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**PORTFOLIO BEHAVIOUR OF THE
NON-FINANCIAL PRIVATE SECTORS
IN THE MAJOR ECONOMIES**

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PORTFOLIO BEHAVIOUR OF THE NON-FINANCIAL PRIVATE SECTORS IN THE MAJOR ECONOMIES*

Introduction

This paper discusses the behaviour of financial asset and liability accumulation and portfolio selection of the personal and company sectors. The principal finding is that the parameters of portfolio demand functions, i.e. the underlying determinants of portfolio choice, are broadly similar between countries. Differences observed in portfolio holdings thus result largely from differing financial conditions.

The analysis uses broadly consistent annual¹ data over the period 1966–84 for stocks of financial assets held by these sectors in the United States, the United Kingdom, Germany and Japan. These data thus cover four of the five principal economies, whose financial systems have widely differing structures and which over this period have experienced various degrees of change, innovation and deregulation. Details of the sectoral and data definitions and sources are given in the appendix.²

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Any errors remain his own.

¹ The study was constrained to use annual data by the absence of quarterly data for Germany and Japan.

² Examination of the appendix is *essential* to a correct interpretation of the data and analysis presented here. The main data problems encountered were: firstly, differing sectoral definitions – for example, only the personal sector was available for the United Kingdom and Japan, and households for the United States and Germany; secondly, the inconsistency of some data series – for example, overseas assets were in some cases only financial, in others only tangible; and thirdly, the absence of some data items, necessitating approximation or estimation. In addition, the flow-of-funds data do not generally show the maturity or credit rating of instruments outstanding, or whether the issue was domestic or overseas, nor do they detail stocks of recent innovations such as swaps, note issuance facilities and securitisation of loans.

Portfolio behaviour is introduced in the context of the development of domestic non-financial sector debt in the four major economies. This magnitude has been of considerable interest in the United States recently, because it has been increasing rapidly in relation to GNP since 1982 after a long period of relative constancy. This has coincided with an upsurge of government borrowing and of foreign debt. Various explanations for the behaviour of this aggregate are discussed. However, the conclusion offered is that a more fruitful assessment of such developments in broad aggregates for financial markets requires complementary analyses of the level and determinants of the *composition of asset and liability* holdings at a *sectoral* level. This paper analyses two sectors, persons and companies. The public sector is excluded because its actions are better analysed in a framework of economic policy choice than in terms of economic behaviour of atomistic agents, while the financial sector is a holder or transactor of assets and liabilities held ultimately by the private sector, and the foreign sector is only analysed in the flow of funds to the extent that its assets and liabilities impinge on those of the domestic economy.

The analysis commences with a discussion of the behaviour of the size of sectoral portfolios over recent years, then goes on to assess econometrically, subject to the constraints on degrees of freedom imposed by annual data, the determinants of these magnitudes. Are the determinants similar between countries, despite their widely differing experiences? The chosen paradigm is that of a dynamic portfolio model, where asset holdings are determined by relative interest rates, total portfolio size, activity and other variables, but adjustment of actual to desired portfolio holdings takes time. Particular attention is given to the choice between tangible (i.e. fixed capital) and financial assets within the total wealth portfolio, rather than the expenditure/savings decision.

Portfolio distributions are then examined. Firstly, the data are used to assess the significance and universality of certain important trends in financial markets. For example, it is gauged whether there has been a widespread shift of portfolios into interest-bearing assets,

from banks to other financial institutions, from depository institutions to “market” assets and a shift within portfolios towards “market” assets held via investing institutions such as pension funds. These are the highlights. However, a complete picture of portfolio distribution may only be obtained by a complete instrument-by-instrument analysis, using flow-of-funds data as described in the data appendix. The paper thus goes on to discuss changes in portfolio shares over time and then analyses the data econometrically using a portfolio approach. The econometrics illustrates the degree to which behaviour is similar between countries and can be analysed in terms of yields and portfolio growth, as well as giving clues to where structural changes have occurred and highlighting certain contrasts in behaviour between countries. The analysis also provides a measure of portfolio instability which can be related to changes in regulations and financial innovation as well as economic instability.

From the research shown, broad conclusions may be drawn concerning the behaviour of the private sector in the financial markets and its response to changes which have implications for both the current behaviour and the future development of financial systems.

I.

A broad measure of debt

Analysis of domestic financial markets is often made in terms of extremely broad concepts, such as broad money, domestic credit expansion and domestic non-financial sectors’ debt. This section analyses the last aggregate, i.e. the sum of non-financial sectors’ gross liabilities excluding equity, and examines some of the explanations that have been offered for its behaviour. It concludes, however, especially in the light of cross-country comparisons of debt stocks, that a detailed examination of both assets and liabilities by sector and instrument may be a more fruitful approach.

Gross debt/income ratios at book value³ of the domestic non-financial sectors have been of particular interest recently in the United States.⁴ This interest has derived from the sudden growth in the ratio since 1982, coincident with falling inflation and increased government and external deficits, by contrast with the long period of stability observed for the aggregate debt ratio over the period since the war. As shown in Graph 1.1, the ratio (including debt of farms and non-corporate business) fluctuated between 1.38 and 1.46 between 1960 and 1982, but has latterly climbed to 1.6.

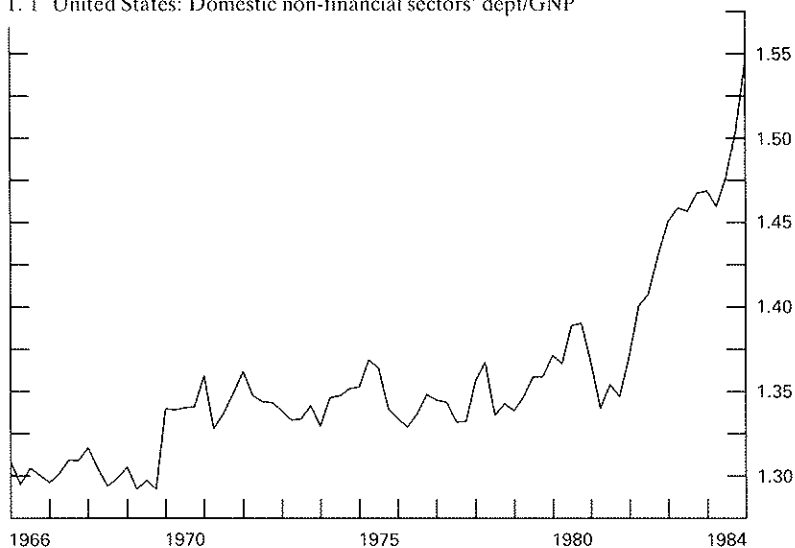
Pollin (1985) discussed some explanations which have been proposed for the ratio's stability and some predictions based on these explanations. Thus, for example, Gurley and Shaw (1957) suggested that a stable debt/income ratio would ensue given a growing economy with zero inflation and a constant average and marginal propensity to issue debt. However, it appears rather that the stable ratio in the United States ensued *despite continual violation* of these conditions. Growth of GNP has been unstable, and debt financing ratios (i.e. the flow of debt issue as a proportion of GNP) of sectors and of the domestic economy have changed frequently, with offsets between sectors occurring over cycles. Inflation has also occurred, with the effect, *ceteris paribus*, of reducing the stock/flow ratio, and rather than growing steadily the stock of public debt started the post-war period from a very high level.

It was nonetheless on the basis of similar premises that Benjamin Friedman (1982, 1984) put forward a view that the stable debt ratio represented a long-run equilibrium for the economy, for which several possible explanations have been suggested. "*Ultra-rationality*" suggests that taxpayers "see through" governments and corporations and regard their liabilities as equivalent to their own, because they foresee the future taxes and reductions in dividends

³ Book values are probably more appropriate for this "supply side" analysis than market value, as they indicate the eventual repayment required. By contrast, in an analysis of demand for assets, market values are more relevant.

⁴ See, for example, Time, 15.7.1985: "Bloated with heavy debt; from consumers to conglomerates, Americans are living on borrowed cash".

1. 1 United States: Domestic non-financial sectors' dept/GNP



which will be needed to repay the debt. Then, if there is a target wealth/income ratio both at the aggregate and among the components of wealth (owing to imperfect substitution) the private sector will reduce its issue of liabilities when government debt issue increases and thus offset any variation in government debt issue. Secondly, a “*capital leveraging hypothesis*” suggests that the private sector has a target gross wealth/income ratio and therefore increases tangible asset holdings when the supply of government debt falls. Supposing there are restrictions on credit which mean collateral is required to obtain a loan, then an increase in tangible wealth increases collateral, relaxes the constraint on credit and allows private sector liabilities to increase, balancing the fall in government debt. Alternatively, an “*asset demand hypothesis*” suggests that if services provided by financial and real assets are imperfect substitutes, agents will have stable subtargets in relation to income for each. The demand for financial assets will then be interest-inelastic, because substitution for tangible assets is ex hypothesi

difficult. Then, since financial assets held must equal financial assets supplied, a partly elastic supply will give a stable ratio of income to assets issued which does not vary with interest rates. To give a constant debt/income ratio this hypothesis requires equity and debt as well as financial and real assets to be weakly substitutable. Tests were unable to resolve which hypothesis was correct, but the stability was nonetheless felt to have important implications. For a corollary of “ultrarationality” and “capital leveraging” is that an increase in one sector’s debt would need to be offset by the others. Hence the current public sector deficit would lead to offsetting declines in private sector credit, with consequent “crowding-out” of consumption and investment. This “closed economy”-based analysis ignores the possibility of inflows from overseas, although crowding-out may then still occur to the extent that industry is rendered uncompetitive by exchange rate appreciation. By contrast, “asset demand” suggests that a change in public sector debt would merely lead to offsetting equity issues. Looking forward a little, the analysis shown in this paper, while not analysing the relationship between total net worth and income, does suggest that for the non-financial private sector as a whole there are no *large* gaps in substitutability between subsets of assets, as required by “ultrarationality” and “asset demand”, though equally the model presented does not feature perfect substitutability. For contrary evidence see Friedman (1985). Also there are long-run relationships between the various financial assets and net financial wealth, while persons pursue a long-run relationship between financial/tangible wealth and net worth, and companies follow target gross financial asset/income ratios and (for some countries) target debt/income ratios.

Pollin’s own view was that the stability resulted from the configuration of stocks at the end of the war, together with a lower public debt-financing ratio than the outstanding stock ratio. Hence public debt stocks declined as private stocks rose, though the exact offset was fortuitous. On the basis of flows Pollin felt that no apparent limit on debt/income ratios had been defined. Nonetheless, he pointed out that the *burden* of the debt could well increase as

disinflation continued, hence reducing the erosion that inflation causes of the value of the stock in relation to income (interest rates are obviously also relevant, to the burden of income gearing).

A further explanation could be couched in the context of "Keynesian" counter-cyclical policy, whereby the government increases its deficit during a recession while other sectors retrench. Such a process could also lead to a constant debt/income ratio and would explain the recent growth in the US ratio in terms of *pro*-cyclical budgetary policy.

In this context the data for the United States underlying these analyses are presented, and an attempt is made to cast light on the subject by comparing and contrasting them with data for other countries.

Hence Graph 1.2 shows the domestic debt/GNP ratios for the United Kingdom, Germany, Japan and the United States (excluding trade credits because of their different treatments in the flow-of-funds accounts and for the United States excluding debt of farms and non-corporate business). As discussed below (see pages 119–122), these data are to some extent country specific, in that they differ in their valuation of company bonds, book values being used except in the case of the United Kingdom. This graph suggests that, far from being a rule, the stability observable in the United States is completely atypical. In the United Kingdom the debt/GNP ratio fell continuously until 1980, when a recovery commenced, while in Germany and Japan the debt ratio has been subject to continuous growth.

In Japan a much higher level has been reached, of over twice annual GNP, while for the other countries the ratios in 1983 were all between 1.3 and 1.7. Clearly, it could be argued that this convergence for all countries but Japan reveals an "equilibrium" ratio to which "western" industrial countries are tending, while Japan follows a different path owing to its differing age distribution, monetary system and financial behaviour. The econometric analysis below gives an indication of the extent to which this may in fact be the case.

Graphs 1.3 to 1.9 reveal the underlying sectoral components of the aggregate debt ratios for each country in turn. The United States is shown to have a stable aggregate ratio as a result – at least since 1966 – of particularly stable sectoral debt ratios, all of which are around 50 per cent. of GNP. Such trends as are observable are a roughly continuous increase for the personal sector, offset by a decline over most of the period in the public sector debt ratio, and also over the 1970s in the company sector. Only since 1981 have personal and public ratios grown together, while the company sector's has been stable, thus giving the observable increase in the *aggregate* ratio. A certain amount of offsetting growth and decline in the debt ratios is observable for the public and company sectors, in line with Friedman's thesis, but no such tendency is observable for persons.

The experiences of other countries differ widely from those of the United States. In particular, their debt ratios are considerably *less* stable. Thus in the United Kingdom the aggregate debt ratio declined over 1966–80, principally owing to a continuously declining public sector debt ratio, though aided by falls in company sector debt since 1974. Like the United States, the United Kingdom accumulated much public sector debt during the war which, unlike that of Japan and Germany, was not dissipated by inflation. The declining ratio reveals its gradual unwinding, aided by lower debt-financing ratios (especially since the mid-1970s) and by higher inflation than in the other countries. The company sector has accumulated fewer liabilities since the mid-1970s owing to declining growth and rates of return to fixed investment. Meanwhile the personal sector has been increasing its debt ratio, despite inflation, though in particular since 1980, when inflation declined. Over much of the period credit was cheap as a result of inflation-induced low real interest rates, while more recently the removal of controls and credit rationing has encouraged borrowing. It is largely the personal sector's debt which underlies the recent growth in the aggregate debt ratio, but companies also increased their debt during 1984.

Germany and Japan both show growing aggregate debt ratios,

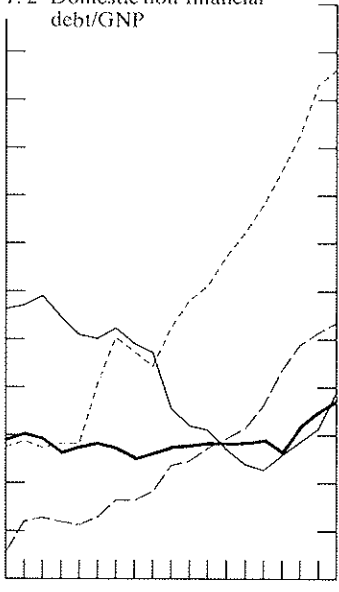
due in turn to growth in every sector's debt relative to GNP. In the case of the public sector, these countries ended the war with their debts effectively written off owing to inflation, and thus public sector deficits over the post-war period have tended to raise the debt ratio. This has been a particularly marked tendency for Japan since 1974, the public sector accounting for most of the growth in the aggregate debt ratio. The personal sector has experienced a steady growth in the debt ratio, as in the Anglo-Saxon countries. The debt of the Japanese company sector has grown somewhat more irregularly than its German counterpart, but has maintained a far higher level of debt in relation to GNP.

In these cases there is little evidence of offsetting changes in debt ratios, except for Japan over 1974-78, when the public sector debt ratio rose sharply, offset to some extent by the company sector. The trend growth in the ratios has been aided by the relatively low inflation performance of these economies since the 1940s (except for Japan in 1974) and the aforementioned low initial level of public sector debt. However, the growth shows no sign of being unsustainable, suggesting, to the extent that agents' reactions to growing domestic debt are similar between countries, that concern in the United States on the basis of the domestic debt ratio *alone* is exaggerated. What may give rise to concern is the combination of the ratio with corresponding indicators of financial conditions - saving, asset formation, interest rates and external flows. But then the simple hypotheses outlined above need to be supplemented.

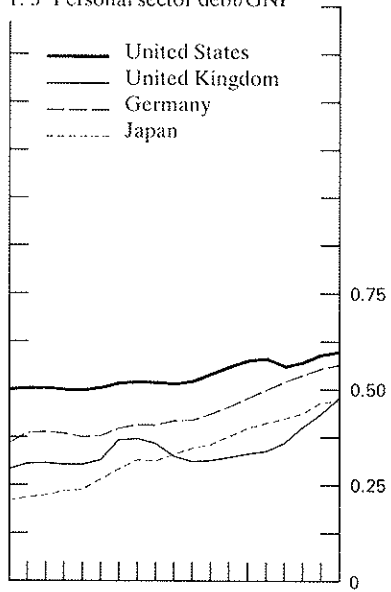
Against this general background this paper seeks to show that portfolio analysis can give useful predictions of behaviour both within and between countries and that portfolio variables can explain most changes in asset and liability holdings. The adjustment that is needed is from the broad-brush, discursive approach typified by this description of analyses of US debt to a detailed analytical and econometric approach to behaviour of individual sectors. Asset as well as liability holding must be analysed, because a given stock of debt has different implications depending on the holder of the corresponding asset. Sectoral rather than aggregate holdings must

Debt/GNP ratios by sector

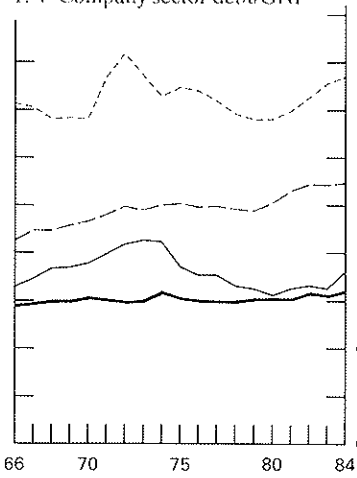
1.2 Domestic non-financial debt/GNP



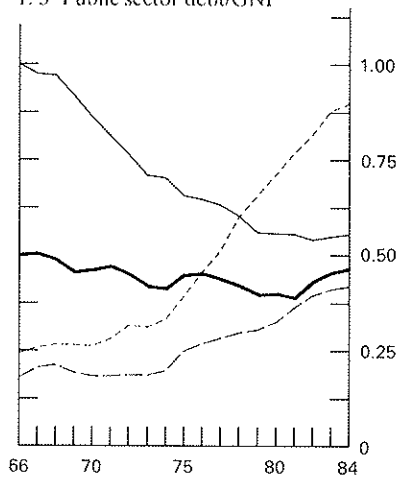
1.3 Personal sector debt/GNP



1.4 Company sector debt/GNP

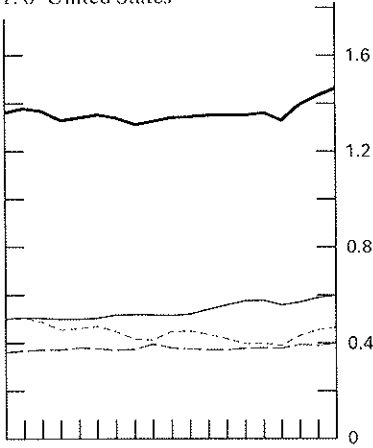


1.5 Public sector debt/GNP

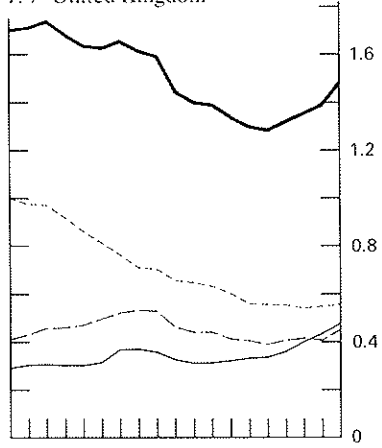


Debt/GNP ratios by country

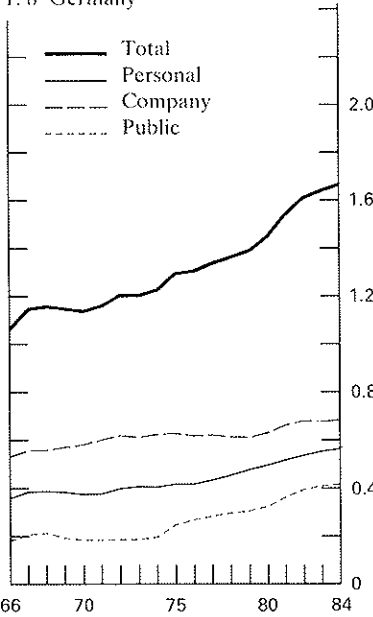
1.6 United States



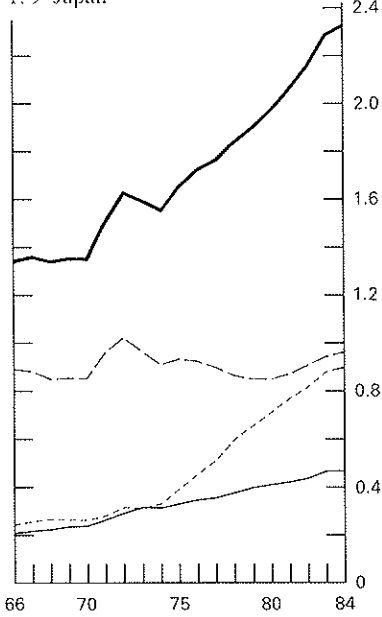
1.7 United Kingdom



1.8 Germany



1.9 Japan



be analysed, because only at that level can consistent behaviour at the micro-economic level be expected. Individual instruments as well as aggregate stocks must be analysed, because the composition of a debt or asset portfolio has important implications for stability, efficiency and the functioning of the financial system in an economy.

Attention is focused below on the company and personal sectors, and no analysis is made of asset holdings and debt issue of the public sector. While the last has been extensively analysed in the literature (see Bispham (1986), for example), its level is determined by policy rather than by the behaviour of atomistic agents broadly pursuing maximisation of utility or profits.

II.

The behaviour of portfolio size

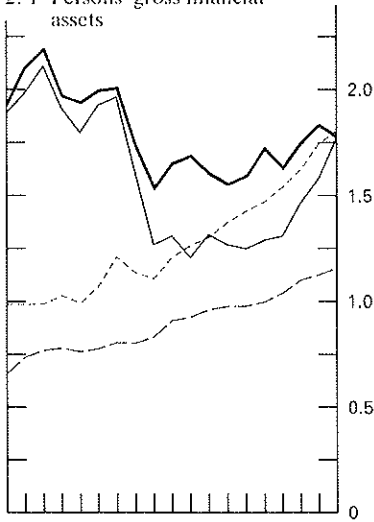
Developments in the size of financial asset and liability stocks in relation to GNP⁵ for the personal and company sectors are shown in Graphs 2.1 to 2.4 opposite.

Personal sector gross financial assets in relation to GNP have undergone contrasting changes for the United States and the United Kingdom compared with Germany and Japan, with the former pairing showing a sharp decline in the mid-1970s, which has since been only partially made up, while the latter reveal steady growth throughout. These developments are related to the higher proportion of corporate equity in the portfolios of the personal sector in the Anglo-Saxon countries. Equity holdings were sharply affected by declining market values in the mid-1970s due to increasing interest rates and reductions in the expected returns from the capital stock after the first oil crisis. The decline in personal

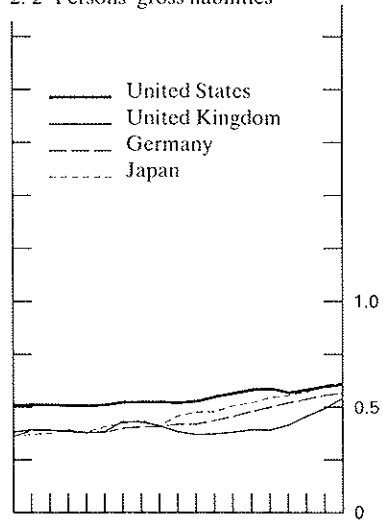
⁵ Deflation of these stocks by GNP gives an accurate representation of sectoral debt/income ratios to the extent that the income distribution has been constant. Though some minor distributional shifts have occurred, the analysis was constrained by lack of consistent sectoral income data.

Financial assets and liabilities/GNP ratios

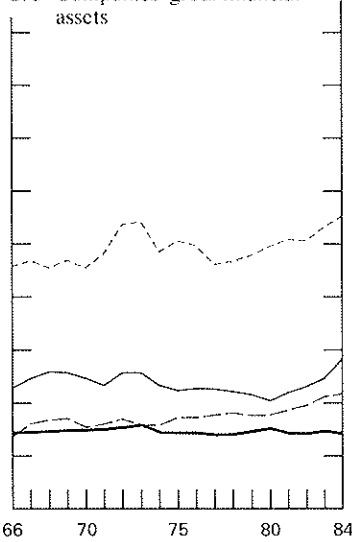
2. 1 Persons' gross financial assets



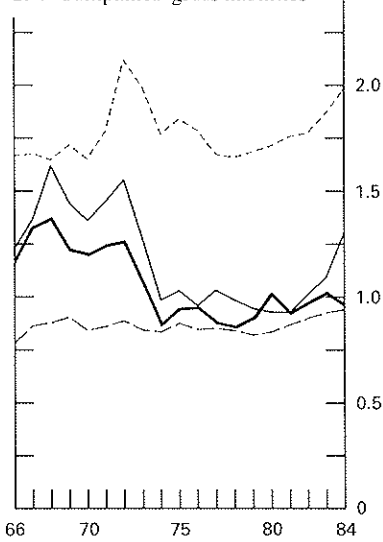
2. 2 Persons' gross liabilities



2. 3 Companies' gross financial assets



2. 4 Companies' gross liabilities



financial wealth has not yet been made up, despite recent growth in security prices and continuing financial surpluses. In Germany and Japan, by contrast, the majority of the portfolio is formed of "monetary" assets having a fixed nominal value and hence relatively unaffected by market valuation changes. Inflation, which would reduce the real value of such "monetary" assets, has also tended generally to be lower in Germany and Japan. The high level of financial asset accumulation in Japan is apparent; this is related to a number of factors, notably the rapid rate of increase in incomes, the ageing of the population,⁶ low public pension provision and high education and housing costs and is also encouraged by the bonus wage system. In Germany persons' gross financial assets have also grown, but remain at a fairly low level, which may be related to both to the low level of equity holding and relatively generous public pension provision, necessitating a lower target level of the financial wealth/income ratio. It is remarkable that the financial wealth/income ratios are currently so similar in the United States, the United Kingdom and Japan, at 1.8 times GNP or roughly 3 times personal income. However, whether this represents a "target" level may be less certain, given the continuing high rate of Japanese accumulation. In any case, estimates of the value of some components of personal wealth, such as social security provisions, are not included here.

Persons' gross liabilities show a convergence over most of the period, so in 1984 the level in each country was roughly 0.6 times GNP. Debt of persons in the United States has always been around this level, while in the other countries this level has only recently been attained. This may be due both to the level of liabilities being demand-determined in the United States and to an institutional preference to lend to industry in the other countries. The United Kingdom in particular has undergone a rapid growth in the liability/

⁶ In Japan only 13½ per cent. of the population is over sixty, compared with 16 per cent. in the United States and 20 per cent. in the United Kingdom and Germany, despite similar life expectancy and birth rates. These patterns imply that the Japanese ratio is expected to rise.

income ratio since 1980, as a consequence of the abolition of the direct controls on the growth of banks' balance sheets and on consumer credit. Indeed, in each case, growth of the liability/income ratio has been greater since 1974 than before, in line with deregulation (except for Germany) and the expansion of the activities of the financial systems. It should be borne in mind that the convergence of the ratios may conceal important differences in financing, an issue discussed at length in Sections V and VI. Also, as described in the appendix, the sectoral coverage differs. The US data show purely the household sector, while the German data are for households plus the housing sector, and the other countries cover the personal sector, including unincorporated businesses. The data may therefore imply a higher level of *household* indebtedness in the United States.

Financial assets of the non-financial company sector have tended to rise in recent years in Japan, Germany and the United Kingdom as a proportion of GNP, while remaining roughly constant in the United States (where gross asset data are incomplete owing to netting-out of holdings of bonds and equities). Not all of these assets are traded on organised markets. Given the definitions of the company sector (page 67), half of companies' assets in Japan and the United States are in the form of trade credit, against 30 per cent. in the United Kingdom and 15 per cent. in Germany. Growth in companies' financial assets reflects a decline in fixed investment since the first oil shock. In recent years UK firms have even consistently run net financial surpluses.

Companies' liabilities (broadly defined to cover both debt and equity) have been dominated by the effect of changes in the valuation of equity in the Anglo-Saxon countries, though more recently there has been a recovery from the low levels of 1974, particularly in the United Kingdom. It is notable that in the United States the level of liabilities in relation to GNP has grown little since 1980, despite the general concern in that country regarding increasing levels of indebtedness. The figure for Japan is again inflated by trade debt, though even if this were to be excluded,

liabilities of firms would far exceed the levels typical of the other three. The relative lack of fluctuation in total liabilities in Germany reveals both the relatively steady performance achieved by that economy and the relative thinness of the equity market resulting from a high level of inter-company equity holdings and high gearing.

This section has shown contrasts in both financial asset and liability holdings between the four countries studied, for both the corporate and personal sectors. These contrasts have manifested themselves in both levels and changes of financial assets and liabilities. In the next chapter a model is developed which is then used to assess whether contrasts in behaviour underlie observed asset holdings, or whether the outcomes are rather the consequence of different stimuli acting on similar underlying behaviour patterns. This is of crucial importance to an assessment of the importance of past changes in holdings as well as the likely future developments in them, and thus of the financial system as a whole.

III.

An error-correction specification for modelling portfolio choice

Introduction

Economic theory would suggest that the size of holdings of any individual asset by an agent or sector is governed by wealth, the expected return on an asset (including non-pecuniary benefits such as liquidity and with a deduction for risk) and in some cases income. The empirical work in this paper uses as its basis the mean-variance portfolio model of Tobin (1958) and Markowitz (1952) wherein the share of an asset in the portfolio depends only on the mean and variance of the return on each asset. While being subject to various theoretical objections, this approach does offer a tractable estimable form of specification, with a set of plausible cross-equation restrictions that can be tested.

The main weakness of such a basic portfolio model is the lack of dynamics. Habits, lack of information and adjustment costs are all likely to impinge on asset holdings and will mean that at any time agents are unlikely to be holding their desired levels of financial (or real) assets. One solution to this is inclusion of a lagged dependent variable, i.e. following a paradigm of partial adjustment. However, in this paper the preferred dynamic specification was the error-correction mechanism. In the context of a desired holding of assets, this specification implies in its general form that in any period agents will adjust their holdings of an instrument (A) by a proportion (λ_i) of the change in the components of desired holdings (A^*_i) and a proportion (β) of the last period's deviation of actual from long-run desired holdings, i.e. (working in logs):

$$\Delta A = \lambda_i \Delta A^*_i + \beta(A^* - A)_{-1} \quad (3.1)$$

This framework allows the short-run relationship between variables to be determined purely by the data, while in the long run the restrictions of portfolio theory are imposed, but may subsequently be tested against the data.

