

III. HAS THE RISE IN DEBT MADE HOUSEHOLDS MORE VULNERABLE?

Introduction and summary

Over the past decade, household debt has risen to record levels in a number of OECD countries. The large size of these debt run-ups, coupled with, in several instances, changes in the characteristics of some of the relevant instruments, are estimated to have raised the sensitivity of the household sector to changes in interest rates, asset prices and incomes.¹ In this sense, the household sector may have become more vulnerable to adverse shifts in these variables.

Increased household debt levels may have raised vulnerability

This chapter begins by reviewing, for a number of OECD economies, macro-economic developments in household balance sheets and incomes over the past two decades. It then examines micro-level information to provide a more recent cross-sectional snapshot of the household sector. The purpose of this chapter is to assess household financial vulnerability. Following the plan of the chapter, the main findings are:

This chapter examines the issue of vulnerability and finds that:

- The rise in household debt, in particular mortgages, to historical levels in a number of countries has been driven by a combination of favourable financial conditions and buoyant housing markets. There have been, as well, a number of supply-side innovations in credit markets that have eased the access to credit for lower-income borrowers and reduced financial constraints for first-time homebuyers.
- While debt, particularly mortgages, has risen sharply, so has total household net wealth, 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. 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.
- The fraction of disposable income devoted to servicing debt (interest and principal payments) has also been moving up. Part of this rise, however, is compositional, reflecting increasing homeownership rates, driven by improved access to credit markets for first-time purchasers who tend to have higher debt and lower income levels. Despite these developments, however, mortgage-delinquency rates have been trending down over the past decade.

Favourable demand and supply developments have driven up debt

Balance sheets appear sound but leverage has risen

To date, households seem able to service higher debt loads

1. See, for example, Debelle (2004).

Evidence from surveys does not show noticeable signs of vulnerability

- Household surveys in various countries that identify debt holdings by age and income group provide a complementary perspective on the issue of vulnerability. Studies using such micro data suggest that most of the debt is held by households better able to manage it. In particular, the major part of debt is held by higher-income households, who also spend a smaller proportion of their disposable income servicing debts. Lower-income households, with less ability to service debt, do not hold that much and, as such, the spill-over effects from this group to the rest of the economy are perhaps not large.

However, risks remain because sensitivity to shocks has risen

Whether the situation remains benign or not depends on what happens to interest rates, asset values (particularly house prices) and incomes. In the event of adverse developments in these variables consumption and the wider economy would be affected. Looking, for instance, at the implications of a sharp and unanticipated rise in interest rates, higher debt levels would imply that a larger proportion of income would be devoted to debt servicing, the size of which would depend importantly on the maturity structure and characteristics of the debt. The resulting reduced capacity to service debt could also adversely affect households' access to credit and accordingly their ability to smooth consumption. Balance sheets would tend to deteriorate and households would be expected to increase saving.² As well, the deterioration in balance sheets could further affect access to credit. There could also be negative feedback effects through worsening income.

The debt run-ups: broad trends and some underlying causes

Total household debt has reached record levels in several countries...

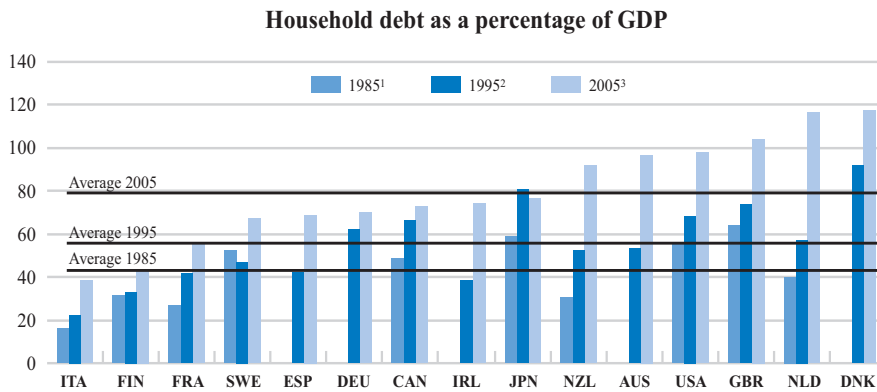
Looking at a group of 15 OECD countries for which data are available, total household borrowing, as a proportion of GDP, has increased considerably over the past two decades (Figure III.1, upper panel).³ However, the process has not been uniform across countries and, in 2005, debt levels ranged from below 40% of GDP in Italy to above 100% in the United Kingdom, the Netherlands and Denmark.

... with mortgages accounting for the bulk of the increases...

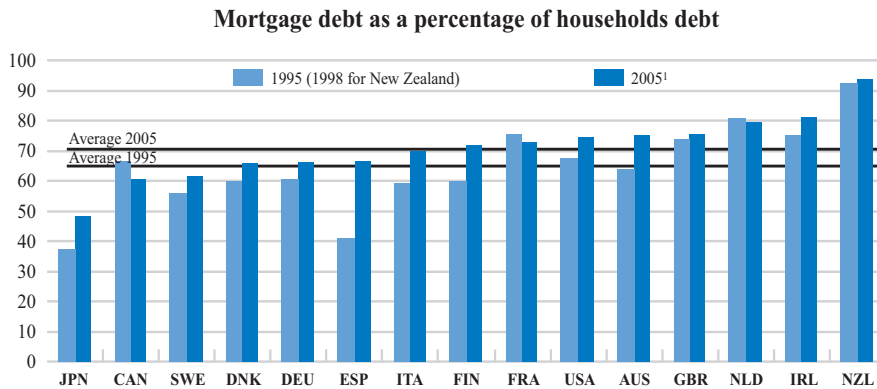
The share of mortgage debt has been rising over time, accounting for approximately two thirds of total household debt in most countries by 2005 (Figure III.1, lower panel). Similarly, credit card debt, which is a substantially smaller portion of household liabilities, has risen rapidly and spread to a wider range of social groups (for instance, in the United States, the United Kingdom and Australia) but accounted only for less than 5% of total household debt.⁴ In Korea, in contrast, the share of credit card debt has been declining from the high levels reached at the peak of the boom-and-bust credit card cycle in 2002.⁵

2. Estimates presented in Girouard *et al.* (2006) point to significant effects of changes in net wealth on household saving rates in a large number of countries.
3. The data are not strictly comparable across countries due to different statistical definitions of the household sector. For example, in some countries, unincorporated businesses and non-profit institutions serving households are included in the household sector data, whereas in others they are not. See the Statistical Annex for further details.
4. See Reserve Bank of Australia (2006); Bucks *et al.* (2006) for the United States; and Del-Rio and Young (2005) for the United Kingdom.
5. For more details, see OECD (2005).

Figure III.1. Trends in household debt



- 1. 1987 for the United Kingdom.
- 2. 1999 for Ireland.
- 3. 2004 for Japan, Denmark and Spain.



- 1. 2004 for Japan, Denmark and Spain.
- Source: See statistical annex.

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Underlying these debt trends have been buoyant housing markets and favourable financing conditions. These developments have been reinforced in several countries by financial liberalisation and innovation,⁶ which have facilitated the access to credit of borrowers who were previously denied it and relaxed financing constraints on first-time homebuyers. One result is that homeownership rates have increased. Transactions and search costs have also been lowered⁷ and borrowing against existing collateral (mortgage equity withdrawal) has become cheaper and more readily available. These, as well as, other reforms have allowed existing borrowers to expand their balance sheets, in the process, raising their net worth. In the wake of these changes, several countries with initially lower debt ratios have seen stronger debt growth compared with those with initially higher debt ratios. This has been particularly noticeable in Australia, the Netherlands, New Zealand and Spain. For a number of new European Union Member countries, one

... driven in part by financial liberalisation and innovations

6. See Girouard *et al.* (2006) for a cross-country overview of financial innovations in mortgage markets.
 7. See Klyuev and Mills (2006), Reserve Bank of Australia (2006) and Danmarks Nationalbank (2006).

study suggests that the convergence in living standards towards that of the European Union average has also contributed to this rapid credit expansion.⁸ Another important factor was the convergence of interest rates towards the comparatively low German levels with the creation of the single currency.

