in monthly service payments.

22. On the other hand, cross-country differences in mortgage rate spreads over market rates for the relevant maturity, which are proximate indicators of efficiency, are not large, having narrowed significantly over the past ten years. Once fees are taken into account and adjustment is made for credit risk and for the value of prepayment options, spreads vary within a relatively narrow range (70-135 basis points) among the countries considered in Figure 4.¹³ The remaining differences reflect mostly product structure and operating and funding costs, plus some distorting influences such as cross-subsidisation with other products and the presence in some countries of government-owned lenders with low cost of capital. Spreads are highest in Italy, which also has the highest operating costs. In Denmark and Germany, the existence of well-developed markets for mortgage-backed securities has contributed to contain funding costs for fixed-rate loans.

23. Two key indicators of mortgage market ability to provide access to financing are typical or maximum loan-to-value (LTV) ratios and mortgage terms (Table 6). Not surprisingly, across countries both are correlated with the size of mortgage debt.¹⁴ In fact, high LTV ratios allow borrowers to take out more debt, and longer repayment terms are then needed to keep debt service-to-income ratios affordable. Even if housing loans are taken solely for house purchase, this adds to the household sector's liquidity. Maximum LTV ratios above 100 per cent exist in the Netherlands and the United Kingdom, although typical values are lower. Typical LTV ratios are particularly low in Italy. Equity withdrawal is further facilitated where mortgage products specifically designed for this purpose are widely marketed, as is the case particularly in Australia, the Netherlands, the United Kingdom and the United States, but also in several Nordic countries. By contrast, such products are either not offered or not widely marketed in France, Belgium and Southern European countries.

13. An earlier study by Diamond and Lea (1992) covering four of the eight countries considered in the Mercer Oliver Wyman (2003) study (Denmark, France, Germany and the United Kingdom) found adjusted spreads ranging between 120 and 276 basis points.

14. Among the countries reported in Table 6, the correlation coefficient of mortgage ratios with typical LTV ratios is 0.78; with typical mortgage terms it is 0.59.

Table 6. Mortgage and housing market indicators

	Residential mortgage debt (% of GDP)	Loan-to-value ratios (%)		Typical loan term	Share of owner-occupied housing (%)
	2005	typical	maximum	(years)	2002 ^a
Australia	72.7	95	..	25	70
Austria	..	60	80	20-30	56
Belgium	..	80	100	20	71
Canada	43.9	75	..	25	66
Denmark	82.2	80	80	30	51
Finland	31.6	70	85	15-20	58
France	41.0	70	100	15-20	55
Germany	46.4	70-80	80	20-30	42
Greece	..	75	80	15-20	83
Ireland	61.4	70-90	90	20	77
Italy	26.7	60	80	15-20	80
Japan	36.7	80	..	25-30	60
Netherlands	92.9	90	115	30	53
New Zealand	86.4	65
Norway	..	70	80	15-20	77
Portugal	..	85	90	15-20	64
Spain	51.3	80	100	20-25	85
Sweden	41.4	80	80	>30	61
United Kingdom	78.8	87	110	25	69
United States	73.2	80	..	30	68

a) Or latest year available.

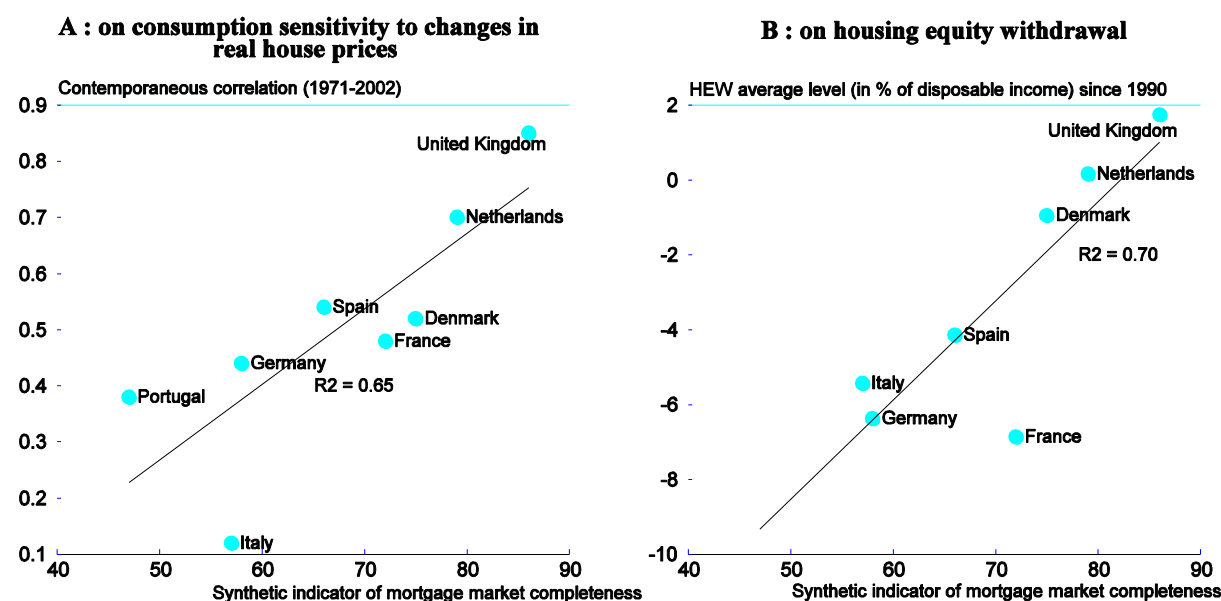
Source: Catte et al. (2004), Girouard et al. (2006b), National sources, Scanlon and Whitehead (2004), EMF (2006).

