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A Changing Financial Environment and the Implications for Monetary Policy

Paul Mylonas,
Sebastian Schich,
Gert Wehinger

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by
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ABSTRACT/RESUMÉ

Monetary policy affects activity, and ultimately inflation, in a number of ways. The most important of these is generally considered to be through the effect of interest rates directly on the demand for goods by households and firms. However, monetary policy can also influence activity through its impact on the value of assets that, in turn, will influence the behaviour of households and firms; e.g. by changing wealth and, through an impact on balance sheets, borrowing costs. Recent financial market developments may have made these effects of monetary policy more important but at the same time less easy to predict. In particular, the size of financial markets has risen relative to activity and readily tradable assets are becoming increasingly important relative to other financial assets. Prices of such assets tend to be sensitive to shifts in market expectations about the future course of general economic developments and in particular interest rates. With these changing financial structures affecting the impact of monetary policy on the real economy they also influence the way in which monetary policy should be implemented. Specifically, they suggest arguments both for and against a gradualist approach -- a strategy whereby policy rates are moved in small steps.

JEL classification: E44, E52, E58.
Keywords: Monetary transmission mechanism, wealth effect, balance sheet effect, gradualism.

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La politique monétaire influe sur l'activité, et finalement sur l'inflation, de plusieurs manières. On considère généralement que la plus importante est celle qui affecte directement la demande de biens des ménages et des entreprises à travers les taux d'intérêt. Cependant, la politique monétaire peut aussi influencer l'activité par son impact sur la valeur des actifs qui à son tour influencera le comportement des ménages et entreprises ; par exemple en changeant la richesse et, au travers de sa répercussion sur le bilan, les coûts des emprunts. Les récents développements du marché financier peuvent avoir rendu ces effets de la politique monétaire plus importants mais en même temps moins faciles à prévoir. En particulier, la taille des marchés financiers s'est accrue par rapport à l'activité, et des biens facilement négociables ont pris de plus en plus d'importance par rapport aux autres biens financiers. Les prix de tels biens tendent à être sensibles aux changements sur les anticipations du marché quant à l'évolution de l'économie en général et des taux d'intérêt en particulier. Ces changements de structures financières affectant l'impact de la politique monétaire sur l'économie réelle influencent aussi la façon dont la politique monétaire devrait être mise en œuvre. Précisément ils inspirent des arguments à la fois pour et contre une approche gradualiste -- une stratégie où la politique des taux évolue lentement.

Classification JEL : E44, E52, E58.
Mots-clés : mécanisme de transmission monétaire, effet de patrimoine, effet de bilan, gradualisme.

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MONETARY POLICY IN A CHANGING FINANCIAL ENVIRONMENT

Paul Mylonas, Sebastian Schich and Gert Wehinger[1]

I. Introduction

1. Monetary policy affects activity, and ultimately inflation, in a number of ways. The most important of these is generally considered to be through the effect of interest rates directly on the demand for goods by households and firms. However, monetary policy can also influence activity through its impact on the value of assets that, in turn, will influence the behaviour of households and firms; e.g. by changing wealth and, through an impact on balance sheets, borrowing costs. Recent financial market developments may have made these effects of monetary policy more important but at the same time less easy to predict. In particular, the size of financial markets has risen relative to real activity and readily tradable assets are becoming increasingly important relative to other financial assets. Prices of such assets tend to be sensitive to shifts in market expectations about the future course of general economic developments and in particular interest rates.

2. The degree to which financial structure and its development have complicated the task of policymakers is an open question, though in the past asset valuations have been strongly pro-cyclical in most countries (Figure 1). The magnitude of recent increases in asset values in many OECD countries has brought forward the issue of how changing financial structures affect the impact of monetary policy on the real economy and therefore the way in which monetary policy should be implemented.[2]

3. This Working Paper looks first at the increase in the size of financial markets,[3] changes in the composition of asset holdings, as well as the development of firms', households' and banks' balance sheets. It then goes on to draw out, in turn, the implications for the functioning of the economy and the setting of monetary policy.

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1. The authors, all members of the Money and Finance Division, wish to thank, without implicating, Mike Kennedy, Jørgen Elmeskov, Mike Feiner and Ignazio Visco for their helpful comments and suggestions. Thanks are also due to Laure Meuro and Catherine Lemoine for statistical assistance and to Paula Simonin for secretarial skills. The views expressed in this working paper are those of the authors and are not necessarily shared by the OECD.

2. The importance of taking account of asset prices has been recently emphasised by Greenspan (1999).

3. The size of financial markets refers to the value of assets provided to ultimate borrowers (e.g. firms and households) by the original lenders (e.g. households); layers of intermediaries in-between are excluded.

II. Changes in financial markets and implications for the balance sheets of households and firms

The increase in financial market size and composition

4. Financial markets have witnessed substantial growth in size and scope over the past two decades. Between 1985 and 1998, the value of total credit and equity outstanding has risen significantly from around 150 per cent to about 250 per cent of the GDPs of the largest OECD economies (Table 1).[4] Though bank credit remains the dominant source of finance in most countries, there has been a shift in the form of credit financing from bank loans to securities (including through the securitisation of loans, especially mortgages by banks). Reflecting these developments, financial wealth has been shifting out of bank deposits towards institutional investors and direct holdings of bonds and equities (Table 2), with this shift most pronounced in the United States. Thus, the share of financial wealth that is both liquid and traded has increased considerably, both in relation to GDP and as a share of total financial assets (Vickers, 1999). As a result, a larger fraction of total wealth may now be more sensitive to market movements in general and vulnerable to abrupt shifts in valuations.

Developments in household and corporate balance sheets

5. The increase in the overall amount of financing and its composition is reflected in the balance sheets of households and firms. For households in the largest OECD countries, their net wealth is equivalent to 4-to-6 times personal disposable income and has been rising over the 1990s, the striking exception being Japan (Figure 2).[5] The improving net wealth of the household sector is mainly due to increased financial wealth, especially in equities for the English-speaking countries, as well as in France. In fact, in several countries wealth in financial assets now exceeds that in real-estate holdings.

6. Household debt is equivalent to about 100 per cent of disposable income in most countries, but it remains, nonetheless, small in relation to the value of assets, particularly in countries where asset prices have been on an upswing (Figure 3). The ratio of financial assets over total liabilities is in the general range of 3 to 5; (Sweden and Italy are exceptions since households there hold fewer assets and are less indebted respectively). However, more recent indicators over the past year or so (not shown in Figure 3) suggest that household borrowing may have risen more rapidly in some countries and this appears to be partly due to enhanced facilities for borrowing. Examples are the increased ease and reduced cost with which equity can be withdrawn from real estate holding (e.g. through home-equity loans and cash-out refinancing) or with which borrowing for the purchase of shares can be undertaken on margin credit. The pace at which this is occurring in both the United States and the United Kingdom in 1999 and 2000 is especially rapid. In the United States, though balance sheets are healthy on average, personal bankruptcies currently exceed the levels reached during the 1991 recession, though they have now declined from their 1998 peak (Figure 4).

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4. Market capitalisation gives a distorted impression of the extent of financing through equity markets because the increase in stock market capitalisation could represent valuation effects (measures of expectations of future earnings) as well as larger capital issuance. In the United States, for example, market capitalisation has increased quite markedly, though net issuance was negative during 1994 to 1999, withdrawing approximately $150 billion from the market.

5. In the case of Japan, the real estate and equity bubbles in the late 1980s increased net wealth considerably and helped fan an output boom. The subsequent collapse in these markets resulted in a prolonged recession.

7. Non-financial firms' net worth as a per cent of GDP has remained low in most countries, with France a notable exception (Figure 5). However, for France, this may be due to stock market valuation gains from cross shareholdings. The share of enterprise financial assets (excluding the value of own equity) to GDP has increased in most countries. In the case of the United States, this has been accompanied by an increase in indebtedness that has risen to high levels as a share to GDP. Perhaps reflecting this trend, spreads between rates on corporate bonds and government securities have widened and exceed 2 percentage points -- a level last observed in the beginning of the 1990s (Figure 6). Nevertheless, in all countries, high asset values have provided firms with an increased buffer against adverse market developments. The corporate balance sheets in most of these OECD countries are also supported by net worth-to-market capitalisation ratios that have fallen dramatically due to rising stock market valuations (Figure 7).

III. Implications of higher asset values for the functioning of the economy

Wealth effects and the structure of household wealth holdings

8. When long-term interest rates rise in response to a tightening of policy, they will tend to lower asset values and, with them, household wealth. As a result of a (permanently) lower level of wealth, saving should increase in the household sector and thus lead to a cut back in consumption. The growth in the size of household assets, not least as a result of the recent surge in stock markets, is likely to imply a significant rise in the strength of the wealth effect. Quite simply, a given percentage increase in the value of wealth, be it equity or real estate wealth, provides a bigger effect on consumption as the size of wealth expands compared with that of income. Looking across a spectrum of large OECD countries, the ratio of private consumption to net worth has decreased by about 10 to 20 per cent between 1995 and 1998. Under certain simplifying assumptions, a 10 per cent rise in net wealth would increase personal consumption by ½ per cent more in 1998 compared with the mid-1980s (Table 3).

9. The role of the wealth effect on consumption will also be strengthened by a broader pattern of asset holdings, the bulk of which has traditionally been in the hands of a narrow portion of the population. In the United States, the 1998 *Survey of Consumer Finances* indicates that half the households now own stock compared with one-third in 1989 and that equity holdings as a per cent of income for the median household have more than doubled to one quarter over the past decade (Table 4). However, the distribution of stock holdings across different income categories of households has not changed significantly since 1989 (Starr-McClure, 1998; and Tracy *et al*., 1999). In most other countries, the share of households holding equities is significantly smaller than in the United States (e.g. about 13 per cent in France for 1998 but even less in Japan and Germany).

10. That being said, in the euro area anecdotal evidence suggests that share holding is spreading quickly, spurred on by privatisation as well as the burst of initial public offerings (IPOs) following the introduction of the euro. Change may come quickly in Japan, as well. There is likely to be at least a partial switch by households out of postal saving bank deposits to the equities market, following the coming to maturity of substantial time deposits at a time when interest rates are very low. The cross-country differences in the degree of equity holdings reflect in part structural conditions, *inter alia*, taxation systems, accounting standards and other regulations. For example, tax incentives for housing and pension savings in the United States and the prevalence of state-run pay-as-you-go pension systems in continental Europe have contributed significantly to the composition of their current financial structures. But these features may change as well, in the face of pressures from global competition and demographic change.

11. In contrast to the narrow distribution of holdings of equity, well over half the households in the majority of the OECD countries own their homes, suggesting a potential for much larger wealth effects resulting from increases in housing prices compared with equivalent increases in equity prices (Table 5).[6] Notable exceptions are Germany, Sweden, Switzerland and the Netherlands. Nevertheless, even in these countries, households' real property holdings are equivalent to two or more times their disposable income. Moreover, the unrealised equity of a home (defined as the value of the property, net of the mortgage) represents the bulk of net wealth for the median income household. For the United States, for example, it is near 90 per cent (Tracy *et al.*, 1999).

Balance sheet effects

Households and non-financial firms

12. Monetary policy also influences activity through its impact on the health of households' and firms' balance sheets. Changes in the market value of assets, while the re-payment of existing liabilities remains unchanged, will influence the creditworthiness of potential borrowers and, thus, their ability to obtain the financing they desire.[7] These effects are likely to be large to the extent that borrowers are dependent on financial institutions, for which it is costly to ascertain borrowers' risk characteristics.

13. The strength of balance sheet effects will be different across economies. They are generally less important in countries with better-developed and diversified financial markets which provide borrowers with alternative sources of funds. For households, in view of their small size and short track record with financial institutions as far as borrowing is concerned, balance sheet effects are more likely to be important. For firms, size may serve as an (albeit imperfect) proxy for the importance of this component of the balance sheet effect since it is likely that smaller firms are more likely to face financing constraints. It appears that countries in continental Europe and Japan have a greater share of small firms measured by employment (those with less than 100 employees) and the United States a greater share of large firms (those with more than 500 employees) (Table 6). This would suggest that the balance sheet effect would be stronger in the former countries than in the latter ones. However, looking forward, a trend towards consolidation among firms would work to reduce financing constraints.

14. Where they are important, balance sheet effects will tend to reinforce the business cycle, as borrowers' net worth and cash flow generally increase along with activity. Moreover, the impact of monetary policy will depend on the condition of the balance sheets. For example, a monetary policy tightening will work towards reducing the value of borrowers' collateral. If balance sheets are strong, as is the case in many OECD countries now, a monetary policy tightening may have to be more significant since a reduction in collateral will be less constraining than when balance sheets are already weak.

15. However, a rise in the share of actively traded assets (including those denominated in a foreign currency), as has occurred in most countries, has increased the potential for significant and sudden shifts in

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6. It is an open question whether the marginal propensity to consume for real property is higher than that for equity, with many researchers suggesting that it is equal for both categories of assets.

7. Balance sheet effects can thus limit households' and firms' funding for consumer durable and investment good purchases, to the extent that lenders are not satisfied with their creditworthiness; e.g. the value of the collateral on their balance sheets. In this situation, banks will either raise the lending premium or ration lending (Bernanke *et al.*, 1998; Bernanke and Gertler, 1999). Though there is general agreement that the balance sheet effect exists, its magnitude, at the aggregate level, remains an open question, and the micro data evidence is mixed (Gilchrist and Himmelberg, 1998).

the valuation of the balance sheet following changes in expectations for monetary policy or other developments. Price reversals may leave a larger number of borrowers in situations with an unwanted imbalance between assets and liabilities (unintended leverage), in some cases requiring a need for additional collateral. The larger the size of the gross asset and liability positions compared with the net asset position, the greater the potential impact of interest rate shifts or changes in other expectations on the health of the balance sheet. As monetary policy influences asset prices, these developments are likely to have increased the importance of the transmission of monetary policy through balance sheets.[8]

16. Assessing the prevalence of these effects is difficult, largely because of problems in ascertaining the balance sheet positions of various sectors, especially enterprises. Data are not very reliable in most countries and sometimes do not exist and/or are produced with long lags. Changes in national accounting standards are another source of data gaps. For enterprise accounts there are three main problems. First, except for a few cases, it is difficult to obtain market valuations for all the individual categories of the balance sheet. Second, balance sheet and net worth comparisons are often distorted by individual countries' accounting practices. Third, no account is made of off-balance sheet activity, where the degree of leverage is usually higher, or for implicit liabilities, such as under-funded pension schemes.

Banks

17. The health of bank balance sheets can also influence their borrowing capabilities and, thus, their capacity to on-lend to households and firms. The transmission of monetary policy to activity in this manner is contentious. In the event, the major countries' bank balance sheets, capital adequacy and profitability are generally strong, with the exception of Japan where both capital and profitability ratios are currently low (Figures 8 and 9). This suggests that in aggregate, changes in monetary policy are unlikely to have strong effects operating via bank balance sheets and associated restrictions on the supply of credit (Favero *et al*., 1999 and de Bandt and Davis, 1999). Moreover, in countries where such balance sheet effects could be the strongest -- where the loan market comprises many relatively small banks (Table 7) and there is a more bank-centred financial system -- banks have other assets on their balance sheet with which to buffer a monetary policy contraction. In these countries, a significant inter-bank market is an additional source of funds for banks. The country that has the least amount of assets for buffer purposes appears to be Japan where banks have undergone exceptional difficulties due to the need to restructure.[9] But even in the case of Japan, banks hold overseas assets that they can sell.

18. Looking forward, however, the pick-up in competition in European financial markets following the introduction of the euro is likely to reduce these buffers. But perhaps more importantly, these developments may provide alternative non-bank sources of finance to households and firms, as well as accelerate the pace of financial sector consolidation. This could potentially increase the overall supply of finance to households and firms. The situation in Japan is changing rapidly as well, encouraged by the exceptional problems currently faced by banks. These have resulted in consolidation within the banking sector, and are providing incentives for the development of non-banking sources of borrowing.