Macroeconomic measures of vulnerability

Assessing the health of household balance sheets

While debt has increased so has net wealth...

Household debt, expressed as a ratio of disposable income, has increased rapidly in most of the countries under study (Japan and Germany excepted). At the same time, there have also been important developments on the asset side of household balance sheets, and net wealth (total wealth less liabilities) has risen significantly (Table III.1). By 2005, net wealth had grown to a level of about seven times disposable income in several countries. The recovery in equity prices since the bursting of the dotcom bubble in 2000-01 provided a boost to household wealth, but the gains for the most part have been due to a rise in the non-financial wealth component (Figure III.2, upper panel), fuelled by large house-price increases. Such

Table III.1. Household debt and net wealth

	<i>Per cent of annual disposable income</i>							
	Debt			Net wealth				
	1995	2000	2005	1995	2000	2005		
United States	93	107	135	510	575	573		
Japan	130	136	132	*	736	750	725	*
Germany	97	111	107	541	575	578	*	
France	66	78	89	461	547	752		
Italy	32	46	59	702	820	936	*	
United Kingdom	106	118	159	569	750	790		
Canada	103	114	126	370	527	640		
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.

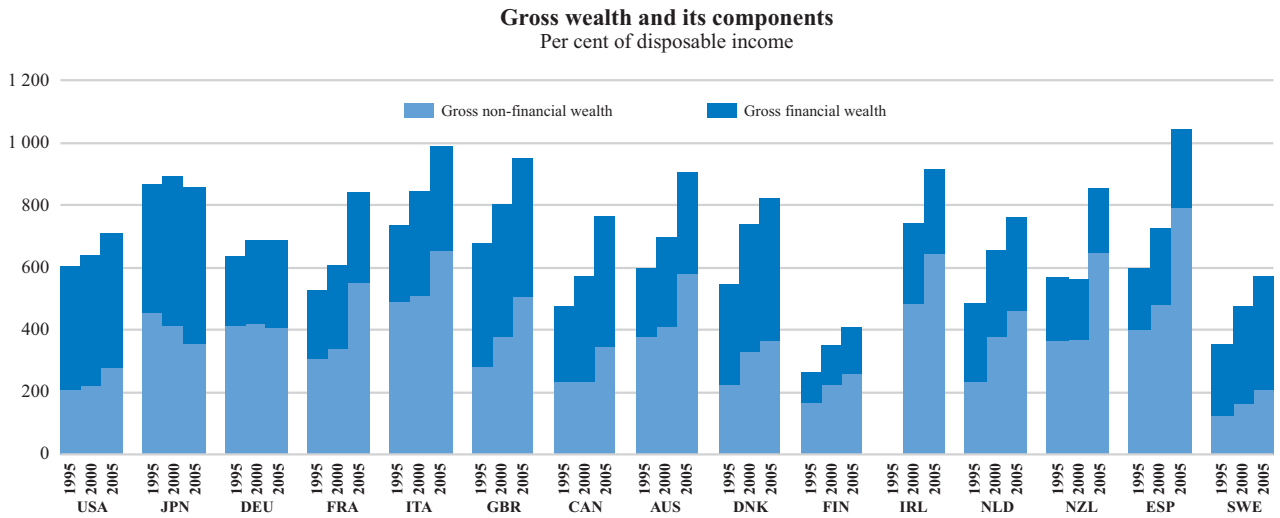
Net wealth is defined as non-financial and financial assets minus liabilities.

Source: See statistical annex.

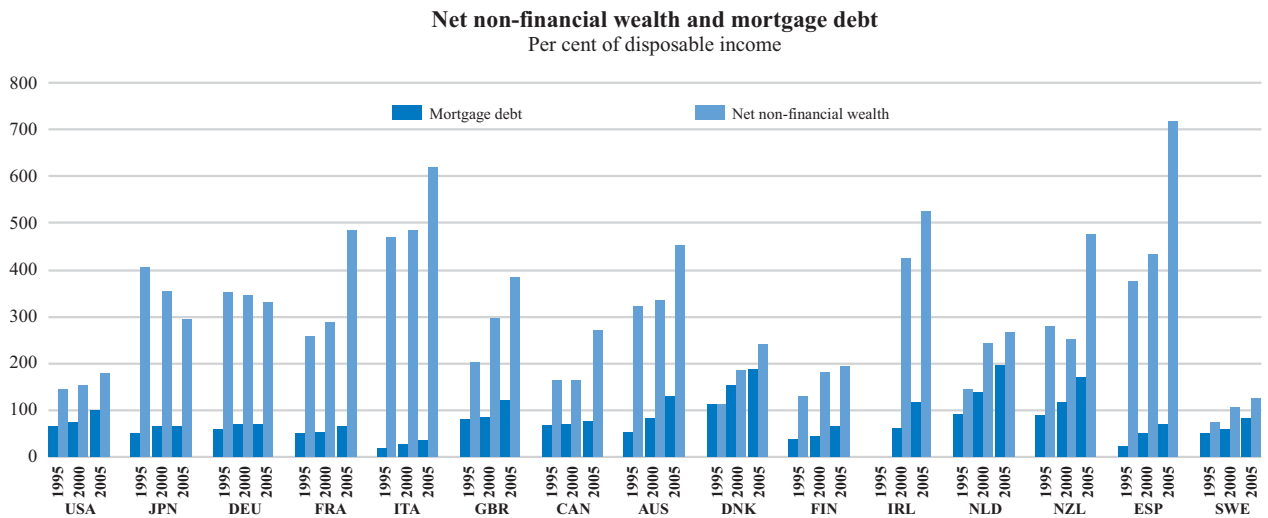
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8. See Coricelli *et al.* (2006).

Figure III.2. Household wealth



Note: The latest data for Japan, Germany, Italy, Denmark and Spain are for 2004.



Note: The latest data for Japan, Germany, Italy and Spain are for 2004. Net non-financial wealth is defined as non-financial wealth minus mortgage debt.

Source: See statistical annex.

StatLink: <http://dx.doi.org/10.1787/733288737585>

risers have been particularly pronounced in New Zealand and Spain. By contrast, in Germany and Japan, where declines in house prices have occurred, a notable increase in the share of housing assets in household portfolios was not recorded. In these economies, household gross wealth peaked earlier in the 1990s and has since stabilised.