These aspects are now discussed in turn.

The economic theory of portfolio choice

Assuming that there is more than one asset available, an investor holding non-human wealth faces the problem of portfolio choice, i.e. selection among a range of instruments available to maximise his utility. Under certain assumptions (that the utility function is additively separable), the decision in which form to hold wealth can be separated from the decision of how much wealth to accumulate. This construct allows one to simplify the complex process of simultaneous decisions that would be derived from the more basic neo-classical theory of lifetime optimisation (see Lancaster (1966, 1971)). This separability assumption is made throughout the empirical work in this paper. It should, however, be seen as a simplification of the modelling for empirical purposes rather than as

necessarily warranted in all cases. The modelling of portfolio choice then gives the problem that so long as all assets are not risk free, an investor faces uncertainty concerning the exact return he will receive from his portfolio. Since in practice even cash is not risk free in real terms, this problem is inevitable. The most general approach to portfolio selection under uncertainty and risk aversion is that of time-state preferences, which integrates the theories of preference over time and over uncertainty, as developed by Arrow (1964) and Debreu (1959). It is difficult to give this approach empirical content. On special assumptions, however, the problem can be reduced to a two-parameter representation, allowing analysis of portfolio choice in terms of the mean and variance of returns from assets in an expected utility-maximising framework. The key developments are due to Tobin (1958) and Markowitz (1952). Sufficient conditions for this are a quadratic utility function, joint normally distributed asset rates of return or a logarithmic utility function and a lognormally distributed portfolio rate of return.

Each of these conditions is subject to objections. For example, a quadratic utility function implies that for sufficiently high incomes utility falls as income rises, and also that if there is one risky asset and one safe one, the investor will hold less of the risky one as he grows richer. The second objection is more serious; falling utility in the first case may be assumed to occur outside the relevant range of incomes. Observation does not suggest that risk is inferior, as the rich tend to hold riskier and higher-yielding portfolios than the poor.

The importance of the normality assumption is that if each security has a normal distribution of returns, then, whatever portfolio is chosen, the distribution of the asset holders' total income is also normal. All possible distributions have the same shape, differing only in mean and variance, and the investor need only be concerned with these moments of the distribution. Again, factually it is not very realistic to assume that all securities' returns are normally distributed, so the mean-variance approach must be seen as an approximation.

Use of this approach allows derivation of linear homogeneous

portfolio demand functions of the following form (see, for example, Tobin (1969), Friedman (1977));

$$\frac{A_{it}^*}{W_t} = \sum_k^N \beta_{ik} r_{kt} + \sum_h^M \gamma_{ih} X_{ht} + \pi_i \quad i = 1, \dots, N, \quad (3.2)$$

where

- A_{it}^* $i = 1, \dots, N$ = the investor's desired equilibrium holding of the i th asset at time period t ($\sum_i A_{it}^* = W_t$);
- W_t = the investor's total portfolio size (wealth) at time period t ;
- r_{kt} $k = 1, \dots, N$ = the expected holding-period yield on the k th asset at time period t ;
- X_{ht} $h = 1, \dots, M$ = the values at time period t of additional variables which influence the portfolio allocation.

These may be regarded as determining a desired portfolio allocation towards which investors' decisions are directed. It should be noted that the specification features no dynamic effects and hence is unrealistic in the real world of transactions, costs, habits and lags in expectation formation. The constant in the specification may be seen as capturing the normal share of each asset when yields and other influencing variables are at their average levels. If investors do not suffer from money illusion, one would expect yields to be determined in real terms, i.e. deducting expected inflation from expected returns. Returns should include capital gains and losses as well as interest returns. The variables X , which implicitly show risks and returns that are not captured directly, might include the level of income or activity, if variations in these increase demand for a certain asset for transactions or precautionary purposes. The importance of this income effect will depend on the ease of substitution between assets. The function implies homogeneity in wealth, i.e. that the share of the asset does not depend on the size of the portfolio. This is a consequence of the separability assumption

noted above; clearly, holdings of some assets may depend on wealth (“luxury assets”), so the constraint may not be warranted.

The nature of the data (asset shares sum to one) implies that a system of these equations satisfies the adding-up constraints, i.e. that the coefficients on each variable sum to zero across all equations and the coefficients on the intercept sum to one. These constraints mean that any increase in demand for an asset due to changes in returns or income must be met by a compensatory reduction in demand for other assets, while any increase in wealth must be allocated to some asset. These restrictions also mean that one of the equations is not independent and can be omitted. However, care is needed to avoid implausible coefficients on the implicit equation, as emphasised by Brainard and Tobin (1968). Alternatively in a simple static linear structure one could impose the restrictions on the whole set of equations by simultaneous estimation. This, however, is very complicated in the context of the disequilibrium log linear approach employed here.

Homogeneity in interest rates within a single equation may also be tested, i.e. that the sum of interest rate terms is zero. This implies (plausibly) that a rise in all real expected yields by the same amount would not affect asset shares. In the presence of a non-interest-bearing asset such an equal increase can only come about via changes in expected inflation, because this is the only way in which the real expected return on such an asset can change. A further property that might be expected is symmetry, i.e. that the coefficient on asset i 's return in the equation for asset k should equal that of k 's return in i .

A priori one would anticipate that an investor's demand for any asset would respond positively to own yield and negatively to the yield on other assets. This property is known as gross substitutability, and, although reasonable, it is nonetheless possible that some assets may be complements.

Since the equation is written in terms of expectations, an assumption must be made concerning the way in which expectations are formed. Thus, for example, Friedman and Roley (1979) tested

autoregressive, rational and unitary (i.e. zero) expectations of capital gains, finding that the autoregressive pattern fitted the data best. Implicitly a similar methodology is used here.

Error-correction mechanisms

As noted, the main objection to using equation (3.2) as a modelling device concerns its assumption of constant static equilibrium. Various dynamic approaches have therefore been proposed. For example, the partial adjustment model (see, for example, Jackson (1984), Goldfeld (1966)) hypothesises that in each period there will be a shift of asset holdings which eliminates some, but not all, of the discrepancy between actual holdings at the beginning of the period and new desired holdings. As pointed out by Friedman (1977), this model fails to take into account the possibly differing influences and level of transaction costs on new cash flows compared with existing asset holdings.

It is also subject to the econometric objection (see Hendry et al. (1983)) that invalid omission of the lagged independent variables may result in a skewed distributed lag relationship between these variables and the dependent variable with a large mean lag, when the coefficient on the lagged dependent variable is large. This may lead to an unrealistically slow speed of adjustment. On the other hand, generalised partial adjustment models with many lags of both dependent and independent variables are subject to multicollinearity. Thirdly, as pointed out by Deaton (1980), partial adjustment models often entail untested common factor restrictions resulting from moving average error processes. To the extent that the restrictions are invalid, estimates will be inconsistent for the coefficients on the independent variables as well as the standard errors.

Friedman (1977) himself developed a model for life assurance and pension funds' asset demands in which new cash flows are reallocated precisely in accordance with desired asset holdings while the existing stock adjusts slowly. He called this model "optimal marginal adjustment". However, the view was taken in this project

that this analysis may not be valid for the personal and company sectors. Life assurance and pension funds closely monitor financial conditions, invest considerable funds in illiquid assets, have exceptionally regular inflows and outflows and are under constant pressure to optimise their portfolios. This is less likely to be the case for persons and companies.

For the non-financial private sector there are likely to be slow diffusion of information and changes in expectations, relatively high transaction costs, a greater importance of income relative to substitution effects of changes in yields and risk aversion concerning the permanence of changes in assets and yields. These factors imply that although adjustment in the long run is still directed towards an equilibrium level, "optimal marginal adjustment" may not hold; instead short-run speeds of adjustment of individual assets towards the desired portfolio may differ; indeed, in some cases the short-run direction of portfolio adjustment may be perverse. For example, it is likely that an increased inflow of funds will initially be placed in a relatively liquid asset and only later transformed in line with the long-run desired portfolio, while revaluations of assets which accrue over the period (included here with the inflow) will be retained in those assets. These tendencies are likely to be of particular importance when adjustment of tangible assets, with their inherent lumpiness and illiquidity, is taken into account. The importance of these tendencies can be gauged by the different magnitudes of the coefficients λ_i in equation (3.4) below on the difference of the log of the size of the portfolio. They are the main reason for the choice of an error-correction paradigm wherein short-run adjustment may itself be partial and not necessarily in line with long-run optimality.

The basic form of an error-correction model (see Hendry et al. (1983), pp. 1069–70) is summarised in equation (3.1) above. In the short run adjustment is determined by empirically estimated parameters λ_i , while longer-term adjustment to the discrepancy between the actual and desired portfolio at the end of the previous period takes place in accordance with the parameter β . Therefore the short and long responses may differ, while in a static

equilibrium, when the difference terms go to zero, the dynamic equation reproduces the associated equilibrium theory ($A=A^*$).

Supposing that there are two assets, equation (3.2) can be rewritten in logs:⁷

$$\ln A_t^* = \ln W_t + \alpha_1 r_{ot} - \alpha_2 r_{ALTt} + \alpha_3 \ln X_t + K_1 \quad (3.3)$$

Then, where r_o is the own rate and r_{ALT} the rate on the alternative asset, an error-correction representation is:

$$\begin{aligned} \Delta \ln A_t = & \lambda_1 \Delta \ln W_t + \lambda_2 \Delta r_{ot} - \lambda_3 \Delta r_{ALTt} \\ & + \lambda_4 \Delta \ln X_t - \beta \ln A_{t-1} + \beta \ln W_{t-1} \\ & + \beta \alpha_1 r_{ot-1} - \beta \alpha_2 r_{ALTt-1} + \beta \alpha_3 \ln X_{t-1} + K_2 \end{aligned} \quad (3.4)$$

Econometrically the error-correction restriction is derived from the autoregressive distributed lag model:

$$\begin{aligned} \ln A_t = & \gamma_1 \ln W_t + \gamma_2 \ln W_{t-1} + \gamma_3 r_{ot} + \gamma_4 r_{ot-1} \\ & + \gamma_5 r_{ALTt} + \gamma_6 r_{ALTt-1} + \gamma_7 \ln X_t + \gamma_8 \ln X_{t-1} \\ & + \gamma_9 \ln A_{t-1} + K_3 \end{aligned} \quad (3.5)$$

by imposing the restriction that $\gamma_1 + \gamma_2 + \gamma_9 = 1$ and specification of the other independent variables in differences and lagged levels. K_i in equations (3.3) to (3.5) are different constants.

It can be seen that (3.4) reproduces the theory entailed in (3.3) in static equilibrium, while the short-run difference terms are free to reproduce the dynamic adjustment inherent in the data generation process. It should be noted that this formulation of the error-correction model does not impose the restriction on the short-run dynamics that movement should be in line with changes in the optimal portfolio. Given the considerations above, it was felt that this would impose unnecessary restrictions on behaviour of persons

⁷ This equation has a slightly different interpretation, since the effect of interest rates is now multiplicative.

and companies and that the relative size of these responses in the absence of a theory-based dynamic specification was best measured by an approach of free estimation.

Why should an error-correction specification, which has proved highly successful in modelling consumption behaviour (see Davidson, Hendry et al. (1978)), be of interest when modelling portfolio behaviour? One may first note the use of *logs* (though this feature is not unique to the error-correction model). While imposing some complications on the constraints of portfolio theory, these nonetheless allow elasticities to be estimated from the equations in a simple and straightforward manner. Secondly, it can be argued that, although owing to free estimation the *adding-up conditions* are not met in the short run for a system of such equations, in the long run the unit elasticity between the asset and wealth ensures that the condition is met, as all the assets grow at the same rate as the portfolio itself.⁸ In each individual equation the specification ensures long-run *homogeneity* between the asset and wealth as in equation (3.2). Besides ease of interpretation and long-run homogeneity, this model in principle *encompasses* many other dynamic models such as partial adjustment (which implies that all lagged independent variables have coefficients of zero). The *dynamics* of the model can be interpreted in several ways besides the differing short and long-run responses noted above. Notably, one can view the response to changes in interest rates in the model as behaving in accordance with an autoregressive structure, the error-correction restriction leading to a diminishing lagged adjustment to changes in returns and other independent variables. As pointed out in Hendry et al. (1983), the model also has various econometric advantages. The proportionality restriction is easily tested by inclusion of lagged wealth separately (see the estimation of debt issue equations below). Secondly, fairly simple dynamics as in (3.4) above are usually sufficient to make the error term white noise, rendering the final parameterisation

⁸ This condition holds except to the extent that the difference of a log is unequal to a growth rate.

parsimonious. Thirdly, the differencing of the dependent variable helps avoid the “spurious” regression problem without loss of long-run information from using differenced data only.

The failure to meet the short-run adding-up conditions would be more serious were the equations to be used in a macro-economic model rather than to evaluate the nature of portfolio demands, as is the intention here. The interest rate homogeneity restriction is easily imposed in this framework, but symmetry is not⁹.

The model described above is the basis for the empirical work in the paper. Variations from it include the testing of direct effects of revaluations on personal sector net financial assets and the imposition of a zero restriction on the lag of interest rates for the portfolio system and debt/equity ratio. The latter restriction was chosen for largely pragmatic reasons – to facilitate nested testing of the gross substitution restriction that $\gamma_3 = -\gamma_5$ in the portfolio equations without running into degrees-of-freedom problems. In the error-correction framework it means that the effect of interest rates on the portfolio in equation (3.5) is equal to γ_3 in the short run and $\gamma_3/(1 - \gamma_9)$ in the long run.

Some problems and caveats regarding the chosen structure should be pointed out. Firstly, there is the possibility of endogeneity

⁹ This model differs from the model applied to demand for bonds by Friedman (1977) and Friedman and Roley (1979) in its log linear formulation, the inclusion of revaluations in the difference of wealth term instead of purely cash flow, the free estimation of short-run coefficients on rates of return and income and the non-imposition of short-run homogeneity between individual assets and cash flows. It should also be noted that it would have been possible to specify an error-correction model in terms of proportions of wealth, i.e.:

$$\Delta \left[\frac{A}{W} \right] = \alpha \Delta \left(\frac{A}{W} \right)^* + \beta \left(\frac{A}{W}^* - \frac{A}{W} \right)_{t-1} \quad (3.6)$$

but this is more restrictive than the paradigm chosen above, which allows the relationship between assets and wealth to be determined freely in the short run.

Friedman and Roley’s specification is in some ways less restrictive than the chosen paradigm, in that they test for different responses of asset demand to the lagged components of wealth rather than purely having total wealth on the right-hand side. Degrees of freedom and the log linear specification prevented such investigations here.

of interest rates and asset returns. The implicit assumption is that agents are “small” in their demand for assets in relation to asset supplies, an assumption which may not be warranted, particularly for tangible assets. Secondly, the possibility of constraints on asset holdings (for example due to credit rationing) is generally not allowed for explicitly, though the results of such constraints can sometimes be observed in the results. Thirdly, no estimate is made of the implicit effects of social security arrangements on wealth holding, though they may clearly affect desired levels (see Feldstein (1977)). Also the implicit assumption behind these portfolio equations is that income and age distributions are roughly constant, which may not have been the case in Japan. A similar debatable assumption is made for the level of risk; it is assumed not to alter over the estimation period, and hence can be captured adequately by the constant term. Finally, taxation levels are generally only captured by the constants, and thus changes in tax rates are not allowed for. The alternative would have been construction of average tax rates for the sectors for all assets in each year, which would have imposed an excessive burden of data collection. These considerations should be borne in mind when evaluating the econometric work reported below. This model is now used to analyse financial asset holdings of the personal and company sectors.

IV.

Determinants of portfolio size

1. Personal sector

While the life cycle theory of consumer behaviour puts forward certain hypotheses concerning personal consumption and *total* wealth accumulation, which have been tested in an international context (see OECD (1981) for a survey), the determinants of *financial* wealth holdings are less clear.

International cross-sectional studies of consumption and saving have typically suggested that differences in saving ratios and hence in wealth accumulation are determined by differing growth rates of real income, socio-demographic variables such as the ratio of working-age population to that retired and under the age of twenty and social security variables such as the benefit replacement ratio (pension benefits as a proportion of average earnings). Time series analyses of determinants of consumption and saving have typically used income and lagged wealth as the main determinants, following the life cycle hypothesis (see White (1978)), with various dynamics added, and also effects of inflation (due to measurement errors in real income during periods of inflation, when part of interest receipts are actually capital repayments) and interest rates (though owing to income and substitution effects the a priori effect is ambiguous). Institutional factors also sometimes taken into consideration include changes in the coverage of public pension schemes (see Feldstein (1977)) and the degree of imperfection of capital markets, which influence the amount of personal saving required for retirement and the purchase of capital goods respectively.

The theory and empirical work on the life cycle give important clues as to the determinants of total wealth accumulation. However, the extent to which the same arguments can be used to determine accumulation of financial wealth is uncertain. If tangible wealth were non-marketable and could not be substituted as a store of value for financial wealth, then only financial wealth could be used as shown above to optimise lifetime consumption, and a "life cycle" model would determine financial wealth holdings (the "asset demand hypothesis" noted on page 7 above). It is unlikely that this is in fact the case. Real assets such as housing are freely marketable and, particularly in Anglo-Saxon countries, large houses are often bought during working lives as a store of value, which may be exchanged for smaller properties after retirement, releasing large amounts of accumulated "equity". The importance of such substitution of tangible for financial assets has become particularly

large in recent years owing to the weakness of real interest rates during periods of high inflation. Real asset prices, by contrast, have tended in the medium term to increase at a faster rate than inflation (see Davis and Saville (1982), Bank of Japan (1985)),¹⁰ encouraging borrowing for the purchase of real assets as a hedge against inflation as well as purely for their use.

In view of the considerations noted above and using the model developed in Section III, the paper now focuses on the choice of instrument in which to hold wealth, rather than on estimation of consumption/savings functions. As discussed above, when the rate of nominal wealth accumulation is taken as given and predetermined by life cycle considerations (using a separability assumption made possible by certain features of the utility function), the form in which wealth is held will depend only on various economic and institutional variables, notably relative returns on real and financial assets. The general form chosen for estimation was:

$$\frac{NF}{P} = f(\dot{p}, \dot{p}fa, r_F, r_T, \frac{NW}{P}, \frac{S}{P}) \quad (4.1)$$

where one would expect real accumulation of net financial wealth (i.e. gross assets less gross liabilities) at market prices (NF/P) to be negatively related to inflation (\dot{p}); positively related to rising financial asset prices ($\dot{p}fa$) (as these imply an increase in the nominal market valuation of equities); positively related to the rate of return on financial assets (r_F) both because it shows increases in the return on assets and because it indicates the cost of borrowing; negatively related to the return on real assets (r_T);¹¹ and positively related both to total net worth (NW/P) and to real saving (S/P). Thus, for example, an increase in house prices would have both an “ex ante”

¹⁰ The indices used in this paper to proxy housing costs have increased in real terms over 1967–83 by 14 per cent. for the United States, 37 per cent. for the United Kingdom, 26 per cent. for Germany and 75 per cent. for Japan. It should be noted that the land price is used for Japan, as this is the major component of house prices.

¹¹ The measure of returns on real assets, real house price increases, excludes the imputed rent from owner occupation, which is another component of the real return.

substitution effect on financial wealth, as, given autoregressive expectations, expected returns to real assets have increased, and an “ex post” “income” or wealth effect through the size of the total portfolio and changes in the ratio of financial to total assets. The importance of this latter effect depends on the proportion of owner occupancy in the country concerned.

The specification chosen for this general form is the familiar error-correction model popularised by Davidson, Hendry et al. (1978). As discussed at length above, this model allows a time series equation to have an economically sensible long-run solution, where in this case net financial wealth depends only on net wealth and the relative rates of return on tangible and financial assets, together with empirically determined short-run dynamics. Hence holdings of financial wealth were modelled as follows:

$$\begin{aligned} \Delta \ln \left\{ \frac{NF}{P} \right\}_t &= \alpha_1 + \alpha_2 \ln \left(\frac{S}{P} \right)_t + \alpha_3 \ln \left\{ \frac{NF}{NW} \right\}_{t-1} & (4.2) \\ &+ \alpha_4 \Delta (rr_F - rr_T)_t + \alpha_5 (rr_F - rr_T)_{t-1} \\ &+ \alpha_6 \left\{ \left(\Delta \ln PE_t - \Delta \ln P_t \cdot \left[\frac{E}{NF} \right]_{t-1} \right) \right. \\ &\quad \left. - \left(\Delta \ln P_t \cdot \left[\frac{(NF - E - L)}{NF} \right]_{t-1} \right) \right\} \end{aligned}$$

The long-run solution to this equation (zero growth, zero inflation) is:

$$\ln \frac{NF}{P} = \frac{\alpha_1}{\alpha_3} + \ln \frac{NW}{P} + \frac{\alpha_5}{\alpha_3} (rr_F - rr_T) \quad (4.3)$$

where NF = stock of net financial wealth

P = consumer/retail price deflator

S = personal savings

NW = stock of net worth (net financial wealth plus tangible assets)

- rr_F = real rate of return on financial assets (time deposits)
(= $r - p$)
- rr_T = real rate of return on real assets (= $\dot{p}_T - p$) where p_T
is an index of house prices
- PE = equity prices
- E = stock of equities
- L = stock of life assurance and pension fund assets

The last term in equation (4.2) shows the rate of capital gain and loss on the portfolio. Equities may show a gain or loss depending on real equity prices, while net monetary assets decline in real value when inflation occurs. To the extent that equity revaluations reflect retained earnings of firms, this variable captures the interrelation between companies' saving and persons' wealth accumulation and hence via the consumption decision their saving (see Feldstein and Fane (1973), Denison (1958)). Pension fund assets are assumed to maintain their real value over the relevant time horizon. This is also true of indexed bonds in the United Kingdom, but sectoral holding data were not available. When added to saving, the financial asset revaluations proxied by this term show the increase in funds available each period for portfolio allocation, excluding short-run changes in the value of real assets. Separate inclusion of saving and a proxy for revaluations allow accumulation to respond differently to these components of the change in wealth. It is assumed that, owing to high transaction costs on real assets, substitution of real for financial assets occurs only in the long run. This substitution, together with effects arising from revaluations of real assets, is captured by the term NF/NW . This term ensures that in the long run, *ceteris paribus*, the portfolio remains balanced, with tangible wealth growing at the same rate as financial wealth. The choice of yield on financial assets is clearly arbitrary. It was felt that time deposits constituted the savings instrument most generally available across the personal sector. The disadvantage of this rate, especially for Japan and the United States, is that it has frequently been

Persons' net financial assets

	United States	United Kingdom	Germany	Japan
K	-0.029 (0.4)	0.145 (0.4)	-0.356 (1.5)	0.114 (0.2)
$\ln S/P_t$	0.017 (0.3)	-0.053 (0.4)	0.085 (0.5)	-0.039 (0.6)
$\ln NFA/NW_{t-1}$	-0.117 (1.9)	-0.147 (0.8)	-0.341 (1.9)	-0.159 (1.2)
Δrrf_t	0.385 (2.7)	0.037 (0.3)	-0.086 (0.2)	0.161 (1.1)
rrf_{t-1}	0.428 (2.0)	0.062 (0.4)	0.123 (0.3)	0.107 (0.7)
$\Delta \ln pfa_t$	0.798 (5.4)	1.314 (13.8)	0.962 (1.1)	0.815 (3.1)
\bar{R}^2	0.92	0.96	0.34	0.92
Se	0.029	0.029	0.037	0.023
DW	2.0	2.2	1.1	2.5

Static equilibrium solutions

United States $\ln NF = 0.25 + \ln NW + 3.7 rrf_t$

United Kingdom $\ln NF = 0.99 + \ln NW + 0.4 rrf_t$

Germany $\ln NF = -1.0 + \ln NW + 0.4 rrf_t$

Japan $\ln NF = 0.7 + \ln NW + 0.67 rrf_t$

For variable definitions see text.

subject to regulation and hence, especially for the United States, does not indicate the true marginal rate on financial assets.

The results are shown above. The signs are generally as expected, except that real saving has a negative effect on real personal sector financial wealth in Japan and the United Kingdom. For the United Kingdom, in particular, this negative sign may reflect peak shifts out of financial assets and increased liability holdings coinciding with high measured saving ratios during periods of inflation, though one would normally expect the weighted change in the asset prices term to capture this effect. This effect may also be a consequence of the inclusion of unincorporated business (whose saving is likely to be largely devoted to fixed capital accumulation) with the household sector in these countries. Speeds of adjustment to desired levels are highest in Germany, with an implicit lagged

dependent variable of 0.7, while adjustment in the other countries is relatively slow. This may also be observed from the graphs in Section II; personal sector portfolios in Germany have been less volatile and hence probably closer to equilibrium than for the other countries. Relative rates of return have the expected long-run sign. The effect of these relative rates of return in both the short and long run is higher for the United States. This might be anticipated given the greater liquidity of the housing market in that country, though the weak response for the United Kingdom is perhaps surprising. The term on financial asset revaluations is the most significant in all of the equations except the one for Germany. The coefficients indicate a higher elasticity of financial asset holdings with respect to real capital gains and losses in the United Kingdom than in the other countries, a result which is corroborated by work on the UK consumption function (see Davis (1984) for a summary).

These equations can be criticised, in particular, for inclusion of the current level of real asset price changes, which itself accounts for much of the change in the dependent variable. However, they do at least give plausible and largely consistent and comparable signs and elasticities for most economic effects, suggesting that behaviour of persons' net financial asset accumulation is broadly similar across the countries studied.

2. Company sector

Analysis of firms' portfolio behaviour must take into account their different characteristics compared with persons. Firms do not need to accumulate wealth for retirement in the same way as persons, instead needing gross financial assets largely as a liquid buffer stock to cover recessions and periods when receipts and payments are not fully synchronised. Nonetheless, there will clearly be an incentive to increase or reduce gross financial assets when real interest rates, and corresponding rates of return on real capital, change. On the liabilities side, it is even less clear what are the determinants of desired gross liabilities, or even the extent to which firms have such a target. Equity, for example, which in several

economies comprises much of firms' liabilities, need never be repaid, and the value of equity on the market is partly beyond firms' control, to the extent that stock prices change in line with prospects for the aggregate economy. Liabilities tend to be increased when firms wish to invest, to the extent that investment cannot be financed from retained earnings, but most models of firm behaviour would argue that the investment and retention decisions are primary, leaving gross liability accumulation as a residual.

These considerations do not, however, mean that no sensible analyses of firms' financial portfolios are possible. In particular, on the liability side, the choice between debt and equity finance of funding needs has long been viewed as a key element in firms' financing choices. Bain, for example, notes that the principal financial decision a firm has to take concerns the division of its liabilities between debt and equity (Bain (1981) page 104; see also Gordon and Malkiel (1981)). This is because excessive reliance on debt (which, unlike equity, needs to be repaid) is often seen as inimical to the stability of firms at times of recession, although conversely issues of equity may dilute the value of existing shareholders' portfolios and are often discriminated against by the tax system (see King (1977)). On the other hand, Modigliani and Miller (1959) have shown that under strong "perfect market" assumptions the debt/equity ratio should be irrelevant to firms' financing decisions. This is because shareholders should be able to build a balanced portfolio comprising shares from firms with high and low gearing. However, the assumptions used have often been challenged, in particular because the terms on which firms can obtain credit depend on the debt/equity ratio, and the debt/equity ratio remains an important indicator of firms' fragility to many commentators in financial markets.

Working financial capital or gross financial assets are often left as a residual in models of firms' behaviour, but some elements of recent behaviour, notably the financial surpluses run by the corporate sector in the United Kingdom, suggest this may be far from reflecting the truth. Portfolio analysis of firms' total (tangible

plus financial) assets would suggest that substitution from tangible to financial assets will occur at times of recession and low rates of return on capital, and that these factors can explain recent surpluses in the United Kingdom and tendencies to reduced deficits elsewhere (see BIS (1985), page 40). In addition, as reported in Jackson (1984), some corporate treasurers assert that gross liquidity is superior to unused credit lines as a source of finance, suggesting an importance of gross financial assets independent of that of net financial assets. It is the analysis of gross financial assets that is considered first.

Besides expecting the level of such assets to respond to interest rates, one would also expect it to vary with economic activity and/or the capital stock. A relationship with activity might be anticipated owing to increases in profitability¹² during periods of expansion, which would allow greater accumulation of financial assets, especially as physical investment decisions often lag behind increases in GNP. Also for precautionary reasons firms are likely to build up liquidity during expansions, so as to create a cushion for the following recession, while for transactionary purposes firms may need more liquidity to finance purchases and sales during periods of buoyant economic activity. For the capital stock, an "asset substitution" hypothesis as noted above would suggest that firms will reduce their financial assets when the capital stock is built up and vice versa, not only because financial assets may be used directly as a means of exchange to pay for investment but also in response to changes in relative returns. Clearly, other forms of behaviour are also conceivable; for example, if firms wish to maintain a balanced asset structure across physical and financial assets, then the capital stock may be a complement to gross financial assets.

The equation used was again in "error-correction" format (see Section III) with the specification

¹² Profitability itself was not used as a scaling variable owing to a lack of consistent data.

$$\Delta \ln \left[\frac{\text{FAC}}{\text{P}} \right]_t = \alpha_1 + \alpha_2 \Delta \ln \text{GNP}_t + \alpha_3 \ln \text{CCS}_{t-1} \quad (4.4)$$

$$+ \alpha_4 \ln \left[\frac{\text{FAC}}{\text{GNP}} \right]_{t-1} + \alpha_5 \Delta (r_F - r_K)_t + \alpha_6 (r_F - r_K)_{t-1}$$

where FAC = gross financial assets of companies

GNP = real gross national product

P = consumer price deflator¹³

CCS = real corporate capital stock at replacement cost

r_F = real rate of return on financial assets
(government bonds)

r_K = average real rate of return on capital in manufacturing (source: OECD)

The rate of return for financial assets chosen for firms was that on government bonds, reflecting firms' greater sophistication and the wider range of assets available at low transaction costs in comparison with the situation for persons. The results are shown overleaf. Except for Japan, the long-run response to differential rates of return is positive, although the short-run response, i.e. the term on the first difference of relative returns, is also perverse for the United States. It may be that this first difference is related to revaluations, i.e. falls in the market value of bonds and (to some extent) equities when interest rates rise. This would give a perverse result for increases in financial rates of return in the short run.

In all cases the long-run response to economic expansion is positive, though the short-run response is negative and insignificant for Germany. In line with the asset substitution hypothesis discussed above, the long-run elasticity is negative for the capital stock except for Japan, suggesting that firms in Japan build a balanced portfolio of assets rather than substituting between financial and real assets. This may be reasonable behaviour, given the atypically large levels

¹³ This was used as a general price deflator, though it may not be strictly appropriate for the capital stock.

