Bank of England

Discussion Papers

Technical Series

No 43

The financial sector of the
Bank of England model

by

Phil Burns

September 1991

No 43

The financial sector of the Bank of England model

by

Phil Burns

September 1991

The object of this Technical Series of Discussion Papers is to give wider circulation to econometric research work in the Bank's Economics Division, and to invite comment upon it; any comments should be sent to the author at the address given below.

The views expressed in this paper are those of the author and do not necessarily represent those of the Bank of England. This paper draws on the work of many people in the Economics Division of the Bank of England. The author is particularly grateful to Francis Breedon, Roger Clews, Keith Cuthbertson, Spencer Dale, Paul Hammett, Brian Henry, Glenn Hoggarth, John Lomax, Helen MacFarlane, Ian Michael, Bahram Pesaran, Hugh Pill, Mahmood Pradhan and Stephen Wright. He would also like to thank Emma Bryan, Chris Case and Jennifer Rumbold for their research assistance and to the Bulletin Group for editorial assistance in producing this paper.

Issued by the Economics Division, Bank of England, London, EC2R 8AH to which requests for individual copies and applications for mailing list facilities should be addressed; envelopes should be marked for the attention of the Bulletin Group. *(Telephone: 071-601-4030)*

ISBN 1 85730 020 3
ISSN 0263-6123

CONTENTS

1 INTRODUCTION

This paper provides an account of the final stages of a project on the estimation of a flow of funds (FOF) model, the bulk of which was undertaken in the Economics Division by Barr and Cuthbertson (hereafter referred to as B-C. See Bank of England Technical Papers Nos 21,22,25,30,31,34). This last stage details the revisions to the original model which B-C estimated, in order to integrate it into the Bank's macro-economic model. To achieve this integration a number of changes were needed. First, it was decided for operational reasons to use a smaller FOF matrix than B-C originally estimated. Following on from the first, a number of changes to the data were made compared with that used originally. Third, the opportunity was taken to update and re-estimate some of the equations. Details of the changes are contained in Section 2, and the new estimation results are given in Section 3. Simulations on the new financial model are reported in section 4.

As in related work, (eg Keating (1985)) the present model is based on an integrated model of sectoral financial behaviour using a coherent theory of the determinants of sectoral portfolio behaviour. In the present work, the underlying model is taken to be the Almost Ideal Demand System (AIDS): a system which has strong theoretical attractions in that it embodies far fewer a-priori restrictions within its structure than other demand models. Whereas the results derived from other models are often influenced as much by the precise functional form used as by the data, the AIDS model is general enough to be a first order approximation to any set of demand functions even in the absence of utility maximising behaviour. This allows the theoretical properties of demand functions to be tested through the parameters within a maintained hypothesis.

Where possible, in estimating the model appropriate cross-equation restrictions have been applied. In other cases, however, this system requirement has been tempered by a need to estimate equations with acceptable statistical properties, and a number of equations have, in consequence, been estimated using single equation methods. Also, the model presented here has not used rational, or indeed any forward looking, expectations in formulating captial gains terms. This reflects a conscious decision not to invoke consistent - model based - expectations formation in the FOF model at this stage. In other words, implicitly expectations of future values of variables are represented by lagged values in an unrestricted way in the model presented here. The equations reported in the paper are estimated using the two-step procedure popularised by Engle and Granger (1987), and in the results section considerable attention will be paid to the integration and co-integrating properties of the variables used in the model.

The model extends to 6 sectors; Personal, M4 Institutions, Other OFIS (OOFIS), Public, Industrial and Commercial Companies (ICCs), and the Overseas Sector. The model then comprises a set of asset demands for each sector. Further detail on the composition of the sectors, and the reason for this sectoral breakdown is given in the next section, before proceeding to describe the model and the results.

2 THE FOF MATRIX AND THE DATA

The FOF matrix estimated in this paper has been devised to provide a detailed account of sectoral portfolio behaviour, and to accommodate the major developments in institutional behaviour over the last two decades. The main example of the latter is the emphasis in the model on M4 institutions and the regrouping of the Other Financial Institutions Sector (now called the OOFIS). Essentially this reflects a changing emphasis from an M3 to M4 basis. Hence building societies have been moved into what was previously the banking sector and is now the M4 institutions. The reduced Other Financial Institutions (ie excluding Building Societies) is the OOFIS, and comprises UK insurance companies, pension funds, unit and investment trusts and finance houses.

The data used in estimating the flow-of-funds matrix have been constructed using the data published in the Bank of England Quarterly Bulletin. B-C used unadjusted data but, in common with the data used in the rest of the model, the data used here are quarterly calendar-year seasonally-adjusted. The sample period varies between sectors, depending upon the availability of certain series. M4 lending to ICCs, for example, is 1968 I - 1989 I, but for persons a shorter sample only was available (1975 III-1989 I).

The data construction is described in detail in appendix 1. There is a significant degree of aggregation, especially in the financing of the PSBR, where all government debt other than gilts is included in the short debt category. There is also a large miscellaneous identified transactions category which includes all financial flows other than LAPF receipts, direct and portfolio investment, public sector finance and sterling and foreign currency transactions with M4 Institutions. Table 1 presents the new FOF matrix.

TABLE 1: FLOW OF FUNDS MATRIX

Item		Public Sector	O'seas Sector	Personal Sector	ICCs	M4 Inst'tions	Other OFIs	Unallo-cated
Financial balance (CYSA) (surplus +, deficit -)	1	FG	FO	FJ	FFI	FFB	FFV*	RESE
FINANCIAL TRANSACTIONS (receipts -, payments +)								
Life assurance and pension fund receipts	2			LVJ			LVV*	
Outward direct investment	3.1		ODIO*		ODII			
Inward direct investment	3.2		IDIO		IDII*			
Portfolio (capital issues) (investment)	4	IPG	IPO	IPJ*	CPII IPI	IPB	CPIV IPV	
Public finance External : long term	5.1	BGO*	BGSO					
: other	5.2	CFG*	CFO					
Domestic : long term	6	BLGG**		BLGJ**	BLGI	LBG*	BLGV	
: other				BSGJ	BSGI		BSGV	
Misc identified transactions	7	MTG	MTO	MTJ	MTI**	MTM	MTV*	
Overseas deposits with M4 institutions (net): £	8.1		D£BO			D£BB*		
: currency	8.2		DSBO			DSBB*		
Lending for house purchase	9			LHPJ*		LHPM	LHPV	
M4 inst non-housing domestic lending : £	10.1			LDJ	LDI	LDB*	LDV	
: currency	10.2			LDSJ	LDSI	LDSB*	LDSV	
M4 inst domestic deposits : £	11.1			DBJ	DBI	DBB*	DBV	
: currency	11.2			DB$J	DB$I	BD$B*	DB$V	
Balancing items	12	RESG	RESO	RESJ	RESI	RESB	RESV*	RESE

* Row residual
** Column residual

The final issue that needs to be addressed is the construction of the stock variables. Following Barr, Cuthbertson and Griffin (1989) it was decided to construct stock series from the flow data to ensure stock-flow consistency, a property which much of the published stock and flow data does not possess. The reasons are outlined in Barr et al. In brief it is because asset classifications published in the FOF matrix and the stock tables do not always match, the quality of the published stock data does not seem to be markedly superior or inferior to the flow data, the FOF matrix is consistent with the real side accounting input of the Net Acquisition of Financial Assets (NAFA) and the published stock figures do not always sum to zero across sectors.

The one aspect in which we differ from Barr, Cuthbertson and Griffin is the revaluation formula. They used a formula which revalues half of the current period flow:-

$$A_t = (P_t/P_{t-1})[A_{t-1} + F_t/2] + F_t/2$$

whereas we use:-

$$A_t = (P/P_{t-1})^*A_{t-1} + F_t$$

where

A_t = nominal holdings of asset at end of time period t

F_t = nominal flow into the asset between end of time period t-1 and end of time period t.

(Note that for capital certain assets $p_t = p_{t-1} = ...= p_{t-n} = 1$ and both formulae are equivalent.)

The reason for the alternative formula is simply one of reducing the simultaneity of the system in order to improve computational efficiency. In the system of demand equations in the overseas and OOFIs sectors, a wealth term defined in the data as the sum of the stocks of the assets in that system is an explanatory variable. Given the revaluation formula used, and that the column of the matrix always balances, it can be shown that the wealth term can be expressed as:-

$$W = \Sigma A_{i,t-1} + FB - X$$

where FB is the financial balance of the sector and X are the other flows in the sector not included in the demand system, all of which are determined outside the system. If the assets were revalued according to the Barr-Cuthbertson rule then variables determined within the system would enter into the wealth equation which would reduce computational efficiency.

It should be noted that since the wealth term is derived from the rest of the column the accounting identity of the column is automatically satisfied and consequently the need for an explicit column residual does not arise - the demand system is itself the column residual.

3 THE MODEL AND ITS ESTIMATION

In this section we first describe the approach taken to estimate the FOF model. In part A the estimation of the asset demand equations, based upon the AIDS model, is described. Also included is a description of the other asset demand functions using a single equation methodology. Both the equations which form the demand systems and the single equations have been estimated using the two step procedure. Then, in part B a short account of auxilliary equations for interest rates and asset prices is provided. Until now share prices have been determined exogenously in the Bank model. This meant that an important link - that from share prices to wealth to consumption - was omitted in simulation exercises. Consequently it is desirable in itself to determine share prices endogenously, especially since the share price is now more important within the new financial model itself. In addition a number of equations for interest rates and asset price equations were specified since these variables are used as explanatory variables in some asset demand equations.

A Modelling Asset Demand Systems

(i) The Theoretical Model

Essentially the underlying theory approaches the demand for assets using neo-classical demand theory rather than considering the 'motives' for holding assets. Transactions, precautionary, and mean-variance models (ie 'motives' models) suffer in that they are not applicable to a broad range of assets across a number of sectors. On the other hand, by using a general model applied to all assets in a representative agent's portfolio, the interdependence of asset demands on other asset demands is explicitly recognised. This interdependence derives from two conditions. The first is that a number of accounting identities should be satisfied (Brainard and Tobin, 1968). However, whilst the minimum condition of adding-up may be met, the long-run asset demands can be somewhat ad-hoc and not based on a choice theoretic model. Therefore the second condition relates to the choice of a theoretical model. Such a model, by allowing tests of the basic axioms of rational choice, clearly goes beyond the accounting requirement that adding up provides, and becomes rooted in a framework which emphasises the importance of homogenous asset demands and symmetric price responses across the demand system. The model used to estimate the asset demands is the Almost Ideal Demand System (AIDS) of Deaton and Muellbauer (1980). The AIDS model embodies far fewer a-priori restrictions within its structure than other demand models. Whereas the results derived from other models are often influenced as much by the precise functional form used as by the data, the AIDS model is general enough to be a first order approximation to any set of demand functions. This allows the theoretical properties of demand functions to be tested through the parameters within a maintained hypothesis. The derivation of the AIDS equation applied in this paper is outlined by Barr and Cuthbertson (1989) so there is little point in repeating it here. The resultant AIDS equation specify the asset shares as functions of real asset prices and real wealth:-

$$s_i = \alpha_i + \Sigma_j \gamma_{ij} \ln p^{\tau}_{j\,t} + \beta_i \ln(W^{\tau}/P^{*\tau})_t \qquad 1$$

$s_i = a_{it}/W$
a_{it}=nominal holdings of the ith asset
W is nominal wealth

The superscript ^{r} denotes a real variable so that :-
$W^r = (W/Z)_t$,

$\ln P^{*r}_t = \Sigma_i s_i \ln p^r_{it} = \ln P^*_t + g_{zt}$,

$\ln P^*_t = \Sigma_i s_i \ln p_{it}$,

$\ln p^r_{jt} = \ln((1+r_{jt})(1-g_{zt}))^{-1} = \ln(1+r_{jt})^{-1} + g_z = \ln p_{jt} + g_z$ 2

where p_{jt} is the nominal 'price' of the asset j in period t, r_{jt} is the expected proportionate return on asset j between t and t+1, Z_t is the goods price index and g_z is goods price inflation.

We can now re-write the AIDS model as:-

$s_i = \alpha_i + \Sigma_j \gamma_{ij} \ln p_{jt} + (\Sigma_j \gamma_{ij}) g_z + \beta_i (\ln(W/Z)_t - \ln P^* - g_z)$ 3

which becomes:-

$s_i = \alpha_i + \Sigma_j \gamma_{ij} (\ln p_{jt} + g_z) + \beta_i (\ln(W/Z)_t - \ln P^* - g_z)$ 4

Equation (4) is the long-run equation which can be estimated as the first step of Engle and Granger's (1987) two-step procedure. The theoretical properties of demand functions which can be tested on the long-run equations are:-

$\Sigma \alpha_i = 1 \; ; \; \Sigma_i \gamma_{ij} = 0 \; ; \; \Sigma \beta_i = 0$ adding up

$\Sigma_j \gamma_{ij} = 0$ homogeneity

$\gamma_{ij} = \gamma_{ji}$ symmetry

Symmetry and negativity (of the Hicksian demand functions) are direct consequences of the axioms of rational choice. Negativity arises from the concavity of the cost function and implies that the matrix of coefficients k_{ij}:-

$k_{ij} = \gamma_{ij} + \beta_i \beta_j (\ln(W/Z)_t - \ln P^* - g_z) - s_i \delta_{ij} + s_i s_j$

is negative semi-definite (where δ_{ij} is the Kronecker delta).

In the second stage of the two step estimation procedure the full system including the dynamics is estimated. If the long-run equation co-integrates then the residuals from that equation will be stationary. The other variables in the dynamic model should also be stationary. In every case the levels variables are I(1) implying that their first difference may enter into the dynamic solution. Consequently the full dynamic model is :-

$\Delta s_{it} = \Sigma_j \pi_j (s_j - s^*_j)_{-1} + \Sigma_i \sigma_i \Delta x_{it}$ 5

where x_{it} are the variables which enter the long-run solution for asset i and s_j^* is the long-run solution defined above for asset j. Note that the solution is a function of the lagged long-run value for each asset in the system.

To apply the model in practice we need to appeal to the principle of weak separability. If the allocation of an agent's wealth between various assets is determined simultaneously with the size of the wealth that they have to distribute (Tobin 1969) then such a model would be intractable. Therefore we need to make the assumption that the level of wealth be treated as a-prior decision, that is, the decisions determining a sector's wealth are independent of the distribution of wealth between various assets and liabilities.

(ii) The Model in Practice

Within the Flow-of-Funds matrix there are effectively four behavioural sectors since the public sector is generally exogenous and the M4 Institutions sector is largely a row residual, ie, treated as passive. This leaves the overseas, personal, company and OOFIs sectors. Asset demands were modelled as part of a system in the OOFIs and overseas sectors. The liabilites in those sectors continued to be modelled as single equations.

The two systems of asset demand equations were estimated by generalised least squares. First the long-run equations were estimated and cross equation restrictions tested. Then a full dynamic model was specified which included not only the lagged residuals of the single long-run equation in question but also the lagged residuals from the other long-run equations in the system. Simply to include the own lags would mean implicitly accepting the restriction that all assets adjust at the same rate.

The results of estimating the model are reported next, where we present the results for the sectors estimated using system methods first (a), and the single equation results in section (b).

<u>(a) System Results</u>

The OOFIs sector

The five assets modelled in this sector are:-

	Model code			
	Flow	Stock	Asset share	Price
(i) Public sector long-term debt	BLGV	KBLV	WBLV	PBLV
(ii) Public sector short-term debt	BSGV	KBSV	WBSV	PBSV
(iii) Sterling deposits with M4 Institutions	DBV	KDBV	WDBV	PDBV
(iv) Foreign currency deposits with M4 Institutions	DB$V	KD$V	WD$V	PD$V
(v) Portfolio investment	IPV	KIPV	WIPV	PIPV

There are a number of differences concerning the data definitions used by us, and by B-C (1990a). First, we model overseas securities together with domestic securities whereas B-C estimate holdings of domestic and foreign securities separately. There is no variable on the model which splits OOFIs portfolio investment into foreign and domestic components. The data definitions in the Bank model mean that local authority debt is modelled as part of short-term debt take up, not as part of demand for deposits, as in the B-C model. As mentioned earlier, the stock data is constructed differently to that used by B-C, and the data is calendar-year seasonally-adjusted (CYSA).

The new yield and price equations, together with those already on the model, allow us to construct the 'price' variables in the asset demand functions which are combinations of the yield on the asset, and, for capital uncertain assets, the expected capital gain, which is assumed to be a n period backward looking moving average term in the asset price. They are reported in full in appendix 2 of the manual.

The AIDS model is a purely demand-side system and makes no allowance for regime changes such as a greater variety of assets and changes in legislation. The system assumes that any regime shifts are fully reflected in relative prices. However, clearly such an assumption will not hold if markets are less than perfect (especially in the short term as the markets adjust to new equilibria), suggesting that the exclusion of institutional changes/regime shifts such as financial liberalisation, is likely to diminish the ability of the demand system to explain certain movements in OOFIs' portfolio distribution in the 1970s and 80s.

There are two possible solutions to this problem. One solution would be to reduce the sample period such that the number of regime shifts is minimised and largely reflected in relative prices. This, however, is problematic since the selection of an appropriate sample period tends to be quite arbitrary; for example studies have often choosen to estimate from 1980 Q1 (eg Dinenis and Scott 1989) despite the existence of significant liberalisation effects occurring into the mid-1980s and the Government changing from a policy of overfunding in 1984/5 to a policy of sustained buying-in of gilts after 1987. Given that we are estimating a system of equations with upwards of 20 parameters it would clearly be better if the sample period be fairly lengthy.

An alternative method (and that most commonly used) is to explicitly introduce these regime effects into the demand system. The most common approach in the literature has been to proxy the effect of financial liberalisation with a combination of time-trends, for example B-C (1990a) used a combination of two time trends. We chose to employ a single time trend over the whole sample period. The reason is simple if not particularly exciting. Any proxy for financial liberalisation is simply that - a proxy. Even though the process of financial liberalisation is probably non-linear, over a forecast period of only 2-3 years a linear trend is probably as good an approximation as anything else. In addition, a dummy variable (equal to zero up to 1979 Q3 and one thereafter) was used to capture explicitly the abolition of exchange controls in October 1979.

Results

The restrictions of symmetry and homogeneity in the long-run were accepted by the data ($\chi^2(10)=12.1$) and all the restricted long-run equations pass the tests for co-integration. The price variables have plausible signs. Insignificant variables were omitted on the basis of a likelihood ratio test. The Hicksian demand curves implied by the long-run parameter estimates were found to satisfy the negativity constraint by testing the concavity of the cost function. The matrix of elasticities is presented in table 2.

Although the estimated parameters are not very informative in terms of the usual economic concepts (eg elasticities), a number of general features are apparent. The own price effects are well determined and have the expected (negative) sign. The cross price effects are all positive suggesting the assets are substitutes, the only exception to this being the implied complementarity between foreign currency deposits and investment in equities. This latter finding is explicable if it is recognised that IPV includes investment in overseas equities and that OOFIs may hold foreign currency deposits for transaction purposes.

Table 2 reports the implied long-run semi-elasticities with respect to the annual rates of return. The results are not inconsistent with reasonable priors. For example, the own price effects dominate the cross price effects (with the exception of the WD$V equation). Also reported are the long-run semi-elasticities with respect to wealth. The finding that equities, the principal capital uncertain asset, is the most sensitive to changes in wealth suggests that the desired risk exposure of OOFIs' portfolios may increase with wealth - this would not appear to be unreasonable.

Table 2

Long-Run Semi-Elasticities

Equ	RUKG	RLA	RCBR	REU$	DIVR	Wealth
WBLV	**0.93**	-0.41	-0.21	-0.12	-0.19	0.78
WBSV	-2.39	**2.66**	0.0	0.0	-0.27	0.67
WDBV	-1.15	0.0	**1.42**	0.36	-0.63	1.0
WD$V	-1.48	0.0	0.82	**0.34**	0.33	0.66
WIPV	-0.11	-0.03	-0.06	0.01	**0.18**	1.17

The supply-side effects, in the form of the financial liberalisation proxy and the capital controls dummy, are both significant. Given that the abolition of capital controls coincided with the general trend towards greater financial liberalisation, it is unclear exactly what effect each variable is capturing and thus the two supply-side effects should be viewed together. The parameter estimates conform to our priors in that they suggest that financial liberalisation and the abolition of exchange controls induced

OOFIs to move out of Government securities - both short and long - and into overseas assets, equities and, to a lesser extent, M4 deposits. However, it should be remembered that these supply-side variables are at best only crude proxies and clearly it is possible that the movement into equities, for example, captured by the supply-side variables may reflect a general trend movement into equities during the eighties rather than being explicitly driven by financial liberalisation[1] .

The preferred dynamic model, derived from a simple general to specific search, is presented in appendix 2. Given that the dependent variable is the change in the budget shares, the degree of fit achieved by the demand system is surprisingly good. Due to the adding-up condition one of the equations (WD$V) is estimated as the residual from the finance constraint. Furthermore, since the lagged residuals from the long-run equations sum to zero, a singularity problem arises if they all enter the system together. Hence the residuals from the long-run equation for WD$V are not included (the estimation and the derived parameter values should be entirely independent of the choice of equation and lagged residual ommitted).