The lower panel of Figure III.2 shows that the increase in mortgage debt has, for the most part, been accompanied by gains in net non-financial wealth. The collateral position of households has accordingly improved in the majority of countries since the early 1990s, with Japan and Germany being exceptions. While part of the rise in assets may be illiquid, their large size provides households with a cushion that can be

... improving collateral positions

used to fund consumption or service debt, should they be hit by an adverse shock. Empirical evidence for several countries including the United States, the United Kingdom, Canada, Australia and New Zealand, all of which have fairly flexible mortgage markets, has shown that households with high housing wealth are better able to smooth consumption in the face of shocks.⁹

Leverage has also risen, exposing balance sheets to risk

The balance sheet positions of households are not, however, without risks. While in most countries, household net wealth positions look healthy, in several, leverage, defined as the ratio of debt-to-net assets, has been trending upward, raising vulnerability to asset-price declines (Figure III.3).¹⁰ There are a number of motivating factors behind these developments. For example, households have borrowed (either directly or through mortgage equity withdrawals) to finance pension and other asset acquisitions, some of which receive favourable tax treatment.¹¹ However, leverage has also been driven by buoyant housing markets, which has encouraged buyers to take out large mortgages on expectations of capital gains. For a number of countries, these price gains have been realised, and leveraged positions have increased only moderately. Nonetheless, even for these economies, given high levels of mortgage debt, leverage positions remain sensitive to changes in interest rates and asset prices (particularly house prices).

Evaluating households' debt-servicing capacity

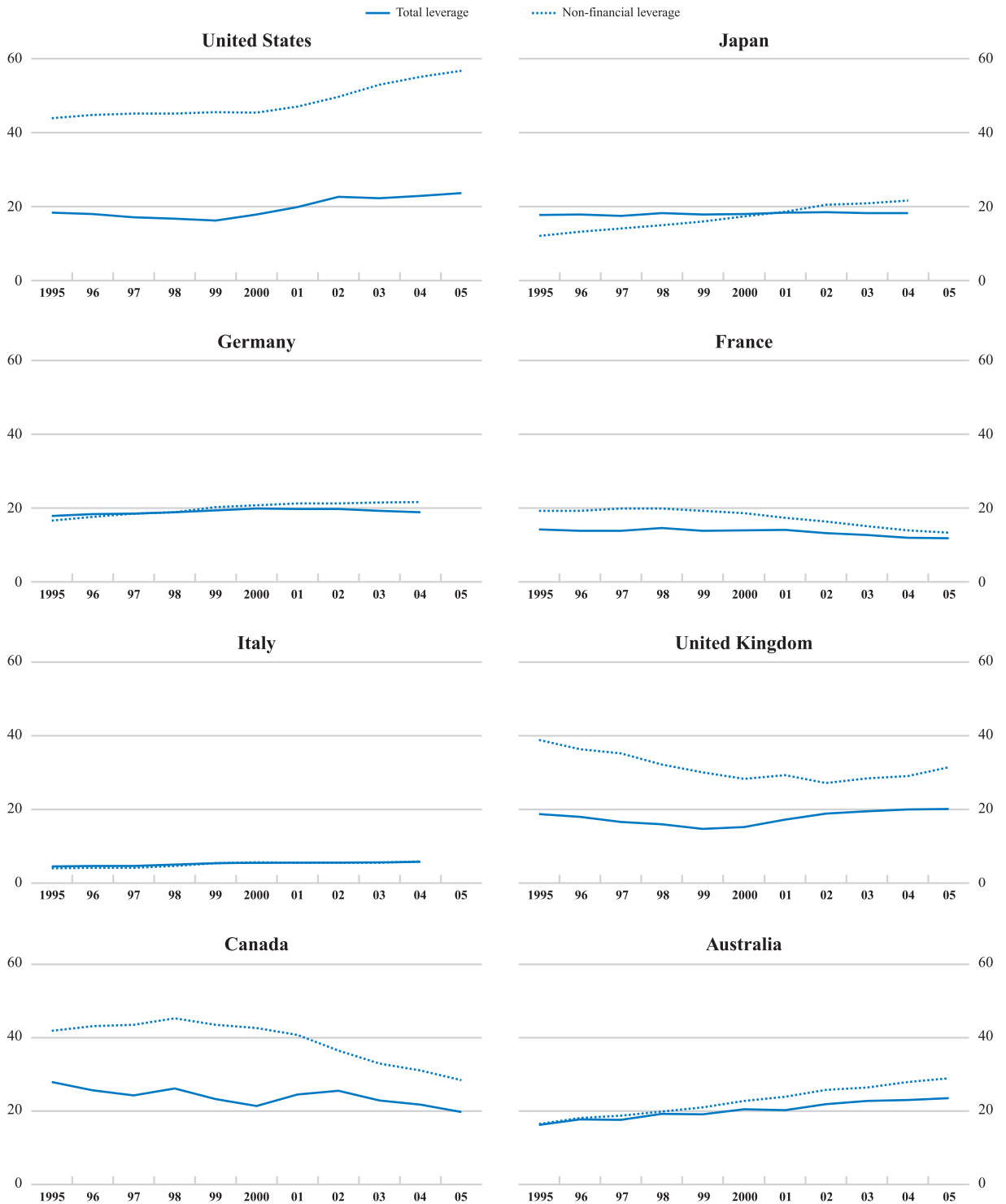
Vulnerability depends on the capacity to service debt

A sharp rise in interest rates or a negative hit to incomes, in addition to any effect it would have on net wealth positions, would push up debt-service ratios – the fraction of disposable income devoted to debt repayment. The speed and extent of any rise in repayments would be related to the characteristics of the debt (most importantly, its maturity and composition between fixed and variable rate instruments). A rise in debt-service burdens could constrain households' access to credit, affecting their ability to smooth consumption in response to shocks. Two measures of debt-servicing capacity are examined here: one based on interest payments only and another that takes account of interest payments and principal repayments (Figure III.4).^{12, 13} The interest-and-principal measure is more comprehensive and more likely to provide a better picture of how households are faring but it is available for only a limited number of countries.¹⁴

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9. See for instance Beaumont (2005), Lustig and Van Nieuwerburgh (2004) and Hiebert (2006).
 10. Cross-country comparisons of household wealth are difficult to make because of institutional differences, *inter alia*, the sizeable amount of wealth held in the form of pension assets and family trusts outside household balance sheets. See Briggs (2006) for example in the case of New Zealand.
 11. See Catte *et al.* (2004), which summarises the different tax regimes affecting residential property prices.
 12. Data on debt-servicing burdens are not strictly comparable across countries. Variations in estimates are based on different assumptions relating to the average maturity of households' loans, the structure of debt in terms of mortgage loans and other loans and the interest paid on different kinds of household loans.
 13. Debt-service ratios for homeowners and renters are distributed differently across loan types. Mortgages are the dominant component of homeowners' debt, whereas credit cards, auto and student loans are the major components of renters' debt. As a result, changes in mortgage interest rates will affect the debt-service ratio only of homeowners, whereas changes in consumer loan interest rates will disproportionately affect the debt-service ratio of renters. In the United States, the debt-service ratio for renters is substantially higher than that for homeowners because of the greater share of income devoted to rent and consumer debt payments, see Bucks *et al.* (2006).
 14. Households facing debt service burden of over one third of their income and total debt-service costs (including student loans, autos loans and credit card payments) in excess of 40% of their income can be categorised as risky borrowers, see for instance Alexander (2006) and ECB (2005).