8. In the case of enterprises, an important new source of risk is off-balance sheet positions in derivatives markets.

9. One of the reasons why Japanese banks have suffered from low capital adequacy is that regulations permitted them to hold 45 per cent of unrealised capital gains on equity holdings in tier II capital. Following the large and sustained stock market correction in the late 1980s and early 1990s, banks' balance sheets weakened markedly (Kato, Ui and Watanabe 1999).

Sensitivity of asset prices to interest rate developments and other shocks

19. There are several developments that may have affected the way long-term interest rates, and asset prices more generally, are influenced by monetary policy. Market integration and the increased use of techniques that are designed to reduce risk for investors may be raising the sensitivity of asset values to monetary policy actions, while greater predictability of monetary policy may have strengthened the impact of policy moves.

Increased asset market integration

20. The greater integration of capital markets is generally considered to be amplifying the sensitivity of asset prices to monetary policy and other interest rate movements, originating in other markets and regions. Bond and equity markets have become more integrated, and the ratio of gross foreign portfolio liabilities to GDP continues to rise in all major countries. For example in the United States and Germany it has risen by 30 per cent of GDP between 1985 and 1998 (Table 8). Reflecting these developments, prices in markets for both bonds and equities have become more correlated between the United States and Europe (Figure 10).

The role for derivatives

21. The greater use of derivatives has two important ramifications for the functioning of financial markets (BIS, 1995). First, they may have speeded up the transmission of monetary policy from short-term interest rates, which are most sensitive to monetary policy developments, to the price of assets in other markets. This has been achieved, in part, by raising asset price substitutability across financial markets (Cohen, 1995). For example, the use of an interest rate option contract, based on government securities, can be used to protect against a change in the interest rate on a corporate security. This practice increases the link between government and corporate securities markets. Second, the greater use of derivatives may help the financial market reaction to monetary policy be less abrupt because they are designed to help insulate firms, at least temporarily, from unexpected changes in their revenues and/or their debt-servicing costs.

An increased role for dynamic hedging activity

22. Since the beginning of the 1990s, dynamic hedging activities have increased markedly. Such hedging may be another source of increased sensitivity of asset prices to monetary policy actions, through a strengthening of the relationship between short-term and long-term rates.[10] Indications of this escalation are the growth of the mortgage-backed securities (MBS) market and the over-the-counter (OTC) market for interest rate derivatives (Table 9), since dealers and other market participants traditionally cover their open (net) interest-rate derivative positions and their positions in MBS with (short) positions in government securities. The increased sensitivity in long-term rates can be illustrated with an example. An increase in short-term interest rates will raise long rates but it will also increase the average duration of the MBS as the degree of early repayments declines. To maintain a hedged position thus requires selling (short) longer-maturity government securities. This reinforces the impact of the original increase in interest rates,

10. The hypothesis of a change in interest rate dynamics has been posited by economists as well as market participants: Fernald *et al.*, (1994), and Goldman Sachs (1999).

producing what is called "positive feedback".[11] While there is agreement on such an impact over the short term, there is considerable doubt as to how long-lasting it may be. The impact of dynamic hedging activities on long-term rates may be altered in the future by a falling stock of government securities, which are critical hedging vehicles. Their supply, especially at the long end of the maturity spectrum, is likely to encounter a period of decline, in view of the outlook for a string of budget surpluses in several of the major countries (Mylonas *et al*., 2000).

Increased predictability of monetary policy

23. Markets have come to understand better the strategies followed by central banks and this may affect the sensitivity of long-term interest rates to movements in short-term ones. Many central banks, for some time now, have followed a gradualist policy strategy -- moving rates in consecutive small steps in the same direction (Figure 11). Reflecting this more systematic and predictable central bank behaviour, markets may now expect a small initial move to be followed by additional ones in the same direction. As a result, even a small move in short-term rates may generate, or even be anticipated by, a significant response from long-term rates.[12] In the event, it appears that the reaction of long-term to short-term rates has changed in the United States, and possibly Japan, but not to any marked extent in other major countries (Figure 12).[13]

IV. Implications for monetary policy

24. The previous sections argued that the significant development and growth of financial markets relative to GDP is likely to have changed the way monetary policy affects real activity, and ultimately inflation.[14] The net impact on the potency of policy interest rate changes, however, is uncertain. Overall, monetary policy may be more powerful through its effect on asset values which reinforce the traditional direct impact of interest rates on demand. However, monetary policy may take longer to have an influence on the economy, as wealth and balance sheet effects take longer to play out.

25. These issues take on an additional importance in the current conjuncture when monetary authorities across the OECD area are reviewing the pace at which monetary policy tightening should proceed. Present high asset values are an additional and important part of the information set for policy

11. For examples regarding positive feedback dynamics resulting from a movement in interest rates in the MBS market and the OTC derivatives market, see Fernald *et al.* (1994) and Kambhu (1998), respectively.

12. A larger impact from short- to long-term interest rates, as a result of increased predictability of central bank action, is not inconsistent with a credible commitment to price stability over the medium term. The existence of a credible policy requires that short-term interest rates several years into the future are relatively unaffected by a monetary policy action. However, a policy rate move may increase long-term rates -- which are an average of current and future short-term rates -- due to expectations of higher short-term rates in the near future.

13. The coefficients shown in this figure suggest that the reaction of long-term rates to a 100 basis point increase in short-term rates has increased from 35 basis points in the 1980s to 60 to 70 basis points since 1992 in the case of the United States. These results control for the short-term interest rate, as well as for other possible determinants of the change in the long-term interest rate, *inter alia*, industrial production and inflation.

14. In addition, the functioning of economies may be more uncertain and prone to factors affecting spending, which subsequently often feed through to asset prices. For example, the United States has been hit by a large positive supply shock, and equity prices are bringing forward to current demand extrapolations of future output gains.

decisions. In most countries, despite recent setbacks, equity market prices have reached heights that would have been considered unlikely several years ago. More recently, real estate prices in some countries have also started to rise.

26. When the monetary policy authorities are confident in their knowledge of the amount of tightening that is needed, they can move quickly to the required higher level for interest rates. However, to the extent that there is more uncertainty on the effects of monetary policy changes, *inter alia*, due to the development of financial markets, it argues for implementing a more gradualist approach. Such uncertainty could increase the risk that a strong policy action might lead to undesirable outcomes. By following a gradualist strategy central banks sacrifice the speed with which their (inflation) target is obtained in order to avoid overshooting the target.[15] In some cases, the degree of gradualism will be dictated by other considerations, such as central banks' anti-inflationary credibility. If it is poor, there is heightened risk that a gradual policy response would increase inflation expectations.

27. Following a policy of gradualism can create tension between pre-emptive and reactive policy moves. An increasing risk of "falling behind the curve" suggests that a gradualist policy may need to be followed by more aggressive moves, if events appear to be turning out differently than expected.[16] For example, if healthy balance sheets were to weaken the effects of higher interest rates, at the same time that wealth effects were stimulating consumption, monetary policy would face an increasing risk of "falling behind the curve".[17]

28. These tensions raise the importance of the monetary authorities' credibility and transparency. If inflation expectations are well anchored, policy actions will be more effective and thus the size of any move to achieve a given objective is likely to be smaller. A credible commitment to low inflation thus provides some insurance against "falling behind the curve". Transparency reduces the risk that policy changes will destabilise markets. Such a strategy would allow markets to adjust their anticipations appropriately and in this way, the risk of a disorderly adjustment of asset prices can be reduced.

15. Uncertainty about the length of the lag in the monetary transmission mechanism also suggests that central banks may prefer to move more gradually (Haldane, 1997; and Ha, 1999).

16. The term "falling behind the curve" is used to suggest that monetary policy authorities have reacted too little, too late in changing their policy rates to achieve their objectives.

17. A more aggressive policy stance may also be required in other cases. First, if the economy is subject to persistent effects, such as from wage indexation, this could offset the initial bias towards gradualism (Shuetrim and Thompson, 1999). Second, in a low inflation environment, a rule that reacts more pre-emptively to deviations from the bank's targets may reduce the likelihood that the economy hits the zero bound for nominal interest rates -- although, in practice, this has only been an issue for Japan (Reifschneider and Williams, 1999).

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TABLES AND FIGURES

Tables

Figures

Table 1. **Credit and equity intermediation**

(Values at end of the year, in per cent of GDP)

	Bank credit to the non-bank private sector				Private sector domestic debt securities[a]				*Of which:* Financial Institutions 1998	*Of which:* Corporate issuers 1998	Market capitalisation of equity markets[b]			
	1985	1990	1995	1998	1985	1990	1995	1998			1985	1990	1995	1998
United States	68	70	64	69	..	50	56	71	43	27	52	58	82	123
Japan	99	122	118	118	..	33	30	40	22	18	58	125	72	57
Germany	93	98	103	118	..	39	42	53	53	½	21	24	22	48
France	76	96	87	80		41	39	33	27	6	12	29	32	65
Italy	51	56	58	60	..	26	32	31	30	1	10	15	18	46
United Kingdom	47	116	116	120		16	17	28	19	8	62	86	119	169
Canada	68	78	79	88	..	9	9	14	6	8	41	47	61	94
Belgium	25	36	75	77	..	49	52	46	34	12	21	36	35	93
Netherlands	61	80	94	107	..	16	16	11	8	3	35	49	81	146
Sweden	87	129	103	..	..	55	57	50	43	7	31	47	67	121
Switzerland	141	168	168	167	..	68	59	50	37	13	68	73	117	150
G10[c]	75	88	84	86	..	39	42	52	35	17	44	63	67	98
G10 - Japan[c]	70	81	78	80	..	41	45	54	37	17	41	49	66	106

a) Amounts outstanding by country of issuer.
b) Data refers only to list shares.
c) Weighted by PPP-adjusted GDP.
Sources: IMF *International Financial Statistics;* BIS *International Banking and Financial Market Developments*, various issues; International Federation of Stock Exchanges; and OECD Secretariat.

Table 2. **Vehicles for savings**

(Financial assets as a per cent of GDP)

	All institutional investors				Insurance companies[a]				Pension funds[b]				Investment companies and other[c]				Bank deposits			
	1985	1990	1995	1997	1985	1990	1995	1997	1985	1990	1995	1997	1985	1990	1995	1997	1985	1990	1995	1997
United States	93	114	152	186	26	32	38	40	39	43	57	72	29	39	57	73	50	49	41	43
Japan	..	..	73	73	..	..	42	41	..	..	..	16	..	30	32	17	88	106	104	104
Germany	29	36	45	59	20	24	28	33	3	3	3	3	5	9	15	23	58	63	60	64
France	27	51	78	97	13	20	41	56	..	..	..	..	14	30	36	41	65	60	64	67
Italy	..	13	32	54	..	6	11	14	..	3	3	3	..	4	18	38	62	59	55	48
United Kingdom	92	104	164	185	37	43	74	80	44	50	69	79	11	12	22	26	38	91	99	101
Canada	44	57	83	101	20	24	28	29	22	28	37	43	3	5	18	28	61	72	75	75
Belgium	26	41	60	76	21	26	30	34	2	2	4	5	3	13	27	37	33	38	75	82
Netherlands	94	109	139	164	29	37	52	61	65	72	85	101	0	0	2	2	66	74	75	77
Sweden	..	80	103	..	..	32	47	..	..	2	2	..	..	46	54	..	44	40	38	41
Switzerland	..	..	75	93	..	..	61	72	..	..	..	..	..	..	14	21	109	106	117	135
G10[d]	..	..	110	134	..	..	38	42	..	..	..	49	..	27	39	47	60	67	63	64
G10 - Japan[d]	73	86	117	145	24	29	38	42	33	34	44	56	21	27	40	53	54	58	55	56

a) Life and non-life insurance companies.

b) Autonomous and non-autonomous pension funds. Autonomous pension funds separate funds established for purposes of providing incomes on retirement for specific groups which are organised, and directed, by private or public employers or jointly by the employers and their employees. These funds engage in financial transactions on their own account. Non-autonomous pension funds are schemes in which employers maintain special reserves which are segregated from their other reserves even though such funds do not constitute separate institutional units from the employers. For Switzerland, these data exist only for even years.

c) Investment companies are a type of financial intermediary which obtains funds from investors and uses them to purchase financial assets. In return, the investors receive shares in the investment company, and thus indirectly own a proportion of the financial assets that the company itself owns. They include closed-end investment companies, managed investment companies, open-end investment companies or mutual funds and unit investment trusts. Other comprises trust accounts of trust banks excluding investment trusts, etc.

d) Weighted by PPP-adjusted GDP.

Sources: *OECD Institutional Investors, Statistical Yearbook*, 1998 ; BIS ; IMF *International Financial Statistics.*

Table 3. **Private consumption compared with net wealth**

	In per cent of net worth				Per cent change	Elasticity of consumption with respect to net worth[a]	
	1985	1990	1995	1998	1985-98	1985	Last value
United States	18.9	18.6	18.1	15.6	-17.2	0.21	0.26
Japan	15.2	10.5	13.3	14.0[b]	-8.0	0.26	0.29
Germany	..	16.2	17.7	16.9	..	..	0.24
France	21.1	21.0	18.9	17.1[b]	-19.2	0.19	0.23
Italy	23.9	18.0	17.2	17.4[c]	-27.2	0.17	0.23
United Kingdom	17.7	15.7	16.0	15.0[c]	-15.5	0.23	0.27
Canada	2.1	21.3	19.3	19.8	-10.4	0.18	0.20
Sweden	39.1	28.9	32.7	..	-16.4[d]	0.10	..

a) The elasticity is calculated as follows: E = mpc x net worth/consumption, where marginal propensity to consume out of wealth (mpc) is assumed to equal 0.04.
b) 1997.
c) Secretariat estimate.
d) 1985-95.
Source: OECD calculations.

Table 4. **Distribution of stock ownership in the United States**

1989-1998

	1989	1992	1995	1998
	Percentage of households owning stock			
All households	31.6	36.7	40.4	48.8
Household income				
(in 1998 $US thousand)				
<25	9.1	13.9	16.0	19.0
25-50	31.5	40.2	45.4	52.7
50-100	51.5	62.5	65.4	74.3
100-250	82.3	76.6	81.1	90.0
250	79.1	88.0	84.6	95.6
	Median value of holdings (in 1998 dollars)			
All households	10.8	12.0	15.4	25.0
Household income				
(in 1998 $US thousand)				
<25	9.5	4.8	6.2	8.0
25-50	6.0	7.2	8.5	11.5
50-100	10.2	15.4	23.6	35.7
100-250	45.8	57.1	65.5	121.5
250	366.7	255.2	320.9	524.5
	Share of household stock owned by each group			
All households	100	100	100	100
Household income				
(percentile)				
Bottom 25	1.3	1.2	1.6	1.3
25-49	4.1	3.8	6.4	4.7
50-74	10.8	12.7	11.5	10.6
75-89	14.9	16.5	19.4	16.6
90-94	11.3	14.7	10.9	11.5
Top 5	57.6	51.2	50.2	55.3
	Percentage of group's stock in retirement accounts			
All households	25.4	34.0	33.3	32.9
Household income				
(in 1998 $US thousand)				
<25	17.2	24.3	21.1	21.8
25-50	29.1	35.8	35.6	42.8
50-100	32.5	42.8	41.0	45.2
100-250	31.4	35.4	39.1	39.6
250	16.5	25.1	21.2	18.4

Sources: US *Survey of Consumer Finances*, weighted data. Update of Tables 1 and 2 from "Stock market wealth and consumer spending" by M. Starr-McCluer, *Federal Reserve Board Working Paper* No. 9098-20, April.

Table 5. **Patterns of home ownership**

Owner-occupation ratio in per cent

Country	1970	1980	1990	1995
United States	65	68	64	67
Japan	59	62	61	..
Germany	36	40	38	41
France	45	51	54	54
Italy	50	59	67	67
United Kingdom	49	56	68	67
Canada	60	62	61	..
Belgium	55	59	62	66
Netherlands	35	42	44	47
Sweden	35	41	42	43
Switzerland	28	30	31	..