24. The above differences are likely to reflect the lender's perception of the risk connected to mortgage loans. An important element in this regard is the legal protection of collateral. The administrative costs and the time required to realise the collateral's value in the event of default differs considerably across countries (Table 7). In Belgium, France, Portugal and especially Italy, the length of legal procedures is probably a key factor discouraging banks from making larger loans relative to the value of the property and from lending to higher-risk borrowers. In a number of OECD countries there are also regulatory ceilings to LTV ratios, and in most of them a loan's LTV ratio influences its weighting for the purpose of capital adequacy requirements, so that high-LTV loans are more costly to fund.¹⁵ Regulatory limits are particularly binding in Germany, being combined with a mandatory loan valuation method that implies an additional discount of 20 to 25 per cent relative to market prices. Moreover, loans with LTV ratios above the 60 per cent ceiling are also ineligible for inclusion in mortgage-backed securities (or can be included, up to an LTV of 80 per cent, but the portion of the loan above 60 per cent is not recognised for collateral purposes).¹⁶

15. Catte *et al.* (2004) describes regulatory limitations on LTV ratios.

16. See Contact Group on Asset Prices (2002).

Figure 4. Effects of mortgage market completeness



Note : HEW is for housing equity withdrawal.

The synthetic indicator of mortgage market completeness is presented in Table 5 (for additional information see Mercer, Oliver, Wyman, 2003). For Portugal, the contemporaneous correlation between consumption and real house price change is calculated over the period 1989-2001, due to limited data availability.

Sources : Mercer, Oliver, Wyman (2003), United States Federal Reserve Board, Japan Statistics, United Kingdom Office for National Statistics, Bank of Canada, Bank of France, Statistics Canada, Bank of the Netherlands, Bank of Spain, European Central Bank, Reserve Bank of Australia and OECD estimates.

Table 7. Time required and cost of mortgage enforcement procedures

	Usual time required ^a (months)	Administrative costs ^b (in per cent)
Austria	6	..
Belgium	18	18.70
Denmark	6	..
Finland	2-3	2.5
France	15-25	7
Germany	12	4.2
Greece	3	16
Ireland	11-14	8.6-10.6
Italy	60-84	..
Netherlands	6	3
Portugal	18-30	8
Spain	7-9	17
Sweden	4-6	5
United Kingdom	8-12	2.6-7
United States	8.4	11.5

a) Total time from the writ of execution (in the countries where the mortgage must be given executory power by a court) to the distribution of the proceeds to creditors.

b) Costs usually include both fixed and variable components. Here they are calculated for a property value of € 100 000. They do not include lost interest during the procedure.

Source: For EU countries: EMF (2002); for the United States: Department of Housing and Urban Development (1996).

25. Though mortgage markets have been evolving rapidly in most OECD countries, including those where they were least developed, differences are still considerable as regards the range of potential

borrowers reached and the variety of needs covered. If mortgage debt ratios can be taken as a summary indicator of market size, their dispersion has actually increased over the last ten years (Girouard *et al.*, 2006b). Thus, it seems possible to distinguish between a group of countries where mortgage markets provide ample access to liquidity (mainly English-speaking and Nordic countries) and others where mortgage finance is less developed (particularly Italy and France). The picture is more mixed for Germany – where basic mortgages with long repayment terms are very affordable but product range is limited and LTV ratios are low – and for Spain, where the market has been developing very rapidly.

