

Analysis of answers to the questionnaire on financial structures

Non-financial sector balance sheets in the monetary policy transmission mechanism

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I. INTRODUCTION¹

While a broad consensus has been reached on how monetary policy is implemented and on what it can or should be expected to achieve in the longer run, the transmission process is not well understood. In varying degrees, the impact of policy on the economy seems to have changed in recent years as a result of financial liberalisation, asset price inflation and changes in sectoral balance-sheet positions. Some of the developments have potentially increased the sensitivity of expenditure to changes in interest rates. Other may have reduced it. While the overall effect is difficult to quantify and may change over time, policy has been adapted in various ways to take account of balance-sheet positions. For example, the European exchange market crisis in 1992-93 highlighted cross-country differences in European monetary policy transmission mechanisms which seemed to substantially affect the cost of pursuing exchange rate based policies.

These developments have drawn attention to cross-country differences in the responses to changes in policy controlled interest rates of other interest rates and in the balance-sheet positions of banks, governments, households and enterprises. In particular, they suggest country differences in the strength of wealth, income and cash-flow effects of changes in interest rates, which may depend on the composition of the balance sheets of the private non-financial sectors. Changes in the interaction of wealth and cash-flow effects over the business cycle as asset price expectations change imply that these effects are not always easy to identify empirically and make the impact of monetary policy less certain. The impact may be strengthened, at least temporarily, when financial positions come under stress and may at times constrain policy.

Our knowledge of cross-country differences in balance-sheet positions of the household and business sectors has been improved by the responses of fourteen central banks to a BIS questionnaire on financial structure. The answers contained information on balance-sheet positions a decade earlier, as well as on developments in interest payments and receipts by the household and non-financial enterprise sectors. The results of the survey are summarised in this note. In combination with the country differences in the response of rates applied by financial institutions to changes in official rates, which are discussed in detail in another BIS note,² it suggests various ways in which the monetary policy transmission mechanism may differ significantly from country to country. Some divergences seem actually to have widened during the last decade. The question arises whether the changes are likely to prove lasting or form part of a cyclical process which could be repeated. To facilitate comparison of the developments over the period, time series broadly corresponding to the

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2 See Claudio Borio (1994), *The structure of credit to the non-government sector and the transmission mechanism of monetary policy: a cross-country comparison*, this volume.

data for two dates supplied in answers to the BIS questionnaire have been collected, for as many of the countries as possible, from other central bank or official sources.³

Developments in sectoral balance-sheet positions have been extensively analysed by several central banks and some of the salient differences between major countries are fairly well known. Data on a number of countries is considered here but for many it is only annual or covers only a short time-span and is thus not suitable for rigorous analysis. Notwithstanding some adjustment, its comparability between countries remains open to question in certain respects. Hence the discussion is preliminary, tentative and informal. It aims only at drawing attention to apparent differences in countries' situations and experiences and suggesting possible implications for the monetary policy transmission mechanism. The impact of changes in balance-sheet positions of financial institutions and the government sector is not considered.

A section placed directly after the introductory section provides a tentative overview of the results. After that are two sections which review the available information on balance-sheet positions and interest payments of the household and enterprise sectors in turn. In each case the discussion begins with a comparison of the key components of the sector's present balance-sheet position and of the position at an earlier reference date, as revealed mainly by questionnaire responses. This is followed by a consideration of the possible implications for the transmission mechanism of developments in balance-sheet structures as reflected in capital gearing, net interest-bearing asset and debt ratios and the composition of indebtedness. Next the data available on interest payments and receipts by the household and enterprise sectors are reviewed, a rough distinction being drawn between the direct effects of monetary policy on average interest rates paid and received and effects coming about through induced changes in balance-sheet positions. Finally, some hypotheses are put forward as to how cross-country differences in financial positions may help to account for differences in the behaviour of particular components of aggregate expenditure, though no attempt is made to test these hypotheses empirically.

II. THE MONETARY POLICY TRANSMISSION MECHANISM AND BALANCE-SHEET POSITIONS

Much attention has been paid to analysing intertemporal substitution effects induced by changes in monetary policy, which essentially entails consideration of the incentives of potential borrowers and lenders to bring forward or delay expenditure. Balance-sheet structures and current income flows may affect agents' capacity to take advantage of such incentives, for instance by recourse to increased borrowing, as well as influencing consumption through standard wealth/permanent income channels. Balance-sheet positions may also reflect the operation of liquidity and credit-rationing effects.

It is generally assumed that following deregulation the transmission of monetary policy impulses to expenditure has become increasingly dependent on effects operating through interest rates, asset prices and exchange rates. A question often raised is whether a weakening of credit-rationing effects could imply that large changes in interest rates are now necessary to have a given effect on private expenditure.⁴ However, where changes in financial structures have augmented wealth, income or cash-flow effects which operate quickly, the impact of given changes in interest rates on aggregate demand may actually have increased. At high debt levels, cash constrained debtors may have a stronger tendency to respond to rises in interest rates than creditors. The possibility that credit institutions could be more inclined to ration credit might enhance the effects of interest rate increases. The wealth effect of declines in asset prices, greater importance of the housing stock in

3 Differences of detail are largely determined by data availability.

4 Some commentators have also contended that an increase in the demand for short-lived services relative to the demand for more durable products may have reduced the interest elasticity of aggregate demand.

personal wealth and increased consumer borrowing against higher market values of housing all potentially increase the effectiveness of interest rate increases. Some commentators have noted that, particularly where levels of short-term government debt⁵ are high, changes in interest rates may bring about a counteracting fiscal shock. However, the government may respond by action to offset the change in the budget deficit. There is also a question of whether private economic agents perceive changes in the budget deficit as implying changes in potential future tax burdens. Some wealth and cash-flow effects of monetary policy may be non-linear. Certain asset price effects depend on the proportionate change in interest rates, implying that a given change in rates is most powerful when their level is low.⁶ Certain cash-flow effects are stronger at high levels of nominal interest rates, even to the extent that interest rate levels reflect inflation expectations.

The role of wealth, income and cash-flow effects clearly differs between countries and has changed over time in ways which are difficult to identify and their importance in particular situations has often been controversial. The effects are potentially strongest when policy changes unexpectedly. Much depends on whether the changes on policy or in other influences on asset prices are expected to prove lasting. Relevant distributions of positions among individual enterprises and households are often not fully revealed by aggregate data. Developments in balance-sheet positions ultimately reflect desired adjustments to perceived income and profit prospects and risks. The implications for the impact of monetary policy on aggregate expenditure of leverage, long/short or fixed/variable interest rate positions cannot always be interpreted unambiguously. For instance, leverage increases the wealth effect of changes in asset prices which are expected to continue, even if cash-flow positions are being squeezed, until the cash-flow effect begins to dominate. When asset prices are not expected to rise cash-flow effects may come into operation quickly. Sectoral balance sheets indicate vulnerability to changes in interest rates. Market participants' perceptions of vulnerability change in the light of experience and balance-sheet positions can be adjusted accordingly. However, the process usually takes time and usually has effects on output.

Recent experience has highlighted several concrete problems associated with the interest rate transmission process as conditioned by sectoral balance-sheet positions. On the one hand, long-term interest rates and the prices of some assets, such as real estate, typically respond only slowly to the moderate changes in policy rates which have been characteristic of the gradualist counter-cyclical monetary policy course normally followed in some large countries. In principle, policy can be adjusted more if necessary, but the risk of exploding an existing asset price bubble may at times have constituted a constraint. It has proved particularly difficult to influence asset prices once speculative bubbles or an implosion have developed. Monetary ease has also operated slowly in counteracting the interest rate, cash-flow or balance-sheet effects of non-monetary disturbances. On the other hand, relatively large changes in policy controlled interest rates have continued to be necessary at times for countering exchange market pressures, even in countries with flexible exchange rates. The sensitivity of sectoral wealth positions and cash flows can intensify the dilemmas faced in these situations.

More generally, the response of long-term interest rates and asset prices to changes in monetary policy is not always predictable, given the important role of expectations. Moreover, the complicated and changing effects of balance-sheet positions has made the direct effect of monetary policy on aggregate expenditure less certain, at least in the short run. This is certainly not the sole criterion for evaluating the effectiveness of policy. The view that policy will have the most favourable effects on investment and growth if it succeeds in reducing and controlling inflation expectations implies that to the extent that increases in short-term interest rates are effective in lowering inflation expectations smaller adverse effects on output may be needed to achieve an inflation objective. Yet uncertainties about the effect of monetary policy on aggregate demand may complicate the task of steering policy towards the achievement of ultimate objectives.

5 Which is akin to "outside wealth".

6 See E. Mausekopf (1994), "The transmission channels of monetary policy: how have they changed?", *Federal Reserve Bulletin*, pp. 985-1008.

III. TENTATIVE CONCLUSIONS AND OPEN QUESTIONS

With economic recovery in the industrial countries now on a firmer footing attention is turning to the question of the impact of rises in interest rates. Whether the impact is likely to be faster and stronger than in the past or much the same as in previous cycles can be expected to depend on sectoral balance-sheet positions and underlying factors, which differ significantly between countries.

At the risk of oversimplification, it seems possible to identify two groups of countries. The distinction depends less on recent experience than on underlying differences in tastes, such as preferences for home ownership, which have in many cases been reinforced by the tax treatment of interest payments and receipts.

One group of countries includes the United States, Japan, the United Kingdom, Canada, Australia and Sweden. In most of these countries, the value of household housing and/or share assets is high, and large recent changes in values remain imprinted on household memories (Table 1). Except in Japan, home ownership is widespread. Housing wealth is relatively large in the United Kingdom and Australia and household share portfolios are substantial in Canada and the United States. In these circumstances wealth effects operating through changes in asset prices are likely to be important. The operation of wealth effects depends on asset price expectations but capital leverage is relatively high in all of these countries except Australia, where it is now rising. Asset prices and household cash flows are clearly vulnerable to a tightening of monetary policy as the economic recovery advances. Households' direct holdings of interest-bearing assets, net of their indebtedness, have fallen to low levels or have become negative in the United Kingdom and Sweden but are large in Japan and, to a lesser extent, Canada and (if implied debt asset holdings through unit trusts are included) the United States. The impact of changes in policy rates on average rates payable by households on existing debt seems relatively large and fast in most of these countries. This is clearly not the case in Sweden, however, and it is difficult to judge how much of an apparent sluggishness of the responses to money market rates of interest rates applied by financial institutions in the United States in recent years reflects only unusual rate setting behaviour of financial institutions in recession.

The other group includes most continental European countries. In many of them home ownership is less widespread, household financial wealth largely takes the form of debt claims and capital gearing ratios are low. Wealth effects and cash-flow constraints may therefore remain limited. That the household sector's net holdings of interest-bearing assets are comparatively large and net interest receipts high may suggest that traditional income effects of monetary policy on household spending could act as significant counter-forces to intertemporal substitution effects. However, the substantial long-term component of both assets and liabilities with interest rates which adjust slowly implies that the impact of policy may be comparatively small in the short run. Relatively weak reactions of household interest receipts and payments, as well as of average rates received and paid, tend to support this. Qualifications to this stylised description are called for in the case of individual countries. In Italy, for instance, interest rates paid and received by the household sector seem comparatively flexible and, as in France, the value of household share portfolios is now high. Household indebtedness seems substantial in Switzerland. However, the overall structure of household balance sheets suggests that these factors are unlikely to become major influences on the transmission mechanism.

The extent to which the remaining cross-country differences in transmission mechanisms are attributable to regulatory influences has not been investigated. In most cases rises in household capital leverage experienced during the last decade were encouraged by *changes* in regulations affecting the attractiveness of home-ownership. Housing and mortgage markets remain subject to strong government influence which could undergo further change in the future. There may also be some question as to whether the spread of innovations such as money market funds or home equity loans could bring about large changes in household balance sheets - and hence in policy transmission mechanisms - in countries where they have to date shown a relatively stable development. There may

Table 1

Household summary data¹(as a percentage of personal disposable income)²

Items		JP	US	CA	AU	UK	DE	FR	IT	ES	BE	NL	CH	SE
1. Total net assets	1993	720	480	440	480	530	420	450	600					200
	1983	540	480	290		430	380	390						190
2. Tangible assets	1993	480	210	210	350	280	280	270	370					
	1983	390	230	150		250	280	300						
3. Share assets	1993	35	85	115	45	55	10	90	65	40				35
	1983	..	45	45		35	10	25	50	20				40
4. Indebtedness	1993	95	90	85	80	95	80	50	25	50	40	65	130	100
	1983	65	70	55	70	60	70	40	20	40	25	50	110	100
5. Debt/total assets (%)	1992	12	16	15	14	19	15	12	2					32
	1982	10	13	13	..	15	16	12	2					34
6. Net debt assets (incl. pension claims)	1992	185	120	120	..	155	125	90	150	70				0
	1982	125	95	100	..	130	95	65	100	65				5
7. Net debt assets (excl. pension claims)	1992	110	15	35	10	5	65	55	130	55				-20
	1982	95	35	50	..	30	50	55	85	65				-10
8. Gross interest received ³	1992	10.4	14.8	[16.8]	12.4	[15.8]	9.6	5.8	16.0	10.1	9.9	17.0		8.0
	1982	11.6	16.3	[18.0]	10.3	[13.3]	7.7	6.3	13.0	..	9.3	..		8.7
9. Gross interest paid ³	1992	6.2	7.5	8.8	10.3	[10.6]	5.5	5.6	4.7	5.9	3.8	6.9		13.5
	1982	5.3	6.8	8.6	8.1	[7.7]	5.4	4.1	3.9	..	3.9	..		12.2
10. Net interest received ³	1992	4.2	7.3	[8.0]	2.1	[5.2]	4.2	0.2	11.4	4.2	6.1	10.1		-5.5
	1982	6.4	9.5	[9.5]	2.2	[5.7]	2.3	2.1	9.1	..	5.4	..		-3.5

¹ Items 1-4, as in Table 3; items 5-10, as in graphs. (Shares include mutual funds.) For items 7, 8, 9 and 10 for the United Kingdom, 1984 and 1992. ² Except item 5. Items 1 and 2 are rounded to the nearest 10; items 4, 6 and 7 to the nearest 5. ³ For the United Kingdom, including dividends; for Canada, receipts and net payments include dividends received.

be little need to take wealth effects explicitly into account in monetary policy in countries where asset price movements have been moderate and where increases in wealth have largely taken the form of longer-term quasi-fixed interest rate claims. However, increases in wealth in these forms could have increased the sensitivity of household spending to bond market disturbances stemming from abroad.

Large cross-country differences in the response of borrowing by non-financial enterprises (Table 2) to changes in asset values could imply continuing differences between countries in the impact on investment of changes in interest rates and asset prices. Increases in leveraging in the 1980s in the United States, Japan, the United Kingdom, Canada and Australia seem to have reflected a breakdown of the traditional reluctance of enterprises to rely heavily on external financing but they were influenced in some cases by changes in the taxation of interest and dividends or other tax changes. The subsequent restructuring of overstretched balance sheets was facilitated by monetary ease. In Japan, where enterprises' holdings of real and financial assets rose even more than financial liabilities during the asset price boom, they have remained much higher, on balance, than in earlier years. A renewed rise in leverage from a higher base in this group of countries could increase the sensitivity of corporate cash flows to interest rates.

Capital gearing ratios of non-financial enterprises in several European countries, including Germany, were relatively high at the beginning of the 1980s. Various explanations have been advanced as to how the large bank lending component may have made higher leveraging acceptable. In many continental European countries enterprises took advantage of improvements in profitability during the 1980s to reduce recourse to external financing. Cash flows were subsequently eroded by recession but interest gearing ratios typically remained relatively low. In France, Italy and Belgium, where these ratios seem high in comparison with some other countries, they are much lower than they were in the early 1980s. Presumably reflecting the relatively large influence of long-term interest rates, the responses of enterprises' interest burdens to changes in short-term market interest rates seems relatively low in many cases. In France, and possibly also Germany and Spain, the sensitivity of interest rates received to short-term market rates seems to have increased, perhaps indicating more active portfolio management by non-financial firms.

Questions of the broader implications for economic efficiency of differing balance-sheet structures and, in particular, differing proportions of equity and short or long-term debt financing of the enterprise sector are beyond the scope of this paper. In contrast to the historically atypical substitution of debt for equity by the US corporate sector in the 1980s, the traditional heavy reliance of firms in many continental European countries on cash flow and external debt finance may partly reflect a traditional reluctance of many firms to rely on equity financing. In many cases financing structures are still influenced by earlier official steps taken to promote the supply of long-term debt financing. Differences in corporate financing structures may also reflect more basic differences in the structure of corporate ownership, creditor enterprise relations and the market for corporate control.⁷ To the extent that such factors are decisive, the prospects for convergence of the financial positions of non-financial corporations in Europe and North America may be limited. However, the scope for equity, bond and short-term market debt financing in domestic and international markets has increased in recent years, though these typically remain modest sources of funding for many European firms. It may be asked whether increases in the availability of market financing or the search for low funding costs and pressures stemming from international competition could contribute to substantially reducing cross-country differences in enterprise financing structures and thus in the monetary policy transmission mechanism.

⁷ See Borio, C.E.V. (1990): "Leverage and financing of non-financial companies: an international perspective", *BIS Economic Paper*, No. 27, Basle, May, and Prowse, S. (1994): "Corporate governance in international perspective: a survey of corporate control mechanisms among large firms in the United States, the United Kingdom, Japan and Germany", *BIS Economic Paper*, No. 41, Basle, July.

Table 2

Non-financial enterprise sector summary data¹

Items		JP	US	CA	AU	UK	DE	FR	IT	ES	BE	NL	CH	SE
1. Tangible assets/GDP (%)	1993	240	130	80	100	120	150	140						
	1983	200	200	90		110	150	160						
2. Debt liabilities/GDP (%)	1993	135	60	45	65	50	75	70	45	60	45	60	50	105
	1983	90	60	45		20	50	55		70	45	45	40	65
3. Shares on issue/GDP (%)	1993		115	105	80	120	30	215	50	35	30			60
	1983		105	65		50	20	50		20	10			35
4. Debt/total assets ²	1992	0.48	0.45	0.61	0.46	0.46	0.51	0.39						
	1982	0.37	0.28	0.59	..	0.25	0.45	0.29						
5. Debt/equity ³	1992	..	0.51	..	0.92	0.49	2.71	0.41	1.47	2.10				1.74
	1982	..	0.80	0.42	3.20	1.41	1.47	2.97				..
6. Net debt/operating surplus	1992	7.30	3.10	4.50	3.60	3.20	1.80	5.10	3.70	1.90				10.20
	1982	3.70	1.80	2.60	2.80	0.50	2.00	6.80	3.50	..				8.80
7. Operating surplus/GDP	1992	0.13	0.07	0.05	0.14	0.10	0.21	0.09	0.09	0.20		0.15		0.06
	1982	0.15	0.08	0.11	0.12	0.15	0.17	0.05	0.07		0.05
8. Long/short-term debt	1992	..	1.80	2.10		0.60	2.60	1.60	0.60		1.20	2.90	0.70	
	1982	..	1.60	1.70		0.10	2.40	1.70	0.90		1.30	..	0.70	
9. Gross interest paid/operating surplus	1992	0.79	0.64	1.00	0.43	[0.43]	0.42	0.63	0.73	0.40		0.51		0.96
	1982	0.64	0.77	0.66	0.33	..	0.52	1.03	1.21		0.83
10. Net interest paid/operating surplus (%)	1992	0.54	0.29	0.68	0.30	[0.42]	0.29	0.51	0.58	0.32		0.32		..
	1982	0.49	0.35	0.45	0.21	..	0.44	0.86	0.94

¹ Items 1-3, as in Table 5; items 5-10, as in graphs (for Japan, shares on issue are at book value). Item 1 is rounded to the nearest 10; items 2 and 3 to the nearest 5; items 6 and 8 to the first decimal place. ² Excluding share holdings by non-financial enterprises (Japan, Germany, France and the United Kingdom). ³ Equity at market value; for the United States, non-farm non-financial corporate enterprises only.

IV. THE HOUSEHOLD SECTOR

1. Cross-country differences in balance-sheet positions

Table 3, based mainly on central bank answers to question 10 of the BIS questionnaire, provides summary data (typically for 1993) for household assets and liabilities set in relation to personal disposable income for a recent date and for a reference year, normally 1983. Some adjustments have been made to facilitate cross-country comparisons.⁸ The nature of the data and the changes over time preclude firm conclusions about the strength of particular monetary policy transmission mechanisms but it may provide insights into cross-country differences in the potential importance of different channels.