Figure III.3. Households leverage ratios

Liabilities as a percentage of net wealth



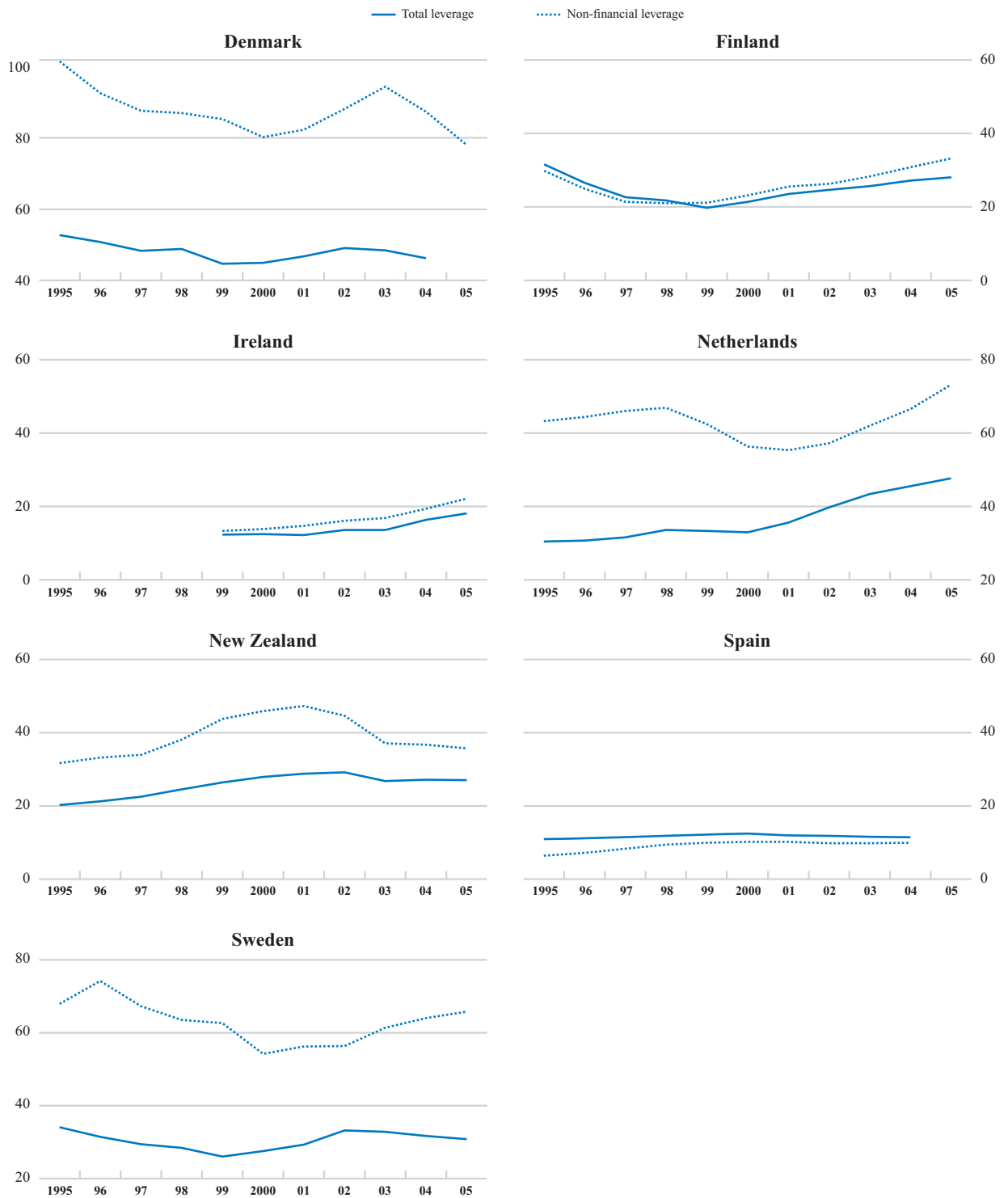
Note: Total leverage is defined as total liabilities divided by net wealth and non-financial leverage as mortgage debt divided by net non-financial wealth.

Source: See statistical annex.

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Figure III.3. Households leverage ratios (cont.)

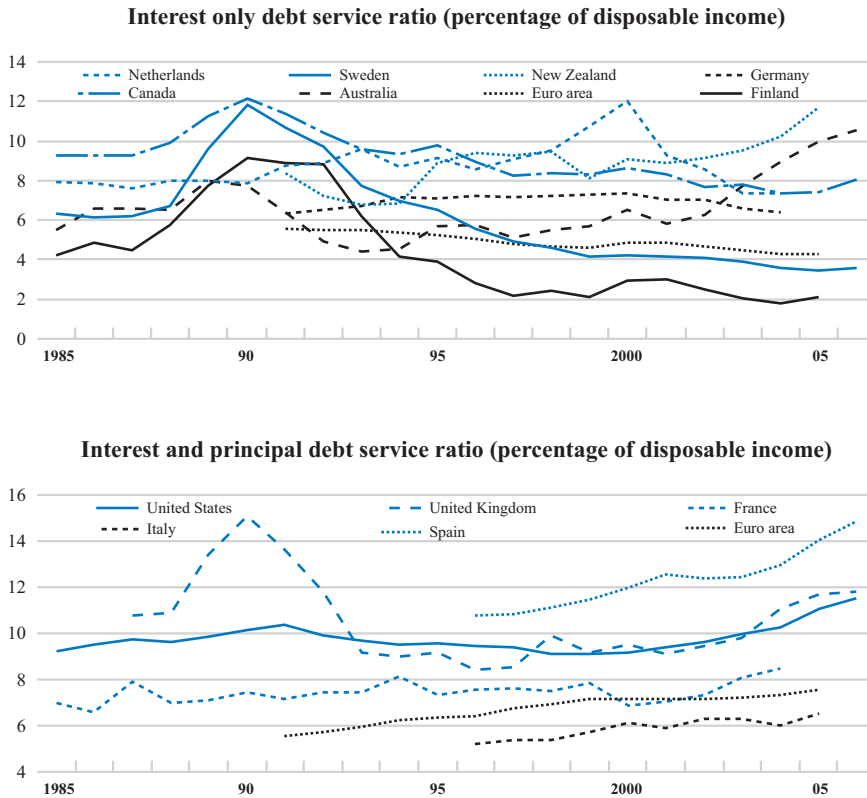
Liabilities as a percentage of net wealth



Note: Total leverage is defined as total liabilities divided by net wealth and non-financial leverage as mortgage debt divided by net non-financial wealth.

Source: See statistical annex.

Figure III.4. Household debt service burdens



Note: Data for the United States and France refer to mortgage debt and for other countries to total household debt.
 Source: National central banks and European Central Bank.

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The interest-service burdens have been relatively stable since peaking in the late 1980s and early 1990s (the exception is the Netherlands), with the general increase in indebtedness having been mostly offset by declines in borrowing costs (Figure III.4, upper panel). However, more recently, in Australia and New Zealand, the interest-burden ratio has risen rapidly, reaching respectively 8½ and 12% of disposable income in 2005. The more comprehensive measure of the debt-service burden has increased for all of the countries for which data are available (Figure III.4, lower panel). In the United States, the United Kingdom, France and Italy, the debt-service ratio has recently started to rise slightly while in Spain, this ratio has been increasing continuously over the past decade.¹⁵

Debt-servicing burdens have edged up recently in a number of countries

Several factors are affecting trends in the aggregate debt-service ratio. First, the composition of the pool of homeowners has been changing. Over the 1990s, homeownership has risen, in part because of new mortgage products facilitating housing acquisition by borrowers with limited funds for a down payment. These new homeowners, who would have previously been renters, have entered the homeowner market with high debt levels relative to their income and this has been a contributing factor to the

The debt increases reflect new entrants to the housing market...

15. A broader measure, produced by the US Federal Reserve Board, takes account of additional obligations like automobile lease payments, housing rents, insurance and property taxes to calculate a financial obligations ratio. This measure has been rising steadily over the past two decades and now stands just over 19% of disposable income, compared with just over 11% for mortgages.

rise in the aggregate debt-service measure.¹⁶ Second, loan maturities have increased in a number of countries and this has brought down annual amortisation.

