Extracted from *Economic Trends* No. 172, February 1968

Short-term forecasts of income, expenditure and saving

by L. S. BERMAN and F. CASSELL*

An article published in the August 1964 issue of *Economic Trends* described how short-term economic forecasts are made of the movements in total demand, domestic activity and the balance of payments. In that article it was explained that the forecasts of domestic activity are expressed in terms of seasonally adjusted series, measured at constant prices and cast in a quarterly framework. This article describes the techniques employed in preparing current price forecasts of expenditure, income and saving, which are made in parallel with the constant price forecasts, and outlines some experimental work on forecasting financial flows.

The current price forecasts (as they are called) are usually made three times each year at the same time as the forecasts of output and expenditure at constant prices. The Central Statistical Office and H.M. Treasury are mainly concerned with their preparation. The purpose of the constant price forecasts is to indicate the likely level of activity at the end of the period and its course to that date. The current price forecasts are intended to throw light on the distribution of income among the different sectors of the economy and on the financial and monetary implications of the constant price forecasts. By providing additional material on income, saving and liquidity, they may also indicate possible feed-backs on the level of activity.

Forecasts are prepared of the various items of final expenditure at current prices and of the various forms of factor incomes; of the income and expenditure accounts for the personal sector, the central government and for local authorities, and appropriation accounts for companies and for public corporations; and, finally, of the saving and investment of each sector and of the likely flows of funds between the different sectors(1). Although some of the detailed forecasts are made for quarterly periods, the main results are expressed in terms of calendar or financial years.

The basic material

The starting point for the exercise is the constant price forecasts of expenditure and output and the balance of payments forecast. In arriving at the constant price forecasts, a good deal of use is made of data which are originally at current prices. For example, the forecasts of consumers' expenditure at constant prices, are derived from forecasts of personal income before and after tax, which, together with forecasts of personal saving and certain other minor items, provide a forecast of consumers' expenditure at current prices. This is then translated into real terms by applying forecast changes in the consumer price index.

The balance of payments forecast is necessarily in terms of current prices and this provides figures not only of imports and exports of goods and services, but also of transfers and property income payments and receipts to and from abroad.

A third basic source of information is the Treasury's forward estimates of public expenditure, classified according to national income definitions. These estimates emerge from the surveys of public expenditure carried out by the Treasury in collaboration with the spending departments in the spring and early summer of each year, and are based on departmental returns covering expenditure by the central government, local authorities and public corporations. During the course of the year these estimates are revised in the light of subsequent Ministerial decisions on public expenditure and of information available to the Treasury about proposals coming forward for increases or reductions in expenditure. For the February/March forecast, use is made of the estimates of Supply expenditure (i.e. expenditure on those services, provision for which has to be voted annually by Parliament and details of which are published in the annual Estimates); of the material presented in the annual white paper on loans from the Consolidated Fund(2); and in the case of local authorities' expenditure, of special departmental returns. These forecasts, provide the basis for compiling the tables showing the national accounts classification of transactions of the central government and of the public sector as a whole given in the *Financial Statement* published on Budget day. The estimates for 1967-68 in Tables 9 and 11 of the 1967-68 *Financial Statement* are at 'survey' prices, which for most of central government and directly related expenditure corresponds to the price basis used for the estimates of Supply Services, that is, in the main, the price levels of late 1966 and early 1967.

Expenditure at current prices

The first step in the calculation is to make forecasts of final expenditure on goods and services at current prices. As has been indicated above, forecasts of consumers' expenditure and of exports at current prices have already been made in the forecasting exercise. To complete the

* Mr. Berman is a chief statistician at the Central Statistical Office and Mr. Cassell an economic consultant at H.M. Treasury.

(1) Work on forecasting financial flows, based on the official current price forecasts, is also carried out by the Bank of England.

(2) It is proposed to replace this by an annual white paper on loans from the National Loans Fund.

picture the constant price forecasts of investment in fixed assets and stockbuilding and of public authorities' consumption have to be converted into current prices. The likely movement in the prices of fixed assets is projected with regard to the way in which wages and salaries are expected to move and to past trends. Account is also taken of any special factors, such as the introduction of S.E.T. The forecast of investment in stocks and work in progress at current prices is based on a fairly stable relationship between investment in stocks at 1958 prices and at current prices. (The calculation of stock appreciation however presents a rather more formidable problem). The forecasts of expenditure by the public sector used in the constant price forecast are originally based on forecasts made at 'survey' prices. They are converted to a current price (or estimated outturn price) basis by taking into account past trends and any specific knowledge about developments in the forecast period which were not allowed for in the original calculation of 'survey' prices. The end result is a forecast of total final expenditure at current market prices.