Sources: Oswald, A (1999), "The housing market and Europe's unemployment: a non-technical paper", *mimeo*, May; European Mortgage Federation; and OECD *Economic Surveys, Denmark* (1999).

Table 6. **Distribution of enterprises by size**

(Size distribution by number of employees in per cent)

	Year	Employment					Turnover/production[b]				
		0-9[c]	10-19	20-99	100-499[d]	500+	0-9[c]	10-19	20-99	100-499[d]	500+
United States	1995	11.8	7.7	18.4	14.6	47.5	10.8	6.1	17.0	13.1	53.0
Japan	1997	11.7	6.0	12.3	70.0		7.1	6.8	23.2	63.0	
Germany[e]	1996	28.4	20.2	11.1	40.3		13.4	17.9	23.4	45.3	
France	1997	19.9	8.3	21.4	19.1	31.3	..	..	..	..	..
Italy	1995	47.0	10.7	17.0	10.3	15.1	29.2	10.4	21.7	15.2	23.5
United Kingdom	1997	28.8	7.2	12.7	12.6	38.7	12.8	5.6	16.0	21.6	44.1
Canada	1995	20.4		18.2	16.2	45.3	..	..	..	..	..
Belgium	1997	16.7	8.9	21.1	17.9	35.4	28.3	8.6	22.0	17.4	23.6
Netherlands[e]	1996	24.3	17.0	19.4	39.2		17.6	21.6	24.3	36.5	
Sweden	1996	22.1	9.1	18.6	17.4	32.8	19.9	8.2	19.0	19.1	33.9
Switzerland	1995	29.0	10.0	20.6	16.8	23.5	..	..	..	..	..

a) Does not comprise all sectors for Japan, Germany, Italy, United Kingdom, Belgium, and the Netherlands.
b) Production for the United States, Japan and Germany, turnover for other countries.
c) 4-9 for Japan, 1-9 for Italy and Switzerland, 1-19 for Canada. France 0-9 includes unknown.
d) For Japan: more than 100.
e) Germany and the Netherlands: The breakdown is 0-9, 10-49, 50-249 and more than 250.
Sources: OECD database on SME Statistics, and Commission of the European Communities.

Table 7. **Concentration in the banking sector**

Cumulative market share of the top-five (top-ten) financial institutions in terms of total assets (per cent)

Country	1990	1995	1997
United States	9 (15)	13 (20)	17 (26)
Japan	30 (49)	28 (46)	31 (50)
Germany	..	17 (28)	17 (28)
France	52 (66)	..	57 (73)
Italy	24 (39)	26 (40)	25 (38)
United Kingdom[a]	49 (66)	..	47 (68)
Canada	55 (78)	65 (88)	78 (93)
Belgium	48 (65)	53 (71)	57 (74)
Netherlands	73 (84)	76 (86)	79 (88)
Sweden	70 (82)	86 (93)	90 (93)
Switzerland	45 (57)	51 (63)	49 (62)

a) Excluding foreign-owned banks.
Sources: British Bankers' Association, Building Societies' Association and national data.

Table 8. **International asset positions**[a]

(In per cent of GDP)

	Assets (Stocks, end of year)				**Liabilities** (Stocks, end of year)				**Net assets** (Stocks, end of year)			
	Portfolio	Equity	Debt	Other[b]	Portfolio	Equity	Debt	Other[b]	Portfolio	Equity	Debt	Other[b]
United States												
1985	2.8	1.1	1.8	16.1	10.8	3.3	7.6	12.6	-8.0	-2.2	-5.8	3.5
1990	5.9	3.4	2.5	18.0	16.0	4.2	11.8	17.1	-10.1	-0.8	-9.3	0.9
1995	15.8	10.5	5.3	16.4	25.3	7.1	18.2	19.1	-9.5	3.4	-12.8	-2.7
1998	22.5	16.1	6.4	19.3	39.3	13.5	25.8	21.1	-16.8	2.5	-19.4	-1.8
Japan												
1985	9.1	..	..	13.8	7.4	2.9	4.5	11.5	1.8	..	..	2.3
1990	18.6	..	..	30.7	12.4	2.8	9.6	35.1	6.3	..	..	-4.4
1995	18.3	3.1	15.2	28.8	11.7	6.5	5.2	26.3	6.6	-3.4	10.0	2.5
1998	24.8	4.9	19.9	33.6	14.9	7.1	7.8	27.3	9.9	-2.2	12.1	6.3
Germany												
1985	6.8	1.7	5.1	28.0	12.9	4.5	8.5	22.0	-6.2	-2.8	-3.3	6.0
1990	11.1	2.7	8.4	42.3	12.4	4.8	7.6	28.0	-1.3	-2.1	0.8	14.3
1995	15.6	6.8	8.8	39.1	25.9	4.5	21.4	32.5	-10.3	2.3	-12.5	6.6
1997	24.0	11.5	12.5	46.4	36.8	9.2	27.6	41.7	-12.8	2.4	-15.2	4.7
France												
1990	6.3	3.1	3.2	36.9	16.7	4.3	12.4	35.5	-10.4	-1.1	-9.3	1.4
1995	12.9	3.7	9.2	42.4	27.3	7.7	19.7	36.3	-14.5	-4.0	-10.5	6.1
1998	37.1	10.2	26.9	45.9	47.1	19.8	27.2	44.9	-10.0	-9.6	-0.4	1.0
Italy												
1985	1.5	1.1	0.5	16.5	1.2	..	1.2	26.0	0.4	..	-0.7	-9.5
1990	5.4	1.4	4.0	14.4	4.6	0.8	3.7	30.1	0.8	0.5	0.3	-15.8
1995	15.2	1.2	14.0	22.7	21.1	1.5	19.6	30.7	-5.9	-0.2	-5.6	-8.0
1998	31.7	3.0	28.7	31.2	43.8	5.3	38.5	30.0	-12.1	-2.3	-9.8	1.3
United Kingdom												
1985	30.0	16.0	14.0	114.2	24.4	4.5	19.9	110.7	5.6	11.5	-5.9	3.6
1990	35.6	18.3	17.3	100.3	34.1	10.7	23.4	108.6	1.5	7.6	-6.1	-8.3
1995	68.4	30.5	37.9	115.0	54.2	21.5	32.8	141.4	14.1	9.0	5.2	-26.4
1998	86.2	41.6	44.6	130.8	80.7	47.6	33.2	158.1	5.5	-6.0	11.5	-27.3
Canada												
1985	4.0	2.9	1.1	20.1	28.5	3.1	25.4	26.9	-24.6	-0.2	-24.3	-6.8
1990	5.9	4.4	1.5	15.3	34.7	3.1	31.6	22.2	-28.8	1.4	-30.1	-6.9
1995	10.4	8.1	2.3	20.9	52.6	4.5	48.1	22.0	-42.2	3.6	-45.8	-1.1
1998	16.1	12.2	3.9	25.4	56.5	5.8	50.8	27.6	-40.5	6.4	-46.9	-2.2
Netherlands												
1985	14.2	6.6	7.6	53.7	26.9	17.2	9.7	42.9	-12.7	-10.6	-2.1	10.7
1990	20.2	10.5	9.7	64.5	32.2	17.6	14.6	55.3	-12.0	-7.1	-4.9	9.2
1995	38.9	22.0	16.9	59.2	54.3	31.3	23.0	55.1	-15.4	-9.3	-6.1	4.1
1997	64.8	33.8	31.0	65.8	85.7	59.9	25.8	7.1	-20.8	-26.1	5.3	58.7
Sweden												
1985	1.0	0.7	0.3	18.6	2.4	2.4	..	45.6	-1.3	-1.7	..	-27.1
1990	4.9	4.2	0.7	24.9	7.4	2.7	4.7	69.6	-2.5	1.5	-4.0	-44.8
1995	20.6	11.6	9.0	31.4	36.8	18.8	18.0	77.2	-16.1	-7.2	-9.0	-45.8
1998	50.0	30.7	19.4	29.1	100.9	37.4	63.5	40.6	-50.9	-6.7	-44.2	-11.6

a) Not including foreign direct investment.
b) Other investment includes trade financing, bank, government and monetary authorities' positions.
Sources: *IMF Balance of Payments Statistics* and OECD Secretariat.

Table 9. Interest rate derivatives on organised exchanges and on over-the-counter markets[a]

$US trillion

	Organised exchanges					
	Turnover in notional amounts[b]				Notional amounts outstanding	
	1992	1995	1997	1998	End-1997	End-1998
Futures	141.0	266.3	274.6	294.8	7.5	7.7
On short-term instruments	113.3	218.2	223.2	239.9	7.1	7.3
Of which:						
3-month euro-dollar rates	66.9	104.1	107.2	119.3	2.6	2.9
3-month euro-yen rates	14.0	46.8	29.9	23.5	1.6	1.2
3-month euro-DM rates	7.5	18.4	25.3	31.4	1.0	1.2
3-month PIBOR	5.8	15.9	12.3	4.4	0.2	1.0
On long-term instruments	27.7	48.2	51.4	54.9	0.4	0.4
Of which:						
US Treasury bonds	7.1	8.7	10.1	11.3	0.1	0.1
Japanese government bonds	9.7	16.2	10.6	9.0	0.1	0.1
German government bonds	3.2	9.3	14.5	19.5	0.1	0.1
French government bonds	2.8	3.4	3.1	2.2	0.0	0.0
Options[c]	25.5	43.3	48.6	55.5	3.6	4.6
Futures and Options (in per cent of G10 GDP)	..	..	..	..	59.7	63.9

	Over-the-counter markets (rounded values)					
	Notional amounts outstanding[b]		Gross market values[d]		Approximate leverage ratio	
	March 1995	June 1999	March 1995	June 1999	March 1995	June 1999
Total	26.6	54.1	0.6	1.4	41	40
FRAs	4.6	7.1	0.0	0.0	256	592
Swaps	18.3	38.4	0.6	1.2	33	31
Options	3.5	8.6	0.1	0.1	58	70
Up to 1 year	11.7	20.3	..			
Between 1 and 5 years	11.5	22.0	..			
Over 5 years	3.5	11.8	..			
US dollar	9.3	16.1	0.2	0.3	51	48
Euro	..	17.5	..	0.6	..	30
Japanese yen	5.6	10.2	0.2	0.2	33	53
Total (in per cent of G10 GDP)	176.6	317.9	..	..	..	..

a) All figures are adjusted for double-counting.

b) Notional turnover amounts capture the relative scale and growth of activity and provide rough measures of market transfer risk comparable with transactions in underlying markets.

c) Calls and puts.

d) Gross market values have been calculated as the sum (in absolute terms) of the positive market values of all reporters' contracts and the negative market value of reporters' contracts with non-reporters (as a proxy for the positive market value of the latter's positions). It measures the replacement cost of all outstanding contracts, showing therefore the transfer of financial wealth which would have taken place if all outstanding contracts had been on that given date.

Sources: BIS 68th *Annual Report*, 1998; BIS "The global OTC derivatives market at end-June 1998" (*Press release*); December 1998; BIS 69th *Annual Rep*ort, 7 June 1999; BIS "The global OTC derivatives market at end-June 1999" (*Press release*), November 1999.

Figure 1. GDP growth and asset market prices
(Index 1984=100)

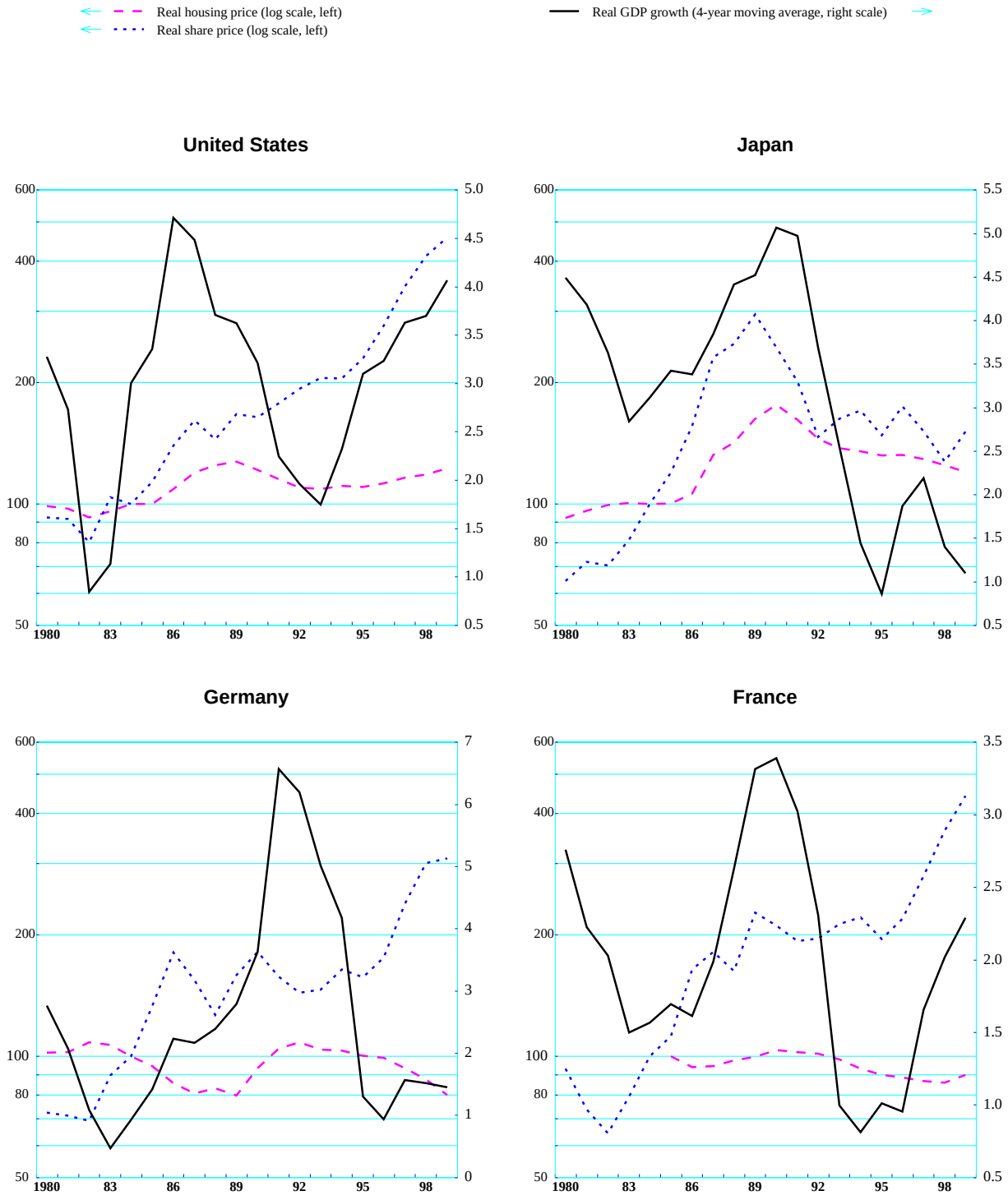


Figure 1 (cont.) GDP growth and asset market prices
(Index 1984=100)