The full dynamic equations were also found to accept the homogeneity and symmetry restrictions ($\chi^2(10)=11.6$). Prior to testing down, all the error correction terms from each long-run equation feed into the dynamic equations for each variable, but these were deleted by as much as the data would allow so that in all but one of the dynamic equations it is just the 'own' error correction term for that variable that feeds into its dynamic equation. All the coefficients on the error correction terms are negative and lie between 0.2 and 0.3 in absolute terms implying an adjustment period of 3 to 5 quarters back to long-run equilibrium.

Generally the short-run price effects appear plausible. Only the price responses in the foreign currency deposits equation display any evidence of overshooting and only one variable changes its sign between the long and short run.

The results of the diagnostic tests reveal that there is quite significant first order serial correlation which persists even when more dynamics enter the model. Testing down the model to a more parsimonious version did not significantly affect this result.

---

1 Part of this trend movement may have reflected the increasing proportion of policies issued by the LAPFs in the 1980s which offered a real (as opposed to a fixed monetary) return. This served to increase their incentive to hold equities.

Overseas sector

Here we are concerned with modelling a three-asset system. Following B-C (1990b) we first apply the principle of two stage budgeting which allows us to model sterling assets held by the overseas sector, separately from foreign currency assets. These assets are:-

	Model code			
	Flow	Stock	Asset share	Price
(i) Net sterling deposits	D£BO	KD£O	WD£O	PD£O
(ii) Company securities	IPOI	KIPI	WIPI	PIPI
(iii) Public sector debt	BGSO	KBGO	WBGO	PBGO

The main departure from the specification used in the OOFIs model is that there is no financial liberalisation proxy. This is mainly because the smaller model allows us to reduce the sample period to exclude the 1970s from consideration.

The long-run elasticities are reported in table 3. The coefficients have plausible signs - the assets are subsitutes for each other. There is some doubt as to whether the equations for sterling deposits and portfolio investment constitute co-integrating vectors. However, single equations for these variables do not have such a strong theoretical basis, and furthermore they do not perform as well in a statistical sense - we therefore continued to investigate the dynamic system of equations.

Table 3

Long-Run Semi-Elasticities

Equ	RUKG	RCBR	DIVR	Wealth
WBGO	**0.50**	-0.41	-0.10	0.78
WD£O	-0.39	**0.73**	-0.35	0.51
WIPI	-0.06	-0.25	**0.31**	1.50

The full dynamic model is reported in appendix 2 and is the result of a general to specific search on the first differences of the variables. The theoretical restrictions of homogeneity and symmetry are accepted in the short and long run. As in the OOFIs model there is some evidence of overshooting, but there is only one case of a "perverse" short-run effect - the wealth term in the WD£O equation.

(b) Single Equation Results

The largest group of new single equations are those which attempt to estimate M4 deposits and lending on a sectoral basis. In the previous vintage of the model, sterling bank (as opposed to M4) deposits held by the ICCs and OOFIs sectors were determined by identity from the rest of the column of the flow-of-funds matrix, and whilst personal sector holdings was also determined by identity it did result from a behavioural equation for the sector's holdings of gross liquid assets. There were also behavioural equations for persons and ICCs sterling bank borrowing but OFIs bank borrowing was determined by a technical equation. Furthermore, the earlier model did not have a sectoral approach to bank deposits and lending in foreign currency. The change in emphasis to an M4 matrix would have neccesitated the re-estimation of the existing behavioural equations, but it was also decided to try to extend the behavioural content of the financial model by estimating equations for M4 deposits and lending both in sterling and foreign currency in each domestic sector. Deposits held by OOFIs, both in sterling and foreign currency were estimated as part of the asset demand system discussed above. This leaves some ten M4 equations to be estimated.

Sterling M4 Deposits

The equation determining the demand for personal sector M4 deposits (page A2.14) reflects the view that a broad measure of money such as M4 is likely to be held for savings as well as transactions motives. This suggests that the demand for personal sector M4 may be viewed as part of an individual's overall portfolio decision. The estimated equation is therefore a hybrid model that includes terms to capture both the transactions motives for holding money and portfolio behaviour. The transactions variable in the equation is real personal disposable income. Consumers expenditure would be another obvious choice but the results are largely unaffected by the distinction. The variable used to capture portfolio behaviour is gross financial and tangible wealth. It was found that splitting the measure into its component parts does not improve the results.

Also included in the long-run solution are own and competing interest rates. The own rate is the building society share rate (RZSN) and the competing rate is the national savings rate (NSRN). They enter the equation in unrestricted form rather than the usual restricted relative interest rate form. A borrowing rate (RCBR) is also included in the long-run equation since the own rate of return relative to the rate on lending may influence how consumption is financed - through borrowing, or by running down deposits. Homogeneity is imposed on the long-run equation with respect to consumer prices.

The long-run equation constitutes a co-integrating vector on the DF statistic, but not the ADF statistic. However, the lags on the ADF regression are all insignificant implying the DF statistic is the more informative test. The full dynamic model passes a range of diagnostic tests at the 5% level and fits the data reasonably well.

The model underpinning the ICCs deposit equation (page A2.14), and also the ICCs lending equation is the buffer stock model. Firms wish to hold a desired level of

lending and deposits. Deviations from this level may occur as firms use lending and deposits to cushion the effects of shocks to real variables if the cost of adjustment on the real side is large relative to the costs of adjusting holdings of deposits and lending. In the long run the stock of lending or deposits would be a function of competing interest rates and the precautionary/transactions balance.

In practice the precautionary/transactions balance is assumed to be a fixed proportion of some activity variable. Fixed investment by the corporate sector is the variable chosen to proxy activity in the company sector. A problem may arise here if both lending and the running down of deposits finances long-term investment in which case the assumptions regarding the separability of investment decisions and money holdings required by the buffer stock model are violated. A further explanatory variable is ICCs portfolio investment which is used to proxy merger and acquisition activity: the suggestion is that firms borrow to finance takeovers or to raise dividends in order to ward off hostile bids.

The ICCs deposit long-run equation (with homogeneity imposed) marginally passes the co-integration tests. There was found to be no role for interest rates in the equation. The dynamic equation passes a range of diagnostic tests. The error correction term is very small implying a sluggish adjustment to long-run equilibrium.

Sterling M4 Lending

The ICCs lending equation (page A2.12) is based upon the same model as the deposit equation except that in the long-run interest rates are significant. The long-run equation passes the co-integration tests and the short-run equation passes a range of diagnostic tests. As in the deposits equation the coefficient on the error correction term implies a very slow adjustment back to long-run equilibrium.

The lending equation for persons (page A2.12) is similar in structure to the deposits equation. The long-run equation marginally passes the DF test for a co-integrating vector. A dynamic equation resulted from a general to specific search which passes the usual tests. The equation determining M4 borrowing by OOFIs (page A2.12) is also encouraging. The DF test on the long-run equation is passed (the equation fails on the ADF test but the lags are insignificant). The long-run includes relative interest rates, inflation and a gross real wealth term. The dynamic equation is relatively parsimonious including as it does just two lagged dependent variables.

Foreign currency M4 lending and deposits

The foreign currency lending and deposit equations are simple equations with the flow as the dependent variable. Constructing stocks to ensure stock-flow consistency may create problems since the revaluation formula would be somewhat arbitrary. The flows themselves are mainly I(0) which precludes estimation by co-integration techniques. Given that the flows are relatively small we did not investigate these matters further.

Portfolio investment

This category has also undergone substantial changes. The exogenous input to this row of the flow-of-funds matrix is less than in previous versions of the model. Inward portfolio investment from overseas and OOFIs portfolio investment are included in their respective sectoral demand systems. ICCs portfolio investment and capital issues, and OOFIs capital issues are now represented on the model by behavioural equations and are discussed below. This leaves only public sector, M4 sector and outward portfolio investment to be exogenously set.

The ICCs portfolio investment equation (IPI, page A2.8) attempts to explain the determinants of merger and acquisition activity. Empirical and theoretical work to date has identified two broad sets of influences that have partly (though by no means completely) determined such movements - share prices and cash flow. Theory suggests that share prices could have two contradictory effects. One is that the lower the market valuation of a firm relative to the replacement costs of its assets, the greater the incentive for other agents to acquire that firm rather than invest in a new facility. Empirical evidence does not however bear this out, possibly because the Tobin's 'q' explanation is subject to the qualification that the capital stock is measured accurately and includes intangible assets such as brandnames. The theoretical reasons why M&A activity is positively related to share prices tend to rely on assumptions within the model, or additional factors. For example Gort (1969) argues that when stock prices are rising prospective purchasers will tend to be more optimistic about the future of the company than its current owners. King's (1986) trapped equity model relies just as much on the different tax treatment between the incorporated and unincorporated sectors as on share prices.

An additional determinant of M&A activity is the level of cashflow, which not only determines the quantity of internal funds available for takeover activity but also influences the cost and level of finance which external sources are willing to provide.

The estimated equation is reported in appendix 2. The dependent variable, IPI, is weighted by the net capital stock at replacement cost. The equation is not estimated using co-integration techniques since the dependent variable is I(0). In the long run movements in merger activity were found to depend positively on profits and on share prices whilst in the short run changes in the nominal post tax long interest rate exercise some damping influence. The equation passes an array of diagnostic tests with the exception of the Bera-Jacque test for normality of residuals. This is unsurprising given the 'lumpy' nature of the series. Using dummy variables to overcome the normality problem diminishes the behavioural content of the model.

Also estimated were equations for ICCs and OOFIs capital issues (pages A2.8 and A2.9). A-priori, one would expect share issues to be positively related to share prices and the level of output and negatively related to cashflow. The influence of share prices could stem from a reduced form linkage between M&A activity and capital issues. A more structural explanation would be that those inside the firm have superior knowledge to investors, and consequently would only issue equity when the shares are overvalued.

Capital issues are also likely to be related to scale flows so we might expect ICCs to have a higher demand for capital issues the higher the level of output, whilst for OOFIs capital issues could be expected to reflect the expansion of the asset side of their balance sheets. Cashflow is likely to be negatively related to share issues since it seems likely that high profit flows reduce the need for external finance, whilst distress issues may emerge as profitability falls.

Empirically, these priors appear to be satisfied (note that the sign convention in the flow of funds matrix means that capital issues enter the matrix with a negative sign. Consequently, a RHS variable with a negative coefficient is positively related to capital issues). The equations are estimated using the Granger-Engle two step procedure. In both cases the long-run equations constitute co-integrating vectors and the dynamic equations pass the misspecification tests.

B Modelling interest rates and asset prices

None of the existing interest rate equations have been amended since the last published record of the Bank model (Breedon, Murfin and Wright, 1990) but an equation has been estimated for a new interest rate variable and, more importantly, share prices are now determined by equation rather than set exogenously.

The new interest rate on the model is the National Savings rate which enters the equation determining the flow of M4 deposits held by the personal sector. Like the other short-term interest rates on the model, it is a simple equation conditioned on the local authority rate.

A more complex model is provided by the new share price equation (SPUK) which was estimated using the Engle and Granger (1987) two step procedure. In a recent paper, Campbell and Shiller (1987) have shown that if the present value/efficient market model is valid then share prices and dividends should be cointegrated, with a unit coefficient on dividends. However, it is likely that this restriction will not be accepted on Bank model variables for two reasons. First, the share price used is the FT 500 Industrial Share Price index whilst the dividend variable used - GDIV - is the dividend payments of all ICCs. Second, strictly speaking it is dividends per share that should have a unit coefficient with share prices. This means that GDIV overestimates the true dividend series since in general it will inflated by dividend payments on a growing number of shares. An additional theoretical reason why the restriction may not hold is that the present value/efficient markets model may not be valid in its strict form. Share prices may be characterised by 'rational' bubbles and as such may deviate from their fundamental values for long periods. Hence, it might be expected that the long-run coefficient on GDIV would turn out to be significantly different from unity. The results tend to confirm this.

There was also found to be a role for the interest rate in the long-run solution, but tax variables were ignored by assuming that the tax rate on equity is equal to that on interest bearing assets.

Unlike the long run there is little theory to suggest what ought to enter the dynamics. After a general to simple search on the dynamics the preferred equation is:-

$$\Delta\ln(SPUK) = \underset{(2.3)}{0.02} + \underset{(5.0)}{0.26*CR87} + \underset{(7.7)}{0.51*CR74} + \underset{(2.3)}{0.16*\Delta\ln(SPUK_{-1})} + \underset{(2.5)}{0.16*\Delta\ln(SPUK_{-3})}$$

$$\underset{(2.4)}{-0.47*\Delta\ln(EER_{-1})} - \underset{(3.0)}{0.08*RES_{-1}}$$

where $RES = \ln(SPUK) - (-1.90 + 0.86*\ln(GDIV) - 3.20*\ln(1 + RCBR/100)$

$DF = -4.8$ $ADF = -3.04$ $R^2 = 0.58$ S.E. $= 0.063$ $LM(4) = 5.05$ $BP(1) = 0.77$

The dummy variables CR74 and CR87 are used to pick up the stock market crashes of 1974 and 1987. Without these variables the equation fails the test for normality of residuals. Since theory allows for the existence of bubbles in asset prices (whilst not suggesting how to predict them) these dummies are not without theoretical justification. The inclusion of lagged dependent variables tends to indicate that expectations of future capital gains are formed adaptively. The effective exchange rate enters with a negative coefficient implying that a fall in the exchange rate will increase share prices by increasing the expectations of future profits and dividends as a result of increased competitiveness and a higher price level. The lagged residuals from the long-run equation enters with a very small coefficient in absolute terms implying a lengthy readjustment back to the long-run path following a shock.

Two technical equations are worthy of mention. The dividend yield (DIVR) is related to SPUK and GDIV, and the gilt price (PGLT) is linked to the long-term rate of interest (RUKG) and lagged PGLT.

These new yield and price equations, along with those already on the model, feed into the asset demand equations.

4. SIMULATIONS

A number of simulations have been run to assess both the impact of the new financial model on the properties of the model as a whole and to observe the properties of the financial model itself. The results are reported in full in appendix 3. The feedback from the financial to the real side in the Bank model is quite weak. The financial balances of each sector are determined on the real side of the model and are only affected by the allocation of financial assets via the impact of interest receipts and payments from those assets and liabilities on sectoral income and expenditure. The endogenisation of the share price on the model does however influence activity through the revaluation effects on personal wealth which affect consumption. Furthermore, mortgage lending directly affects house prices and durable consumption in the model.

An important result which applies to all the simulations is that M4 net non deposit liabilities do not change by more than a negligible amount. If they did move substantially it would imply a significant assymetry between the growth of both sides of the M4 Institutions' balance sheets in response to a given shock.

A permanent increase in the share price of 5% (pages A3.1,2) can be expected to raise the level of persons net financial wealth by some 4% after three years which increases the level of output by 0.2% after three years with a negligible effect on prices. There is no significant effect on the exchange rate. Unsurprisingly, the increase in the share price causes both the OOFIs and the overseas sectors to hold more of their gross asset portfolios in equities and less in gilts and deposits. However, the positive wealth effects cause holdings of deposits by OOFIs to rise even though their share in the portfolio has fallen. Total private sector net recourse to M4 institutions is broadly constant over the simulation period.

A 5% appreciation in sterling (page A3.3) causes the share price to fall by 2.4% after twelve quarters. There are two broad assets with which the domestic equity market must compete - the domestic bond market and the foreign equity and bond markets. Rates of return across these markets must be equalised over time. Therefore a rise in the exchange rate will tend to lower the price of domestic equities. Added to this there is the real side affect that an appreciation will tend to lower profitability in the traded goods sector.

In the first year of the simulation both the OOFIs and overseas sectors move away from equities into long term government debt owing to both wealth effects (gilts are inferior goods) and substitution effects. In the last six quarters wealth grows picks up which stimulates a move back towards equities. Persons' net recourse to the M4 institutions increases significantly, mainly owing to a rise in the demand for loans for house purchase. This is offset by less pronounced reductions in net recourse by the other sectors.

In the interest rate simulations (pages A3.4-A3.7) the output and demand response to higher interest rates is more negative than in the last published record of the Bank model because of the influence of share prices on consumption. In the exchange rate free simulation a rise of 1% in all interest rates lowers the share price level by 4.5% after twelve quarters. If the exchange rate is held to base the response is slightly less negative.

Holdings of deposits and take-up of loans are now far more interest rate sensitive on the model as a result of the new sectoral equations for M4 lending and deposits. A 1% rise in all rates with the exchange rate free would lower the level of M4 by 4% after twelve quarters with persons and OOFIs deposit holdings most affected. There would be some increase in overall net recourse to the M4 Institutions by the private sector, mainly by the personal sector. As far as asset allocation in the OOFIs and overseas portfolios is concerned there are a number of influences at work. The rise in interest rates will increase the demand for capital certain assets such as deposits and reduce the demand for equities and gilts. There is also a wealth effect which reduces the attractiveness of equities but increases demand for gilts. In both the OOFIs and

overseas sectors for the first two years asset shares of deposits, both domestic and foreign currency, and short-term government debt increases whilst the proportion of the portfolio allocated to gilts and equities falls relative to base. After that OOFIs and overseas agents increase the share of their portfolios allocated to gilts as their wealth continues to fall relative to base.

Since M4 lending and deposit growth is determined by short rates, a rise of 1% solely in short rates leads to much the same results as the all interest rate rise. There are some changes in the asset allocations in the OOFIs and overseas portfoilios, mainly due to the smaller wealth effects such a rise has compared to the case when all rates increase.

We can analyse these wealth effects on the asset portfolios of the overseas and OOFIs sectors by certain real shocks. An exogenous increase of 5% in world trade (pages A3.8,9) is a shock that affects the UK current and capital accounts. The current balance improves by roughly £6bn in the first year of the simulation and £5bn in the second and third years. This has a deleterious effect on the wealth the overseas sector distributes between the three assets in its gross asset portfoilio. After twelve quarters the level of this wealth is 8%-9% lower than base. This causes overseas agents to readjust their portfolios towards the 'inferior goods' - gilts and deposits - and away from equities.

A 10% rise in persons' contributions to pension funds (pages A3.10,11) has fairly muted, and expected impact on the portfolios of the OOFIs. There is a straight trade-off between the share of the portfolio allocated to gilts and equities.

5 CONCLUSION

In this paper we have described the changes to the equations underpinning the flow of funds matrix. A full model now explains the holdings of assets in the OOFIs and overseas sectors whilst in the other sectors single equations have been estimated for portfolio investment and M4 deposits and lending. The results so far have been encouraging, especially in the demand systems where the long-run parameters are intuitively plausible and the short-run dynamics have sensible properties. The simulations yield the expected results in response to a number of shocks.

A number of issues remain however. First, a large part of the matrix is determined by ad-hoc single equations, and an extension of the systems approach appears desirable. Second, the financial sector has very little feedback to the real side of the model. This could be achieved by the inversion of the asset demand equations to derive asset prices, as in the LBS model, except that such a model may become intractable. If the model, however refined, does not feed back to the real side, its merit must be assesed on the basis of the value of the forecasts for financial flows derived from the model.

REFERENCES

Barr D.G. and Cuthbertson K. (1989) "Modelling the flow of funds" Bank of England Technical paper No.21

Barr D.G. and Cuthbertson K. (1990a) "A data based simulation model of the financial asset decisions of UK 'other' financial intermediaries" Bank of England Technical paper No.30

Barr D.G. and Cuthbertson K. (1990b) "The demand for financial assets held in the UK by the overseas sector:an application of two staged budgeting" Bank of England Technical paper No.31

Barr D.G., Cuthbertson K. and Griffin R .M. (1989) "Construction of a consistent matrix for modelling the flow of funds" Bank of England Internal mimeo

Brainard W.C. and Tobin J. (1968) "Econometric Models: Their Problems and Usefulness:Pitfalls in Financial Model Building" American Economic Review, 65, 367-83

Breedon F.J., Murfin A.J. and Wright S.H. (1989) "The Bank of England Model 1989:recent developments and simulation properties" Bank of England Technical Paper No.29

Campbell J.Y. and Shiller R.J (1987) "Cointegration and tests of present value models" Journal of Political Economy, 95 1062-1088

Deaton A. and Muellbauer J. (1980) "An Almost Ideal Demand System" American Economic Review, 70, 312-326

Dinenis E. and Scott A (1989) "Portfolio Selection and the Investment Performance of UK Pension Funds" LBS Discussion Paper No.15-89

Engel R.F. and Granger C.W.J. (1987) "Co-integration and Error Correction: Representation, Estimation and Testing" Econometrica, 55, 251-276

Gort M. (1969) "An Economic disturbance theory of mergers" Quarterly Journal of Economics 83, 624-642

Keating G. (1985) "The Financial Sector of the London Business School Model" in D. Currie (ed) Advances in Monetary Economics, London, Croom-Helm

King M.A. (1986) "Takeover activity in the U.K." in J.A. Fairburn and J.A. Kay (ed) Mergers and Merger Policy, Oxford University Press

Tobin J. (1969) "A General Equilibrium Approach to Monetary Theory" Journal of Money, Credit and Banking, 1, 15-29

APPENDIX 1: DATA CONSTRUCTION

This appendix describes the data sources for the elements of the flow-of-funds matrix. The non-model codes quoted in line 1 are CSO codes. The codes in the construction of the variables on the other lines refer to variables in the flow-of-funds matrix in the BEQB where:-

pe is the persons column
ic is the industrial and commercial companies column
no is the OOFIs column
bk is the banking column
bs is the building societies column
pb is the public sector column

and the number following each code refers to the line of the matrix from which the variable is taken. For example pe6 refers to line 6 of the personal sector - persons holdings of notes and coins.