In many of the countries shown the ratio of recorded household wealth (total gross real and financial assets minus financial liabilities) to disposable income appears to fall within a fairly narrow range of 420 to 530%. The ratio is relatively low in Sweden, where high marginal income taxes were previously combined with liberal tax deductibility for interest payments, but it is substantially larger in Japan and relatively high also in Italy, where large government budget deficits have long gone hand in hand with high personal savings ratios. Of course, this raises a question of how far government debt should be counted as wealth. Clearly many items which may enter into household calculations of desired wealth positions, not least human wealth, are not taken into account in this data. On the one hand, the accumulation of these typically large-scale holdings of net tangible and financial wealth might have made household spending less sensitive to current income, credit and liquidity restraint and even perhaps to interest rates. On the other hand, household spending might also have become more sensitive to changes in asset values and to interest rate incentives to delay spending. The extent to which such changes have been significant in practice evidently differs considerably from country to country.⁹

Assets differ in liquidity and price sensitivity. Significant cash-flow, income and even wealth effects of monetary policy depend on the *composition* of household portfolios, which are influenced by institutional constraints as well as preferences and display substantial cross-country differences. The possibility that the sign or magnitude of the impact on spending of different components of household wealth may differ has generally been neglected in econometric investigation of wealth effects, in particular.

Housing, which dominates tangible assets and forms a large component of total assets, constitutes a potentially important channel for wealth effects on expenditure, though complex distributional influences may be entailed. In particular, impacts of changes in house prices on the expenditure of house-owners may be counteracted by those on the affordability of housing for first-time buyers. Moreover, house prices have not always responded quickly to changes in short-term interest rates. Differences in land values account for much of the difference in the relationship of household tangible assets to disposable income in Japan and North America, but an unknown amount of tangible assets of unincorporated businesses is included in the estimate shown for Japan. Though countries' statistical valuation procedures differ, relatively high estimates of housing wealth in some European countries (where occupier-ownership is much lower than in North America) reflect relatively high land prices and building costs. In some cases personal sector housing wealth includes substantial investment in accommodation for letting.

8 The dates to which the figures shown relate and information about BIS adjustments is contained in the footnotes to the table. Nevertheless, allowance needs to be made for differences in coverage of items other than those drawn from the balance sheets of domestic credit institutions and for obvious differences in the methods used to value items expressed at market prices.

9 Evidence suggesting a decline in the relative importance of transitory income relative to permanent income or wealth in explaining consumption in a number of countries which had undergone financial innovation was reported in A. Blundell-Wignall, *OECD Working Paper*, No. 77, April 1990.

By contrast, in many continental European countries households' total gross holdings of financial assets (including shares and pension assets) are lower in relation to disposable income than in the United States, Canada, Japan and the United Kingdom. Moreover, notwithstanding relatively high levels of indebtedness, in the latter four countries households' total net financial asset/income ratios are higher than in most continental European countries. Financial asset holdings are also relatively high on both a gross and net basis in Italy and strikingly low in Sweden.¹⁰

Share prices can be viewed as a potentially significant, if tenuous monetary policy transmission channel. The direction of any influence of short-term interest rates on the rates at which expected returns on shares are discounted is clear, though the influence of changes in monetary policy on expected nominal and real returns is less predictable. Wealth effects stemming from changes in the market value of household financial assets have long been a central element in the Federal Reserve's model of the US economy where, as in Canada, household portfolios of shares remain relatively high in relation to disposable income when indirect holdings through bond and share mutual funds are included. In relation to disposable income household holdings of marketable shares are lower in Australia and the United Kingdom, even smaller in Sweden, Spain and Japan and strikingly small in Germany and Switzerland. The high figures shown in the table for France and Italy in part reflect a spreading of share ownership and comparatively strong rises in share prices in recent years. That for France includes substantial amounts of non-marketable equity claims at values which have been adjusted upwards in line with rises in the prices of quoted shares.¹¹ There may be a question as to whether household perceptions of wealth in these forms adjust as quickly as this implies. Elsewhere such claims are largely left out of account or included at conservative book values.

In relation to income, household pension and insurance claims are particularly large in the United Kingdom and are also substantial in Japan, the United States, Canada and Australia. The smaller ratios in many continental European countries in part reflect a wide coverage of unfunded government pension schemes. Typically national accounting procedures impute claim values and interest income to the household sector on the basis of the funded reserves of pension and insurance institutions. How closely the evaluations made by households correspond to this procedure is an open question. Pension claims are relatively illiquid and, like housing assets, they do not contribute to household cash flow but may serve as collateral for borrowing.

More light may be thrown on the potential for income effects of changes in interest rates by comparing only direct household positions in debt claims such as deposits, bonds and credit. Yet the elasticity of expenditure to interest income may be smaller than that of other elements of disposable income. Movements in interest income may also influence saving for retirement or the decumulation of lifetime savings in retirement. However, changes in interest rates which simply match developments in inflation expectations may have only limited effects (though changes in inflation expectations could directly affect expenditure). The income effect of changes in household interest receipts may be partly offset by income effects of interest payments by debtors in other private domestic sectors. Questions may also be raised about the extent to which interest receipts on government debt, which are relatively high in countries such as Italy and Belgium, are viewed as a net addition to private incomes or are offset by expected future debt servicing costs. Even so significant effects of changes in interest income have persistently been found in some countries.

Household sector direct holdings of debt claims are relatively large in Japan, Italy, Germany, France and Spain, where they far exceed household indebtedness. Holdings of debt claims are also fairly large in relation to disposable income and household indebtedness in Canada and, if indirect holdings through mutual funds are added, in the United States. By contrast, it would seem that, allowing for the fact that currency and non-interest-bearing sight deposits are included in the debt

10 That the figure for France is higher than that for Germany largely reflects differing valuation practices for equity claims, as explained below.

11 To permit more comparability with other countries, holdings of short-term mutual claims by French households, listed with equity in national financial statistics, are included under debt claims in Table 1. In 1993 the amount was equivalent to nearly 20% of disposable income.

Table 3

Household sector balance sheet¹

(as a percentage of annual personal disposable income)

Items	AU	BE	CA	FR	DE	IT	JP	NL	ES	SE	CH	UK	US
	1993²												
Total net assets	481.6		438.9	454.4	420.3	597.9	722.7			200.7		532.6	484.0
Assets:													
Tangible, total ³	353.9	..	212.6	267.9	280.4	366.5	484.9					278.1	210.4
Housing ⁴	318.1	168.1	167.5	209.5		..			n.a.	143.0		250.3	150.7
Financial, total	206.9		311.9	237.5	217.8	262.8	333.5		168.7	158.0		356.5	365.6
Debt claims	76.3	..	115.9	109.7	144.0	165.7	223.5	67.3	108.2	78.7	..	101.0	99.2
<i>of which: Long-term</i> ⁵	6.7		48.2	12.2	73.4	50.2	192.5	6.7	5.7	14.2			26.2
Shares ⁶	46.5		95.6	74.0	11.7	56.3	20.7		20.4	25.0		45.6	63.6
Mutual funds ⁷	n.a.		17.9	17.4	n.a.	9.4	12.4		20.7	10.6		7.4	22.8
Insurance/pension claims	83.4		82.5	36.5	62.2	23.8	76.9		17.5	22.4		192.0	111.7
Liabilities:													
Financial, total ⁸	79.2	41.5	85.6	51.0	77.9	31.4	95.7	64.9	58.0	100.3	130.3	102.0	92.0
Debt claims	79.2	41.5	85.6	51.0	77.7	24.7	95.7	64.9	51.1	100.3	130.3	95.7	89.9
<i>of which: Long-term</i> ^{8,9}	44.9	23.5	82.6	43.9	72.4	14.7	38.7	59.0		57.3	115.6	77.6	67.9
	1983¹¹												
Total net assets	440.3		288.6	392.0	382.5	523.2	536.0			187.4		427.2	481.0
Assets:													
Tangible, total ³	325.5		149.1	299.7	282.1	331.7	385.0					254.1	227.5
Housing ⁴	329.6	172.1	107.2	207.2				n.a.	n.a.	135.6		209.5	166.5
Financial, total	185.0		196.1	133.5	172.3	219.2	214.8		133.5	154.2		240.2	324.5
Debt claims	83.1	..	98.4	97.9	120.5	145.3	179.5	63.9	107.0	94.8	..	92.8	109.8
<i>of which: Long-term</i> ⁵	12.4		30.0	11.4	65.8	37.2	153.2	13.3	6.3	20.2			23.5
Shares ⁶	34.4		44.0	19.6	7.6	44.0	3.7		17.9	38.4		31.7	42.9
Mutual funds ⁷	n.a.		2.0	5.2	n.a.	5.4	n.a.		0.1	n.a.		3.2	3.5
Insurance/pension claims	65.9		51.7	10.9	44.3	18.2	31.6		2.5	n.a.		105.8	69.8
Liabilities:													
Financial, total ⁸	70.2	25.2	56.6	41.2	71.9	27.7	63.8	51.7	44.3	102.4	111.8	67.1	71.0
Debt claims	70.2	25.2	56.6	41.2	70.1	22.4	63.8	51.7	38.9	102.4	111.7	58.9	69.0
<i>of which: Long-term</i> ^{8,9}	29.1	20.5	55.2	36.8	63.8	12.8	26.6	46.2		40.5	96.4	44.6	47.0

Footnotes to Table 3

- ¹ For Australia, Belgium, France, Italy, Japan, Spain, Sweden and the United Kingdom, including unincorporated enterprises. However, identified trade credit assets and liabilities and tangible assets of individual enterprises (normally the items most dominated by this sector) have been excluded from debt items and the totals (n.a. for Australia).
- ² For Belgium, September 1993; for Japan, Sweden and Switzerland, end-1992. Total net assets include tangible assets for the dates given in footnote 3 below.
- ³ Including durable goods. For Australia, June 1993; for France, Germany, Italy and the United Kingdom, end-1992; for Japan, total fixed capital and land.
- ⁴ At market value. Housing includes the estimated value of land, except for France.
- ⁵ In general, deposits at one year or more and bonds; for Canada, partly estimated on the basis of the maturities of the public debt - includes two-thirds of time deposits; for Japan, includes all time deposits, most of which are at over one year; for Spain and Sweden, bonds only; for the United Kingdom, the relatively small holdings of medium and long-term debt are included in short-term debt or company securities; for the Netherlands, only bank deposits; for the United States, bonds, government securities and mortgages.
- ⁶ At market value. For Germany, BIS estimate; for the United Kingdom, all company securities; for France, Italy, Spain and Sweden, including substantial amounts of equity claims other than quoted shares; for the United States, excluding equity in unincorporated business (equivalent to 47% of personal disposable income in 1993).
- ⁷ For most countries, all funds. For France and the United States, bond and share funds (money market funds are included with short-term debt assets (for France, holdings of such funds amounted to 19.5% of disposable income in 1993)). In most cases where holdings of fund shares are not available separately they are included in shares.
- ⁸ For Belgium, liabilities to credit institutions only; for Japan, housing credit (instalment repayments); for the Netherlands, liabilities to banks, insurance and pension organisations only; for Switzerland, liabilities to banks only; for Germany, including an estimated 80% of the debt of the housing sector (which is included with enterprises in the National Financial accounts).
- ⁹ In principle, claims of one year or more. For Australia and the United Kingdom, housing credit granted by major lenders; for Sweden, all loans other than from banks; for Switzerland, mortgage and fixed-term loans; for the United States, mortgages and bonds.
- ¹⁰ For Australia and the United Kingdom, estimated as a residual respectively of total liabilities and total credit.
- ¹¹ For Australia, December 1988 (except tangible assets, June 1989); for Italy, December 1989; for Japan and Sweden, December 1982.

N.B.: Financial asset and liability items may not add to the total as in most cases there are small residual items which are not shown.

assets shown in the table, total personal sector direct holdings of interest-bearing claims may be smaller than household interest-bearing liabilities in Sweden and the United Kingdom. This could imply large cross-country differences in the magnitude of any conventional current income or cash-flow effects associated with changes in gross interest receipts. To the extent that changes in net interest receipts are relevant, the income effects, usually assumed to be clearly positive, could now be negative in some countries.

The scale of income and cash-flow effects and the speed with which they operate depends on the response of interest rates on household assets and liabilities to changes in monetary policy. The national financial ("flow of funds") accounts contain no information on fixed-variable interest rate mixes and the maturity breakdown differs conceptually from country to country. The long-term asset component is clearly substantial in Japan, Germany, Canada and, to a lesser extent, the United States. Data not fully classifiable by sector suggest that households' long-term debt claims are substantial also in Austria, Belgium, the Netherlands and Switzerland. To the extent that the long-term instruments bear interest at fixed rates related to longer-term market rates the response of average interest rates received to monetary policy may be slow and uncertain. Some more direct evidence on this is reported below. Moreover, to the extent that long-term rates follow changes in policy controlled rates, positive income effects could be counteracted by a negative wealth effect associated with changes in the market price of existing portfolios of fixed interest rate securities. Household holdings of long-term fixed interest rate bonds are relatively high in relation to disposable income in the United States, Canada, Japan and Germany. However, in many European countries households hold a substantial proportion of their long-term interest-bearing assets in the form of non-marketable claims, such as medium-term time deposits and bank debentures issued on tap. Interest rates on new issues are typically related to market yields of comparable maturities but households probably do not perceive the value of existing claims as changing when the interest rates on new issues change.

In all countries the household sector holds substantial amounts of short-term interest-bearing assets. The nature of the predominant types of claims (savings deposits, short-term time deposits, Treasury bills, etc.) implies that the interest rates on them can in principle be adjusted following changes in short-term market interest rates. In practice, however, the response of rates on the large savings deposit balances in Germany, Switzerland, Austria and Japan is more limited than that of retail interest rates in the United States and the United Kingdom. Household holdings of money market claims through mutual funds are now particularly large in France and Spain. In short, the responsiveness of deposit to market rates has tended to increase in recent years in most countries, but in varying degrees.

If marginal propensities to consume out of income are larger for debtor than creditor households or if interest rate changes have stronger cash-flow effects on credit-constrained net debtors than on creditor households, levels of gross indebtedness may be more relevant than the aggregate net asset position of the household sector.

The household sector's total financial liabilities are relatively low in Italy, Belgium and France. The debt ratio is also comparatively low in Australia. By contrast, household indebtedness is relatively high in relation to disposable income in Sweden, the United Kingdom and, to a lesser extent, Japan, the United States and Canada. It is also quite high in Switzerland and (on the basis of an assumption in the table that 80% of housing debt is attributable to the household sector) Germany. While it may partly be due to difficulties in allocating debt between sectors, the high debt ratio in Switzerland, where the owner occupancy rate is very low, may reflect an incentive to "leveraged investment in rental accommodation" stemming from relatively low real interest rates and the availability of non-amortised mortgages. In comparing debt ratios, allowance has to be made for the inclusion in this sector in some countries of unincorporated enterprises whose borrowings are probably larger than their financial asset holdings.

Household indebtedness everywhere includes substantial amounts of mortgage and other long-term debt.¹² However, taking into account the differing proportions of variable interest rate debt, it can readily be seen why a relatively high level of indebtedness in relation to personal disposable income should expose the UK household sector to stronger cash-flow effects than only moderately lower levels of indebtedness in the United States and some continental countries where fixed interest rate financing predominates. The vulnerability of households to changes in debt servicing obligations may be mitigated if, when interest rates change, mortgage lenders make offsetting adjustments in debt amortisation instalments payable by borrowers, thus effectively adjusting the duration of the loan, as is common in Australia and for some floating rate mortgages in Canada. In the United States the maturity of some lending to the personal sector seems to have been increased temporarily when inflation rates rose in the early 1980s. Such practices do not appear to be common elsewhere.

2. Proportion of assets and liabilities with banks

Table 4, based on the questionnaire answers and national financial accounts, shows that in European countries including the United Kingdom, the bulk of household indebtedness is to the banking sector broadly conceived.¹³ The concept used here covers all deposit-taking and other institutions covered by the national monetary statistics.¹⁴ It includes long-term lending institutions, which in some countries provide a significant share of mortgage lending, but not insurance companies and pension funds, which bulk relatively large in lending to households in the Netherlands.

Table 4

Households

(share of total debt assets and liabilities with banks¹)

Items	AU	CA	FR	DE	IT	NL	ES	SE	UK	US
Assets:										
1993 ²	83.5	50.7	68.9	68.1	58.9		96.6	..	78.5	60.6
1983 ³	62.6	40.4	85.0	69.9			95.6	..	69.5	71.3
Liabilities:										
1993 ²	73.2	53.7	82.2	100.0	94.6	75.8	88.3	90.2	97.5	39.2
1983 ³	61.9	41.3	77.3	99.2		75.7	90.8	83.2	93.3	32.9

¹ For Australia and Canada, commercial banks; for France, Germany, Italy and Spain, credit system; for Sweden, financial sector; for the United Kingdom, banks and thrift institutions. Debt assets as defined in Table 3. ² See footnote 2 to Table 3. ³ See footnote 11 to Table 3.

In the case of Australia and Canada the banking sector is narrowly defined. The shares in lending to households of banks and other deposit-taking institutions, considered together, is relatively large. In the United States, on the other hand, a substantial proportion of household mortgage loans are held by Federal Government-related mortgage pools and by government-sponsored enterprises active in promoting the securitisation of mortgages, which has made a significant contribution to the availability of long-term fixed interest rate housing credit. A comparison with the sources of mortgage financing elsewhere would have to take into account the significant amounts of long-term fixed rate financing of universal banks and specialised long-term credit banks in many European countries and

12 A concept of long-term debt which unavoidably differs in some cases from that used in the BIS analysis of answers to other parts of the questionnaire.

13 All household positions vis-à-vis non-residents identified in the financial accounts data are relatively small. They are not analysed in this section.

14 In the case of Germany, building and loan associations are excluded. Lending by finance companies is in principle included but is typically relatively small.

Canada, contrasting with the heavier reliance on deposit financing in the United Kingdom and Australia.

Only to a limited extent are such differences revealed by proportions of household debt claims held with "banks" which, except in Germany, include long-term non-deposit placements with credit institutions. To a considerable extent cross-country differences in the proportion reflect relatively high shares in household portfolios of securities in the United States, Canada, Germany and Italy and of money market funds in France. Such differences have important implications for the availability and terms of different types of credit to households but an analysis of this aspect of the transmission mechanism is beyond the scope of this paper.

3. Change in balance-sheet positions since 1982

A comparison of the data for the two dates shown in Table 3 reveals that in relation to disposable income the value of household tangible assets has risen strongly, on balance, in Japan, Canada and the United Kingdom, has changed little in Germany and France and has apparently fallen in the United States. Of course, the huge measurement problems in this area must be borne in mind. Financial asset holdings have risen strongly in relation to disposable income in all countries except Sweden. In Germany, France, Spain and especially Italy, the rise in household indebtedness has been modest and net financial assets have risen considerably. In Japan and, to a lesser extent, the United Kingdom and Canada, large rises in housing values and debt have been accompanied by less well documented but substantial rises in financial asset holdings. As in the United States, where financial assets and liabilities have both risen strongly, net financial assets have risen in relation to disposable income.

In many cases the net movement in balance-sheet positions over the decade masks sharp divergences during the period. This can be clearly seen in the graphs which complement Table 3 by showing balance-sheet ratios based on the available time series for household balance-sheet positions.¹⁵

Ratios of household total net assets to disposable income (Graph 1) for which, it has been argued, households may have targets, show strong cyclical movements in the United States, with some tendency to revert to a level or slightly rising trend. In Japan, the United Kingdom and Sweden the ratios reflect strong rises in the late 1980s, partly reversed subsequently, in the value of household non-financial assets, which remains much higher than in the early 1980s. In Germany, France and Italy the ratios also seem to have moved upwards over time mainly as a result of increases in households' financial wealth. However, in Germany the ratio has been remarkably stable since about 1983. The observed upward trend in Japan is plausible but the ratio has remained remarkably high. In Sweden it has returned to a strikingly low level.