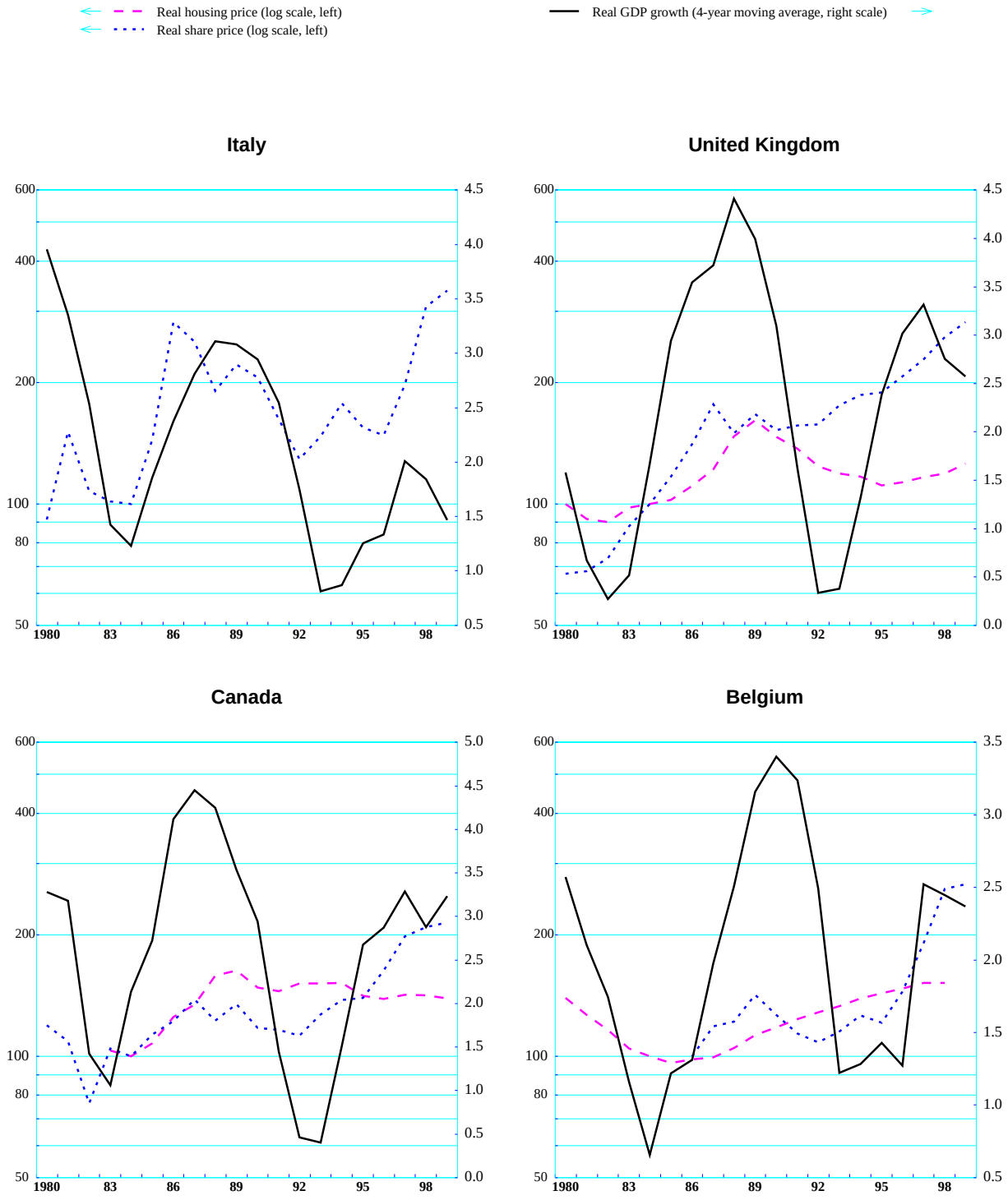


Figure 1 (cont.) GDP growth and asset market prices
(Index 1984=100)

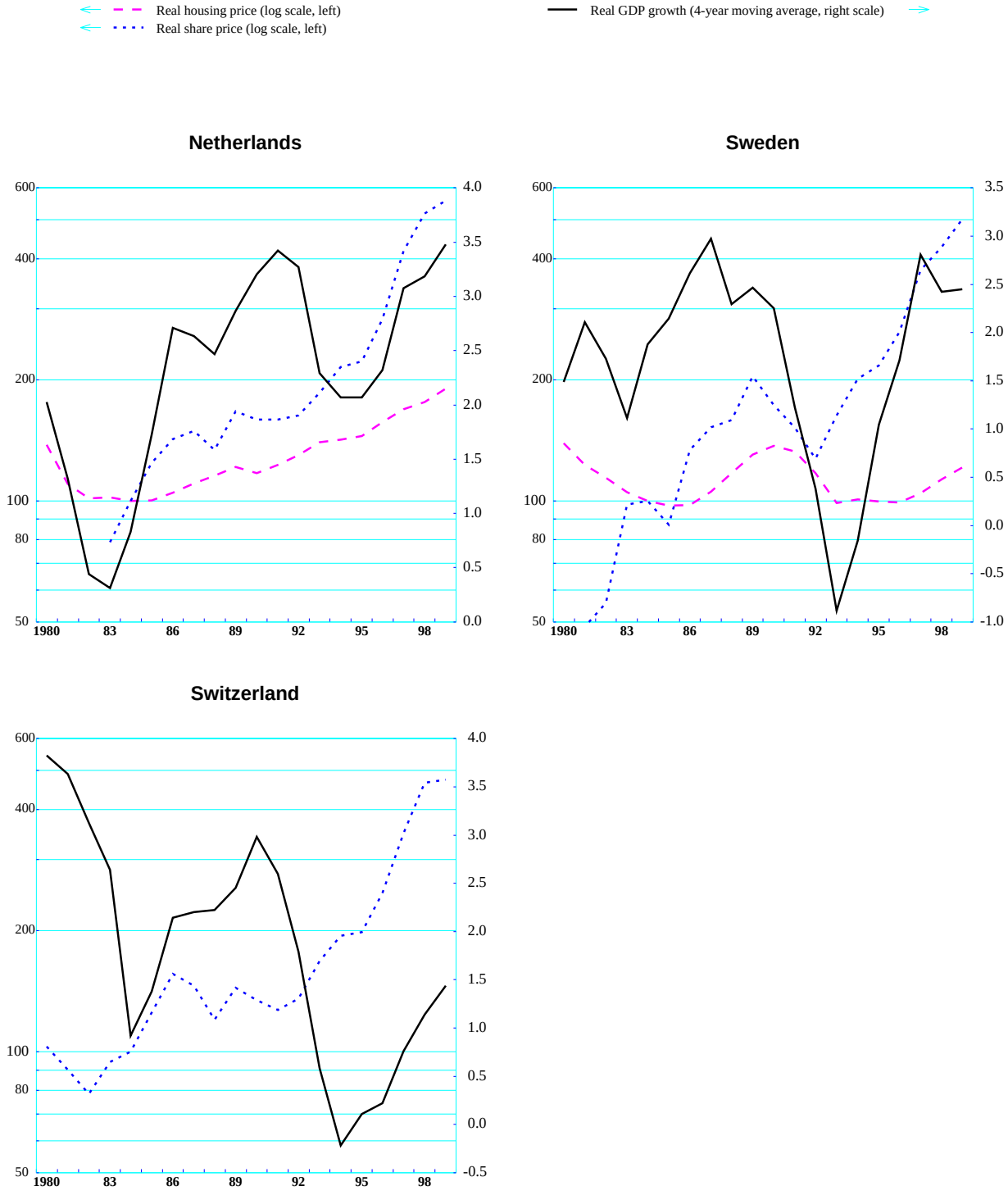
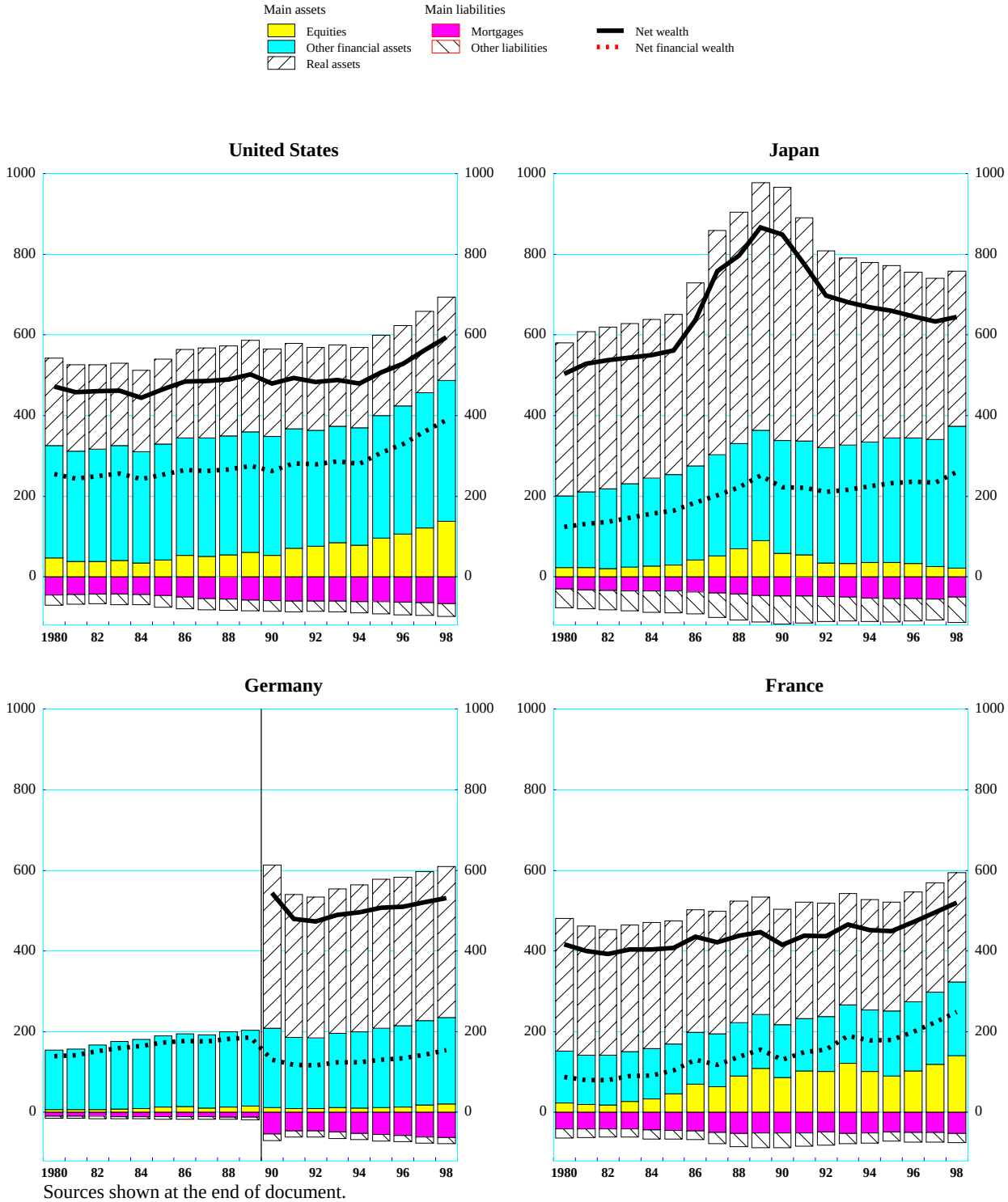
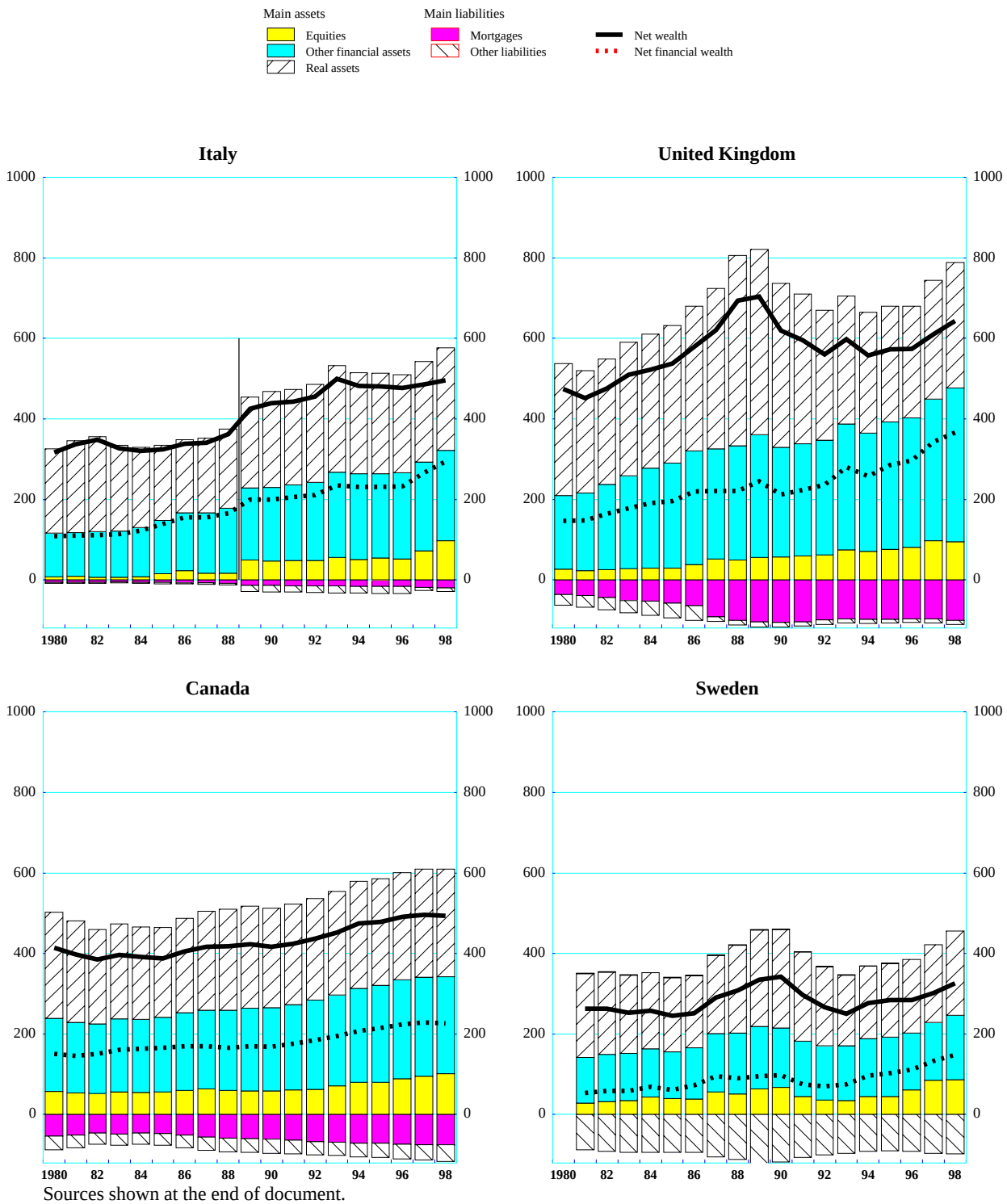


Figure 2. Household assets and liabilities
(in per cent of household disposable income)