Companies' gross financial assets

	United States	United Kingdom	Germany	Japan
K	-0.36 (0.3)	0.47 (0.5)	0.35 (0.7)	-8.9 (1.5)
$\Delta \ln \text{GNP}_t$	0.8 (1.9)	1.1 (0.8)	-0.023 (0.1)	3.98 (2.7)
$\ln \text{CCS}_{t-1}$	-0.08 (0.9)	-0.13 (0.7)	-0.104 (0.8)	0.8 (1.5)
$\ln \text{FAC}/\text{GNP}_{t-1}$	-0.56 (2.3)	-0.29 (0.9)	-0.4 (0.2)	-0.9 (1.5)
Δrr_t	0.009 (0.2)	0.0024 (1.1)	0.0016 (0.9)	0.0006 (0.1)
rr_{t-1}	0.0063 (2.0)	0.0048 (1.3)	0.0048 (2.6)	0.006 (1.0)
\bar{R}^2	0.57	0.15	0.21	0.45
Se	0.04	0.11	0.04	0.09
DW	1.7	1.8	2.4	1.8

For variable definitions see text.

of gross financial assets in relation to GNP shown in Graph 2.3. Firms may have such a large cushion of financial assets that they do not need to adjust them closely either to carry out investment or to maximise returns on their total portfolio. One reason for this pattern may be high levels of cross holdings of equity, the value of which rises with the capital stock. An additional explanatory factor may be the prevalence of restrictions on credit in Japan, particularly in the earlier part of the estimation period, when "indirect finance" via banks was usually the only source available. This often resulted in firms being asked by banks to hold "compensating balances" of deposits when borrowing, so as to maintain the required balance between the banks' assets and liabilities. (This system will also boost company liabilities.)

The lagged dependent variables show that adjustment is faster in the case of Japan, while the estimate for Germany reveals very slow adjustment to desired levels of gross financial assets.

This set of equations is exploratory, and many of the variables

are insignificant at the 95 per cent. level. However, the sign pattern does give support to a behavioural explanation of firms' holdings of gross financial assets, not only in terms of transactions and precautionary motives for holding liquidity but also as a store of value, an earning asset in its own right and, except for Japan, as a substitute for fixed capital. This is in line with recent empirical observations of sectoral balances and also with firms' increasing activities in financial markets. Stacking the observations and running a Chow test for structural breaks over the entire data set revealed that one could accept similar behaviour for all countries except Japan at the 95 per cent. level.

For the reasons given above firms' gross financial liabilities were not analysed. However, the debt/equity choice was investigated, in terms of the increase in real debt in relation to, inter alia, the size of firms' equity stock. This analysis suggests determinants for the subset of liabilities which is the subject of the analysis of total non-equity liabilities shown in Section I. Reasons have been adduced above for firms to desire a balance between debt issue and the value of the equity stock. One would also expect debt issue to be reduced when the relative real cost of servicing increases (though, as discussed by Gordon and Malkiel (1981), this may not always apply), and increased when economic activity rises, to finance investment and as the probability of bankruptcy falls. There has, of course, been a shift over the estimation period in the *nature* of much debt finance. In particular, this has involved a shift from fixed to variable rate debt in many cases. One would expect the current interest rate to have a more powerful effect on debt issue in the case of fixed rate debt, as this represents the level of nominal resource transfer that needs to be made throughout the life of the contract. The extent to which this is true of the *real* interest rate used here depends, of course, on inflation expectations. With variable rate debt, by contrast, the current interest rate has less significance, as the level may be expected to change over the life of the contract. The importance of the real interest rate in the variable rate case depends on the nature of the contract. In some cases this may

stipulate a constant mark-up of the current nominal rate over inflation. However, it may be more likely that the rate will change with the general level of interest rates, which are dictated by a wide variety of policy and activity influences. Thus, for example, in the United Kingdom variable rate contracts are usually set in terms of a constant mark-up on the London interbank rate (LIBOR). Hence the current real rate may not be a good indicator of the long-term cost of variable rate debt to a firm. (For a deeper discussion of fixed versus variable rate loans see Santomero (1983)). A further shift in the nature of debt has been in terms of maturity; for example, in the United Kingdom maturities have tended to shorten. Unfortunately these shifts are not revealed by the data.

The specification chosen was as follows:

$$\Delta \ln \frac{D}{P} \alpha_1 + \alpha_2 \text{RCD} + \alpha_3 \Delta \ln \text{GNP}_t + \alpha_4 \ln \text{GNP}_{t-1} \quad (4.5)$$

$$+ \alpha_5 \ln \left[\frac{D}{E} \right]_{t-1} + \alpha_6 \ln \left[\frac{D}{P} \right]_{t-1}$$

where RCD = real relative cost of debt, specified as the real interest rate on debt (bank lending rate, except for the United States, where it was the bond rate) minus dividend yield on equity

D = stock of debt at market prices excluding trade credit and overseas direct investment

E = stock of equity at market prices

The relative cost of debt was entered only as a current level, implying that short and long-run effects from this variable differ only by the inverse of the coefficient $\alpha_5 + \alpha_6$. The "free" lagged debt term $(D/P)_{t-1}$ is introduced to allow testing of unit elasticity between debt and equity. The results for 1967-84 are shown on page 43. The most surprising finding is the positive term on the relative real interest rate, i.e. debt issue increases when the real interest rate rises compared with the dividend yield on equity. By contrast, if the

equations are only estimated up to 1980, the relative real interest rate has a negative effect on debt issue, except for Japan. A simple explanation for these signs might be in terms of the cycle. Since 1980 economic expansion has coincided with sharply rising real interest rates which have not been followed strongly by dividend yields, while in the earlier period expansion was generally accompanied by inflation, which tended to reduce real rates. However, it is more likely that changes in the nature of debt have also had an influence. If a large proportion of debt issued since 1980 has been at variable rate, then the current interest rate is likely to have less influence than for fixed rate debt (see BIS (1984) and Goodhart (1984)). Firms may therefore continue to issue debt in the light of cyclical and portfolio considerations despite high current real interest rates. It may also be the case that the dividend yield does not reflect changes in transaction costs, where those on equity have probably risen relative to debt issue, nor tax considerations, nor the increasing sensitivity of shareholders to dilution of their holdings by new issues. Indeed, the recent tendency in the US has been to issue debt to *repurchase* equity. Thirdly, deregulation may have increased the price of bank loans while also raising availability. This sign change could provide clues to the recent acceleration of debt issue in the United States discussed in Section I.

In each case the debt/equity ratio has the correct sign, suggesting that excessive growth of this ratio leads to a reduction in real debt issue. The coefficients on the lagged dependent variables imply relatively fast adjustment to desired levels in Germany and the United States compared with the other two countries, while the long-run solutions imply a near unit elasticity between debt and *income* for Germany and the United States. For the United Kingdom and Japan the elasticity with respect to *equity* is nearer one, in particular, in the estimate over the whole period. These differences were confirmed by a Chow test, which showed similar behaviour between the United States and Germany and the United Kingdom and Japan. Apart from the interest rates, there are two other aberrant signs, on income growth for the United Kingdom

over the 1967–84 period and for the level of income in the Japanese case up to 1980. The former may reflect the prevalence of “distress borrowing” over the recent recession, when firms had to borrow to cover interest payments on their existing debt, given tight cash flow conditions. For Japan the coefficient is insignificantly different from zero, perhaps suggesting that borrowing is independent of the level of activity. Also, the sign may result from the implicit “safety net” of government assistance, which has meant that lending to firms in priority sectors has been relatively risk-free for financial institutions, regardless of the state of the economy (see Boltho (1985)). The positive sign on the interest rate term for that country may reflect the relatively weak possibilities of substitution between debt and equity, together with the prevalence of credit rationing over much of the observation period.

To summarise, results have been presented for company sector portfolio behaviour which illustrate many of the empirically observed features of firms’ financial activities and indicate a wide degree of similarity of behaviour between the four countries, despite their differing financial systems. The main contrasts shown have been the different responsiveness of the Japanese company sector to interest costs, returns and levels of activity and the complementarity revealed in that country of the capital stock with the financial asset stock.

3. Summary

The results for portfolio size given in this section imply that observed differences between countries in non-financial private sector asset and debt holdings, and hence in total debt as discussed in Section I, result largely from differing financial conditions rather than different underlying behaviour and responses to stimuli. These differing financial conditions include different movements and levels of interest rates due to interest rate and capital controls, property market booms, low marketability of equity, high returns on capital investment, and indeed levels of saving and economic growth, all of which are captured to some extent by the equations. The coefficient

Real debt issue

Country	K	RCD	$\Delta \ln \text{GNP}_t$	$\ln (D/E)_{t-1}$	$\ln \text{GNP}_{t-1}$	$\ln D_{t-1}$	R ²	SE	DW
United Kingdom	-0.23 (0.2)	0.0049 (0.8)	-0.026 (0.1)	-0.078 (1.2)	0.051 (0.2)	-0.012 (0.1)	0.635	0.036	2.0
Japan	1.1 (1.0)	0.0051 (1.3)	0.662 (1.3)	-0.098 (1.4)	0.052 (0.2)	-0.014 (0.5)	0.708	0.033	1.2
Germany	-0.257 (1.1)	0.0034 (1.2)	0.483 (2.0)	-0.034 (0.5)	0.342 (1.7)	-0.271 (1.7)	0.807	0.016	1.6
United States	-1.93 (3.1)	0.0023 (1.4)	0.537 (3.2)	-0.041 (1.5)	0.738 (2.6)	-0.589 (2.2)	0.657	0.017	1.9
1967-80									
United Kingdom	-0.22 (0.2)	-0.0087 (1.1)	1.58 (1.7)	-0.182 (2.4)	0.261 (1.0)	-0.271 (1.3)	0.739	0.032	1.7
Japan	1.42 (1.0)	0.0084 (1.3)	0.46 (0.7)	-0.146 (1.4)	-0.069 (0.2)	-0.046 (0.1)	0.691	0.038	1.0
Germany	-0.43 (1.7)	-0.0014 (0.4)	0.666 (2.5)	-0.034 (0.5)	0.589 (2.4)	-0.491 (2.5)	0.783	0.015	2.1
United States	-0.217 (0.3)	-0.0036 (1.6)	0.681 (4.9)	-0.017 (0.9)	0.508 (2.4)	-0.543 (2.8)	0.839	0.011	2.6

Static solutions

1967-80

United Kingdom	D = -2.6 + 0.57 GNP + 0.054 RCD + 0.87 E	United Kingdom	D = -0.49 + 0.58 GNP - 0.019 RCD + 0.4 E
Japan	D = 9.8 + 0.46 GNP + 0.046 RCD + 0.88 E	Japan	D = 7.4 - 0.36 GNP + 0.044 RCD + 0.76 E
Germany	D = -0.8 + 1.12 GNP + 0.011 RCD + 0.11 E	Germany	D = 0.82 + 0.97 GNP - 0.027 RCD + 0.07 E
United States	D = -3.1 + 1.17 GNP + 0.0036 RCD + 0.07 E	United States	D = 0.39 + 0.91 GNP - 0.006 RCD + 0.03 E

For variable definitions see text.

estimates suggest that, offered similar conditions, companies' and persons' behaviour in these countries would not differ widely. The equations help to gauge how any convergence (or divergence) of such conditions would change financial asset and liability holding behaviour and also help to explain the past behaviour of gross debt discussed in Section I above. This having been said, it is also likely that some contrasts in observed behaviour result from factors which are omitted from the specifications, such as the ease of household borrowing, the pension and housing tenure systems, the tax systems, the structure of financial markets and their assessment of the risk of lending to companies, and government loan guarantees to financial institutions. Effects of changes in these variables cannot be gauged using the equations.

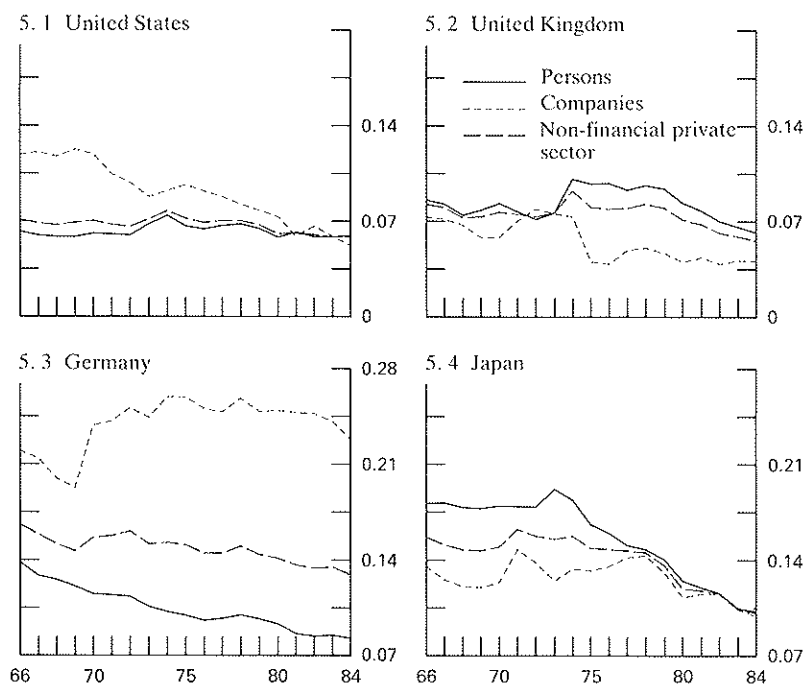
Analysis of gross quantities alone, however, has few implications for the development of the financial system, except in terms of the total sums turned over by it. Individual sectors of the financial system are affected by portfolio *choice* within these aggregates. It is to analysis of these components of gross aggregates that the paper now turns.

V.

Recent developments in financial markets

The basic tools for analysis of portfolio distribution are the stock data provided by national flow-of-funds statistics. The derivation and composition of the data base used in this paper are discussed in the appendix. This provides broadly consistent data over 1966–84 for an array of individual assets and liabilities, changes in which are discussed in Section VI below. First, however, by way of an introduction, the data are used to gauge the size and significance of certain trends in financial behaviour which are often asserted to be important by commentators.

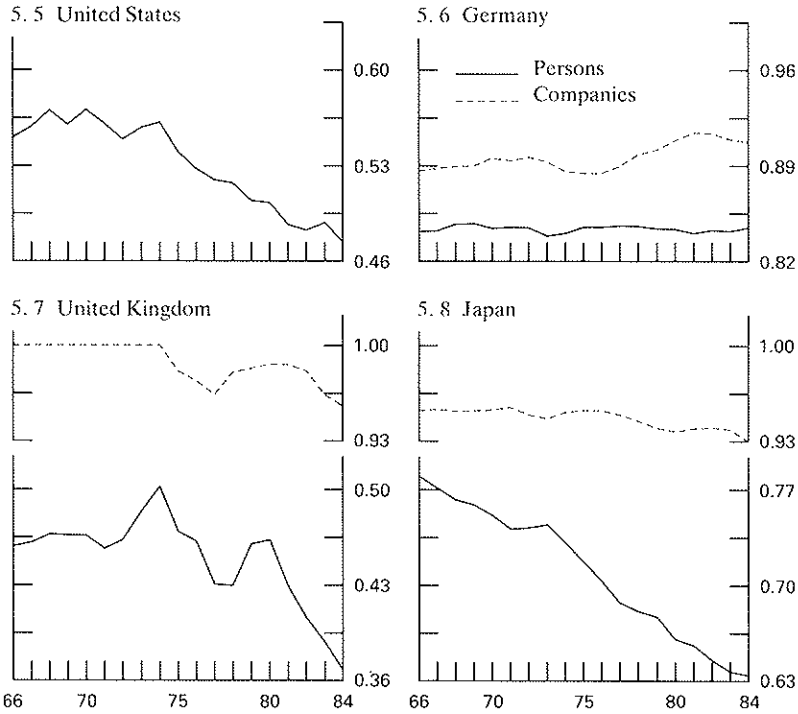
Proportion of non-interest-bearing assets



1. Increases in the proportions of interest-bearing assets

The proportion of traditionally non-interest-bearing assets (i.e. currency and sight deposits) in gross assets is shown in Graphs 5.1 to 5.4 for the personal and company sectors individually and as aggregated. The data confirm a tendency for the private sector to economise on non-interest-bearing balances, in particular for Japan since the mid-1970s and for the United Kingdom since 1979. In all countries except Germany there has been a convergence of personal and company sector behaviour, showing the influence of common technological advances as well as similar economic influences from price inflation. In Germany firms are shown by the flow of funds to

Ratio of bank to total (bank + OFI) deposits*



* Here, and in subsequent graphs, OFI refers to Other (than banks) financial institutions.

hold over 20 per cent. of their gross financial assets in the form of cash and sight deposits. While that country has generally experienced lower inflation and lower interest rates on alternative assets, this may also indicate both lower liquidity of alternative assets such as time deposits and elements of window-dressing (see page 65 below).

For the financial system, the graphs suggest that sight deposit shares entail a higher average cost of funds for banks in the United States and the United Kingdom, with only 6 per cent. of the non-

financial private sector's assets held in this form, while in Germany and Japan the figure exceeds 10 per cent.

*2. Increases in deposits with other financial institutions
at the expense of banks*

It has often been asserted that banks, encumbered by restrictions on their competitiveness, such as the "corset" in the United Kingdom and differential tax treatment, for example the tax privileges of deposits with the Post Office Bank in Japan,¹⁴ have as a result lost out to the other financial institutions. The data shown in Graphs 5.5 to 5.8 reveal that this is a strong tendency in all countries except Germany. In the United Kingdom, the United States and Japan the balance of deposits of the non-financial private sector has swung decisively from banks to other financial institutions. For the United Kingdom and the United States this is also a consequence of the nature of the housing market, as discussed on page 55 below. In Japan it is a consequence both of taxation and of the longer maturity of assets that could be offered by trusts and the Post Office compared with banks. Since regulation by the Japanese authorities has generally ensured an upward sloping yield curve, "longer" assets are always attractive, especially if contracts are relatively easily terminated. In Germany shares of deposits have remained roughly constant, with the majority still being held with banks. (It should be noted that other financial institutions here are defined as non-bank depository institutions, excluding pension funds and other investment institutions.) It is of interest that in Germany there are no strong regulatory controls on banks' activities, while in the other countries there has often been regulation and strict compartmentalisation of financial institutions. It should be noted, however, that the wide definition of banking in Germany may mask some portfolio shifts between types of bank.

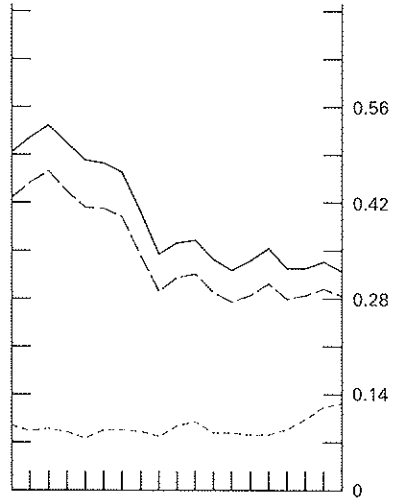
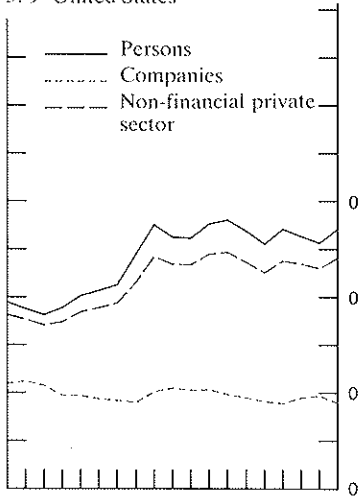
¹⁴ This institution has been classified as a non-bank in this paper; for discussion see page 120 of the appendix.

Portfolio share of deposits and market assets

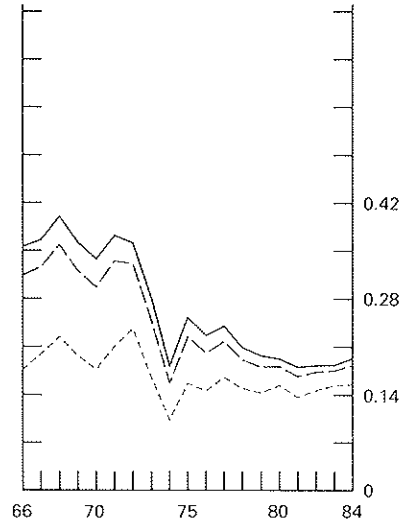
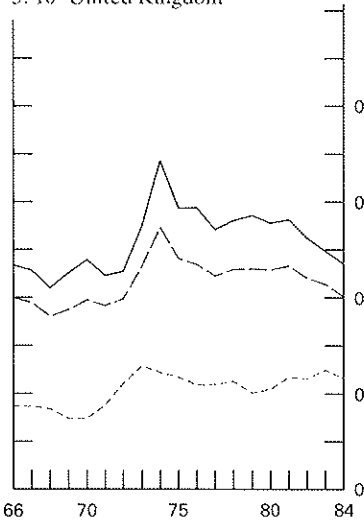
Deposits

Market assets

5.9 United States



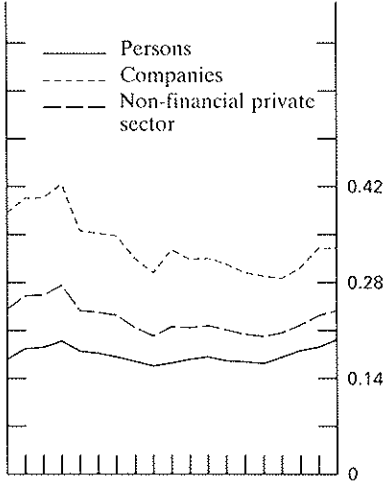
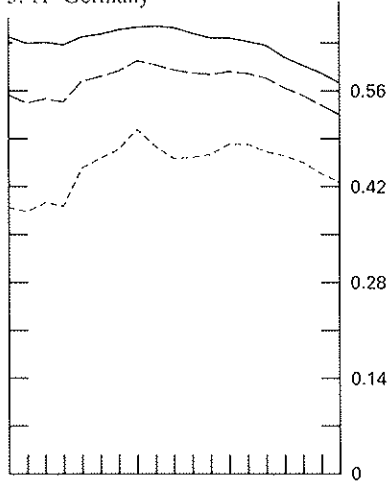
5.10 United Kingdom



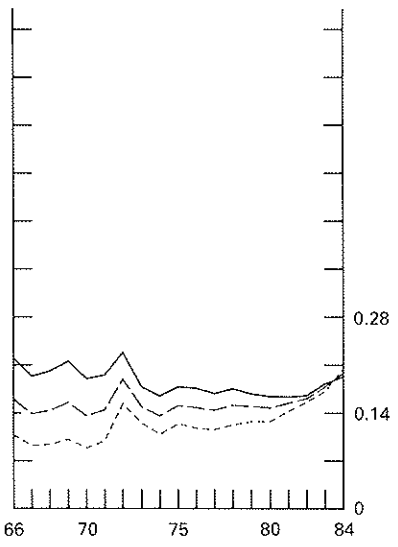
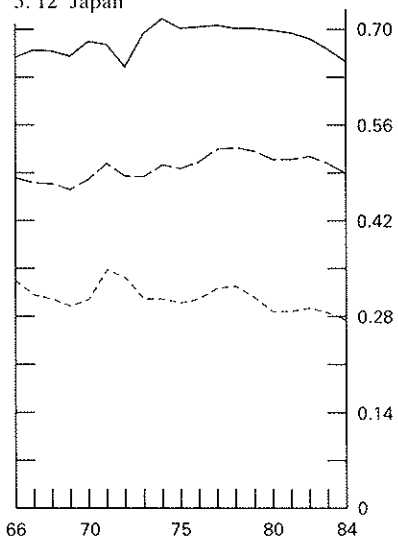
Deposits

Market assets

5.11 Germany



5.12 Japan

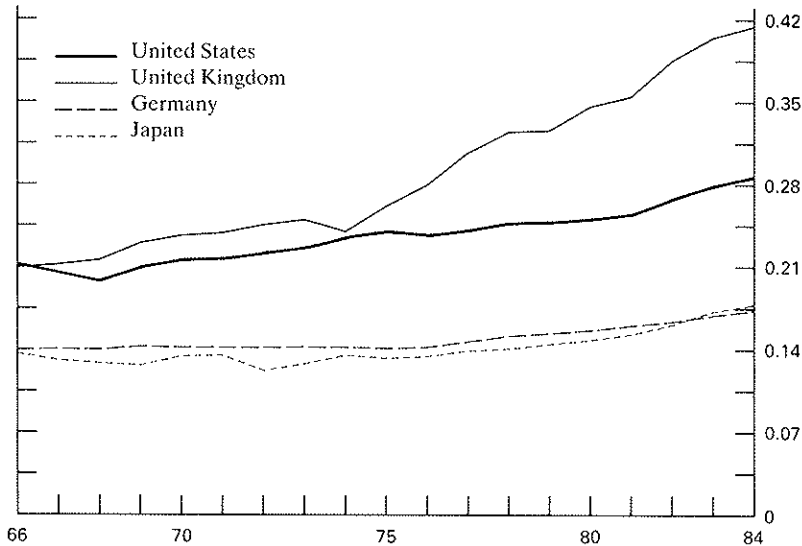


3. *Increases in the proportion of "market" assets held directly as opposed to deposits*

An increase in the share of domestic market-related assets in gross assets (bonds, equities, market paper)¹⁵ has frequently been observed in *flow* terms. The data shown in Graphs 5.9 to 5.12 reveal the extent to which these flow changes have affected the underlying *stock* and hence actually indicate a fundamental shift in behaviour. Clearly, this will be influenced by the size of flow shifts in relation to the stock, the sometimes offsetting influence of valuation changes and the degree to which shifts into market assets have been indirect, agents using investing institutions as an intermediary (see part 4 below). The graphs confirm that the share of deposits in the asset portfolio of the non-financial private sector has declined significantly in recent years in Germany and the United Kingdom and to a smaller extent in Japan. By contrast, the deposit share in the United States has remained broadly constant. The share of domestic market assets held directly by the non-financial private sector has increased significantly in Japan and Germany since 1980, while in the United States no clear trend is discernible and in the United Kingdom growth has been relatively minor. It should be borne in mind that data for US firms' equity and corporate bond holdings are not available; inclusion might alter the picture somewhat for that country. However, in general it may be concluded that major stock shifts towards market assets held directly have been most marked in Germany, followed by Japan and the United Kingdom. In Germany such a trend would have a less deleterious effect on banks' balance sheets, as they are the dominant issuers of bonds on the market. Hence the portfolio shift represents a reshuffling of their liabilities rather than a decline in their share of private sector portfolios. By contrast, in the United Kingdom a falling share of deposits, together with a shift *within* deposits towards other financial institutions (see 2 above) has implied a significant decline in the share of banks in aggregate private sector portfolios. For Japan the shift has been

¹⁵ Foreign assets are excluded owing to the lack of consistent data.

5.13 Proportion of personal sector assets held via investment institutions



related to the development of secondary markets, increased yields offered by the tender system on government bonds and the regulation of the yield curve noted above.

4. Increases in institutional holders of assets

The proportion of personal sector assets held via institutions is dominated by holdings in life assurance and pension funds (see Section VI below), though unit and investment trusts are other important means of spreading the risk of a portfolio of market assets. In many countries pension funds and life assurance are also given tax advantages. Graph 5.13 confirms the growth of these institutions, in particular for the United Kingdom. The shift to these forms of asset holding away from deposits and (in some cases) direct holding of market assets has wide implications for financial markets. In particular, the pension institutions' liability profile has made them a ready market for government bond issues, enabling the higher deficits of recent years to be funded smoothly and without excessive

cost. In some cases (Japanese Postal Life Assurance) these funded schemes are already in the public sector. It can also be argued that without the presence of relatively stable institutional holders the bond and equity markets would be far more unstable. A predominance of pension fund assets also has implications for the liquidity of household portfolios. Since these assets are difficult to liquidate before retirement and cannot be used as collateral, it seems likely that increased use of such funds may have as a corollary an increased demand for liquidity in the rest of the portfolio. The relatively long maturities of German and Japanese bank deposits compared with those in the Anglo-Saxon countries would tend to support this hypothesis.

To the extent they have occurred, these changes are of vital importance to the financial institutions involved, and represent important developments in portfolio distributions of the private sector. However, to highlight them alone would give a false picture both of changes in financial systems over time within countries and of contrasts in asset distribution between countries. Alone they also give no clue as to the forces which underly portfolio shifts. The paper therefore turns to a detailed analysis of portfolio distribution, instrument by instrument, followed by an analysis of the underlying causes of changes in asset holdings.

VI.

Portfolio composition

Recent trends in the composition of private sector portfolios are shown graphically below. They are illustrated by the proportion of the gross asset or liability portfolio accounted for by each instrument. Comments on the graphs follow.

1. Personal sector assets

Currency and sight deposits have undergone a decline in their share of the portfolio in each country since 1974, the United States

and the United Kingdom having shown an upward trend until that date. The decline corresponds to rapid inflation, which increased real capital losses incurred by holders of non-interest-bearing assets. Technological improvements, probably partly stimulated by rapid inflation, which have allowed agents to economise on transactions balances, have also been important. Thirdly, there has been an increase in the liquidity of time deposits due to both technological improvements and innovation (especially in the United Kingdom and the United States), which resulted in turn from competition between institutions. In the last few years the effect of innovation in introducing "NOW" accounts, effectively interest-bearing sight deposits, has helped to attenuate the decline in this asset's share of personal wealth. It is notable that the share of sight deposits has approached 6 to 10 per cent. of gross assets in each country, revealing the convergence of behaviour in the market for this asset. Japan is shown to have the highest level of sight deposits for most of the period, which may be partially due to the payment of interest on chequeable accounts and to constraints on borrowing necessitating high levels of liquidity. Sight deposits there, however, have declined most rapidly in recent years, coincident with the easing of liquidity constraints and the development of new financial instruments such as "maturity-designated time deposits" and "deposit combined accounts", a form of sweep account. As Graph 6.3 reveals, Germany and Japan may also have had larger sight deposits in the earlier period on account of their having a smaller other (depository) financial institutions sector. Building societies in the United Kingdom, for example, have always offered liquid interest-bearing accounts, which many have used as demand deposits. A further common feature in all countries except Germany is the instability of the *share* of sight deposits in 1972-75, although the absolute *level* was less affected. This is the counterpart of economic instability, due partly to relaxed monetary policy, which found expression in both equity market volatility (see Graph 6.7) and, in the United Kingdom, a rapid expansion of bank time deposits following the liberalisation of the banking system under "Competition and Credit

Control". Both of these affected gross assets, the denominator of the sight deposit share.