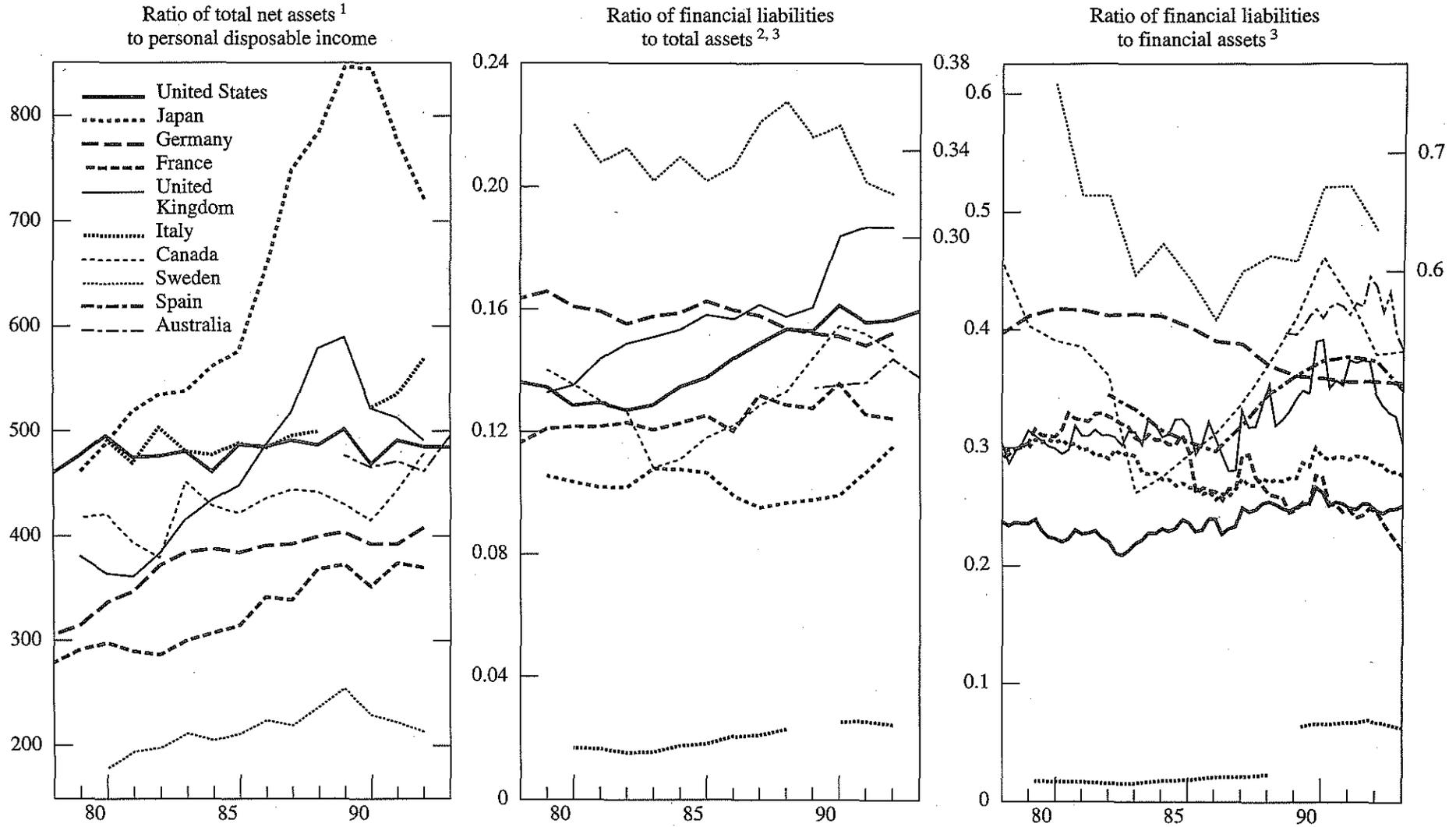
Notwithstanding strong rises in the value of housing assets, ratios of household debt to total assets, a conventional indicator of household capital gearing¹⁶ and of constraints on spending, displayed strong rises during the 1980s in the United Kingdom, Sweden and, reversing a fall lasting until 1984, Canada. This ratio also rose strongly in the United States.

15 Graphs showing developments in the underlying series, set in relation to personal disposable income measured at annual rates (so as to facilitate cross-country comparisons), are shown in Annex 1. Annex 2 contains notes on the content of individual country series. It should be noted, in particular, that in contrast to the data in the tables unincorporated enterprises are included in the enterprise sector in the graphs for Italy. For Canada household assets in the graphs include assets of unincorporated enterprises.

16 Ratios of debt to net assets, a related measure sometimes used, show similar patterns.

Graph 1

Household sector: total net asset and capital gearing ratios



¹ For France, Italy, Japan and Sweden, real housing assets only.

² Financial plus non-financial assets.

³ For Sweden, right-hand scale.

In several countries, large rises in household debt during the 1980s followed the removal of long-standing credit ceilings which had borne most heavily on household borrowing. However, demographic factors and the interaction of inflation with differing income tax treatment of interest payments also played a role in most cases. In the United States the removal by 1986 of the Regulation Q ceilings on which credit restraint had traditionally relied substantially changed the interest rate transmission mechanism. However, other regulatory changes which increased the availability of variable interest rate mortgages and facilitated the securitisation of mortgage lending under the aegis of Federal Government agencies had a more immediate effect in increasing the growth of mortgage credit. As in other countries where a strong expansion of household indebtedness took place, government intervention affecting the mortgage and housing markets designed to foster home ownership changed its form but remained extensive and could be changed further in future.

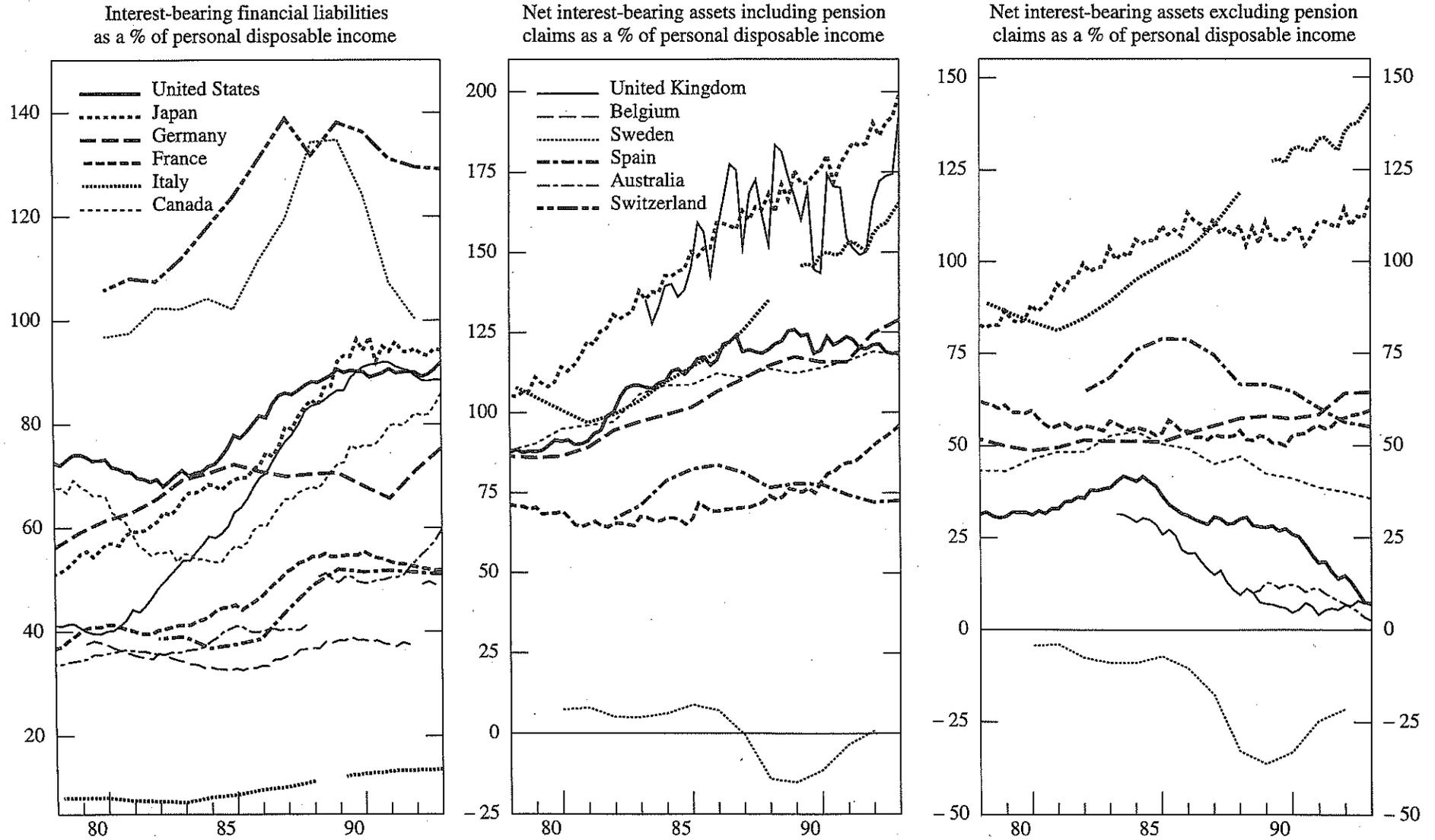
No reduction in the household debt/asset ratio in the United Kingdom took place in the early 1990s, when household cash flow benefited from lower interest rates. Continuing falls in asset prices help to explain this but, as in the United States, the economic recovery began with a higher debt/asset ratio than in previous cycles. In Japan, with rises in asset values continuing to exceed increases in debt, the debt/asset ratio fell on balance until 1990. It rose when asset prices fell but, save Italy, remains lower than in the other countries shown. In Germany the ratio seemed to be on a declining trend prior to the inclusion of east German households in 1992. In Sweden it fell as from 1987 but remains relatively high.

Ratios of household debt to financial asset holdings quickly reflect the portfolio impacts of current monetary conditions but in some cases are also quite sensitive to movements in share prices. In the United Kingdom, Australia, Canada, Sweden and also Spain, they rose strongly in the 1980s but fell in the early 1990s when balance-sheet restructuring was in process. Similar tendencies were also evident in the United States and Japan but the changes remained within narrow bounds. These ratios suggest a persistent trend towards a strengthening of household financial positions in Germany and in France. In France (as in Japan until 1989) strong rises in the value of equity holdings help to explain the fall in the ratio to a low level. In Italy both the total and financial gearing ratios remain remarkably low.

The increases in gross debt/income ratios (Graph 2) suggest that the impact of rises in household indebtedness during the 1980s on the monetary policy transmission may prove substantial in some countries. In the United Kingdom the rise was remarkably sustained. In relation to disposable income it even exceeded that in Japan. By contrast, the rises in France and Spain were quite modest, though no doubt structural. In North America the movements in debt ratios appear more cyclical, particularly if a longer period is considered. Financial retrenchment resulted in a stabilisation of debt ratios as from 1990 in the United States, the United Kingdom and Japan, but the ratio did not fall significantly except in Sweden, where by 1992 it was back to the levels recorded in the early 1980s. Renewed rises have been underway since 1991 in Canada and Australia and since 1993 in the United States. The rise in Germany since 1990 reflects not only the strength of new housing construction but also temporary tax incentives to borrowing to finance acquisition of existing houses.

Graph 2

Household sector: interest-bearing liabilities and net interest-bearing assets



In all ten countries for which data is available much of the rise in household financial asset holdings over the past decade has taken the form of pension and insurance claims, which displayed particularly fast growth in France, Spain, the United Kingdom and the United States. Households' direct holdings of debt claims plus pension and insurance claims net of household debt, sometimes used as a broad measure of the sector's net interest-bearing assets,¹⁷ remained on a strongly expansionary course in Japan and (when money market funds are included, as in the graph) France. In the United Kingdom they surged back up to the longer-term trend in 1991-93, apparently as a result of increases in the valuation of the equity component of the pension and insurance institutions' portfolios. Even by this broad measure¹⁸ households' net "interest-bearing" assets became negative in the late 1980s and early 1990s in Sweden,¹⁹ but elsewhere the measure is clearly positive.

The situation appears quite different, however, when pension claims are excluded. The resulting ratio for net direct positions in interest-bearing debt claims²⁰ has shown little increase since the mid-1980s in Japan and has fallen progressively in the United States and Australia to a level which, as in the United Kingdom, appears barely positive. In Canada it seems also to have been on a declining trend. In Sweden it rebounded as from 1990 but remained substantially negative in 1992. Certainly the ratio does not reflect large increases in household holdings of liquid assets through mutual funds recorded in recent years in the United States and Spain in particular. In Germany, France and Italy the ratio has continued to rise in recent years, but a substantial proportion of the rise has taken the form of longer-term placements.

In general, the share of long-term debt in total household debt (as here defined) has remained fairly stable in recent years, most notably in Germany. It has displayed some tendency to rise progressively in the Netherlands and to fall gradually in France. A rise recorded in the United States reflects an expansion in the share of mortgage financing, encouraged by the phasing out of tax exemptions for household interest payments on consumer credit and facilitated by the development of home equity loans, which increased the liquidity of existing housing wealth. Although the lion's share of mortgage financing is still at fixed interest rates, the ability to negotiate refinancing at lower interest charges permitted downward adjustment of interest rates payable by households in the 1990-93 period.²¹ Efforts to develop instruments permitting a reallocation of the resulting risks faced by providers of mortgage finance were a major force driving innovation in instruments for securitising mortgage loans. Securitisation has contributed to a reduction in spreads between interest rates on mortgage loans and governments bonds and to faster adjustments in rates on new mortgage loans.

4. Household sector interest receipts and payments

Gross and net interest flows in relation to personal disposable income

In principle, the strength and speed of the interest rate pass-through may be seen more directly in data on interest receipts and payments of the household sector as supplied by central banks or taken from the national accounts (Graph 3) but here, too, allowance must be made for cross-country differences in coverage and compilation procedures.

17 Of course, this measure does not capture unfunded pension claims.

18 Which does not, however, include bonds (and, in some countries, short-term debt assets held indirectly through unit trusts).

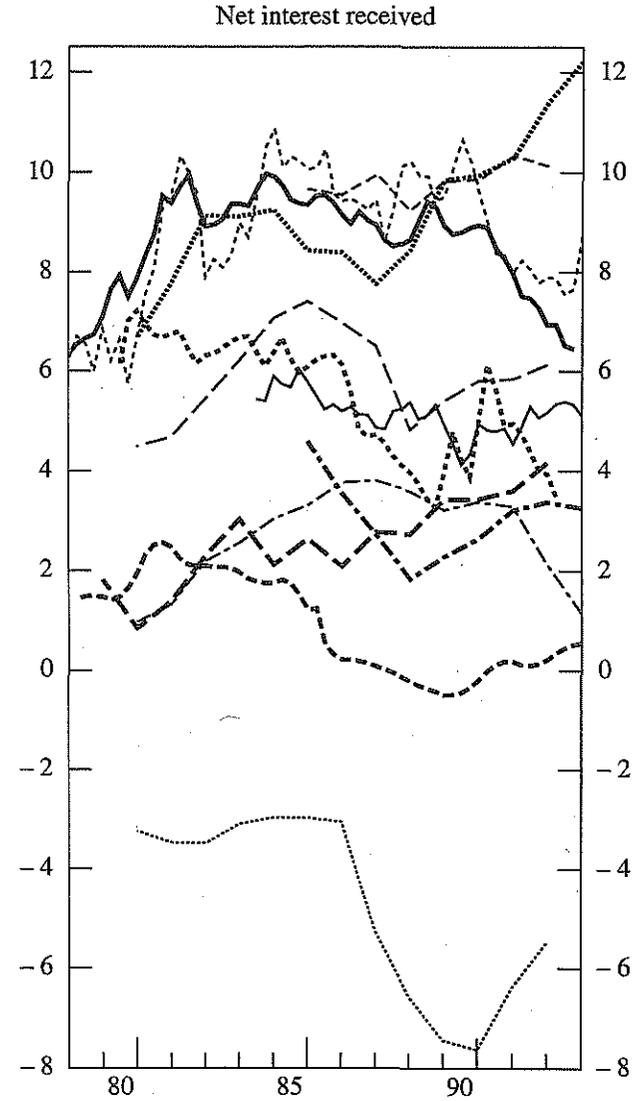
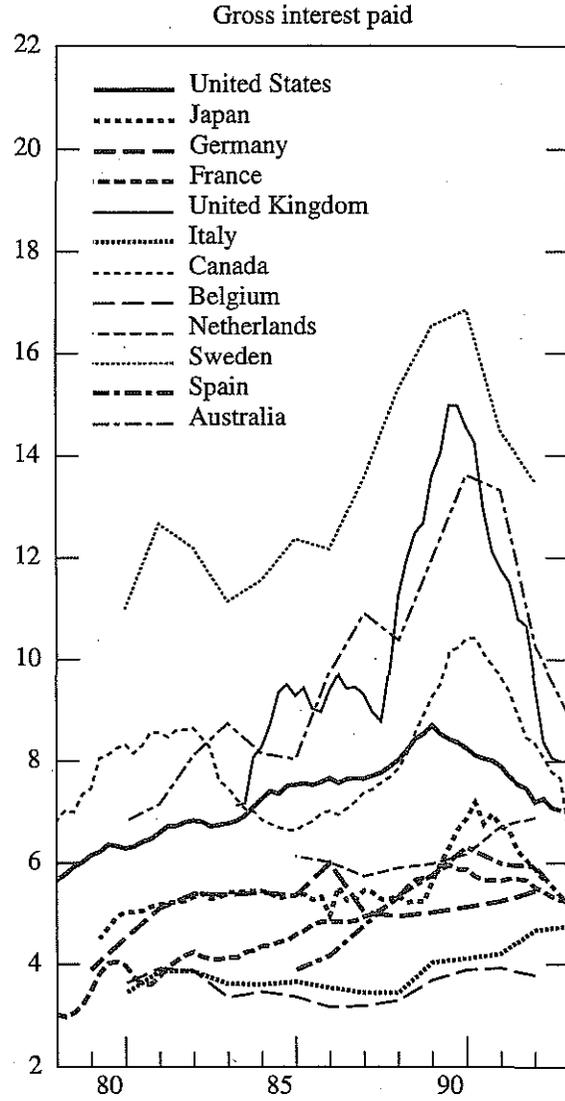
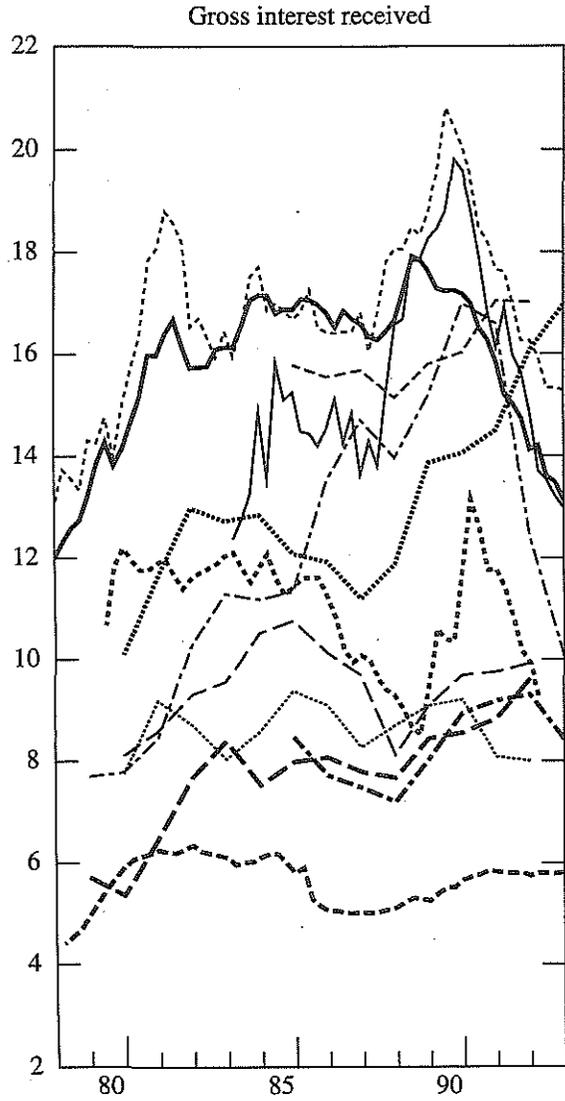
19 It must be borne in mind that, as in some other countries, unincorporated enterprises are included in the sector, though recorded trade credit granted and received is excluded from the measure shown.

20 As no attempt has been made to exclude currency or non-interest-bearing sight deposits the measure presumably overstates non-interest-bearing claims to some extent. In the case of Australia "debt assets" include only deposits with bank and non-bank building societies.

21 Refinancing was extensively used earlier, under different market conditions, to increase the size of mortgage loans in order to extract equity in housing, to finance house improvements or to repay other debt.

Graph 3

Household sector interest receipts and expenditure: as a percentage of personal disposable income



Two cycles are visible in aggregate household interest receipts since 1978, set in relation to household disposable income. In the United States, Japan, the United Kingdom and Australia, money market rates reached higher peaks in the early 1980s than in the late 1980s but the imprint of the latter rise is much more evident. This partly reflects the build-up in the stock of household assets including pension claims during the period. In combination with it, however, came the impact of interest rate deregulation in the first two and of financial innovation in all four above countries in making short-term placements bearing interest rates which respond quickly to money market rates available to the household sector. No such development can be seen in the data for France (which presumably exclude dividends paid by mutual funds). Little change during the period is evident in Canada, where the absence of interest rate controls permitted a flexible response in the early 1980s. For most continental European countries annual data suggest slow and muted responses of household interest rate receipts to changes in money market rates. An exception is Italy, where the sharp rise in average rates in 1991 and 1992, attributable to the tightening of monetary policy in defending the lira within the ERM, increased returns on household portfolios of short-term and variable rate government securities.