... as well as mortgage equity withdrawal and refinancing

The third factor affecting households debt service burden is housing equity withdrawal and re-financing. These vehicles have allowed homeowners to take advantage of lower interest rates to reduce their monthly payments and, in several countries, to extract some of the built-up equity in their homes.¹⁷ Mortgage refinancing at lower rates clearly reduces debt service burden, even if most of the proceeds are spent. On the other hand, the housing equity withdrawal effect is ambiguous. It increases household debt service burden, even if most of the proceeds are reinvested. But if the proceeds are used to payoff debt with higher interest rates, the debt service burden will decrease. In the United States and the United Kingdom, these two effects seem to have been partly offsetting. Some of the equity extracted has been used to pay down more expensive consumer debt or to make purchases that would otherwise have been financed by more expensive and less tax-favoured credit. At the same time, a number of homeowners have also taken advantage of house price inflation to increase their borrowing by re-mortgaging.

Variable-rate debt has been rising but risks may be limited

Another development that has implications for vulnerability is the changing composition of debt away from fixed rate and towards more flexible instruments. These newer types of loans come in several forms, including instruments with rates that move with market interest rates, products that allow borrowers to pay only interest instead of the conventional interest-plus-principal or to pay less interest than is accrued (negative amortisation loans that lead to rising loan principal balances), as well as loans with various combinations of initially reduced rates and rapid reset conditions. These instruments have the effect of lowering initial monthly payments but at the expense of incurring the risk of larger payments later should mortgage rates be readjusted upward. However, the flexibility of mortgage markets in several countries has allowed households to switch to fixed-rate instruments very rapidly and with little cost. For example, the United Kingdom, which has traditionally been regarded as a variable rate country, is reporting a higher proportion of initial fixed rate mortgage loans than variable rate loans since mid-2005.¹⁸ The contracting of mortgage loans with adjustable rates has been generally more prevalent in the United Kingdom, Italy, Australia, Finland, Ireland and Spain than in the other countries (Figure III.5, upper panel).

So far household have been able to handle increased debt loads...

To date, there have been few signs at the aggregate level that households are having trouble meeting payment obligations. A commonly used indicator of debt-repayment ability, the delinquency rate,¹⁹ shows that arrears on housing loans held by banks have been trending down, or have remained quite low relative to the average of the past decade (Figure III.5, lower panel). Indeed, the downward trend in delinquencies has

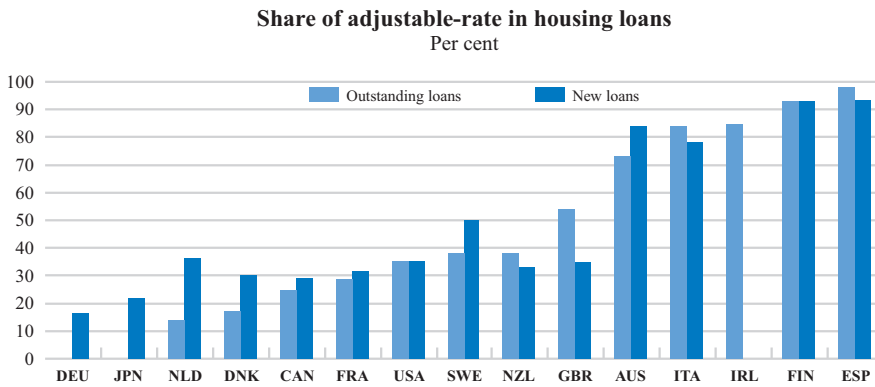
16. In the United States, the increase in homeownership during the 1990s was concentrated among households with limited funds for a down payment; see Dynan *et al.* (2003) and Bucks *et al.* (2006).

17. See for instance Greenspan and Kennedy (2005), Klyuev and Mills (2006), Schwartz *et al.* (2006) and Riksbank (2005b) for a discussion of the effects of mortgage-equity withdrawal on consumption.

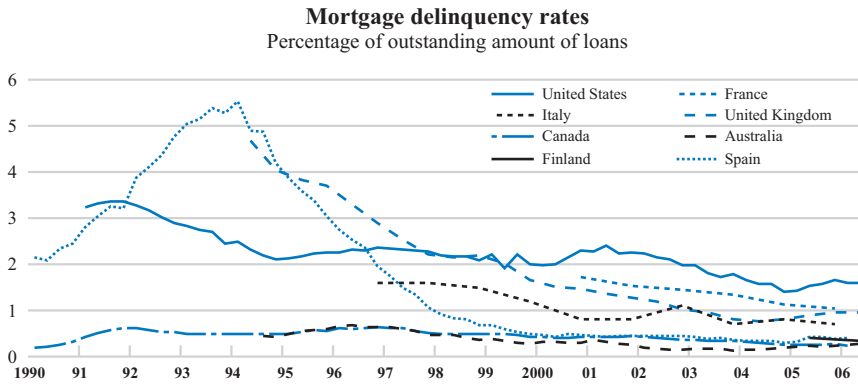
18. For a comprehensive review of the different types of mortgage interest rates in Europe, see European Mortgage Federation (2006).

19. The standard definition of credit delinquency is loans that are in repayment default for at least three months. The main difference across countries is how these loans are defined, *i.e.* how long it takes before the loan can be judged as non-recoverable and hence can be written off as a loss for the credit institution. The timing of this process depends on national regulation. In France and Italy, the time before a loan can be written off is particularly long, thus the same loan can be counted as non-performing for several years while in other countries it will be considered as non-performing for no more than six months. This partly accounts for the fact that in France and Italy the stock of delinquency loans as a proportion of the total loans' stock is larger, see Moody's (2003).

Figure III.5. Adjustable rate loans and vulnerability



Note: Latest year for which data are available. For further detail, see statistical annex.



Note: Loans refer to mortgages for all countries except Finland and Italy where they include all loans to the households sector. For Italy, they refer to new bad debts during the year as a percentage of outstanding loans.

Source: See statistical annex.

StatLink: <http://dx.doi.org/10.1787/583344008077>

reflected growing credit availability, falling interest rates and longer maturities. However, lags in the response of arrears to increasing debt ratios may be significant.²⁰

The relaxation of credit standards and the growing use of payments reduction features in mortgages have, however, increased credit risk in mortgage markets.²¹ Several banks and other private financial institutions have recently specialised in offering “affordable” loan products. These non-conventional housing loans are likely to appeal more to consumers with low credit ratings who may find it difficult to obtain finance from traditional sources. These mortgages are often used to consolidate existing (secured and unsecured) debts. In Australia and in the United States, for instance, a much higher proportion of non-conventional borrowers (compared with those who use more conventional instruments) are behind schedule on their loan repayments.²²

... but borrowers with non-conventional loans have been stretched

20. In the literature, there is no agreement about which financial indicator is the most important predictor of households’ delinquency, see, for example, Rinaldi and Sanchis-Arellano (2006); Duygan and Grant (2006); Diaz-Serrano (2004); and May and Tedula (2005).

21. See Frankel (2006).

22. In Australia, nearly 4% of the value of securitised non-conventional loans was in arrears, compared to only 0.2% of both other securitised and bank’s housing loans, see Reserve Bank of Australia (2005). In the United States, the delinquency rate for sub-prime mortgages is estimated to be around seven times that of prime mortgages.