Influence of owner-occupied housing

26. Potentially amplifying the importance of mortgage-market structure is the extent of owner occupation. Housing tenancy structures differ considerably across OECD countries. Broadly speaking, the share of owner-occupied housing is very high in Southern European countries, relatively low in Germany, the Netherlands and in some Nordic countries and around two thirds in most other countries (Table 6). In part, these differences reflect tax incentives (discussed below). They also reflect differences in access to mortgage financing. Access to mortgage markets seems to allow households to achieve home-ownership earlier: in the Netherlands and in the United Kingdom households in the 25-29 age group are more likely to be homeowners, relative to the national average, than in France, Germany, Italy or Spain. In practice, however, some of the countries with the highest owner-occupation rates – such as Italy and Spain – are among those that have, or had until recently, the least developed mortgage markets. This suggests that other mechanisms for providing access to home-ownership are available in these countries, like for example inter-generational wealth transfers. Thus, while owner-occupation may be a necessary condition for a housing wealth channel to open up, it is not a sufficient one, and the cross-country correspondence between owner-occupation and the sensitivity of consumption to real house prices is weak.

Housing transaction costs

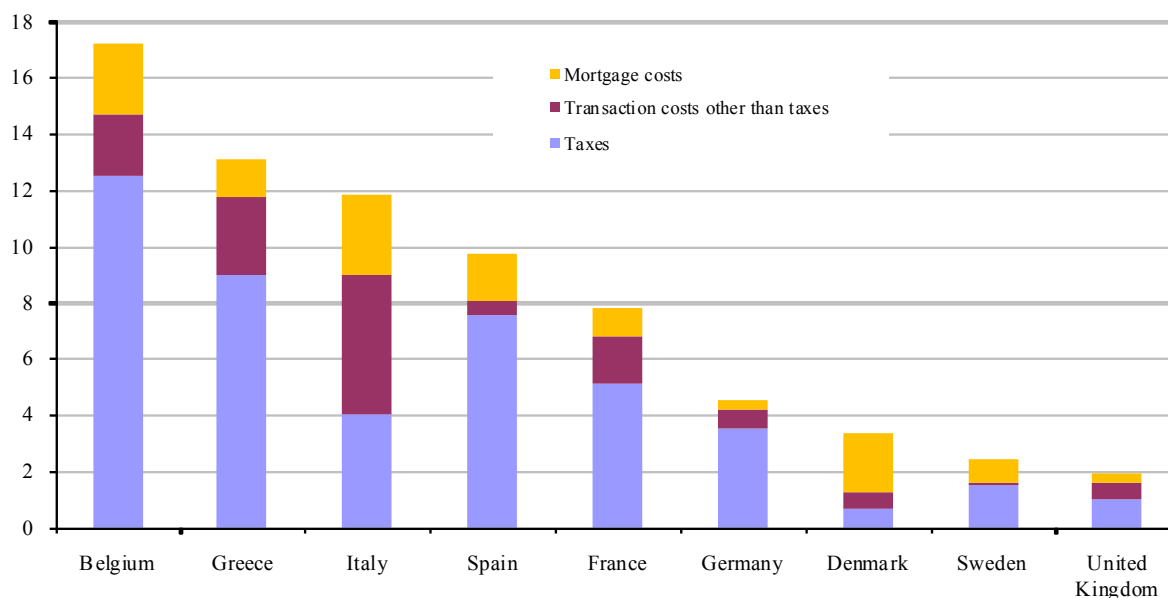
27. Housing transaction costs also differ considerably across countries. Taxes – stamp duties, transfer and cadastral taxes, VAT – are one component.¹⁷ In addition, the fees to be paid to intermediaries can be set directly by regulations or be influenced by regulations on entry into the market for real estate services. Estimates of housing transaction costs for different countries on a comparable basis are difficult to find. Those available cover only a limited number of countries. The European Mortgage Federation (EMF, 2006) categorises countries into high – Belgium, Spain, Italy, Greece – medium – France, Hungary, Germany and Poland – and low transaction costs countries – Sweden, the United Kingdom and Denmark (Figure 5).¹⁸ The connection between housing transaction costs and the strength of the house-price/consumption correlation is difficult to demonstrate from this small sample. But the presumption is that higher costs operate to impede the housing sector/consumption transmission mechanism by making housing assets less liquid.

17. See Table 4 in the Annex of Catta *et al.* (2004) for an overview of residential property taxation in OECD countries.

18. High, medium and low transaction costs countries are defined as countries where transaction costs are respectively above 9%, between 4 and 9%, and below 4% of property value.

Figure 5. Transaction costs

Per cent of property value



Source: EMF (2006).

The role of taxation

28. The taxation of capital gains on housing assets can be seen as having similar effects to transaction costs if the tax is levied when the gains are realised, as is usually the case. However, while most OECD countries apply capital gains taxes to residential property, a majority exempt owner-occupied dwellings that are the owner's main residence.¹⁹ In the few countries where gains are taxed but no exemption exists for principal owners, such as Norway, Sweden and Austria, this tax may be perceived as a significant additional transaction cost. In Spain and Portugal, capital gains on housing are exempt from the tax if the proceeds are reinvested.