This last phenomenon is also observable in the trend of *time deposits with banks*, especially in the United Kingdom and Japan. Unlike sight deposits, however, there are also sharp contrasts in the level of bank time deposits between the Anglo-Saxon countries and the others. While time deposits with banks are typically 10 per cent. of the portfolio in the United Kingdom and the United States, they are around 30 to 50 per cent. in Germany and Japan. The counterpart of this is mainly the larger size of the other financial institutions sector and portfolio and institutional investment in the Anglo-Saxon countries. It is also related to the nature and definition of the banking system. In Germany "banks" tend to offer a wide range of services to their customers (the "universal" banking system) and also include savings banks – institutions which in other countries might be classified as other financial institutions. In Japan the banking system is also widely defined, though in contrast to Germany personal deposit rates are still regulated. The average maturities of bank time deposits also tend to be longer in Germany and Japan. The trends in the share of bank time deposits have been of growth followed by decline, with similar shares prevailing at the beginning and end of the period. The apogee was reached in around 1974 in all countries. Declines in the United Kingdom and the United States since then have been related to competition from other financial institutions, notably "money market mutual funds" in the United States, the US fall being attenuated in the early 1980s by the banks' own innovation of "money market deposit accounts". In the United Kingdom banks have been at a disadvantage vis-à-vis building societies, both because the latter were non-profit-making, and because till recently only building societies could offer a lower ("composite") rate of tax on deposits. In Germany the counterpart to the decline in the share of bank time deposits has been mainly the issuing by banks of bonds which have been held directly by households, and in Japan by the growth of the Post Office Bank, equities and investment trusts. While these changes contrast in their

impact on banks' balance sheets, they reveal the trend in both countries towards market-issued assets (and corresponding higher returns) away from traditional deposits.

Trends in *time deposits with other financial institutions* confirm these tendencies, as in Germany this sector has not expanded significantly as a direct holder of deposits, while in the Anglo-Saxon countries and Japan the other financial institutions sector has grown rapidly, at least until the early 1980s. As emphasised, this growth has been partly due to innovation sparked by regulation, notably the development in the 1970s of money market mutual funds in the United States – a consequence of disintermediation, as other deposit rates were kept low by Regulation Q ceilings – though some importance is also attributable to developments in the housing market. Building societies in the United Kingdom and thrifts in the United States are key providers of funds for house purchase, and part of their growth is due to the expansion of demand for mortgages as growth of house prices outstripped that of retail prices. Such a tendency would be particularly marked where saving is required with the institution prior to receipt of a loan, a system which has been in force during frequent periods of rationing of mortgage loans. By contrast, in Germany the housing market has been both less active and funded to a greater degree by banks. As described above, the other financial institutions sector in Japan, as defined here, benefits from tax privileges (the Post Office Bank) and has advantages from being permitted to accept deposits with a longer maturity than banks.

Government bonds are often characterised as a key element in the growth of financial portfolios (see, for example, the explanations for growth in aggregate debt, page 6), but Graph 6.5 suggests that to date such bonds held directly (rather than via investment institutions) have not become a very significant part of persons' portfolios. The share in 1984 was about 4 to 6 per cent. of gross assets in each case, following a decline in the United Kingdom and growth in Germany and Japan over the previous two decades. Evidence offered in Section VII below suggests that households'

demand functions for government bonds are similar, with a short-run interest elasticity of around 0.1. On the supply side, these trends have been in line with changes in the total stock outstanding; in the United Kingdom the stock has been declining since 1945, while Japan and Germany have started from a base of zero. In the United Kingdom and the United States there have also been decumulations following the bond price declines of the mid-1970s, which corresponded to increasing indirect holdings via investment institutions. Growth in institutional holdings of securities has also been marked in Japan, and it is notable that direct holdings of government bonds have grown more weakly there than in Germany, despite the more rapid growth of government debt (see Graph 1.5).

Contrasting tendencies are apparent for *private bonds*, shown in Graph 6.6. German private bond holdings have grown steeply to 10 per cent. of the portfolio, while direct holdings have declined in other countries, particularly since the mid-1970s. As well as being due to the differing importance of investment institutions, these changes reflect the buoyancy of the private bond market¹⁶ in Germany, particularly for bank bonds. These bank bonds are issued to finance bank lending, particularly to local authorities and companies. This buoyancy is in sharp contrast to the moribund state of the corporate bond market in the United Kingdom. There, few issues have been made since the mid-1970s owing to volatile inflation and lack of competitiveness on the demand side with government bonds and on the supply side with bank lending. It should be emphasised that in the case of private and government bonds, only those outstanding for Germany and the United Kingdom reflect market values; for the other countries bonds are at book value. In most cases, obviously depending on the maturity of the bond and changes in interest rates, this distinction may make little difference to the resulting stock.

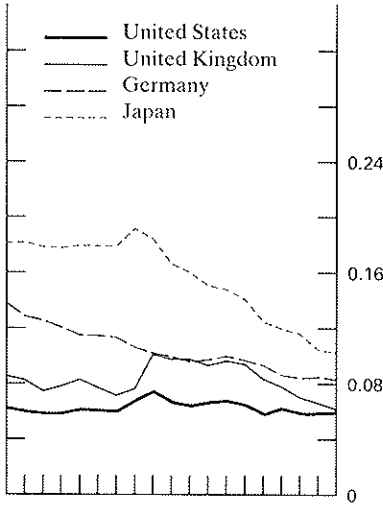
¹⁶ This market is dominated by new issues, as bonds in Germany are often held till maturity.

Short-term bills and other *market paper* are not held in significant quantities by the personal sector in Japan, showing both the regulated nature of the financial system (for example, concerning the minimum size of certificates of deposit issued by the banks) and the lack of strong money markets. For the United States an odd trend in distribution is apparent, with three major peaks. These correspond to cycles in issues (largely by finance companies) and in the competitiveness of the instrument and to some extent to the incidence of "credit crunches", i.e. sudden quantitative restrictions on credit operating through the market (see Wojnilower (1980, 1985)). For the United Kingdom and Germany public-sector issues dominate this aggregate. In the former country a constant nominal holding has corresponded to a declining portfolio share, while in Germany holdings have grown from a level of zero in 1972.

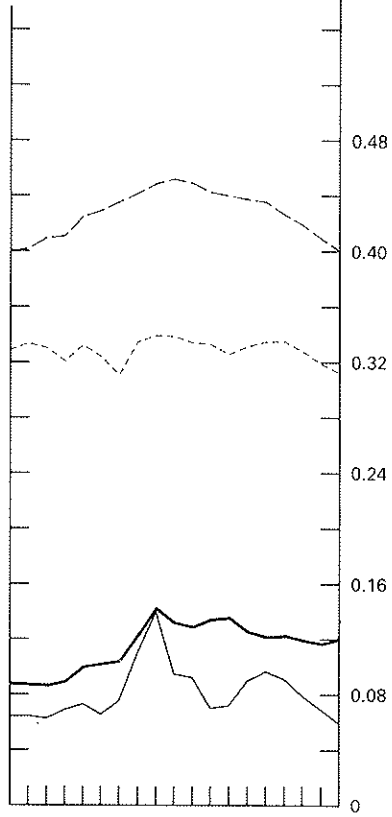
Investment trusts (Graph 6.9) are an indirect means of holding bonds and equities, offering market returns together with a spreading of risks across portfolios, though still being subject to valuation effects. Analysis shows that these trusts have grown in recent years, particularly in the United States and Japan. This reflects an increase in the flow of institutional investment, encouraged by increases in stock market prices, especially in the United States, where "mutual funds" hold the majority of their assets in the form of corporate equity. In Japan, by contrast, the majority of investment trusts' portfolios are in the form of medium-term bonds. For Japanese investors such trusts offer the advantage of market returns which are not available on deposit instruments, although unlike postal savings they are subject to tax. The advantages of trusts have been increased recently by the institution of liquid medium-term bond funds, which operate similarly to money market mutual funds in the United States (see Suzuki (1984)). The security market in Japan has also shown less instability than elsewhere in recent years, thus encouraging indirect investment in securities. It should be noted that the Japanese data are at book value; hence the recent growth reflects a shift of investor preferences, while in the United States it also reflects valuation

Personal sector financial asset portfolio composition

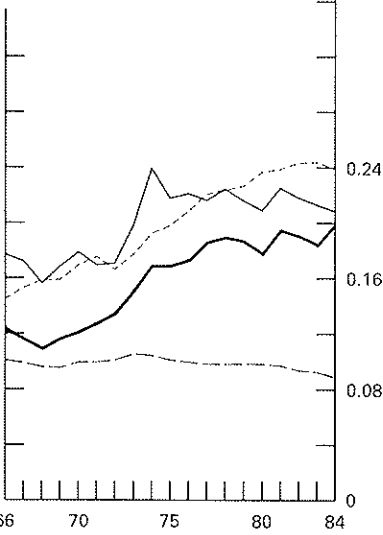
6. 1 Currency and sight deposits



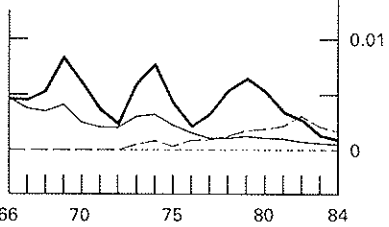
6. 2 Time deposits with banks



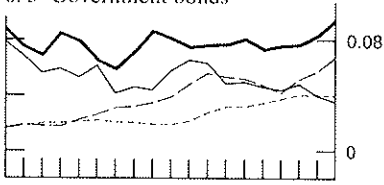
6. 3 Time deposits with OFIs



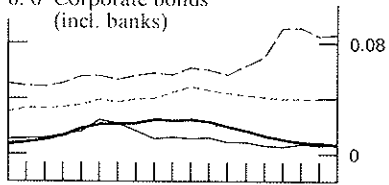
6. 4 Market paper



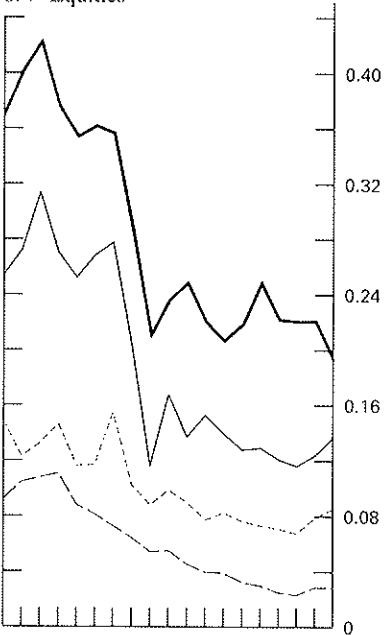
6. 5 Government bonds



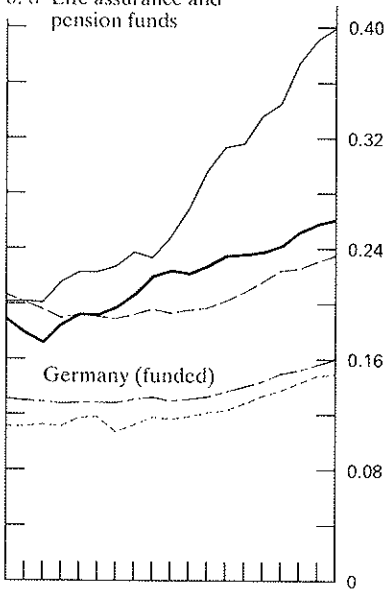
6. 6 Corporate bonds (incl. banks)



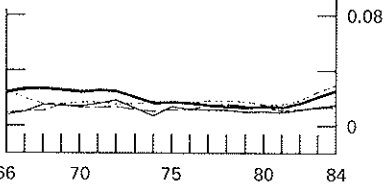
6. 7 Equities



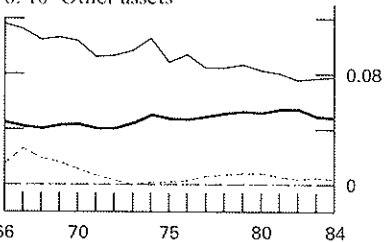
6. 8 Life assurance and pension funds



6. 9 Investment trusts



6. 10 Other assets



effects. Similar growth has not been observed in the United Kingdom and Germany, where investment and unit trusts have remained around 1 to 1½ per cent. of portfolios.

Corporate equity held directly remains a sizable but declining proportion of personal sector assets, as shown in Graph 6.7. This decline occurred principally during the stock market collapse of 1972–74, especially for the United Kingdom and the United States. Since then the equity share has not been rebuilt, given the revealed risk of such holdings and the sharply negative returns, allowing for capital losses. A similar pattern on a smaller scale is shown for Japan, although the 1972–74 decline there was preceded by rapid growth in 1970–72; hence the long-run level declined less than in the Anglo-Saxon countries. In Germany no sharp fall is apparent, rather a long-run decline in holdings. The key counterpart to the decline in direct holdings of equity has been the growth in institutional investment, partly investment trusts but mainly life assurance and pension funds (see Graph 6.8). Despite the common trends, it should be emphasised that the levels are still distinct, notably between the high-share Anglo-Saxon countries and low-share Germany. Although wealth taxes¹⁷ discourage equity holdings in Germany and there is a high level of inter-firm equity holding, this contrast is also related to the supply side. In Germany firms have tended to be highly (and till recently increasingly) geared, i.e. with a high debt/equity ratio, while this has been less the case in the United Kingdom and the United States, where stock markets are more active and equity issue simpler. These issues are discussed further below (page 73).

Other assets (Graph 6.10) are relatively minor for most countries, but for the United States include the large outstanding volume of non-tradable secondary mortgages. These are not such a feature of the other financial systems. Graph 6.8 is of considerable interest in showing the increasing share of financial assets taken up by *life*

¹⁷ These were reduced in 1983.

assurance and pension funds. For funded pensions there is, as with equity, a distinction between the Anglo-Saxon countries and Germany and Japan. In the former countries a larger proportion of pensions are funded, and compared with Germany the state pensions are less generous, encouraging this form of saving. Nonetheless, it is notable that if companies' estimated unfunded pension liabilities¹⁸ are added to persons' assets, the share in assets for Germany is similar to that in the United States. The pension industry in the United Kingdom has experienced sustained growth exceeding that in other countries. This may be related to the tax privileges of this form of saving in the United Kingdom (where, for example, pension funds can reclaim advance corporation tax paid by firms on their distributed profits) as well as a wider coverage and a greater counterpart decline in equity holdings. Japan remains somewhat below the other countries in stock terms, though in flow terms inflows are now sizable. The lower level is related, firstly, to the more recent industrialisation of that country, with fewer schemes having reached maturity. Secondly, pensioners often use other savings instruments for old age; on Post Office savings deposits, for example, interest is exempt from tax for small savers, hence similar post-tax returns to pension funds can be offered. (Postal deposits should be distinguished from Postal Life Assurance, which is included in the total here.) Thirdly, there is the lower average age of the population. However, the population is ageing rapidly and tending towards a similar distribution to that of other countries, while state pension provision has been cut back. These tendencies may be expected to lead to a stronger growth in the life assurance and pension fund share. It should, of course, be borne in mind that these graphs show shares and not absolute growth. As shown in Graph 2.1, gross asset growth in Japan outstrips that of other countries.

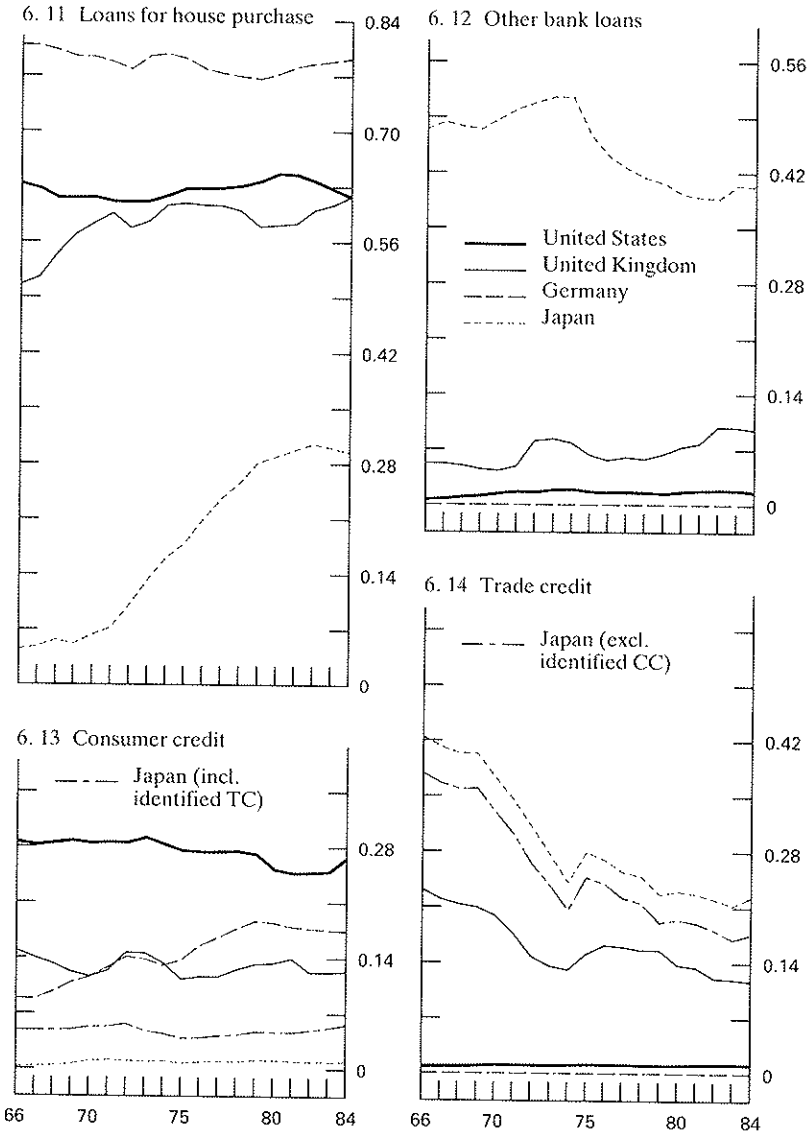
¹⁸ I.e. those which are included in firms' balance sheets, but for which no financial assets have been purchased. State unfunded (social security) schemes of this type are excluded from consideration here.

2. *Personal sector liabilities*

Loans for house purchase form a dominant proportion of personal sector liabilities in all countries except Japan (where loans and trade credit to unincorporated businesses bulk large), and even in Japan growth has been rapid. This is to be anticipated; housing remains the key capital investment of the personal sector. In Germany the figure includes all loans to the housing sector, loans to firms for construction included. Combined with a relatively low level of consumer credit, this explains the dominant 80 per cent. share there. The United Kingdom and the United States may be contrasted, as the share of mortgages has grown in the former while remaining stable in the latter, both now forming 60 per cent. of persons' liabilities. This is explicable by tax considerations; in the United Kingdom only loans for house purchase are subject to tax relief, while in the United States all loans are. Hence there is an incentive in the United Kingdom to take out housing loans as a substitute for consumer credit (by borrowing more than is needed for house purchase). The offset has been relatively weaker growth in consumer credit, especially since 1981 (Graph 6.13). In Japan the growth in borrowing for house purchase reflects an improving housing stock and an increasing land price. The ratio of the cost of a house to the cost of the corresponding land is below one only for Japan in this group of countries. The importance of mortgage borrowing there is reflected in the high level of income gearing (gross mortgage interest payments as a proportion of personal disposable income), which in 1982 was 5 per cent.

The United States is shown in Graph 6.13 to have a large share of identified *consumer credit* in liabilities compared with the other countries. As noted, this form of credit also attracts tax relief, and there may also be elements of a more "debt-oriented" society, fostered by a highly competitive banking system. Comparative behaviour of total liabilities was discussed in Section II above. The level of consumer credit in Japan is low (though rising) even if account is taken of the Japanese system of banks lending first to retailers, who then offer "trade credit" to consumers. As shown, the

Personal sector liabilities portfolio composition



share of direct lending by financial institutions for consumer goods is very low. For the United Kingdom consumer credit has tended to grow at the same rate as the portfolio; as noted, the tax subsidies to mortgage holders have led to some substitution in recent years. Consumer credit in Germany, by contrast, has grown significantly, helped by a weakening of industrial demand for loans compared with the pre-1973 period and financial institutions' consequent search for other markets.

Other bank loans (Graph 6.12) largely comprise loans to unincorporated businesses in Japan and the United Kingdom; the comparative importance of the unincorporated sector explains the difference in levels between these two countries. For the United Kingdom the pattern shows an increase in the share of bank loans during 1972–74, when bank lending was liberalised under “Competition and Credit Control”, and a more recent growth offsetting the declines in “unorganised credit markets” (trade credit). The more rapid decline in the share of trade credit than of bank loans in Japan suggests a similar process of substitution, related to the development of financial markets. In Germany bank loans to the personal sector (not for house purchase) may all be attributed to the financing of consumption.

Trade credit (Graph 6.14) is largely extended to the unincorporated business sector by other firms, though some is also extended by the personal sector, reflected in the share of “other assets” in the portfolio (Graph 6.10); hence it is large for Japan and the United Kingdom, where these sectors are included. In each case there has been a tendency for this share to decline; as noted above, this is due to the development of financial markets, which can intermediate at low cost and risk between firms, thus substituting for the system of trade credit.

3. Company sector financial assets

Company sector financial assets, often called “working capital”, have, except in the United States (where gross asset data are incomplete owing to netting-out of bond and equity holdings),

expanded considerably in recent years, as shown in Graph 2.4. With this expansion has gone an increased desire for returns, which has been satisfied by the development of financial systems and the increasing liquidity of instruments offering high returns. Being larger and more sophisticated than persons, firms can take rapid advantage of such changes. Such developments are manifest, for example, in the decline in holdings of *currency and sight deposits* (Graph 5.15) by firms in the United Kingdom, the United States and Japan since 1974. In Germany, by contrast, the share has not declined and remains at a far higher level. The financial system there has not undergone such rapid change, and there are also closer links between firms and banks and fewer alternative financial institutions, all of which may help to explain the phenomenon. There may, however, also be elements of window-dressing (a practice whereby the banks amend their liability composition for a short period at the end of a quarter to conform with central bank liquidity requirements).

Time deposits with banks have grown in the Anglo-Saxon countries,¹⁹ offsetting the fall in sight deposits, though they remain at a lower level than in Germany and Japan. This difference in level may reflect the greater availability of alternative instruments, though as pointed out above (page 38), the system of “compensating balances” has often been an important factor in Japan. This system also historically discouraged the holding of securities. In Japan time deposits have declined somewhat overall despite the improvements in terms on large time deposits due to deregulation. Certificates of deposit, which companies were recently permitted to hold, have proved more attractive. Time deposits in Germany have followed an irregular path, with a peak in 1973 which may have been associated with speculation concerning currency appreciation. The share of these assets has declined since 1979; as shown below, the counterpart has been an increase in holdings of marketable instruments.

¹⁹ For the United States this is partly because certificates of deposit, which have been permitted since the 1960s, could not be divided from other time deposits.

The *other financial institutions* sector takes a small proportion of company deposits in Germany, Japan and the United Kingdom. For the United Kingdom the recent growth in deposits with building societies has been associated with deregulation, as building societies have been allowed to enter the wholesale money markets. For Japan the trust banks hold about 2 per cent. of companies' financial assets, while in Germany about 4 per cent. of companies' assets are held in non-bank deposits, largely with insurance companies. In the United States deposits of companies with savings institutions could not be separately identified from persons but are probably small.

Direct holdings of *government bonds* by companies represent a fairly small proportion of the portfolio, as for persons. The data suggest some growth in the portfolio share in Japan, where such bonds can be transacted in the Gensaki market, and in recent years in the United States, but a decline in Germany and the United Kingdom. *Private bond* holdings are similarly low for all countries except Germany, where bond holdings have grown to almost 6 per cent. of the portfolio. These bonds are largely issued by banks and thus represent a higher-return instrument for holding assets with banks. "Private bond" holdings shown here for the United States are only in the form of repurchases, which, though bond-based, share many features with market paper. Other corporate bond holdings are netted out in the flow of funds.

Short-term *money markets* are shown in Graph 6.22 to be most active in the United Kingdom and the United States, where the relatively high portfolio share suggests that such instruments are freely available, liquid and offer a competitive return. The emergence of the financial markets in Japan is illustrated by the growth of such instruments there, stemming from the introduction of CDs in 1978, before which they were not permitted. It should be noted that the Japanese Gensaki or bond repurchase market, which operates as a short-term money market, is captured in the data for bonds and not market paper, while, as noted, security repurchases in the United States are also shown separately under "corporate bond"

holdings. German money markets largely involve transactions between the monetary authority, banks and the public sector.

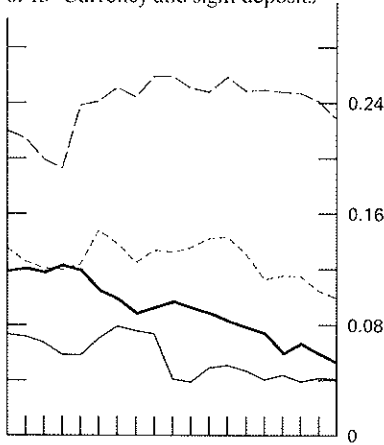
Trade and other credit shows a large variation between countries partly due to different definitions – in Germany, for example, domestic trade credit is largely netted out as a consequence of the wide definition of the corporate sector, including unincorporated businesses. In Japan trade credit includes lending by large to small firms and retailers' consumer credit, which also features in the United Kingdom and the United States. The graph nonetheless shows that domestic trade credit has declined as a proportion of assets in the United Kingdom and Japan, and to some extent in the United States, as it has been substituted by intermediation through financial institutions and markets. Fluctuations in the share of trade credit largely reflect the business cycle.

For *overseas assets* again different aggregates are defined; direct investment is excluded in the case of Germany, while portfolio investment is absent in the cases of the United States and Japan. Given that rates of return on capital and financial assets are linked, one would expect these quantities to move similarly, albeit over different time horizons. This is in fact the case: all industrial countries have tended to invest more abroad, attracted by higher rates of return and often as a corollary of the availability of financial surpluses, as domestic investment has fallen since the first oil shock. Growth of overseas assets for the United Kingdom since 1979 partly reflects the ending of exchange controls, which were not in operation over the observation period in Germany, though rate-of-return considerations were probably more important.²⁰ The difference in shares of direct investment between the United States and Japan contrasts a mature and a "developing" industrial country, the latter only recently having commenced overseas investment. Estimates published by the Japanese Planning Agency and shown in

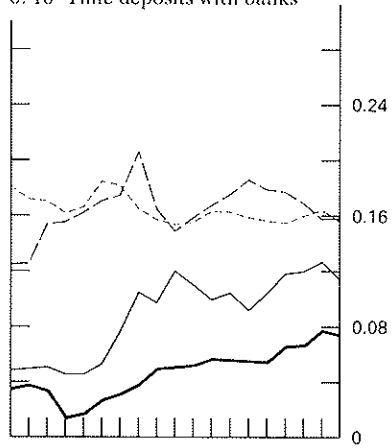
²⁰ Evidence presented by the Bank of England (1981) suggests that abolition in fact impinged largely on portfolio investment by institutional investors. Exchange controls were not designed to restrict profitable direct investment, which, as noted below, forms the vast majority of companies' overseas assets.

Company sector financial asset portfolio composition

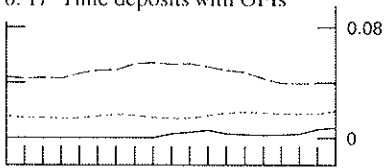
6. 15 Currency and sight deposits



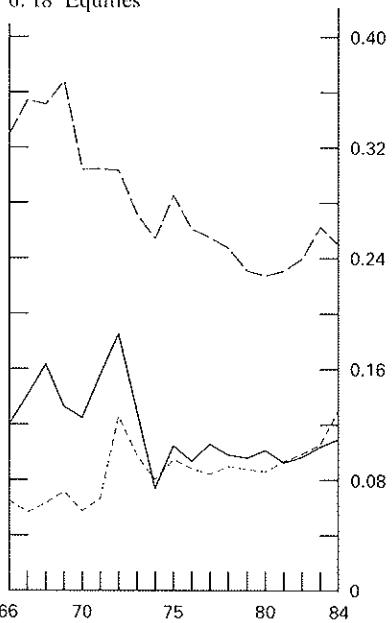
6. 16 Time deposits with banks



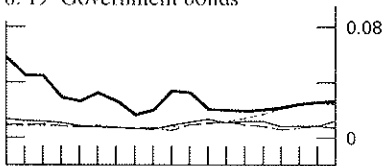
6. 17 Time deposits with OFIs



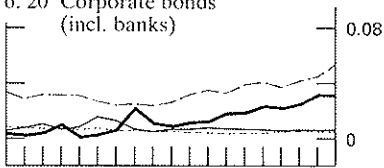
6. 18 Equities



6. 19 Government bonds

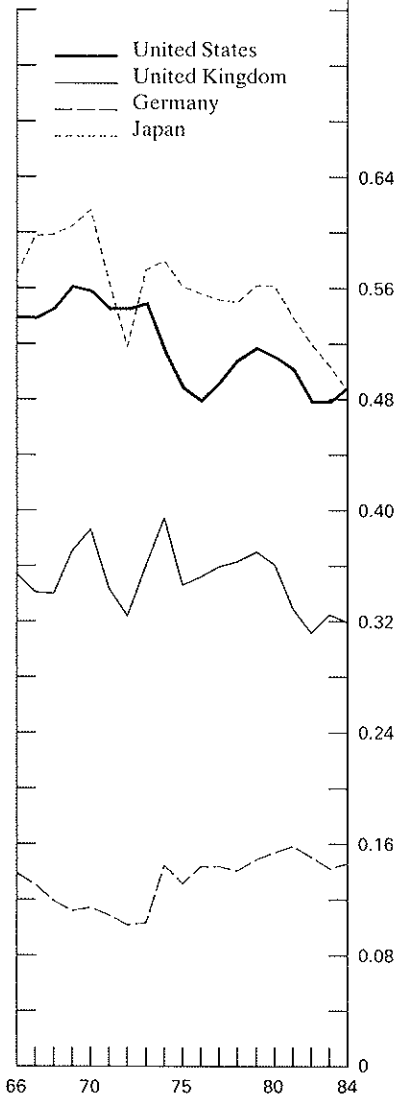


6. 20 Corporate bonds
(incl. banks)

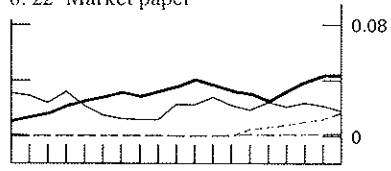


66 70 75 80 84

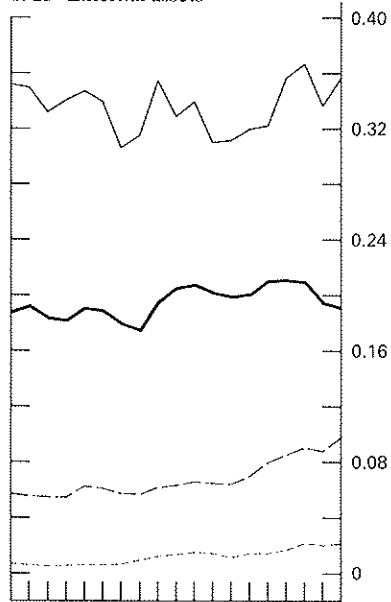
6. 21 Trade and other credit



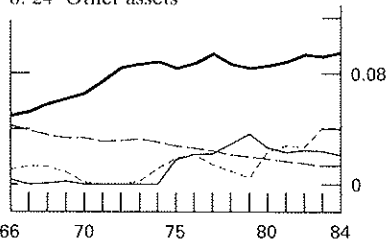
6. 22 Market paper



6. 23 External assets



6. 24 Other assets



the flow-of-funds matrix given on page 132 of the appendix suggest that inclusion of overseas financial assets would make little difference to the low level of firms' overseas assets, while the matrix shown on page 128 of the appendix shows that at the end of 1982 over 90 per cent. of British companies' overseas investment was also in direct rather than portfolio form.