Evidence from micro data

Micro data can identify problems missed in macro measures

Aggregate measures of household debt only provide information about the position of the household sector as a whole or some notional average household. As such, these indicators mask important disparities in financial conditions across different segments of the population due to the substantial heterogeneity among households. In this respect, analysis using micro data indicators can potentially help identify pockets of fragility within the sector. This section summarises the results of various studies that have used household-level surveys for particular countries to analyse the financial position of the sector.²³

Household indebtedness by age and income group²⁴

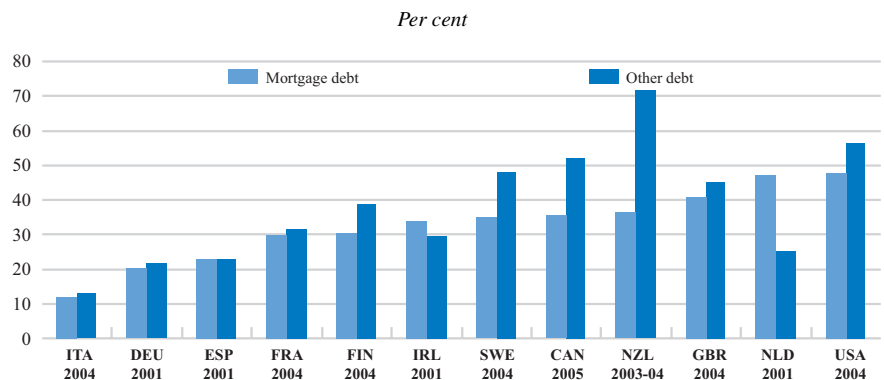
The share of indebted households varies across countries

The share of households with mortgage and non-housing debt varies greatly across countries (Figure III.6), with Italy and Germany at one extreme and the Netherlands and the United States at the other. Repeated cross-sectional analyses report that, since the late 1990s, the fraction of household with debt has increased slightly in the United States and in the Nordic countries, while it has remained roughly unchanged in Canada and the United Kingdom. Such analysis is not available for the other countries studied here.

Within countries, debt is concentrated among the young and middle-aged

Debt-holding patterns are generally consistent with predictions from the life-cycle theory of consumer behaviour. The percentage of indebted households peaks among young households (less than 35 years of age) or households in the middle-age groups (Figure III.7, upper panel). Within these age groups, the percentage of indebted households often exceeds 70%. Debt holding declines sharply for those aged over 65, especially in the United Kingdom, Germany, Italy, Finland and Spain.

Figure III.6. Proportion of households holding debt



Note: Some households may be holding both categories of debt.

Source: See statistical annex.

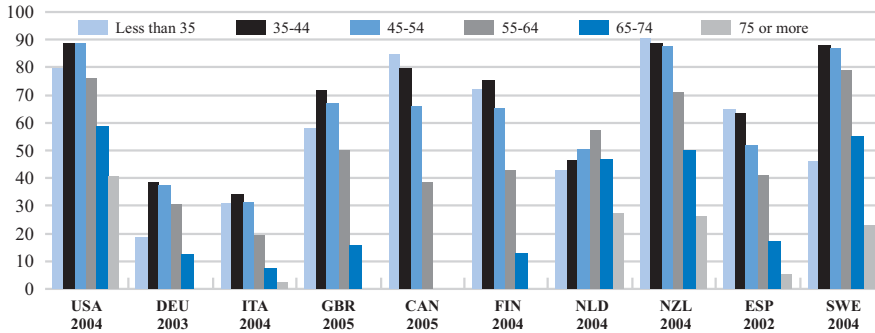
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23. While the methodologies may differ, the results of these studies may provide complementary information on vulnerability to that obtained from macro measures. The Statistical Annex reports the sources of the different household surveys.
24. Empirical analysis of the determinants of household debt using aggregate and cross section data include Magri (2002) for Italy; Barnes and Young (2003) for the United States; Tudela and Young (2005) for the United Kingdom; Bank of Ireland (2005); Herrala (2006) for Finland; Zochowski and Zajackowski (2006) for Poland and Crook and Hochguertel (2006) for several OECD countries.

Figure III.7. Debt holding patterns

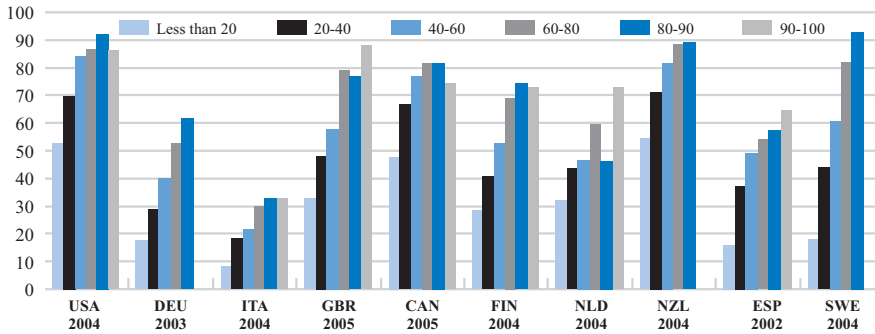
Percentage of indebted households

By age



Note: For Germany, the United Kingdom and Finland, the last age group is 65 or more. For Canada, the groups are less than 35, 35-49, 50-64 and 65 or more.

By percentile of income



Note: For Germany, New Zealand and Sweden, the last group is 80-100.

Source: See statistical annex.

The lower panel of Figure III.7 shows that borrowing has been mostly undertaken by households with the highest incomes. In the United States, the United Kingdom, Canada, Finland, New Zealand and Sweden, the proportion of indebted households in the upper income group exceeds 80%. The share of indebted households in the lower income group is nonetheless high in the United States, Canada and New Zealand, relative to other countries. For the countries for which a time perspective is available, the share of indebted households in the lowest income groups has increased the most since the end of the 1980s, reflecting the effect of the liberalisation of credit markets on the group of households which previously were most subject to credit rationing.

The share of indebted households tends to increase with income

Table III.2 shows the median value of debt holdings²⁵ for those individuals with debt according to their age (as a percentage of per capita income).²⁶ The median value of debt peaks for households in the 35 to 44 age category for almost all of the

Median debt has followed a hump-shaped pattern

25. The median value of the debt is equal to the value that comes mid-way in the debt distribution. This measure is less sensitive to the extremes of the distribution and therefore provides a better picture of the typical household's debt than the average debt.

26. Due to the lack of availability of data on income distribution, the median debt has been normalised by household disposable income at national level divided by population.

Table III.2. Distribution of the household median debt

Percent of overall per capita income¹

	Median debt by age					
	Less than 35	35-44	45-54	55-64	65-74	75 or more
United States (2004)	114	295	281	162	85	52
Italy (2004)	95	95	76	51	32	46
Netherlands (2004)	720	741	538	453	360	405
New Zealand (2004)	126	342	281	68	7	3
Spain (2002)	300	219	137	105	57	92
Sweden (2004)	269	417	374	361	211	124
					65 or more	
Germany (2003)	610	626	612	518	337	
United Kingdom (2005)	81	375	226	103	34	
Finland (2004)	100	316	182	88	55	
		35-49	50-64	65 or more		
Canada (2005)	257	277	119	36		
						Median debt by income percentile
	Less than 20	20-40	40-60	60-80	80-90	90-100
United States (2004)	24	54	151	316	460	707
Italy (2004)	44	57	51	76	101	171
United Kingdom (2005)	38	30	113	264	263	780
Canada (2005)	26	92	256	348	416	537
Finland (2004)	34	96	210	312	292	350
Netherlands (2004)	208	542	528	640	686	686
Spain (2002)	93	107	166	207	213	384
					80-100	
Germany (2003)	430	430	496	613	1 017	
New Zealand (2004)	27	39	153	284	549	
Sweden (2004)	99	107	176	311	622	

1. Household disposable income at national level divided by population.

Source: See statistical annex.