29. Other fiscal provisions, such as mortgage interest deductibility and the level of property taxes potentially play an important role too. In equilibrium, assuming that arbitrage exists between house ownership and rental, house prices are linked to the level of rents and the user cost of housing:

$$P = R / (i_a + \tau + f - \pi)$$

Where P represents the level of house prices, R the level of rents, i_a the after-tax interest rate on mortgages, τ the property tax rate, f the depreciation rate and π the expected growth rate of rents.

30. The price level is a decreasing function of the after-tax mortgage interest rate and the property tax rate. Mortgage interest rate deductibility, by lowering i_a , has a positive impact on the price

19. In some countries, such as Austria, Belgium, Finland and Germany, this exemption has been available only if the property is held for a minimum number of years (*e.g.* five to ten years), a provision that is intended to encourage long-term, non-speculative investment in housing.

level. A low property tax rate similarly tends to increase prices. The property tax rate is generally rather unrelated to the evolution of housing market prices.²⁰

31. A tax system favouring home ownership through subsidies and tax deductibility not only raises the equilibrium price of housing but also increases price volatility (van den Noord, 2005). The demand and supply shocks affecting the housing market are amplified compared to the situation that would prevail in the presence of a neutral tax system. Mortgage interest deductibility does not in itself increase house price volatility. However, if expectations are extrapolative, which is likely in housing markets, an increase in house prices tends to generate expectations of further increases (in the relation above, π is a function of its past values) and a tax system which subsidises housing tends to increase price volatility. Van den Noord (2005) shows that euro area countries with the highest subsidies for home ownership (Netherlands, Ireland, Finland, Spain) have the most volatile house prices.

Asset prices and monetary policy stance

32. The main objectives of monetary authorities in OECD countries are price stability, minimum deviations of output from its potential and financial stability.²¹ Insofar as asset prices, in particular those of housing, can provide useful information on future production and inflationary pressures, they can influence the monetary policy stance.²² But the debate among economists and policymakers on the opportunity for monetary policy to respond to asset price movements, beyond taking into account what is implied by their short-term effects on output, employment and inflation, has been revived recently.²³ In other words, should monetary policy try to counter evolutions that would make asset prices drift from their fundamentals?

33. For monetary policy to be efficient in limiting asset price bubbles, three conditions need to be met²⁴ (Kohn, 2006): first, monetary authorities need to be able to detect the development of a bubble at an early stage; second, a modest tightening of monetary policy needs to be able to control speculation; third, expected gains from avoiding a bubble in terms of medium-term macroeconomic performance must be substantial. This third condition can be expressed in a slightly different way: preventive action by central banks is only warranted if one considers that it will prove more difficult to deal with the effects of a burst bubble. This could be the case, in particular if there are deflation risks or if nominal interest rates close to zero leave little margin to the central bank to reduce lending costs.²⁵ Or if developments in asset markets are perceived as putting the stability of the financial system at risk.

20. An exception is Denmark, where the property tax rate is revised annually, contributing to macroeconomic stabilisation (Muellbauer, 2006).

21. These objectives are generally considered by central banks, even though the mandates and scope of responsibility of these institutions vary across countries.

22. In the case monetary authorities have an inflation target, the methodology used to measure changes in housing costs in the reference index can prove important (Ahearne, 2005). On this subject, see also Cournède (2005).

23. See, for example, the Federal Reserve Bank of Kansas City 2007 Economic Symposium on "Housing, Housing Finance, and Monetary Policy".

24. In this article, we are focussing on house price bubbles, but the issues are similar for financial bubbles.

25. Zero nominal interest rates do not completely eliminate the possibility of monetary policy action. The Bank of Japan adopted a policy of quantitative easing between March 2001 and March 2006, apparently with some positive results, though the magnitude of the impact on the economy is difficult to evaluate (Yamasawa, 2006; Spiegel, 2006).

Identifying a bubble

34. Acting against the building of a bubble implies being able to identify the latter with a reasonable degree of certainty in real time. This assumption appears problematic, especially as it implies that central banks would have an information advantage over private markets.²⁶ In addition, only about two thirds of the major price increases which have taken place in OECD countries since 1970 have been followed by sharp declines.²⁷ A large price increase is not necessarily associated with a bubble and can be the result of a favourable evolution of fundamentals. Fundamentals can, however, be difficult to observe or to interpret in real time. These difficulties are compounded by the lag in the reaction of the economy to monetary policy.