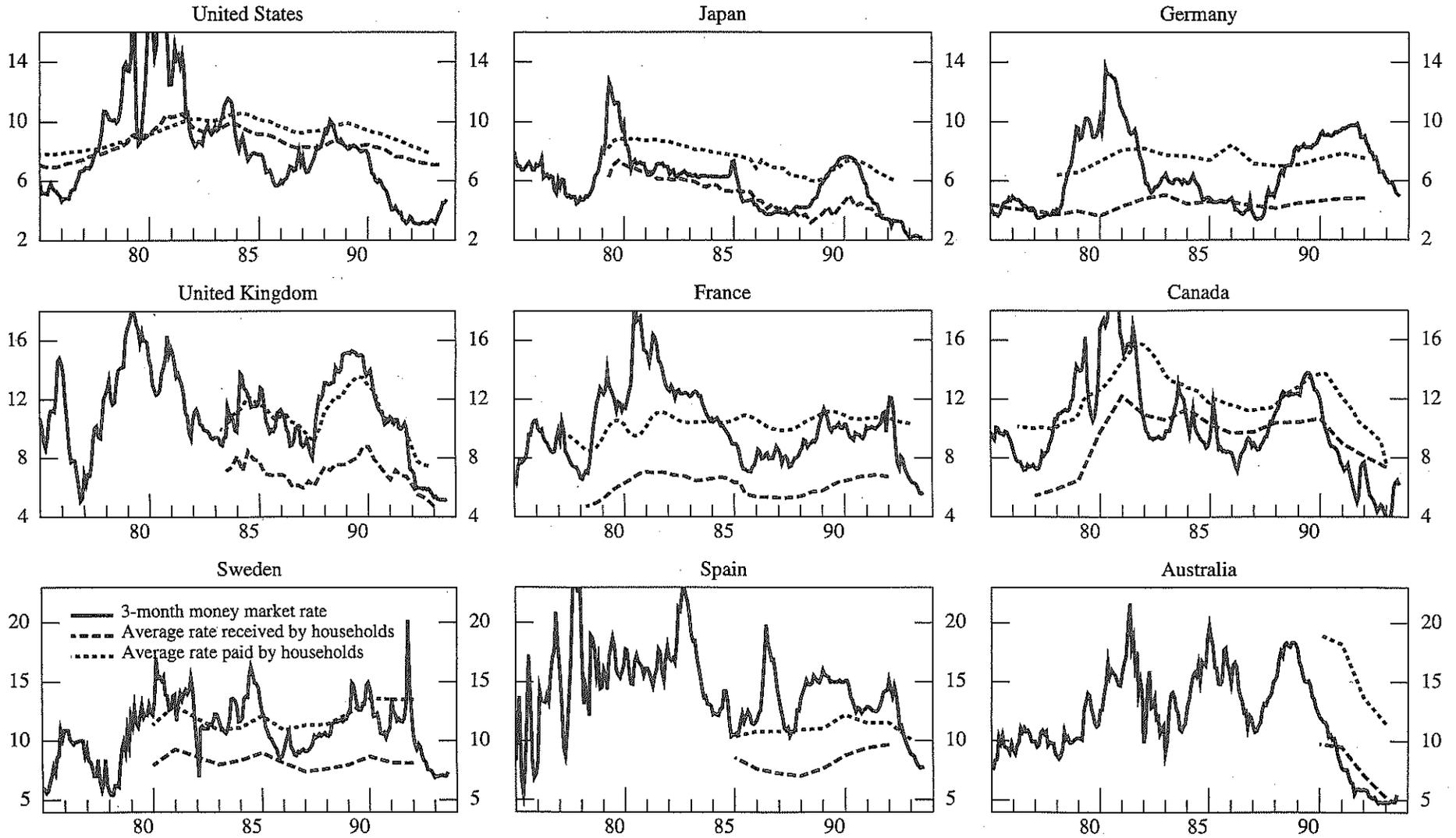
Typically gross household interest payments have displayed less volatility than receipts. This reflects to some extent the long-term fixed interest component of indebtedness. Notable exceptions can be seen in the case of the United Kingdom and Australia, where adjustable rate mortgage loans predominate and where, as in Japan, Sweden and Canada, the stock of long-term debt has undergone large changes. In most countries net interest payments, while mirroring the fluctuations in gross interest receipts, have remained within a narrower range. In making cross-country comparisons of these ratios it must be borne in mind that interest receipts generally include imputed interest on pension and insurance claims, which, as indicated above, are particularly large in the United Kingdom. Here and in Canada dividends received are included in the measure of "interest receipts".

Average rates of interest received and paid

While changes in stocks of assets and debt are influenced by monetary policy and form part of income effects in the transmission mechanism, substitution and wealth effects depend more on the direct impact of monetary policy on average interest *rates* paid or received by the sector. The calculation of average rates can also be viewed as means for helping to distinguish the sensitivity of total interest receipts and payment/income ratios to direct interest rate effects from the impact of changes in income and in asset or debt/income ratios. An approximation of the average rates may be estimated by dividing sectoral interest receipts and payments by the relevant stock of sectoral assets and liabilities. Graph 4 compares average rates so estimated with representative three-month money market rates, assumed to be indicative of the thrust of monetary policy. The graph highlights relatively strong and quick responses of average interest rates received and paid by the household sector to movements in money market rates in the United Kingdom, Australia and, to a lesser extent, Canada and Japan. The reactions appear remarkably limited in continental European countries, including France, for which quarterly series are available. The responses to money market rates of both average rates received and paid in the United States, particularly since 1990, also seem very small. During the recent period of monetary easing concerns about slow reactions of bond yields and of interest rates applied by financial institutions were widely expressed. A progressive rise in the average interest rate received in relation to money market rates, evident in France, Sweden and Japan, presumably reflects liberalisation and increasing competition in the financial markets.

Graph 4

Average interest rates received and paid by households:* relationship to money market rates



* Total volume of household interest receipts and payments divided by the amount of debt assets or liabilities of the household sector.

5. Household financial positions and expenditure

To the extent that changes in short-term interest rates affect the attractiveness of investment in real assets, the impact of monetary policy may be felt mainly on housing and consumer durable expenditures. The strength of substitution effects, and the speed with which they operate will depend on the response of long-term rates to money market rates and the availability of variable interest rate contracts. The introduction of variable interest rate mortgages in the United States could, for example, have increased the sensitivity of the demand for new mortgage loans to changes in short-term rates through various channels. In particular, the variable mortgage rate has generally been below the fixed rate and there is evidence that many borrowers take the lower current rate.²² Recently the traditionally interest-sensitive housing component of aggregate expenditure has again been a major element in the economic recovery in the United States, Australia, the United Kingdom and Japan. Indeed, in some cases the strength of the rebound in housing has already led to expressions of concern that an unsustainable upswing could again be developing in this sector.

To the extent that monetary policy operates through its effects on income, net wealth or the debt servicing burdens of existing house owners, policy might influence many types of consumption expenditure. Traditionally, household spending on consumer goods other than durables has not seemed particularly interest-sensitive, though increases in interest sensitivity have been identified in recent years in some countries, including the United Kingdom. Given the large swings in balance-sheet positions over the past decade it is perhaps not surprising that stable effects are difficult to identify. There is also some question as to whether such effects as have been found are likely to prove stable in future. Similar considerations apply to attempts to identify a separate role for movements in balance-sheet variables, such as debt, which are related to spending in different ways at different stages of asset price cycles. In some countries ratios of household consumption to income rose to unusually high levels in the late 1980s, when rising prices of residential real estate boosted wealth and borrowing capacity, but then fell sharply as balance-sheet positions were consolidated. Striking cross-country correlations have been found between increases in household debt ratios in the 1980s and the extent of the subsequent shortfall in the growth of household consumption relative to its trend.²³ Particularly strong effects have been seen in the United Kingdom and Sweden. Though the adjustment may now be complete, households may remain vulnerable to interest rate pressures to the extent that increased competition has led to lasting easing of lending criteria such as loan-value or loan-to-income ratios. It has been suggested that although household debt ratios in Sweden have been restored, the erosion of net wealth could exert a depressing effect on consumption for some years.²⁴ On the other hand the rise in household asset holdings may help to explain the less pronounced effect on consumption of increases in debt ratios in Canada and Japan.²⁵ Longer-term, the impact on the transmission mechanism of rises in household net wealth may also be stronger than that of past rises in debt in other countries. However, renewed increases in debt ratios as recovery proceeds cannot be precluded and the vulnerability of households could increase if lending standards weaken once more.

22 There is strong evidence that the share of adjustable rate mortgages in new US mortgage loans has fluctuated closely in line with the spread between rates on fixed and adjustable rate mortgages. Rates on fixed interest rate mortgages may include term premia and/or premia for interest rate risk (which is borne by the borrower in the case of variable rate loans) and for prepayment risk, which US financial institutions have found particularly difficult to manage. It would seem that, in practice, the terms of variable rate loans, which have often entailed deeply discounted rates for the first year or two, have not always included appropriate allowance for the credit risks entailed. Lending practices in the 1980s generally permitted a household to borrow more with an adjustable than with a fixed rate instrument. However, ability to have recourse to financing, in effect at short-term interest rates, could have reduced the interest rate sensitivity of the timing of expenditures.

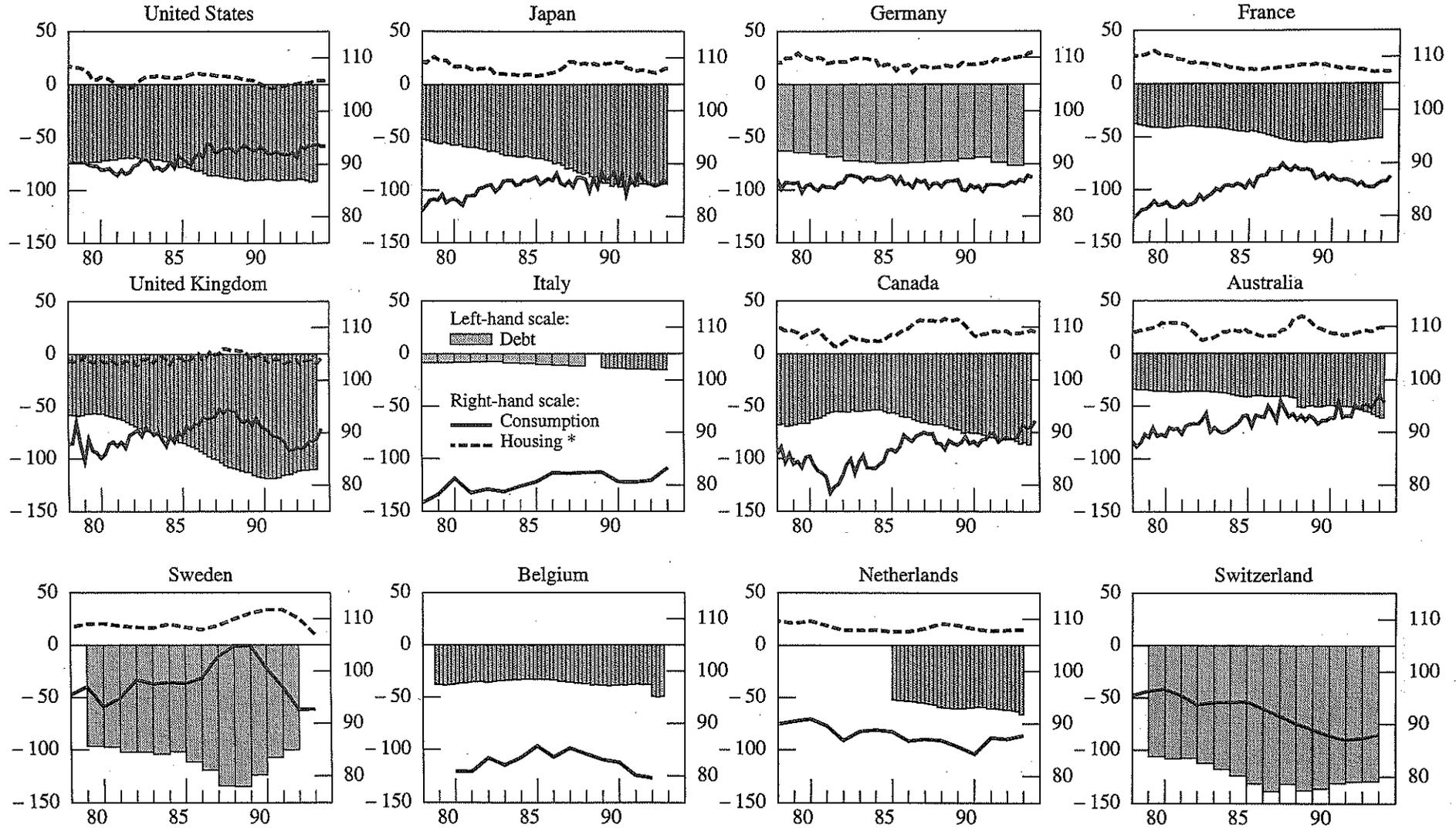
23 Mervyn King, Presidential Lecture delivered to the European Economic Association, August 1993.

24 Daniel Barr and Kurt Gustavsson, "Debt consolidation in progress", *Sveriges Riksbank Quarterly Review*, 1993:4.

25 Bank of Japan, *Annual Review*, 1994, p. 36.

Graph 5

Household debt, consumption and housing expenditure: as percentages of personal disposable income



* As a percentage of GDP, plus 100.

V. THE ENTERPRISE SECTOR

The deterioration in the balance sheets of non-financial enterprises, particularly in the United States, Japan and Australia, during the 1980s and the subsequent balance-sheet correction which delayed economic recovery, have posed a challenge to the presumption, common in the 1980s, that the impact of financing structures on investment could largely be ignored. This is reflected in the revival of central bank interest in the roles that credit and asset market disturbances may play in the monetary policy transmission mechanism and in magnifying swings in economic activity. It has been acknowledged that tax and bankruptcy costs do have a significant impact on investment decisions in practice. This has paved the way for a resurgence of the belief that, as a result of market imperfections which limit enterprises' ability to obtain external funding and raise its cost, cash flows can be a significant independent influence on investment. Wider acceptance of this position has been encouraged by analysis relating to information asymmetries and "principal-agent" problems associated with differences in owner and manager incentives. Over the business cycle these factors may change in ways which affect the supply of credit and the willingness of firms to invest.

Recent experience in a number of countries has demonstrated that increases in corporate leverage can amplify the effects on aggregate demand of interest rates and asset price movements. Uncertainty about future interest rates, cash flows or relative prices can have strong impacts on firms' willingness to invest and on their incentive to accumulate liquidity and to reduce indebtedness. Credit-rationing can exert a strong influence on the monetary policy transmission process, even in a liberalised and competitive financial environment, particularly if balance-sheet positions of credit institutions come under strain. The impact of changes in interest rates on the cash flow, liquidity, net worth and solvency of enterprises can affect output both directly and via impacts on the value of assets usable by enterprises as collateral. Monetary policy can influence the availability and cost of credit through these channels both directly and through its effect on output.

1. Cross-country differences in balance-sheet positions

The basic data on the balance sheets of non-financial enterprises, scaled by GDP, in Table 5, have largely been obtained from central bank answers to the BIS questionnaire.²⁶ The table reveals the imprint of country differences in enterprise internal financing capacity and in the use made of various types of external finance. These reflect differences in the cost of equity, short and long-term debt financing, as influenced by institutional and regulatory structures, and convention. Balance-sheet structures, in turn, affect the impact of the short-term risk-free rates of interest on the costs of internal and alternative external financing sources as perceived by non-financial enterprises, on enterprise cash flows and hence on investment. It is conceivable that as a result of the increasing use made by enterprises of derivative products some balance-sheet items may have become less informative over time. However, in practice, cross-country differences in the coverage of positions vis-à-vis non-residents are probably a more important problem.

²⁶ It should be noted that data for Australia, Canada, France, Italy, Japan, Spain, Sweden and the United Kingdom exclude some or all private unincorporated enterprises and that public sector enterprises are not included in Canada, Japan or the United Kingdom.

Values of tangible assets embody histories of cyclical and longer-term movements in investment in fixed capital and stocks. However, some of the largest cross-country differences seem to reflect values of non-reproducible assets which affect collateral available for borrowing. In particular, land prices help to explain the relatively high value of tangible corporate assets in Japan. Land is excluded from the data for Australia and Germany. Similarly, large cross-country differences in ratios of total financial assets (other than trade credit receivable) to GDP are strongly influenced by the value of enterprises' holdings of equity claims in other firms. Exchange-traded equity holdings include claims on other non-financial corporations at market values on a gross basis for all countries other than the United States and Australia.²⁷ Debt asset/GDP ratios (which generally mainly reflect claims on domestic financial institutions) show much less diversity between countries. They are relatively high in Japan and, to a lesser extent, Germany and Sweden but seem relatively low in Australia, Canada, France, Italy and Spain. The proportion identified as long-term is relatively small, even in Germany and the Netherlands, the notable exception being Japan, where holdings of longer-term time deposits are substantial.

Enterprise indebtedness (other than trade credit) is comparatively high in relation to GDP in Japan, Sweden and Germany. Elsewhere the relation falls within a fairly narrow range, but it is particularly small in Italy. The component identified as longer term in this data²⁸ is relatively large in Germany and the Netherlands but also fairly high in France, Canada and the United States. As might be expected, the value of equity on issue is considerably higher in the United States, Canada, the United Kingdom and Australia than in the continental European countries (other than France). The identified trade credit items excluded from debt and financial asset totals, but shown as memorandum items, are relatively high for Japan, France and Spain and low for Germany and Italy.²⁹

2. Proportion of assets and liabilities with banks and non-residents

Table 6 summarises the data available from the questionnaire and published sectorial financial accounts on the shares of non-financial enterprises' positions vis-à-vis domestic banks and non-residents in 1993 and the reference year.

In the continental European countries 78-90% of non-financial enterprises' total recorded debt liabilities consist in credits from banks, broadly conceived as credit institutions covered by the monetary statistics. In Germany the share of bank indebtedness has declined since the early 1980s but in Spain it has risen. In all these countries a very high proportion of debt assets are held with banks, though in Germany and Spain the proportion has fallen since the early 1980s. By contrast, only about one-third to one-half of debt liabilities in the Anglo-Saxon countries are to "banks". In the United Kingdom and, to a lesser extent, Canada and the United States, the proportion has fallen during the last decade, as a result of recourse by non-financial enterprises to bond issues. Certainly the concept of "banks" in Australia and Canada covers only commercial banks, but even if liabilities to other deposit-taking institutions were included the proportion in the total would remain much lower than in the continental European countries. The share of enterprise debt claims held with "banks" is strikingly high in the United Kingdom but relatively low in Australia and the United States.

27 For Japan, equities on the liability side of the balance sheet are recorded at book value. For Germany, market values of equity for 1993 are BIS estimates. Equity in unincorporated enterprises is included in other liabilities at book values.

28 As noted above for the household sector, the definition of longer-term used here differs in some cases from that given in central bank answers to other parts of the BIS questionnaire. For details see footnotes to Table 5.

29 Although the exclusion of trade credit may in principle be less justified than in the case of the personal sector when the focus is on the financial viability of individual enterprises, it would seem appropriate when the cadre of interest is the structure of debt claims vis-à-vis financial institutions. As pointed out above, country differences in the coverage and degree of consolidation of inter-enterprise claims probably preclude reliable international comparisons.