StatLink: <http://dx.doi.org/10.1787/577682427763>

countries under review, reflecting the larger number of first-time homebuyers in this group.²⁷ Median debt in the middle age group (aged 45 to 54) has also been relatively high, and the fact that the number of households in this group has recently risen may help to explain the aggregate increase in debt. The median debt falls steadily through middle age before dropping off more sharply for those aged over 65; the fall in median debt for this category is essentially related to paying down mortgages.

Most debt is held by higher-income households

The median value of debt holdings rises across income groups, reflecting considerable borrowing to fund assets by high-income earners. Households in the top income percentiles account for the largest part of the aggregate debt. In contrast, households in the bottom one make up a very small share of aggregate debt.

27. The share of the population at household formation age (24 to 44 year old) has increased rapidly since the mid-1990s in the United States, the United Kingdom, Australia, Ireland, Netherlands and Spain.

Debt-servicing burdens by age and income group

In order to further assess the macroeconomic risks implied by the debt-servicing burden, it is instructive to consider different income and age categories. For example, for lower-income households, income and interest rate shocks may imply greater financial duress as they tend to have lower saving ratios and will probably also have less collateral or financial reserves. Their share in the total distribution could matter for macroeconomic outcomes.²⁸

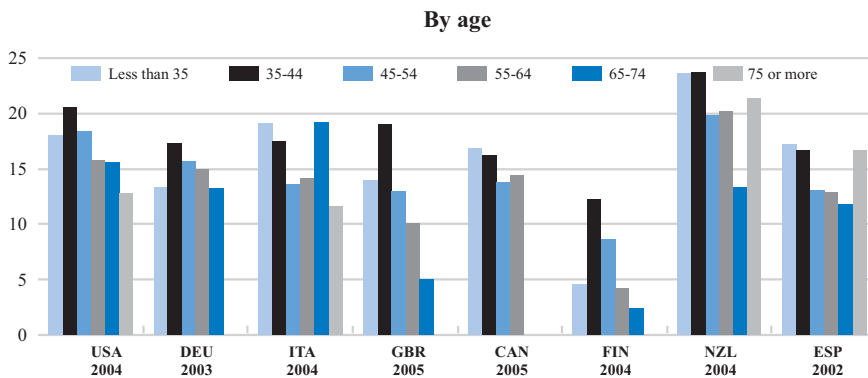
Figure III.8, upper panel shows that the median debt-service ratio has been highest in the younger age groups (less than 35 and 35 to 44), likely reflecting that these households are first-time homebuyers. However, middle-age households (45 to 54), who also hold a large share of debt (Table III.2), have a lower debt-service burden. Overall, for all the countries under review, households have recently devoted less than a quarter of their income to debt servicing. For the United States, for which there is information, the debt-service ratio distribution seems to have

The distribution of the debt-service ratio varies

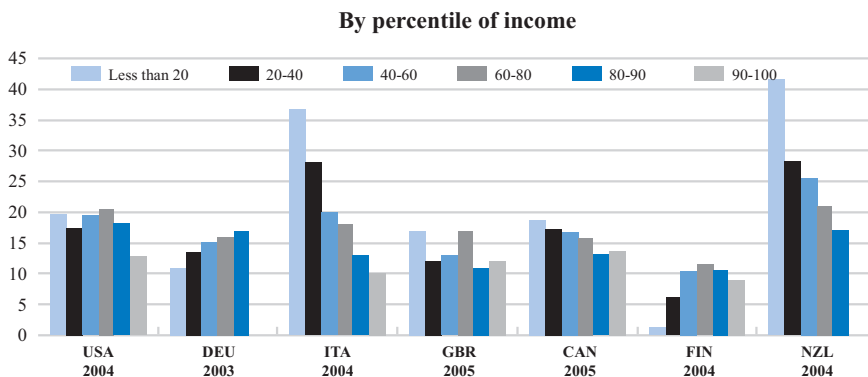
First time buyers tend to have less ability to service debt...

— Figure III.8. Distribution of debt service burden of indebted households —

Per cent of disposable income



Note: For Germany, the United Kingdom and Finland, the last age group is 65 or more. For Canada, the groups are less than 35, 35-49, 50-64 and 65 or more.



Note: For Germany and New Zealand the last group is 80-100.

Source: See statistical annex.

28. See for example, Herrala and Kauko (2006) who used Finnish household micro data to estimate the effect of interest rate changes (and other shocks) on household distress and bank loan losses.

drifted up slightly for most age groups over the past decade, consistent with the trend in the aggregate data.²⁹ While recent micro data for France are not available, the 2000 debt service ratio per income deciles indicated a burden roughly similar to the US profile.³⁰

... while high-income groups
have more

The median debt-service burden indicator suggests that indebted households in the highest income groups are better able to service their debt (Figure III.8, lower panel). They have median interest-to-income ratios close to 15% for most of the countries under review. The main exception is Finland, where the highest income households have much higher debt service burden than the lowest, but they still enjoy an interest to income ratio of less than 10%, *i.e.* much lower than in any other country. In Italy and New Zealand, the debt servicing ability at the bottom income groups is extremely weak; however, these households have not taken on much debt.

29. See Doms and Motika (2006).

30. See Bourdin (2006).

Statistical annex

This statistical annex details the macro and micro data sources used for this study. There are three main differences between macro and micro data on the household sector's assets and liabilities:

- First, unincorporated businesses and non-profit institutions are included only in the macro data.
- Second, the level of detail between the two sources differs (for example, as concerns the treatment of managed accounts such as trusts and estate investment funds).
- Finally, the valuation methods for various assets and liabilities differ.

Sources for the macroeconomic data

Household assets and liabilities

Data for household assets and total liabilities (amounts outstanding at the end of the period) are based on the UN System of National Accounts 1993 (SNA 93) and, more specifically, for European Union countries, on the corresponding European System of Accounts 1995 (ESA 95). Households include non-profit institutions serving households. Households also include self-employed persons and sole proprietors, except in the United States. Net wealth is defined as non-financial and financial assets minus liabilities.

Non-financial assets consist mainly of dwellings and land. For Germany, Italy and the United States, data also include durable goods. For Canada, France, Japan, the United Kingdom and the United States, data also include non-residential buildings and fixed assets of unincorporated enterprises and of non-profit institutions serving households, although coverage and valuation methods may differ. For Denmark, housing wealth has been estimated using the stock of dwellings at constant prices and house price data from Statistics Denmark. For Sweden, housing wealth data are from the Bank of Sweden. Net non-financial wealth is defined as financial assets minus mortgages.

Financial assets comprise currency and deposits; securities other than shares, loans, shares and other equity; insurance technical reserves; and other accounts receivable/payable. Not included are assets with regard to social security pension insurance schemes. Equities comprise shares and other equity, including quoted, unquoted and mutual fund shares. Net financial wealth is defined as financial assets minus financial liabilities excluding mortgages.

The sources for these data are:

Australia: Australian National Accounts, Financial Accounts.

Canada: Statistics Canada, Bank of Canada.

Denmark: Statistics Denmark.

Finland: Bank of Finland.

France: INSEE, *Rapport sur les comptes de la nation*; Banque de France.

Germany: Deutsche Bundesbank, *Monthly Report and Financial accounts for Germany 1991 to 2005*, Special Statistical Publication, 2006.

Ireland: Central Bank and Financial Services Authority of Ireland, *Quarterly Bulletin*, No. 3, 2006.

Italy: Banca d'Italia, Supplements to the Statistical Bulletin; Financial Accounts of OECD countries.

Japan: Cabinet Office, Government of Japan, Annual Report on National Accounts.

New Zealand: Reserve Bank of New Zealand.