The next step is to deduct from this total, forecasts of imports of goods and services and of taxes on expenditure (*less* subsidies) to produce a quarterly forecast of gross domestic product at current factor cost (see Table A). The forecast of imports is taken from the balance of payments forecasting exercise. Taxes on expenditure consist of taxes (e.g. purchase tax) received by the central government and of rates received by local authorities. The forecast of central government receipts is prepared mainly by the Customs and Excise Department on the basis of the detailed forecasts of consumers' expenditure and imports. (A forecast for the current financial year appears in the *Financial Statement*.) The forecast of local authority receipts of rates is based largely on information provided by local authorities and on assumptions about how local authorities' revenue will be divided between receipts from rates and from current grants from the central government, taking into account the formula by which the latter are determined. The forecast of subsidies is based on departmental estimates of spending.

Income and expenditure in 1966

TABLE A	£ million
Total final expenditure at market prices	44,332
less Imports of goods and services	—7,125
less Taxes on expenditure *plus* subsidies	—5,038
equals Expenditure on gross domestic product	32,169
less Residual error	116
plus Stock appreciation	353
equals Total domestic income(¹)	32,638
Income from employment	22,437
Income from self-employment(¹)	2,470
Gross trading profits of companies(¹)	4,646
Gross trading surpluses of public enterprises(¹) ..	1,136
Rent	1,949
Total domestic income(¹)	32,638

(¹) Before providing for depreciation and stock appreciation.

For past periods estimates of the gross domestic product at factor cost obtained by adding up the expenditure estimates do not coincide with the estimates obtained by aggregating incomes; the difference is, of course, the residual error. It is necessary to project forward this discrepancy before a forecast of factor incomes can be made. This is generally done by assuming that the residual error in the forecast period will be equal to its average level in the past year.

Another necessary step in the calculation is to forecast stock appreciation. This is done in the light of the changes in prices implied by the expenditure forecasts at current and constant prices, giving particular importance to the changes forecast in import prices.

Factor incomes

Having established quarterly forecasts of expenditure on the gross domestic product at factor cost and forecasts of the residual error and of stock appreciation, the way is now clear for forecasting, quarter by quarter, the various forms of factor incomes adding up to total domestic income.

The forecast of the factor income element in personal income is already available from the calculations underlying the constant price forecast of consumers' expenditure (see section *The basic material*). Briefly, wages and salaries are forecast by using current information about wage negotiations, and considering what has happened in the past at periods of similar pressure of demand; by forecasting the numbers in employment (allowing for pressure of demand and the forecast changes in the working population); and by allowing for wage drift. Forecasts of Forces' pay and of national insurance contributions are made from information available about the numbers involved and rates of pay and contributions. Employers' contributions to pension schemes, etc., are projected in line with past trends and with the forecast wage and salary bill. Income from self-employment is projected according to its recent trend and its cyclical behaviour in the past, looking separately at likely developments in the income of professional persons, farmers and other small traders and partnerships. If it is known for example that doctors or dentists are due to receive an increase in income, special allowance would be made for this.

The remaining forms of factor incomes to be forecast are gross trading profits and rent. Forecasts of the gross trading surpluses of public corporations and of public enterprises, are available from information provided by the public corporations and departments to the Treasury. It should be noted that the forecast of the gross trading surpluses of public corporations is heavily dependent on the pricing policies of the nationalised industries, for which allowance is made in forecasting the consumer price index. Income from rent is forecast in relation to recent trends taking account of the forecast of the rental income received by the central government and local

authorities, and of the forecast increase in the cost of housing included in the consumer price index. Finally, the forecast of the gross trading profits of companies is obtained as the difference between total domestic income and the sum of all the other forms of factor income; it is thus obtained as a residual in the calculations and hence is subject to a wide margin of error.