Table 5¹

Non-financial enterprise sector balance sheet

(as a percentage of annual GDP)

Items	AU	BE	CA	FR	DE	IT	JP	NL	ES	SE	CH	UK	US
1993²													
Assets:													
Tangible, total ³	99.1		78.8	137.6	145.2		240.9					123.7	128.8
Fixed capital ⁴			61.3	83.3	125.7		107.6					47.8	71.6
Inventories			17.5	21.1	19.5		14.9					17.5	17.8
Financial, total ⁵	34.5		43.5	189.3	69.2	35.7	86.0		39.0	91.2		61.6	34.1
Debt claims	16.6	..	11.5	18.3	33.4	10.5	53.3	26.5	22.5	41.8	..	15.2	13.9
<i>of which: Long-term</i> ⁶	0.2		3.9	1.6	7.2	3.5	40.1	1.7	2.6	16.6		..	2.2
Equity ⁷	0.2		22.6	169.7	18.1	15.3	19.4		10.8	34.0		19.0	0.2
Liabilities:													
Financial, total ^{5, 8}	73.1	78.6	74.3	67.9	93.9	59.4	144.0		65.1	135.6		81.5	71.2
Debt claims ⁹	64.4	45.9	44.9	67.9	73.2	45.6	136.2	59.7	58.2	103.6	50.4	49.3	58.2
<i>of which: Long-term</i> ^{6, 10}	n.a.	27.6	30.7	41.8	55.9	20.2	17.5	44.5	4.5	4.8	38.8	21.4	37.6
Memorandum items:													
Equity ^{4, 7}	78.7	29.7	104.5	215.2	29.8	48.1	14.2		32.5	58.7		121.9	115.0
Trade credit granted	n.a.		19.3	49.3	5.7		50.8		32.1	18.1		14.7	15.8
Trade credit received	n.a.		21.1	39.4	3.5	2.3	39.0		20.8	17.3		15.5	12.8
1983¹¹													
Assets:													
Tangible, total ³	98.9		85.7	156.6	150.3		199.0					107.9	200.1
Fixed capital ⁴			61.1	89.9	125.3		94.3					39.0	95.2
Inventories			24.6	27.5	25.0		22.0					21.7	24.3
Financial, total ⁵	43.2		33.2	48.4	46.4	32.1	44.2		29.5	44.4		43.9	32.2
Debt claims	19.4	..	11.0	8.3	24.8	11.9	41.3	15.0	16.4	25.5	..	12.7	14.6
<i>of which: Long-term</i> ⁶	0.2		4.0	1.2	2.4	4.0	25.8	1.1	1.7	9.3		..	2.3
Equity ⁷	0.4		16.5	34.0	13.2	12.9	2.9		7.0	16.1		8.3	0.1
Liabilities:													
Financial, total ^{5, 8}	88.4	62.9	68.4	53.1	77.0	51.0	91.1		73.6	85.2		41.1	67.6
Debt claims	78.6	47.1	44.6	53.1	52.7	39.8	91.1	45.1	69.2	66.8	38.5	21.8	58.4
<i>of which: Long-term</i> ^{6, 10}	n.a.	24.4	30.4	34.9	37.6	16.9	6.1	29.9	6.8	5.9	27.9	1.6	36.0
Memorandum items:													
Equity ^{4, 7}	56.3	9.1	63.9	48.7	20.4	46.2	7.4		22.6	35.7		50.6	106.5
Trade credit granted	n.a.		20.4	42.4	7.5	..	64.4		40.1	22.0		19.4	17.5
Trade credit received	n.a.		22.5	40.2	4.6	2.5	52.1		30.6	19.2		20.3	14.2

Footnotes to Table 5

- ¹ For Australia, Belgium, France, Italy, Japan, Spain, Sweden and the United Kingdom, excluding unincorporated enterprises. Excluding identified trade credit assets (n.a. for Australia and Italy) and liabilities (n.a. for Australia) and, in the case of Sweden, loans between affiliates.
- ² For Belgium, September 1993; for Japan, Sweden and Switzerland, end-1992.
- ³ For Australia, June 1993; for France and the United Kingdom, 1992; for Germany and for inventories only, end-1991. For Australia, excluding land.
- ⁴ Excluding residential buildings and land.
- ⁵ For Italy, shares and debt claims include domestic assets and liabilities only; for the Netherlands, only bank deposits.
- ⁶ In general, deposits at one year or more and bonds; for Japan, including all time deposits, most of which are at over one year; for Spain, including all credit granted other than trade credit; for the United Kingdom, the relatively small holdings of medium and long-term debt are included in short-term debt; for the United States, bonds and government securities.
- ⁷ At market values, except for Japan (book values). For Germany, BIS estimate; for the United Kingdom, assets: all company securities, liabilities: all company securities minus debenture and loan stock issued; for France, Italy, Spain and Sweden, including substantial amounts of equity claims other than quoted shares. For the United States, including equity in unincorporated business at book value (equivalent to 35% of GNP in 1993).
- ⁸ For Belgium, liabilities to credit institutions and bonds only; for Germany, including an estimated 20% of the debt of the housing sector (which is all included with enterprises in the national financial accounts).
- ⁹ For the Netherlands, liabilities to banks, insurance and pension organisations only; for Switzerland, liabilities to banks only.
- ¹⁰ In principle, claims of one year or more. For Canada, mortgages and a share of other credit based on a maturity breakdown for bank credit; for Japan, Spain and Sweden, bonds only; for Switzerland, mortgage and fixed-term loans; for the United States, mortgages and bonds; for the United Kingdom, debenture and loan stock issued.
- ¹¹ For Australia, December 1988 (except tangible assets, June 1989); for Italy, December 1989; for Japan and Sweden, December 1982.

N.B.: Financial asset and liability items need not add to the totals as in most cases there are substantial residual items including, in particular, claims on and liabilities to non-residents.

Table 6

Non-financial enterprises: shares of assets and liabilities with banks and the rest of the world

Items	AU	BE	CA	FR	DE	IT	JP	NL	ES	SE	UK	US
	Share of total debt assets and liabilities with banks¹											
Assets:												
1993 ²	61.0			81.8	79.5	63.6			77.3		94.5	47.2
1983 ³	40.4			84.3	88.7				93.9		85.3	42.8
Liabilities:												
1993 ²	29.5	89.9	32.8	80.2	85.1	94.6		78.6	77.3	80.9	49.4	32.4
1983 ³	19.7	95.4	43.3	88.7	91.3			71.3	81.2		77.6	39.5
	Share of foreign assets and liabilities⁴ in total assets and liabilities											
Assets:												
1993 ²	37.0					24.1	15.5		11.6	13.0	40.1	33.6
1983 ³	29.4					19.3			7.6		39.0	41.3
Liabilities:												
1993 ²	28.5	30.2	7.8			5.0	9.6		23.1	7.0	8.0	10.3
1983 ³	31.1	22.8	8.2			5.8			17.3		11.9	6.1

¹ For Australia and Canada, commercial banks; for Belgium, France, Germany, Italy and Spain, credit system; for Sweden, financial sector; for the United Kingdom, banks and building societies; for the United States, banks and thrift institutions. Debt assets as defined in Table 5. ² See footnote 2 to Table 5. ³ See footnote 11 to Table 5. ⁴ For Belgium, total liabilities of the household enterprise sector to the rest of the world; for Canada, non-resident holdings of corporate claims, foreign currency loans to residents and commercial paper in foreign currency; for Italy and Spain, debt claims and equity; for Japan and the United Kingdom, securities and foreign direct investment; for Sweden, debt claims and shares at book value; for the United States, direct investment, foreign deposits (assets), bonds and loans (liabilities).

The proportion of cross-border assets and liabilities of non-financial enterprises in the total is not easy to compare. In Canada it includes only debt liabilities; in Japan, the United Kingdom and the United States, a large proportion consists in foreign direct investment. In Spain and Italy equity constitutes a substantial portion. Except in the case of Canada, the identified foreign component has increased significantly since the early 1980s,³⁰ as might well have been expected. This points to a large and growing weakness of the national financial accounts data – its poor coverage and identification of cross-border operations and positions.

3. Change in balance-sheet positions since 1983

Holdings of tangible assets by non-financial enterprises have on balance risen considerably over the last ten years in Japan and the United Kingdom but have fallen in relation to GDP in Canada, France, Germany and, particularly, the United States. For US non-farm incorporated enterprises alone the decline has been somewhat less pronounced. The ratio for fixed reproducible capital has fallen in the United States and France, changed little in Germany and Canada and risen in the United Kingdom. Graph 6, which shows movements over the last 15 years,³¹ highlights the contrast between the almost continuous decline in the United States since 1982 and the huge rise in Japan between 1986 and 1990, followed by an equally steep fall in the following two years when collateral values were eroded. The huge increase in Japan helps to explain why the Bank of Japan has pointed to over-investment in physical capital in the economic expansion period of the late 1980s and the difficulties subsequently experienced by companies in making adjustments in the stock of tangible assets as a major recessionary force. Substantial rises in tangible assets in the United Kingdom and Australia in the late 1980s were also partly reversed subsequently as enterprises sought to redress balance-sheet positions which had come to be viewed as overextended by curtailing investment. By comparison, the ratios for France and Germany remained remarkably stable throughout the period. Reflecting structural as well as cyclical influences, stock ratios have been pruned in all the countries, a development which has no doubt reduced the interest sensitivity of expenditures on stocks.

Large rises in the value of financial assets held by non-financial enterprises have been recorded in Japan and (largely equity values) France. Substantial increases, in part reflecting accumulation of debt claims, have also taken place elsewhere, most notably in the European countries (other than Spain).³² Except in Japan most of the rise in holdings of debt claims has been in short-term forms.³³ Over the decade as a whole gross debt/GDP ratios (excluding trade credit) have risen substantially in Japan and Sweden. Considerable increases have also taken place in many other continental European countries. The rise in the value of shares on issue has been relatively large in the United Kingdom, Canada, France, Belgium and Sweden but relatively small in Germany and the Netherlands.

Though the trade credit data excluded from the debt totals is probably not comparable across countries, a decline in the amounts outstanding over time, as is evident for Japan, Spain, Sweden and the United Kingdom, may indicate a reduction in the role of restrictions on credit-granting by financial intermediaries which typically provided an incentive to the use of trade credit. Of course, the decline is probably in part cyclical and may also reflect efforts of companies to cut back on such claims with a low direct interest yield.

30 For Australia and Italy, data for reference year relate to the late 1980s.

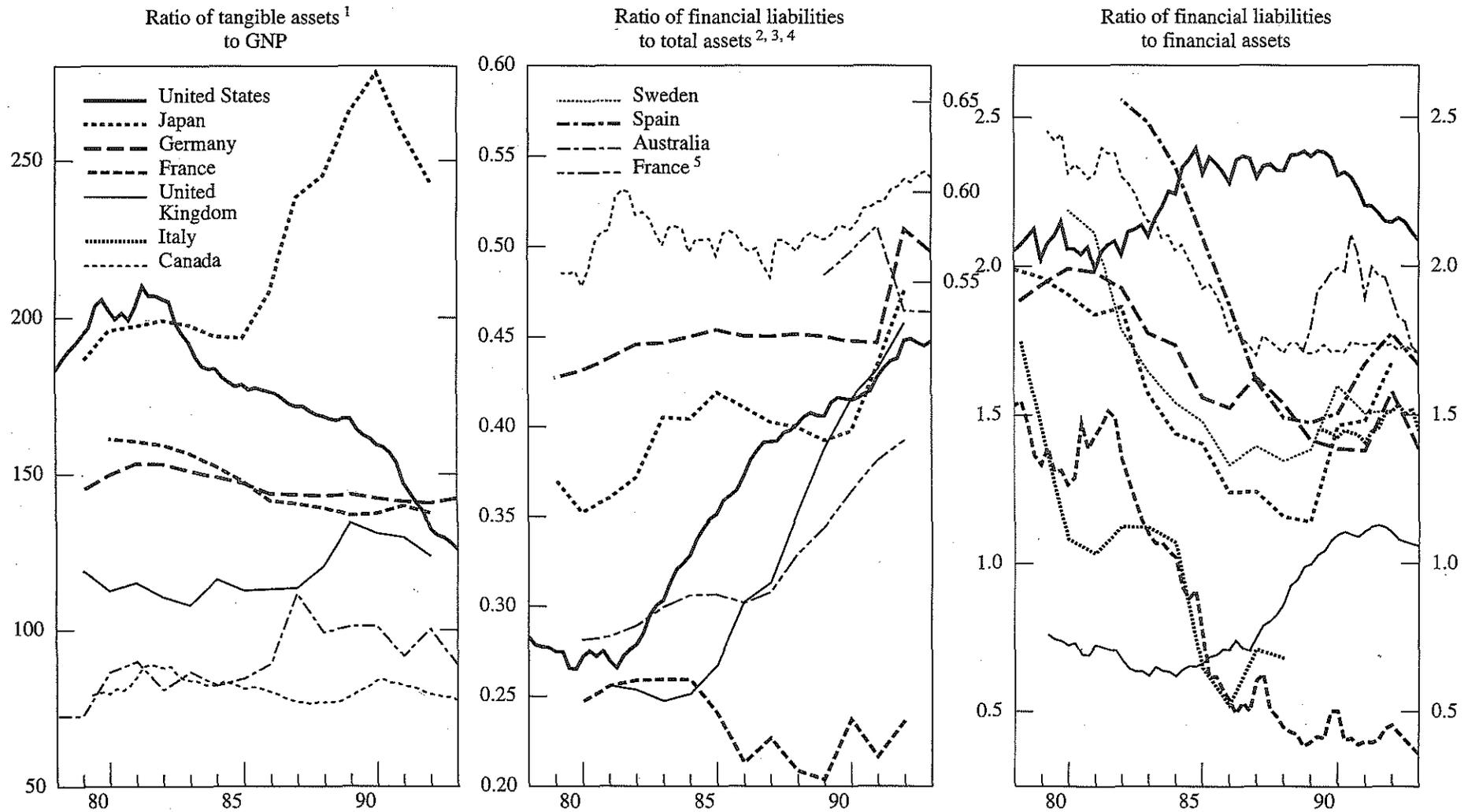
31 See footnote 15. For the United States, the graphs, like the table, relate to all non-financial business except where expressly indicated. For Australia, the data underlying the graphs relate to private corporations only.

32 For Australia, a fall is shown but the reference year is 1989. For Italy, where a fall in debt claims is shown, the base year is 1988.

33 For the United States, certainly, equity in unincorporated enterprises is included at book value.

Graph 6

Non-financial enterprise sector: tangible asset and capital gearing ratios



¹ For Japan and Germany, excludes housing assets. ² Excludes identified trade credit. For Japan and Germany, excludes all share assets; for the United Kingdom, excludes domestic share assets. ³ Financial plus non-financial assets. ⁴ For Canada, right-hand scale. ⁵ Excluding domestic share assets.

In the United States the ratio of other enterprise debt to total assets, real and financial, which had risen steeply in the 1983-87 period when leveraged buyout and debt financed merger activity contributed to major changes in balance-sheet structures, rose further in 1990-92 when the recorded value of land holdings fell sharply. In Japan, notwithstanding a huge debt-financed expansion of firms' balance sheets, the ratio edged down until 1989-90 as asset prices boomed, but turned up when the bubble burst. Marked rises in capital gearing were recorded in Australia in the early 1980s, in a climate of strong profit expectations and rising share prices following the relaxation of credit and interest rate controls, and in the United Kingdom in the late 1980s when merger and takeover activity expanded. The overall ratio declined in France in the mid-1980s as a result of a strong rise in the value of enterprises' equity claims and remained at a very low level.

It may be argued that the inclusion of intra-sectoral share claims on a gross basis for the sector as a whole entails an element of double-counting in countries where cross-shareholding is large. Only a very small amount of equity claims on other sectors is included in enterprise assets in the United States. Exclusion of domestic shares makes the largest difference in the case of France – where an alternative capital gearing measure so calculated shows a substantial rise after 1968, though it remains below the levels for the other countries. Domestic or all shares are excluded from the measures shown for Japan, Germany and the United Kingdom. Even after this undoubtedly excessive adjustment³⁴ the ratio for all non-financial enterprises in the United States almost rises by 1989 to that in Germany, where the apparent rise in 1992 largely reflects the addition of heavily indebted enterprises in eastern Germany and the inclusion of the Treuhand agency in the non-financial enterprise sector. Much higher ratios which have at times been calculated for Germany result from attributing the entire housing debt of the country to the enterprise sector as is done in the national financial statistics. In the case of Japan the data cover only the narrower corporate sector. Data for the (more comparable) US corporate sector yield a gearing ratio rising even further above that for Japan in the late 1980s. In Japan, corporate asset holdings, as well as corporate indebtedness, have traditionally been high in relation to GDP and underwent a strong expansion in the 1980s.

Ratios of total financial liabilities to total financial assets (other than trade credit) highlight the deterioration in the liquidity of US non-financial enterprises in the early and mid-1980s when debt was substituted for equity on a large scale. This development, which was encouraged by tax changes and the development of junk bonds, weakened established linkages between the growth of indebtedness and current spending but, at the same time, made firms more vulnerable to future increases in interest rates. By contrast, rises in the financial asset holdings of the non-financial enterprises far exceeded increases in indebtedness until about 1987 in all of the other countries except the United Kingdom. In most European countries and Canada financial gearing is now considerably lower than in the United States. Certainly in some countries, increases in the recorded value of enterprises' equity asset holdings had made a substantial contribution to the fall in the ratio. In Japan rising company indebtedness, much of it in equity-related instruments such as convertible bonds, was accompanied by an expansion of financial assets in part induced by the high returns offered on deposit instruments by banks seeking to increase their market shares in a phase of incomplete interest rate liberalisation. Such a build-up of liquid assets may reduce the sensitivity of enterprise cash flows to monetary policy, but it may also suggest increasing sensitivity to rates of return on financial assets. Financial gearing rose strongly in the United Kingdom as from 1987, Australia as from 1988 and Japan as from 1989. By this time efforts of companies to redress balance sheets by building up financial asset positions and cutting back borrowing were already in process in the United States and were beginning to appear in other countries. In Canada and most continental European countries the investment cycle made less impact on the balance sheets of non-financial enterprises and the lower ratios of liabilities to financial assets achieved in the 1980s were largely maintained.

Strong rises in the credit market indebtedness of non-financial enterprises in the United States and the United Kingdom were generally not reflected in large movements in ratios of debt to

³⁴ Holdings of domestic and foreign shares are not distinguished in the data for Japan and Germany. Holdings of share claims on other domestic sectors (such as financial institutions) are not shown separately for any of the four countries.

equity at market values. These ratios reflect the impact of changes in share prices on the availability and cost of equity financing. Declining short-term interest rates apparently contributed to rises in share prices which facilitated balance-sheet restructuring by non-financial enterprises in the 1990-93 period. This illustrates a role share prices can play in the monetary policy transmission process. However, a tendency towards stability in debt/equity ratios observed in some countries in the 1980s seems to reflect more the impact of changing profit expectations, reflected in stock market valuations of non-financial enterprises, on the ability and willingness of enterprises to borrow. Such a relationship clearly entails a risk of over-leveraging when share prices move out of line with fundamentals. The resulting problem could be exacerbated if share prices then begin to respond to market perceptions of excess gearing. The debt/equity ratio for the US non-financial corporate sector³⁵ was on a generally declining trend throughout the 1980s, notwithstanding net retirements of equity up until 1987. The fall steepened when a reversal of this process began in the early 1990s. Somewhat more responsive to cyclical movements in borrowing, the ratio for companies in the United Kingdom and Australia rose in the late 1980s but fell subsequently.³⁶ By contrast, in the continental European countries debt/equity ratios generally fell during the 1980s. Borrowing remained modest even though share prices rose. In Germany, Sweden and Spain the ratios were already relatively high but their movements scarcely suggest a close connection between equity values and borrowing.

Net liability positions in debt instruments (Graph 7), which approximate net interest-bearing positions (liabilities minus assets), rose steeply in relation to current operating surplus³⁷ in the late 1980s in Sweden and Japan, as well as in the United States,³⁸ Canada, the United Kingdom and Australia. Except in Japan, falls have subsequently taken place but the ratios remain considerably higher than in the mid-1980s. Following declines in the 1980s moderate increases have been recorded recently in Spain, Germany and France. To some extent these ratios are sensitive to cyclical developments in operating surplus. In Spain, in particular, net interest-bearing liabilities now stand much lower in relation to GDP than a decade earlier. However, as far as can be judged from net interest-bearing positions alone, firms in Japan, Sweden, France and Italy would seem comparatively vulnerable to interest rate changes, though the exposure of firms in France is much lower than in the early 1980s.

Consistent with other evidence, ratios of long to short-term credit-market indebtedness to financial institutions are relatively high in Germany,³⁹ France and the Netherlands. They are also fairly high in Canada and the United States, where recent increases formed part of the balance-sheet restructuring process. The rise in Germany in 1993 was strongly influenced by debt consolidation operations of the Treuhand agency. Even so, the ratios in all these countries have long displayed strong cyclical movements which to a considerable extent reflect larger changes in short-term than in long-term indebtedness. Thus there may be scope for influencing non-financial enterprises' overall demand for credit through changes in short-term interest rates, even in countries where the proportion of long-term financing at quasi-fixed interest rates is high. In Belgium, the share of long-term credit in enterprise indebtedness apparently declined in the late 1980s. In the United Kingdom, the proportion of long-term largely fixed interest rate finance in company balance sheets has recently risen as a result of large-scale recourse to issues of debenture and loan stock accompanied by net repayment of bank loans. However, the proportion remains low in comparison to other countries.

35 As reflected in the ratio of credit market debt to equity.

36 No comparable series can be shown for Japan as corporate equities on issue are recorded in the financial accounts only at book value.