Equity held by firms as an asset is separately identified in the case of Germany, the United Kingdom and Japan. In each case the equity proportion underwent a sharp decline over 1972-74, but only for Germany and the United Kingdom was this part of a sustained fall in the proportion. For Japan, the trend has been of growth throughout, and in the early 1980s the equity share in Germany and the United Kingdom also showed some recovery in line with the recent buoyancy of the market. The levels show marked contrasts both with personal-sector equity proportions (Graph 6.7) and with equity as a proportion of corporate liabilities (Graph 6.29). In particular, the proportion of equity in company assets in Germany is very high, especially given the high gearing ratios there. This illustrates the high level of inter and intra-company equity holdings, especially compared with the United Kingdom, and is also a consequence of the relatively low level of *direct* holdings by financial institutions in Germany (see appendix, page 131, and also page 76).

4. *Company liabilities*

Apart from retained earnings (which, for example, in the United Kingdom and Germany tend to form 60 per cent. of corporate funds), corporate bond issue, borrowing from financial institutions and equity issue are the main means for firms to finance investment. Differences in the proportions of these liabilities incurred reflect differences in risks and returns, but also in the financial systems, Germany and Japan traditionally being more "bank-oriented" while the Anglo-Saxon countries tend to be "equity or market-oriented".

This generalisation does not, however, apply to the UK *corporate bond* market, which has been moribund since the mid-1970s. Potential new bond issues have faced problems as a result of

volatile inflation; also they have often been unable to compete in returns with government bonds, and firms themselves have found variable interest bank loans more competitive. This is in contrast with the United States, where corporate bonds continue to comprise 15 to 20 per cent. of firms' liabilities including equity. Corporate bonds have retained their popularity in the United States, partly owing to financial innovations, such as floating rate bonds, zero coupon bonds, convertible bonds, bonds with warrants, interest rate swaps and shelf registration; for a discussion see Moran (1984). In Germany and Japan the level has remained low; the German corporate bond market has been moribund following the imposition of a capital yield tax in the mid-1960s and has been partly replaced by the "Schuldschein" system (see below). By contrast, in Japan there have recently been increases in issues of convertible (to equity) bonds. The function of bond issue in Germany is also often intermediated by the banks, which issue their own obligations. Bank bonds in Germany are two-thirds of total domestic issues, including public sector obligations.

Bank lending in the four countries reflects the orientation of the financial system and the closer links between banks and firms in Germany and Japan, bank lending in these countries forming 35 to 45 per cent. of firms' liabilities, while in the Anglo-Saxon countries it is typically only 15 per cent. While partly due to differences in the financial system, this contrast also results from differences in firm size. In Germany smaller firms, which dominate the industrial structure to a greater extent than elsewhere, are unable to tap the security markets. For the Anglo-Saxon countries the share of bank lending shows a sharp peak in 1974, corresponding to the fall in equity prices and the rapid expansion of bank credit itself. In each of the four countries bank lending has tended overall to increase its share of total liabilities, in line with a decline in equity issues²¹ and trade credit, and in the United Kingdom as an offset to the decline

²¹ This is because the tax systems tend to offer incentives for firms to issue debt instead of equity; see King (1977) for a theoretical discussion and King and Fullerton (1984) and Alworth (1985) for cross-country comparisons.

in bond issues. It should be noted that these data for bonds and bank lending do not illustrate possibly important shifts that have occurred in maturity and fixed versus floating rate instruments. These data also only show actual rather than contingent liabilities, where, for example, it was estimated that unused loan commitments in the United States were US\$ 350 billion in 1984 compared with US\$ 100 billion in 1977 (reference Moran (1984)).

Loans by the *public sector* to companies are far higher in Germany and Japan, reflecting the greater role of the public sector in the development of industry and the fostering of growth, though the stock has been declining as a proportion of liabilities in Germany since 1976. In Japan this also reflects the large number of financial institutions owned by the public sector, notably the Japan Development Bank and the Small Business Finance Corporation.

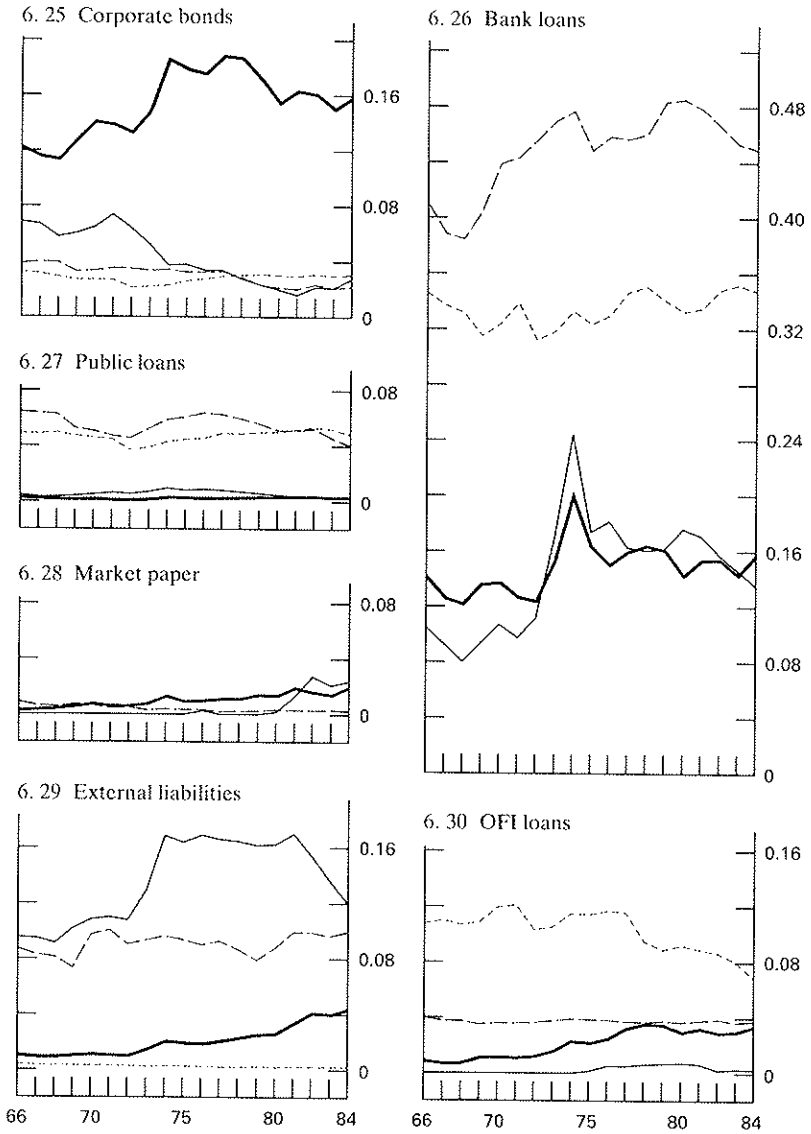
Short-term bills and bonds may not be issued by firms in Japan, and in Germany the amounts of these instruments outstanding from firms are small – most bills in Germany are issued by the public sector or the banks, as can be seen in the matrix shown on page 130 of the appendix. As with market paper qua asset, the Anglo-Saxon countries show the more active short-term markets, market paper forming 2 per cent. of firms' liabilities. However, it should be noted that in the United Kingdom the growth of the commercial bill market has also till recently been fostered by the Bank of England as a means of monetary control, to prevent M_3 growing at the same rate as bank lending.

Lending to firms by *other financial institutions* reveals such lending to be of particular importance in Japan. This lending represents loans by trusts, insurance companies and specialised institutions for small business. Lending by finance companies in the United States has undergone a steady growth, while in Germany lending (largely) by insurance companies has been trendless at 4 per cent. of the total of firms' liabilities. This lending often takes the form of "Schuldschein" loans, or loans against borrowers' notes, an instrument which has largely replaced bond issues by firms. Unfortunately, data for the stock of "Schuldschein" notes are not

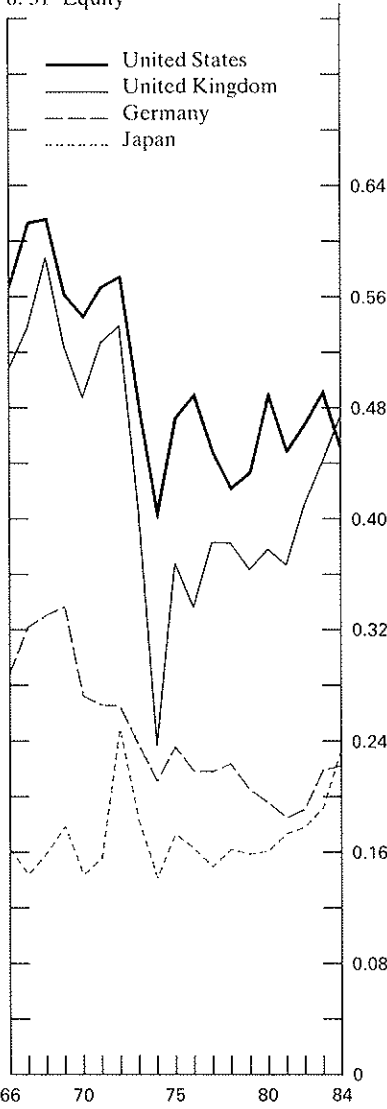
available. It should be noted that in Germany, the United Kingdom and the United States other financial institutions (except insurance and pension funds) largely hold their assets in the form of loans for house purchase. Building societies in the United Kingdom, which form the bulk of the other financial institutions sector are (to date) legally forbidden to lend to industry, thus helping to explain the low level of lending shown. Pension funds in Anglo-Saxon countries largely hold market assets rather than undertaking direct lending.

Equity shares are shown in Graph 6.29 at market prices. While it can be debated whether equity is a "liability" in the strict sense that it need not be repaid, neglect of shareholders is likely to lead to takeover, especially in the Anglo-Saxon countries. Moreover, the valuation ratio (between the market value of equity and the replacement cost of the capital stock) is an important indicator of the incentive to invest (see Tobin (1969), Jenkinson (1981) and Davis (1986)), and the level of the debt/equity ratio reflects firms' ability to survive short-term fluctuations in economic activity and interest rates. The graph shows a basic contrast between the United Kingdom and the United States on the one hand, where gearing is relatively low at around 1, and Germany and Japan on the other, where the debt/equity ratio is shown to be about 4. The higher levels of equity in the United Kingdom and the United States have been sustained despite the increases in gearing concomitant with the collapse of equity prices in 1974; in fact most of the losses have been made up since then. The recovery reflects mainly valuation gains rather than new issues, which as noted have remained at a fairly low level owing to disincentives arising from the tax system. Indeed, in 1984 substantial quantities of equity were retired in the United States during so-called "leveraged buy-outs" and replaced by forms of debt. In Germany gearing has undergone a long-term increase which has recently been a focus of policy concern, with banks urging client firms to broaden their equity bases and the government acting to lower the wealth tax. As pointed out by Friedmann (1984), high gearing in Germany is a consequence of the industrial structure, with many small highly geared firms and a small number of public

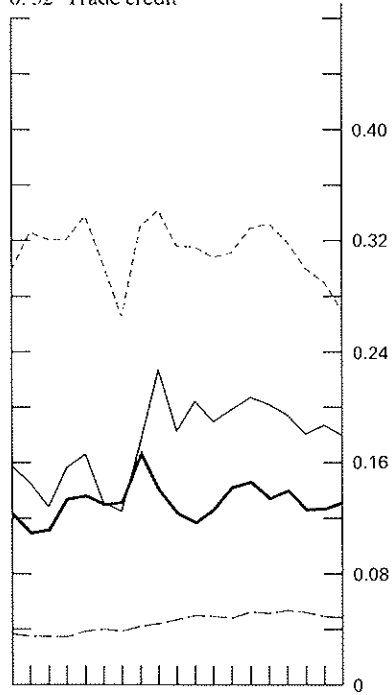
Company sector liabilities portfolio composition



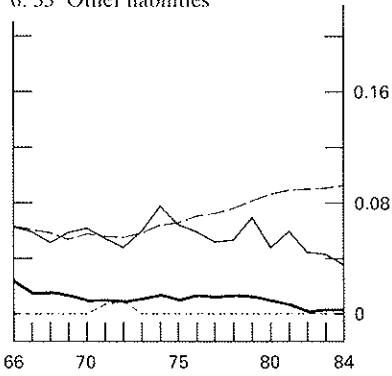
6. 31 Equity



6. 32 Trade credit



6. 33 Other liabilities



companies, together with risk-averse banks, who offer low pay-outs on new issues, and accounting conventions, which rarely revalue assets from historic costs. Some slight decline in the level of gearing occurred in the early 1980s, partially as a result of policy measures. In Japan, too, gearing has fallen from the high levels of the mid-1970s, mainly as a result of a very buoyant stock market but also owing to increased equity issues, both direct and via convertible bonds – a shift towards direct financing.

It should be noted that in Germany and Japan, much equity is held by banks either directly or (especially in Germany) *on behalf of* customers. This compounds the potential influence of banks over firms.

Overseas liabilities are defined similarly to overseas assets (page 67), tending, however, to be at a lower level. An increase in direct investment in the United States can be observed, while in the United Kingdom inward investment has declined as a share of firms' liabilities since 1981. The very low level of inward direct investment in Japan is apparent, while the overseas liabilities of Germany have increased. This is, however, only partly due to measured transactions, because overseas liabilities include the flow-of-funds residual (see pages 119–127 of the appendix). Firm conclusions thus cannot be drawn from the German data.

Trade credits are a smaller *proportion* of firms' liabilities than assets, though examination of *levels* reveals that this form of finance is broadly balanced for the company sector as a whole. Domestic trade credit is again shown to have undergone a decline since 1974, in line with the development of the financial systems.

Other liabilities are of some interest for Germany, as they show pension contributions invested within firms' own balance sheets, which can thus be used as a source of finance. Friedmann (1984) illustrated the growth in this liability from 10 per cent. of capital in 1970 to 14 per cent. in 1982. Contributions to these schemes, which are only available for large firms, are tax-exempt.

These graphs reveal some striking differences between the four countries in terms of asset and liability portfolio distributions. In

particular, Germany and Japan contrast in many cases with the Anglo-Saxon countries. These differences can often be traced to the structures of the respective financial systems. In order to assess the extent to which they also result from different responses to rates of return, income and wealth an econometric analysis of portfolio distributions is required.

VII.

Determinants of portfolio distribution

For an analysis of the determinants of the portfolio distributions described in Section VI, a simple portfolio system of the type described in Section III above was estimated.

The procedure chosen was progressively to test restrictions on the following log-linear general autoregressive distributed-lag equation, containing wealth, income and interest rate terms and a lagged dependent variable. A similar approach was adopted in modelling asset demands of the UK non-bank private sector and personal sector by Davis (1986).

$$\begin{aligned} \ln \left[\frac{A_i}{P} \right]_t = & k + a_1 \ln \left[\frac{A_i}{P} \right]_{t-1} + a_2 \ln \left[\frac{W}{P} \right]_t \\ & + a_3 \ln \left[\frac{W}{P} \right]_{t-1} + a_4 rr_i \\ & + a_5 \left\{ \sum_{j \neq i} \left(rr_j \cdot \frac{A_j}{W_j} \right) \right\}_t + a_6 \ln GNP_t + a_7 \ln GNP_{t-1} \end{aligned} \quad (7.1)$$

where $rr_i = r_i + \dot{p}_i - \dot{p}$

A_i = nominal stock of the asset i

W = nominal stock of financial assets

P = consumer price deflator

rr_i = real return on the asset i

r_i = nominal yield on the asset i

P_i = the market price of the asset i (for bonds and equity)

For the exact definitions used in each case see the data appendix, pages 102–118. Returns are measured pre-tax; thus differences in tax treatment between different assets and liabilities are not taken into account. This general equation can be restricted to the parsimonious specification (7.2), described in Section III above, by use of the restrictions (7.3). The validity of each of these restrictions was tested by the procedure of “nested testing” discussed on page 80 below.

$$\Delta \ln \left(\frac{A_i}{P} \right)_t = K + \alpha \Delta \ln \left(\frac{W}{P} \right)_t + \beta \ln \left(\frac{A_i}{W} \right)_{t-1} \quad (7.2)$$

$$+ \gamma \left\{ rr_i - \sum_{j \neq i} \left(rr_j \cdot \frac{A_j}{W_j} \right) \right\}_t$$

$$a_1 + a_2 + a_3 = 1 \quad (7.3)$$

$$a_4 = -a_5$$

$$a_6 = a_7 = 0$$

The first restriction is the *error-correction* restriction, as discussed above, which gives the property in a log-linear equation that in the short run the elasticity of the relevant asset stock with respect to the wealth variable is freely estimated, while the term $\beta A_i/W$ ensures that in the long run, *ceteris paribus*, the asset stock grows at the same rate as the portfolio. As shown, the short-run adding-up constraint is not imposed. Testing suggests, however, that this constraint is, nonetheless, in fact largely satisfied. Evaluation at the sample mean of the short-run elasticity of the portfolio with respect to wealth (sum of coefficients on difference of wealth weighted by mean asset share) gave values between 0.8 and 1.12, with five out of eight sets of equations giving between 0.92 and 1.05. Exact “adding-up” requires a value of one.

The relative interest rate was entered only as a level, largely to enable testing, subject to restricted degrees of freedom of the second restriction of *interest rate homogeneity* and *gross substitution*. If this is accepted, it implies that the reactions of demand for an asset to increases in its own return and the return on the rest of the portfolio are equal and opposite. It is, of course, conceivable that an asset

may be a complement with the rest of the portfolio, in which case the coefficient a_5 would be positive. The relative returns term consists of the real yield on the asset (including valuation gains and losses) minus the weighted sum of the returns on other assets weighted by the proportion of each asset in the existing portfolio, with a negative weight for liabilities, a construct that thereby ensures interest rate homogeneity to the extent that it is accepted. Especially with such a small number of observations, it would be very difficult to avoid spurious and misleading results if all interest rates were entered separately without such a restriction. Such problems of wrong signs and insignificant coefficients are common in the portfolio literature; see, for example, Green (1982) and Jackson (1984). The method of weighting of returns was suggested by Keating (1984), who used it in estimation of the financial model for the London Business School, albeit in combination with a linear partial adjustment rather than logarithmic error-correction specification, and he also imposed further restrictions on the budget constraint. His weights were the inverses of the diagonal elements of the covariance matrix of yields rather than portfolio shares. Clearly, the restriction on the yield term used here imposes perhaps unwarranted restrictions on cross-elasticities of other asset yields onto asset demands. For example, it might be plausible, given their similar characteristics, that the bank time deposit yield has a greater proportionate effect on demand for deposits with other financial institutions than the yield on equity. Instead, the degree of substitutability depends on the size of the asset shares. A further feature of this restriction is that *margins* and not *levels* of interest rates are important, an approach atypical of much research in monetary economics.

The third restriction is that sectoral income, as proxied by GNP, has no independent effect on asset demands; instead they are purely determined by wealth (itself in turn determined by income and saving) and rates of return. This is a plausible restriction when the primary function of an asset is as a store of value (equities, bonds etc.). It may be less so where the assets have an important transaction function (sight deposits), especially if transaction costs

are high, and for liabilities where income gearing may be an important constraint on demand (mortgages).

The procedure of nested testing of a general equation (see Leamer (1978)) involves the use of F tests (or similar) to test the acceptability of imposing each restriction in turn. The order of the nest is necessarily arbitrary. In this case the income restriction was tested first, then the full set of restrictions. If the two restrictions of error correction and asset substitutability could not be imposed together, each was tried in turn, to find the equation most consistent with the data. The most parsimonious equation (7.4) was accepted in 50 per cent. of cases, the error-correction restriction being rejected in 25 per cent. of the estimations, gross substitutability/homogeneity in 16 per cent. and zero income elasticity in 28 per cent. of cases.

Not all asset shares were examined in this research exercise. Life assurance and pension funds were omitted because their rate of return is hard to capture, because contributions are typically not a subject of choice even in the medium term (workers being contracted in to a company scheme compulsorily for all their working lives), and because the balance cannot be cashed without changing jobs, and even then actuarial losses are usually sustained. Trade credit again has no readily observable cost or return, and its issue is determined in the short run predominantly by the rate of economic activity.

Results are given for the personal sector on pages 82–85. A priori one would anticipate that the coefficient on relative returns for assets should be positive, and for liabilities it should be negative. Assuming the restricted specification is accepted, the lagged asset/wealth ratio should be negative, thus implying a positive long-run ratio of the asset stock to the total portfolio. This will not be observed where the asset share has been in continuous decline, as a positive long-run share cannot be identified. The short-run elasticity is more ambiguous. For most assets one would expect it to be positive and for most liabilities negative, but it is not implausible that demand for certain assets, particularly liquid ones, should increase when the portfolio declines in the short run, as during

periods of economic restraint one might expect agents to express preference for liquidity over high but risky returns. For liabilities, too, one would usually expect the short-run elasticity to be negative, as the increase in a liability reduces the size of the net portfolio, but in some cases liabilities may only increase when assets rise in parallel, which would occur, for example, if the relevant sector were also the dominant depositor.

Considering first the asset side, asset holdings for Japan and Germany are generally better determined than those for the United Kingdom and the United States. There are also significantly fewer "wrong signs" in these cases, and the restrictions were accepted more frequently. These results might have been anticipated, since the German and Japanese financial systems have undergone less change, and the financial assets and liabilities have changed less in their characteristics over this period, as discussed in Section VI above.²² Therefore equations which presuppose an unchanging financial structure are better able to predict changes in asset and liability holdings, using as regressors only wealth and rates of return. Equity holdings have the wrong sign for the long-run asset/wealth ratio in the United Kingdom, the United States and Germany, in line with the hypothesis that a continuous decline means the desired long-run share is unidentifiable.

Generally, market assets exhibit a higher interest rate elasticity than deposits.²³ This is plausible, as these assets are more likely to be held as stores of value, in contrast to deposits, where liquidity and transactions motives are also operative. Wrong signs on the own rate of return were obtained for market paper in the United States, private bonds in the United Kingdom and sight deposits in Japan.

²² It should be noted that the degree of control by the authorities of financial conditions in these countries has differed; thus in Germany there has been no credit control by administrative methods, while in Japan this has often been the case, together with control of the yield curve.

²³ This would tend to support a "Friedman" as opposed to a "Tobin" view of the demand for money. However, it is shown below that the result does not hold for companies, so the aggregate money-demand function may not have a low interest rate elasticity.

Portfolio equations: US personal sector, 1967-84

	const	Δw_t	Δ_{t-1}	w_{t-1} [*]	Γ_{OWN} [*]	Γ_{PF} [*]	ΔY_t	Y_{t-1}	se	$LM(2)^+$	\bar{R}^2
<i>Asset</i>											
Sight deposits	-1.41 (1.6)	0.287 (1.7)	-.154 (1.5)		.0010 (0.3)		0.799 (2.7)	0.113 (1.4)	.032	8.5	0.57
Time deposits	-1.70 (2.1)	0.302 (1.7)	-.111 (2.5)		.0013 (0.4)				.041	0.8	0.34
Deposits with other financial institutions	-5.03 (3.6)	0.412 (4.4)	-.508 (4.0)	-.076 (1.1)	.0033 (2.4)		1.516 (6.4)	1.063 (4.3)	.022	7.1	0.81
Public bonds	0.792 (1.2)	-1.61 (1.7)	0.296 (1.2)		0.137 (2.1)	.0119 (1.2)			.074	2.6	0.17
Private bonds	8.790 (3.0)	1.139 (2.1)	0.119 (1.8)	0.429 (1.6)	.0062 (0.9)		-1.11 (1.4)	-1.47 (6.7)	.082	5.6	0.79
Market paper	-793 (0.8)	-3.78 (2.1)	-160 (0.9)		-.022 (0.9)				.363	3.7	0.27
Equities	-033 (1.1)	1.376 (6.3)	.0082 (0.2)		.0025 (1.8)				.031	5.6	0.97
Tax-exempt bonds	1.257 (2.4)	-3.22 (6.0)	0.582 (3.8)		0.027 (4.5)	.0298 (4.0)			.076	5.3	0.73
<i>Liability</i>											
Mortgages	-.623 (0.9)	-.222 (2.5)	0.023 (0.5)		-.0035 (3.3)		0.999 (7.3)	0.74 (1.1)	.015	1.9	0.80
Bank lending	-.618 (2.2)	-.058 (0.1)	-.138 (2.6)		-.0016 (0.2)				.112	2.9	0.22
Consumer credit	-3.17 (3.3)	-.124 (1.1)	-.136 (2.1)		-.0022 (1.6)		1.518 (6.3)	0.316 (3.4)	.024	5.1	0.83

* An entry in these columns indicates that the error-correction or gross substitution restrictions did not hold; instead the terms were estimated freely.
+ Critical level = 5.99.

Portfolio equations: Japanese personal sector, 1967-84

	const	Δw_t	a_{t-1}	w_{t-1} [*]	r_{OWN}	r_{PF} [†]	Δy_t	y_{t-1}	sc	LM(2) ⁺	R ²
<i>Asset</i>											
Sight deposits	-.844 (0.9)	0.272 (1.4)	0.655 (0.8)		-.0016 (0.7)		1.453 (3.1)	0.090 (0.9)	.036	2.5	0.79
Time deposits	-.172 (1.3)	0.600 (4.8)	-.315 (1.6)		.00086 (0.5)				.028	5.4	0.63
Deposits with other financial institutions	-.015 (0.7)	.481 (7.4)	-.13 (4.5)		.0028 (2.2)				.021	0.8	0.9
Public bonds	-.255 (1.2)	1.726 (4.0)	-.064 (1.0)		.0130 (2.6)				.074	2.6	0.48
Private bonds	-.740 (2.5)	0.974 (3.2)	-.266 (2.6)		.0049 (1.4)				.053	2.1	0.55
Market paper Equities	-.442 (4.3)	1.471 (3.8)	-.195 (3.2)		.0037 (2.8)				.065	1.3	0.91
<i>Liability</i>											
Mortgages	0.025 (0.3)	-.666 (1.2)	-.102 (3.1)		-.0133 (2.1)				.090	1.0	0.41
Bank lending	1.218 (4.2)	-.092 (0.3)	-.432 (3.6)	0.254 (2.8)	-.0053 (1.6)				.037	2.1	0.69
Consumer credit	-.244 (0.1)	0.373 (0.3)	-.140 (0.8)		0.011 (0.9)		2.5 (1.3)	-.056 (0.2)	.152	7.0	0.49

* An entry in these columns indicates that the error-correction or gross substitution restrictions did not hold; instead the terms were estimated freely.
 † Critical level = 5.99.

Portfolio equations: UK personal sector, 1967-84

	const	Δw_t	a_{t-1}	w_{t-1} *	FOWN	Fpf	Δy_t	y_{t-1}	se	LM(2) ⁺	\bar{R}^2
<i>Asset</i>											
Sight deposits	-0.96 (0.5)	0.184 (1.8)	-0.044 (0.5)		.0003 (0.2)				.046	6.4	0.06
Time deposits	-5.49 (2.6)	0.012 (0.1)	-2.65 (2.8)		.0053 (2.0)				.091	4.2	0.57
Deposits with other financial institutions	-4.12 (3.4)	-1.84 (1.1)	-937 (3.4)	0.368 (3.3)	.0053 (2.1)	.0057 (2.4)	0.612 (2.2)	1.029 (3.7)	.022	5.1	0.83
Public bonds	12.98 (6.3)	0.824 (5.7)	-1.01 (6.8)	0.246 (1.9)	.0046 (2.9)		0.185 (0.2)	-1.58 (6.2)	.067	7.4	0.85
Private bonds	.0021 (0.1)	1.651 (2.3)	0.006 (0.1)		-.002 (0.3)				.210	1.4	0.51
Market paper	-1.63 (2.5)	-2.45 (2.4)	-2.48 (2.3)		0.026 (2.7)	0.031 (2.2)			.162	0.3	0.33
Equities	0.125 (1.6)	2.11 (6.8)	0.179 (2.7)		.0022 (2.7)	-.034 (2.7)			.051	2.7	0.97
<i>Liability</i>											
Mortgages	0.058 (1.3)	-.046 (0.3)	.0082 (0.3)		.0102 (5.5)	0.002 (0.9)			.027	5.9	0.79
Bank lending	-.324 (1.0)	0.841 (2.0)	-.109 (1.2)		.0079 (1.6)				.177	2.7	0.11
Consumer credit	-.337 (1.3)	0.901 (4.1)	-.108 (1.4)		.0091 (3.8)				.087	5.9	0.49

* An entry in these columns indicates that the error-correction or gross substitution restrictions did not hold; instead the terms were estimated freely.
 + Critical level = 5.99.