Over the past 10 years or so the share of company trading profits in domestic incomes has fluctuated with the business cycle around a downward trend. This provides a basis for making an independent check on the residual forecast by relating the share of company profits in total domestic income (both reckoned before providing for depreciation and stock appreciation) to the pressure of demand. For this purpose domestic income is defined to exclude income earned in industries in which company profits are not themselves generated. These industries comprise: ownership of dwellings, public administration and defence, public health services and local authority educational services. (The net output of all these industries is published for calendar years in the Blue Book; but quarterly figures have to be interpolated.) The pressure of demand is expressed by an index of the gross domestic product at constant prices (obtained as an arithmetic average of the three measures —expenditure, income and output), divided by an index of potential output (in recent years this is assumed to be growing at around 3 per cent per annum).

Of those tried, the regression equation which appears to fit the data best for each quarter over the years 1955 to 1966 is:

$$y_t = -0{\cdot}0327T + 0{\cdot}5775X_t - 0{\cdot}3190X_{t-2} - 7{\cdot}475$$

(standard error) (0·0051) (0·0541) (0·0529)

where y = gross trading profits of companies as a percentage of total domestic income (adjusted in the way described); T is the quarterly time trend; Xt and Xt-2 the index of pressure of demand in the quarter and in the previous but one quarter. The term Xt-1 is ignored as its coefficient proved to be not significant. However, this relationship is probably distorted by auto-correlation and further relationships are being explored. Since the forecast of company profits must be fitted into a very tight timetable the choice of explanatory variables is necessarily restricted.

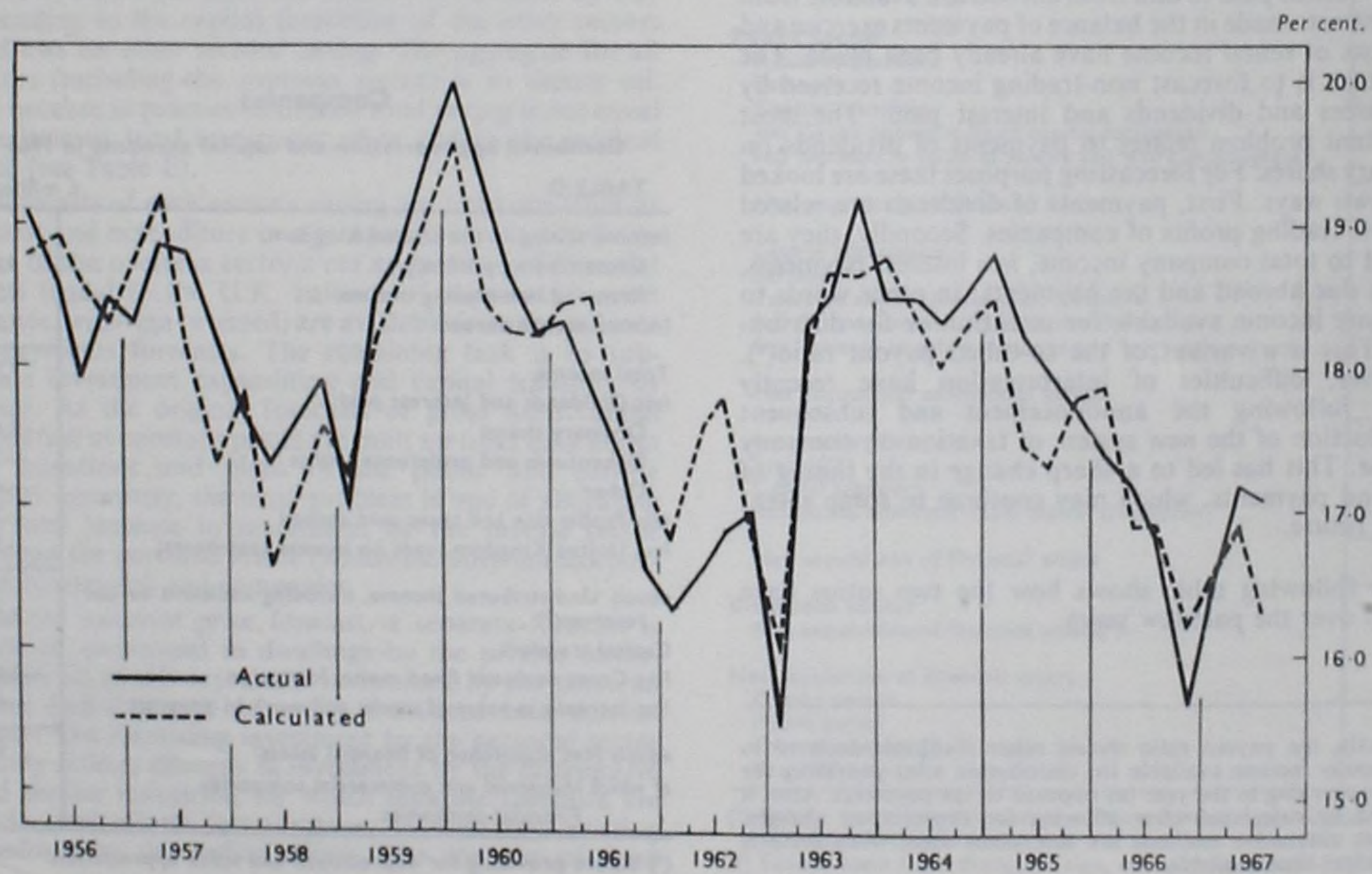
The chart below shows the share of gross trading profits of companies in total domestic income (adjusted in the way described), both actual and calculated from the above equation.