35. Historically, price-to-rent and price-to-income ratios have tended to revert to their long term average, albeit with relatively long adjustment delays (Girouard *et al.*, 2006a; Ahearne *et al.*, 2005a). A significant deviation of these ratios from their historical norms imply a large probability of correction in the medium term. High Investment rates relative to their long run average are also indications of potential overheating, as construction booms tend to end with sharp adjustments (Hoeller and Rae, 2007). Another feature of housing booms is that they are usually associated with strong credit growth (Ahearne *et al.*, 2005 ; Detken and Smets, 2004 ; ECB, 2005). The increase in demand permitted by credit expansion puts pressure on prices, but the resulting increase in housing wealth provides collaterals which can be used for further borrowing, a mechanism described as the financial accelerator (Bernanke *et al.*, 1988). If all the indicators described above may help in assessing the state of the housing market, detecting bubbles in real time remains very challenging.

Countering the development of a bubble

36. Assuming that a bubble could be identified with a reasonable degree of certainty, it is necessary to assess whether monetary policy is the most suited instrument to counter its development. Housing bubbles imply sharp increases – often double digit – in prices. In this situation, it is unlikely that moderate hikes in policy rates are enough to bring house prices back to their equilibrium level. An increase in interest rates which would be sufficient to impact significantly on house prices would probably be damaging for the rest of the economy.²⁸ Furthermore, if speculation can lead to a misallocation of resources – e.g. overinvestment in the construction sector – an increase in interest rates aimed at cooling asset markets might crowd-out investments that are economically sound and socially useful (Kohn, 2006). Finally, taking the evolution of asset prices into account when setting the monetary policy stance might reduce the clarity of monetary policy objectives in the eyes of the public and therefore make macroeconomic stabilisation by the central bank more difficult (Nickell, 2005 ; Mishkin, 2007). Some central banks consider, however, that monetary policy has a role to play in controlling financial imbalances resulting from irrational developments in asset prices.²⁹ Thereby, they might be able to improve macroeconomic performances in the medium-term. In this approach, central banks aim at cooling asset

26. Gurkaynak (2005) shows that, despite recent advances, econometric detection of asset price bubbles cannot be achieved with a satisfactory degree of certainty.

27. To qualify as a major increase, the appreciation had to feature a cumulative real price increase equalling or exceeding 15%. The detail of these episodes can be found in Girouard *et al.* (2006a).

28. For example, Nickell (2005) estimates that to eliminate the surge in house price inflation in 2003-04 in the United Kingdom, a 300 basis points rise in interest rates during 13 quarters would have been necessary. This would have taken off more than 1/2 per cent of GDP in 2003.

29. The influence of financial imbalances on future inflation is one of the justifications for the monetary pillar of the ECB (ECB, 2005). Bean (2003) and White (2005) also stress the need to take into account the consequences of monetary policies at a longer horizon than the two years or so generally considered in monetary analysis.

markets and avoid the building up of bubbles by raising interest rates moderately when markets seem to be becoming too buoyant and credit growth looks excessive.³⁰ Detken and Smets (2004) note that monetary policy has often been relatively accommodative at the end of an asset price cycle upswing. Taylor (2007) argues that if the federal funds rate had been set according to a Taylor rule in the past few years, much of the housing boom in the United States would have been avoided.³¹ However, high saving and strong reserve accumulation by central banks in surplus-generating emerging markets and large saving relative to investment in the OECD countries' corporate sector have also contributed to the unusually low long-term interest rates of recent years (Ahrend *et al.*, 2008).

Improving macroeconomic performance in the medium term

37. The building up of a bubble on financial or housing markets is a source of concern for monetary authorities because if it bursts it is likely to have a sizeable impact on growth and employment, and can even cause a deflationary spiral as has been seen in Japan in the 1990s. Indeed, most large downturns in house prices have been associated with sharp slowdowns in GDP and household consumption growth (Figure 6). Obviously, the causality runs both ways and these variables are also influenced by common factors, in particular the evolutions of household income and interest rates. Nevertheless, the strong correlation between house prices and growth suggests that housing cycles can amplify considerably the business cycle. Several recent pieces of work confirm this hypothesis. According to an International Monetary Fund study on developed countries in the post-war period, on average housing market contractions last twice as long as stock market ones and associated output losses are twice as large – about 8% after three years against 4% for stock market crises (IMF, 2003). Similarly, Cecchetti (2006), in a multi-country study, concludes that housing booms lower future growth prospects and entail considerable risks of particularly adverse outcomes. Finally, Detken and Smets (2004) and ECB (2005) emphasize the high costs of recessions coupled with falls in house prices.