Portfolio equations: German personal sector, 1967-84

	const	Δw_t	\hat{w}_{t-1}	w_{t-1}	Γ_{PF}	Δy_t	y_{t-1}	se	LM(2) ⁺	R ²
<i>Asset</i>										
Sight deposits	1.786 (2.4)	-0.19 (0.1)	-0.708 (2.7)	0.038 (0.2)	.0078 (1.2)	1.073 (2.5)	0.738 (1.8)	.022	=	0.73
Time deposits	-0.567 (2.0)	0.342 (2.7)	-0.226 (1.1)	-0.001 (0.1)	.0010 (0.4)	0.529 (2.8)	0.376 (2.5)	.009	=	0.94
Deposits with other financial institutions	-1.13 (2.3)	0.012 (0.1)	-0.443 (2.4)	0.143 (0.9)	.0018 (0.5)	0.268 (1.0)	0.385 (2.1)	.011	=	0.88
Public bonds	-0.389 (1.8)	-0.390 (0.5)	-0.168 (1.9)	0.014 (2.9)				.093	4.5	0.44
Private bonds	0.271 (0.4)	-0.380 (0.6)	-0.120 (1.0)	0.0125 (1.6)		-0.904 (1.3)	-0.190 (0.9)	.068	3.4	0.06
Market paper	-12.4 (5.6)	4.020 (0.9)	-0.949 (2.2)	4.080 (4.3)	0.130 (2.6)			.283	7.1	0.99
Equities	.0092 (0.1)	0.356 (0.8)	0.020 (0.2)	-0.041 (0.7)	.0063 (5.7)			.047	1.1	0.86
<i>Liability</i>										
Mortgages	0.399 (3.7)	-0.527 (6.4)	-0.055 (1.3)	-0.068 (6.5)		0.255 (2.0)	-0.102 (2.7)	.009	3.8	0.84
Bank lending: long-term	-0.470 (2.6)	-1.35 (2.8)	-0.310 (3.7)	-0.132 (2.2)				.064	6.1	0.43
short-term	-1.60 (2.6)	-0.904 (1.0)	-0.572 (3.0)	-0.034 (0.3)				.127	3.8	0.45

* An entry in these columns indicates that the error-correction or gross substitution restrictions did not hold; instead the terms were estimated freely.

+ Critical level = 5.99.

= Computer unable to calculate statistic.

For UK corporate bonds this was true also for the company sector on the asset side and may be a consequence of the lack of supply (see page 70) which has meant that equilibrium shares could never be reached.

Stocks of equities have a high short-run elasticity with respect to wealth, except for Germany where personal sector equity holdings are relatively small and markets inactive. This reflects the retention of any capital gains in the asset in the short term before distribution across the portfolio in the longer term. The lowest short-run elasticity for the Anglo-Saxon countries is for market paper, suggesting importance as a precautionary means of holding wealth, shifted into when wealth declines. The coefficients of the implicit lagged dependent variables from the equations are all rather high, only falling below 0.6 in 25 per cent. of cases. This shows that the equations take a long period to adjust to desired levels of wealth holding, illustrating the importance of habits and transaction costs to personal sector behaviour. It means that the adding-up constraint is only strictly enforced in this system in the long run.

Income was a significant determinant of asset holdings for persons in many cases. This was particularly true for deposits, as might be expected for a transaction medium. Sight deposits had significant (and large) income elasticities, especially in the short run, for the United States, Germany and Japan, while time deposits in Germany and other financial institution deposits in Germany, the United Kingdom and the United States were also determined partly by income. Besides the importance of transactions, these effects may also be caused by risk aversion together with high transaction costs (of shifts in the portfolio) and habits. If income increases and saving rises with it, then assets may initially be accumulated in liquid form (especially time deposits), largely to allow for rapid decumulation if needed, and only later transformed into higher-yielding assets when the increase in wealth is felt to be permanent. The lower long-run than short-run income elasticity for all deposits except deposits with other financial institutions in the United Kingdom tends to support this hypothesis.

Deposits in Germany, deposits with other financial institutions and market paper in the United Kingdom, public and tax-exempt bonds in the United States were all implied to be complements with the rest of the portfolio. The error-correction restriction was rejected for deposits with other financial institutions and private bonds in the United States, deposits with other financial institutions and public bonds in the United Kingdom, all forms of deposits, market paper and equities in Germany and bank lending in Japan. In most cases the implied long-run elasticity exceeded unity, showing these assets to be growing faster than wealth over the estimation period.

On the liabilities side, except for consumer credit in Japan and all liabilities in the United Kingdom, the rates-of-return coefficients were negative, as might be expected (a higher cost of credit discourages borrowing). The results for the United Kingdom may be due to frequent periods of credit rationing, overriding normal responses to interest rates. However, a dummy for intensity of rationing proved insignificant in these equations. Income was an important determinant of demand for liabilities in the case of mortgages and consumer credit in the United States, mortgages in Germany and consumer credit in Japan. In the case of mortgages, income gearing will be lower when incomes are high, and also periods of economic growth tend to include high rates of housing construction. Inflows to lending institutions are often more buoyant during such periods, enabling any rationing of mortgages to be eased. For consumer credit, consumer confidence and concomitant durables purchases also tend to be a component of economic upturns.

Results for company sector asset holdings are given on pages 88–91. The results follow the pattern for the personal sector; standard errors are lower and \bar{R}^2 statistics are higher in the cases of Germany and Japan, where there are also fewer “wrong signs”. For Germany all the returns have the correct (positive) sign, while for Japan the only inconsistency is a small negative effect of the rate of return on sight deposits. This could be due to financial liberalisation, which

Portfolio equations: US company sector, 1967-84

	const	Δw_t	a_{t-1}	w_{t-1}	r_{OWN}^*	r_{pr}^*	Δy_t	y_{t-1}	se	LM(2) ⁺	R ²
Asset											
Sight deposits	-.238 (0.1)	0.732 (1.3)	0.084 (0.3)	0.159 (1.2)	0.002 (0.7)	-2.33 (2.2)	0.060 (0.1)	.069	0.6	0.22	
Time deposits	-15.5 (2.6)	1.208 (0.9)	-.328 (2.0)	2.150 (2.7)	-.239 (2.3)	0.581 (2.2)		.229	11	0.26	
Deposits with other financial institutions											
Public bonds	16.11 (3.8)	-.079 (0.1)	-1.12 (5.4)	-1.37 (3.1)	.0586 (3.6)			.145	8.3	0.65	
Private bonds											
Market paper	-.326 (1.5)	2.663 (4.1)	-.118 (1.7)	.0063 (1.4)				.127	0.5	0.56	
Equities											
Overseas assets	-.335 (1.9)	0.289 (2.4)	-.213 (2.0)	.0002 (0.9)				.024	3.1	0.29	

* An entry in these columns indicates that the error-correction or gross substitution restrictions did not hold; instead the terms were estimated freely.
 + Critical level = 5.99.

Portfolio equations: Japanese company sector, 1967-84

Asset	const	Δw_t	β_{t-1}	w_{t-1}	Γ_{PP}^{Δ}	Δy_t	y_{t-1}	se	LM(2) ⁺	R ²
Sight deposits	-299 (0.6)	0.747 (2.7)	-141 (0.6)		-00006 (0.1)			.080	3.4	0.22
Time deposits	-1.00 (1.8)	1.212 (5.9)	-545 (1.8)		.00001 (0.1)			.042	4.2	0.76
Deposits with other financial institutions	-4.21 (3.1)	1.532 (7.3)	-479 (2.6)	0.699 (2.9)	.0023 (0.6)			.054	5.6	0.76
Public bonds	-1.11 (1.1)	1.272 (5.3)	-111 (2.4)		.0267 (8.0)	-1.32 (2.2)	0.071 (0.8)	.042	6.4	0.83
Private bonds	-530 (0.5)	1.772 (6.3)	-119 (1.9)		.0265 (7.0)	-2.14 (3.1)	-0.030 (0.3)	.049	7.8	0.81
Market paper +	-5.10 (13)	13.88 (2.0)	-955 (53)		.1240 (1.0)			.303	-	0.99
Equities	-4.20 (2.7)	0.968 (2.7)	-356 (2.4)	0.682 (2.7)	.0067 (6.1)			.059	1.1	0.95

* An entry in these columns indicates that the error-correction or gross substitution restrictions did not hold; instead the terms were estimated freely.

+ Critical level = 5.99.

† 1979-84.

Portfolio equations: German company sector, 1967-84

Asset	const	Δw_t	a_{t-1}	w_{t-1}°	Γ_{OWN}	Γ_{PF}°	Δy_t	y_{t-1}	se	$LM(2)^+$	R^2
Sight deposits	-3.59 (3.6)	0.872 (2.0)	- .940 (3.8)	0.211 (1.0)	.0026 (0.5)		0.620 (1.0)	1.387 (3.3)	.041	1.6	0.60
Time deposits	-1.27 (4.1)	0.209 (0.3)	- .733 (4.0)		.0031 (0.5)				.069	2.7	0.60
Deposits with other financial institutions	-.260 (0.8)	1.357 (3.6)	- .078 (0.8)		.0080 (1.9)				.046	5.7	0.47
Public bonds	-4.29 (3.2)	3.632 (3.8)	- .366 (1.6)		.0150 (1.9)		4.873 (3.0)	0.879 (2.7)	.160	13	0.51
Private bonds	-.085 (0.2)	-2.06 (2.2)	- .061 (0.5)		.0064 (1.6)	.0226 (2.3)			.091	4.5	0.29
Market paper †	-11.7 (6.6)	4.643 (0.5)	- .922 (2.0)	4.298 (4.9)	.0690 (1.1)				.350	9.9	0.99
Equities	-.279 (2.6)	1.568 (3.7)	- .171 (2.2)		.0023 (1.7)				.037	0.2	0.90
Overseas assets	0.195 (1.1)	0.829 (2.1)	0.063 (1.0)		0.006 (1.7)				.046	1.3	0.11

* An entry in these columns indicates that the error-correction or gross substitution restrictions did not hold; instead the terms were estimated freely.

+ Critical level = 5.99.

† 1979-84.

Portfolio equations: UK company sector, 1967-84

Asset	const	Δw_t	a_{t-1}	w_{t-1}^*	Γ_{OWN}^*	Γ_{PF}^*	Δy_t	y_{t-1}	se	LM(2) ⁺	R ²
Sight deposits	-.555 (1.4)	0.878 (1.6)	-.260 (1.9)		.0202 (2.6)				.144	2.9	0.50
Time deposits	-.102 (2.0)	1.73 (2.6)	-.44 (2.5)	-.105 (0.2)	-.024 (2.7)		2.4 (1.3)	1.857 (2.0)	.132	6.6	0.42
Deposits with other financial institutions ⁺	-19.9 (1.8)	8.830 (3.3)	-.902 (1.7)	3.280 (1.9)	-.139 (2.5)	.0667 (1.4)			.298	-	0.99
Public bonds	-1.05 (1.3)	0.547 (1.0)	-.218 (1.3)		.0064 (1.9)				.164	5.0	0.17
Private bonds	-1.81 (1.9)	1.329 (1.8)	-.380 (1.9)		-.037 (3.1)				.223	5.3	0.53
Market paper	1.6 (0.5)	-1.06 (0.9)	-.458 (2.5)	-.113 (0.2)	0.019 (1.3)	0.026 (1.7)			.187	1.5	0.18
Equities	-.053 (0.2)	1.491 (4.2)	0.015 (0.1)		.0053 (6.0)				.101	5.3	0.84
Overseas assets	-.440 (1.4)	0.808 (4.0)	-.414 (1.4)		.0034 (1.7)				.052	1.1	0.62

* An entry in these columns indicates that the error-correction or gross substitution restrictions did not hold; instead the terms were estimated freely.
⁺ Critical level = 5.99.
⁺ 1979-84.

allowed economies in sight deposits, but which coincided with falling inflation and hence a higher relative return to sight deposits. Also, in earlier periods sight deposits may have been interest-inelastic on account of the system of compensating balances to obtain bank loans. For deposits with other financial institutions and equities in Japan long-run wealth elasticities of around 1.5 were found. For Germany a long-run solution to demand for overseas assets could not be found, while private bonds were shown to be a complement with the rest of the portfolio. For the United Kingdom several rates of return (time and other financial institution deposits, corporate bonds) were wrongly signed, and the equation for equities was again unstable, with the coefficient of the lagged dependent variable exceeding 1. For the United States, rates of return on time deposits had the wrong sign. US companies' time deposits have been highly influenced by financial innovation, notably security repurchase agreements, the growth of the commercial paper market and various innovations in the bond market (see page 71 above). The interest rate series used (CD rate for banks) may, as a result, have been unable to capture the true marginal rates on these assets.

Income proved to be significant for sight deposits for Germany and the United States, and also for public bonds in Germany and Japan and private bonds in Japan. While in the case of deposits this would be due to their importance for transactions, for bonds this may reflect debt restructuring on the part of issuers during periods of increasing revenues.

Generally, the company sector portfolio equations explain changes in holdings better than the corresponding equations for the personal sector. This is to be expected; firms are less habit-bound than persons, have a clear objective of profit-maximising, are more financially sophisticated and face lower transaction costs. Consequently, an explanation for the distribution of gross financial assets featuring wealth and rates of return is more likely to explain their behaviour. It is significant that for firms the elasticities with respect to rates of return are more comparable across assets than for persons, except in the case of bank deposits for Japan, where near-

zero elasticities were found, perhaps because of the compensating balance system discussed above (see page 38). Except for government bonds in the United States and private bonds in Germany, the short-run elasticities of asset holdings with respect to gross assets are all positive. The coefficients of the lagged dependent variables are lower than for households, falling below 0.6 in 40 per cent. of the equations, implying a relatively rapid adjustment of portfolios to desired long-run levels. Lower transactions costs are also suggested by the smaller number of cases where income is an important determinant of portfolio holdings, because the absence of such effects for deposits implies that assets are easily transformed into transaction balances.

Taking an overview of the portfolio equations' statistical properties, the \bar{R}^2 s are satisfactory considering that the dependent variable is measured in first differences; only in 10 per cent. of cases do they fall below 0.2, the lowest being 0.06 for UK households' sight deposits and German households' corporate bonds, both of which series were partly estimated, as discussed in the data appendix. The size of the standard errors obviously depends on the variance of the data as well as the appropriateness of the economic specification. The proportions below 0.1, which in a log-linear equation implies 10 per cent., were: Germany 80 per cent.; Japan 95 per cent.; the United States 65 per cent.; the United Kingdom 45 per cent. The Durbin-Watson statistic is not strictly valid in the presence of a lagged dependent variable, so is not relevant here. The Lagrange Multiplier test, which *is* valid in the presence of a lagged dependent variable (see Breusch and Godfrey (1981)) and tests for both autoregressive error schemes and moving-average processes, shows 20 per cent. of the equations to have second-order autocorrelation. On the household side this feature is particularly marked for all deposits in the United States and for sight deposits in the United Kingdom, while for companies bond holdings are particularly affected.

To summarise, while the portfolio modelling reported above has proved able to illustrate some of the differences between sectors and

countries and the tendencies in asset holdings which were noted in the analysis of Section VI, it has also shown that for most instruments, portfolio responses to changes in yields, income and wealth are similar between countries. The best example of this is the high proportion of correct signs and similar elasticities on the "own rate", although one might also instance the significance of economic activity in the equations for personal sector transactions balances and the prevalent acceptance of the error-correction restriction of long-run unit elasticity. These suggest that most of the differences in outturns of portfolio holdings result from differences in offered yields, in other return and availability conditions and in the dynamic adjustment paths. These considerations also have some important implications for future developments of financial markets, discussed further in the summary below. But first another use may be made of these estimates, in tracing the time path of portfolio instability.

VIII.

Portfolio instability

The residuals from the estimates described in Section VII above can be used to give a measure of unexplained portfolio shifts, i.e. those which the conventional portfolio size and rate-of-return variables have been unable to explain. Naturally such a measure is also influenced by errors in the flow-of-funds data and specification errors, omitted variables and structural changes in the coefficients of the model. To the extent that the residuals are highly erratic, the measure throws some doubt on the portfolio estimates reported above. Nonetheless, the measure may shed some light on the hypothesis that instability has increased in recent years as a result of financial innovation, or alternatively that a more important influence is general economic instability, as observed during the oil shocks.

1. Portfolio instability, personal sector
(as a percentage)

Years	United States	United Kingdom	Germany	Japan
1967-69	3.0	3.7	3.3	5.0
1970-74	3.2	4.8	3.2	5.6
1975-79	3.8	3.8	2.8	4.8
1980-84	3.6	4.2	3.6	4.8

2. Portfolio instability, company sector
(as a percentage)

Years	United States	United Kingdom	Germany	Japan
1967-69	2.3	1.7	1.7	0.3
1970-74	1.8	4.6	3.4	1.4
1975-79	2.0	3.4	3.2	1.4
1980-84	2.4	4.0	2.4	1.8

The crude measure used was the absolute error of each equation, weighted by the proportion of the asset in the portfolio and summed for each country. In a log specification this gives a measure of the percentage error of the system in predicting the shares of the portfolio, although obviously in practice many of the errors would cancel owing to opposite signs.

The results for the personal and company sectors are shown in the tables above. On the whole, a strong impression of increasing instability is not presented. The relative stability of the errors offers some support to the specifications used. Nonetheless, some patterns can be observed. For the personal sector, the period since 1970 has in most cases shown an increase in average instability. The results are most clear-cut for the United States, where instability was significantly higher in the second than in the first half of the

observation period. This is in line with the increasing tendencies towards innovation and deregulation, which are likely both to increase the facility of shifts between instruments and to change the nature of instruments in a way that cannot be captured by the equations. For example, the inclusion of "NOW" accounts with sight deposits is likely to mean changes in the share of this instrument based on its new status as a store of value as well as a medium of exchange.

For other countries the results tend to show greater instability in the 1970s. For the United Kingdom this is probably a consequence of the turmoil following the introduction of "Competition and Credit Control" in 1971, which caused shifts in asset holdings for which even all the work done in the United Kingdom on money demand functions has been unable to account. Hence the pattern is attributable to deregulation, but confined to a particular historical period rather than a continuing process. Japan also shows rises in instability in the early 1970s. Besides being a period of economic instability resulting from the oil crisis and relaxed monetary policy (it is often called the "excess liquidity" period), this period corresponds in Japan to the start of shifts in asset preferences resulting from innovation, notably the growth of bond markets and of the Post Office Bank (see Suzuki (1983)), although instability declined later in the 1970s, while innovation accelerated. For Germany, where innovation has not been an issue, the pattern reflects the incidence of sharp changes in economic activity, notably the boom of 1970-73 and the recession of 1981-82.

For the company sector a pattern of greater instability after 1970 is apparent for the United Kingdom, Germany and Japan. However, for the United States portfolio instability declined during 1970-74, although it increased after 1975. While instability in the 1967-69 period coincides with the Vietnam war and the "credit crunch" of 1969, growing instability in the United States since then can be associated with the accelerating pace of financial innovation, as discussed in Section VI above. For the United Kingdom the greatest instability is again in the early 1970s, for reasons similar to those

adduced above for persons; again the early 1980s, which featured extensive innovation and change, were the second most unstable period. For Germany the trends are less clear, although on average instability was greater in the 1970s taken as a whole than in either the 1960s or 1980s. Instability for Japan grew throughout, notably in the early 1980s following the key innovation for Japanese companies, the opening of the CD market in 1979. The growth²⁴ of the Gensaki and commercial bill discount markets occurred mainly in the 1970s (see Suzuki (1984), page 20) and may have been a contributing factor in the increasing level of instability over that period.

To summarise, the crude measure of unexplained portfolio shifts used here suggests that in most cases instability has been greater since the 1960s, and analysis suggests that many of the changes coincided with innovation and deregulation which may alter the nature of the instruments in a way not captured by the standard portfolio variables of wealth and rates of return. Contrasts are also observable between trends for the personal and company sectors, which can be ascribed to differences in the timing of the key innovations for these sectors.

Conclusion

This paper has analysed the portfolio behaviour of persons and companies. These are the ultimate agents of the economy which are serviced by the financial system, are influenced by the policies (including offered debt) of the public sector and may hold some assets and liabilities vis-à-vis the foreign sector. This analysis has shown that despite differences in *actual* holdings, the underlying *determinants* of asset and debt holding are broadly comparable across the four major economies studied, though with certain

²⁴ The Gensaki market was established in the 1960s, but only developed to its current importance in the 1970s.

notable contrasts. Such analysis both at the level of total asset and liability stocks and at the disaggregated level of individual instruments is vital to the correct understanding of trends in wide aggregates such as domestic non-financial sector debt which were highlighted at the start of the paper, as well as the monetary aggregates often used in policy planning.

Based on reasonably satisfactory econometric estimates, research has shown that behaviour in Japan, Germany, the United Kingdom and the United States is similar to the extent that similar determinants explain trends in asset and liability holdings. For example, it has been shown that a person's net financial wealth holdings are influenced by total wealth, relative returns on real and financial assets, saving and asset revaluations, while companies' debt holdings are determined by the debt/equity ratio, the cost of debt and the level of activity. Portfolio distribution across instruments is determined by portfolio size and relative real returns, though activity also enters, particularly in the case of assets used for transaction purposes. These similarities are unsurprising at one level, in that all the countries have mixed economies with similar industrial and household structures and a similar menu of financial instruments available. International integration at both the real and the financial level is increasing. However, both the outstanding levels of asset and liability stocks and the distribution of these stocks across instruments have been seen to show sharp contrasts. In particular, a distinction can be made between the historical experiences of the United States and the United Kingdom and those of Germany and Japan. For example, personal sector financial asset holdings have shown a decline relative to GNP since the 1960s in the United States and the United Kingdom, while in the other two countries they have grown almost continuously. Broadly the same can be said of companies' gross liabilities. At a more disaggregated level, the debt/equity ratio for firms is far higher in Germany and Japan, as is the proportion of personal and company sector assets held as time deposits. Underlying these contrasting experiences are the structures of the financial systems, which in the Anglo-Saxon

countries have always depended largely on markets, while in Japan and Germany the structure is dominated by deposit-taking institutions (though the system of pension provision, taxation and inflation patterns have also impinged). Nor is the contrast purely a static one. The Anglo-Saxon countries have experienced a more rapid pace and a different timing of deregulation and change in their financial systems, which have affected the availability and characteristics of a wide variety of financial instruments over the period of observation, while those in Germany and Japan have shown little change.

Some of these contrasts have manifested themselves in the econometric analysis. In particular, portfolio equations reveal a better fit and fewer "wrong signs" in Germany and Japan. This might be expected, since the assumption underlying their estimation is that the real interest rate series used adequately capture changes in the return on assets, which may not be the case during periods of innovation. Again, sometimes countries show individual responses consistent with certain differences in economic behaviour. In Japan firms' gross financial asset holdings are indicated to be positively related to the capital stock and not strongly influenced by relative returns on financial assets and capital. These assets are thus complements to the capital stock, while opposite signs in the other countries suggest some importance attaches to substitution by firms between real and financial assets. This effect may arise in turn from a system of compensating balances for bank loans in Japan. Again in Japan, the interest rate on debt compared with the dividend yield on equity appears not to reduce the relative attractiveness of debt over equity, which it does at least till 1980 in the other countries. This may illustrate the relative unimportance of the equity market over most of the estimation period as a source of industrial finance in Japan and also the importance of credit rationing there.

These contrasts in the results should not be overstressed. Rather, the message given by the research is that economic behaviour of agents largely transcends the structure of financial markets, and therefore policy-makers and financiers face broadly similar

behaviour of ultimate agents. This is true in terms both of the variables which are important to portfolio decisions and the signs on these variables, which broadly follow economic preconceptions. The implication of ultimate agents' behaviour, which may broadly be summarised by "responsiveness of asset holdings to differentials in real returns, given the influence of scale variables" is that increases in efficiency and innovation by the public and financial sectors in instruments offered are likely to be met by strong responses, though the influence of habit and slow diffusion of information mean that the response will be slower for the personal than the company sector. The main caveat to this is that there is also likely to be a limit to these responses due to the increasing marginal cost of substitution from real assets or consumption to financial assets and between financial instruments, caused by the rising cost of forgoing the non-pecuniary characteristics of the alternatives. Thus, for example, there will be a limit to substitution from deposits to equity due to the increased risk of economising on deposits, whatever the increase in the yield on equity. Again, financial assets will not be substituted for real assets to such an extent that consumption of goods or "shelter" is far diminished. The structure of the econometric specifications used, with a normal share of an asset when yields and other determining variables are at their average level, to which the share will eventually return if diverted from its equilibrium path, means that these effects are also captured in the research work (see Section III).

The paper has also offered some insights into trends in portfolio instability. In particular, it suggests that instability in portfolios has increased since the 1960s, and that many of the changes coincided with innovation and deregulation. This underlines the possible dangers to the financial sector during periods of rapid change, and the importance of adaptability on the part of institutions and, as a corollary, adequate monitoring of developments by central banks.

To summarise, deep distinctions between countries in the behaviour of financial asset and liability holdings, in total debt, its distribution and the structure of financial systems do not undermine

the validity of the underlying determinants suggested by portfolio theory as an adequate explanatory factor for developments both in and across countries; contrasts in behavioural responses encompassed within moderately robust econometric estimates are relatively small. International financial integration has been at a relatively early stage or dormant throughout the observation period, especially as regards the personal and company sectors. Interbank claims still dominate the external financial assets of most countries, and the marginal source of assets and loans for persons and companies has typically not been the rest-of-the-world sector. However, if integration continues to proceed at a rapid rate, and is assumed to affect the determinants rather than the parameters of the estimated equations, the broadly similar underlying asset and liability demand functions may manifest themselves in later years in similar actual behaviour. Common international trends are already observable, for example declining sight deposit shares (though this is mainly due to common *technology* rather than competition) and rising debt issue by firms in increasingly internationalised markets. The research shown here suggests that the behavioural basis for this convergence in financial structures exists, and analysis of past history reveals many such common trends.

Data Appendix

In the following appendix information is provided enabling the reader to find, at a glance, the exact definitions for the series used in this paper. After a key giving data sources and sectoral definitions, the appendix goes through the series for each country in turn, in each case in the order: household/personal sector assets, household/personal sector liabilities, company sector assets, company sector liabilities, interest rates and yields and other variables. There follows a discussion of the various problems and approximations involved in the data construction and an examination of the consistency of the flow-of-funds systems used (see also Goldsmith (1985)).

Data Appendix: Key

United States: sources

BIS	BIS Monetary und Economic Data Bank
OECD	OECD Financial Statistics Part 1; Domestic Markets – Interest Rates
SCB	Survey of Current Business (US Department of Commerce)
USBS	Balance sheets for the US economy (Federal Reserve System)
USFF	Flow-of-funds accounts; assets and liabilities outstanding (Federal Reserve System)

United States: sectors

H	Housholds, personal trusts and non-profit organisations
C	Non-financial corporate business

United States: reference

'Introduction to flow of funds' (February 1975) Board of Governors of the Federal Reserve System

United Kingdom: sources

BIS	BIS Monetary and Economic Data Bank
ETAS	Economic Trends Annual Supplement (Central Statistical Office)
FS	Financial Statistics (Central Statistical Office)
FT	The Financial Times
MDS	Monthly Digest of Statistics (Central Statistical Office)
NIE	National Income and Expenditure (Central Statistical Office)
OECD	OECD Financial Statistics Part 1; Domestic markets – Interest Rates

United Kingdom: sectors

ICC	Industrial and Commercial Companies
P	Personal sector

United Kingdom: references

- 'Financial Wealth of the Non-Bank Private Sector', *Economic Trends*, July 1981
'National and Sector Balance Sheets for the United Kingdom', *Economic Trends*, November 1980
'Conference on financial statistics' Bank of England Quarterly Bulletin, December 1985.

Germany: sources

- BIS BIS Monetary and Economic Data Bank
DB Deutsche Bundesbank; by letter
DBMR Monthly Report of the Deutsche Bundesbank
OECD OECD Financial Statistics Part 1; Domestic markets – Interest Rates
SJ Statistisches Jahrbuch für die BRD 1985 (Statistisches Bundesamt)
VG Volkswirtschaftliche Gesamtrechnung (Statistisches Bundesamt)

Germany: sectors

- H Households
H + HO Households plus housing sector
C × HO Non-financial companies minus housing sector

Germany: references

- 'Tables and methodological notes on the capital finance account, 1960–82', Deutsche Bundesbank, special series No. 4

Japan: sources

- BIS BIS Monetary and Economic Data Bank
BJ Bank of Japan; by letter
BJESA Bank of Japan Economic Statistics Annual
BJESM Bank of Japan Economic Statistics Monthly
EPARNA Report on National Accounts (Economic Planning Agency)
OECD OECD Financial Statistics Part 1; Domestic Markets – Interest Rates

Japan: sectors

- C Non-financial company sector
P Personal sector

Index to series

UNITED STATES

Series	Sector	Source	Definition
		<i>Household assets</i>	
Currency and sight deposits	H	USFF	'Checkable deposits and currency'
Time deposits with banks	H	USFF	'Small time and savings deposits' + 'large time deposits' - 'deposits with saving institutions combined'
Time deposits with other financial institutions	H	USFF	'Deposits with savings institutions combined' + 'Money market fund shares'
Government bonds	H	USFF	'US government securities' (Treasury Issues + Agency Issues)
Corporate bonds	H	USFF	'Corporate and foreign bonds'
Tax-exempt bonds	H	USFF	'Tax-exempt obligations'
Market paper	H	USFF	'Open-market paper'
Investment Trusts	H	USFF	'Corporate equities: mutual fund shares'
Equities	H	USFF	'Corporate equities; other'
Other assets	H	USFF	'Miscellaneous assets' + 'security credit' + 'mortgages'
Pension funds	H	USFF	'Life insurance reserves' + 'Pension Fund reserves'
		<i>Household liabilities</i>	
Mortgages	H	USFF	'Home mortgages' + 'other mortgages'
Consumer credit	H	USFF	'Instalment consumer credit' + 'other consumer credit'
Bank lending not elsewhere classified	H	USFF	'Bank loans n.e.c.'
Trade credit	H	USFF	'Trade credit'
Other liabilities	H	USFF	'Other loans' + 'tax-exempt debt' + 'deferred and unpaid life insurance premiums'

Series	Sector	Source	Definition
		<i>Corporate assets</i>	
Currency and sight deposits	C	USFF	'Demand deposits + currency'
Time deposits with banks	C	USFF	'Time deposits' + 'foreign deposits'
Time deposits with other financial institutions	—	—	Unavailable, assumed negligible
Government bonds	C	USFF	'US government securities' (+ 'tax-exempt obligations' in the graphical analysis)
Corporate bonds	C	USFF	'Security repurchases' ²⁵ (Other corporate bond holdings unavailable)
Market paper	C	USFF	'Commercial paper'
Trade and other credit	C	USFF	'Consumer credit' + 'trade credit'
External assets	C	USFF	'Foreign direct investment'
Equities	—	—	Unavailable, corporate holdings netted out
Other assets	C	USFF	'Insurance receivables' + 'equity in sponsored agencies' + 'other'
		<i>Corporate liabilities</i>	
Corporate bonds	C	USFF	'Corporate bonds' + 'tax-exempt debt'
Bank lending	C	USFF	'Mortgages' + 'Bank loans n.c.c.'
Public lending	C	USFF	'US government loans'
Market paper	C	USFF	'Commercial paper' + 'acceptances'
Loans by other financial institutions	C	USFF	'Finance company loans'
Equities	C	USBS	'Non-financial corporate sector; market value of equity'
External liabilities	C	USFF	'Foreign direct investment in US'
Trade credit	C	USFF	'Trade debt'
Other liabilities	C	USFF	'Profit taxes payable'

²⁵ Added to market paper for estimation of the portfolio system.