Income and expenditure and appropriation accounts

The next step in the forecasting procedure is to produce a consistent set of income and expenditure and appropriation accounts for each of the different sectors of the economy. As has been explained, the account for the personal sector, is already available from the calculation of consumers' expenditure at constant prices.

Gross trading profits of companies as a percentage of total domestic income

Adjusted in the way described in the text



Personal sector

Combined income and expenditure and capital accounts in 1966

TABLE B	£ million
Income from employment	22,437
Income from self-employment(1)	2,470
Rent, dividends and net interest(1) (2)	3,628
Current grants from public authorities	2,973
Personal income before tax(1)	31,508
less Transfers abroad (net) and taxes paid abroad ..	—70
less United Kingdom taxes on income (payments) ..	—3,646
less National insurance and health contributions ..	—1,797
equals Personal disposable income(1)	25,995
less Consumers' expenditure	—24,116
equals Personal saving(1)	1,879
Capital transfers *less* taxes on capital	—162
less Gross domestic fixed capital formation	—911
less Increase in value of stocks and work in progress ..	—93
equals Net acquisition of financial assets	713

(1) Before providing for depreciation and stock appreciation.
(2) Includes transfers to charities by companies.

To complete the appropriation account for companies, forecasts are required of rent, dividends and interest received by companies and paid out by them and also forecasts of their payments of taxes on income. Forecasts of interest payments by the public sector for financial years are available from the Treasury; forecasts of interest and dividends paid to and from abroad are available from the forecasts made in the balance of payments exercise and forecasts of rental income have already been made. The main task is to forecast non-trading income received by companies and dividends and interest paid. The most important problem relates to payments of dividends on ordinary shares. For forecasting purposes these are looked at in two ways. First, payments of dividends are related to gross trading profits of companies. Secondly, they are related to total company income, *less* interest payments, profits due abroad and tax payments; in other words to company income available for retention or for distribution. This is a variant of the so-called payout ratio(3). However, difficulties of interpretation have recently arisen following the announcement and subsequent introduction of the new system of taxation on company income. This has led to a sharp change in the timing of dividend payments, which may continue to some extent in the future.

The following table shows how the two ratios have moved over the past few years:

(3) Strictly, the payout ratio should relate dividends declared to company income available for distribution after providing for taxes accruing in the year (as opposed to tax payment). Also, it could be calculated after allowing for depreciation charges. These alternative methods are sometimes used, when there is sufficient time available.

Payments of dividends on ordinary shares

TABLE C

Calendar year	Amount (£ million)	As a percentage of	
		year's trading profits	income available for distribution
1960 ..	1020	27·0	27·1
1961 ..	1149	31·3	31·8
1962 ..	1146	31·6	33·5
1963 ..	1235	29·8	30·2
1964 ..	1490	32·1	31·2
1965 ..	1688	34·7	32·6
1966 ..	1633	35·1	34·1

For purposes of projecting the payout ratio, receipts from investment grants are included in company income.

Payments of taxes on income by companies relate to their income in an earlier period. Broadly speaking companies will be paying taxes in 1968/69 on income received or earned in 1967 (*viz.* trading profits *less* depreciation allowances and interest charges, *plus* their non-trading income). Forecasts of these tax payments are made by the Inland Revenue on the basis of the figures of income and gross fixed capital formation and dividend payments emerging from the current price forecasts.