38. Three main reasons explain the larger macroeconomic repercussions of recessions associated with housing crises, compared with those linked to stock market developments:

- Housing wealth is much more widely distributed than financial wealth, which is largely concentrated among the wealthiest households. These households' consumption is presumably less sensitive to current income developments than that of less affluent households.
- As house prices are less volatile than equity prices, their variations are more likely to be perceived as permanent, and hence to affect consumption.
- Housing wealth is more often used as collateral for borrowing and its level has therefore a larger impact on household's financial constraints.
- Housing crises often coincide with banking crises and a credit crunch, which delays the economic recovery.

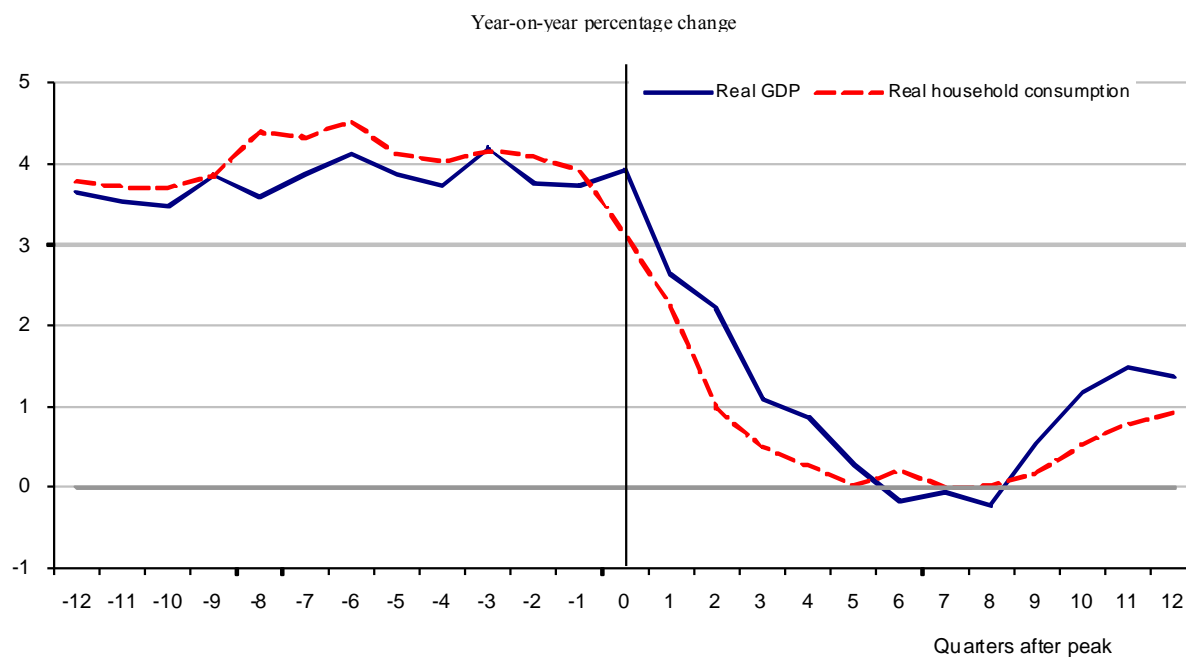
Hence, housing crises create important risks for the economic growth outlook. The highest housing wealth and mortgage debt relative to GDP, the more serious the risk is. As noted earlier, these aggregates have increased considerably in recent years in most OECD countries.

30. Such "leaning against the wind policies" have, in particular, been carried out recently by central banks in the United Kingdom, Australia and Sweden (Ahearne, 2005; White, 2005; Ingves, 2007).

31. Ahrend *et al.* (2008) also provide evidence that policy rates persistently and significantly below what a Taylor rule would prescribe are associated with increases in asset prices, especially housing.

39. The current level of inflation, still low by historical standards, is also likely to lengthen significantly adjustments on housing markets. Based on the historical record, declines in real house prices, following large run-ups, have taken place more slowly (quickly) when increases in the overall price level were small (large). This phenomenon, which mainly results from the downward rigidity of prices and the erosion effect of inflation on debt in real terms, is illustrated by the negative cross-country correlation observed between the level of inflation and the duration of the house-price contraction phases, suggesting that downturns can be quite protracted at very low inflation rates (Figure 7).