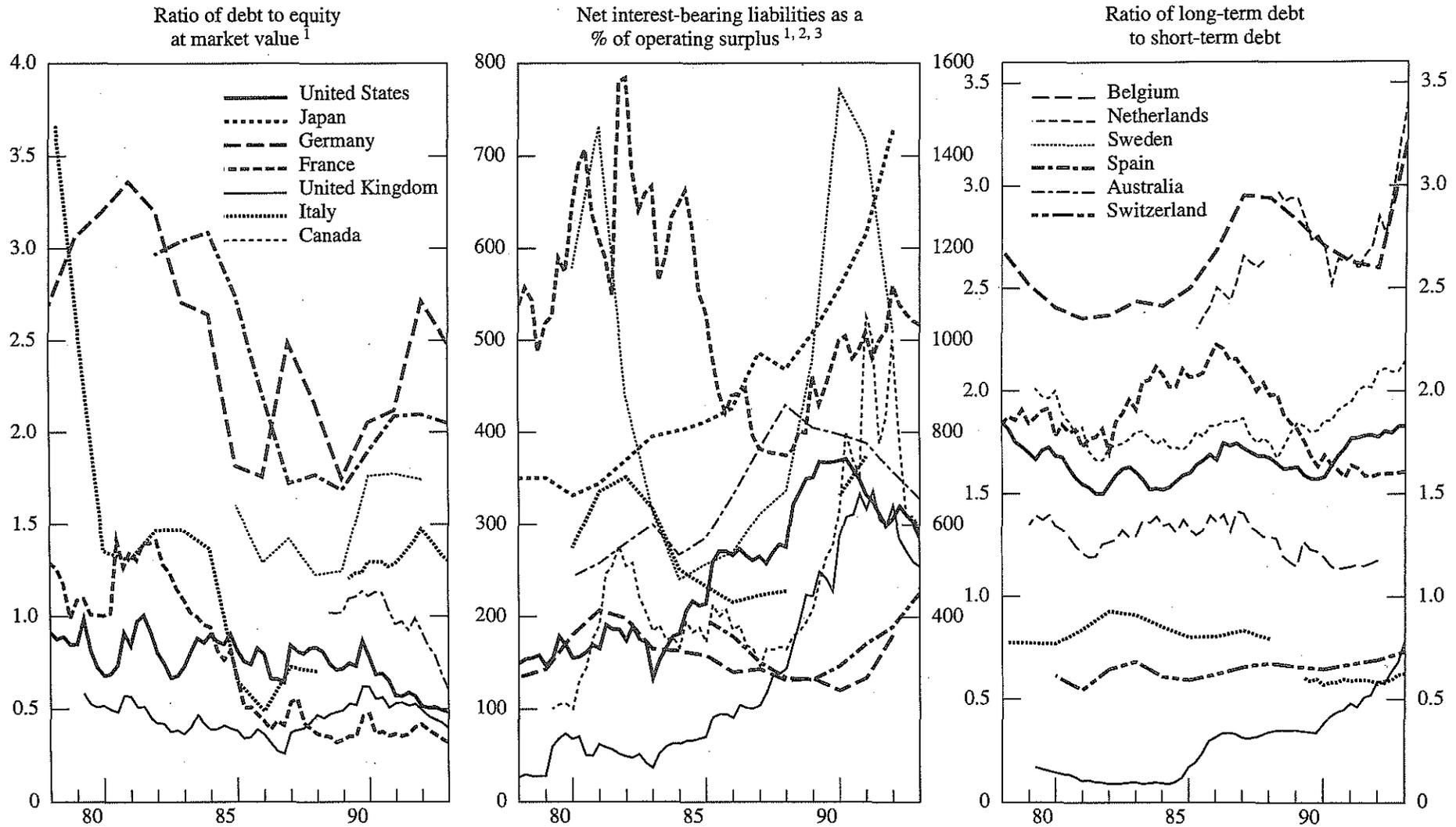
37 For countries other than Australia, Canada, France, Spain, the United Kingdom and the United States, OECD national accounts data for the "corporate and quasi-corporate sector" have been used.

38 Data shown for the United States, as for the debt equity ratio, apply to the non-farm corporate sector only. All other graphs and tables relate to all non-financial enterprises.

39 According to the breakdowns in the national financial accounts.

Graph 7

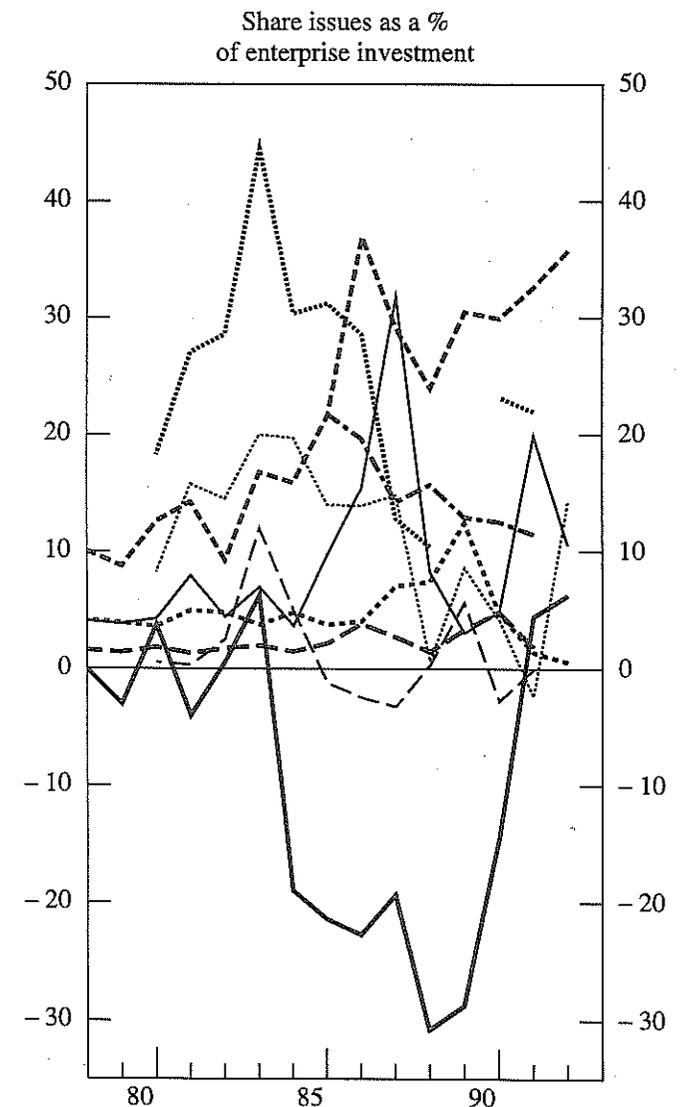
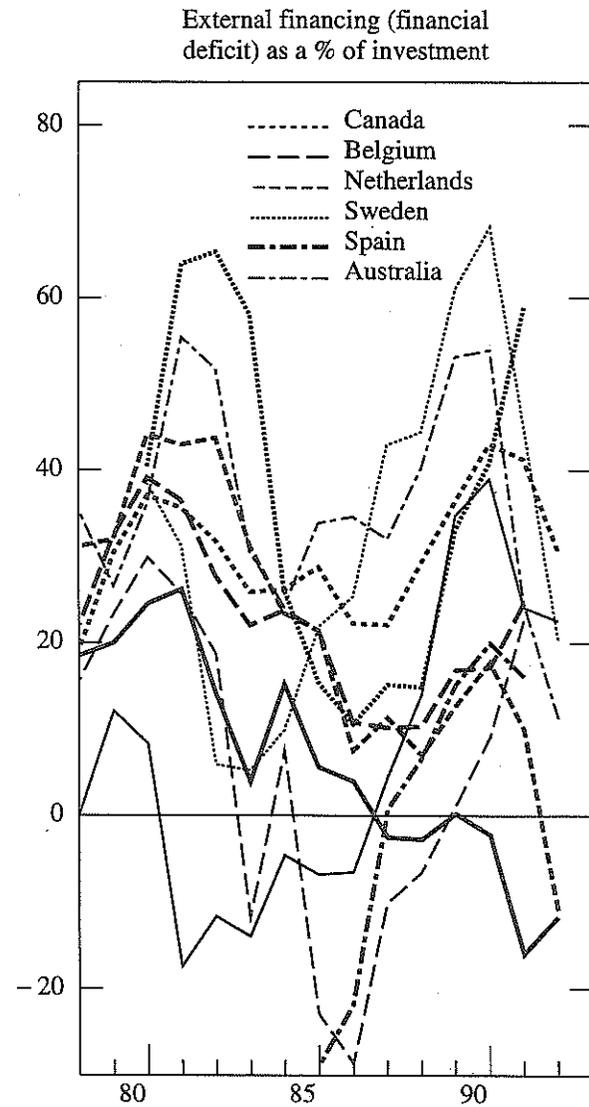
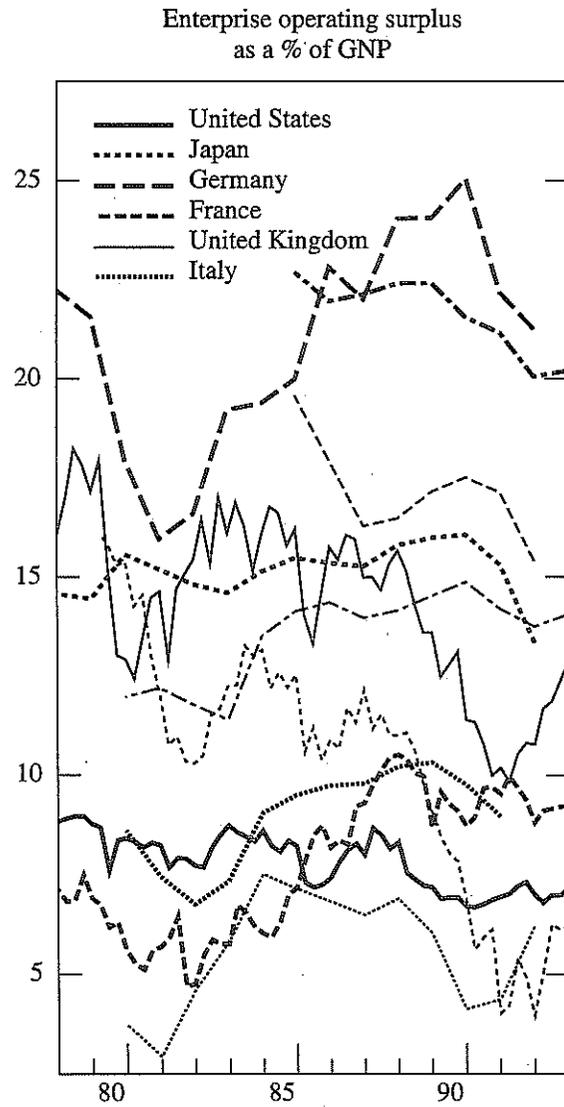
Non-financial enterprise sector: financial balance sheet ratios



¹ For the United States, corporate sector only. ² For Australia, gross borrowing from financial institutions as a % of operating surplus. ³ For Sweden, right-hand scale.

Graph 8

Non-financial enterprise sector: financial flow ratios



The improvements in capital gearing ratios recorded in many European countries in the 1980s were largely attributable to the contribution made by wage moderation, along with steady output growth, to strengthening the profitability and internal financing capacity of non-financial enterprises. A strengthening of underlying profit positions may have brought about lasting reductions in firms' vulnerability to interest rate changes. In Germany, France, Italy and Sweden the share of the operating surplus of the non-financial enterprise sector in GDP, which may serve as an indicator of self-financing capacity, increased strongly during the 1980s (Graph 8). It fell cyclically in 1990-93 but remained higher than in the 1981-83 recession. A rise in profit shares in Australia in the 1980s also largely withstood recession, partly as a result of cost-cutting efforts by enterprises. Profit shares were also relatively high in the mid-1980s in the United Kingdom, Canada and Japan but, as in the United States, subsequently fell below the levels recorded in the early 1980s before a recovery set in. According to these indicators profit shares seem relatively high in Germany and Spain and relatively low in the United States, Canada and Sweden.

While profit shares give an indication of self-financing capacity, cyclical variations in investment ratios affect the extent to which enterprises actually make use of external financing. The enterprise sector's financial deficit⁴⁰ set in relation to its gross investment may serve as a proxy for total net recourse to external financing of investment (including decumulation in financial assets). The ratios reveal similar cyclical movements in most of the countries, falling in 1982-86, rising in 1986-90 and (except in Germany and Italy) moving back down thereafter. In Germany, France and Belgium, the second peak is lower than the earlier one, but is higher in the United Kingdom, Sweden and Japan. On average during the period use of external financing (as indicated by financial deficits) was relatively low in Belgium and Spain and relatively high in Australia, Japan, Sweden and Italy. In the last year for which this data is available (1991 or 1992) the sector remained in deficit in most countries, notwithstanding cut-backs in investment ratios, but was in substantial surplus in France. In the United States the enterprise sector moved into small surplus in the late 1980s and into much larger surplus as from 1990. External financing includes recourse by non-financial enterprises to equity issues, which can serve to reduce gearing. Scaled by GDP, equity financing reached high peaks at times in the 1980s in the United Kingdom, Canada, Japan and Italy, and has recently again risen strongly in the United Kingdom, Canada and Italy. It has risen structurally since the mid-1980s in France and has generally been comparatively high in Spain, but has remained extremely modest in Germany and Belgium. However, equity issues have on average been a minor component of external financing of investment in most of the countries and have remained very small in relation to internal financing in all cases.

4. Enterprise sector interest receipts and payments

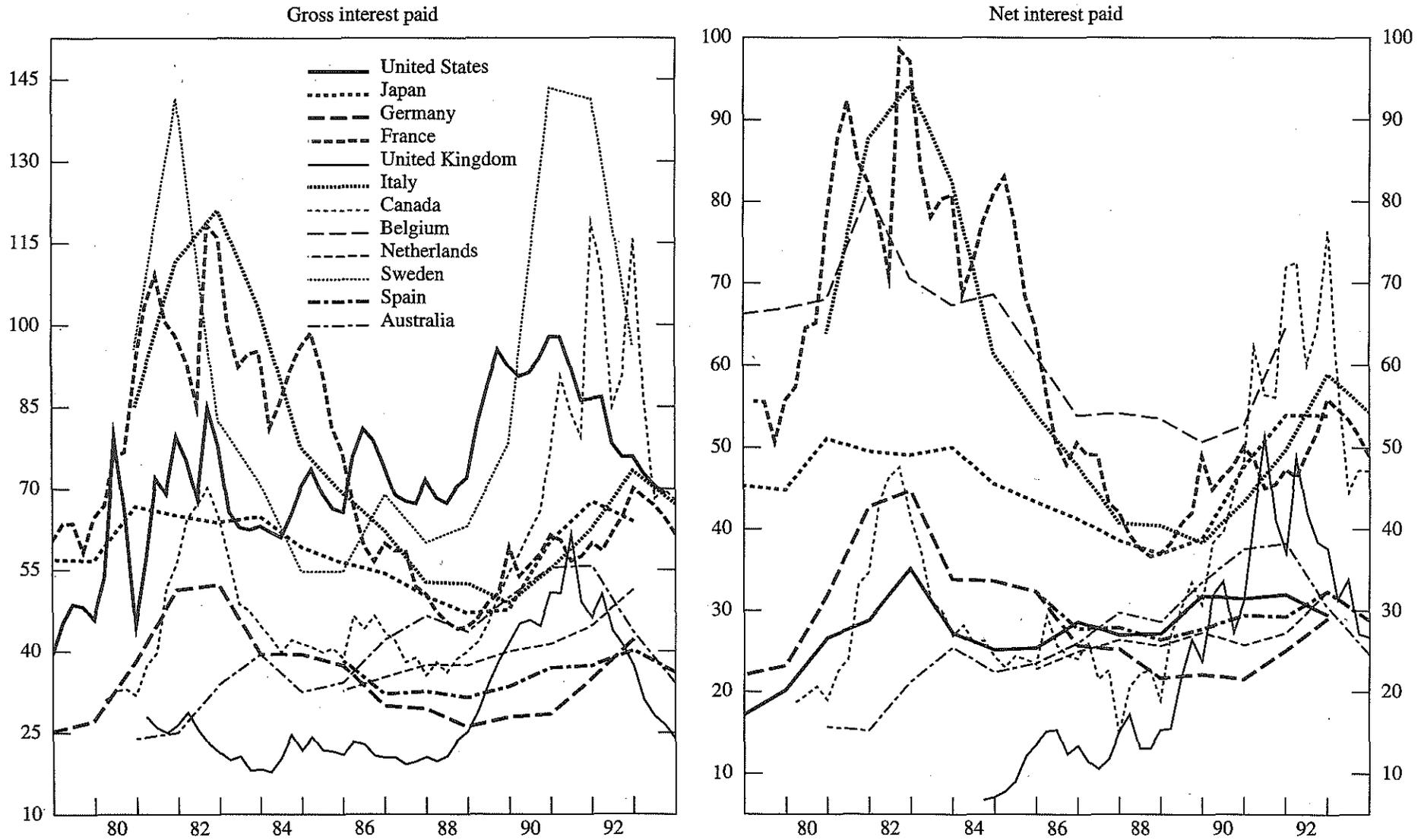
Gross and net interest payments in relation to operating surplus

Interest gearing in the non-financial enterprise sector (Graph 9) is quite sensitive to movements in profit rates and in leverage, as well as to the direct impact of interest rate changes. Developments in profitability and leverage made substantial contributions to the high peaks reached by ratios of gross and net interest payments to operating surplus in France, Italy and Sweden in the early 1980s and in Canada, Sweden, the United States, the United Kingdom, Japan and Australia in the early 1990s as well as to the recent declines in five of the latter six countries. In most cases the ratios for net payment have moved over a smaller range than gross payments.

40 Both the numerator and the denominator are based on OECD data, which differ conceptually from national data in some cases.

Graph 9

Non-financial enterprise sector interest receipts and expenditure: as a percentage of gross operating surplus



Earlier reductions in interest-bearing liabilities help to explain why the recent rise in the interest payment ratio has been relatively modest in Germany, France, Belgium, the Netherlands and Spain. In Germany, the Netherlands and Spain the level of net payments has remained quite low in recent years. In Belgium, France and Italy the level has fallen substantially since the early 1980s, on balance, but remains high in comparison with most other countries. The relatively low levels reached in the United Kingdom and Australia clearly reflect the complementary operation of de-leveraging and decline in interest rates.

Average rates of interest received and paid

To a certain extent the direct effect of interest rate changes on income gearing can be distinguished by considering developments in average interest rates paid and received (Graph 10).⁴¹ A relatively strong response to market rates is evident in the case of interest rates paid by non-financial enterprises in the United States up until 1990. Thereafter, however, the average rate remained above the money market rate by an ever widening margin as market rates rose to levels not previously reached since in the 1960s. Delayed and unusually limited responses to money market rates of bond yields and bank prime lending rates have been cited in many accounts of the recent "credit crunch". In Japan the response of the average rate paid to declines in money market rates as from 1991 was also limited but the adjustment to the earlier rise had also been incomplete.

Average interest rates paid and received by enterprises in the United Kingdom have displayed strong, almost simultaneous, reactions to movements in money market rates. The full extent of the movement is masked by the inclusion of dividend receipts and payments in the averages. Lagged and more limited responses have been evident in France, Sweden and Italy. In Germany and Spain, as far as can be judged from the annual data available, the reaction of both averages has generally been small, the recent sharp rise in the average interest rate received in Germany, in a period of monetary restraint, evidently being an exception. Average rates paid and received in Canada, on a downward course consistent with but not closely related to that of money market rates through much of the 1980s, seem to have come down more than the corresponding US rates since 1990 when a marked decline has been evident in such interest rates in Australia.

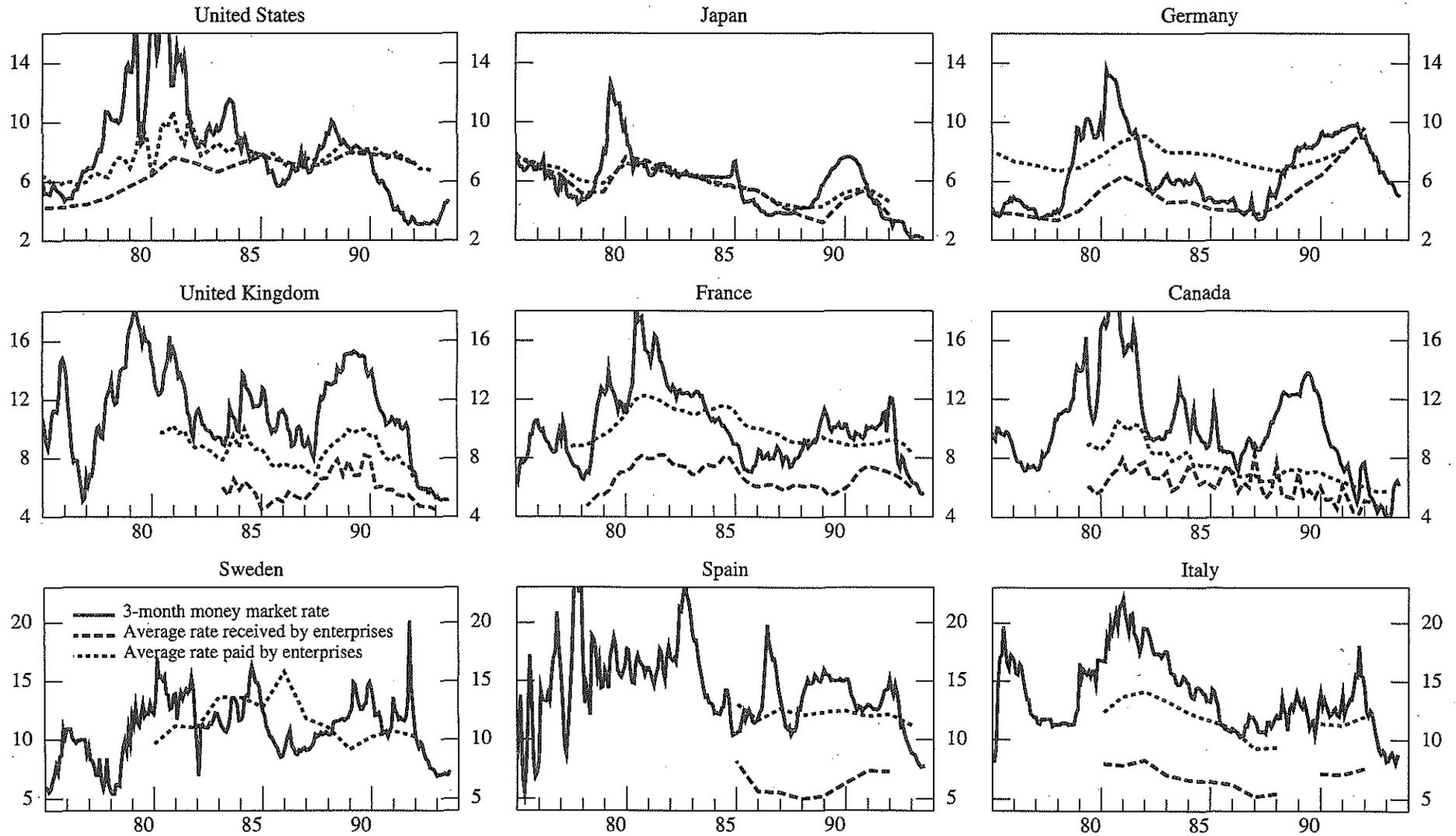
5. Enterprise financial positions and expenditure

To the extent that differing responses to monetary policy of average rates paid by non-financial enterprises reflect cross-country differences in rate setting behaviour of the main institutional suppliers of external finance, the responses of the marginal rates applied by enterprises in making investment decisions may differ in similar ways. Where long-term quasi-fixed rate financing is available the response of long to short rates is likely to be a key factor in investment decisions. Where only variable rate financing is available short-term rates and the expected behaviour of institutions in adjusting them may enter into the calculation. Inherited balance-sheet positions may exert an influence on capital expenditure not only to the extent that cash flows are an important determinant, but also through their interaction with expectations for output, profits and asset prices, on which the influence of monetary policy may be limited, at least in the short run. That, in varying degrees, non-financial enterprises can take advantage of a wider range of financing possibilities than households has contributed to large cyclical movements in their balance sheets in some countries. However, capital expenditure normally bears some of the burden of adjustment. Moreover, enterprise balance sheets in different countries have also displayed divergent trends and still differ in ways which could affect the interest sensitivity of investment.