Interest rates and yields

'Real' rates = nominal rates in the last quarter of the year less the annual inflation rate of the 'consumer prices (all items)' index in the last quarter.

Series	Source	Definition
<i>Nominal rates</i>		
Sight deposits		Zero
Time deposits with banks	OECD	Persons: 'Rate on small time deposits' Companies: 'Deposits with commercial banks; large time deposits'
Time deposits with financial institutions	OECD	'Savings and loan association deposits'
Market paper	BIS	'Interest rate; money market, bankers' acceptances, 3-month, market yield'
Corporate bond yield	BIS	'Yield, secondary market, corporate bonds (AAA)'
Corporate bond capital gain/loss	SCB	'Standard and Poor's corporate composite bond price index'
Government bond yield	BIS	'Yield, secondary market, US Treasury notes and bonds (10 years)'
Government bond capital gain/loss	SCB	'Standard and Poor's domestic municipal bond price index'
Equities, yield	BIS	'Dividend yield, New York stock exchange'
Equities, capital gain/loss	BIS	'Stock exchange prices, New York stock exchange'
Bank lending	BIS	'Bank prime lending rate'
Mortgages	OECD	'Rates charged to borrowers; mortgages'
Consumer credit	—	'Bank lending' rate \times 1.4
<i>Other variables</i>		
Public sector gross debt	USFF	'Gross liabilities of US government' + 'state and local government'
Household/personal sector (HPS) net worth	USBS	'Net worth; households'
HPS saving	BIS	'Saving; household sector'
HPS rate of return on real assets	SCB	'Average selling price of new houses'

Series	Source	Definition
HPS rate of return on financial assets	OECD	'Time deposit interest rate' as defined above
Companies' capital stock	USBS	'Net capital stock including land and inventories; non-financial corporate business'
Companies' rate of return on financial assets	BIS/SCB	'Government bond yield (including capital gains/losses)' as defined above
Companies' rate of return on capital	OECD	'Rate of return in manufacturing' (Gross operating surplus/gross capital stock)

UNITED KINGDOM

Series	Sector	Source	Definition
		<i>Personal sector assets</i>	
Currency and sight deposits	P	FS	1982-84 'Money (M_3)' - 'time deposits' - 'foreign deposits' 1975-81 'Money (M_3)' - 'time deposits' - 'foreign deposits' + ('savings bank deposits' \times 0.33) 1966-74 ('Money (M_3)' \times ratio M_1/M_3) + ('savings bank deposits' \times 0.33)
Time deposits with banks	P	FS	1982-84 'Time deposits' + 'foreign deposits' 1975-81 'Time deposits' + 'foreign deposits' + ('savings bank deposits' \times 0.67) 1966-74 ('Money (M_3)' \times (1- M_1/M_3)) + ('savings bank deposits' \times 0.67)
Deposits with other financial institutions	P	FS	'National Savings' + 'deposits with building societies'
Government bonds	P	FS	'Public sector long-term debt'
Corporate bonds	P	FS	'UK debenture and loan stock'

Series	Sector	Source	Definition
Market paper	P	FS	'Local authority temporary deposits'
Investment trusts	P	FS	'Unit trust and property unit trust units'
Equities	P	FS	'UK ordinary and preference shares'
Other assets	P	FS	'Other domestic assets' + 'overseas assets' + 'accruals of tax, rates and interest' + 'other domestic loans' + 'retail co-operatives, members' funds'
Pension funds	P	FS	'Equity in insurance and pension funds'
<i>Personal sector liabilities</i>			
Mortgages	P	FS	'Loans for house purchase; public sector + banks + other financial institutions'
Consumer credit	P	FS	'Hire purchase and other instalment debt' + 'consumer credit; monetary sector'
Bank lending	P	FS	'Bank lending' – 'consumer credit; monetary sector'
Trade credit	P	FS	'Domestic trade and other credit'
Other liabilities	P	FS	'Other domestic loans' + 'overseas liabilities' + 'accruals of tax, rates and interest'
<i>Company sector assets</i>			
Currency and sight deposits	ICC	FS	1975–83 'Sight deposits' + 'notes and coin' 1966–74 'Money (M ₃)' × ratio M ₁ /M ₃
Time deposits with banks	ICC	FS	'Money (M ₃)' – 'Currency and sight deposits' as defined immediately above – 'certificates of deposit'
Deposits with other financial institutions	ICC	FS	'Building society shares and deposits' + 'building society wholesale borrowing'

Series	Sector	Source	Definition
Government bonds	ICC	FS	'Public sector long-term debt'
Corporate bonds	ICC	FS	'UK debenture and loan stock'
Market paper	ICC	FS	'Certificates of deposit' ²⁶ + tax instruments' + 'Treasury bills' + local authority temporary deposits'
Trade and other credit	ICC	FS	'Domestic trade and other credit' + 'hire purchase and other instalment debt'
External assets	ICC	FS	'Overseas assets'
Equities	ICC	FS	'UK ordinary and preference shares'
Other assets	ICC	FS	'Other domestic loans' + 'other domestic assts' + 'accruals of taxes, rates and interest'
<i>Company sector liabilities</i>			
Corporate bonds	ICC	FS	'UK debenture and loan stock'
Bank lending	ICC	FS	'Bank lending'
Public lending	ICC	FS	'Public sector loans'
Market paper	ICC	FS	'Issue department's holdings of commercial bills'
Loans by other financial institutions	ICC	FS	'Hire purchase and other instalment debt'
Equities	ICC	FS	'UK ordinary and preference shares'
External liabilities	ICC	FS	'Overseas liabilities'
Trade credit	ICC	FS	'Domestic trade and other credit'
Other liabilities	ICC	FS	'Retail co-operatives; members' funds' + 'other domestic loans' + 'other domestic liabilities' + 'accruals of taxes, rates and interest'

²⁶ Included in time deposits when estimating the portfolio system.

Interest rates and yields

'Real' rates = nominal rates in the last quarter of the year less the annual inflation rate of the 'retail price (all items)' index in the last quarter of the year.

Series	Source	Definition
<i>Nominal rates</i>		
Series	Source	Definition
Sight deposits		Zero
Time deposits with banks	BIS	'Interest rate; 7 days notice; time deposits; London clearing banks'
Time deposits with other financial institutions	BIS	'Interest rate; building society shares (grossed up for tax)'
Market paper	OECD	'Deposits with local authorities (3-month)'
Corporate bond/yield	OECD	'Bond yield; company bonds (25 years)'
Corporate bond capital gain/loss	FT	'Stock exchange prices; debenture and loan stocks'
Government bond yield	OECD	'Bond yield; secondary market; 20-year government bonds'
Government bond capital gain/loss	FT	'Stock exchange prices; government securities (FT stock index)'
Equities, yield	ETAS	'Dividend yield, ordinary shares'
Equities, capital gain/loss	ETAS	'FT actuaries' ordinary share index'
Bank lending	FS	'London clearing banks' base rates'
Mortgages	BIS	'Building societies' new mortgage rates to owner occupiers'
Consumer credit		'Bank lending' rate \times 1.4
External assets	BIS	'Interest rate on 3-month US dollars in Euro-market, reported by Great Britain'
<i>Other variables</i>		
Public sector gross debt	FS	'Nominal national debt outstanding'
Household/personal sector (HPS) net worth	FS	'Net financial wealth' + 'tangible assets'
HPS saving	NIE	'Personal sector saving'

Series	Source	Definition
HPS rate of return on real assets	MDS	'Price index for all houses (new and second-hand) mix-adjusted'
HPS rate of return on financial assets	BIS	'Time deposits interest rate' as defined above
Companies' capital stock	NIE	'Industrial and commercial companies' net capital stock at replacement cost'
Companies' rate of return on financial assets	OECD/FT	'Government bond yield (including capital gain)' as defined above
Companies' rate of return on capital	OECD	'Rate of return in manufacturing' (gross operating surplus/gross capital stock)

GERMANY

Series	Sector	Source	Definition
<i>Household assets</i>			
Currency and sight deposits	H + HO	DBMR	'Currency and sight deposits'
Time deposits with banks	H + HO	DBMR	'Time deposits' + 'savings deposits'
Time deposits with other financial institutions	H + HO	DBMR	'Funds placed with building and loan associations' + ('funds placed with insurance enterprises' × 0.15)
Government bonds	H + HO	DBMR, DB	'Assets arising from bonds (at market prices)' × 'proportion of households' identified bond holdings held as government bonds'
Corporate bonds	H + HO	DBMR, DB	'Assets arising from bonds (at market prices)' × 'proportion of households' identified bond holdings held as corporate (bank + non financial company) bonds'
Market paper	H + HO	DBMR	'Assets arising from money-market paper'
Investment trusts	H + HO	DB	'Investment trust units (deposited with banks)' × 'price index'

Series	Sector	Source	Definition
Equities	H + HO	DBMR	'Assets arising from shares (at market prices)' – 'investment trusts'
Other assets	H + HO	DBMR	'Other claims' – 'other domestic claims'
Pension claims (total)	H + HO	DBMR	('Funds placed with insurance enterprises' × 0.85) + 'other domestic claims'
Pension claims (funded)	H + HO	DBMR	('Funds placed with insurance enterprises' × 0.85)
<i>Household liabilities</i>			
Mortgages	HO	DBMR	'Short-term bank loans' + 'longer-term bank loans' + 'building and loan association loans' + 'insurance enterprise loans'
Consumer credit	H	DBMR	'Short-term bank loans' + 'longer-term bank loans' + 'insurance enterprise loans'
(short-term)	H	DBMR	'Short-term bank loans'
(long-term)	H	DBMR	'Longer-term bank loans' + 'insurance enterprise loans'
Trade credit	H + HO	DBMR	'Other liabilities; trade credits'
Other liabilities	H + HO	DBMR	'Other liabilities' – 'other liabilities; trade credits'
<i>Company sector assets</i>			
Currency and sight deposits	CXHO	DBMR	'Currency and sight deposits'
Time deposits with banks	CXHO	DBMR	'Time deposits' + 'savings deposits'
Time deposits with other financial institutions	CXHO	DBMR	'Funds placed with building and loan associations' + 'funds placed with insurance enterprises'
Government bonds	CXHO	DBMR, DB	'Assets arising from bonds (at market prices)' × 'proportion of companies identified bond holdings held as government bonds'

Series	Sector	Source	Definition
Corporate bonds	CXHO	DBMR, DB	'Assets arising from bonds (at market prices)' × 'proportion of companies' identified bond holdings held as corporate (bank + non-financial) bonds'
Market paper	CXHO	DBMR	'Assets arising from money-market paper'
Trade and other credit	CXHO	DBMR	'Trade credits'
External assets	CXHO	DBMR	'Other claims on the rest of the world' – 'trade credits'
Equities	CXHO	DBMR	'Shares at market prices'
Other assets	CXHO	DBMR	'Other claims on domestic sectors'

Company sector liabilities

Corporate bonds	CXHO	DBMR	'Bonds at market prices'
Bank lending	CXHO	DBMR	'Short-term bank loans' + 'longer-term bank loans'
Public lending	CXHO	DBMR	'Other liabilities to domestic sectors' – 'households' other claims on domestic sectors (unfunded pension rights)'
Market paper	CXHO	DBMR	'Liabilities arising from money-market paper'
Loans by other financial institutions	CXHO	DBMR	'Building and loan association loans' + 'insurance enterprise loans'
Equities	CXHO	DBMR	'Shares at market prices'
External liabilities	CXHO	DBMR	'Other liabilities to the rest of the world' – 'trade credits'
Trade credit	CXHO	DBMR	'Trade credits'
Other liabilities	CXHO	DBMR	'Households' other claims on domestic sectors (unfunded pension claims)'

Interest rates and yields

'Real' rates = nominal rates in the last quarter of the year less the annual inflation rate of the 'cost of living (all items)' index in the last quarter.

Series	Source	Definition
	<i>Nominal rates</i>	
Sight deposits		Zero
Time deposits with banks	OECD	Persons: 'Savings deposits with agreed period of notice of 12 months' Companies; 'Time deposits (3 months)'
Time deposits with other financial institutions	OECD	Persons: 'Savings deposits with agreed period of notice of 12 months + 1.5' (Proxy for long-term deposit rate) Companies: 'Savings deposits with agreed period of notice of 12 months'
Market paper	BIS	'Money market; 3-month loans'
Corporate bond yield	BIS	'Yield; secondary market, industrial bonds'
Government bond yield	BIS	'Yield; secondary market, public sector bonds'
Bonds, capital gain/loss	BIS	'Stock exchange prices, bonds of domestic issuers'
Equities, yield	OECD	'Share yield'
Equities, capital gain/loss	OECD	'Share prices'
Bank lending	OECD	'Rates charged to borrowers; credits in current account'
Mortgages	OECD	'Rates charged to borrowers; mortgages'
Consumer credit		'Bank lending' rate \times 1.4
External assets	OECD	'Euro-dollar rate; 3 months'
	<i>Other variables</i>	
Public sector gross debt	DBMR	'Liabilities outstanding; government total'
Household/personal sector (HPS) net worth	DBMR, VG	'Net financial assets' + 'net residential capital stock at replacement cost'
HPS saving	BIS	'Household saving'
HPS rate of return on real assets	SJ	'Preisindex für Wohngebäude'
HPS rate of return on financial assets	OECD	'Interest rate; time deposits' as defined above

Series	Source	Definition
Companies' capital	VG	'Net non-residential capital stock of non-financial enterprises, at replacement cost'
Companies' rate of return on financial assets	BIS	'Government bond yield (including capital gain/loss)' as defined above
Companies' rate of return on capital	OECD	'Rate of return in manufacturing' (gross operating surplus/gross capital stock)

JAPAN

Series	Sector	Source	Definition
<i>Personal sector assets</i>			
Currency and sight deposits	P	BJESM	'Currency' + 'demand deposits'
Time deposits with banks	P	BJESM	'Time deposits' – 'Time deposits with the Post Office Bank'
Deposits with other financial institutions	P	BJESM	'Trust' + 'insurance' – 'pension trust deposits' – 'life assurance' + 'time deposits with the Post Office Bank'
Government bonds	P	BJESM	'Short-term government securities' + 'government bonds' + 'local government bonds' + 'public corporation bonds'
Corporate bonds	P	BJESM	'Bank debentures' + 'industrial bonds'
Market paper	P	BJESM	'Certificates of deposit'
Investment trusts	P	BJESM	'Securities investment trust'
Equities	P	BJESM	'Stocks at market price'
Other assets	P	BJESM	'Others'
Pension funds	P	BJESM	'Pension trusts' + 'life assurance'
<i>Personal sector liabilities</i>			
Mortgages	P	BJESM	'Loans for house purchase'
Consumer credit (financial institutions)	P	BJESM	'Consumer credit'

Series	Sector	Source	Definition
Consumer credit (total)	P	BJESM	'Consumer credit' + 'consumer credit extended by retailers'
Bank lending	P	BJESM	'Loans by private financial institutions' – ('loans for house purchase' – 'public loans for house purchase') – 'consumer credit'
Trade credit	P	BJESM	'Trade credit'
Trade credit excluding retail consumer credit	P	BJESM	'Trade credit' + 'consumer credit extended by retailers'
Other liabilities	P	BJESM	'Loans by public financial institutions' – 'public loans for house purchase'
<i>Company sector assets</i>			
Currency and sight deposits	C	BJESM	'Currency' + 'demand deposits'
Time deposits with banks	C	BJESM	'Time deposits'
Deposits with other financial institutions	C	BJESM	'Trust'
Government bonds	C	BJESM	'Bonds' + 'short-term government securities' × 'ratio of public to total bonds outstanding'
Corporate bonds	C	BJESM	'Bonds' + 'short-term government securities' × 'ratio of private to total bonds outstanding'
Market paper	C	BJESM	'Certificates of deposit'
Trade and other credit	C	BJESM	'Trade credit'
External assets	C	EPARNA	'Overseas direct investment'
Equities	C	BJESM	'Stocks at market prices'
Other assets	C	BJESM	'Others'
<i>Company sector liabilities</i>			
Corporate bonds	C	BJESM	'Industrial bonds' + 'bonds in foreign currency'
Bank lending	C	BJ	'Loans by banks'
Public lending	C	BJESM	'Loans by public financial institutions'

Series	Sector	Source	Definition
Market paper	—	—	—
Loans by other financial institutions	C	BJESM	'Loans by private financial institutions' — 'loans by banks'
Equities	C	BJESM	'Stocks' × 'price index'
External liabilities	C	EPARNA	'Overseas direct investment in Japan'
Trade credit	C	BJESM	'Trade credit'
Other liabilities	—	—	—

Interest rates and yields

'Real' rates = nominal rates in the last quarter of the year less the annual inflation rate of the 'consumer prices, general' index in the last quarter.

Series	Source	Definition
	<i>Nominal rates</i>	
Sight deposits		Zero
Time deposits with banks	BIS	'Time deposits with banks, 3-month'
Time deposits with other financial institutions	OECD	'Provisional dividend rate for loan trusts (5 years)'
Market paper	BIS	'Time certificates of deposit, to 120 days'
Corporate bond yield	BIS	'Yield, secondary market, industrial bonds'
Corporate bond capital gain/loss		Unavailable
Government bond yield	BIS	'Yield in secondary market, interest-bearing government bonds'
Government bond capital gain/loss		Unavailable
Equities, yield	BIS	'Dividend yield, listed stocks, Tokyo stock exchange'
Equities, capital gain/loss	BIS	'Stock exchange prices; stocks, Tokyo index'
Bank lending	OECD	'Short-term bank loans, regulated interest rates'
Mortgages	BIS	'Interest rate on housing loans by city banks'
Consumer credit		'Bank lending' rate × 1.4

Series	Source	Definition
	<i>Other variables</i>	
Public sector gross debt	BJESM	'Liabilities; total' – 'difference', of central government, local authorities and public corporations
Household/personal sector (HPS) net worth	EPARNA	'Net worth'
HPS saving	BIS	'Household saving, including unincorporated enterprises'
HPS rate of return on real assets	BJESM	'Urban land price index'
HPS rate of return on financial assets	BIS	'Time deposit interest rate' as defined above
Companies' capital stock	EPARNA	'Inventories' + 'Net fixed capital' + 'unreproducible tangible assets'
Companies' rate of return on financial assets	BIS	'Government bond yield' as defined above
Companies' rate of return on capital	OECD	'Rate of return in manufacturing' (gross operating surplus/gross capital stock)

The data: coverage and estimation

The following section details the sectoral coverage of the data between countries and notes some of the estimations that were required for their construction.

1. Sectoral coverage

The data for "*persons*" covers the personal sector for the United Kingdom and Japan, thus including the activities of unincorporated businesses, which are particularly important in Japan. In Germany and the United States unincorporated businesses and farms are excluded, i.e. household sector data are used. For Germany it seemed logical to include the housing sector with households, as only by this means can the important transactions of the household sector associated with residential investment be included, though at the cost of including activities of housing enterprises, insurance enterprises and the government in financial operations relating to new housing and the stock of existing dwellings.

For "*companies*" the data for the United Kingdom²⁷ and Japan cover industrial and commercial corporate firms. In the United States non-financial corporate business again excludes non-corporate business and farms, for which complete asset data are not available, and which are thus not included in the current analysis. For Germany the non-financial enterprise sector covers "all economic units whose main function is that of producing goods and non-financial market services and selling them against remuneration". Hence as well as corporate business it covers the unincorporated enterprise sector and all public enterprises.

While these distinctions clearly present a problem for exact comparison of financial portfolio behaviour between countries, there is no alternative in comparative work but to follow the breakdown set by the national data sources. The distinctions should

²⁷ A further problem for the United Kingdom is that some recent portfolio shifts indicated by the flow of funds will be due to the privatisation of state-owned firms.

nonetheless be borne in mind, and it is detailed above where they make a clear difference to the comparisons made between countries and where data problems render comparisons impossible.

2. Data inconsistencies and approximations

The same considerations apply to the definitions of assets and liabilities, although inconsistencies and gaps have been kept to the minimum by contact with the national statistical offices. Exact details are given above, but some indications are also given here of the key approximations required to produce a consistent set of asset and liability data.

For the United Kingdom data on the sight and time deposit components of sectoral money holdings (allowing notes and coin to be determined by residual) are only available since 1975. For earlier years the division was estimated by the ratio of M_1 to M_3 outstanding. Savings banks (a form of mutually owned bank, similar in form and operation to clearing banks, but distinct from building societies) were classed in the official statistics as 'other financial institutions' until 1982, and subsequently as part of the banking sector. For consistency they have been added to the banking sector throughout this paper. "Consumer credit" is defined as hire purchase and other instalment debt, plus bank lending for consumption, of which the latter series is only available from 1975. For earlier years the split between bank lending for consumption and to unincorporated business was estimated by use of the ratio for 1975.

In the case of Japan companies' bond holdings are not available separately for public bonds (short-term and other) and corporate bonds. This division of the holdings between public and private has been approximated by the ratio of total stocks outstanding while short-term government bonds were included in total government bonds for both persons and companies. A further problem for Japan is classification of deposits with the Post Office Bank between "bank" and "other financial institution" deposits. It was decided that since it does not lend commercially like a bank, instead being a

method of government finance, and for congruency with other countries (National Savings in the United Kingdom), it should be classified as a non-bank, while Postal Life Assurance is classed as "institutional investment".

For the United States time deposits could not be divided between those held with banks and those with savings institutions. The approach adopted was to attribute all time deposits with the latter to households, subtracting them from households' time deposits. This may be a reasonable approximation for corporate business, but it may introduce some deposits of non-corporate business to the household sector. For the United States corporate sector equities and bonds are not shown on the asset side, because they are netted out. This gives a somewhat different picture of firms' assets to the other data sets. As with assets, lending by other financial institutions to firms (apart from finance companies) could not be divided from banks. All bank loans and mortgages have therefore been attributed to banks. Tax-exempt obligations are guaranteed by the public sector, but the ultimate liability is often incurred by a company or person. Therefore in the graphs these have been added to government bonds on the assets side, but on the liabilities side they have been combined with "other liabilities" (persons) and "corporate bonds" (companies). In the econometric work tax-exempt bonds were not combined with government bonds owing to their differing rate-of-return characteristics.

In the German flow of funds "insurance deposits" were divided between general (other financial institutions) and life (life assurance and pension funds) business in the ratio 15:85, following information from the Bundesbank. Data were also provided by the Bundesbank for identified holdings of government and corporate bonds as assets for households and companies. There was an unidentified residual; the treatment was to apply the indicated ratio of identified holdings to the total shown in the flow of funds. For investment trusts data were provided in a similar format; in this case there was no total figure to suggest an allocation of the residual between these and other sectors, so only identified holdings were taken into account.

The methodological notes for the flow of funds suggest that "households' other assets" are composed overwhelmingly of unfunded pensions owed by firms. This was therefore added to "life and pension funds", enabling estimates of both funded and total private pension assets of households to be presented. For liabilities "loans for house purchase" were defined as total liabilities of the housing sector; this is likely to be a somewhat wider measure, given the sectoral definition detailed above, than for the other countries. Consumer credit data are not available; however, given the sectoral definitions, all non-housing bank and insurance company loans are for consumption purposes, so both short and long-term bank loans were included in this total. Bank loans n.e.c. are therefore zero. For firms, "other domestic liabilities" are mainly non-funded pensions and public loans. Since the former are represented by households' "other domestic assets", subtraction gives an estimate of public loans.

Besides these adjustments necessitated by the data available for individual countries, it should be noted that certain assets and liabilities remain somewhat inconsistent between countries. External assets and liabilities for the United Kingdom include physical (i.e. direct) and portfolio investment, but for Germany only certain portfolio data (loans, participations, land ownership, trade credit) are available, and for the United States and Japan only physical investment. Trade credit is domestic except for Germany, where only foreign trade credits are shown. Bonds for the United States and Japan are at book rather than market value, as are investment trusts in Japan (which invest mainly in bonds). However, this is likely to be less of a problem than it would be for equity, where market values diverge sharply from book. Estimates of the value of equity are at market value throughout.

These data problems suggest that caution needs to be exercised when interpreting the results, but nonetheless are of sufficiently minor importance compared with the wide range of consistent data used not to invalidate the analysis as a whole.

Consistency of the flow-of-funds balance sheets

The data used in this paper are drawn from the national flow-of-funds tables of assets and liabilities outstanding. A property that one would expect such tables to exhibit is that all the household and company assets and liabilities should be matched by corresponding instruments held by other sectors. For the country as a whole, including the rest-of-the-world sector, the only assets with no corresponding liability should be gold (usually aggregated with SDRs).

To check these properties, each balance-sheet matrix was analysed in turn. It was found that the matrices broadly corresponded with these presuppositions, though with certain minor differences due to accounting conventions, lack of data, etc. These results, therefore, further underpin the data used above and the analyses made of persons' and companies' behaviour.

There follow comments on each stock matrix in turn. Examples of the matrices themselves are appended, on pages 129–135.

United Kingdom

The matrices for all assets and liabilities balance exactly for each instrument, and the sum of net financial worth for all sectors is zero. This methodology implies that gold is a liability of the foreign sector as well as an asset of central government, which is not the case in actual fact, but an accounting convention. In the UK balance sheet, all marketable assets are valued at current market value, while the value of funded pension claims is set equal to the current market value of funds' assets and liabilities, and assets of unfunded (and state) pension schemes are excluded. Overseas direct investments are an exception to the rule of market valuation; owing to measurement problems they are instead given at book value.

Germany

The assets and liabilities table for Germany is in a similar format to that of the United Kingdom, gold and SDRs being considered an

asset of the Bundesbank and liability of the overseas sector. Bonds and shares are presented both at book and market value, other assets and liabilities being presented at book. The German accounts add downwards to net wealth of each sector for all assets and liabilities except "other claims". For such claims on domestic sectors, the reason given for exclusion is that the sub-sectors "enterprises (except housing), central, regional and local authorities and banks" include intra-sectoral claims and liabilities, which are, therefore, not counted in computing the total for the respective sections. "Other claims" on domestic sectors and on the rest of the world are also not equal on the assets and liabilities side (i.e. adding across), although the totals of aggregate "other claims" are equal. This is because the balancing item in the financial accounts (which mainly reflects certain unrecorded credit operations between Germany and the rest of the world) is included in enterprises' liabilities to the rest of the world and the rest of the world's claims on the domestic sectors. The precise amount included in the balance sheets is the cumulative value of the annual balancing item, roughly adjusted for valuation gains and losses.

Unlike the United Kingdom, unfunded pension claims by households on companies are included in the balance sheet under "other claims on domestic sectors".

Japan

The complete balance sheet for the nation is published by the Economic Planning Agency at the end of every fiscal year. An example is shown on pages 132–133. However, this does not diverge from the timelier "Financial assets and liabilities" account of the Bank of Japan, from which the data used above were drawn. The difference is the greater consistency of the former resulting from the inclusion of the rest-of-the-world sector, which enables asset and liability stocks to sum to the same amount.

Inconsistencies that arise in the balance sheet stem largely from shortages of information. In the case of gold and SDRs, non-resident yen and foreign currency deposits and foreign exchange

reserves, the items are entered explicitly only on one side of the balance sheet. In each case this is because there are no data for holders, so the items are only entered on the liabilities side. Of course, entry of gold as a liability of the rest-of-the-world sector is again objectionable.

Equities and long-term government bonds have different values on the assets and liabilities side. This is because on the liabilities side they are measured at book value, while on the assets side corporate and private holdings of bonds are measured at their initial selling value, i.e. allowing for the small discount below book value which was realised at the time of issuance, while equities are shown at market value.

The residual for the system comes in the “other liabilities” row of financial institutions. It is ignored in the adding-up across the row, which is made to sum instead to the difference between the rest of the liabilities and total of assets. The rationale for its residualisation is that it represents cumulated financial sector saving and investment, i.e. the difference between assets and liabilities, while by accounting convention the financial sub-sectors should hold no net assets. It does, however, manifest itself as the difference between total assets and liabilities of the whole financial sector.

Japanese financial data do not allow for non-funded pension rights. Of the above inconsistencies, it is only the valuation of equity and bonds which affect the data for companies and persons. Other assets and liabilities of these sectors are fully accounted for as liabilities and assets respectively of the other sectors. Information provided in the “Financial assets and liabilities” table enables market values of equity to be derived.

United States

The US flow of funds does not include a full stock matrix, but such a matrix is easily constructed and the consistency of asset and liability holdings checked. In the matrix shown on pages 134–135 the constraint that holdings should sum to zero is satisfied for all assets except those marked (5). Negative entries indicate a liability of the

sector, while for an entry with three numbers the top number shows the net holdings of the assets by the sector, and the other two in square brackets show the gross holding of the instrument as an asset and a liability. Obviously these sum to the net holding.

In the case of security repurchases, trade credit, profit taxes payable and miscellaneous claims the totals do not sum to zero, an unallocated discrepancy of small magnitude remaining. For corporate equity the holdings as a "liability" are only given as a total rather than divided among banks, the private non-bank financial sector and corporate non-financial business. The split between financial and non-financial business equity may, however, be obtained from "Balance sheets for the US economy 1945-83".

As implied above, in most cases when a sector holds an instrument as an asset and a liability, these quantities are both shown in the balance sheet. This is not, however, the case for some assets, notably holdings of corporate bonds, equities and mortgages by non-financial corporate business. In these cases only net holdings are shown (as a liability).

The aggregate of gold, SDRs, etc. is shown as a net asset, following the economically correct procedure, i.e. the accounting convention applied in the other countries is not enforced. As a result this now does not sum to zero; gold is rather a net asset of both the domestic and foreign sectors. Although it involves a loss of consistency, this procedure seems more intuitively reasonable than the other cases.

To conclude, this survey of the balance sheets, which encompass the data used in this paper, reveals them to be internally consistent. All the assets and liabilities of the household and company sectors have correspondents in the financial, public and overseas sectors, or in each other, which leave no holdings unaccounted for. One inconsistency of valuation has been revealed in equity, or "stocks" for Japan. This is, in any case, dealt with above by use of these data as estimates of market value rather than variants on book value, as shown in the balance sheets. Only in the United States is gold treated as a net asset of all sectors; in other cases the accounting

convention of treating it as a liability of the overseas sector is adopted. Only in the United Kingdom is there no “residual”. In Germany there is a residual from the external side which manifests itself in other claims of the rest-of-the-world sector on the company sector. In Japan the residual arises among the liabilities of the financial sector, while in the United States there are various instruments which feature small unallocated quantities. These do not affect the broad consistency of these tables.