Figure 6. Real GDP and consumption during major housing downturns



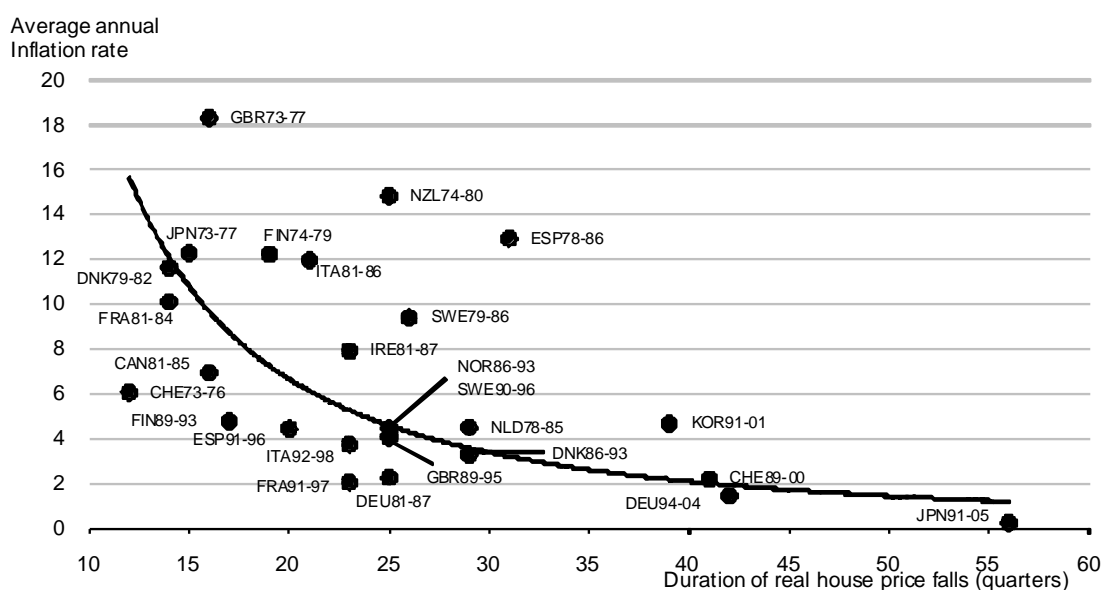
Note : Average growth during major downturns in housing prices in a selection of 18 OECD countries. Major downturns are defined as price falls exceeding 15% in real terms, cumulatively over a period of at least 6 quarters (see Girouard et al., 2006a, table 2).

Source : OECD Economic Outlook database and OECD calculations.

40. Risks for growth, employment and financial stability resulting from housing market developments could justify monetary policy interventions. However, preventive action is only warranted if it is considered as more efficient than intervention in the wake of the bursting of a bubble, where the central bank, as the lender of last resort, provides the necessary liquidity to dampen the shock and restore the conditions for growth. If, in a number of historical episodes, and in particular in Japan in the 1990s, monetary authorities have been unable to lift the economy out of stagnation, it seems to be primarily the result of inadequate initial monetary policy responses and of the structural weaknesses of the financial system.³² However, recent developments in the United States show that shoring up the financial system after the bursting of a bubble can be a challenging task.

32 . See, for example, Kohn (2006).

Figure 7. Inflation and real house price adjustments



Source: Girouard et al. (2006a), table 2 and OECD Economic Outlook database.

Systemic risk and financial system supervision

41. The large macroeconomic impact of housing crises over history is notably linked to the fact that they are often concomitant with banking crises (Detken and Smets, 2004). An appropriate assessment of the capacity of the financial system to absorb a fall in house prices by its supervisors is therefore essential.³³ This capacity essentially depends on the capital basis of financial institutions, the adequacy of provisioning – especially in relation to business cycle positions – and underwriting policies based on sound risk assessment.

42. Banking regulations – in particular the capital requirements set out by the Basel Committee on Banking Supervision³⁴ – should guarantee that international banks hold adequate capital. However, in the past few years, there was a dramatic growth in the share of assets held outside the traditional banking system, in particular in investment banks, structured investment vehicles, conduits and hedge funds.³⁵ Many traditional banks have sponsored off-balance-sheet vehicles to which they have contingency commitments to provide liquidity. These developments have increased the leverage of the financial system. Moreover, in a system where balance sheets are marked to markets, financial institutions eager to maintain their leverage are encouraged to take on more debt and make more investments as asset prices increase. In turn, this puts additional pressure on asset prices, improves bank balance sheets and encourages further lending. As financial institutions search for ever more borrowers, they tend to ease lending standards, creating the conditions for the following crisis.