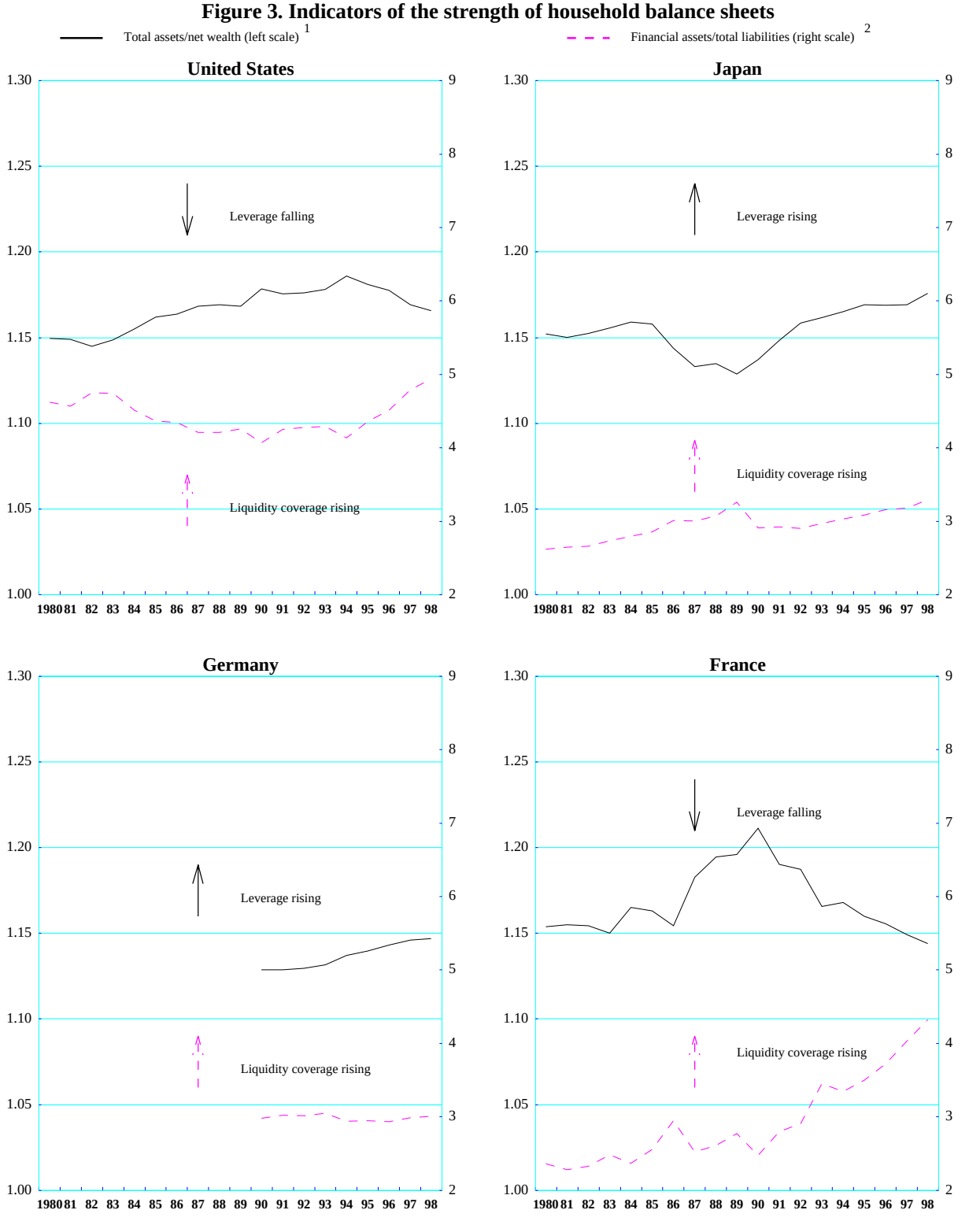
Sources shown at the end of document.

Figure 2 (cont.) Household assets and liabilities
(in per cent of household disposable income)



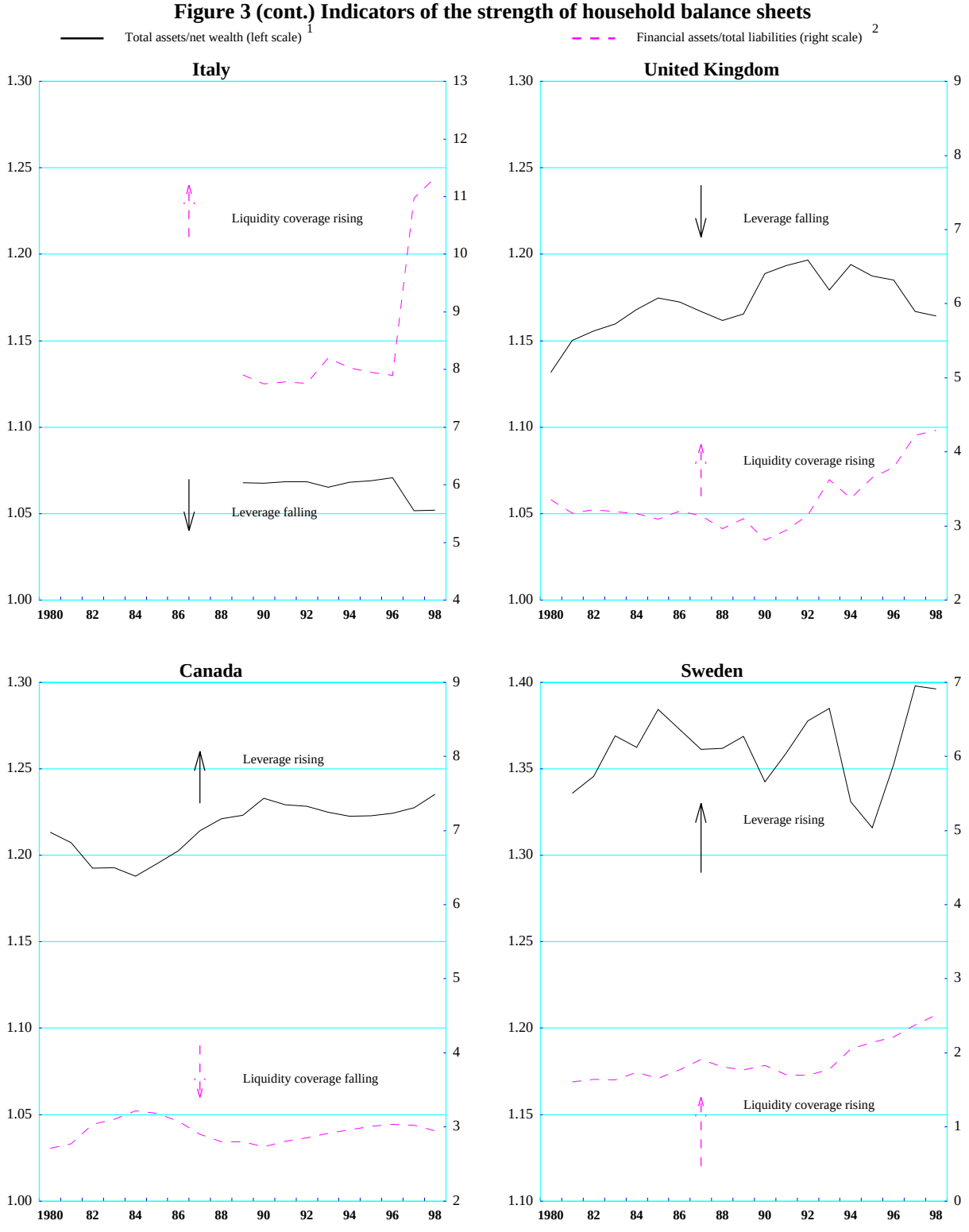
Sources shown at the end of document.

Figure 3. Indicators of the strength of household balance sheets



1. The ratio of total assets to net wealth is an indicator of leverage or gearing.
2. The ratio of financial assets to total liabilities is an indicator of the ability to quickly liquidate assets to pay off liabilities.
Sources shown at the end of document.

Figure 3 (cont.) Indicators of the strength of household balance sheets



1. The ratio of total assets to net wealth is an indicator of leverage or gearing.
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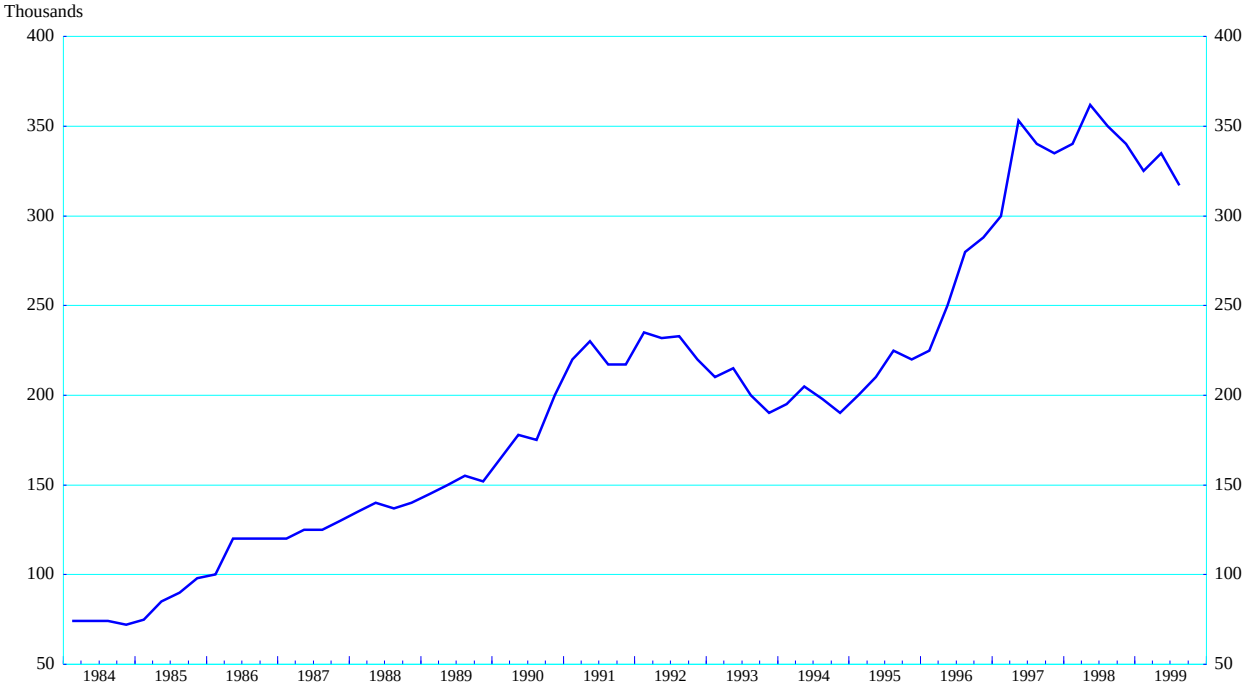
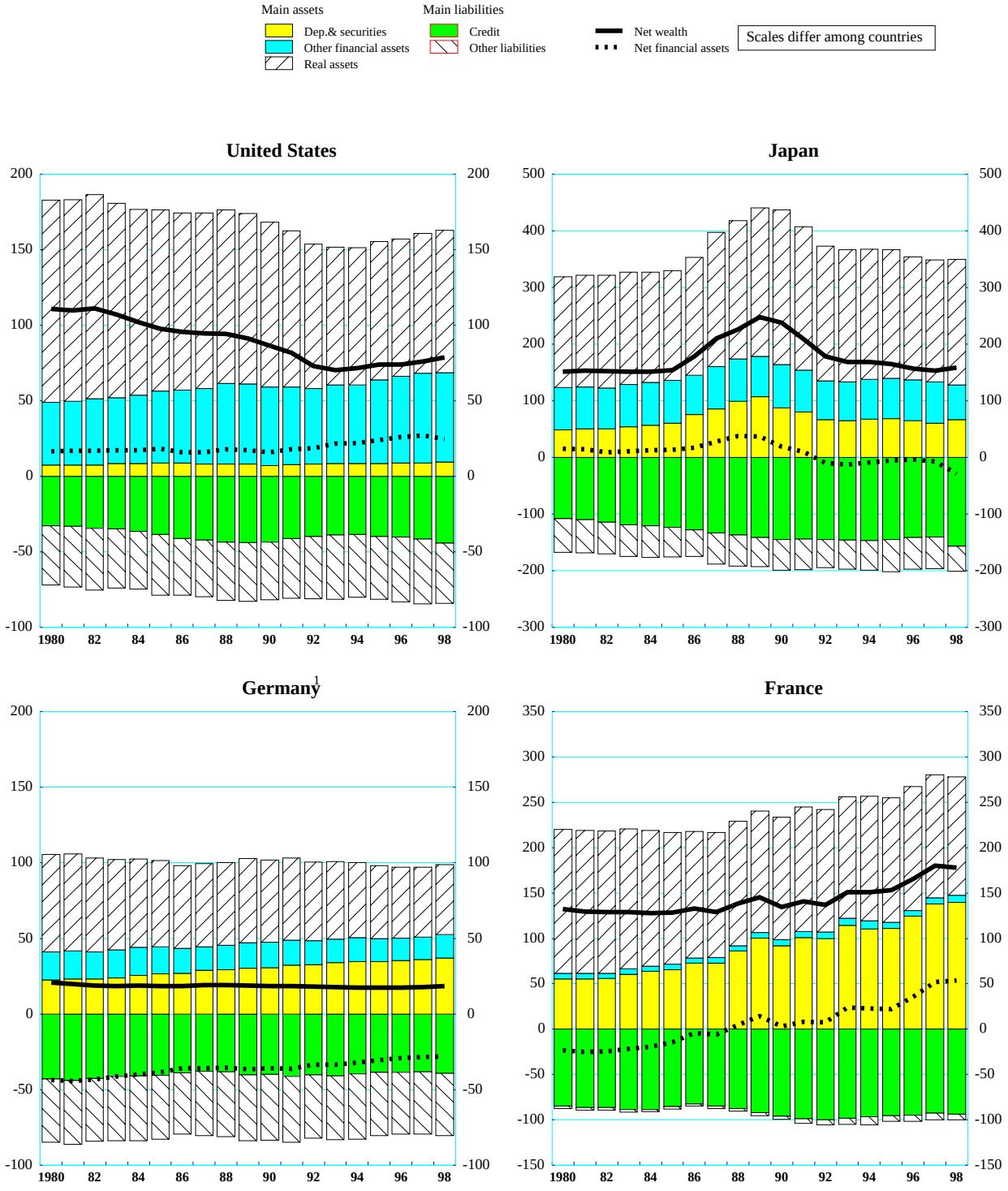
Sources shown at the end of document.

Figure 4. Personal bankruptcy filings in the United States



Source: Federal Deposit Insurance Corporation.

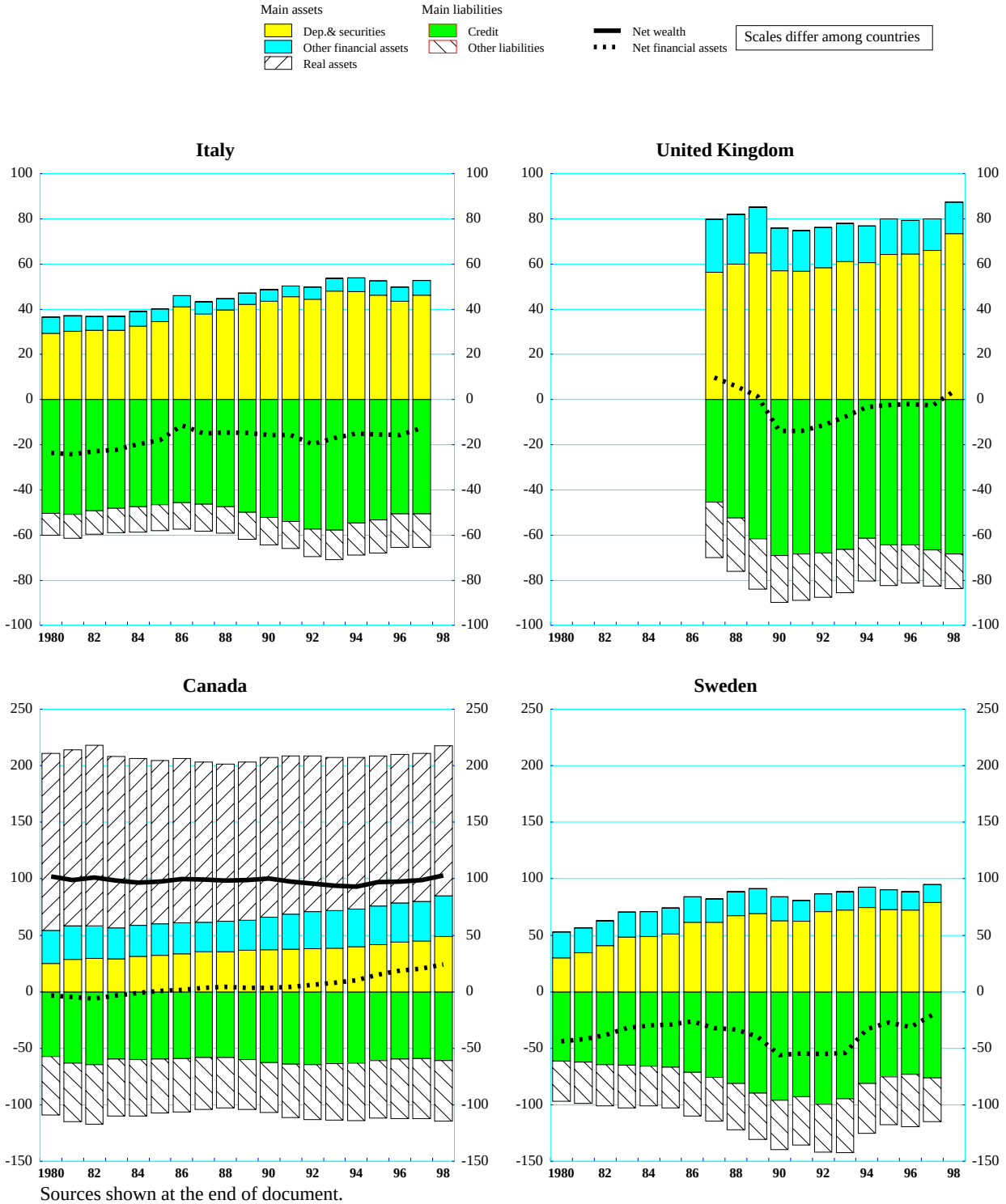
Figure 5. Corporate sector balance sheet developments
(in per cent of GDP)