The appropriation account for public corporations is built up from information provided by the main corporations to the Treasury. The principal items to be forecast here are their gross trading surpluses and their payments of interest (mainly on loans to the government). The other items in the account are relatively minor.

Companies

Combined appropriation and capital accounts in 1966

TABLE D	£ million
Income arising in the United Kingdom:	
Gross trading profits(1)	4,646
Rent and non-trading income	1,351
Income earned abroad	1,362
Total income	7,359
less Dividends and interest paid:	
Ordinary shares	—1,633
Debentures and preference shares	—351
Other	—698
less Profits due and taxes paid abroad	—768
less United Kingdom taxes on income (payments) ..	—757
equals Undistributed income, including additions to tax reserves(1)	3,152
Capital transfers	21
less Gross domestic fixed capital formation	—2,627
less Increase in value of stocks and work in progress ..	—424
equals Net acquisition of financial assets:	122
of which Industrial and commercial companies	80
Financial companies	42

(1) Before providing for depreciation and stock appreciation.

For the central government and the local authorities, income and expenditure accounts are compiled. The forecasts of expenditure are derived from the material assembled in the way described on page ix. Some of these forecasts of expenditure would have been used in the constant price forecast, for example, the forecasts of expenditure on goods and services, national insurance benefits, family allowances and other current grants to the personal sector. Other items like current grants to local authorities and payments of subsidies and debt interest would not have been used. On the income side, the forecast of taxes on income is made by the Inland Revenue on the basis of the forecasts of personal and company income. The forecast of taxes on expenditure has been described already. The forecast of national insurance contributions is provided by the Government Actuary. As has been indicated already, forecasts of the public sector's transactions, classified according to the definitions used in the national income accounts for the current financial year but at 'survey' prices are now published regularly in the *Financial Statement*.

Sector capital accounts

The final stage in the calculation of the current price forecast is to bring together forecasts of the capital accounts of each of the different sectors for financial years. These show for each sector saving (or undistributed income), expenditure on fixed assets and stock-building and net receipts from, or net payments of, capital transfers (these include taxes on capital and investment grants). The balancing item in each sector's account is its 'net acquisition of financial assets', often called its 'financial surplus or deficit'. This indicates the extent to which the sector on balance contributes by way of lending to the capital formation of the other sectors or draws on other sectors' saving. The aggregate for all sectors (including the overseas sector) is in theory nil. But because in practice estimated total saving is not equal to estimated total investment, they add to the residual error (see Table E).

Forecasts of each sector's saving are available from its income and expenditure or appropriation accounts. Forecasts of the overseas sector's net acquisition of financial assets (equal to the U.K. balance of payments current balance, with sign reversed) are available from the balance of payments forecasts. The remaining task is to subdivide investment expenditure and capital transfers by sector. As the original forecasts of gross fixed capital formation at constant prices are built up from data about the intentions and plans of the public and private sectors separately, the main problem is one of allocating the total increase in investment by the private sector between the personal sector (which includes unincorporated businesses) and companies.

In the constant price forecast, a separate forecast is made of investment in dwellings by the private sector. Almost all of this represents investment by the personal sector and this can be readily translated into current prices. The remaining investment by the personal sector mainly reflects changes in investment by the distributive and service industries, for which separate forecasts are made, and allows for purchases of land and existing buildings by the public sector. The forecast of fixed investment by companies is obtained initially as a residual in the calculation, but the plausibility of the figures is examined carefully, in relation to the forecasts at constant prices.

The forecast of the sector split of the increase in the value of stocks and work in progress (that is, the physical increase in stocks together with stock appreciation) is fairly straightforward. Information about stock changes for public corporations and central government is available from departmental sources. The main task, therefore, is to divide the residual between changes in the value of stocks held by the personal sector and by the company sector. This is done in the light of past experience. Any error in the forecast division of the increase in the value of stocks between persons and companies is considerably smaller than the error in the forecast of the total.