43. Lax underwriting criteria were particularly evident in the United States subprime market – a market catering to borrowers that do not qualify for conventional loans, because of poor credit history

33. This is particularly crucial at times of deregulation of financial markets (Bernanke, 2002; White, 2005).

34. See BIS (2006).

35. Geithner (2008) estimates that in early 2007 the combined assets of such structures amounted to more than \$10 trillion which is roughly equivalent to the total assets of the U.S. banking system.

and/or insufficient guarantees to qualify for prime loans. From 2004 to 2006, this market expanded dramatically, reaching about 20% of mortgage originations in 2006.³⁶ This expansion proved unsustainable and the subprime market collapsed in 2007, with repercussions far beyond the housing market. At this point, the amount of losses on mortgage-backed securities remains very uncertain, but several analysts estimate it around \$400 billion (Blundell-Wignall, 2008; Greenlaw *et al.*, 2008). These events have vividly shown that even though housing loans have historically been fairly safe,³⁷ it is necessary to remain vigilant about underwriting conditions, especially in the presence of principal-agent problems. Banks also need to assess, in particular through stress-testing, the sensitivity of their portfolios to unfavourable market and macroeconomic developments. Similar exercises should be conducted at the system level by regulators, focussing more on systemic risks than on risks to individual institutions (Geithner, 2008). More transparency in financial information and accounting, as well as improved financial literacy of the public, would also support sustainable development in housing finance.

44. Provisioning policies are also key to financial stability. Unfortunately, provisioning tends to be pro-cyclical, with risks usually underestimated when the economy is expanding (Hoeller and Rae, 2007). In fact, most provisioning methods are backward-looking, *i.e.* future default rates are simply assumed to be similar to those observed in recent years. An exception is Spain, where a “dynamic provisioning system” has been put in place, where estimated future losses depend on past losses evaluated over a whole business cycle (White, 2005). Rating agencies also tend to issue ratings on the basis of past defaults rather than perform forward-looking assessments. Over recent years, this problem has probably been compounded by conflicts of interests – rating agencies receiving fees from the issuers of the securities they rated could have been incited to underestimate risks associated with these securities. As a result, residential mortgage-backed securities and collateralized debt obligations linked to subprime residential mortgage-backed securities were given top ratings. When investors realized that the risks associated with these securities were much greater than implied by their ratings, demand for these products collapsed, triggering a deep liquidity crisis, which prompted exceptional interventions by central banks on both sides of the Atlantic. In addition to providing liquidity, government assistance had to be provided to several financial institutions in Germany (IKB, Bayern LB, Sachsen LB and West LB), the United Kingdom (Northern Rock) and the United States (Bear Stearns, Fannie Mae and Freddy Mac, AIG).

45. This episode has shown that if securitisation can offer great opportunities for the development of housing finance, it also creates new challenges for the regulators and supervisors of the financial system. Between the mid-1980s and the early 2000s, the evolution of the structure of housing markets seems to have contributed to reduce the volatility of housing investment and GDP in the United States (Gordon, 2005). Housing finance in the United States has experienced sweeping changes since the Savings and Loans crisis of the 1980s. Before that crisis, mortgages were mainly granted by local and regional depository institutions, leading to a credit cycle driven by local financial conditions. Today, a national, market based system of securitized mortgage finance accounts for about 70% of outstanding mortgages, allowing a distribution of risks among a wide range of investors (Schnure, 2005; Green and Wachter, 2007). As a result, U.S. housing markets have become less dependent on local financial conditions and have become more stable, until recently.

46. In the past few years, however, large amounts of subprime mortgage securities were concentrated in highly leveraged financial institutions, leading to the ongoing housing and liquidity crises. Outside the United States, the evidence on the impact of mortgage market structures on the resilience of the economy to a shock on house prices is mixed. In the study quoted above, the IMF concludes that bank-based financial systems are more vulnerable to house price busts than market-based ones (IMF, 2003). But

36. See OECD (2007), Box I.2.

37. Commercial loans usually carry more risks and have contributed to several financial crises at the beginning of the 1990s (Ahearne *et al.*, 2005).

Cecchetti (2006) finds little evidence of a role of the financial structure in the real economic impact of asset price booms. It is, however, worth noting that international comparisons are made more difficult by the fact that securitisation is still not very widespread outside the United States.³⁸

47. The turmoil on financial markets triggered by the subprime mortgage market crisis in the United States since mid-2007 has highlighted the need for reinforcing the supervision and regulation of the financial system, in the United States and elsewhere. However, policymakers want to avoid a regulatory overreaction, which would discourage legitimate activity and would push risk-taking vehicles into the shadows (e.g. towards hedge funds or offshore) where they would be even further away from the reach of regulators. Geithner (2008) and OECD (2008) have put forward proposals for reforming the U.S. regulatory system in order to prevent future financial crises. White (2005) proposes to move towards a macro-financial stabilisation framework, spanning monetary policy and prudential regulation to deal with financial imbalances. Discussing these proposals is beyond the scope of this paper, but creating the conditions for a sound recovery of housing markets is currently a major challenge for policymakers.

38. As an indication, the share of mortgage loans that were securitised in 2007 was about 20% in the United Kingdom, Australia, the Netherlands and Spain and around 10% in France.

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