1. Comprises only enterprises in former West Germany.

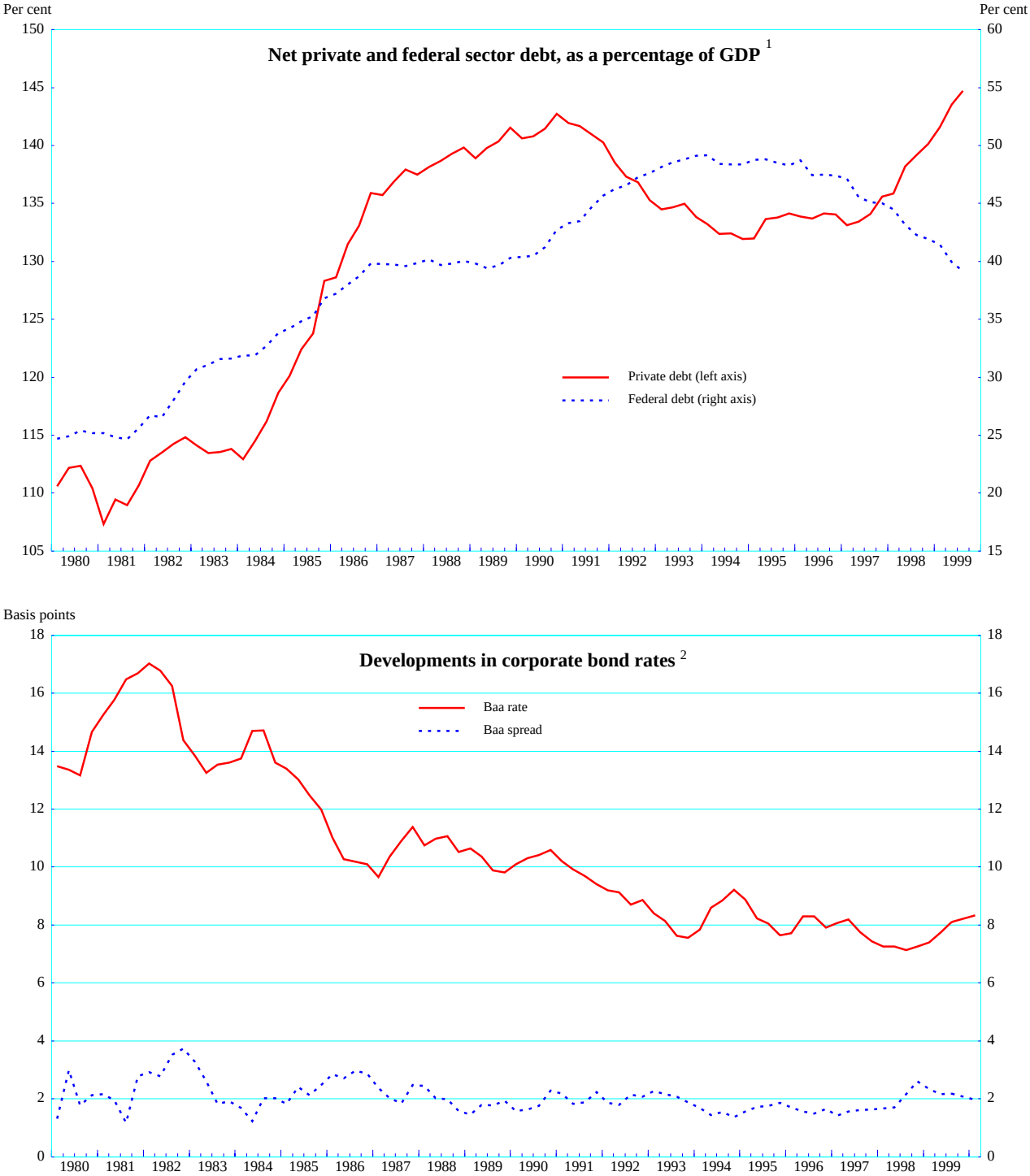
Sources shown at the end of document.

Figure 5 (cont.) Corporate sector balance sheet developments
(in per cent of GDP)



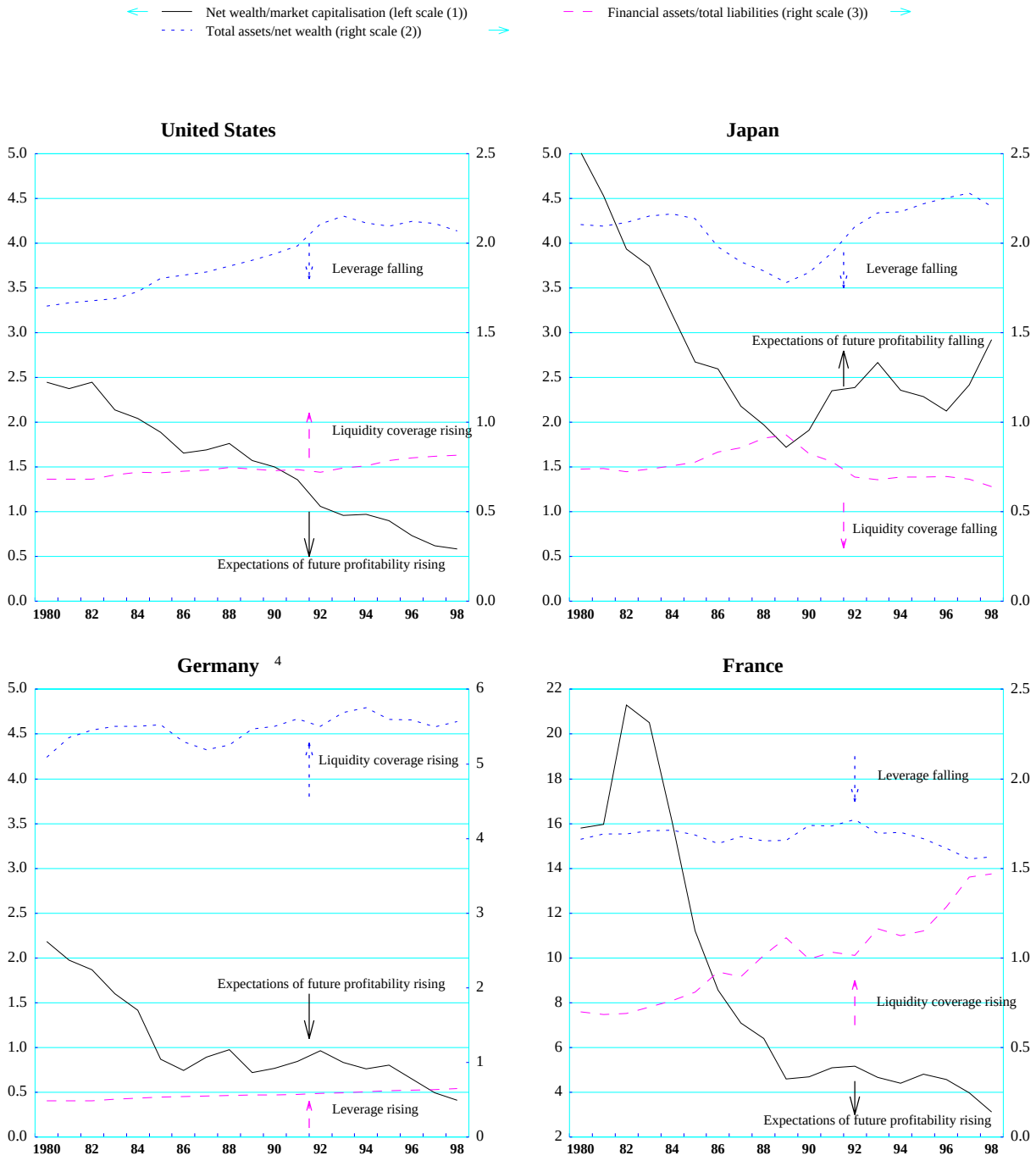
Sources shown at the end of document.

Figure 6 . Private sector debt and corporate interest rate spreads in the United States



1. The debt aggregate is the outstanding credit market debt of the domestic non-financial non-federal sectors (i.e. mortgages, tax-exempt and corporate bonds,consumer credit,bank loans, commercial paper, and other loans).
2. The spread is calculated as the difference between the interest rate on Baa rated corporate bonds and 10-year US government bonds.
Source: OECD Secretariat and Board of Governors of the Federal Reserve System.

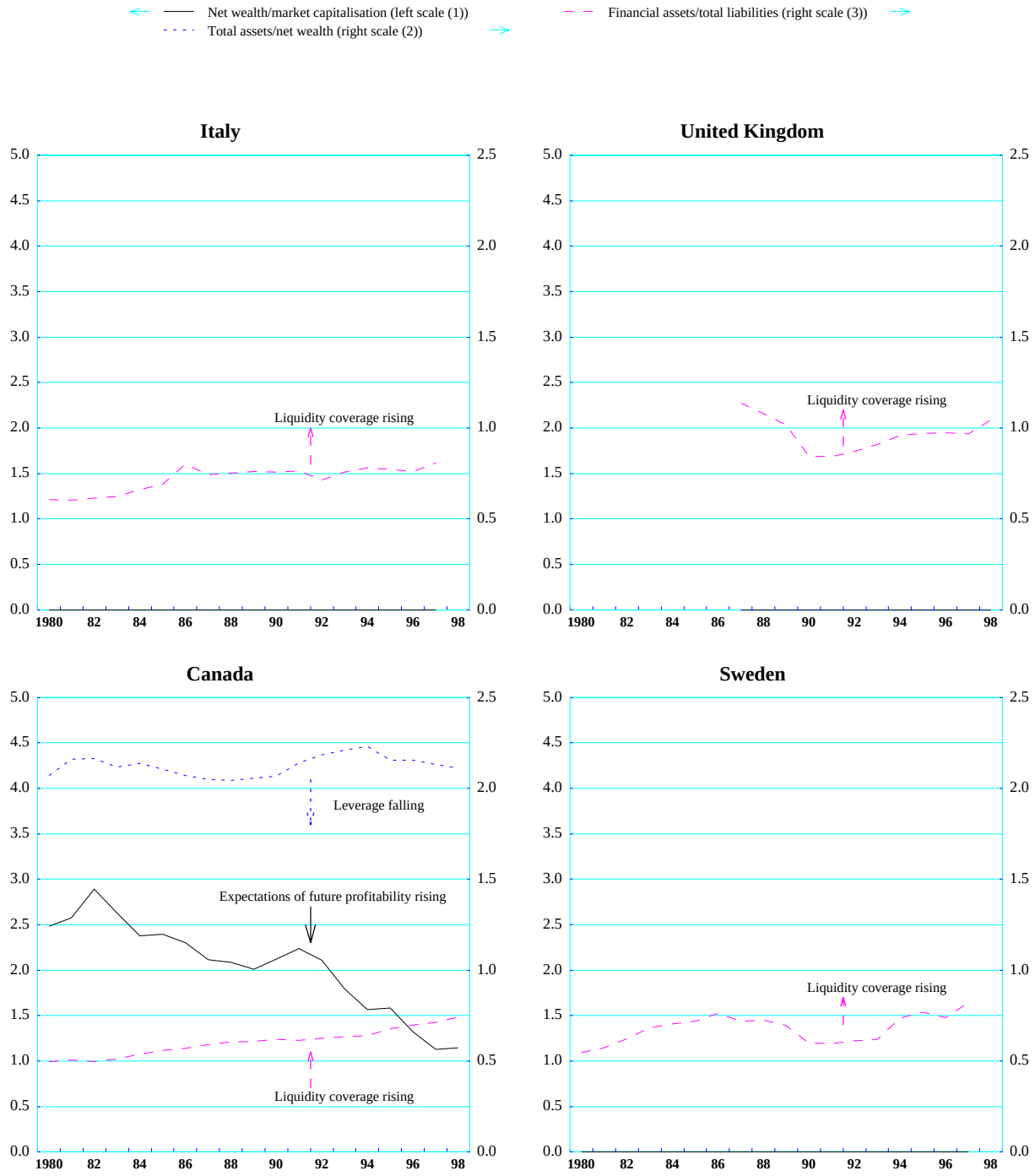
Figure 7. Indicators of the strength of corporate sector balance sheets



1. A comparison of the ratio of the stock market value of a firm to its balance sheet value is an indicator of the market's expectations of the firms' future value added.
2. The ratio of total assets to net wealth is an indicator of leverage or gearing.
3. The ratio of financial assets to total liabilities is an indicator of the ability to quickly liquidate assets to pay off liabilities.
4. Comprises only enterprises in former West Germany.

Sources shown at the end of document.