41 Calculated in the way described above for households.

Graph 10

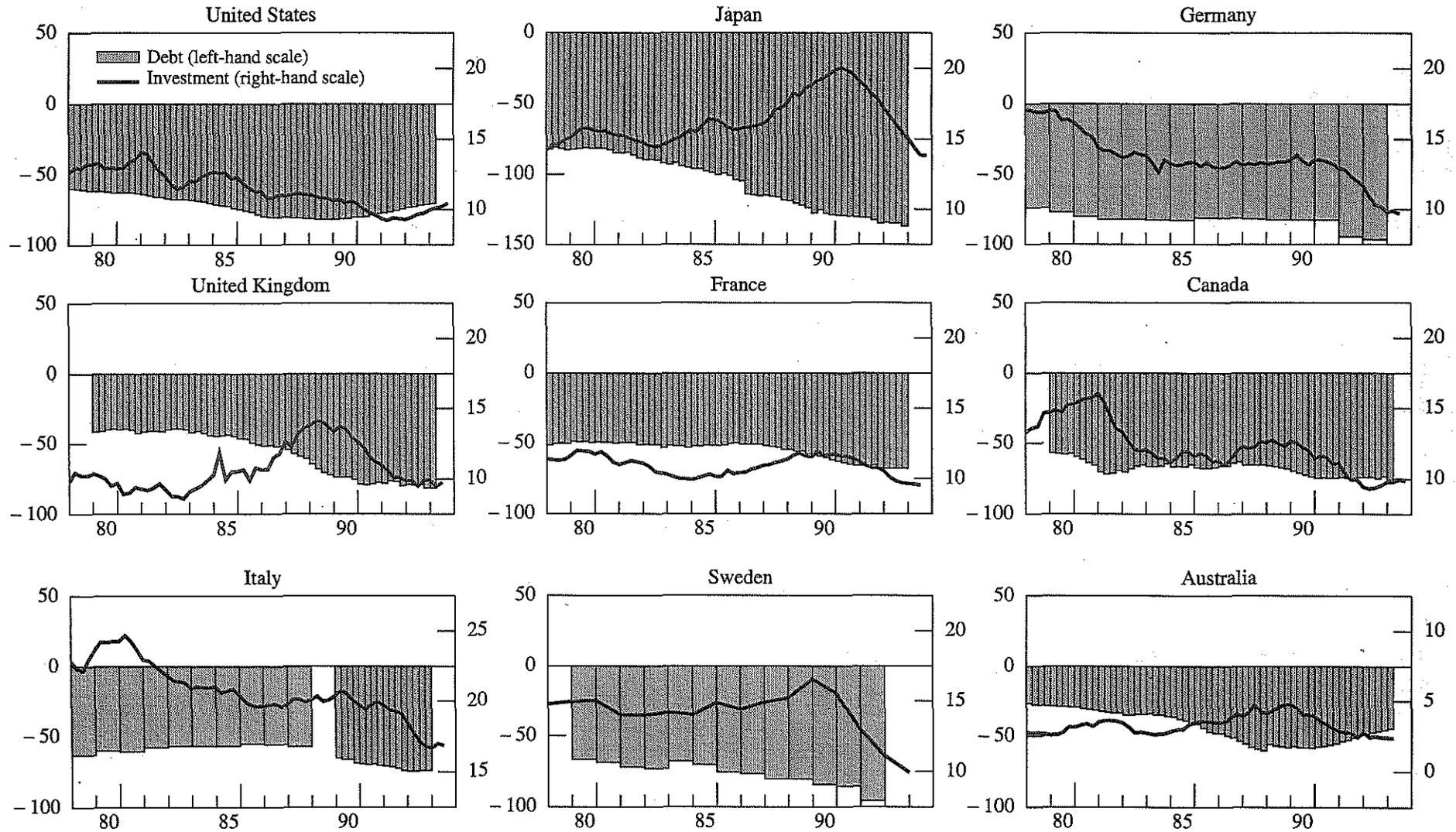
Average interest rates received and paid by non-financial enterprises:* relationship to money market rates



* Total volume of enterprise interest receipts and payments divided by the amount of debt assets or liabilities of the enterprise sector.

Graph 11

Enterprise sector debt and private non-residential fixed investment:* as percentages of GDP



* For Italy, total fixed investment; for Sweden, total non-residential fixed investment.

Non-financial enterprises were probably less directly affected by the removal of credit and interest rate controls than households, except in Australia. Yet in the 1980s balance sheets of enterprises in the United States, Japan, the United Kingdom, Canada and Australia underwent asset-price-related rises in leverage which increased exposures to increases in interest rates and declines in asset prices. The impact of asset price movements on investment has been most evident in the case of construction, which in a number of countries underwent a cycle closely related to that in prices of non-residential real estate. Other investment expenditures have undoubtedly been affected by the impact of movements in equity prices on the cost and availability of finance, particularly in Japan. In several countries de-leveraging, coupled with sluggish economic activity, clearly contributed to weakening business investment which did not until recently contribute to economic recovery. Ratios of total fixed investment to GDP had been unusually weak for some years in the United States and particularly steep falls were recorded in the early 1990s in Australia, Canada and Sweden (Graph 11). A substantial decline in the investment ratio seems also to have taken place in Italy, where non-financial enterprises' income gearing and reliance on external financing seem to have risen to comparatively high levels. In general, smaller declines were recorded in other European countries where movements in asset prices and in enterprise indebtedness have been limited. In Germany, the indicator has been distorted by the strength of personal consumption and government spending following unification of the country. In the United Kingdom, notwithstanding a substantial rise in leverage, enterprise investment seems to have been sheltered by the shallowness of the recession in output and the impact on profitability of strong growth in labour productivity in relation to the growth of wages.

Several central bank and academic studies have found evidence of the impact on investment of cash flow, leverage and other balance-sheet variables such as liquid assets, though such effects are typically difficult to disentangle from those of monetary policy operating through interest rates and output.⁴² Monetary policy is only one of many influences on asset prices and balance-sheet structures. In the early 1990s in the United States, Australia and some other countries the power of interest rate reductions in counteracting recessionary influences at first seemed limited but may have increased over time. Clearly it depends on circumstances and may be felt only with a long, and perhaps variable, lag.

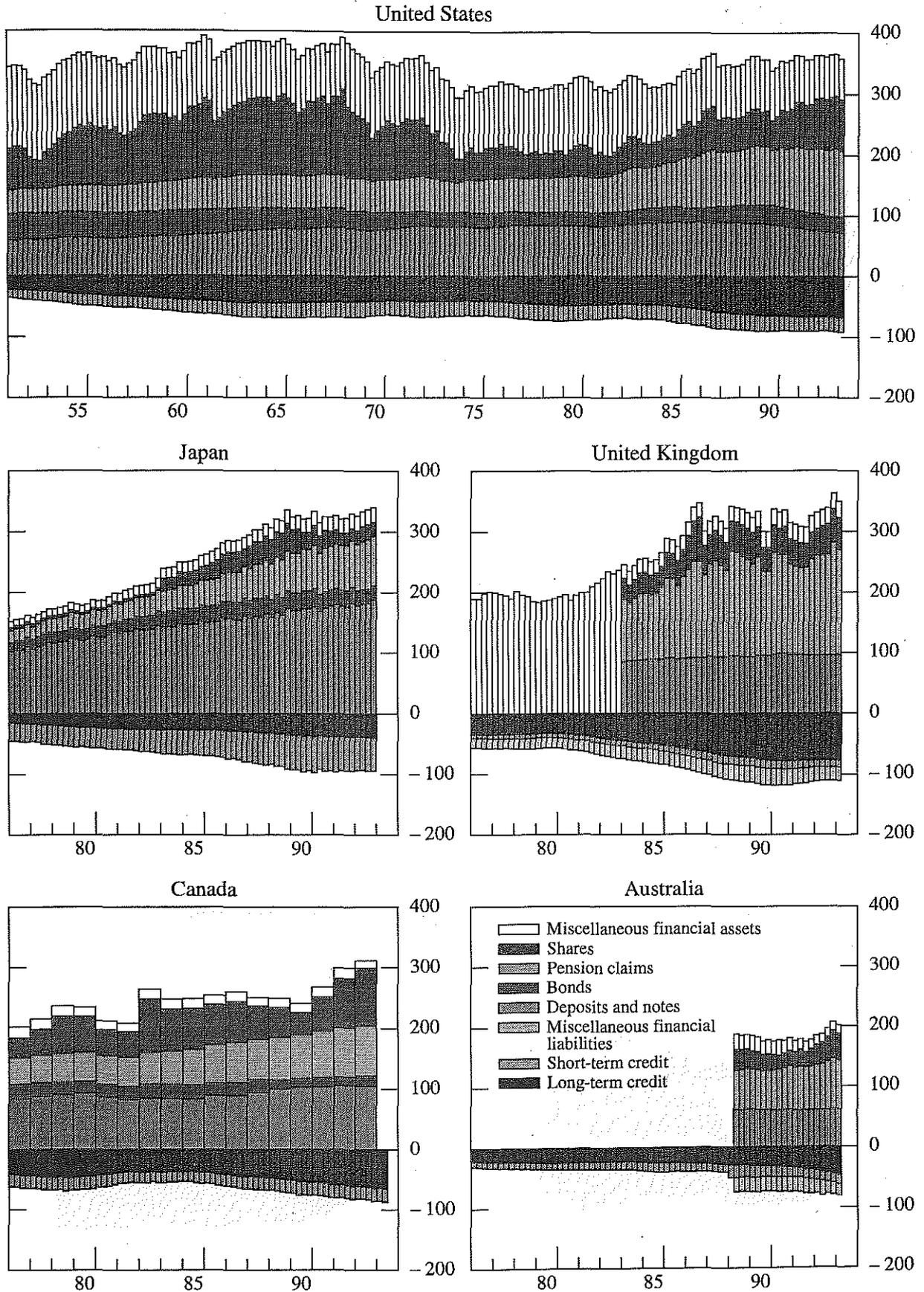
Balance-sheet restructuring has probably ceased to operate as a constraint on investment, except in Japan. To the extent that debt structures have been lengthened by long-term fixed rate financing, as in the United States and the United Kingdom, the impact of monetary policy on investment could be slower and less reliable than in the past. Exposures to influences on long-term interest rates and share prices coming from abroad may have increased. However the long-term quasi-fixed rate financing component of the indebtedness of non-financial enterprises remains higher in many European countries and in some of them firms have reduced their reliance on external financing.

With cash flows benefiting from expansion of output, investment seems to be on a strong expansionary course in many of the countries where leverage increased most during the 1980s. In some, signs of increased takeover activity may even herald renewed increases in leverage. Whether investment will as a result prove more sensitive than in the past to a tightening of monetary policy as the upswing progresses remains to be seen.

42 For instance, cash flows constitute a key determinant of investment in the Bank of France model. Some studies have found significant effects of balance-sheet variables in the United States, Canada and Australia. See e.g. Fillon, J.-F., *Bank of Canada Working Paper*, No. 94-7, August 1994, Mills et al., *Reserve Bank of Australia Research Discussion Paper*, No. 9402, May 1994, and Federal Reserve Bank of New York, articles in the *Quarterly Review*, Spring 1993, and in *Studies of Financial Changes and the Transmission Mechanism*, May 1990.

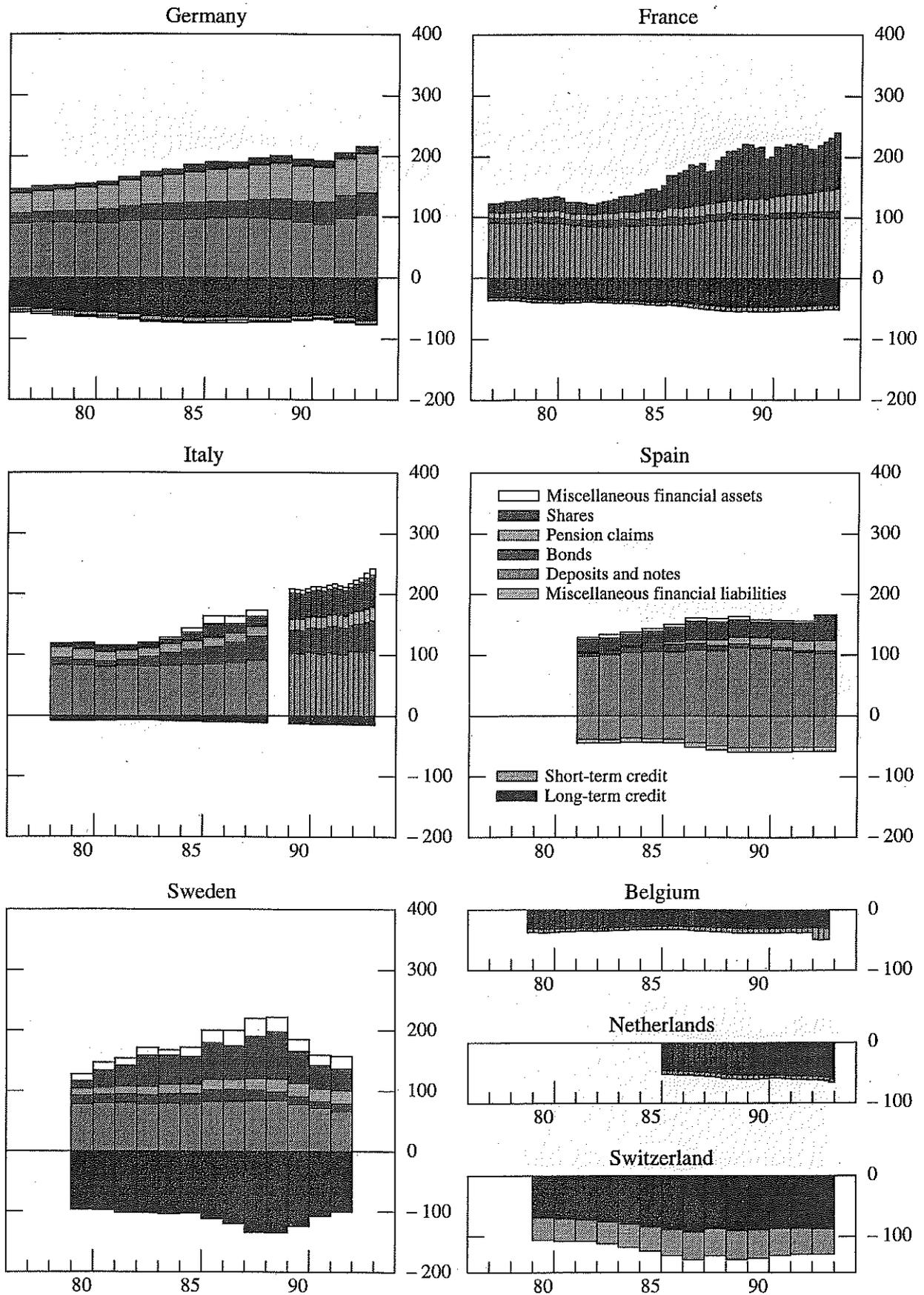
Graph A.1

Household sector balance sheet: percentages of personal disposable income



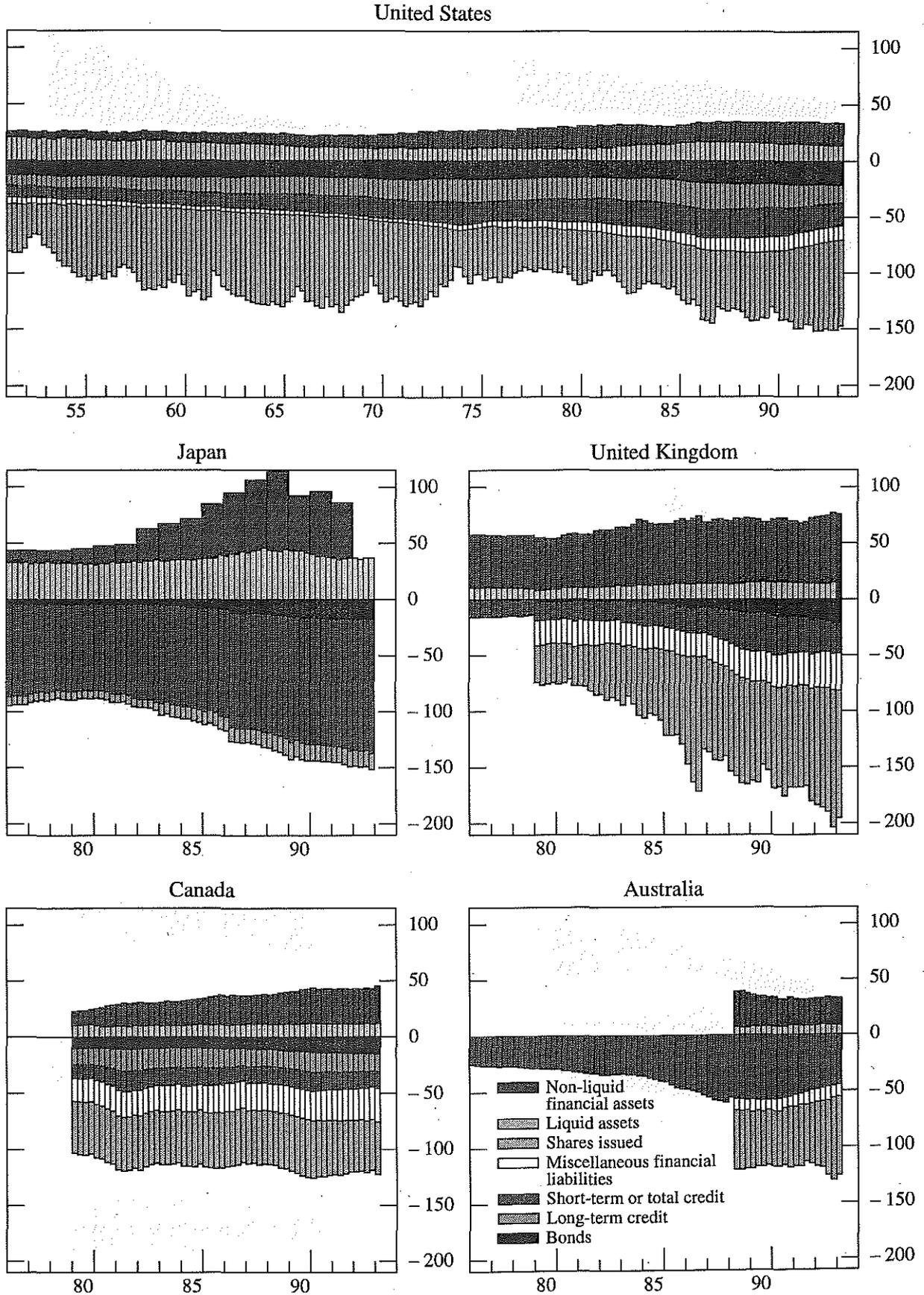
Graph A.1 (cont.)