United Kingdom: Office for National Statistics, United Kingdom, National Accounts and Financial Statistics.

United States: Federal Reserve Statistics Release, Flow of Funds Accounts of the United States.

Spain: Bank of Spain.

Sweden: Bank of Sweden and Statistics Sweden.

Mortgage debt data for non G-7 countries have been estimated using various national sources and are not necessarily fully consistent with SNA 93 and ESA 95. For Australia, mortgages refer to outstanding loans to households for housing by type of lending institution in the Financial Accounts of the Australian National Accounts. For Denmark, mortgages are from Statistics Denmark and refer to lending of mortgage banks by sector. For Finland, mortgage data are from the Bank of Finland. For Ireland, data are from the Central Bank and Financial Services Authority of Ireland *Quarterly Bulletin* No. 3, (see Kelly, 2006). For New Zealand, data are from the Reserve Bank of New Zealand. For Spain, data are from the Bank of Spain and for Sweden, from Statistics Sweden.

GDP and disposable income

GDP and household disposable income are taken from the OECD Economic Outlook 80 database.

Share of adjustable rate loans in housing loans

The 2005 data for the *share of new loans* in housing loans are defined as loans with a duration of one year or less. For most European countries, the data are from European Mortgage Federation (2006). For France, the data are from Gouteroux (2006). For Italy, data are from the Bank of Italy. For Finland, they are from the Bank of Finland. For Japan and Canada, they refer to the Bank of International Settlements (BIS) (2006) and correspond to adjustable rate loans with a duration up to five years. For New Zealand, data are from the Reserve Bank of New Zealand. For Australia, the data come from the Reserve Bank of Australia. For Ireland, data are from the Central Bank and Financial Services Authority of Ireland.

The data for the *share of outstanding loans* are defined as loans with a duration of one year or less. They are taken from Girouard *et al.* (2005) for Australia, Canada and France. For most European countries, the data are from European Mortgage Federation (2006). For Japan, data are from the BIS (2006). Other, country-specific sources are: Bank of Italy (2006), Bank of Finland and the Reserve Bank of New Zealand.

Sources for mortgage delinquency rates

Australia: Bank on-balance sheet housing loan arrears 90+ days, Reserve Bank of Australia.

Canada: Residential mortgage loans in arrears three months or more, Canadian Bankers' Association and Statistics Canada.

France: “Part des encours douteux, Enquête auprès des principaux établissements distributeurs de prêts à l'habitat”, Banque de France.

Finland: Non-performing assets of households, Bank of Finland.

Italy: New bad debts during the year as a percentage of outstanding loans, Bank of Italy.

Spain: Household non-performing loans (for house purchase), Bank of Spain.

United Kingdom: Mortgage arrears for more than three months, Council of Mortgage Lenders.

United States: Delinquency rate on single-family residential mortgages, booked in domestic offices; all commercial banks (seasonally adjusted), Federal Reserve Board.

Sources for the proportion of households holding debt

The “other debt” category is generally defined as unsecured debt in the form of personal loan, overdraft, credit card, store card, student loan, social fund loan and other loan.

Spain and Ireland: ECB (2005).

Canada: The data, provided by the Bank of Canada, are based on the *Canadian Financial Monitor* (CFM), a survey conducted by Ipsos Reid Canada. Data are for 2005. For more detail, see Faruqui (2006).

France: Banque de France (2005).

Finland: Bank of Finland (2006).

Germany: Federal Statistical Office.

Italy: Banca d'Italia (2006b).

United States: Bucks *et al.* (2006).

United Kingdom: May *et al.* (2004).

Sweden: Bank of Sweden.

New Zealand: Treasury of New Zealand. For information, the proportion of households holding “other debt” excluding student loans is 69.4% and the proportion of households holding “other debt” excluding credit cards is 48.3%.

Sources for the micro data

Australia: No micro data were provided for the study. There are, however, two household micro surveys which are of interest, the Household Expenditure Survey (HES) conducted by the Australian Bureau of Statistics and the Survey of Household and Income and Labour Dynamics (HILDA), which is administered by the Melbourne Institute. The aggregate results from the HES are available at:

[www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/6530.0Main+Features12003-04%20\(Reissue\)?OpenDocument](http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/6530.0Main+Features12003-04%20(Reissue)?OpenDocument).

The information on HILDA is available at:

<http://melbourneinstitute.com/hilda/>.

For more detail, see Kohler *et al.* (2004).

Canada: The data, provided by the Bank of Canada, are based on the *Canadian Financial Monitor* (CFM), a survey conducted by Ipsos Reid Canada. Data are for 2005. For more detail, see Faruqui (2006).

Denmark: No micro data were provided for the study. However, households' indebtedness is discussed in Danmarks Nationalbank (2006).

European Union countries: The European Central Bank (ECB) provided some data from the 2001 European Community Household Panel database. They are reported in part in ECB (2005).

Finland: Data for 2004 are from the Bank of Finland (2006).

France: No micro data were available for the study. However, the Banque de France has produced several studies on household indebtedness, see for instance Banque de France (2005) and Boutiller *et al.* (2005). See also the work from the Commissions du surendettement at:

www.banque-france.fr/fr/instit/services/page3a.htm.

Selected micro data are reported for 2005 in Mouillart (2006).

Germany: The data, provided by the Federal Statistical Office, are based on the Income and Expenditure Survey 2003. For more details, see Bartzsch and Stöss (2006).

Italy: The data, provided by the Bank of Italy, are based on the 2004 Survey of Household Income and Wealth (SHIW), Banca d'Italia (2006a and b). For details on the previous surveys, see www.bancaditalia.it/statistiche.

Netherlands: The data, provided by the Nederlandsche Bank, are based on preliminary results of the 2004 regular Dutch DNB Household Survey (DHS). For details see Van Els *et al.* (2003) and De Nederlandsche Bank (2005).

New Zealand: The data, provided by the Treasury of New Zealand, are based on the survey SoFIE for 2004, see www.stats.govt.nz/additional-information/survey-of-family-income-employment/default.htm.

Spain: The data, provided by the Bank of Spain, are based on the 2002 Survey of Household Finances (EFF). For more detail see Barcelo (2006), Banco de Espana (2005), Bover *et al.* (2005) and Bover (2004).

Sweden: The data were provided by the Bank of Sweden and Statistics Sweden. An analytical exposé of the Bank of Sweden uses of micro data can be found in Johansson and Persson (2006).

United Kingdom: The data were provided by the Bank of England and are based on 2005 NMG Research survey and on the Bank's calculations. For more information, see Barwell *et al.* (2006). For details on the 2004 survey, see May *et al.* (2004).

United States: The data are from the Federal Reserve Bank and are based on the 2004 Survey of Consumer Finances. They are reported in Bucks *et al.* (2006). For references to earlier surveys, see Aizcorbe *et al.* (2003).

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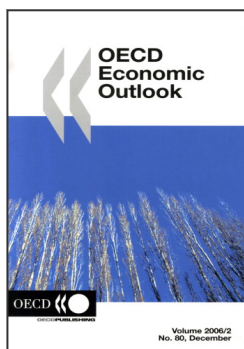
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From:
OECD Economic Outlook, Volume 2006 Issue 2

Access the complete publication at:
https://doi.org/10.1787/eco_outlook-v2006-2-en

Please cite this chapter as:

OECD (2006), "Has the Rise in Debt made Households more Vulnerable ?", in *OECD Economic Outlook, Volume 2006 Issue 2*, OECD Publishing, Paris.

DOI: https://doi.org/10.1787/eco_outlook-v2006-2-39-en

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