Figure 7 (cont.) Indicators of the strength of corporate sector balance sheets



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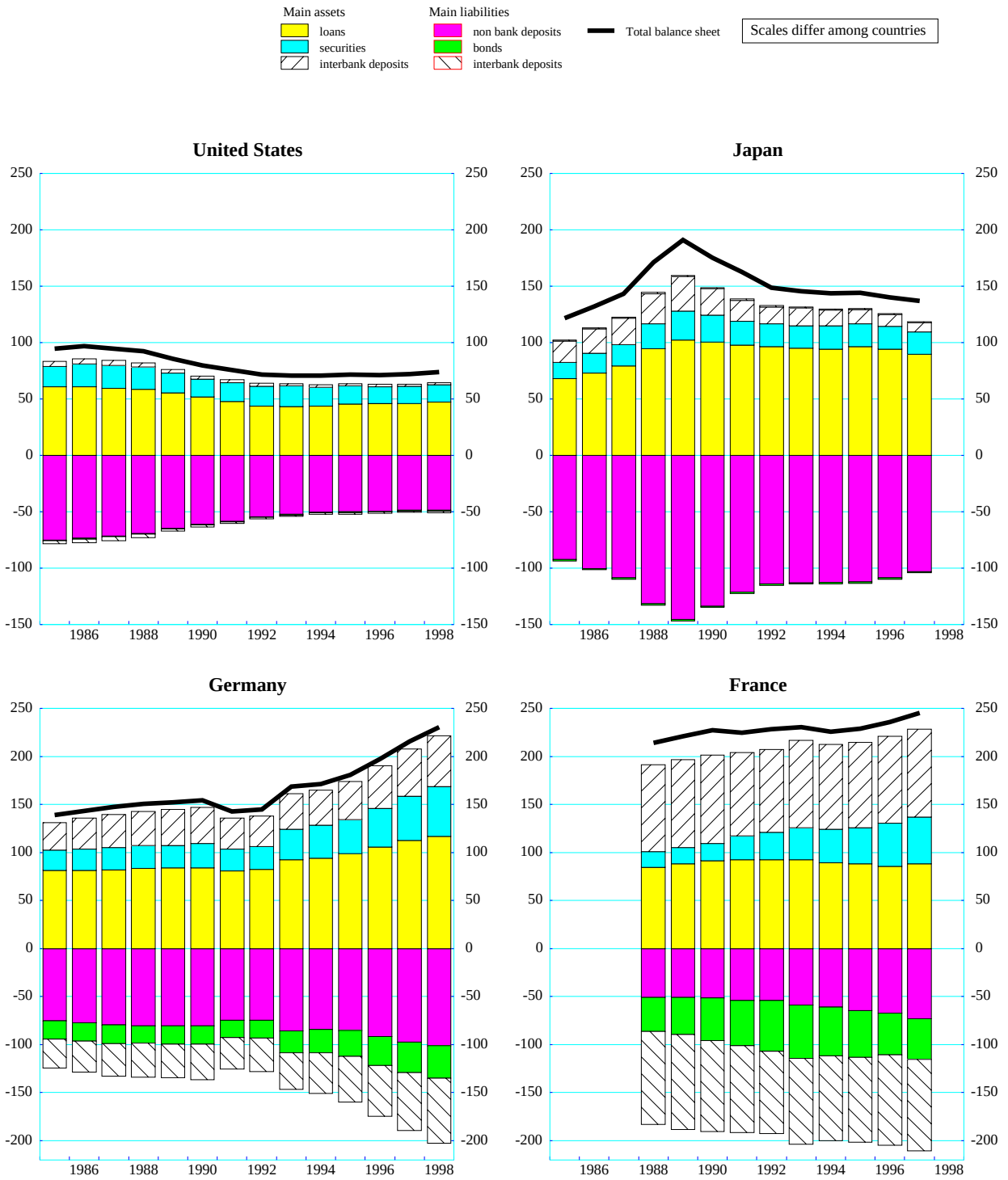
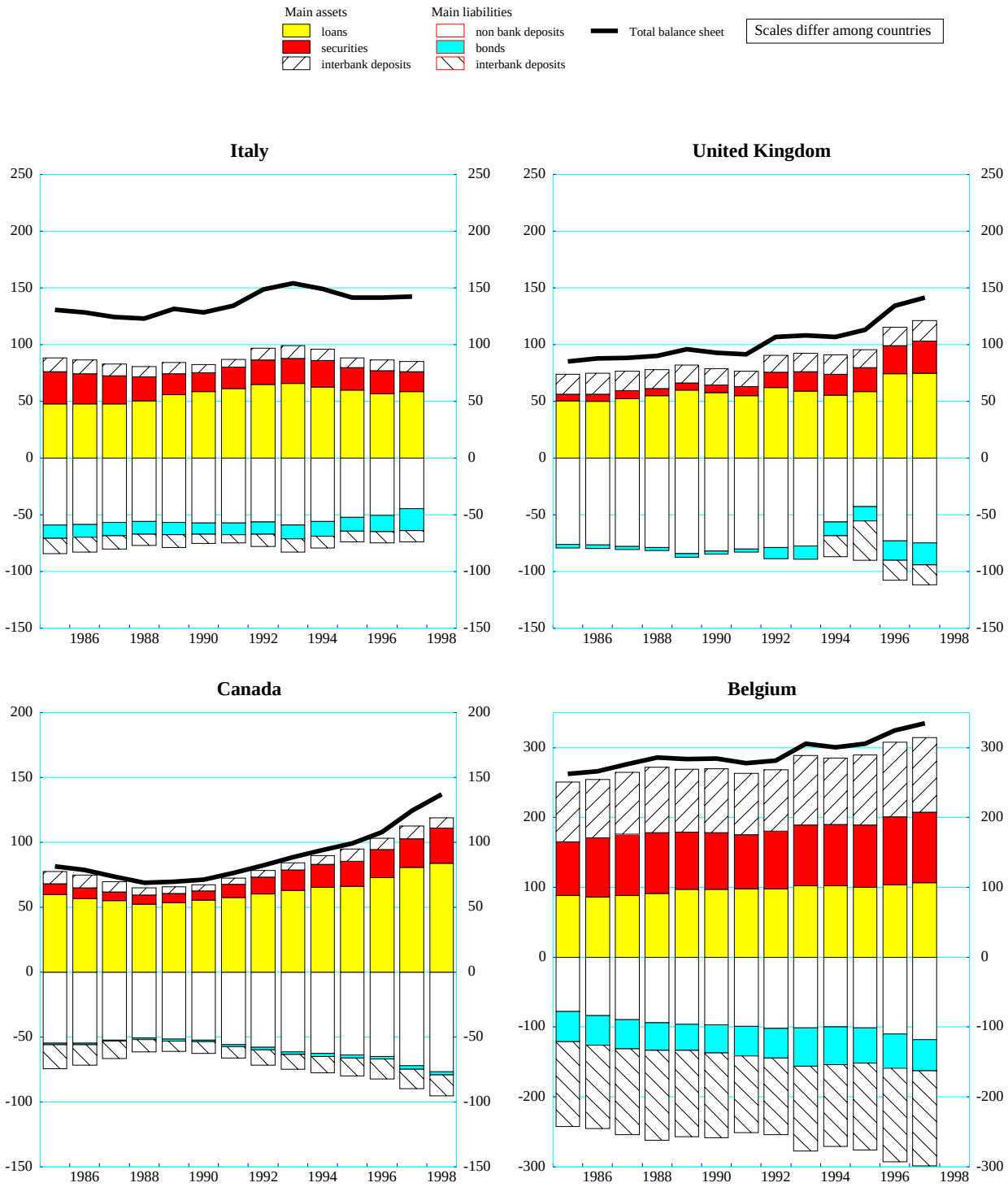
Sources shown at the end of document.

Figure 8. Bank balance sheet developments
(in per cent of GDP)



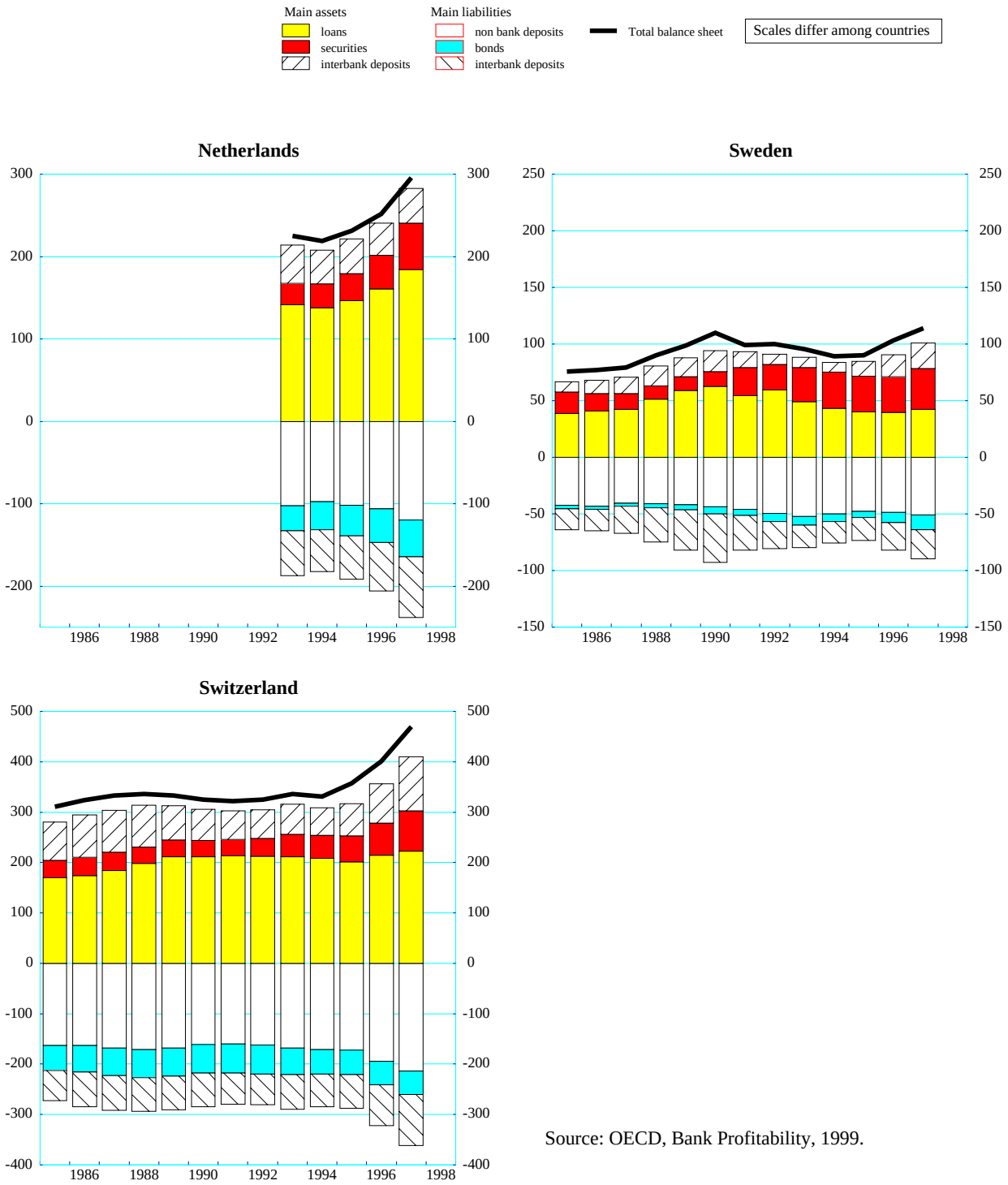
Source: OECD, Bank Profitability, 1999.

Figure 8 (cont.) Bank balance sheet developments
(in per cent of GDP)



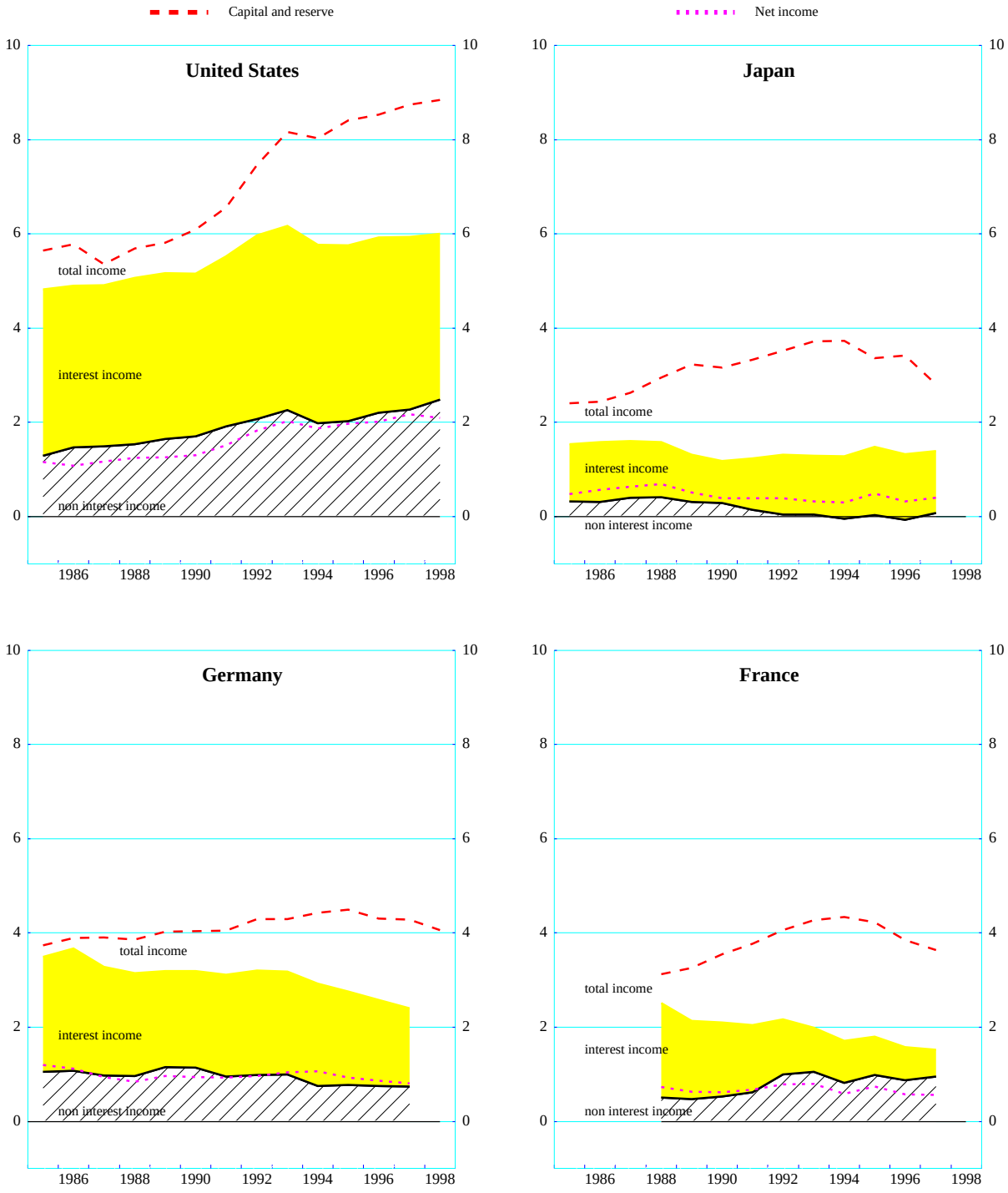
Source: OECD, Bank Profitability, 1999.

Figure 8 (cont.) Bank balance sheet developments
(in per cent of GDP)



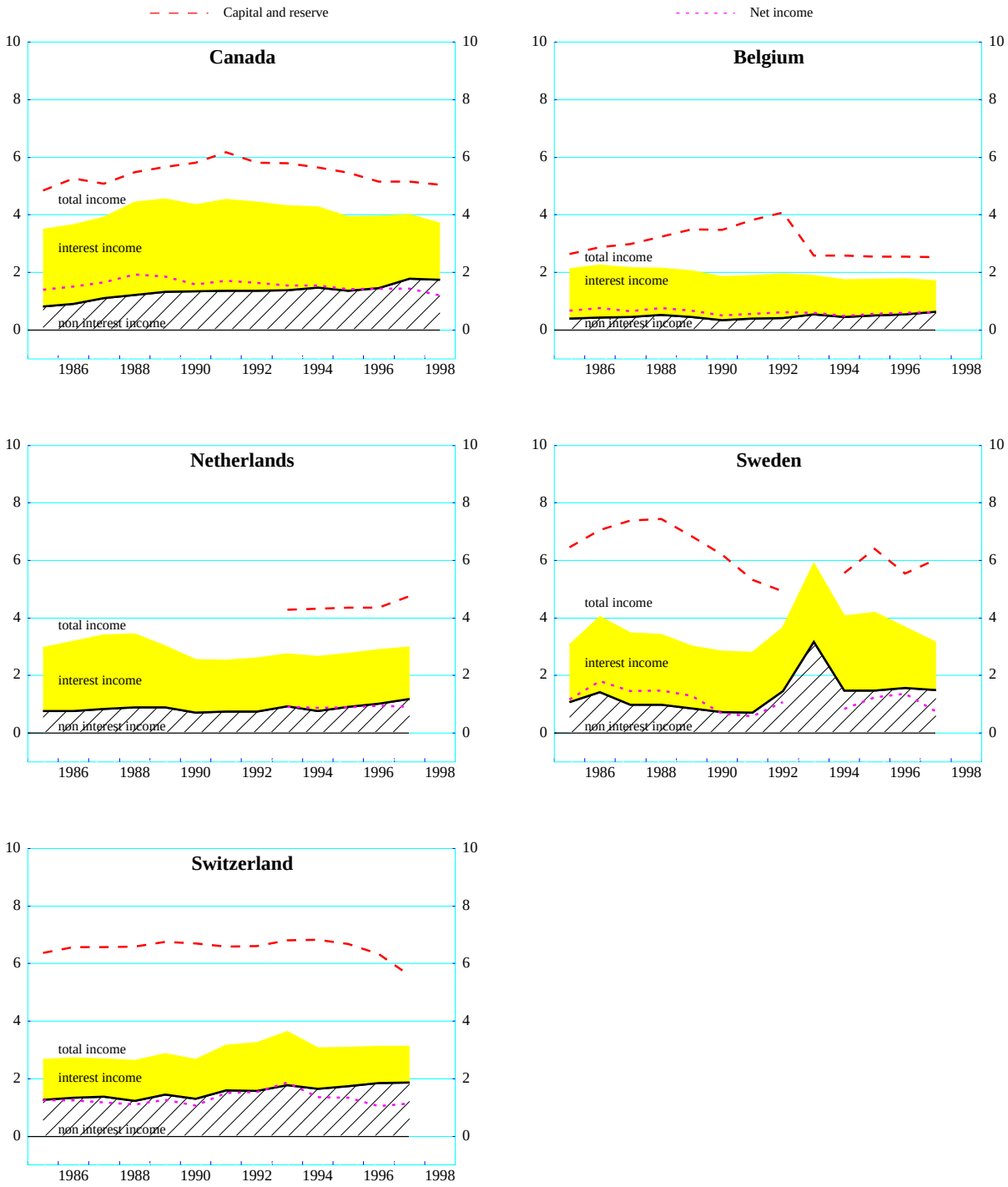
Source: OECD, Bank Profitability, 1999.