Line One: Financial Balances

fg=aavd+aavc
fo=aavi
fj=aavh
ffi=aavg
ffb=-(fg+fo+fj+ffi+ffv+rese)
ffv=aavf
rese=djds

Line Two: Pension Fund Receipts

lvj=pe33
lvv=-lvj

Line Three: Direct Investment

odii=-os35+ic32
odio=-odii
idio=os36+31213
idii=-idio

Line Four: Portfolio Investment

cpii=ic31_1
cpiv=no31_1
ipg=pb31+pb32
ipo=os31-o31213+os32+ic32+bk32+bs32
ipi=ic31_2+o31213
ipb=bk31+bs31
ipv=no30+no31_2+no32
ipj=-(cpii+cpiv+ipg+ipo+ipi+ipb+ipv)

Line Five: Public External Finance

bgso=os8
bgo=-bgso
cfo=os6+os7+os14_2+os15+os16+os17+os18+os19+os20
cfg=-cfo

Line Six: Public Domestic Finance

blgj=pe8
blgi=ic8
blgv=no8
bsgj=pe6+pe9+pe10+pe12+pe14_2+pe19+pe20
bsgi=ic6+ic7+ic9+ic10+ic12+ic13+ic14_1+ic14_2+ic19+ic20
lbg=bk6+bs6+bk7+bs7+bk8+bs8+bs9+bk10+bs10+bk11+bk12+bs12+bk14_1+bs14_1+bs14_2+bk15+bk16+bs16+bk19+bs19+bk20+bs20-pb21_1-pb21_2-pb21_3-ic15-no15
bsgv=no6+no7+no9+no10+no12+no14_1+no14_2+no16+no19+no20
blgg=-(blgj+blgi+lbg+blgv+bsgi+bsgj+bsgv)

Line Seven: (Column residuals + Row residual)

mtg=fg-(ipg+bgo+cfg+blgg+resg)
mto=fo-(odio+idio+ipo+bgso+cfo+d£bo+d$bo+reso)
mtj=fj-(lvj+ipj+blgj+bsgj+lhpj+ldj+ld$j+dbj+db$j+resj)
mti=ffi-(odii+idii+cpii+ipi+blgi+bsgi+ldi+ld$i+dbi+db$i+resi)
mtm=bk28+bs28+bs29+bk32+bs32+bk34+bs34+bk35+bs35+bk36+bk37+bs37+bk38+bs38
mtv=-(mtg+mto+mtj+mti+mtm)

Line Eight: Overseas Deposits with M4 Institutions (net)

d£bo=internal data
d$bo=internal data
d£bb=-d£bo
d$bb=d$bo

Line Nine: Lending for House Purchase

lhpm=bs27_1+bk27_2
lhpv=no27_2
lhpj=-(lhpm+lhpv)

Line Ten: M4 Institutions Non-housing Domestic Lending

ldj=pe24_2
ldi=ic24_2
ldv=no24_2
ldb=bk24_2+bs24_2
ld$b=bk24_1+bs24_1
ld$j=pe24_1
ld$i=ic24_1
ld$v=no24_1

Line Eleven: Domestic Deposits with M4 Institutions

```
dbj=pe21_1+pe21_2+pe21_3+pe22
dbi=ic21_1+ic21_2+ic21_3+ic22
dbv=no21_1+no21_2+no21_3+no22
dbb=-(dbj+dbi+dbv)
bd$b=bk21_3+bs21_3+pb21_3
db$j=pe21_3
db$i=ic21_3
db$v=no21_3
```

Line Twelve: Balancing items

```
resg=pb40
reso=os40
resj=pe40
resi=ic40
resb=ffb-(ipb+lbg+mtm+d£bb+d$bb+lhpm+ldb+ld$b+dbb+bd$b)
resv=-(resg+reso+resj+resi+resb)
```

APPENDIX 2: EQUATION LISTING OF FINANCIAL MODEL AND OTHER RELEVANT SECTORS

This equation listing replaces the analogous sections of the model manual published in the last discussion paper by Breedon, Murfin and Wright (1989)

1. EXCHANGE RATES AND INTEREST RATES

EXCHANGE RATES

Exchange rate equation (NOPT(1)=1)

$$(3)\ \Delta \ln\left[\frac{EER.PPOX}{WPP}\right] = \underset{(2.7)}{0.451195}\ \Delta \ln\left[\frac{EER.PPOX}{WPP}\right]_{-1} + \underset{(2.0)}{0.954398}\ \Delta\left[\frac{BAL}{GDPN}\right]$$

$$+ \underset{(1.6)}{0.676103}\ \Delta\left[\left[\frac{\frac{RUKG}{100} - \left(PC/PC_{-4}\right) - 1}{\left(PC/PC_{-4}\right)}\right] - \left[\frac{\frac{RUSG}{100} - \left(PCUS/PCUS_{-4}\right) - 1}{\left(PCUS/PCUS_{-4}\right)}\right]\right]_{-2}$$

$$- \underset{(1.5)}{0.00358954}\ \Delta\ CPBR - \underset{(4.1)}{0.585891}\ RER8_{-1} + \underset{(0.1)}{0.00034714}$$

Where:

$$RER8 = \ln\left[\frac{EER.PPOX}{WPP}\right] - \left[0.123174 + 1.07652\left[\frac{BAL}{GDPN}\right] - 0.00112176\ CPBR\right.$$

$$\left. + 0.635284\left[\left[\frac{\frac{RUKG}{100} - \left(PC/PC_{-4}\right) - 1}{\left(PC/PC_{-4}\right)}\right] - \left[\frac{\frac{RUSG}{100} - \left(PCUS/PCUS_{-4}\right) - 1}{\left(PCUS/PCUS_{-4}\right)}\right]\right]\right]$$

$R^2 = 0.474$ SE = 0.032 DW = 1.7 LM(4) = 2.7 1979 IV-1988 II

Accumulation of PSBR as a % of GDPN (from 1979 Q1)

(436) CPBR = $CPBR_{-1}$ + 100.PSBR/GDPN

£/$, index of quarterly average

(31) ERUK = (WER/(EER/0.9961355)

Effective rate excluding the dollar

(23) ERND = {[EER * ((100/ERUK)**(-0.2044))]

**(1/(1 - 0.2044))}/0.99819

Alternative exchange rate equation (NOPT(1)=0)

$$(3)\ \Delta \ln\left[\frac{EER.PPOX}{WPP}\right] = \underset{(1.3)}{0.219261}\ \Delta \ln\left[\frac{EER.PPOX}{WPP}\right]_{-1} + \underset{(1.2)}{1.24516}\ \Delta \ln\left[\frac{PPOX}{WPP/100}\right]_{-1}$$

$$+ \underset{(1.8)}{0.963738}\ \Delta \left[\frac{BAL}{GDPN}\right] - \underset{(1.6)}{0.246836}\ RER5_{-1} - \underset{(0.6)}{0.00475859}$$

Where:

$$RER5 = \ln\left[\frac{EER.PPOX}{WPP}\right] - \left[0.016395 + 2.00812\left[\frac{BAL}{GDPN}\right]\right.$$

$$\left. + 0.518305\left[\left[\frac{RUKG}{\left(\frac{PC/PC_{-4}}{PC/PC_{-4}}\right)} - 1\right]\right] - \left[\frac{RUSG}{100} - \left[\left(\frac{PCUS/PCUS_{-4}}{PCUS/PCUS_{-4}}\right) - 1\right]\right]\right]$$

$R^2 = 0.274$ SE = 0.037 DW = 1.9 LM(4)=2.9 1979 III-1988 II

INTEREST RATES

Local authority three-month deposit rate

$$(234)\ RLA = \underset{(3.6)}{0.2847601}\ REU\$ + \underset{(7.0)}{0.6336016}\ RLA_{-1} + \underset{(2.0)}{9.674914}\ \Delta \ln ERUK_{-1}$$

$$+ \underset{(2.8)}{25.96145}\ (\ln GDP_{-1} - 1/9 \sum_{i=2}^{10} \ln GDP_{-i}) + \underset{(1.4)}{34.2805}\ \Delta^2 \ln PPOX_{-1}$$

$$+ \underset{(1.3)}{10.60268}\ \Delta^2 \ln KM4_{-1} + \underset{(2.3)}{23.81598} \left[0.4 \left[\frac{PSBR}{GDPN}\right] + 0.3 \left[\frac{PSBR}{GDPN}\right]_{-1}\right.$$

$$\left. + 0.2 \left[\frac{PSBR}{GDPN}\right]_{-2} + 0.1 \left[\frac{PSBR}{GDPN}\right]_{-3}\right] - \underset{(0.3)}{0.3642757}$$

$\bar{R}^2 = 0.821$ SEE = 1.382 DW = 1.74 1972 I - 1982 IV

Clearing banks' base rate

(140) RCBR = RLA

Yield on 20-year government stock

$$(311)\ \Delta RUKG = \underset{(5.6)}{0.3155152}\ \Delta RLA - \underset{(2.6)}{0.09259948}\ (RUKG - RLA)_{-1}$$

$$- \underset{(2.9)}{0.06743253} \left[\frac{100.(EER - EER_{-1})}{EER_{-1}}\right]$$

$\bar{R}^2 = 0.510$ %SE = 168.6 DW = 1.6 LM(4)=4.0 FCST(4)=1.1 1972 II-1987 II

Building societies' net share rate, quarterly average

$$(237)\ RZSN = \left[1 - \frac{TRY}{100}\right] * RZSG$$

Building societies' gross share rate, quarterly average

$$(236)\ \ln RZSG = \underset{(0.7)}{0.0080498} + \underset{(-)}{0.57767}\ \ln RZSG_{-1} + \underset{(5.0)}{0.42233}\ \ln RLA$$

$\bar{R}^2 = 0.819$ SE = 0.063 DW = 1.55 1980 I - 1987 II

Building societies' gross mortgage rate, quarterly average

$$(238)\ \ln RZMG = \underset{(2.7)}{0.0421146} + \underset{(-)}{0.60198}\ \ln RZMG_{-1} + \underset{(23.3)}{0.92485}\ \ln \left[RZSN/\left(1 - \frac{TCR}{100}\right)\right]$$

$$- 0.52683 \ln \left[RZSN/\left(1 - \frac{TCR}{100}\right)\right]_{-1}$$

$\bar{R}^2 = 0.979$ SE = 0.018 DW = 1.74 1980 I - 1987 II

500 share price index

$$(297,B)\ \Delta \ln SPUK = \underset{(2.3)}{0.01518595} + \underset{(5.0)}{0.2571183}\ CR87 + \underset{(7.7)}{0.5053445}\ CR74$$

$$+ \underset{(2.3)}{0.1564744}\ \Delta \ln SPUK_{-1} + \underset{(2.4)}{0.164597}\ \Delta \ln SPUK_{-3} - \underset{(2.3)}{0.4704761}\ \Delta \ln EER$$

$$- \underset{(4.0)}{2.486112}\ \Delta \ln(1 + RCBR/100) - \underset{(3.0)}{0.08246818}\ RES_{-1}$$

$R^2 = 0.61$

where $RES = \log SPUK - (-1.901788 + 0.8616035 \log GDIV - 3.208158 \log(1 + RCBR/100)$

DF = - 4.8 ADF = - 3.04

Dividend yield

$$(578,T)\ \frac{\Delta DIVR}{DIVR_{-1}} = \frac{\Delta GDIV/SPUK}{GDIV_{-1}/SPUK_{-1}}$$

Price of UK government securities (all stocks)

$$(576,T)\ PGLT = PGLT_{-1}.(RUKG_{-1}/RUKG)$$

National savings interest rate

$$(573,B)\ NSRN = \underset{(3.1)}{1.5901} + \underset{(3.9)}{0.3725}\ NSRN_{-1} + \underset{(1.9)}{0.1459}\ RLA(1- TRY/100)$$

$$+ \underset{(2.7)}{0.2898}\ RLA(1- TRY/100)$$

$R^2 = 0.87$ SE = 0.4111 DW = 1.72 LM(4) = 5.6 BP(1) = 0.4

Asset prices for the OOFIs sector model

Own asset price of BLGV

$$(606,T)\ PBLV = \ln \left[\frac{1}{1 + ((RUKG + ((PGLT - PGLT_{-8})/PGLT_{-8}).100/2)/400)} \right] + \ln (PEF/PEF_{-1})$$

Own asset price of BSGV

$$(612,T)\ PBSV = \ln \left[\frac{1}{1 + RLA/400} \right] + \ln (PEF/PEF_{-1})$$

Own asset price of DBV

$$(613,T)\ PDBV = \ln \left[\frac{1}{1 + RCBR/400} \right] + \ln (PEF/PEF_{-1})$$

Own asset price of DB$V

$$(614,T)\ PD\$V = \ln \left[\frac{1}{1 + ((((ERUK .(1 + (REU\$.2/100))/ERUK_{-8})-1)*100/2)/400)} \right] + \ln (PEF/PEF_{-1})$$

Own asset price of IPV

$$(617,T)\ PIPV = \ln \left[\frac{1}{1 + ((DIVR + ((SPUK - SPUK_{-8})/SPUK_{-8}).100/2)/400)} \right] + \ln (PEF/PEF_{-1})$$

Aggregate price index (the weights used are the average budget shares over the sample period)

(629,I) AGPV = 0.40528 PBLV + 0.06995 PBSV + 0.07225 PDBV + 0.03243 PD$V
+ 0.42009 PIPV

Asset prices for the overseas sector model

Own asset price of BGSO

$$(574,T)\ PBGO = \ln \left[\frac{1}{1 + ((RUKG + ((PGLT - PGLT_{-4})/PGLT_{-4}).100)/400)} \right]$$

Own asset price of D£BO

$$(577,T)\ PD£O = \ln \left[\frac{1}{1 + RCBR/400} \right]$$

Own asset price of IPOI

$$(580,T)\ PIPI = \ln \left[\frac{1}{1 + ((DIVR + ((SPUK - SPUK_{-4})/SPUK_{-4}).100)/400)} \right]$$

Aggregate price index (the weights used are the average budget shares over the sample period)

(592,I) AGPO = 0.41958 PBGO + 0.28258 PD£O + 0.29785 PIPI

2. FLOW OF FUNDS MATRIX: BY ROW

Line 1 Financial balance

(230,I) FG = SG + FTKG - (IFG£ + IIG£ + YSAG)

(231,I) FO = FTKO - BAL

(227,I) FJ = SJ + FTKJ - (IFJ£ + IIJ£ + YSAJ)

(737,I) FFI = SCI + FTKI - (IFI£ + III£ + YSAI)

(751,X) FFB (exogenous)

(424,I) FFV = SCF + FTKF - (IFF£ + IIF£) - FFB

Line 2 LAPF receipts

To Persons

(494,T) LVJ = YECO + YVO - TYV + 0.1072 YWS - 3.6632 WS

From OOFIs

(NM) LVV = - LVJ

Line 3.1 Outward direct investment

To Overseas

(NM) ODIO = - ODII

From ICCs

(411,B) $\frac{ODII}{PGDP}$ = -3447.5807 + 35.5593 (100.GDPO/GDPO (1980))
(6.1) (8.4)

R^{-2} = 0.450 SE = 395.8 DW = 1.6 1966 I = 1987 II

Line 3.2 Inward direct investment

From Overseas

(412,B) 100.(IDIO - IOIL)/WPC = -90.45212 + 11.40239 WGDP - 3.85376 $RULC_{-1}$
(0.4) (5.3) (1.5)

R^{-2} = 0.234 SE = 299.2 DW = 2.2 1966 I - 1987 IV

To ICCs

(NM) IDII = -IDIO

Line 4 Portfolio investment

By Public sector

(467,X) IPG (exogenous)

By Overseas sector

(467,I) IPO = IPOO + IPOI

(307,X) IPOO (exogenous)

(302,I) IPOI = KIPI - $(SPUK/SPUK_{-1}).KIPI_{-1}$

By Persons

(716,I,RR) IPJ = -(IPG + IPO + IPI + IPB + IPV + CPIV + CPII)

By ICCs

$$(730,B)\ IPI/KFX£ = -0.00314 + \underset{(2.1)}{0.331}\ (IPI/KFX£)_{-1} + \underset{(3.1)}{0.106}\ (IPI/KFX£)_{-2}$$

$$+ \underset{(1.9)}{0.191}\ (IPI/KFX£)_{-3} - \underset{(2.8)}{0.258}\ (IPI/KFX£)_{-4}$$

$$+ \underset{(2.5)}{0.0235}\ ((YITP + YRI + NTRI + YIAB - EIAB)/GDPN)$$

$$+ \underset{(3.5)}{2.7}\ (SPUK/KFX£) - \underset{(2.5)}{0.0736}\ \Delta\ ((1-TRYC/100).(RUKG + 1.5)/100)$$

$\bar{R}^2$ = 0.515 S.E. = 0.00105 DW = 2.02 ARCH = 0.107 LM(4) = 2.1 BJ = 6.72

1965 I - 1987 II

By ICCs (issues)

$$(500,B)\ \Delta\ (CPII/PGDP) = -5.78 + \underset{(2.0)}{0.21}\ \Delta(CPII/PGDP)_{-4} - \underset{(5.2)}{25.03}\ \Delta(SPUK/PGDP)_{-1}$$

$$- \underset{(10.9)}{3295}\ \Delta D873 - \underset{(5.7)}{0.64}\ RES_{-1}$$

$$RES = ((CPII/PGDP) - (\underset{(7.2)}{5129} - 13.49\ (SPUK/PGDP)$$

$$+ \underset{(2.1)}{0.122}\ ((YITP + YRI + NTRI + YIAB - EIAB)/PGDP) - \underset{(4.7)}{0.0915}\ GDP$$

$$- \underset{(7.2)}{4180}\ D873))$$

DF = -8.1 ADF -3.46 1968 I - 1988 II

$\bar{R}^2$ = 0.71 S.E. = 399 DW = 1.806 ARCH = 1.92 LM(4) = 7.8 BJ = 8.58

By M4 institutions

(753,X) IPB (exogenous)

By OOFIs

(726,B) $IPV = KIPV - (SPUK/SPUK_{-1}).KIPV_{-1}$

By OOFIs (issues)

$$(725,B)\ \Delta(CPIV/PGDP) = \underset{(0.2)}{-5.38} + \underset{(1.7)}{0.18}\ \Delta(CPIV/PGDP)_{-1} \underset{(3.7)}{-\ 9.76}\ \Delta(SPUK/PGDP)_{-1} \underset{(5.1)}{-\ 0.596}\ RES_{-1}$$

$$RES = (CPIV/PGDP) - (\underset{(4.6)}{1355} - \underset{(4.4)}{6.01}\ (SPUK/PGDP) \underset{(2.5)}{-\ 0.0149}\ GDP)$$

DF = -5.15 ADF -3.06 1968 I - 1988 I

$\bar{R}^2$ = 0.39 S.E. = 215 DW = 1.78 ARCH = 13.85 LM(4) = 5.2 BJ = 56.0

Line 5.1 Public finance, external, long term

(NM) BGO = -BGSO

(470,I) $BGSO = KBGO - (PGLT/PGLT_{-1}).KBGO_{-1}$

Line 5.2 Public finance, external, other

(NM) CFG = -CFO

(471,X) CFO (exogenous)

Line 6 Public finance, domestic

Public sector borrowing requirement

(233,I) PSBR = - FG + IPG + MTG + RESG

Total

(718,I,CR) BLGG = FG - IPG - BGO - CFG - MTG - RESG

Long debt taken up by persons

(735,I,CR) BLGJ = FJ - LVJ - IPJ - BSGJ - MTJ - LHPJ - LDJ - LD$J - DBJ - DB$J - RESJ

Short debt taken up by persons

$$(734,T)\ BSGJ = 0.3 \sum_{i=0}^{3} \alpha_i\ PSBR_{-i}$$

α_{0-3} = 0.4; 0.3; 0.2; 0.1

Short debt taken up by ICCs

(746,T) BSGI = 0.1 DBI

Long debt taken up by ICCs

(747,T) BLGI = 0.05 DBI

Debt taken up by M4 institutions

(476,I,RR) LBG = -(BLGG + BLGJ + BSGJ + BLGI + BSGI + BLGV + BSGV)

Long debt taken up by OOFIs

(763,I) BLGV = KBLV - $(PGLT/PGLT_{-1}).KBLV_{-1}$

Short debt taken up by OOFIs

(762,I) BSGV = ΔKBSV

Line 7 Miscellaneous identified transactions

(623,X) MTG (exogenous)

(624,X) MTO (exogenous)

(625,X) MTJ (exogenous)

(626,I,CR) MTI = FFI - ODII -IDII - CPII - IPI - BLGI - BSGI - LDI - LD$I
- DBI - DB$I - RESI

(627,I,RR) MTM = -(MTG + MTO + MTJ + MTI + MTV)

(628,X) MTV (exogenous)

Line 8.1 Net overseas sterling deposits with M4 institutions

(484,I) D£BO = ΔKD£O

(NM) D£BB = - D£BO

(482,T) L£BO = - 0.026 (X£ + M£)

Line 8.2 Net overseas foreign currency deposits with M4 institutions

(483,I) D$BO = SWI + LD$B + BD$B

(NM) D$BB = - D$BO

Line 9 Lending for house purchase

To Persons

(NM) LHPJ = - (LHPM + LHPV)