Household sector balance sheet: percentages of personal disposable income



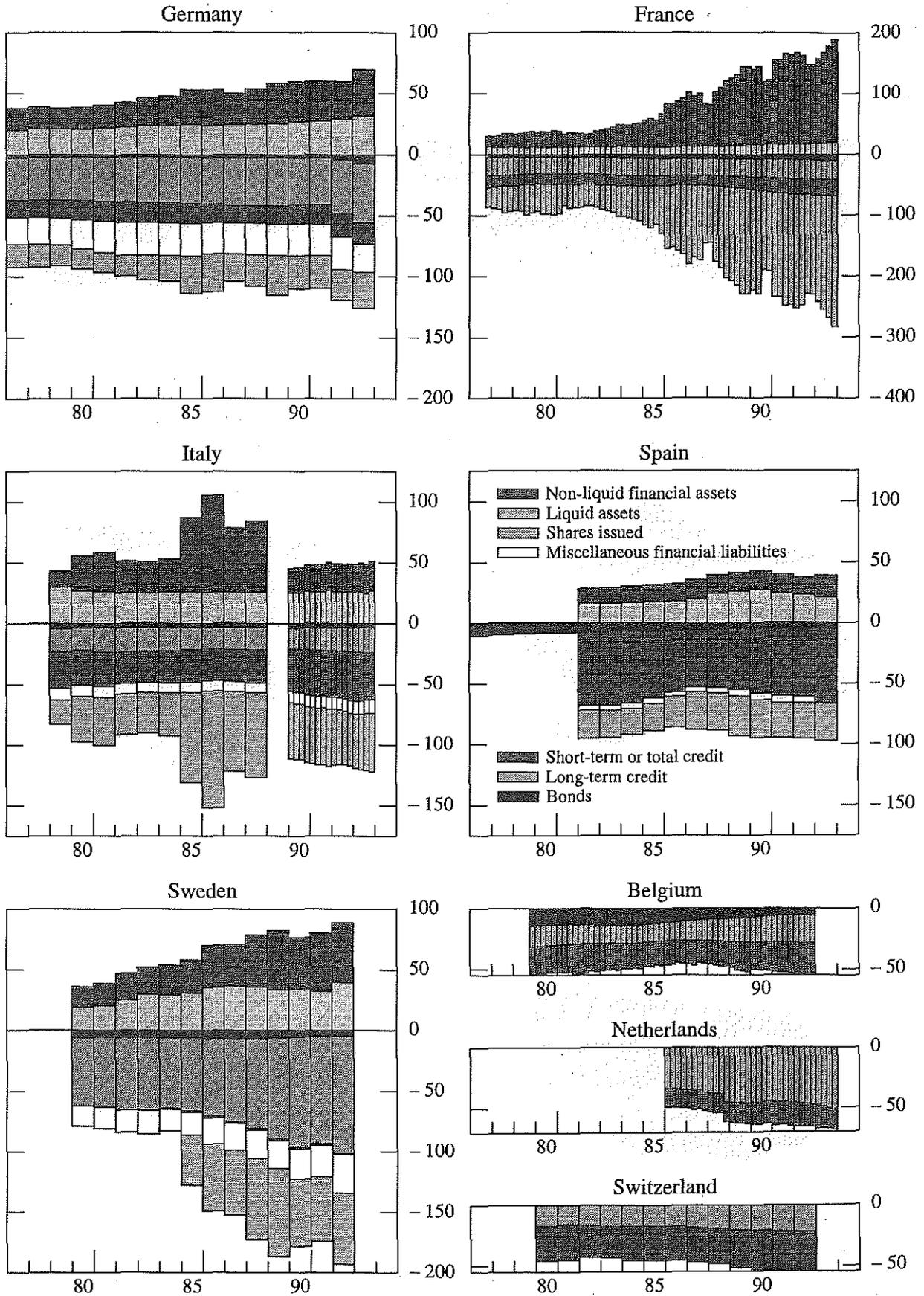
Graph A.2

Non-financial enterprise sector balance sheet items: as percentages of GDP



Graph A.2 (cont.)

Non-financial enterprise sector balance sheet items: as percentages of GDP



ANNEX 2

Notes on data sources and methods

I. HOUSEHOLD AND ENTERPRISE SECTOR BALANCE SHEETS

This annex lists data sources used in addition to data supplied in central bank answers to the BIS questionnaire on financial structures. Selective notes on the sectorisation, data coverage, BIS adjustments and differences between the data used in the tables and graphs are included.

Australia: Financial assets and liabilities for the personal and company sector (public enterprises are included in Table 5 but not in data underlying the graphs): Reserve Bank of Australia, *Bulletin*, Table D3, Credit to the private sector from financial intermediaries (household long-term debt liabilities = housing loans (column 6), short-term debt liabilities = other loans to personal sector (column 7)) and Table D4, Financial assets and liabilities of the domestic non-financial private sector. Household share holdings include unit trusts, debt assets include only deposits with banks and financial institutions. Enterprise debt assets include only bank deposits; total liabilities = source total minus shares issued. Trade credit is not identified separately and could not be deducted from sector totals. All series used taken from RBA diskette.

Tangible assets: Households: Table 3: dwellings and consumer durables from RBA answer to questionnaire; graphs: quarterly stock estimates from Tim Callen, RBA Research discussion paper No. 9109 (1991) updated by RBA (letter to BIS 4/9/93). Enterprises: business capital, from "Australian private wealth", *Treasury Round-up*, Summer 1993/94 (supplied by RBA).

Belgium: Tables: individual enterprises included with households, loans from public sector excluded (no allocation by recipient sector provided), all securities on issue and credit from abroad allocated to business sector. Graphs: individual enterprises included in enterprise sector. Banque Nationale de Belgique, *Bulletin*, Table XVI 3b, Debt incurred mainly by individuals; long-term = mortgage credit (column 9); short term = other (columns 4 + 13). Table XVI 6b, Loans from credit institutions to enterprises; long-term = investment and leasing credit (columns 4 + 5); short-term = other types of credit (Column 9 minus columns 4 + 5). Table XVII 2B, columns 6 + 7, bonds issues by private companies and public-sector producing enterprises. All series taken from BIS Data Bank.

Canada: Household sector: Financial liabilities (excluding individual enterprises): Bank of Canada, *Review*, Table E2; long-term = mortgages (B938) plus, in Table 3, medium-term consumer credit; short-term = consumer credit (B140). From BIS Data Bank. Financial and real assets (including unincorporated enterprises): Table 3: Bank of Canada estimates. Graphs: Statistics Canada, *National Balance Sheet Accounts 1992* (1993 estimated by BIS in the light of questionnaire answers). Share holdings estimated by BIS on the basis of the proportion of shares to other assets shown in M.-C. Montplaisir, article in Bank of Canada Review, July 1992, page 8. Total financial assets = National Balance Sheet Accounts, line 2100 minus line 2520 plus estimated market value of share holdings. Debt assets = lines 2311 to 2424.

Enterprise Sector: Statistics Canada, *Quarterly Financial Statistics for Enterprises*, Table 5, Total non-financial industries (series used taken from Cansim via DRI). Non-financial assets = Capital assets net plus stocks (D86230 + D86234). Total financial assets = total assets minus non-financial assets and accounts receivable (D86227 - (D86230 + D86235 + D86229)). Debt assets, short-term = cash, deposits and loans (D86228 + D86233), long-term = portfolio investments (D86232). Financial liabilities: total = source total minus accounts payable (D86236 - D86237); debt liabilities, long-term = bonds and mortgages (D86244 + D86245) plus 44% of loans and overdrafts (D86239 x .44 - the proportion given for 1993 in the Bank of Canada's answers to the BIS

questionnaire. In Table 3 the figure given in the questionnaire for 1983 is used for that year); short-term = acceptances (D86243) and 56% of loans and overdrafts.

France: Financial assets and liabilities of corporate and quasi-corporate enterprises (S10) and households, including individual enterprises (S80). Private institutions serving households (S70) are excluded from Table 3 but included in household sector in the graphs. Banque de France, *Bulletin* Second Quarter 1994, *Etudes*, pp. 177ff. Total liabilities and assets = source totals minus trade credit, "décalages comptables" (items F65, F66 and F75) and, in the case of enterprise liabilities, shares (F50). Debt assets and liabilities = currency, deposits, securities and credit; long-term (F40 + F70 - F75), short-term (F00 + F10 + F30 + F60 - F66 - F65) and, in the case of household assets, short-term mutual fund shares (F'531), which is excluded from shares. All series used from Bank of France TOF diskette.

Non-financial assets: INSEE, Comptes de patrimoine. Enterprises, total; households (graphs), housing assets only.

Germany: Financial assets and liabilities of households and producing enterprises with 80% of the liabilities of the separate housing sector added to those of households and 20% added to those of producing enterprises. Deutsche Bundesbank, *Monthly Report*, May 1994, pp. 19ff. Eastern Germany is included as from 1992. Total assets and liabilities = source adjusted to include shares at market value (for households: Bundesbank, *ibid.* p. 32; for enterprises: BIS estimates for 1992 and 1993). Trade credit is deducted from enterprise sector assets and liabilities in Table 5 but only the assets could be deducted for the graphs. The debt claim maturity breakdown for assets in Tables 3 and 5 is from questionnaire answers - in the graphs, assets = placements with banks and building and loan associations and bonds (small amounts of money market paper are omitted); for liabilities, short-term = short-term bank loans; long-term = long-term bank loans plus loans from building associations and bonds (at book values). Household pension claims include funds placed with insurance enterprises and "other claims" in the source, which consist largely of pension claims on non-financial enterprises. Most series used from BIS Data Bank.

Non-financial assets: enterprises; Federal Statistical Office, National Accounts, Fachserie 18, Reihe 3.1, Table 3.6.2 (western Germany), structures (excluding rental of housing) and equipment at replacement cost plus stocks (Table 6; BIS estimates for 1992 and 1993). Data in source relate to beginning of year and are used as end-year data for previous year. Households: unpublished Bundesbank estimates for total household tangible assets at replacement cost.

Italy: Financial assets and liabilities: individual enterprises are included in the household sector in the tables but in the enterprise sector in the graphs (data for years prior to 1989 are available only on the latter basis). Bank of Italy, Supplement to Statistical Bulletin, Conti Finanziari (quarterly data as from 1990). Earlier data from OECD, Financial Accounts of OECD countries, 1991 (based on series published in Bank of Italy Annual Report appendices in previous years). Methodology for the two data sets differ. No adjustments made for trade credit except in the case of the enterprise sector in Table 5. Debt claims = currency, deposits, securities and credit; maturity breakdown as in source (long-term includes medium and long-term securities).

Series for household tangible assets from answers to BIS questionnaire.

Japan: Financial assets and liabilities, household and corporate business sectors. Bank of Japan, *Flow of Funds Accounts in Japan* and *Economic Statistics Monthly*. Totals exclude trade credit and, in the case of corporate liabilities, shares. Sectoral share holdings are at market values but on the liability side of the balance sheet they are shown only at book values. In the graphs, debt assets include, for households, only currency and deposits and for the corporate sector, only deposits and CDs. In the tables fixed interest securities are included, classified, together with all time deposits, as long-term. Long-term household debt liabilities = housing credit, subject to instalment repayments,

total for all institutions shown in Bank of Japan, *Economic Statistics Monthly*, Table 58. Long-term company debt liabilities = bonds; total = loans plus bonds.

Non-financial assets: Economic Planning Agency, Annual Report on the National Accounts, 1994, Table 2 II 1 (end of calendar year). Non-financial incorporated enterprises: total, stocks fixed assets, land, subsoil, timber tracts and other non-reproducible assets (lines 1 + 2 + 3); households: stocks, fixed assets and land, excluding timber tracts etc. (lines 1 + 2 + 3i).

Netherlands: Bank deposits and credit to individuals and enterprises, including public enterprises, from banks, insurance companies and pension funds only. Tables: loans only; graphs: loans and securities, including participations (counted as long-term debt claims). Netherlands Bank, *Quarterly Bulletin*, Tables 2.1.3, banks (columns 5, 11, 16) and 2.2.1, insurance companies and pension funds (tables, loans only; graphs: column 8, total capital market investments - counted as long-term debt but includes participations and a small amount of short-term credit).

Spain: Non-financial enterprises and households, including individual enterprises and non-profit-making private bodies. Bank of Spain, *Cuentas Financieras de la Economía Español*. Credit and total financial assets and liabilities exclude trade credit (credit from domestic non-financial sectors) and, in the case of enterprise liabilities, shares issued. Debt assets and liabilities include (where relevant) cash, transferable and other deposits, short-term securities and (for enterprises only) bonds and credit granted (in the graphs a small amount of non-negotiable securities held by households is omitted). Long-term liabilities include only bonds. Total enterprise debt liabilities include substantial amounts of credit from abroad. Most series used taken from OECD Financial Accounts diskette, updated to 1993 from the *Cuentas Financieras*.

Sweden: Financial assets and liabilities of enterprises and households, including unincorporated enterprises. Statistiska Meddelanden, Finansräkenskaper. Total financial assets and liabilities exclude trade credit so identified and, in the case of enterprises, inter-company liabilities. Household assets are adjusted to include shares at market value. Debt assets include cash, transferable and other deposits securities and credit. Long-term debt: for households, credit granted by mortgage banks; for companies, bonds only. Total household debt liabilities include substantial amounts of credit from the public sector. Most series available on OECD Financial Statistics diskette.

Household housing assets = value of housing, owner-occupied, multi-unit and for recreational purposes and land used for all three types of housing. Data supplied by Statistics Sweden (letter 11/12/93).

Switzerland: Bank lending to individuals and enterprises, including public enterprises. Swiss National Bank, *Das Schweizerische Bankwesen im Jahre*, Sectoral breakdown of (bank) assets. 1993 Table 33.4. Long-term debt liabilities: in tables = mortgages and fixed-term advances; in graphs: mortgages and securities; short-term = other forms of bank loan.

United Kingdom: Balance sheets of industrial and commercial company sector and personal sector, including unincorporated enterprises. Central Statistical Office, *The Blue Book* (National Accounts) and *Financial Statistics*, Tables 9.1j and 9.11. In the tables, financial assets and liabilities exclude trade credit, accruals adjustments and miscellaneous instruments; in the graphs the unadjusted source totals are used, except for company liabilities, which exclude trade credit and shares = British company securities minus debenture and loan stock. Debt assets include, in the tables, deposits and claims on the public sector; in the graphs currency and, in the case of companies, deposits with building societies are omitted. Long-term debt, households = loans secured by dwellings, total; companies, debentures and loan stock issued (series supplied by CSO). Other debt of companies and (in the table) households includes bank credit other than for housing, finance leasing, other lending by financial institutions and by the public sector plus (table only) Bank of England issue department transactions in bills. In the graphs other household debt is consumer credit (*Financial Statistics*, Table 3.2b).

United States: Financial assets and liabilities: Federal Reserve Board, *Flow of Funds Accounts*. Households, including non-profit organisations (L100) and all non-financial business (L101) (Non-farm corporate business (L104) for certain graphs, as expressly indicated). Total assets and liabilities exclude trade credit. Debt assets = deposits and credit market instruments; debt liabilities = credit market instruments; long-term = bonds and mortgages. Enterprise shares on issue: corporate equities at market value plus (table only) household holdings of equity in unincorporated enterprises at book value. All series used from Flow of Funds tape.

Tangible assets: Federal Reserve Board, *Balance Sheets for the US Economy*, Total tangible assets at current cost (Tables B100 to 102, line 2). FOF tape.

II. FINANCIAL FLOWS FOR HOUSEHOLDS AND ENTERPRISES

1. Interest received and paid by households and enterprises

Australia: Interest paid and received by private corporate trading (non-financial) enterprises and households (including unincorporated enterprises), financial year ending in year for which the data is entered (from RBA answers to BIS questionnaire = national accounts) plus, in the case of household receipts, imputed interest on life and superannuation funds, Australian Bureau of Statistics, *National Accounts 1991-92*, Table 15, Household income (1992-93: BIS estimate).

Belgium: Interest received and paid by households (S70 + S80) and net payments by companies (S10 + S40 + S50) from BNB answer to BIS questionnaire (= National Statistical institute, National Accounts data) updated by BIS estimates, annual.

Canada: Interest, dividends and miscellaneous investment income received by households, Statistics Canada, *National Income and Expenditure Accounts*, quarterly estimates, Table 6, Sources of personal income, line 9; interest rates paid by households on consumer and mortgage credit, calculated and supplied by Bank of Canada (letter 28/2/94); non-financial business, Statistics Canada, *Quarterly Financial Statistics for Enterprises*, all non-financial enterprises, Table 5, interest and dividends received (D86262), and total interest on borrowings (D86264).

France: Interest rates received and paid by households and by companies and quasi-companies. INSEE, *Comptes Nationaux Trimestriels*, Compte de revenu, ensemble des ménages et sociétés et quasi-sociétés non-financières, intérêts effectifs et (household revenue only) int. sur contrats d'assurances (= Annual supplied in Banque de France answer to BIS questionnaire).

Germany: Interest received, persons, from Bundesbank answer to questionnaire; households, western Germany, interest and interest paid on consumer credit (Bundesbank answers to questionnaire and national accounts), plus interest paid on housing credit, estimated and supplied by Bundesbank (letter 2/9/93) - 1992: BIS estimate; interest paid by enterprises (Bundesbank answers to questionnaire and national accounts): interest received by production enterprises, western Germany, *Volkswirtschaftliche Gesamtrechnung*, Fachserie 18, Reihe 1.3, Table 3.3.1, interest, lines 67, 68, 69, 72 (includes some other entrepreneurial income).

Italy: Interest paid and received by households and non-financial enterprises, all from Bank of Italy answer to BIS questionnaire (Statistical Office, National Accounts data).

Japan: Households (including private unincorporated non-financial enterprises), interest income and consumer debt and other interest paid (Economic Planning Agency, *Annual Report on the National Accounts*, 1994, Table 3(1)II.5 (quarterly series), lines 13(1) and 2 (1+2); Non-financial incorporated enterprises, *ibid.*, T 1(2)II.1 (calendar years), lines 9(1) and 1(1).

Netherlands: Interest receipts and payments of households and non-financial enterprises, Central Bureau of Statistics, *National Accounts*, Table S 80.1 and S 10.1, code 2112 (rente).

Spain: Interest receipts and expenditure of households and non-financial enterprises, Bank of Spain answers to BIS questionnaire (= Bank of Spain, *Financial Accounts*, income account S70/80 and S10, item 6.1 plus, in the case of household receipts, item 6.4 (imputed interest on insurance contracts)).

Sweden: Household interest payments from Riksbank answer to BIS questionnaire (from national accounts), receipts: Statistiska Meddelanden, *Nationalräkenskaper*, Table 7.VI, Income and outlay account, line 3 (excludes dividends), non-financial enterprise interest payments, net: *ibid.*, Table 7.I, line 12 (excludes dividends).

Switzerland: Households, interest received (excluding dividends) and interest paid on consumer debt (only), Federal Statistical Office, *Swiss National Accounts*, Table 4, Vermögenseinkommen der privaten Haushalte, lines (a) and (c).

United Kingdom: Total receipts and payments of interest and dividends by the personal sector and industrial and commercial companies, CSO, *Bluebook*, Table 3.8 (Annual data only) series GJDL, GJDK, XAGB and XAFZ. Corresponding unpublished quarterly data supplied by CSO (series excluding dividends are available for interest payments).

United States: Personal interest income, Dept. of Commerce, *Survey of Current Business*, National Income and Product Accounts, Table 2.1, line 14; interest paid by non-financial corporations and by persons on consumer and mortgage credit, calculated and supplied by Federal Reserve Board (letter 11/3/94).

Other series used: "Property and entrepreneurial income receipts and expenditure, interest", OECD National Accounts Volume II, Table 7, income and outlay account, lines 8 and 26 (OECD tape).

2. Enterprise operating surplus

For **Australia**, gross operating surplus of private corporations (answer to questionnaire, annual); for **Belgium**, disposable income for non-financial enterprises (answer to questionnaire updated by BIS estimates, annual); for **Canada**, operating profit, Financial Statistics for Enterprises, Table 5, quarterly (Cansim/DRI); for **France**, gross disposable income of corporate and quasi-corporate enterprises (answer to questionnaire, annual; BIS Data Bank, quarterly); for **Spain**, gross operating surplus, Bank of Spain, *Financial Accounts*, operating accounts of non-financial enterprises, 1993 p. 116, annual; for the **United Kingdom**, gross trading profits of companies and public corporations (BIS Data Bank, quarterly); for the **United States**, US internal surplus of non-farm corporations (Flow of Funds tape, quarterly). For **other countries**, "Operating surplus, corporate and quasi-corporate enterprises", OECD National Accounts Volume II, Table 7, income and outlay account, line 1 (OECD tape).

3. Company internal financing, financial deficit and investment

Provisionally, for all countries from OECD National Accounts Volume II, Table 7, capital accumulation account. Internal financing = net saving and consumption of fixed capital, lines 1 and 2, external financing = net lending, line 18, and gross investment = increase in stocks, investment in fixed capital and purchases of land and intangible assets, net, lines 8 to 13 (OECD tape).

4. Share issues by non-financial companies

BIS Data Bank except *Italy*, as from 1990: Bank of Italy CD-ROM, prior to 1990, as for *Spain* and *Sweden*, from OECD Financial Accounts.

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