S6

Sectoral distribution of financial assets and liabilities: all sectors matrix
Amount outstanding at end-1982

	Central government	Local authorities	Public corporations	Monetary sector	Other financial institutions	Industrial and commercial companies	Personal sector	Overseas	Total
<i>Financial assets</i>									
Monetary gold, convertible currencies, SDRs and net position in IMF	12.9							1.3	14.3
Notes and coin				2.1	0.4	1.0	9.2	0.2	13.5
Deposits with UK banks: sterling	0.6	1.0	0.6	47.1	12.7	18.2	50.0	18.9	149.1
Deposits with UK banks: foreign currencies	0.2		0.1	90.2	3.4	7.8	1.6	279.5	382.7
National savings deposits and investments						0.1	21.9		22.0
Building society shares and deposits					0.3		67.0		67.7
Building society wholesale instruments				0.2		0.1			0.3
Deposits with other financial institutions				0.4		0.3			0.7
Local authority temporary debt								2.6	2.6
Tax instruments	0.8	0.6		0.1	1.3	0.3	0.3		4.1
Government liability to trustee savings banks				0.7		2.0			3.0
British Gas Corporation deposits with the Government			0.3				0.1		0.7
Insurance bills								0.5	0.5
Other bills and short-term instruments	7.6			0.4		0.2		0.5	1.2
British government and government-guaranteed securities		0.1		6.3		0.4	17.8	0.7	15.0
Local authority listed securities, and negotiable bonds	0.1			6.5	54.7	1.1	7.6		87.9
Public dividend capital	3.0			0.6	0.8	0.1	0.2		2.1
Other public corporation securities									
UK debenture and loan stock				1.1	4.0	1.0		0.9	1.1
UK ordinary and preference shares	5.3		0.3	3.9	71.1	15.6	2.8	1.5	10.3
Unit trust and property unit trust units					4.8		47.4	5.3	148.8
Retail co-operative societies: members' funds							4.6		9.4
Overseas government and company securities				5.0	25.3	2.8	5.7		38.8
British government foreign currency bonds								0.5	0.5
Overseas direct investment (including loans to subsidiaries)				4.3	3.4	45.2		30.9	84.2
Property holdings abroad					1.7			1.1	3.2
UK bank lending: sterling				82.2			0.4		82.2
UK bank lending: foreign currencies				284.2					284.2
Hire purchase and other instalment debt									
Government net indebtedness to Banking Department					1.9	1.4			3.5
Government lending to public corporations			0.2	0.5					284.2
Long-term loans to local authorities	22.2								22.2
Refinanced shipbuilding credit	16.2	0.3	0.1	7.6	2.5	0.1	1.5		28.3
Loans for house purchase	0.2			10.8	59.4				66.2
Other public sector: loans to private sector		4.5	1.6						6.1
Debts between public corporations and local authorities	0.5	0.1	0.3						0.9
Overseas loans to and from public sector		1.2	0.4						1.5
Refinanced export credit	3.3								3.3
Other loans	1.4								1.4
Trade credit, advances etc.		2.7			14.7	7.5	4.0	5.9	31.8
Equity in insurance and pension funds	11.8	0.1	8.5			53.8	17.9	5.2	88.1
Accrued taxes, interest etc.			0.6				152.5		152.5
Total financial assets	86.2	10.5	15.5	554.3	262.6	161.1	407.7	368.6	1,866.4
Net financial wealth	-49.2	-31.5	-27.4	3.1	-12.8	-121.0	280.9	-42.2	-

Source: Financial Statistics.

S6 Sectoral distribution of financial assets and liabilities: all sectors matrix

Amount outstanding at end-1982

	Central Government	Local authorities	Public corporations	Monetary sector	Other financial institutions	Industrial and commercial companies	Personal sector	Overseas	Total
<i>Financial liabilities</i>									
Monetary gold, convertible currencies, SDRs and net position in IMF	1.3			0.7				12.9	14.3
Notes and coin	12.7			149.1				0.1	13.5
Deposits with UK banks: sterling				382.7					149.1
Deposits with UK banks: foreign currencies	22.0				67.7				382.7
National savings deposits and investments					0.3				22.0
Building society shares and deposits					0.1				67.7
Building society wholesale instruments					2.6				0.3
Deposits with other financial institutions									2.6
Local authority temporary debt		4.1							4.1
Tax instruments	3.0								3.0
Government liability to trustees savings banks	0.7								0.7
British Government deposits with the Government	0.3								0.3
Treasury bills	1.2								1.2
Other bills and short-term instruments	0.7		0.3	1.8	1.5	7.0		3.7	15.0
British government and government-guaranteed securities	87.8	2.1	0.1						87.9
Local authority listed securities and negotiable bonds			3.0						2.1
Public dividend capital			1.1						1.1
Other public corporation securities			1.1						1.1
UK debenture and loan stock				2.6	0.9	6.9			10.3
UK ordinary and preference shares				11.9	16.8	120.0			148.8
Unit trust and property unit trust units					9.4	0.6			9.4
Retail co-operative societies: members' funds									0.6
Overseas government and company securities	0.5			2.2	0.4	28.3			38.8
British government foreign currency bonds									0.5
Overseas direct investment (including loans to subsidiaries)									0.5
Property holdings abroad									0.5
UK bank lending: sterling			1.1		9.8	33.2	1.1		44.2
UK bank lending: foreign currencies		0.6	1.0		7.4	12.0	24.6		45.6
Hire purchase and other instalment debt							0.5		0.5
Government net indebtedness to Banking Department	0.5		22.2			0.6	2.9		26.2
Long-term loans to local authorities		38.3							38.3
Government lending to public corporations									0.2
Refinanced shipbuilding credit									0.2
Loans for house purchase									0.2
Other public sector loans to private sector		0.3	1.2				76.2		77.7
Debts to seven public corporations and local authorities	2.5	0.3	2.9			0.8	0.2		6.7
Overseas loans to and from public sector									0.9
Refinanced export credit									0.9
Other credit advances etc			1.5						1.5
Trade credit, advances etc		3.8	7.7		2.8	8.8	5.4		31.8
Equity in insurance and pension funds					0.5	55.9	15.3		62.7
Accrued taxes, interest etc	2.1	2.5	0.8	0.1	152.5	7.5			157.5
Total financial liabilities	135.4	42.0	42.9	551.2	275.4	282.0	126.8	410.7	1,866.4

Source: Financial Statistics.

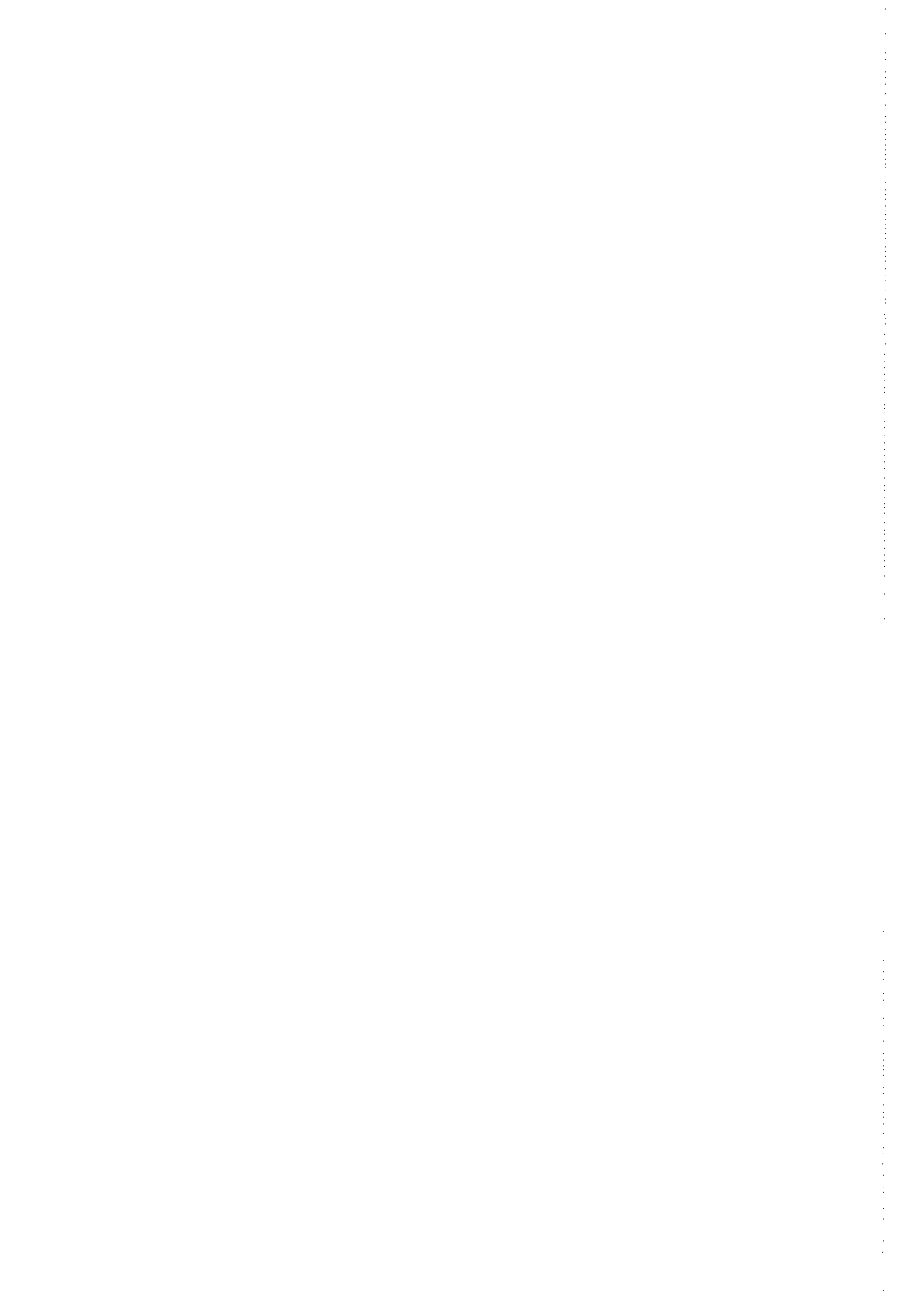
Financial assets and liabilities by sector at end-1982 ^e

Item	Sector			Enterprises			Government		Rest of the world ^f		All non-financial sectors (cols 4 plus 5)		Banking institutions ^g		Building and loan associations		Insurance enterprises ^h		All financial sectors (cols 7 to 9)		All sectors (cols 6 plus 10)	
	1	2	3	(2a)	(2b)	(2c)	(3a)	(3b)	(3c)	4	5	6	7	(7a)	(7b)	8	9	10	11	12	13	
I. Financial assets																						
Funds placed with banks	659.2	330.2	107.1	107.1	150.7	1,301.5	161.7	3,531.1	161.7	1,653.1	1,653.1	1,653.1	1,653.1	1,653.1	9.0	0.0	97.7	106.7	1,659.8	1,659.8	1,659.8	
Currency and sight deposits ⁱ	629.0	314.6	104.3	104.3	144.3	1,283.6	154.3	3,536.6	154.3	1,653.6	1,653.6	1,653.6	1,653.6	5.2	0.0	6.5	7.7	390.8	390.8	390.8	390.8	
Savings deposits	210.3	119.5	108.5	108.5	139.5	498.1	4.5	628.8	4.5	628.8	628.8	628.8	628.8	2.2	0.0	2.5	101.3	101.3	726.3	726.3	726.3	
Savings deposits with building and loan associations	526.8	5.7	4.5	4.5	2.9	537.1	5.7	542.8	5.7	542.8	542.8	542.8	542.8	2.2	0.0	6.5	95.1	101.3	542.8	542.8	542.8	
Funds placed with insurance enterprises ^h	118.2	1.6	1.6	1.6	0.0	120.8	1.6	120.8	1.6	120.8	120.8	120.8	120.8	2.2	0.0	0.0	0.0	0.0	124.3	124.3	124.3	
Funds placed with building and loan associations	315.1	28.4	0.5	0.5	0.5	344.0	0.5	344.0	0.5	344.0	344.0	344.0	344.0	2.2	0.0	0.0	0.0	0.0	345.3	345.3	345.3	
Money market paper	5.4	0.4	0.1	0.1	0.1	5.9	0.4	9.2	0.1	9.7	9.7	9.7	9.7	15.9	0.0	0.0	0.0	0.0	19.7	19.7	19.7	
Bonds	257.3	38.6	18.2	2.7	314.1	25.3	339.4	289.2	283.6	4.1	97.7	391.1	391.1	283.6	4.1	0.0	10.3	391.1	730.5	730.5	730.5	
Shares	35.8	76.9	76.9	15.5	15.5	125.2	76.9	89.8	16.7	0.1	89.8	16.7	16.7	16.7	0.1	0.0	0.0	16.7	102.1	102.1	102.1	
External position of the Bundesbank	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	47.4	47.4	47.4	
Long-term bank loans	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	427.4	427.4	427.4	
Building and loan association loans	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,467.0	1,467.0	1,467.0	
Insurance enterprise loans ^h	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	135.6	135.6	135.6	
Other claims on domestic sectors ^j	131.3	19.2	20.0	0.1	6.7	417.3	20.0	707.1	20.0	707.1	707.1	707.1	707.1	63.1	0.0	0.0	0.0	0.0	150.2	150.2	150.2	
Other claims on domestic sectors ^j	131.2	5.1	10.9	20.3	59.8	236.6	20.3	269.6	20.3	269.6	269.6	269.6	269.6	63.1	0.0	0.0	0.0	0.0	305.7	305.7	305.7	
Other claims on domestic sectors ^j	131.2	188.9	188.9	12.5	12.5	201.4	12.5	201.4	12.5	201.4	201.4	201.4	201.4	63.1	0.0	0.0	0.0	0.0	201.4	201.4	201.4	
Other claims on domestic sectors ^j	-	117.5	117.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	117.5	117.5	117.5	
Total	1,729.5	675.3	665.8	314.2	2,368.2	7,119.0	538.0	3,257.0	2,309.1	2,235.0	4,488.3	4,488.3	4,488.3	2,309.1	2,235.0	133.6	150.2	3,566.1	2,814.0	6,071.0	6,071.0	
Memorandum items																						
Bonds at market prices	258.8	38.2	17.5	2.6	311.5	25.8	337.3	285.3	279.4	4.0	96.1	385.5	385.5	279.4	4.0	0.0	23.7	385.5	722.8	722.8	722.8	
Shares at market prices	66.4	189.5	189.5	36.4	292.3	36.4	335.8	29.6	29.6	0.2	23.7	35.5	35.5	29.6	0.2	0.0	0.0	35.5	382.2	382.2	382.2	
II. Liabilities and claims outstanding																						
Funds placed with banks	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,659.8	1,659.8	1,659.8	
Currency and sight deposits ⁱ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	390.8	390.8	390.8	
Time deposits ⁱ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	542.8	542.8	542.8	
Savings deposits	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,155.6	1,155.6	1,155.6	
Funds placed with building and loan associations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	124.3	124.3	124.3	
Liabilities arising from money market paper	-	2.7	3.7	19.5	19.5	33.3	0.4	71.7	5.7	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	345.3	345.3	345.3	
Liabilities arising from money market paper	-	32.1	32.3	125.4	125.4	157.7	47.4	208.1	52.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	345.3	345.3	345.3	
Shares outstanding	-	117.0	115.3	-	-	117.0	117.0	115.3	115.6	-	-	-	-	-	-	-	-	-	124.3	124.3	124.3	
External position of the Bundesbank	48.9	280.4	261.3	21.1	346.4	75.8	86.9	86.9	86.9	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	525.5	525.5	525.5	
Short-term bank loans	98.7	832.2	408.3	360.6	1,335.9	171.8	422.2	422.2	422.2	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,155.6	1,155.6	1,155.6	
Long-term bank loans	8.7	165.8	54.4	33.7	148.2	1.7	149.9	1.7	149.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	124.3	124.3	124.3	
Building and loan association loans	4.7	417.6	394.4	67.4	83.6	489.6	201.4	491.0	10.3	83.9	83.9	83.9	83.9	10.3	0.0	0.0	0.0	0.0	1,155.6	1,155.6	1,155.6	
Other liabilities to domestic sectors ^j	4.7	194.7	171.5	0.6	16.9	200.0	201.4	491.0	10.3	83.9	83.9	83.9	83.9	10.3	0.0	0.0	0.0	0.0	1,155.6	1,155.6	1,155.6	
Other liabilities to domestic sectors ^j	-	222.9	222.9	66.8	66.8	289.6	-	289.6	-	-	-	-	-	-	-	-	-	-	1,155.6	1,155.6	1,155.6	
Other liabilities to domestic sectors ^j	-	75.2	75.2	-	-	75.2	-	75.2	-	-	-	-	-	-	-	-	-	-	75.2	75.2	75.2	
Total	157.0	1,970.5	1,270.7	629.5	695.5	2,357.0	587.5	3,344.6	2,231.7	2,194.4	131.2	357.3	2,726.4	2,194.4	131.2	0.0	0.0	357.3	2,726.4	6,071.0	6,071.0	
Memorandum items	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	510.8	510.8	510.8	
Bonds at market prices	-	33.5	33.5	130.7	130.7	164.2	47.4	211.5	510.8	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	510.8	510.8	510.8	
Shares at market prices	-	279.5	275.4	-	279.5	55.1	334.6	35.0	35.0	1.7	10.9	47.6	47.6	35.0	1.7	0.0	0.0	0.0	382.2	382.2	382.2	
III. Net assets or liabilities (-) (I less II)																						
	1,572.3	-1,295.3	-604.9	-315.2	-408.7	-38.1	-49.5	-87.6	77.4	58.6	11.6	-1.8	87.6	-	-	-	-	-	511.3	722.8	382.2	

¹ Including Equalization of Burdens Fund and ERP Special Fund. ² Including GDR. ³ Including the Bundesbank. ⁴ Including private pension funds. ⁵ Including other items in course of settlement (e.g. claims on non-financial sectors, insurance claims, claims on other banks). ⁶ Including claims on other sectors (e.g. claims on other banks). ⁷ In the sub-sectors enterprises (except housing), central, regional and local authorities and banks including intra-sectoral claims and liabilities, which were not counted in computing the totals for the respective sectors. ⁸ Including counterpart of special drawing rights allocated. ⁹ Excluding counterpart in respect of the appreciation of the gold provisionally contributed to the EMU. ¹⁰ Provisional. ¹¹ Discrepancies in the totals are due to rounding. ¹² Source: Deutsche Bundesbank Monthly Report.

Assets	Sector		Non-financial companies				Bank of Japan		Financial sector		General government	Personal	Rest of the world	Total
	Sector		Non-financial companies		Bank of Japan		Financial sector							
	private	public	private	public	private	public	private	public						
1. Gold and SDRs	-	-	-	-	-	-	-	-	-	-	-	-	-	
2. Cash and demand deposits	37,857	1,435	36,421	1,435	2,880	-	-	5,568	1,100	4,422	46,204	-	91,364	
(1) currency	1,727	-	1,713	-	-	-	-	2,689	303	-	15,410	-	17,147	
(2) demand deposits	35,775	1,067	34,708	1,067	2,880	-	-	2,878	719	4,067	30,785	-	70,628	
(3) deposits with Bank of Japan	-	-	-	-	-	-	-	-	1	-	-	-	2,890	
(4) government current deposits	354	-	-	354	-	-	-	-	75	354	-	-	708	
3. Other deposits	62,055	1,027	61,027	1,027	-	-	-	-	-	12,228	244,931	-	319,215	
(1) time deposits	54,246	891	53,354	891	-	-	-	-	-	4,504	221,420	-	280,172	
(2) non-resident and foreign currency	4,943	10	4,933	10	-	-	-	-	-	7,064	23,453	-	35,462	
(3) trust	2,865	126	2,739	126	-	-	-	-	-	639	3,581	-	3,581	
(4) CDs	-	-	-	-	-	-	-	-	-	-	56	-	56	
4. Short-term securities	459	1	457	1	10,483	9,167	1,315	1,315	1,315	759	-	128	11,831	
5. Long-term securities	8,994	198	8,795	198	138,359	8,072	95,218	35,068	35,068	8,191	39,112	11,265	205,923	
(1) long-term government bonds	6,505	6,416	6,416	88	68,493	8,061	10,463	19,968	19,968	2,345	13,887	4,123	95,355	
(2) local government bonds	-	17	-	17	18,213	1,668	16,544	1,668	1,668	985	258	-	20,169	
(3) public corporation bonds	2,358	2,247	2,247	9	26,804	10	16,596	10,197	10,197	2,375	2,509	3,326	33,569	
(4) bank debentures	-	75	-	75	14,397	12,286	2,111	1,895	2,111	1,895	12,480	-	31,813	
(5) industrial bonds	-	8	-	8	9,410	528	8,287	1,123	1,123	528	1,720	-	11,910	
(6) investment trusts	131	-	131	-	1,039	-	1,039	-	-	60	8,258	-	9,490	
(7) foreign currency bonds	-	-	-	-	-	-	-	-	-	-	-	3,814	3,814	
6. Stocks (market value)	50,968	336	50,631	336	46,662	-	46,490	172	172	61	44,855	7,422	149,970	
7. Loans	42	1,415	43	1,415	466,525	3,590	326,226	116,708	116,708	15,353	5,704	-	467,624	
(1) Bank of Japan loans	-	-	-	-	1,790	1,790	-	-	-	-	-	-	1,790	
(2) call money	-	-	-	-	14,425	14,425	-	-	-	-	-	-	14,425	
(3) bills bought and sold	-	-	-	-	4,502	1,800	-	-	-	-	-	-	4,502	
(4) loans by private institutions	-	-	-	-	309,098	-	309,098	-	-	-	5,704	-	314,802	
(5) loans by public institutions	42	1,415	43	1,415	116,708	-	116,708	-	-	15,353	-	-	132,104	
8. Insurance (life)	2,335	2,335	2,335	2,335	-	-	-	-	-	1,912	52,163	-	56,410	
9. Transfers from general government	-	-	-	-	-	-	-	-	-	1,606	-	-	1,606	
10. Accounts payable and receivable	176,442	2,438	174,003	2,438	-	-	-	-	-	-	-	-	177,009	
11. Other financial	22,510	1,001	21,509	1,001	37,548	4,033	29,602	4,466	4,466	61,821	7,962	34,605	164,448	
(1) deposits with trust fund bureau	35	-	35	-	339	-	339	-	-	46,517	-	-	46,552	
(2) government shareholding	86	49	286	49	38	-	38	-	-	6,910	7,494	-	7,336	
(3) liability insurance	3,207	3,207	3,207	3,207	-	-	-	-	-	27	-	-	10,767	
(4) forex reserves excl. gold and SDRs	-	-	-	-	557	-	557	-	-	-	-	1,057	8,849	
(5) direct investment	7,234	-	7,234	-	-	-	-	-	-	294	-	-	4,608	
(6) overseas long-term trade credit	4,312	-	4,312	-	9,289	311	4,872	4,105	4,105	67	-	370	11,262	
(7) external loans	1,305	-	1,305	-	1,289	-	1,289	-	-	67	468	-	7,243	
(8) external security investments	3,819	-	3,819	-	17,888	-	17,888	-	-	1,348	-	-	52,134	
(9) other external	1,358	951	1,358	951	3,183	3,721	-	-	-	6,618	-	-	33,177	
(10) other	951	-	-	-	3,183	-	-	-	-	-	-	-	10,756	
Total	361,666	8,311	354,820	8,311	682,459	24,863	503,107	158,886	158,886	106,357	441,500	53,422	1,645,405	

Source: Report on National Accounts (Economic Planning Agency), 1986.



Assets	Sector	Non-financial companies		Financial sector			General government	Personal	Rest of the world	Total
		private	public	Bank of Japan		public				
				private	public					
1. Gold and SDRs		-	-	-	-	-	-	788	788	
2. Cash and demand deposits		-	-	91,364	-	23,805	-	-	115,169	
(1) currency		-	-	17,147	-	20,140	-	-	37,287	
(2) demand deposits		-	-	70,638	-	-	-	-	70,638	
(3) deposits with Bank of Japan		-	-	2,880	-	784	-	-	3,664	
(4) government current deposits		-	-	708	-	-	-	-	708	
3. Other deposits		-	-	332,941	-	253,944	-	-	586,885	
(1) time deposits		-	-	280,172	-	202,974	-	-	483,146	
(2) non-resident and foreign currency		-	-	12,826	-	12,826	-	-	25,652	
(3) trust		-	-	38,462	-	35,462	-	-	73,924	
(4) CDs		-	-	3,581	-	-	-	-	3,581	
4. Short-term securities		1,404	1,494	-	-	-	10,337	-	11,831	
5. Long-term securities		44,231	29,583	49,665	-	-	113,265	-	207,163	
(1) long-term government bonds		-	-	-	-	-	96,595	-	96,595	
(2) local government bonds		3,877	3,877	-	-	-	16,292	-	20,169	
(3) public corporation bonds		25,002	24,997	8,104	-	8,104	261	-	33,369	
(4) bank debentures		-	-	31,813	-	-	-	-	31,813	
(5) industrial bonds		11,910	475	9,490	-	-	-	-	11,910	
(6) investment trusts		3,441	232	257	-	-	-	-	3,698	
(7) foreign currency bonds		20,029	19,958	2,927	-	-	116	-	22,957	
6. Stocks (book value)		268,463	70	2,927	-	-	-	-	271,460	
7. Loans		230,748	39,130	21,432	-	-	41,428	-	272,608	
(1) Bank of Japan loans		-	-	1,790	-	-	-	-	1,790	
(2) call money		-	-	14,425	-	4,502	-	-	18,927	
(3) bills bought and sold		-	-	4,502	-	-	-	-	4,502	
(4) loans by private institutions		206,048	6,218	714	-	-	3,098	-	216,068	
(5) loans by public institutions		56,196	32,911	-	-	-	38,330	-	94,426	
8. Insurance (life)		-	-	56,410	-	36,780	-	-	93,190	
9. Transfers from general government		12	12	1,594	-	-	-	-	1,606	
10. Accounts payable and receivable		156,581	156,569	-	-	-	143	-	313,150	
11. Other financial		93,149	4,087	120,022	-	1,057	2,381	60,937	277,607	
(1) deposits with trust fund bureau		-	-	46,552	-	-	-	-	46,552	
(2) government shareholding		4,195	4,039	1,810	-	200	163	1,050	10,207	
(3) liability insurance		-	-	10,762	-	-	-	-	10,762	
(4) forex reserves excl. gold and SDRs		-	-	-	-	-	-	-	-	
(5) direct investment		1,057	1,057	-	-	-	-	5,455	7,569	
(6) overseas long-term trade credit		-	-	-	-	-	-	7,791	7,791	
(7) external loans		369	321	28	-	-	-	4,606	5,324	
(8) external security investments		4,108	4,108	-	-	-	-	10,832	15,040	
(9) other external		83,450	83,450	38,360	-	875	731	11,243	103,289	
(10) other		-	-	32,526	-	181	1,482	19,956	53,144	
Total		563,982	74,390	675,462	24,863	503,107	167,556	61,725	1,645,405	
Net financial wealth		-202,296	-66,078	6,997	-	-	-61,198	-8,403	-275,974	

Source: Report on National Accounts (Economic Planning Agency), 1986.

	Households	Non-corporate and farms	Non-financial corporate business	US government	State and local government	Foreign	Monetary authority	Commercial banks	Non-bank financial	Agencies and mortgage pools
Gold, SDR, forex, treasury currency, net IMF position (\$)	+316	+20	+72	+17 -16 +65 (1)	+3	59 -17	+35	-364 /-370 /+6	+40	+1
Checkable deposits and currency	+1,324			+1	+5		-143	-612 /-729	-718 /+11	
Small time and savings deposits	+137		+60		+66	+35		-308	+10	
Large time deposits	+207		+27		+17			+76 /-66	+10 /-207	+15
Money market mutual funds			+12			-36	+149	+41 /-10	+24	
Security repurchases (\$)	+277		+23	-991	+99			+212	+461	
Foreign deposits			+21		+59	+153	+139	+134	+256	
US government securities	+226		+2	-991	+40	-3 (2)	+10	+78	+205	
- Treasury issues	+51									
- Agency issues										
Tax-exempt securities	+103		-71 /+4 /-75		-316 /+9 /-325			+159	+125	
Corporate and foreign bonds	+192 /-29		+46							
Corporate equities (including mutual funds)	+1,275		-406	(3)		-19 /+11 /-60	+77	-16 /+9 /-26 (3)	+395 /+457 /-62 (3)	
Mortgages	-942 /+192 /-1,135	-443	-77	+49 /+50 /-1	+46			+300	+761 /+763	+305
Consumer credit	-442	+24	+33							
Bank loans n.e.c.	-34	-62	-383			-29	+2	+191	+194	
Open market paper	+15	-10	-6			-40 /+35 /-75		+539	-30	+1
			+42 /-48					-17 /+18 /-35	+55 /+130 /-75	+1

	Households	Non-corporate and farms	Non-financial corporate business	US government	State and local government	Foreign	Monetary authority	Commercial banks	Non-bank financial	Agents and mortgage pools
Other loans	-73	-91	-98	+154	-10	-62			+83	+96
- finance houses		-10	-86						+96	
- US government	-13	-53	-11	+152	-10	-62			-66	-5
- credit agencies	-6	-29		+1					+53	+102
- policy loans	-34							+26	-13	
Security credit	/+29								/-38	
	/+16								/+24	
Trade credit (5)	-32	-13	+110	+4	-20	+11			+20	
		/+27	/+486	/+22	/+24	/+24				
		/-39	/-376	/-18		/-13				
Profit taxes payable (5)	+70	+49	+206	+12	+14	-132	-2	-1	-2	
Miscellaneous claims (5)	/-16		+328			/+123	/+4	/+106	-198	-32
	/+85		/-122			/-255	/-6	/-108	/+130	/-39
			+105			-105			/-327	/+7
- direct investment			/+227			/+122				
			/-122			/-227				
Life insurance reserves	+233			-10					-223	
Pension fund reserves	+1,123			-98					-1,025	
Interbank claims										
Total financial assets	+5,377	+93	+1,086	+265	+259	+491	+4	+65	+3,103	+434
Total liabilities	-1,779	-618	-1,388	-1,134	-354	-548	-194	-1,519	-2,975	-428
			(4)				(4)	(4)	(4)	

Total assets: \$12,914 billion.
 Total liabilities: \$12,838 billion, including corporate equity.

- Notes:
 (1) Of which (gross asset and liability holding of sector).
 (2) Including mail float.
 (3) By residual.
 (4) Own equity issues are not shown separately for these sectors. They sum to \$1,721 billion.
 (5) Excluding corporate equity.
 Holdings do not sum exactly to zero.
 Source: Flow-of-funds accounts, assets and liabilities outstanding (Federal Reserve System).

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