By M4 institutions

(715,I) LHPM = LHPT - LHPV

By OOFIs

(498,I) LHPV = SHMV.LHPT

(477,I) KHPV = $KHPV_{-1}$ + LHPV

Total

(102,I) LHPT = ΔKHPT

$$(62,B)\ \Delta \ln KHPT = \underset{(3.6)}{0.00773912} - \underset{(2.3)}{0.0788039}\,[\ln KHPT_{-1} - FITV_{-1}] + \underset{(9.4)}{0.650179}$$

$$\Delta \ln KHPT_{-1} + \underset{(3.6)}{0.156819}\,\Delta \ln KHPT_{-1} + \underset{(1.7)}{0.0349698}\,\Delta \ln RPDI_{-1}$$

$$- \underset{(3.7)}{0.89395}\,\Delta \ln(PAHM/PC) + \underset{(4.2)}{0.978382}\,\Delta \ln(PAHM/PC)_{-1}$$

$$- \underset{(2.6)}{0.0472075}\,\Delta \ln(PAHM/PC)_{-3} - \underset{(4.4)}{0.0257415}\,\Delta \ln\left(RZMG\left(1 - \frac{TRY}{100}\right)\right)$$

$$+ \underset{(4.4)}{0.126817}\,\Delta \ln ZLVF + \underset{(4.0)}{0.955534}\,\Delta\Delta \ln PAHM - \underset{(4.0)}{0.953883}\,\Delta\Delta\, GCIF$$

R^{-2} = SE = 0.003 DW = 1970 II - 1987 II

Where:

$$FITV = \ln VOHS + 1/9 \sum_{i=0}^{8} \ln RPDI_{-i} - 11.86211 - 0.759071 \ln(PAHM/PC)$$

$$- 0.0852346 \ln\left(RZMG\left(1 - \frac{TRY}{100}\right)\right) + 0.39509 \ln ZLVF - 1.11289\, GCIF$$

$$+ 0.00294495\, ZDOW$$

Geometric cumulation of inflation

(194,T) GCIF = 0.95 $GCIF_{-1}$ + Δ lnPC

Line 10.1 M4 institutions non-housing domestic sterling lending

To Persons

(731,I) $LDJ = -\Delta KLDJ$

(558,B) $\Delta lnKLDJ = \underset{(4.2)}{0.03} + \underset{(2.8)}{0.3791}\ \Delta lnKLDJ_{-3} - \underset{(2.0)}{0.0379}\ RES_{-1}$

$RES = lnKLDJ - (-27.19961 + 2.528579\ lnRPDI + 0.714708\ (lnNWJ - lnPC)$

$+ 0.05979039\ (RZSN - RCBR) + 1.0\ PC)$

DF = -2.6776 ADF = -1.46933 $\bar{R}^2$ = 0.233 SE = 0.0107 LM(4) = 2.42

BJ(2) = 0.4883 1980 I - 1989 IV

To ICCs

(745,I) $LDI = -\Delta KLDI$

(561,B) $\Delta lnKLDI = \underset{(2.10)}{0.0085442} + \underset{(4.4)}{0.3914}\ \Delta lnKLDI_{-1} + \underset{(2.4)}{0.2213}\ \Delta lnKLDI_{-3}$

$+ \underset{(2.3)}{0.0216}\ \Delta(RLA.(1 - TRYC/100) - RCBR.(1 - TRYC/100))$

$+ \underset{(2.1))}{0.091}\ \Delta IFI£ + \underset{(2.9)}{0.0000079}\ IPI/PIFO - \underset{(2.0)}{0.0582}\ RES_{-1}$

$RES = lnKLDI - (6.0179 + 1.0\ lnPIFO + 0.5603\ (lnIFI£ - lnPIFO) - 0.1993\ DCST$

$+ 0.1202\ (RLA.(1 - TRYC/100) - (RCBR.(1 - TRYC/100)))$

$+ 0.0000581\ IPI/PIFO$

DF = -4.29 ADF = -3.29 $\bar{R}^2$ = 0.291 SE = 0.0221 DW = 2.13

LM(4) = 9.19 BJ(2) = 0.39 1964 I - 1989 IV

By M4 institutions

(755,I) LDB = - (LDJ + LDI + LDV)

To OOFIs

(462,I) $LDV = -\Delta KLDV$

(565,B) $\Delta lnKLDV = \underset{(2.5)}{0.0110716} + \underset{(3.5)}{0.439014}\ \Delta lnKLDV_{-1} + \underset{(2.2)}{0.217336}\ \Delta lnKLDV_{-2}$

$- \underset{(1.8)}{0.0597916}\ RES_{-1}$

$RES = lnKLDV - (-1.3898 + 1.0\ lnPGDP + 0.137862\ RLA$

$- 0.143861\ RCBR + 0.0223044\ ((PGDP - PGDP_{-4})/PGDP_{-4}).100)$

$+ 0.874717\ (lnKWV - lnPGDP))$

DF = -3.67 ADF = -1.94 $\bar{R}^2$ = 0.441 SE = 0.0201 DW = 2.03 ARCH = 0.59

Line 10.2 M4 institutions [non-housing] domestic lending in foreign currency

To Persons

(69,B) $LD\$J.EER/WPX = -4.79982 + 0.185332\ (LD\$J.EER/WPX)_{-1} - 447.804\ D854863$
(0.4) (2.0) (7.6)

$- 3.00544\ (\Delta RLA - \Delta((((REU\$.3/100)+1).ERUK/ERUK_{-12})-1).100/3))$
(1.0)

$- 1222.96\ \Delta \ln(KWJ/PC)$
(2.6)

$\bar{R}^2 = 0.631$ SE = 81.6963 DW = 2.06 ARCH = 0.33 LM(4) = 6.42 BJ(2) = 0.11

1976 I - 1988 IV

To ICCs

(165,B) $LD\$I.EER/WPX = -249.687 + 0.434348\ (LD\$I.EER/WPX)_{-1}$
(1.9) (3.2)

$- 37.2997\ (\Delta RLA_{-1} - \Delta(((((REU\$.2/100)+1).ERUK/ERUK_{-8})-1).100/2))$
(2.1)

$- 6099.31\ \Delta \ln WTMU_{-1}$
(1.5)

$\bar{R}^2 = 0.265$ SE = 692.931 DW = 1.73 ARCH = 0.47 LM(4) = 6.15 BJ(2) = 1.12

1977 I - 1989 I

Proxy for ICCs stock of liabilities

(85,I) $KBLI = KBLI_{-1} - LDI - LD\$I - .18CPII$

By M4 institutions

(758,I,RR) $LD\$B = -(LD\$J + LD\$I + LD\$V)$

To OOFIs

(219,B) $LD\$V.EER/WPX = -139.248 + 0.3842498\ (LD\$I.EER/WPX)_{-2}$
(0.2) (2.1)

$- 0.76221964\ DB\$V_{-1} - 0.027187\ (KWV/PEF)$
(1.7) (3.7)

$+ 0.02729092\ (KWV/PEF)_{-2}$
(3.5)

$\bar{R}^2 = 0.283$ SE = 1170.46 DW = 1.81 LM(4) = 4.40 BP(1) = 1.06
1977 I - 1989 I

Line 11.1 Sterling deposits with M4 institutions

Held by persons

(460,I) DBJ = ΔKDBJ

(393,B) $\Delta \ln KDBJ = \underset{(3.7)}{0.010975} + \underset{(2.8)}{0.294495}\ \Delta \ln KDBJ_{-1} + \underset{(2.5)}{0.240568}\ \Delta \ln KDBJ_{-2}$

$+ \underset{(2.1)}{0.0619508}\ \Delta(\ln KWJ - \ln RPDI - \ln PC) + \underset{(1.8)}{0.114154}\ \Delta \ln PC$

$+ \underset{(1.7)}{0.00242919}\ \Delta RZSN_{-1} + \underset{(3.1)}{0.0057486}\ \Delta RZSN_{-4} - \underset{(1.9)}{0.00283524}\ \Delta NSRN$

$- \underset{(2.5)}{0.00510189}\ \Delta NSRN_{-4} + \underset{(3.3)}{0.147701}\ \Delta \ln RPDI - \underset{(3.0)}{0.0707038}\ RES_{-1}$

RES = lnKDBJ - (-0.139621 + 0.908838 lnRPDI + 0.0263835 RZSN

- 0.0286703 NSRN + 1.0 lnPC - 0.0065939 RCBR + 0.7048 (lnKWJ - lnRPDI

-lnPC))

DF = -3.22 ADF = -2.92 $\bar{R}^2$ = 0.561 SE = 0.00582 DW = 2.1 ARCH = 0.078

LM(4) = 3.76 BJ(2) = 5.864 1968 I - 1989 I

Held by ICCs

(709,B) $\Delta \ln KDBI = \underset{(2.4)}{0.0128} + \underset{(2.1)}{0.2015}\ \Delta \ln KDBI_{-1} + \underset{(2.1)}{0.2029}\ \Delta \ln KDBI_{-2}$

$+ \underset{(1.7)}{0.1259}\ \Delta \ln(IFI£ - PIFO) - \underset{(2.1)}{0.0631}\ RES_{-1}$

Where

RES = lnKDBI - (5.8621 + 0.4982 ln(IFI£ - PIFO) + 0.0000973 IPI/PIFO

- 0.2811 DCST)

DF = -4.0 ADF = -3.6 $\bar{R}^2$ = 0.11 SE = 0.0371 DW = 1.98 LM(4) = 0.58

BJ(2) = 0.15 1969 I - 1989 I

(461,I) DBI = ΔKDBI

In M4 institutions

(756,I,RR) DBB = - (DBJ + DBI + DBV)

Held by OOFIs

(761,I) DBV = ΔKDBV

Stock of deposits with Building Societies

(776,B) $\ln KZJ = 1.10319\ \ln KZJ_{-1} - 0.15896\ \ln KZJ_{-2} + 0.50584\ \ln KDBJ$

$- 0.45007\ \ln KDBJ_{-1} + 0.0044791\ RZSG - 0.0044791\ RLA - 0.028323$

Composite tax rate

(634,I) $TCR = (25.5/30)\ TRY$

Line 11.2 Foreign currency deposits with M4 institutions

Held by persons

(720,T) $DB\$J = 50 + 0.001 DB\$J_{-1}$

Held by ICCs

(723,B) $DB\$I.EER/WPX = \underset{(3.0)}{324.85} - \underset{(2.0)}{0.286062}\ (DB\$I.EER/WPX)_{-2}$

$- \underset{(1.7)}{42.6526}\ (\Delta RLA - \Delta(((((REU\$.3/100)+1).ERUK/ERUK_{-12})-1).100/3)$

$\bar{R}^2 = 0.141$ SE = 711.147 DW = 1.86 ARCH = 0.32 LM(4) = 1.01 BJ(2) = 9.16

1977 I - 1989 I

Proxy for ICCs stock of liquid assets

(38,I) $KLI = KLI_{-1} + DBI + DB\$I + BSGI$

In M4 institutions

(760,I,RR) $BD\$B = -(DB\$J + DB\$I + DB\$V)$

Held by OOFIs

(736,I) $DB\$V = KD\$V - (ERUK/ERUK_{-1}).KD\$V_{-1}$

Line 12 Balancing items

(469,X) RESG (exogenous)

(485,X) RESO (exogenous)

(732,X) RESJ (exogenous)

(743,X) RESI (exogenous)

(748,X) RESB (exogenous)

(749,I,RR) RESV = -(RESG + RESO + RESJ + RESI + RESB + RESE)

(567,X) RESE (exogenous)

Monetary stocks and flows

Stock of M0

(259,B) Δ lnKM0 = 0.008558349 + 0.0466994 $\Delta D681_{-12}$
(3.4) (6.1)

+ 0.2977676 $\Delta\Delta$ $lnPC_{-1}$ + 0.4037796 Δ $lnKM0_{-1}$
(2.2) (4.1)

- 0.1776887 JRES
(3.0)

Where: JRES = $lnKM0_{-1}$ - ln(C£ + TCC) + 0.5621558 + 0.001382596 CRSN

R^{-2} = 0.485 SE = 0.010 DW = 2.3 LM(4)=4.9 1970 III-1986 IV

Accumulation of RZSN since 1963 Q1

(274,I) CRSN = $CRSN_{-1}$ + RZSN

Flow of M4

(587,B) M4 = - DBB + 0.55289 ΔKM0

R^2 = 0.997591 DW = 2.6 SE = 206.3

M4, stock

(559,I) KM4 = $KM4_{-1}$ + M4

Velocity of M4

(164,I) M4VL = 8(GDPN/(KM4 + $KM4_{-1}$))

External contribution to growth of M4

(739,T) M4EX = -(D£BO + D$BO) + LD$B + BD$B

Change in net non-deposit liabilities of M4 institutions

(740,T) M4NL = M4 - (PSBR + BLGG + LBG - BGSO - CFO + LDB + LHPM + M4EX)

2. FLOW OF FUNDS: OOFIs AND OVERSEAS NEARLY IDEAL DEMAND SYSTEMS (NIDS)

The reporting of equations in the matrix by asset rather than by sector conceals the fact that some assets in the OOFIs (BLGV,BSGV,DBV,DB$V,IPV) and Overseas (BGSO,IPOI,D£BO) sectors were modelled as a system for each sector using the Nearly Ideal Demand System (NIDS). Consequently, the systems are reported here in full. The NIDS equation regresses the share of total wealth an asset commands in the portfolio of a representative agent as a function of real asset prices and real wealth:-

$$s_i = \alpha_i + \Sigma_j \gamma_{ij} \log p^r_{jt} + \beta_i \log(W^r/P^{*r})_t$$

$s_i = a_{it}/W$
a_{it}=nominal holdings of the ith asset, W is nominal wealth

The superscript ^{r} denotes a real variable so that :-
$W^r = (W/Z)_t$,
$\log P^{*r}_t = \Sigma_i s_i \log p^r_t = \log P^*_t + g_{zt}$,
$\log P^*_t = \Sigma_i s_i \log p_{it}$,
$\log p^r_{jt} = \log((1+r_{jt})(1-g_{zt}))^{-1} = \log(1+r_{jt})^{-1} + g_z = \log p_{jt} + g_z$

where p_{jt} is the nominal 'price' of the asset j in period t, r_{jt} is the expected proportionate return on asset j between t and t+1, Z_t is the goods price index and g_z is goods price inflation.

We can now re-write the NIDS model as:-

$$s_i = \alpha_i + \Sigma_j \gamma_{ij} (\log p_{jt} + g_z) + \beta_i (\log(W/Z)_t - \log P^* - g_z)$$

In the equations AGGP = logP* + g_z. Notice that the theoretical specification implies a 'double deflation' for wealth.

The short-run dynamics are simply the variables in the long run solution differenced until they are stationary. In almost every case the variables are I(1).

This yields the full dynamic model :-

$$\Delta s_{it} = \Sigma_j \pi_j (s_j - s^*_j)_{-1} + \Sigma_i \sigma_i \Delta x_{it}$$

where x_{it} are the variables which enter the long-run solution for asset i and s_j* is the long-run solution defined above for asset j. Note that the solution is a function of the lagged long-run value for each asset in the system. In practice the specifications may alter slightly. For example the asset equations in the OOFIs sector include an ad hoc velocity of lending term which is meant to proxy financial liberalisation.

The product of the budget share and the total wealth term is the current period stock. If the asset is capital certain the flow is merely the difference of the stock. If the asset is capital uncertain then we need to abstract from revaluations. In the OOFIs system there is a simple revaluation formula which is :-

$$STOCK = (PRICE/PRICE_{-1}).STOCK_{-1} + FLOW$$

Therefore the flow is :-

$$FLOW = STOCK - (PRICE/PRICE_{-1}).STOCK_{-1}$$

This simple revaluation rule also means that the higher level equation can be derived from last periods stocks, pre-determined prices and the other

variables in the OOFIs column. To illustrate,

$\Sigma STOCK_i$ = WEALTH = $\Sigma\{(PRICE_i/PRICE_{i-1}).STOCK_{i-1}) + \Sigma FLOW_i$

Since we know that the sum of the flows less the financial balance in any column is zero by construction then :-

$\Sigma FLOW_i$ = FINANCIAL BALANCE - ΣOTHER FLOWS

where the other flows have already been determined. Note that this now rules out the need for a column residual in that sector - the whole system is effectively the column residual.

The overseas sector is slightly more complicated. One of the assets is an FSD stock (the revaluation rule of which is not known) whilst the other is derived according to the following rule :-

$STOCK = PRICE/PRICE_{-1}.[STOCK_{-1} + FLOW/2] + FLOW/2$

Re-arrangement of this equation in terms of the flow gives :-

$FLOW = 2\{[STOCK.PRICE_{-1} - STOCK_{-1}.PRICE]/(PRICE + PRICE_{-1})\}$

which is intractable for the purposes of defining a higher level equation from the existing information. A solution to this problem in forecasting is to define an equation similar to that in the OOFIs sector which will not hold exactly over the past, but will over the forecast.

The formulae for the long-run elasticities are :-

wrt the interest rate, $-\gamma_{ij}/4.s_i$

wrt wealth, $[1 + (\beta_i/s_i)]$

So, for example in the OOFIs sector the elastcity wrt the RLA in the equation for BSGV is - 1.291291/(4*0.06995) = - 4.61505 i.e an increase of 1% in RLA will decrease the level of holdings of short-term debt by 4.6%. The wealth elasticity is [1 + (- 0.004367324/0.06995)] = 0.9375654. The figure 0.06995 is the average share of holdings of short debt over the sample period.

Whilst adding up is satisfied in the estimation of the systems, it may be violated when residuals are set in the forecast. Therefore adding up is guaranteed by setting one asset share in each system to be equal to 1 - Σs_i. The behavioural equations for those assets are still reported in the manual since they may be of interest in their own right.

The OOFIs sector

In this sector adding up is satisfied throughout. Symmetry and homogeneity are accepted in the long run but not in the short run. The residuals from the long-run equation for DB$V do not enter into any of the dynamic models since the inclusion of the residuals for all the assets results in a singular matrix because all the residuals in any single time period sum to zero, which causes the matrix to become singular.

Total nominal wealth (as defined in the data)

KWV = (KBLV + KBSV + KDBV + KD$V +KIPV)

Higher level equation

(569,I) $KWV = FFV - LVV - CPIV - MTV - LHPV - LDV - LD\$V - RESV$

$+ (PGLT/PGLT_{-1}).KBLV_{-1} + KBSV_{-1} + KDBV_{-1}$

$+ (ERUK/ERUK_{-1}).KD\$V_{-1} + (SPUK/SPUK_{-1}).KIPV_{-1}$

where the stocks are defined in the data as :-

$KBLV = (PGLT/PGLT_{-1}).KBLV_{-1} + BLGV$

$KBSV = KBSV_{-1} + BSGV$

$KDBV = KDBV_{-1} + DBV$

$KD\$V = (ERUK/ERUK_{-1}).KD\$V_{-1} + DB\$V$

$KIPV = (SPUK/SPUK_{-1}).KIPV_{-1} + IPV$

Asset shares (as defined in the data)

$WBLV = KBLV/KWV$

$WBGSV = KBSV/KWV$

$WDBV = KDBV/KWV$

$WD\$V = KD\$V/KWV$

$WIPV = KIPV/KWV$

Asset prices

$$(606,T)\ PBLV = \ln\left[\frac{1}{1 + ((RUKG + ((PGLT - PGLT_{-8})/PGLT_{-8}).100/2)/400)}\right] + \ln (PEF/PEF_{-1})$$

$$(612,T)\ PBSV = \ln\left[\frac{1}{1 + RLA/400}\right] + \ln (PEF/PEF_{-1})$$

$$(613,T)\ PDBV = \ln\left[\frac{1}{1 + RCBR/400}\right] + \ln (PEF/PEF_{-1})$$

$$(614,T)\ PD\$V = \ln\left[\frac{1}{1 + ((((ERUK\ .(1 + (REU\$.2/100))/ERUK_{-8})-1)*100/2)/400)}\right] + \ln\ (PEF/PEF_{-1})$$

$$(617,T)\ PIPV = \ln\left[\frac{1}{1 + ((DIVR + ((SPUK - SPUK_{-8})/SPUK_{-8}).100/2)/400)}\right] + \ln\ (PEF/PEF_{-1})$$

Aggregate price index (the weights used are the average asset shares over the sample period)

$$(629,I)\ AGPV = 0.40847\ PBLV + 0.07082\ PBSV + 0.07287\ PDBV + 0.03208\ PD\$V + 0.41577\ PIPV$$

Take up of public sector long-term debt

(i) Behavioural equation

$$(630,B)\ \Delta WBLV = -\underset{(2.5)}{0.00340009} - \underset{(7.2)}{0.7099106}\ \Delta PBLV + \underset{(3.8)}{0.1922203}\ \Delta PBSV + \underset{(3.1)}{0.1151056}\ \Delta PDBV + \underset{(2.3)}{0.05489615}\ \Delta PD\$V + \underset{(4.2)}{0.3476886}\ \Delta PIPV - \underset{(4.4)}{0.2020108}\ RES1_{-1} - \underset{(3.4)}{0.06581303}\ \Delta(\ln(KWV/PEF) - AGPV)$$

$\bar{R}^2 = 0.51$ SE = 0.011 DW = 2.4 BP(8) = 10.6 LM(4) = 14.1 1972 I - 1988 IV

(ii) Stock

$$(631,I)\ KBLV = KWV.WBLV$$

(iii) Flow

$$(763,I)\ BLGV = KBLV - (PGLT/PGLT_{-1}).KBLV_{-1}$$

Take up of short-term assets

(i) Behavioural equation

(632,B) ΔWBSV = - 0.001005548 + 0.1922203 ΔPBLV - 0.1971628 ΔPBSV
(1.6) (3.8) (3.7)

+ 0.004942581 ΔPD$V - 0.0477693 Δ(ln(KWV/PEF) - AGPV)
(0.2) (5.6)