Figure 9. Indicators of the strength of bank sector balance sheets
(as per cent of balance sheet)



Source: OECD, Bank Profitability, 1999.

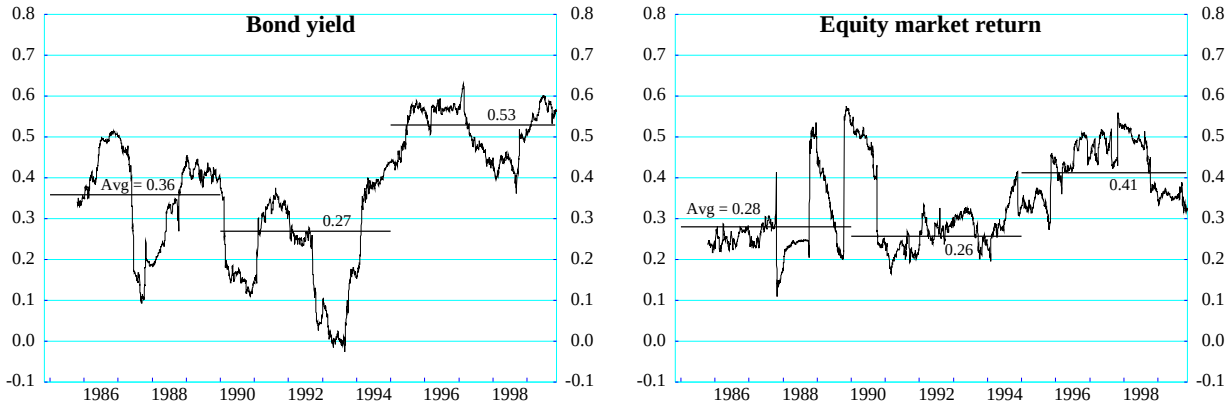
Figure 9 (cont.) Indicators of the strength of bank sector balance sheets
(as per cent of balance sheet)



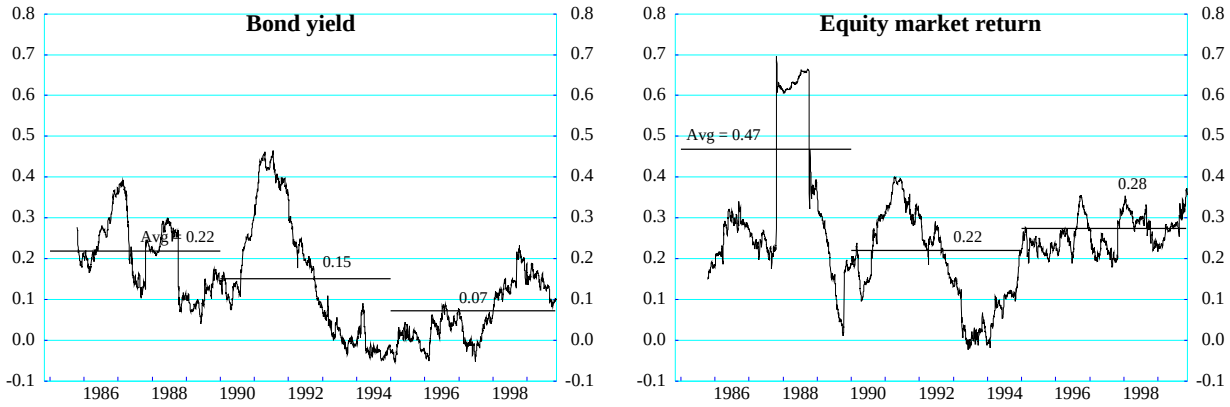
Source: OECD, Bank Profitability, 1999.

Figure 10. Bond yield and equity market return correlations

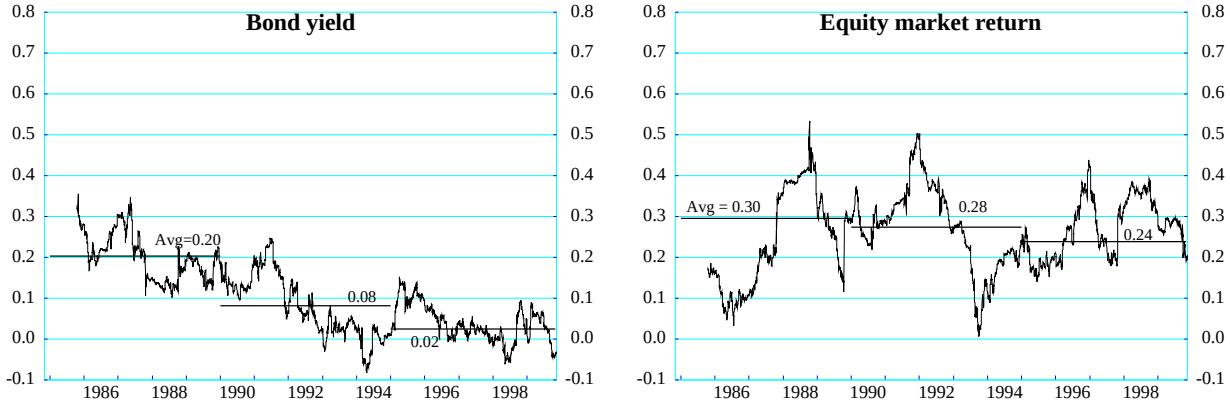
A. United States-Germany



B. United States-Japan



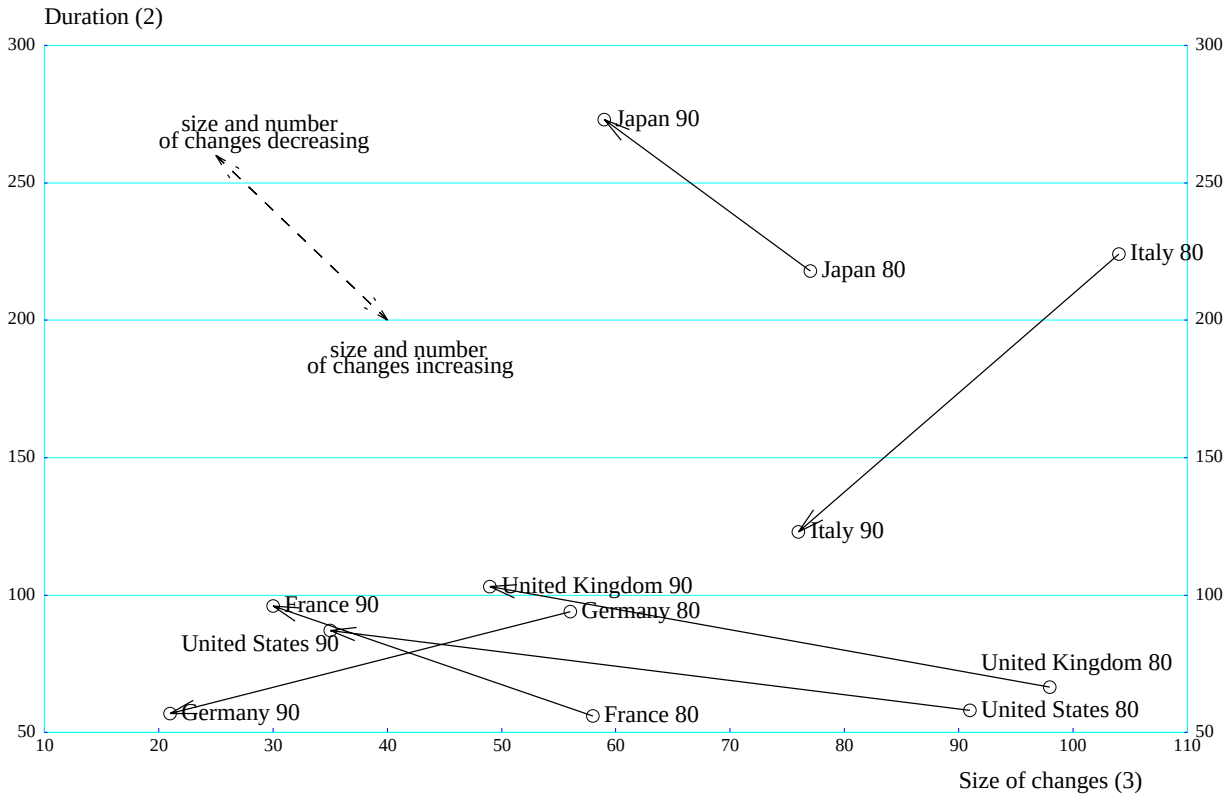
C. Germany-Japan



Note: 250-day rolling correlation of daily changes in long-term bond yields and in the equity returns. US bond yield changes and US equity returns are lagged.

Source: OECD calculations based on BIS data.

Figure 11. Policy rate changes during the 1980s and 1990s [1]

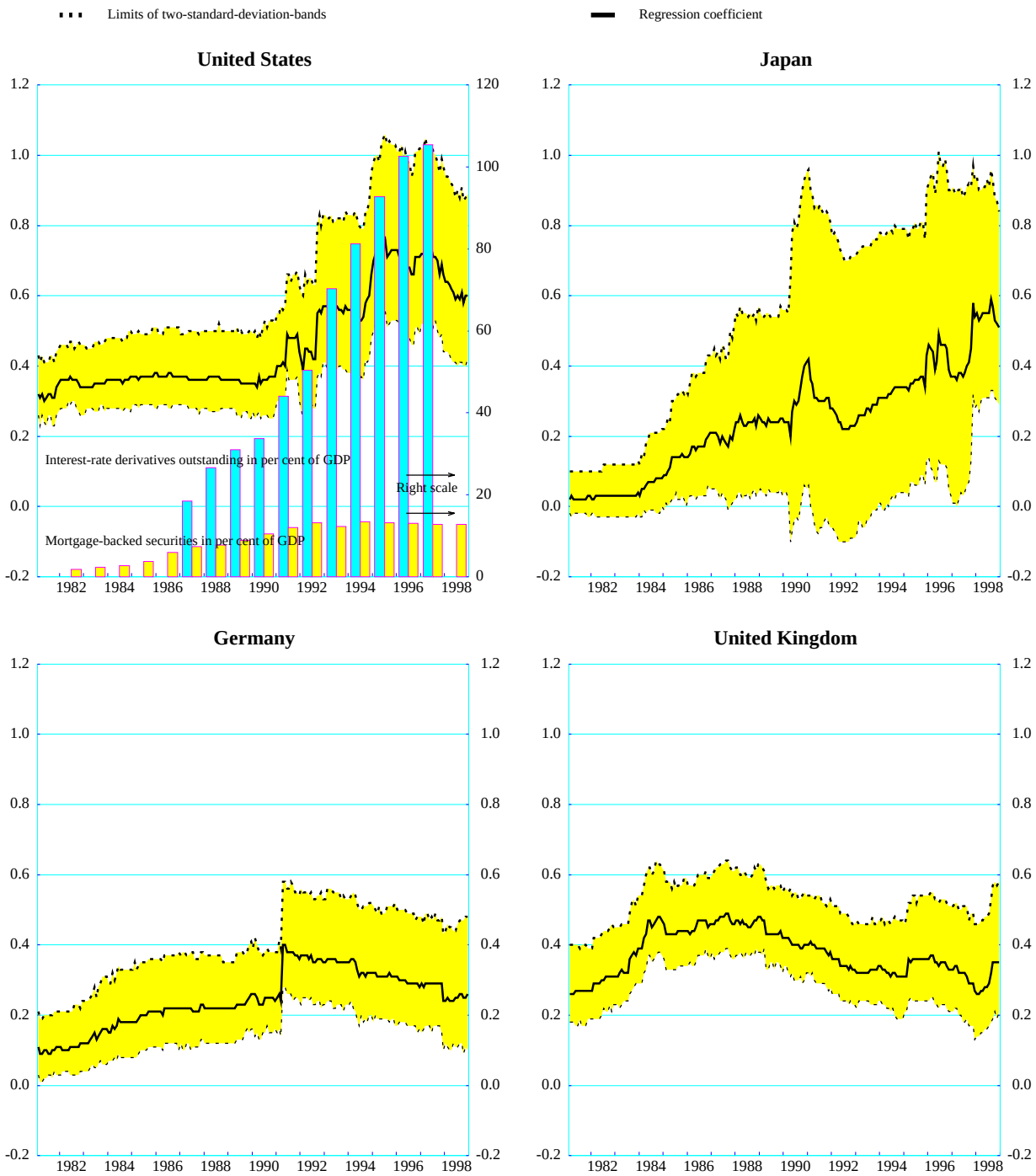


1. The 1980s comprise 1980 up to and including 1988; and the 1990s, 1989 up to and including 1999.
2. Average duration, measured by the number of days, including weekends and bank holidays. A longer duration is equivalent to a smaller number of changes during the period under consideration.
3. Average absolute value of change in basis points

Explanation: Movements in central bank policy rates usually follow a pattern of a series of small moves in the same direction, with few large moves or policy reversals. A simple measure of this pattern, often referred to as 'gradualism', consists of calculating the average size of policy rate moves (horizontal axis) and the number of days between subsequent moves (vertical axis).

Source: OECD calculations.

Figure 12. Sensitivity of long-term to short-term interest rates



Note: Chart plots coefficients from ten-year rolling regressions of monthly changes in ten-year yields (LR) on monthly changes in three-months interest rates (SR) and other control variables; that is β from $\Delta LR = \alpha + \beta \Delta SR + \delta CV$, together with two-standard-deviation-bands on either side of the mean estimate. CV is a vector of control variables, including the level and change of the long-term interest rate (both lagged), the lagged short-term interest rate and the level and change of industrial production and inflation.

Source: OECD.

Sources

For Figures 2 and 3

United States: Federal Reserve Statistical Release, *Flow of Funds Account of the United States*, various issues.

Japan: Economic Planning Agency, *Annual Report on National Accounts*, 1999. 1998 values are from the Bank of Japan *Flow of Funds Accounts* (and are not strictly comparable with previous years). 1998 real assets are estimates based on increases in housing prices.

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Japan: Economic Planning Agency, *Annual Report on National Accounts*, 1999. 1998 values are from the Bank of Japan *Flow of Funds Accounts* (and are not strictly comparable with previous years). 1998 real assets are estimates based on increases in the private non-residential fixed capital formation deflator. Equities have been adjusted for cross-shareholdings according to estimates by Shuichi Uemura and Takeshi Kimura, "Japanese share prices", *BIS Conference Papers* Vol. 5, Basle, March 1998, pp. 139-176.

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Sweden: Statistics Sweden, *Swedish Financial Accounts*.

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