- 0.3242584 RES2$_{-1}$
(6.7)

$\bar{R}^2$ = 0.53 SE = 0.0052 DW = 1.5 BP(6) = 8.6 LM(4) = 12.9 1972 I - 1988 IV

(ii) Stock

(636,I) KBSV = KWV.WBSV

(iii) Flow

(762,I) BSGV = ΔKBSV

Sterling deposits with M4 institutions

(i) Behavioural equation

(637,B) ΔWDBV = 0.0008764477 + 0.1151056 ΔPBLV - 0.148363 ΔPDBV
(2.0) (3.1) (3.5)

+ 0.03325745 ΔPD$V - 0.03901516 Δ(ln(KWV/PEF) - AGPV)
(1.4) (6.6)

- 0.05165223 RES1$_{-1}$ - 0.2206679 RES3$_{-1}$
(2.1) (4.3)

$\bar{R}^2$ = 0.55 SE = 0.004 DW = 1.4 BP(7) = 3.9 LM(4) = 22.2 1972 I - 1988 IV

(ii) Stock

(638,I) KDBV = KWV.WDBV

(iii) Flow

(761,I) DBV = ΔKDBV

Foreign currency deposits with M4 institutions

(i) Behavioural equation

In the model WD$V is set to be equal to (1 - WBSV - WDBV - WBLV - WIPV). The full behavioral equation is reported here since it may be of interest.

$$\begin{aligned}(639,B)\ \Delta WD\$V = {} & 0.0004608 + \underset{(0.8)}{0.05489615}\ \Delta PBLV - \underset{(2.3)}{0.004942581}\ \Delta PBSV \\ & + \underset{(0.2)}{0.03325745}\ \Delta PDBV - \underset{(1.4)}{0.06720899}\ \Delta PD\$V - \underset{(4.1)}{0.02588719}\ \Delta PIPV \\ & - \underset{(1.7)}{0.02442858}\ \Delta(\ln(KWV/PEF) - AGPV) + \underset{(6.1)}{0.2536631}\ RES1_{-1} \\ & + \underset{(5.9)}{0.3242584}\ RES2_{-1} + \underset{(6.7)}{0.2206679}\ RES3_{-1} + \underset{(4.3)}{0.2946858}\ RES5_{-1} \\ & \qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad (4.9)\end{aligned}$$

1972 I - 1988 IV

(ii) Stock

(640,I) KD$V = KWV.WD$V

(iii) Flow

(736,I) DB$V = KD$V - (ERUK/ERUK$_{-1}$).KDV_{-1}$

Portfolio investment

(i) Behavioural equation

$$\begin{aligned}(642,B)\ \Delta WIPV = {} & 0.003068325 + \underset{(4.2)}{0.3476886}\ \Delta PBLV \\ & - \underset{(1.7)}{0.02588719}\ \Delta PD\$V - \underset{(4.0)}{0.3218014}\ \Delta PIPV \\ & + \underset{(7.6)}{0.1770261}\ \Delta(\ln(KWV/PEF) - AGPV) \\ & - \underset{(7.0)}{0.2946858}\ RES5_{-1}\end{aligned}$$

$\bar{R}^2 = 0.62$ SE = 0.015 DW = 2.2 BP(11) = 23.2 LM(4) = 11.9 1972 I - 1988 IV

(ii) Stock

(643,I) KIPV = KWV.WIPV

(iii) Flow

(726,T) IPV = KIPV - (SPUK/SPUK$_{-1}$).KIPV$_{-1}$

Long-run equations

RES1 = WBLV - (- 1.160089 PBLV + 0.51158 PBSV + 0.258961 PDBV
+ 0.1471107 PD$V + 0.2424373 PIPV - 0.07011344 (ln(KWV/PEF) - AGPV)
- 0.003470707 TIME + 0.05161526 D794 + 1.508032

DF = -4.1 ADF = -2.6

RES2 = WBSV - (+0.51158 PBLV - 0.5691181 PBGSV
+ 0.0575381 PIPV - 0.01747498 (ln(KWV/PEF) - AGPV)
- 0.00098976 TIME - 0.02163253 D794 + 0.3838671

DF = -3.7 ADF = -3.3

RES3 = WDBV - (0.258961 PBLV - 0.3186138 PDBV - 0.08126199 PD$V
+ 0.1409148 PIPV + 0.0007653085 TIME - 0.02732829 D794 - 0.003764049

DF = -3.4 ADF = -2.3

RES4 = WD$V - (0.1471167 PBLV - 0.08126199 PDBV
- 0.03350964 PD$V - 0.03233903 PIPV - 0.00842427 (ln(KWV/PEF) - AGPV)
+ 0.0005184504 TIME - 0.01510928 D794 + 0.08342547

DF = -3.4 ADF = -2.5

RES5 = WIPV - (+0.2424373 PBLV + 0.0575381 PBGSV + 0.1409148 PDBV
- 0.03233903 PD$V - 0.4085511 PIPV + 0.0960127 (ln(KWV/PEF) - AGPV)
+ 0.003176708 TIME + 0.01245483 D794 - 0.9715601

DF = -5.3 ADF = -5.0

The Overseas sector

In this sector symmetry and homogeneity are imposed in the short and long-run. The residuals from the long-run equation for IPOI do not enter into the any of the dynamic specifications since the presence in the equation of all the residuals results in a singular matrix.

Total nominal wealth (as defined in the data)

$$KWO = (KBGO + KD£O + KIPI)$$

Higher level equation

$$(585,I)\ KWO = FO - ODIO - IDIO - CFO - MTO - RESO + (PGLT/PGLT_{-1}).KBGO_{-1} + KD£O_{-1} + (SPUK/SPUK_{-1}).KIPI_{-1}$$

where the stocks are defined in the data as:-

KBGO is the FSD stock

$$KD£O = KD£O_{-1} + LD£BO$$

$$KIPI = (SPUK/SPUK_{-1}).(KIPI_{-1} + IPOI/2) + IPOI/2$$

Asset shares (as defined in the data)

$$WBGO = KBGO/KWO$$

$$WD£O = KD£O/KWO$$

$$WIPI = KIPI/KWO$$

Asset prices

$$(574,T)\ PBGO = \ln\left[\frac{1}{1 + ((RUKG + ((PGLT - PGLT_{-4})/PGLT_{-4}).100)/400)}\right]$$

$$(577,T)\ PD£O = \ln\left[\frac{1}{1 + RCBR/400}\right]$$

$$(580,T)\ PIPI = \ln\left[\frac{1}{1 + ((DIVR + ((SPUK - SPUK_{-4})/SPUK_{-4}).100)/400)}\right]$$

Aggregate price index (the weights used are the average asset shares over the sample period)

$$(592,I)\ AGPO = 0.41958\ PIPI + 0.28258\ PBGO + 0.29785\ PD£O$$

Take up of public sector debt

(i) Behavioural equation

$$(582,B)\ \Delta WBGO = \underset{(0.9)}{0.001701004} - \underset{(5.0)}{0.5241889}\ \Delta PBGO + \underset{(3.7)}{0.4088526}\ \Delta PD£O$$

$$+ \underset{(1.7)}{0.1153363}\ \Delta\ PIPI - \underset{(3.7)}{0.1127645}\ \Delta\ (\ln(KWO/PEF) - AGPO)$$

$$- \underset{(5.4)}{0.8162377}\ RES1_{-1}$$

$\bar{R}^2 = 0.70$ SE = 0.009 DW = 2.0

(ii) Stock

(594,I) KBGO = KWO.WBGO

(iii) Flow

(470,I) BGSO = KBGO - (PGLT/$PGLT_{-1}$).$KBGO_{-1}$

Sterling deposits with M4 institutions

(i) Behavioural equation

$$(583,B)\ \Delta WD£O = \underset{(1.7)}{-0.00797697} + \underset{(3.7)}{0.4088526}\ \Delta PBGO - \underset{(3.9)}{0.8208046}\ \Delta PD£O$$

$$+ \underset{(2.5)}{0.411952}\ \Delta PIPI + \underset{(1.0)}{0.07973324}\ \Delta\ (\ln(KWO/PEF) - AGPO)$$

$$+ \underset{(1.3)}{0.5117505}\ RES1_{-1} - \underset{(2.2)}{0.3105768}\ RES2_{-1}$$

$\bar{R}^2 = 0.44$ SE = 0.02 DW = 2.1

(ii) Stock

(603,I) KD£O = KWO.WD£O

(iii) Flow

(484,I) D£BO = ΔKD£O

Portfolio investment from overseas

(i) Behavioural equation

In the model WIPI is set equal to (1 - WBGO - WD£O). The full behavioural equation is reported here since it may be of interest.

$$(581,B)\ \Delta WIPI = \underset{(1.5)}{0.006275966} + \underset{(1.7)}{0.1153363}\ \Delta PBGO + \underset{(2.5)}{0.4119526}\ \Delta PD£O$$

$$- \underset{(3.5)}{0.5272884}\ \Delta PIPI + \underset{(0.5)}{0.03303128}\ \Delta\ (\ln(KWO/PEF) - AGPO)$$

$$+ \underset{(0.8)}{0.3044872}\ RES1_{-1} + \underset{(2.2)}{0.3105768}\ RES2_{-1}$$

(ii) Stock

(584,I) KIPI = KWO.WIPI

(iii) Flow

(307,I) IPOI = KIPI - (SPUK/SPUK$_{-1}$).KIPI$_{-1}$

Long-run equations

RES1 = WBGO - (0.9488516 - 0.5667771 PBGO + 0.4590453 PD£O
+ 0.1077318 PIPI - 0.06349503 (ln(KWO/PEF) - AGPO))

DF = -5.3

RES2 = WD£O - (1.843916 + 0.4590453 PBGO - 0.8722233 PD£O + 0.413178 PIPI
- 0.1464767 (ln(KWO/PEF) - AGPO))

DF = -2.5

RES3 = WIPI - (- 1.7927676 + 0.1077318 PBGO + 0.413178 PD£O
- 0.5209098 PIPI + 0.2099717 (ln(KWO/PEF) - AGPO))

DF = -2.3

APPENDIX 3: SIMULATION TABLES

1. SPUK +5pc, EER FREE

(% differences from base except where stated)

	1	2	4	8	12
GDPO	0.0	0.0	0.1	0.2	0.2
DOMD	0.0	0.0	0.1	0.2	0.3
PGDP	0.0	0.0	0.0	0.0	0.1
RPI	0.0	0.0	0.0	0.1	0.1
RPIX	0.0	0.0	0.0	0.0	0.1
WS	0.0	0.0	0.0	0.0	0.1
LU (mn)	0.0	0.0	0.0	0.0	0.0
PSBR (£bn)	-	-	0.0	-0.2	-0.7
RCBR (%)	0.0	0.0	0.0	0.0	0.0
BAL (£bn)	-	-	-0.1	-0.3	-0.5
KM4	0.3	0.4	0.5	0.8	1.0
of which: KDBJ	0.1	0.2	0.3	0.6	0.8
KDBI	0.0	0.0	0.1	0.2	0.4
KDBV	1.8	2.0	2.0	2.3	2.5
KM4L	0.0	0.0	0.1	0.4	0.5
of which: KLDJ	0.0	0.0	0.1	0.3	0.5
KHPJ	0.0	0.0	0.0	0.0	0.0
KLDI	0.0	0.0	0.0	0.2	0.3
KLDV	0.0	0.2	0.7	1.9	2.5
WBLV (%)	-0.5	-0.5	-0.5	-0.5	0.0
WBSV (%)	-0.2	-0.2	-0.3	-0.3	-0.3
WDBV (%)	-0.2	-0.2	-0.2	-0.2	-0.2
WD$V (%)	-0.1	-0.1	-0.1	-0.1	-0.1
WIPV (%)	1.0	1.0	1.0	1.0	0.5
WBGO (%)	-0.5	-0.3	-0.3	-0.2	-0.1
WD9O (%)	-0.3	-0.6	-0.7	-0.3	-0.3
WIPI (%)	0.8	0.9	1.1	0.4	0.4
SPUK	5.0	5.0	5.0	5.0	5.0
EER	0.0	-0.1	0.0	0.0	-0.1
KWV	3.3	3.6	3.6	3.8	3.9
KWO	2.8	2.0	2.4	2.3	2.4

1A. SPUK +5pc, EER FIXED

(% differences from base except where stated)

	1	2	4	8	12
GDPO	0.0	0.0	0.1	0.2	0.2
DOMD	0.0	0.0	0.1	0.2	0.3
PGDP	0.0	0.0	0.0	0.0	0.1
RPI	0.0	0.0	0.0	0.0	0.1
RPIX	0.0	0.0	0.0	0.0	0.1
WS	0.0	0.0	0.0	0.0	0.1
LU (mn)	0.0	0.0	0.0	0.0	0.0
PSBR (£bn)	-	-	0.0	-0.2	-0.7
RCBR (%)	0.0	0.0	0.0	0.0	0.0
BAL (£bn)	-	-	-0.1	-0.3	-0.5
KM4	0.3	0.4	0.5	0.8	1.0
of which: KDBJ	0.1	0.2	0.3	0.6	0.8
KDBI	0.0	0.0	0.1	0.2	0.3
KDBV	1.8	2.0	2.0	2.3	2.6
KM4L	0.0	0.0	0.1	0.4	0.5
of which: KLDJ	0.0	0.0	0.1	0.3	0.5
KHPJ	0.0	0.0	0.0	0.0	0.0
KLDI	0.0	0.0	0.0	0.1	0.3
KLDV	0.0	0.2	0.7	1.9	2.5
WBLV (%)	-0.5	-0.5	-0.5	-0.5	0.0
WBSV (%)	-0.2	-0.2	-0.3	-0.3	-0.3
WDBV (%)	-0.2	-0.2	-0.2	-0.2	-0.2
WD$V (%)	-0.1	-0.1	-0.1	-0.1	-0.1
WIPV (%)	1.0	1.0	1.0	1.0	0.5
WBGO (%)	-0.5	-0.3	-0.3	-0.2	-0.1
WD9O (%)	-0.3	-0.6	-0.7	-0.3	-0.3
WIPI (%)	0.8	0.9	1.1	0.4	0.5
SPUK	5.0	5.0	5.0	5.0	5.0
KWV	3.3	3.6	3.6	3.8	3.9
KWO	2.8	2.0	2.4	2.3	2.4

2. EER +5pc

(% differences from base except where stated)

	1	2	4	8	12
GDPO	-0.1	-0.2	-0.3	-0.4	-0.5
DOMD	0.0	0.1	0.2	0.1	-0.1
PGDP	0.2	0.1	-0.5	-1.7	-2.7
RPI	-0.2	-0.6	-1.1	-2.0	-2.6
RPIX	-0.2	-0.5	-1.0	-2.1	-2.9
WS	-0.1	-0.3	-0.9	-2.1	-3.1
LU (mn)	0.0	0.0	0.0	0.0	0.1
PSBR (£bn)	-	-	0.5	2.2	3.7
RCBR (%)	0.0	-0.6	-0.3	0.0	0.2
BAL (£bn)	-	-	0.3	-1.1	-1.2
KM4	0.0	-0.1	0.0	-0.2	-0.6
of which: KDBJ	0.0	0.0	-0.1	-0.3	-0.9
KDBI	-0.1	-0.1	-0.4	-1.4	-2.3
KDBV	0.2	-0.3	0.5	2.0	2.7
KM4L	0.0	0.0	0.1	-0.1	-0.8
of which: KLDJ	0.0	0.0	0.2	0.2	-0.1
KHPJ	0.0	0.1	0.4	0.8	0.4
KLDI	0.0	-0.1	-0.4	-1.4	-2.6
KLDV	0.0	0.0	0.0	-0.8	-2.0
WBLV (%)	0.3	0.5	0.4	-0.4	-1.7
WBSV (%)	0.0	-0.1	0.0	0.3	0.5
WDBV (%)	0.0	0.0	0.2	0.4	0.5
WD$V (%)	-0.1	0.0	0.0	0.1	0.2
WIPV (%)	-0.2	-0.4	-0.6	-0.4	0.5
WBGO (%)	0.1	0.6	0.3	-0.4	-0.5
WD9O (%)	-0.1	-0.5	-0.2	0.1	-0.1
WIPI (%)	0.0	-0.1	-0.1	0.3	0.5
SPUK	0.0	-1.0	-1.5	-2.0	-2.4
EER	5.0	5.0	5.0	5.0	5.0
KWV	0.1	-0.2	-0.7	-1.2	-1.4
KWO	1.2	-0.4	-0.1	0.2	0.5

3. All Interest Rates +1pc, EER FREE

(% differences from base except where stated)

	1	2	4	8	12
GDPO	0.0	-0.2	-0.5	-0.9	-1.3
DOMD	-0.1	-0.4	-0.8	-1.4	-1.9
PGDP	0.0	0.0	0.0	-0.4	-1.0
RPI	0.5	0.5	0.4	0.0	-0.6
RPIX	0.0	0.0	-0.1	-0.3	-0.8
WS	0.0	0.0	0.0	-0.4	-1.0
LU (mn)	0.0	0.0	0.0	0.1	0.1
PSBR (£bn)	-	-	1.2	2.8	4.9
RCBR (%)	1.0	1.0	1.0	1.0	1.0
BAL (£bn)	-	-	0.7	1.6	2.5
KM4	-0.3	-0.5	-1.1	-2.6	-4.0
of which: KDBJ	-0.3	-0.4	-1.1	-2.9	-4.5
KDBI	0.0	-0.1	-0.4	-1.1	-1.7
KDBV	-0.7	-1.3	-2.2	-3.1	-4.5
KM4L	-0.1	-0.3	-0.8	-2.0	-3.2
of which: KLDJ	0.0	-0.1	-0.3	-1.2	-2.5
KHPJ	-0.3	-0.6	-1.2	-2.7	-4.1
KLDI	0.0	-0.1	-0.3	-1.1	-1.9
KLDV	0.0	-0.2	-0.7	-2.2	-3.3
WBLV (%)	-0.5	-0.4	-0.3	-0.1	0.7
WBSV (%)	0.4	0.4	0.5	0.5	0.2
WDBV (%)	0.3	0.2	0.2	0.1	0.0
WD$V (%)	0.1	0.1	0.0	0.0	0.0
WIPV (%)	-0.3	-0.3	-0.5	-0.5	-0.8
WBGO (%)	-0.5	-0.7	-0.5	0.3	0.4
WD9O (%)	0.9	1.2	1.4	0.6	0.7
WIPI (%)	-0.3	-0.5	-0.9	-0.9	-1.1
SPUK	-2.2	-2.6	-3.7	-4.0	-4.5
EER	-0.1	0.3	1.5	0.8	1.0
KWV	-2.6	-2.9	-3.6	-3.9	-4.3
KWO	-2.4	-2.2	-3.3	-4.4	-6.1

3A. All Interest Rates +1pc, EER FIXED

(% differences from base except where stated)

	1	2	4	8	12
GDPO	0.0	-0.2	-0.4	-0.8	-1.2
DOMD	-0.1	-0.4	-0.8	-1.3	-1.9
PGDP	0.0	0.0	0.0	-0.1	-0.5
RPI	0.5	0.5	0.5	0.4	-0.1
RPIX	0.0	0.0	0.1	0.0	-0.3
WS	0.0	0.0	0.0	-0.1	-0.5
LU (mn)	0.0	0.0	0.0	0.0	0.1
PSBR (£bn)	-	-	1.1	2.3	4.2
RCBR (%)	1.0	1.0	1.0	1.0	1.0
BAL (£bn)	-	-	0.6	1.7	2.7
KM4	-0.3	-0.5	-1.1	-2.5	-3.8
of which: KDBJ	-0.3	-0.4	-1.1	-2.8	-4.3
KDBI	0.0	-0.1	-0.4	-0.8	-1.2
KDBV	-0.7	-1.3	-2.1	-3.4	-4.8
KM4L	-0.1	-0.3	-0.8	-1.9	-3.0
of which: KLDJ	0.0	-0.1	-0.3	-1.2	-2.4
KHPJ	-0.3	-0.6	-1.3	-2.8	-4.1
KLDI	0.0	-0.1	-0.3	-0.8	-1.4
KLDV	0.0	-0.2	-0.7	-2.0	-2.9
WBLV (%)	-0.5	-0.4	-0.3	0.0	0.9
WBSV (%)	0.4	0.4	0.5	0.4	0.1
WDBV (%)	0.3	0.2	0.1	0.0	-0.1
WD$V (%)	0.1	0.1	0.0	0.0	0.0
WIPV (%)	-0.3	-0.3	-0.3	-0.4	-0.9
WBGO (%)	-0.5	-0.7	-0.5	0.4	0.4
WD9O (%)	0.9	1.2	1.4	0.6	0.8
WIPI (%)	-0.3	-0.5	-0.8	-0.9	-1.2
SPUK	-2.2	-2.6	-3.1	-3.7	-4.1
KWV	-2.6	-2.9	-3.1	-3.6	-4.1
KWO	-2.4	-2.2	-2.9	-4.3	-6.1

4. All Short Interest Rates +1pc, EER FREE

(% differences from base except where stated)

	1	2	4	8	12
GDPO	0.0	-0.2	-0.4	-0.8	-1.2
DOMD	-0.1	-0.3	-0.7	-1.2	-1.8
PGDP	0.0	0.0	0.0	-0.2	-0.7
RPI	0.5	0.5	0.5	0.2	-0.4
RPIX	0.0	0.0	0.0	-0.1	-0.6
WS	0.0	0.0	0.0	-0.2	-0.8
LU (mn)	0.0	0.0	0.0	0.0	0.1
PSBR (£bn)	-	-	1.0	2.4	4.5
RCBR (%)	1.0	1.0	1.0	1.0	1.0
BAL (£bn)	-	-	0.7	1.8	2.7
KM4	-0.3	-0.4	-1.0	-2.4	-3.8
of which: KDBJ	-0.4	-0.4	-1.1	-2.8	-4.4
KDBI	0.0	0.0	-0.2	-0.7	-1.4
KDBV	-0.6	-1.0	-1.8	-3.0	-4.2
KM4L	-0.1	-0.3	-0.7	-1.8	-2.9
of which: KLDJ	0.0	-0.1	-0.3	-1.2	-2.4
KHPJ	-0.3	-0.6	-1.3	-2.7	-4.0
KLDI	0.0	0.0	-0.2	-0.7	-1.4
KLDV	0.0	-0.1	-0.6	-1.7	-2.8
WBLV (%)	-0.1	-0.1	0.0	0.2	0.5
WBSV (%)	0.2	0.3	0.3	0.4	0.3
WDBV (%)	0.2	0.2	0.1	0.0	0.0
WD$V (%)	0.1	0.0	0.0	0.0	0.0
WIPV (%)	-0.4	-0.4	-0.5	-0.6	-0.6
WBGO (%)	-0.1	-0.2	-0.1	0.1	0.2
WD9O (%)	0.5	0.8	1.0	0.7	0.8
WIPI (%)	-0.4	-0.6	-0.8	-0.8	-1.1
SPUK	-2.2	-2.6	-3.3	-3.8	-4.3
EER	0.0	0.1	0.5	0.5	0.7
KWV	-1.8	-2.2	-2.7	-3.3	-3.8
KWO	-1.7	-1.7	-2.6	-4.1	-5.9

4A. All Short Interest Rates +1pc, EER FIXED

(% differences from base except where stated)

	1	2	4	8	12
GDPO	0.0	-0.2	-0.4	-0.7	-1.1
DOMD	-0.1	-0.3	-0.7	-1.2	-1.8
PGDP	0.0	0.0	0.0	-0.1	-0.5
RPI	0.5	0.5	0.5	0.3	-0.1
RPIX	0.0	0.0	0.1	0.0	-0.3
WS	0.0	0.0	0.0	-0.1	-0.5
LU (mn)	0.0	0.0	0.0	0.0	0.1
PSBR (£bn)	-	-	1.0	2.2	4.1
RCBR (%)	1.0	1.0	1.0	1.0	1.0
BAL (£bn)	-	-	0.6	1.8	2.8
KM4	-0.3	-0.5	-1.0	-2.4	-3.7
of which: KDBJ	-0.4	-0.4	-1.1	-2.8	-4.3
KDBI	0.0	0.0	-0.2	-0.6	-1.1
KDBV	-0.6	-1.0	-1.8	-3.1	-4.3
KM4L	-0.1	-0.3	-0.7	-1.8	-2.8
of which: KLDJ	0.0	-0.1	-0.3	-1.2	-2.4
KHPJ	-0.3	-0.6	-1.3	-2.7	-4.0
KLDI	0.0	0.0	-0.1	-0.6	-1.2
KLDV	0.0	-0.1	-0.6	-1.7	-2.6
WBLV (%)	-0.1	-0.1	0.0	0.2	0.5
WBSV (%)	0.2	0.3	0.3	0.3	0.2
WDBV (%)	0.2	0.2	0.1	0.0	-0.1
WD$V (%)	0.1	0.1	0.0	0.0	-0.1
WIPV (%)	-0.4	-0.4	-0.5	-0.5	-0.6
WBGO (%)	-0.1	-0.2	-0.2	0.1	0.3
WD9O (%)	0.5	0.8	1.0	0.7	0.9
WIPI (%)	-0.4	-0.6	-0.8	-0.8	-1.1
SPUK	-2.2	-2.6	-3.1	-3.6	-4.0
KWV	-1.8	-2.2	-2.6	-3.2	-3.6
KWO	-1.6	-1.7	-2.5	-4.0	-5.9

5. World Trade +5pc, EER FREE

(% differences from base except where stated)

	1	2	4	8	12
GDPO	0.5	1.0	1.3	1.4	1.5
DOMD	0.0	0.3	0.7	0.9	1.2
PGDP	-0.1	-0.1	-0.3	-0.6	-0.5
RPI	0.0	-0.2	-0.4	-0.6	-0.7
RPIX	0.0	-0.2	-0.5	-0.8	-0.7
WS	0.0	-0.1	-0.3	-0.4	-0.1
LU (mn)	0.0	0.0	-0.1	-0.1	-0.2
PSBR (£bn)	-	-	-1.2	-3.0	-5.2
RCBR (%)	0.0	0.0	0.2	0.2	-0.2
BAL (£bn)	-	-	5.9	4.9	4.5
KM4	-0.1	-0.1	-0.1	0.0	0.3
of which: KDBJ	0.0	0.0	0.1	0.1	0.4
KDBI	0.0	0.0	0.2	0.7	0.7
KDBV	-0.5	-1.1	-1.6	-1.3	-0.4
KM4L	0.0	0.0	0.1	0.3	0.7
of which: KLDJ	0.0	0.0	0.1	0.4	0.8
KHPJ	0.0	0.0	0.2	0.5	1.0
KLDI	0.0	0.0	0.1	0.7	0.9
KLDV	0.0	0.0	-0.1	-0.6	-0.5
WBGO (%)	0.1	0.3	0.5	0.3	0.6
WD9O (%)	-0.1	-0.2	0.1	0.8	0.7
WIPI (%)	0.0	-0.1	-0.6	-1.1	-1.2
SPUK	0.0	-0.2	-1.1	-0.6	1.2
EER	0.8	1.7	2.7	2.7	2.7
KWV	0.1	0.0	-0.6	-0.3	1.3
KWO	-0.7	-2.4	-5.5	-7.9	-8.5

5A. World Trade +5pc, EER FIXED

(% differences from base except where stated)

	1	2	4	8	12
GDPO	0.5	1.0	1.5	1.6	1.8
DOMD	0.0	0.3	0.6	0.9	1.2
PGDP	-0.1	-0.2	-0.2	0.2	0.9
RPI	0.0	-0.1	0.0	0.3	0.7
RPIX	0.0	-0.1	-0.2	0.1	0.7
WS	0.0	0.0	0.0	0.5	1.4
LU (mn)	0.0	0.0	-0.1	-0.1	-0.2
PSBR (£bn)	-	-	-1.3	-4.0	-7.2
RCBR (%)	0.0	0.1	0.4	0.3	-0.2
BAL (£bn)	-	-	5.8	5.4	5.3
KM4	-0.1	-0.1	-0.1	0.1	0.6
of which: KDBJ	0.0	0.0	0.1	0.2	0.7
KDBI	0.0	0.0	0.3	1.3	1.9
KDBV	-0.5	-1.1	-1.7	-2.2	-1.9
KM4L	0.0	0.0	0.1	0.3	1.0
of which: KLDJ	0.0	0.0	0.1	0.3	0.8
KHPJ	0.0	0.0	0.1	0.1	0.7
KLDI	0.0	0.0	0.2	1.2	2.1
KLDV	0.0	0.0	-0.1	-0.3	0.4
WBGO (%)	0.1	0.2	0.3	0.5	0.8
WD9O (%)	-0.1	-0.1	0.3	0.8	0.7
WIPI (%)	0.0	-0.1	-0.6	-1.2	-1.5
SPUK	0.0	0.0	-0.5	0.4	2.5
KWV	0.0	0.0	-0.3	0.4	2.1
KWO	-0.9	-2.5	-5.4	-8.0	-8.9

6. LVJ +10pc, EER FREE

(% differences from base except where stated)

	1	2	4	8	12
GDPO	-0.1	-0.2	-0.2	-0.2	-0.3
DOMD	-0.1	-0.2	-0.3	-0.4	-0.5
PGDP	0.0	0.0	0.0	0.0	-0.2
RPI	0.0	0.0	0.0	0.0	0.0
RPIX	0.0	0.0	0.0	0.0	-0.1
WS	0.0	0.0	0.1	0.0	-0.1
LU (mn)	0.0	0.0	0.0	0.0	0.0
PSBR (£bn)	-	-	1.2	1.8	2.5
RCBR (%)	0.0	0.0	0.0	0.1	0.2
BAL (£bn)	-	-	0.3	0.7	1.0
KM4	0.0	0.1	0.1	0.1	0.0
of which: KDBJ	0.0	0.0	0.0	0.0	-0.2
KDBI	0.0	0.0	0.0	-0.2	-0.3
KDBV	0.2	0.4	0.6	1.1	1.4
KM4L	0.0	0.0	0.0	0.0	-0.1
of which: KLDJ	0.0	0.0	0.0	0.1	0.0
KHPJ	0.0	0.0	0.0	-0.1	-0.3
KLDI	0.0	0.0	0.0	-0.1	-0.3
KLDV	0.0	0.0	0.1	0.2	0.5
WBLV (%)	0.0	0.0	-0.1	-0.1	-0.1
WBSV (%)	0.0	0.0	0.0	0.0	0.0
WDBV (%)	0.0	0.0	0.0	0.0	0.0
WD$V (%)	0.0	0.0	0.0	0.0	0.0
WIPV (%)	0.0	0.0	0.1	0.1	0.2
SPUK	0.0	-0.1	-0.1	-0.3	-0.7
EER	-0.1	-0.1	-0.2	-0.2	-0.3
KWV	0.1	0.3	0.5	1.0	1.4
KWO	-0.1	-0.2	-0.4	-1.1	-2.0

6A. LVJ +10pc, EER FIXED

(% differences from base except where stated)

	1	2	4	8	12
GDPO	-0.1	-0.2	-0.2	-0.2	-0.3
DOMD	-0.1	-0.2	-0.3	-0.4	-0.5
PGDP	0.0	0.0	0.0	-0.1	-0.3
RPI	0.0	0.0	0.0	0.0	-0.2
RPIX	0.0	0.0	0.0	-0.1	-0.2
WS	0.0	0.0	0.0	-0.1	-0.2
LU (mn)	0.0	0.0	0.0	0.0	0.0
PSBR (£bn)	-	-	1.2	1.9	2.7
RCBR (%)	0.0	0.0	0.0	0.1	0.2
BAL (£bn)	-	-	0.4	0.7	1.0
KM4	0.0	0.1	0.1	0.1	0.0
of which: KDBJ	0.0	0.0	0.0	0.0	-0.2
KDBI	0.0	0.0	0.0	-0.2	-0.4
KDBV	0.2	0.4	0.6	1.1	1.5
KM4L	0.0	0.0	0.0	0.0	-0.2
of which: KLDJ	0.0	0.0	0.0	0.1	0.0
KHPJ	0.0	0.0	0.0	-0.1	-0.3
KLDI	0.0	0.0	0.0	-0.2	-0.4
KLDV	0.0	0.0	0.1	0.2	0.4
WBLV (%)	0.0	0.0	-0.1	-0.1	-0.2
WBSV (%)	0.0	0.0	0.0	0.0	0.0
WDBV (%)	0.0	0.0	0.0	0.0	0.0
WD$V (%)	0.0	0.0	0.0	0.0	0.0
WIPV (%)	0.0	0.0	0.1	0.1	0.2
SPUK	0.0	-0.1	-0.1	-0.4	-0.8
KWV	0.1	0.2	0.5	0.9	1.3
KWO	0.0	-0.2	-0.4	-1.1	-2.0

APPENDIX 4: FULL ALPHABETICAL LISTING OF THE BANK MODEL

The full variable listing of the Bank Model is included in this appendix for reference. Clearly not all of this is relevant for the current paper.

ALPHABETICAL VARIABLE LISTING

Code	Definition (a)	Data Unit	Defined by (b)	Page (file)
ACCP	Accumulation of PMGO/PPOX from 1973 Q4		i(679)	5.2(S8)
ACTC	Advance corporation tax credits	£mn	b(133)	12.1(S18)
ACTP	Payments of advance corporation tax: total	£mn	b(200)	11.5(S2)
ADJ	Difference between the expenditure and average estimates of GDP	85£mn	x(598)	
ADJP	Net adjustments required to obtain public sector planning totals	£mn	x(684)	
AFTP	Financial companies payments of advance corporation tax	£mn	i(408)	11.5(S19)
AGPO	Overseas aggregate price index		i(592)	14b.8/8.6(S5)
AGPV	OOFIs aggregate price index		i(629)	14b.4/8.6(S5)
AITP	Payments of advance corporation tax: ICCs	£mn	t(266)	11.2(S19)
ANRP	Accruals of North Sea Oil Royalties (Private sector)	£mn	t(18)	12.5(S21)
AVAT	Accruals of VAT and purchase tax (excluding that on cars)	£mn	b(78)	12.2(S21)
BAL	Current balance of payments	£mn	i(132)	13.4(S23)
BALI	Invisible balance	£mn	i(245)	13.4(S23)
BALM	Manufactures balance	£mn	i(106)	13.4(S23)
BALN	Non-oil visible balance	£mn	i(164)	13.4(S23)
BALO	Balance on petroleum and petroleum products	£mn	i(325)	13.4(S23)
BALS	Balance on services	£mn	i(242)	13.4(S23)
BALV	Visible trade balance	£mn	i(298)	13.4(S23)
BD$B	M4 institutions domestic deposits (currencies):M4 institutions	£mn	t(760)	14a.9(S5)
BGSO	Overseas take-up of gilts: overseas	£mn	i(470)	14a.3/14b.9(S5)
BIPD	Interest, profits and dividends (net)	£mn	i(130)	13.4(S23)
BITC	"Bite" of capital allowances against North Sea		t(153)	12.5(S25)
BITP	"Bite" of capital allowances against Petroleum Revenue Tax		t(232)	12.4(S25)
BLGG	Long debt: Public		i(718)	14a.3(S5)
BLGI	Long debt: ICCs	£mn	t(747)	14a.4(S5)
BLGJ	Long debt: Persons	£mn	i(735)	14a.3(S5)
BLGV	Long debt: OFIs	£mn	t(763)	14a.4/14b.4(S5)
BSGI	Other short debt: ICCs	£mn	b(746)	14a.4(S5)
BSGJ	Other short debt: Persons	£mn	b(734)	14a.3(S5)
BSGV	Other short debt: OFIs	£mn	b(762)	14a.4/14b.5(S5)
BTAB	Net private and government transfers abroad	£mn	i(131)	13.4(S23)
C£	Total consumers' expenditure	£mn	i(103)	1.2(S0)
CAT	Consumption of alcohol and tobacco	85£mn	b(691)	1.1(S0)
CD	Consumers' expenditure on durable goods	85£mn	b(2)	1.2(S0)
CEAT	Average specific duty rate on alcohol and tobacco	£/85£	t(692)	12.3(S2)
CEOL	Average specific duty rate on hydrocarbon oil	£/85£	t(722)	12.3(S2)
CF	Consumers' expenditure on food	85£mn	b(280)	1.1(S0)
CFO	Reserves etc: overseas	£mn	x(471)	
CIPD	Total IPD credits	£mn	i(289)	13.2(S22)
CND	Consumers' expenditure on non-durable items	85£mn	b(1)	1.1(S0)
CONS	Total consumers' expenditure	85£mn	i(4)	1.2(S0)
CPBR	Accumulation of PSBR as a % of GDPN (from 1979 Q1)	%	i(436)	8.1(S13)
CPII	Capital issues (UK): ICCs	£mn	b(500)	14a.2(S19)
CPIV	Capital issues (UK): OFIs	£mn	b(725)	14a.2(S19)
CR74	Dummy for 1974 Stock market crash		x(646)	
CR87	Dummy for 1987 Stock market crash		x(645)	

CRSN	Accumulation of RZSN since 1963 Q1	%	i(274)	14a.10(S3)
CUCI	Transformed CBI index of capacity utilisation		b(256)	6.3(S10)
D681	Dummy for 1968 Q1		x(508)	
D714	Dummy from 1971 Q4		x(551)	
D721	Dummy for 1972 Q3		x(509)	
D73B	Dummy for 1973 Q2		x(545)	
D741	Dummy from 1974 Q2		x(523)	
D75	Dummy for 1975		x(593)	
D75A	Dummy from 1975 Q1		x(552)	
D79	Dummy for 1979 Q2		x(549)	
D794	Dummy from 1979 Q4		x(644)	
D80T	Time trend from 1980 Q1		x(695)	
D811	Dummy from 1981 Q1		x(602)	
D821	Dummy from 1982 Q1		x(681)	
D842	Dummy for 1984 Q2		x(450)	
D844	Dummy for 1984 Q4		x(647)	
D852	Dummy for 1985 Q2		x(648)	
D853	Dummy for introduction of 1985 budget changes		x(316)	
D856	Dummy for 1985 Q4 and 1986 Q3		x(550)	
D873	Dummy for 1987 Q3		x(553)	
D£BO	Overseas deposits with M4 institutions (net): sterling (overseas)	£mn	t(484)	14a.4/14b.9(S19)
D$BO	Overseas deposits with M4 institutions (net): currency (overseas)	£mn	i(483)	14a.4(S5)
DAVE	Mortgage debt: Average of RPI index households	Jan 87=100	b(770)	9.6(S17)
DB$I	ICCs M4 institutions domestic currency deposits	£mn	b(723)	14a.9(S5)
DB$J	Personal sector M4 institutions domestic currency deposits	£mn	t(720)	14a.9(S5)
DB$V	OOFIs M4 institutions domestic currency deposits	£mn	i(736)	14a.9/14b.6(S5)
DBB	M4 institutions domestic deposits (sterling): M4 institutions	£mn	i(756)	14a.8(S5)
DBI	M4 institutions domestic deposits (sterling): ICCs	£mn	i(461)	14a.8(S5)
DBJ	M4 institutions domestic deposits (sterling): persons	£mn	i(460)	14a.8(S5)
DBNK	Dummy for the return of banks to the housing market		x(522)	
DBV	M4 institutions domestic deposits (sterling): OOFIs	£mn	i(761)	14a.8/14b.5(S5)
DCAP	Dummy variable		x(754)	
DDOB	Domestic demand (output based)	85£mn	i(452)	6.1(S2)
DIIN	Dummy for period of nominal tax relief on stocks		x(524)	
DIIP	Dummy for period of physical tax relief on stocks		x(546)	
DIPD	Total IPD debits	£mn	i(294)	13.3(S22)
DIVR	Dividend rate		t(578)	8.4(S5)
DM84	Dummy for the miners strike		x(786)	
DOIL	Demand for oil	85£mn	b(678)	5.2(S8)
DOMD	Domestic Demand (expenditure based)	85£mn	i(309)	6.1(S2)
ECMM	Employment costs per employee, manufacturing	£mn/1000	i(355)	7.4(S18)
E$£	$ per £, quarterly average	$	i(518)	8.1(S13)
EDM£	DM per £, quarterly average	DM	i(520)	8.1(S13)
EDM$	Dm/$ exchange rate , quarterly average	dm/$	x(605)	8.1
EER	Effective UK exchange rate index	1985=1	b(3)	8.1(S13)
EF	Total final expenditure	85£mn	i(70)	6.1(S9)
EF£	Total final expenditure	£mn	i(119)	6.1(S9)
EFAB	Financial companies profits due abroad	£mn	t(397)	11.5(S19)
EGG	Average earnings in public sector	1985=100	b(160)	7.4(S12)
EGGC	General Government total current expenditure	£mn	i(782)	12.1(S20)
EGGI	General Government debt interest payments	£mn	t(781)	12.1(S20)
EGPT	Public expenditure planning total	£mn	i(683)	12.2(S20)
EGTA	Net public sector transfers abroad	£mn	x(609)	
EIAB	ICCs profits due abroad	£mn	i(97)	11.3(S19)
EIBO	ICCs non-oil profits due abroad	£mn	b(156)	11.3(S19)
EIDV	ICCs payments of dividends on ordinary shares	£mn	t(66)	11.2(S19)
EIF	Financial companies payments of dividends and interest	£mn	t(392)	11.5(S19)
EIOI	ICCs other interest payments	£mn	t(83)	11.3(S19)

EIP	Households' gross interest payments	£mn	b(446)	10.2(S18)
EJTA	Personal sector net transfers abroad	£mn	x(563)	
EMAN	Index of average earnings in manufacturing	1985=100	b(607)	7.4(S12)
ENIH	National insurance payments	£mn	i(243)	10.5(S18)
EOTH	Average earnings in manufacturing	1985=100	b(204)	7.4(S12)
ERND	Non-dollar effective exchange rate	1985=100	t(23)	8.1(S13)
ERUK	UK exchange rate against US$ (Index)	1985=1	i(31)	8.1(S13)
ESAB	Subsidies	£mn	x(635)	
ETDE	Actual average quarterly wages and salaries (DoE measure)	1985=100	b(273)	7.3(S12)
FC	Net acquisition of financial assets: companies	£mn	i(228)	11.5(S19)
FCA	Factor cost adjustment	85£mn	b(67)	6.2(S9)
FCA£	Factor cost adjustment	£mn	i(120)	6.2(S9)
FFB	Net acquisition of financial assets: M4 institutions	£mn	x(751)	
FFI	Net acquisition of financial assets: ICCs	£mn	i(737)	11.3(S19)
FFV	Net acquisition of financial assets: financial companies	£mn	i(424)	11.5(S19)
FG	Net acquisition of financial assets: public sector	£mn	i(230)	12.2(S20)
FGG	Net acquisition of financial assets: general Government	£mn	i(784)	12.1(S20)
FJ	Net acquisition of financial assets: persons	£mn	i(227)	10.6(S18)
FNS	Net acquisition of financial assets: North sea companies	£mn	i(252)	12.4(S25)
FO	Net acquisition of financial assets: overseas	£mn	i(231)	13.4(S23)
FPC	Net acquisition of financial assets: Public corporations	£mn	i(785)	12.2(S20)
FRAM	Fraction of mortgage interest payments eligible for relief		x(37)	
FTGG	Net capital transfers: general Government	£mn	x(777)	
FTKF	Net capital transfers: financial companies	£mn	x(387)	
FTKI	Net capital transfers: ICCs	£mn	i(306)	11.3(S19)
FTKJ	Net capital transfers: persons	£mn	x(618)	
FTKO	Net capital transfers: overseas	£mn	x(622)	
FTPC	Net captial transfers: public corporations	£mn	x(778)	
G	Public authorities' current expenditure on goods and services	85£mn	x(586)	
G£	Public authorities' current expenditure on goods and services	£mn	i(115)	12.1(S20)
GCIF	Geometric cumulation of inflation (inflation expectations)		t(194)	14a.5(S1)
GDIV	ICCs gross payments of dividends on ordinary shares	£mn	t(71)	11.2(S19)
GDP	Gross domestic product (average estimate)	85£mn	i(68)	6.1(S9)
GDP£	Gross domestic product (expenditure estimate)	£mn	i(121)	6.1(S9)
GDPE	Gross domestic product (expenditure estimate)	85£mn	i(341)	6.1(S9)
GDPN	Nominal Gross Domestic Product at market prices (average measure)	£mn	i(15)	6.1(S9)
GDPO	Gross domestic product (output estimate)	85£mn	i(343)	6.1(S9)
GDPY	Gross domestic product (income estimate)	85£mn	i(342)	6.1(S9)
GIGH	Household income gearing ratio		i(22)	10.6(S18)
GNEC	Gross employers contributions		i(250)	10.5(S18)
GNJC	Gross employees contributions		i(263)	10.5(S18)
GTPF	Gross trading profits of financial companies	£mn	t(769)	11.4(S19)
HMF	Actual average hours worked per operative in manufacturing ind'	hrs/wk	i(265)	7.2(S11)
HMFT	Total hours worked in manufacturing industry	000s hrs/wk	b(300)	7.1(S11)
IB	Total business investment	85£mn	i(652)	2.2(S2)
IBNM	Business investment: non-oil, non-manufacturing	85£mn	i(650)	2.2(S2)
IBNO	Business investment: non-oil	85£mn	i(649)	2.2(S2)
ICHJ	Personal sector purchases of council houses	85£mn	x(218)	
IDIO	Inward investment (including inward unremmited profits):Overseas	£mn	b(412)	14a.1(S5)
IF	Total fixed investment	85£mn	i(30)	2.3(S6)
IF£	Gross fixed investment	£mn	i(118)	2.3(S6)
IFF£	Financial companies fixed investment	£mn	i(422)	2.3(S6)
IFG£	Public sector fixed investment	£mn	i(221)	2.3(S6)
IFI£	ICCs fixed investment	£mn	b(268)	2.4(S6)
IFJ£	Personal sector fixed investment	£mn	b(222)	2.4(S6)
IFP£	Total private sector fixed investment	£mn	i(224)	2.3(S6)
IGG	General Govt fixed inv. and net purchases of land & existing buildings	85£mn	x(653)	
II	Total stockbuilding	85£mn	i(64)	3.1(S6)

IIE	Total stockbuilding	£mn	i(107)	3.2(S6)
IIF£	Financial companies stockbuilding	£mn	x(423)	
IIG£	Public sector stockbuilding	£mn	i(213)	3.2(S6)
III£	ICCs stockbuilding	£mn	b(284)	3.2(S6)
IIJ£	Personal sector stockbuilding	£mn	b(211)	3.2(S6)
IIM	Manufacturers' stockbuilding	85£mn	i(52)	3.1(S6)
IIR	Non-manufacturers' stockbuilding	85£mn	i(53)	3.1(S6)
ILBP	Net pur. pub sec existing land & build by the priv sector	85£mn	x(217)	2.2
IMAN	Investment in manufacturing	85£mn	b(688)	2.1(S2)
INS	Fixed investment in North Sea sector	85£mn	x(597)	
INS£	Fixed investment in North Sea sector	£mn	i(285)	12.4(S25)
INSB	Interest payments due in UK on account of North Sea borrowing	£mn	x(281)	
IOIL	Inward oil investment	£mn	t(562)	12.5(S25)
IPB	Portfolio investment: M4 institutions	£mn	x(753)	
IPC	PC's investment in BPV other	£mn	x(354)	
IPC£	Public corporations fixed investment	£mn	t(667)	2.3(S2)
IPG	Portfolio investment: public	£mn	x(467)	
IPI	Portfolio investment: ICCs	£mn	x(730)	
IPJ	Portfolio investment: persons	£mn	i(716)	14a.2(S19)
IPO	Portfolio investment: overseas	£mn	i(480)	14a.2(S2)
IPOI	Inward portfolio investment	£mn	i(302)	14a.2/14b.10(S5)
IPOO	Outward portfolio investment	£mn	x(307)	
IPR	Private sector residential investment in houses, land & existing buildings	85£mn	b(654)	2.2(S2)
IPR£	Private sector residential investment in houses, land & existing buildings	£mn	i(666)	2.3(S2)
IPV	Portfolio investment: OFIs	£mn	t(726)	14a.3/14b.6(S5)
KATC	Proxy for stock of unused allowances against TPR		b(152)	12.5(S25)
KATP	Proxy for stock of unused allowances against corporation tax		b(235)	12.4(S25)
KBGO	Stock of overseas take-up of gilt	£mn	i(594)	14b.9(S5)
KBLI	Proxy for ICCs liabilities	£mn	i(85)	14a.7(S5)
KBLV	Stock of public sector long-term debt	£mn	i(631)	14b.4(S5)
KBSV	Stock of short-term assets	£mn	i(636)	14b.4(S5)
KCD£	Proxy for the stock of consumer durables	£mn	t(105)	1.2(S18)
KD£O	Stock of overseas M4 deposits (sterling)	£mn	i(603)	14b.9(S19)
KD$V	Stock of foreign currency deposits with M4 institutions	£mn	i(640)	14b.6(S5)
KDBI	Stock of ICCs deposits with M4 institutions	£mn	b(709)	14a.8(S5)
KDBJ	Stock of persons domestic deposits with M4 institutions	£mn	b(393)	14a.8(S5)
KDBV	Stock of OOFIs sterling deposits with M4 institutions	£mn	i(638)	14a.8(S5)
KFX£	Non-North Sea ICCs net capital stock at replacement cost	£mn	b(538)	11.3(S19)
KHPT	Total private mortgage lending (stock)	£mn	b(62)	14a.5(S1)
KHPV	Stock of lending for house purchase: OFIs	£mn	i(477)	14a.5(S1)
KIBA	Stock of borrowing from overseas by M4 institutions & OOFI's + bks inv	£mn	t(320)	13.3(S22)
KIDI	Stock of inward non-oil direct investment, excl M4 institutions	£mn	i(321)	13.2(S22)
KIIJ	Value of personal sector stocks	85£mn	i(216)	3.2(S6)
KIIM	Stock level: manufacturers'	85£mn	b(93)	3.1(S6)
KIIR	Stock level: non-manufacturers'	85£mn	b(94)	3.1(S6)
KIIT	Stock level: total	85£mn	i(711)	3.1(S5)
KIOL	Stock of inward oil direct investment	£mn	i(322)	13.2(S22)
KIPI	Stock of overseas inward portfolio investment	£mn	i(584)	14b.10(S5)
KIPO	Stock of portfolio & miscellaneous liabilities	£mn	t(323)	13.3(S22)
KIPV	Stock of portfolio investment	£mn	i(643)	14b.6(S5)
KIX£	Non North Sea ICCs level of stocks at current prices	£mn	i(548)	11.4(S19)
KLDI	Stock of M4 institutions non-housing domestic sterling lending: ICCs	£mn	b(561)	14a.6(S5)
KLDJ	Stock of M4 institutions non-housing domestic sterling lending: persons	£mn	b(558)	14a.6(S5)
KLDV	Stock of M4 institutions lending to the private sector: OOFIs	£mn	b(565)	14a.6(S5)
KLI	Proxy for ICCs stock of liquid assets	£mn	i(38)	14a.9(S5)
KM0	Stock of M0	£mn	b(259)	14a.10(S3)
KM4	Stock of M4	£mn	i(559)	14a.10(S3)
KNEA	Net external asset position	£mn	i(312)	13.3(S22)

KOBA	Stock of lending abroad by M4 institutions & OOFI's	£mn	t(324)	13.1(S22)
KODI	Stock of outward direct investment, excl M4 institutions	£mn	t(329)	13.1(S22)
KOHS	Stock of owner-occupied housing	£mn	t(223)	10.6(S6)
KOPO	Stock of portfolio & miscellaneous assets	£mn	i(335)	13.2(S22)
KWJ	Personal sector wealth	£mn	i(571)	10.7(S5)
KWO	Overseas sector wealth	£mn	i(585)	14b.8(S5)
KWV	OOFIs wealth	£mn	i(569)	14b.3(S5)
KZJ	Stock of personal sector deposits with building societies	£mn	b(776)	14a.9(S1)
L£BO	M4 institutions lending in sterling to overseas: overseas	£mn	t(482)	14a.4(S7)
L$BO	M4 institutions foreign currency lending to overseas (gross)	£mn	x(434)	
LBG	M4 institutions finance of the PSBR: public	£mn	i(476)	14a.4(S5)
LD$B	M4 insts lending in foreign currency to UK private sector:M4 institutions	£mn	i(758)	14a.7(S5)
LD$I	M4 insts lending in Foreign Currency to UK Private sector:ICCs	£mn	i(165)	14a.7(S5)
LD$J	M4 insts lending in Foreign Currency to UK Private sector:persons	£mn	i(69)	14a.7(S5)
LD$V	M4 insts lending in Foreign Currency to UK Private sector:OFIs	£mn	i(219)	14a.7(S5)
LDB	M4 insts lending to UK private sector: M4 institutions	£mn	i(755)	14a.6(S5)
LDI	M4 insts lending to UK private sector: ICCs	£mn	b(745)	14a.6(S5)
LDJ	M4 insts lending to UK private sector: persons	£mn	t(731)	14a.6(S5)
LDV	M4 insts lending to UK private sector: OFIs	£mn	t(462)	14a.6(S5)
LE	Employees in employment (UK)	000s	i(74)	7.2(S11)
LEG	Employment in non-trading public sector (including HM forces)	000s	b(427)	7.1(S11)
LEMF	Employment in manufacturing industry	000s	b(428)	7.1(S11)
LHPJ	Personal sector lending for house purchase	£mn	i(719)	14a.5(S1)
LHPM	Flow of M4 institutions loans for house purchase	£mn	i(715)	14a.5(S1)
LHPT	Total private mortgage lending (flow)	£mn	i(102)	14a.5(S1)
LHPV	Loans for house purchase by other: OFIs	£mn	i(498)	14a.5(S1)
LNUE	Number of people earning more than upper earnings limit	000s	x(291)	
LOTH	Empl 'other' sector (nationalised industries and private services)	000s	b(426)	7.2(S11)
LSE	Number of self-employed	000s	x(659)	7.2
LSMM	The effect of special employment measures on manufacturing employ'	000s	x(533)	
LSMO	The effect of special employment measures on other employment	000s	x(540)	
LSMU	The effect of special employment measures on unemployment	000s	x(532)	7.2
LU	Number unemployed excl school-leavers and adult students (UK)	000s	b(75)	7.2(S11)
LUA	Initial estimate of number unemployed (UK)	000s	x(566)	
LVJ	Life assurance and pension fund receipts: persons	£mn	t(494)	10.6(S18)
LWRT	Individuals on work related and government training schemes	000s	x(257)	
LZSI	Personal sector net receipts of building society interest	£mn	t(122)	10.2(S1)
M	Imports of goods and services	85£mn	i(56)	5.2(S8)
M4	Flow of M4	£mn	i(587)	14a.1(S3)
M4EX	External contribution to change in M4	£mn	t(739)	
M4NL	Change in non-deposit liabilities of M4 institutions	£mn	t(740)	
M4VL	Velocity of M4	%	i(560)	14a.10(S9)
M£	Imports of goods and services	£mn	i(114)	5.2(S8)
MAND	Proxy for the demand for total manufactured goods	85£mn	b(455)	6.2(S10)
MCME	Effective manufacturing import competitiveness		i(417)	9.10(S14)
MG	Total visible imports	85£mn	i(51)	5.1(S8)
MG£	Total visible imports	£mn	i(112)	5.2(S8)
MGBM	Imports of basic materials and miscellaneous	85£mn	b(9)	5.1(S8)
MGFD	Imports of food, drink and tobacco	85£mn	t(42)	5.1(S8)
MGMA	Imports of all manufactures	85£mn	i(188)	5.1(S8)
MGNO	Total non-oil visible exports	85£mn	i(79)	5.1(S8)
MGO	Imports of crude oil and oil products	85£mn	i(651)	5.2(S8)
MGOF	Imports of other fuels	85£mn	t(663)	5.2(S8)
MIPS	Mortgage interest payments: RPI sub-index	Jan 1987=1	t(767)	9.6(S17)
MPRM	Proxy for production of finished manufactured goods	85£mn	b(457)	6.3(S10)
MPRO	Manufacturing production	85£mn	i(47)	6.2(S10)
MPRX	Output of food, drink and tobacco	85£mn	t(458)	6.3(S10)
MRGN	Ratio of gross to net output in manufacturing		x(710)	

MS	Imports of services	85£mn	i(55)	5.2(S8)
MS£	Imports of services	£mn	i(113)	5.2(S8)
MSOT	Imports of services excluding shipping	85£mn	b(44)	5.1(S8)
MSSH	Imports of services shipping	85£mn	x(104)	
MTG	Public sector miscellaneous identified transactions	£mn	x(623)	
MTI	ICCs miscellaneous identified transactions	£mn	i(626)	14a.4(S5)
MTJ	Personal sector miscellaneous identified transactions	£mn	x(625)	
MTM	M4 institutions miscellaneous identified transactions	£mn	i(627)	14a.4(S5)
MTO	Overseas sector miscellaneous identified transactions	£mn	x(624)	
MTV	OOFIs miscellaneous identified transactions	£mn	x(628)	
NCPA	Total number claiming personal allowances		t(50)	10.3(S18)
NCRE	Composite rate paid on earnings below upper limit		x(339)	
NCRJ	Employees rate paid on earnings below upper limit		x(326)	
NECO	Number of employees contracting out	000s	x(615)	
NECR	Employers contracted out rebate rate		x(331)	
NFLT	Flat Rate: Self employed		t(301)	10.4(S2)
NFWJ	Net Financial Wealth: Persons	£mn	t(328)	10.7(S18)
NGTP	Gross trading profits North Sea comp (excl pub sec)	£mn	i(254)	12.3(S25)
NIGX	Proxy for net income gearing of non North Sea ICCs	£mn	i(555)	11.3(S19)
NJCR	Employees contracted out rebate rate		x(337)	
NLAJ	Persons' holdings of net liquid assets (end-quarter)	£mn	b(318)	10.6(S18)
NLEL	Lower Earnings limit		t(292)	10.4(S2)
NLES	Lower Earnings limit self employed		t(308)	10.4(S2)
NPSE	Self employed contributions		i(270)	10.5(S18)
NRCE	Employers contracted out rebate		i(271)	10.5(S18)
NRCJ	Employees contracted out rebate		i(275)	10.5(S18)
NRSE	Self employed contribution rate		x(338)	
NRST	Number of restart interviews (flow)	000s	x(528)	
NSG	North Sea Gas production (excluding public sector)	tonnes mn	x(287)	
NSGR	Gross revenue of North Sea Companies (excluding public sector)	£mn	i(261)	12.3(S25)
NSO	North Sea oil production	tonnes mn	x(557)	
NSRN	National savings rate		b(573)	8.4(S5)
NSTC	North Sea total costs	£mn	t(262)	12.4(S25)
NTIF	Rent and non-trading income of financial companies	£mn	i(771)	11.4(S19)
NTRI	Industrial and commercial companies non-trading income	£mn	t(26)	11.1(S19)
NUEL	Upper Earnings limit	£/wk	t(305)	10.4(S2)
NURE	Rate paid by those earning above upper earnings limit		x(317)	
NURJ	Rate paid by employees earning above upper limit		x(327)	
NWJ	Personal sector net wealth	£mn	i(279)	10.7(S18)
ODII	Outward investment (including outward unremitted profits)	£mn	b(411)	14a.1(S5)
ONSO	North Sea net output	85£mn	t(641)	12.4(S25)
OOTH	Output of 'other' sectors (nationalised ind and private serv)	85£mn	i(425)	6.2(S10)
PAHM	Price deflator for all houses mix adjusted	1985=1	b(16)	9.7(S15)
PAT	Price of alcohol and tobacco	1985=1	b(693)	9.5(S15)
PBGO	Asset price of overseas take-up of gilt	1985=1	t(574)	14b.8/8.6(S5)
PBLV	Asset price of OOFIs long debt	1985=1	t(606)	14b.3/8.5(S5)
PBSV	Asset price of OOFIs other short debt	1985=1	t(612)	14.b3/8.5(S5)
PC	Price deflator for total consumption, underlying	1985=1	i(82)	9.5(S0)
PCD	Price deflator for consumption of durable goods	1985=1	b(81)	9.5(S15)
PCND	Price deflator for consumption of non-durable items, underlying	1985=1	i(80)	9.4(S15)
PCNR	Price of other non-durable consumption, national accounts basis	1985=1	i(672)	9.4(S15)
PCON	Price of other non-durable consumption, underlying	1985=1	b(708)	9.4(S15)
PCR	Price deflator for total consumption, national accounts basis	1985=1	i(677)	9.5(S15)
PCUS	US consumer price index	1985=100	x(526)	
PD£O	Asset price of overseas M4 deposits (sterling)	1985=1	t(577)	14b.8/8.6(S19)
PD$V	Asset price of OOFIs domestic currency deposits with M4 institutions	1985=1	t(614)	14b.4/8.5(S5)
PDBV	Asset price of OOFIs other short debt	1985=1	t(613)	14b.3/8.5(S5)

PEF	Price deflator for total final expenditure	1985=1	i(123)	9.8(S15)
PF	Price deflator for the consumption of food	1985=1	b(313)	9.5(S15)
PFCA	Implicit deflator for the factor cost adjustment	1985=1	i(201)	6.2(S9)
PG	Price deflator for public authorities' current expenditure	1985=1	b(91)	9.6(S15)
PGAS	Price of gas	£/tonne	b(288)	12.4(S25)
PGDP	Price deflator for GDP (expenditure estimate)	1985=1	i(126)	9.8(S15)
PGLT	Price of gilts	1985=1	t(576)	8.4(S5)
PIF	Price deflator for total fixed investment	1985=1	i(90)	9.7(S15)
PIFO	Price deflator for fixed investment other than residential	1985=1	b(675)	9.6(S15)
PIGG	Price deflator for general Government investment	1985=1	t(658)	
PII	Price deflator for total stockbuilding	1985=1	i(712)	9.8(S5)
PILG	Price of transfers of land and existing buildings	1985=1	t(187)	9.7(S15)
PINS	Price deflator for fixed investment in North Sea	1985=1	t(13)	9.7(S15)
PIPI	Asset price of overseas inward portfolio investment	1985=1	t(580)	14b.8/8.6(S5)
PIPR	Price deflator for private residential investment	1985=1	b(664)	9.7(S15)
PIPV	Asset price of OOFIs portfolio investment	1985=1	t(617)	14b.4/8.5(S5)
PM	Price deflator for imports of goods and services	1985=1	i(125)	9.2(S8)
PMBM	AVI for imports of basic materials and miscellaneous	1985=1	b(11)	9.1(S14)
PMFD	AVI for imports of food, drink and tobacco	1985=1	b(92)	9.1(S14)
PMG	AVI for total visible imports	1985=1	i(95)	9.2(S8)
PMGM	AVI for imports of manufactures,inc erratics	1985=1	b(186)	9.1(S14)
PMGN	AVI for total non-oil visible imports	1985=1	i(117)	9.2(S14)
PMGO	AVI imports of crude oil and oil products	1985=1	t(111)	9.2(S14)
PMO$	AVI imports of crude oil and oil products (dollars)	1985=1US$	t(61)	9.2(S14)
PMOF	AVI imports of other fuel	1985=1	t(101)	9.2(S14)
PMS	Price deflator for imports of services	1985=1	b(96)	9.2(S8)
PNDR	Price deflator for non-durable consumption, national accounts basis	1985=1	i(674)	9.4(S15)
POIL	Price of North Sea Oil	£/tonne	t(685)	12.4(S25)
POWA	Population of working age excluding those in full-time education	000s	x(73)	
PPOX	Producer price of manuf output (excl food, drink tobacco)	1985=1	b(599)	9.3(S15)
PROM	Index of manufacturing production	1985=100	i(159)	6.2(S10)
PRRX	Real non North Sea pre-tax rate of return	£mn	i(481)	11.4(S19)
PRUE	Prop of total earnings earned by those above upper limit		x(276)	
PS	Price deflator for stock levels	1985=1	b(127)	9.8(S15)
PSBR	Public sector borrowing requirement	£mn	i(233)	14b.3(S20)
PVIC	Present value of investment allowances	%	x(344)	
PX	Price deflator for exports of goods and services	1985=1	i(124)	9.9(S16)
PXG	AVI for total visible exports	1985=1	i(99)	9.9(S16)
PXGM	AVI for exports of manufactures, inc erratics	1985=1	b(363)	9.8(S16)
PXGN	AVI for total non-oil visible exports	1985=1	i(58)	9.9(S16)
PXGO	AVI exports of crude oil and oil products	1985=1	t(315)	9.9(S16)
PXNM	AVI for exports of non-fuel, non-manufactures	1985=1	b(459)	9.8(S16)
PXO$	AVI exports of crude oil and oil products (dollars)	1985=1US$	t(57)	9.9(S16)
PXOF	AVI for exports of other fuel	1985=1	t(314)	9.9(S16)
PXS	Price deflator for exports of services	1985=1	b(100)	9.9(S16)
Q1	Seasonal dummy for quarter 1		x(501)	
Q2	Seasonal dummy for quarter 2		x(502)	
Q3	Seasonal dummy for quarter 3		x(503)	
Q4	Seasonal dummy for quarter 4		x(504)	
RCBR	Clearing banks' base rate	%	t(140)	8.3(S17)
RCCM	Real cost of capital		i(451)	7.4(S11)
RCCX	Non North Sea ICCs capital consumption at replacement cost	£mn	b(536)	11.4(S19)
RCI2	Real cost of stockholding (lagged 2 quarters)		i(43)	3.1(S6)
RDT	Rate of customs and excise duty on tobacco	%	x(572)	
RESB	Unidentified financial transactions: M4 institutions	£mn	x(748)	
RESE	Residual error in national income accounts	£mn	x(567)	
RESG	Unidentified financial transactions: public	£mn	x(469)	
RESI	ICCs balancing item	£mn	x(743)	

RESJ	Unidentified financial transactions: persons	£mn	x(732)	
RESO	Unidentified financial transactions: overseas	£mn	x(485)	
RESV	Unidentified financial transactions: OFIs	£mn	i(749)	14a.9(S2)
REU$	Three-month euro-dollar rate (quarterly average)	%	x(616)	
RHT	Implicit average tax rate on households' inc(excl grants)	%	i(430)	10.3(S18)
RIBA	Rate of return on M4 institutions & OOFI's liabilities	%	b(348)	13.3(S22)
RIDI	Rate of return on inward non-M4 institutions, non-oil direct investment	%	i(349)	13.2(S22)
RIOL	Rate of return on inward oil direct investment	%	i(350)	13.3(S22)
RIPO	Rate of return on portfolio & miscellaneous liabilities	%	b(352)	13.3(S22)
RJGO	Ratio of the rate of other current grants to the initial estimate		t(303)	10.1(S2)
RLA	Local authority three month rate (quarterly average)	%	b(234)	8.3(S17)
RM6S	Major 6 average short-term interest rate	%	x(738)	
RMD	Effective minimum deposit rate for durables	%	x(568)	
RNSR	Rate of North Sea oil and gas royalties	%	x(687)	
ROBA	Rate of return on M4 institutions & OOFIs assets	%	i(353)	13.1(S22)
RODI	Rate of return on outward non-M4 institutions direct investment	%	b(356)	13.1(S22)
ROPO	Rate of return portfolio & miscellaneous assets	%	b(357)	13.2(S22)
RPAL	Average rate of personal allowance		t(54)	10.3(S2)
RPDI	Real personal disposable income	85£mn	i(293)	10.6(S18)
RPI	Retail Price Index (all items)	Jan 1987=1	t(158)	9.6(S17)
RPIA	Initial estimate for Retail Price Index	Jan 1987=1	x(517)	
RPIX	Retail Price Index (all items excl. mortgage interest)	Jan 1987=1	b(139)	9.5(S0)
RTPR	Rate of petroleum revenue tax	%	x(619)	
RUB	Estimated average rate of unemployment benefit	£/wk	t(611)	10.1(S2)
RUKG	Rate on long-term (20 years) UK government stock	%	b(311)	8.3(S17)
RULC	Relative unit labour costs	1985=100	i(670)	9.9(S16)
RUSG	US bond yield (secondary market, 10 years or more)	%	x(447)	
RWG	Constructed world long bond yield (10 year)	%	b(359)	13.5(S24)
RZMG	Interest rate on building society mortgages	%	b(238)	8.3(S17)
RZSG	Gross rate of interest on building society shares	%	b(236)	8.3(S17)
RZSN	Net rate of interest on building society shares	%	i(237)	8.3(S17)
SCF	Financial companies saving	£mn	i(421)	11.5(S19)
SCI	Industrial and commercial companies saving	£mn	i(267)	11.3(S19)
SDBA	Spread on euro currency lending	£mn	x(340)	
SGG	General government saving		i(783)	12.1
SHMV	OFI's share of mortgage lending		x(59)	
SJ	Person's saving	£mn	i(172)	10.6(S18)
SNS	Saving by North Sea companies	£mn	i(253)	12.4(S25)
SPUK	UK share prices index	1985=100	b(297)	8.4(S5)
SPW	Constructed world share price		b(336)	13.4(S24)
SR	Saving ratio	%	i(260)	10.6(S18)
SWI	M4 institutions net foreign currency position (assets +)	£mn	x(72)	
TARR	Reduction in income tax due to the existence of reduced rates	£mn	x(721)	
TAT	Taxes on alcohol and tobacco	£mn	t(694)	12.3(S2)
TCAT	Tax rate on consumption of alcohol and tobacco		t(703)	9.3(S21)
TCC	Revenue from community charge	£mn	t(673)	12.3
TCD	Tax rate on consumer durables		t(702)	9.3(S21)
TCF	Tax rate on consumption of food		t(704)	9.3(S21)
TCNS	North sea corporation tax payments	£mn	b(272)	12.4(S25)
TCON	Tax rate on consumption of other non-durables		t(705)	9.3(S21)
TCR	Building societies' composite tax rate	%	t(634)	14a.9(S2)
TE	Receipts by government of taxes on expenditure	£mn	i(195)	12.3(S21)
TGG	Taxes on current grants to persons	£mn	t(290)	10.4(S18)
TGR	Effective tax rate on current grants from public sector		x(655)	
THCO	Taxes on hydrocarbon oil	£mn	i(202)	12.3(S21)
TIME	Time trend starting in 1955 Q1		x(505)	
TPAL	Aggregate married, single and child tax allowance	£mn/qtr	t(442)	10.3(S18)

TPG	Tax rate for government consumption		t(136)	9.3(S21)
TPIF	Tax rate for fixed investment		t(157)	9.3(S21)
TPR	Petroleum revenue tax	£mn	t(686)	12.4(S25)
TRAT	Local authority receipts of rates	£mn	b(205)	12.3(S21)
TRES	Residual expenditure taxes (including motor vehicle duty)	£mn	t(701)	12.3(S21)
TRY	Standard rate of income tax	%	x(564)	
TRYC	Annual tax rate on corporate income	%	x(596)	
TRYU	Implicit average higher tax rate	%	t(657)	10.3(S2)
TSET	Selective employment tax receipts	£mn	x(556)	
TWJ	Personal sector tangible wealth	£mn	b(210)	10.7(S18)
TYF	Financial companies payments of UK taxes on income	£mn	i(420)	11.5(S19)
TYFM	Financial companies payments of mainstream corporation tax	£mn	t(406)	11.5(S19)
TYI	ICCs payments of UK taxes on income	£mn	i(168)	11.2(S19)
TYIM	Non-North Sea ICCs payments of mainstream corporation tax	£mn	i(185)	11.2(S19)
TYJ	Personal sector payments of UK income tax	£mn	b(169)	10.4(S18)
TYJI	Proxy for the revenue from the investment income surcharge	£mn	x(444)	
TYJU	Proxy for payments of surtax/higher rate tax	£mn	t(441)	10.4(S18)
TYV	Tax payments by life assurance companies and pension funds	£mn	x(661)	
ULC	Unit labour costs whole economy	£/85£	i(77)	7.4(S15)
UMGM	UVI for imports of manufactures, including erratics	1985=100	b(189)	9.1(S14)
UPLT	Uplift allowance for North Sea investment	%	x(620)	
UR	Rate of unemployment	%	i(76)	7.2(S11)
UXGM	UVI of exports of manufactures, including erratics	1985=100	b(282)	9.8(S16)
VATS	Standard rate of VAT	%	x(662)	
VOHS	Value of owner occupier housing stock	£mn	i(212)	10.6(S6)
WBGO	Asset share: Overseas take-up of public sector debt		b(582)	14b.9(S5)
WBLV	Asset share: OOFIs take-up of public sector long-term debt		b(630)	14b.4(S5)
WBSV	Asset share: OOFIs take-up of short-term assets		b(632)	14b.5(S5)
WD£O	Asset share: Overseas sterling deposits with M4 institutions		b(583)	14b.9(S5)
WD$V	Asset share: OOFIs foreign currency deposits with M4 institutions		b(639)	14b.6(S5)
WDBV	Asset share: OOFIs sterling deposits with M4 institutions		b(637)	14b.5(S5)
WER	UK EER-weighted dollar non-sterling exchange rate	1985=100	x(604)	
WGDP	Major six GDP	1985=100		x(696)
WIPI	Asset share: Portfolio investment from overseas		b(581)	14b.9(S5)
WIPV	Asset share: OOFIs portfolio investment		b(642)	14b.6(S5)
WLCL	World actual unit labour costs	1985=1	x(435)	
WMIP	Weight of mortgage interest payments in the RPI		t(768)	9.6(S17)
WODY	Constructed world dividend yield	%	b(310)	13.5(S24)
WPC	Major six consumer prices (local currency)	1985=100	x(697)	
WPFD	World dollar price of food	1985=100	x(167)	
WPIC	World dollar price of industrial commodities	1985=100	x(166)	
WPP	World producer price	1985=100	x(45)	
WPO$	World dollar price of oil	$ per barrel	x(680)	
WPX	World export prices	1985=100	x(87)	
WS	Actual average quarterly wages and salaries (CSO measure)	£/qtr	b(269)	7.4(S12)
WSE	Self-employment income per man	£mn	b(358)	7.4(S12)
WTMU	World import volumes (UK weighted)	1985=100	x(178)	
X	Exports of goods and services	85£mn	i(41)	4.2(S7)
X£	Exports of goods and services	£mn	i(110)	4.2(S7)
XCME	UK effective export competitiveness		i(671)	9.9(S16)
XG	Total visible exports	85£mn	i(36)	4.1(S7)
XG£	Total visible exports	£mn	i(108)	4.2(S7)
XGMA	Exports of manufactures, inc erratics	85£mn	b(34)	4.1(S7)
XGNM	Exports of non-fuel, non-manufactures	85£mn	b(468)	4.1(S7)
XGNO	Total non-oil visible exports	85£mn	i(474)	4.1(S7)
XGO	Exports of crude oil and oil products	85£mn	b(278)	4.1(S7)
XGOF	Exports of other fuels	85£mn	t(277)	4.1(S7)

XS	Exports of services	85£mn	b(40)	4.2(S7)
XS£	Exports of services	£mn	i(109)	4.2(S7)
XSOT	Exports of services excluding shipping	85£mn	b(46)	4.2(S7)
XSSH	Exports of services shipping	85£mn	x(89)	
YD	Personal disposable income	£mn	i(170)	10.6(S18)
YDIJ	Personal income from dividends and net interest	£mn	i(146)	10.2(S18)
YDLH	Adjusted proxy for household real disposable income	£mn	t(590)	10.6(S18)
YEC	Employers' contributions	£mn	i(149)	10.3(S18)
YECN	Employers' national insurance contributions	£mn	b(151)	10.5(S18)
YECO	Employers' other contributions (ie to LAPFs)	£mn	b(150)	10.2(S18)
YECS	Accruals of the national insurance surcharge	£mn	i(141)	12.3(S18)
YFAB	Financial companies income from abroad	£mn	t(391)	11.4(S19)
YFT	Financial companies proxy for taxable profits	£mn	i(400)	11.4(S19)
YGGC	General Government total current reciepts	£mn	i(780)	12.1(S20)
YGGI	General Government income from rent, interest and dividends	£mn	t(775)	12.1(S20)
YGTA	Public sector gross trading surplus	£mn	t(190)	12.1(S20)
YHOL	Proxy for households' receipts of dividends and gross interest upon which tax is paid in the current qtr	£mn	i(437)	10.3(S2)
YHOO	Households' receipts of dividends and gross interest other than that from building societies (households)	£mn	b(142)	10.1(S18)
YIAB	Industrial and commercial companies income from abroad	£mn	t(39)	11.1(S19)
YIBA	M4 institutions & OOFIs IPD debits	£mn	i(360)	13.3(S22)
YIDI	IPD debits: direct investment	£mn	i(361)	13.2(S22)
YIOL	IPD debits: oil direct investment	£mn	b(375)	13.2(S22)
YIPO	IPD debits: portfolio & miscellaneous	£mn	i(398)	13.3(S22)
YIT	Proxy for non North Sea taxable profits	£mn	t(161)	11.1(S19)
YITP	Industrial and commercial companies gross trading profits	£mn	i(19)	11.1(S19)
YJ	Personal pre-tax income	£mn	i(155)	10.3(S18)
YJCN	National insurance contributions paid by employees and self-empl	£mn	b(351)	10.5(S18)
YJG	Current grants to persons from public sector	£mn	t(319)	10.3(S18)
YJGA	Initial estimate of current grants to persons from public sector	£mn	x(591)	
YJO	Other personal income	£mn	i(148)	10.2(S18)
YJT	Computed taxable personal income	£mn	i(304)	10.4(S18)
YJTW	Income from wages, salaries and private pension scheme	£mn	i(432)	10.3(S18)
YOBA	IPD credits: M4 institutions & OOFIs	£mn	i(413)	13.1(S22)
YODI	IPD credits: direct investment	£mn	i(414)	13.1(S22)
YOPO	IPD credits: portfolio & miscellaneous	£mn	i(429)	13.2(S22)
YPCI	Public corporations income from rent, dividends and interest	£mn	t(774)	12.2(S20)
YR	Income from rent and non-trading capital	£mn	b(134)	6.2(S18)
YRI	Industrial and commercial companies income from rent	£mn	b(25)	11.1(S19)
YRJ	Personal sector income from rent and non-trading capital	£mn	i(147)	10.2(S18)
YSA	Stock appreciation (total)	£mn	t(138)	3.2(S6)
YSAG	Public sector stock appreciation	£mn	t(215)	3.2(S6)
YSAI	Industrial and commercial companies stock appreciation	£mn	t(21)	3.2(S6)
YSAJ	Personal sector stock appreciation	£mn	i(214)	3.2(S6)
YSE	Income from self-employment	£mn	i(135)	10.1(S18)
YSEL	Proxy for the taxable self-employment income on which tax is paid	£mn	i(433)	10.3(S2)
YVO	Life assurance companies' and pension funds' receipts of rent and non-trading capital, dividends and net interest	£mn	t(539)	10.2(S18)
YWS	Income from wages and salaries	£mn	i(145)	10.1(S18)
ZDOW	Percentage share of endowment mortgages	%	x(225)	
ZLVF	Loan to value ratio for 1st time buyers	%	x(12)	

(a) Unless otherwise stated, seasonally-adjusted series are used in all cases where the appropriate statistics are available or can be derived.
(b) b = behavioural equation, i = identity, t = technical, x = exogenous.

Bank of England Discussion Papers

	Title	Author
1-5, 8, 11-14, 16-17, 19-22, 31	*These papers are now out of print but photocopies can be obtained from University Microfilms International* (a)	
6	'Real' national saving and its sectoral composition	C T Taylor A R Threadgold
7	The direction of causality between the exchange rate, prices and money	C A Enoch
9	The sterling/dollar rate in the floating rate period: the role of money, prices and intervention	I D Saville
10	Bank lending and the money supply	B J Moore A R Threadgold
15	Influences on the profitability of twenty-two industrial sectors	N P Williams
18	Two studies of commodity price behaviour: Interrelationships between commodity prices Short-run pricing behaviour in commodity markets	Mrs J L Hedges C A Enoch
23	A model of the building society sector	J B Wilcox
24	The importance of interest rates in five macroeconomic models	W W Easton
25	The effects of stamp duty on equity transactions and prices in the UK Stock Exchange	Mrs P D Jackson A T O'Donnell
26	An empirical model of company short-term financial decisions: evidence from company accounts data	Mrs G Chowdhury C J Green D K Miles
27	Employment creation in the US and UK: an econometric comparison	I M Michael R A Urwin
28	An empirical model of companies' debt and dividend decisions: evidence from company accounts data	Ms G Chowdhury D K Miles
29	Expectations, risk and uncertainty in the foreign exchange market: some results based on survey data	M P Taylor
30	A model of UK non-oil ICCS' direct investment	E J Pentecost
32	The demographics of housing demand; household formations and the growth of owner-occupation	M J Dicks
33	Measuring the risk of financial institutions' portfolios: some suggestions for alternative techniques using stock prices	S G F Hall D K Miles
34	An error correction model of US consumption expenditure	I R Harnett
35	Industrial structure and dynamics of financial markets; the primary eurobond market	E P Davis
36	Recent developments in the pattern of UK interest rates	D K Miles
37	Structural changes in world capital markets and eurocommercial paper	J G S Jeanneau
38	Stockbuilding and liquidity: some empirical evidence for the manufacturing sector	T S Callen S G B Henry
39	The relationship between employment and unemployment	M J Dicks N Hatch
40	Charts and fundamentals in the foreign exchange market	Mrs H L Allen M P Taylor
41	The long-run determination of the UK monetary aggregates	S G Hall S G B Henry J B Wilcox
42	Manufacturing stocks; expectations, risk and co-integration	T S Callen S G Hall S G B Henry
43	Instability in the euromarkets and the economic theory of financial crises	E P Davis
44	Corporate governance and the market for companies: aspects of the shareholders' role	J Charkham
45	Stock-flow consistent income for industrial and commercial companies: the UK experience	K D Patterson
46	The money transmission mechanism	D K Miles J B Wilcox
47	Monetary aggregates in a changing environment: a statistical discussion paper	R D Clews Ms J E C Healey Glenn Hoggarth C R Mann
48	A model of manufacturing sector investment and employment decisions	J W Lomax
49	A simple model of the housing market	M J Dicks
50	An industrial approach to financial instability	E P Davis
51	International financial centres—an industrial analysis	E P Davis
52	A model of ICCs' dividend payments	J W Lomax
53	The determination of average earnings in Great Britain	M A S Joyce
54	Cross-border savings flows and capital mobility in the G7 economies	Shelley Cooper

Technical Series

	Title	Author
1-11,14,20, 23	*These papers are now out of print but photocopies can be obtained from University Microfilms International* (a)	
12	The development of expectations generating schemes which are asymptotically rational	K D Patterson
13	The arch model as applied to the study of international asset market volatility	R R Dickens
15	International comparison of asset market volatility: a further application of the ARCH model	R R Dickens
16	A three sector model of earnings behaviour	D J Mackie
17	Integrated balance sheet and flow accounts for insurance companies and pension funds	Raymond Crossley
18	Optimal control of stochastic non-linear models	S G Hall J R Harnett M J Stephenson
19	A multivariate GARCH in mean estimation of the capital asset pricing model	S G Hall D K Miles M P Taylor
21	Modelling of the flow of funds	D G Barr K Cuthbertson
22	Econometric modelling of the financial decisions of the UK personal sector: preliminary results	D G Barr K Cuthbertson
24	Modelling money market interest rates	J S Flemming D G Barr
25	An independant error feedback model of UK company sector asset demands	D G Barr K Cuthbertson
26	A disequilibrium model of building society mortgage lending	S G Hall R A Urwin
27	Balancing the national accounts: an asymptotically maximum likelihood approach using trends	G P Dunn D M Egginton
28	Testing a discrete switching disequilibrium model of the UK labour market	S G Hall S G B Henry M Pemberton
29	The Bank of England Model 1989: recent developments and simulation properties	F J Breedon A J Murfin S H Wright
30	A data-based simulation model of the financial asset decisions of UK, 'other' financial intermediaries	D G Barr K Cuthbertson
31	The demand for financial assets held in the UK by the overseas sector: an application of two-staged budgeting	D G Barr K Cuthbertson
32	A note on the estimation of GARCH-M models using the Kalman Filter	S G Hall
33	Modelling the sterling effective exchange rate using expectations and learning	S G Hall
34	Modelling short-term asset holdings of UK banks	D G Barr K Cuthbertson
35	A Monte Carlo study of alternative approaches to balancing the national accounts	D M Egginton
36	Sterling's relationship with the dollar and the deutschemark: 1976–89	A G Haldane S G Hall
37	Using and assessing CBI data at the Bank of England	Bahram Pesaran C B Wright
38	A system approach to consumption and wealth	S G Hall K D Patterson
39	Exchange rate equations	Helen Allen Brian Henry Bahram Pesaran
40	Inventories, technological change, financial effects and risks	Keith Cuthbertson David Gasparro
41	News effects in a high frequency model of the sterling-dollar exchange rate	C A E Goodhart S G Hall S G B Henry Bahram Pesaran
42	Expenditure on consumer durables in the United Kingdom	N O Kennedy
43	The financial sector of the Bank of England model	Phil Burns

(a) These papers are no longer available from the Bank, but photocopies can be obtained from University Microfilms International, at White Swan House, Godstone, Surrey RH9 8LW