Net acquisition of financial assets in 1966

Summary analysis by sector

TABLE E	£ million
Private sector	
Personal sector	
Saving(1)	1,879
Capital transfers *less* taxes on capital	—162
less Gross domestic fixed capital formation	—911
less Increase in value of stocks and work in progress	—93
Net acquisition of financial assets	713
Companies	
Saving(1)	3,152
Capital transfers	21
less Gross domestic fixed capital formation	—2,627
less Increase in value of stocks and work in progress	—424
Net acquisition of financial assets	122
Public sector	
Public corporations	
Saving(1)	630
Capital transfers	11
less Gross domestic fixed capital formation	—1,447
less Increase in value of stocks and work in progress	—41
Net acquisition of financial assets	—847
Central government	
Saving(1)	1,219
Taxes on capital *plus* capital transfers	66
less Gross domestic fixed capital formation	—341
less Increase in value of stocks and work in progress	—25
Net acquisition of financial assets	919
Local authorities	
Saving(1)	416
Capital transfers	64
less Gross domestic fixed capital formation	—1,330
Net acquisition of financial assets	—850
Overseas sector	
Net acquisition of financial assets(2)	59
Net acquisition of financial assets :	
Private sector	835
Public sector	—778
Overseas sector(2)	59
Residual error	—116

(1) Before providing for depreciation, stock appreciation and additions to tax reserves.
(2) Equals, apart from change in sign, net investment abroad.

In addition to constructing sector capital accounts of this kind, detailed capital accounts are constructed for the central government on the lines of Table 9 of the *Financial Statement 1967-68* and somewhat less detailed capital accounts for local authorities and the public corporations, showing their financial and other capital transactions with the central government. These tables provide consistent forecasts of local authority borrowing from government and non-government sources; of borrowing by public corporations from the government and of the central government's borrowing requirement (its net balance).

Financial flows

The sector capital accounts provide a natural starting point for assessing the ways in which sectors with surplus funds may channel them to the sectors which have deficits to finance. The financial accounts (or flow of funds accounts) ([4]) provide the statistical framework for this kind of analysis. The general aim is to project forward the network of sector financial accounts to show the possible flows of funds between lenders and borrowers, both directly and indirectly through financial intermediaries. But this kind of forecasting is, at present, still at an early stage of development.

In order to carry out an analysis of financial flows it is necessary to sub-divide the company sector into (*a*) industrial and commercial companies, (*b*) banks, and (*c*) other financial institutions. The first step in the forecast is to estimate the *gross* financial surplus, or deficit, of each sector (which equals the *net* acquisition of financial assets *plus* borrowing from other sectors). This measures the total funds available for the acquisition of financial assets. This entails, therefore, making a forecast of the likely increase in financial liabilities owed by one sector to another. For the personal sector some estimates have already been made in the course of the constant price forecasting exercise: the forecast of consumers' expenditure incorporates forecasts of the changes in hire purchase and bank credit for consumption, and the forecast of investment in housing takes account of the likely availability of mortgage finance. (These initial forecasts, of course, may require amendment in the light of the full financial picture that emerges.) Forecasts are then made of bank lending for purposes other than consumption and house purchase (notably to unincorporated businesses). In this way forecasts are made of the main sources of finance to the personal sector—including funds provided by financial intermediaries, such as building societies, whose activity consists largely of transferring funds within the personal sector. By a gradual process of trial and error consistent estimates of the supply of and demand for funds by the different sectors of the economy are fitted into an interlocking set of financial accounts. The aim is to arrive at the most likely of many possible financing patterns associated with the national income and balance of payments forecast. It should be emphasised that the financial forecast is derived from the economic forecast and is not an independent prediction of financial developments.

([4]) These are published for quarterly periods in *Financial Statistics* (H.M.S.O. monthly) and in the *Bank of England Quarterly Bulletin*.

The selection of the most likely financing pattern in any forecast period can be guided by analysis of past data and by the establishment of measured relationships between expenditure of various kinds and movements in, or holdings of, financial assets and liabilities. Such analytical work has been facilitated by the publication, in the December 1967 issue of the *Bank of England Quarterly Bulletin*, of a six-sector set of financial accounts covering the period 1952-66; but much work still remains to be done. One persistent feature of the accounts for the United Kingdom is the existence of large and volatile 'unidentified items' in the personal sector and in the industrial and commercial company sector. These balancing items represent discrepancies between the financial surpluses and deficits (described on page xiii) derived from the national income data and the net totals of identified financial transactions shown in the financial accounts. As such, they cannot be ignored in an exercise which seeks to relate financial and economic forecasts. These uncertainties in the data for the past and the lack, as yet, of firmly established relationships between expenditure and financial transactions mean that the financial forecast at the moment is more of an art than a science. However, continuous efforts are being made to improve the reliability of the data.

Financial forecasts should be able to throw light on the financial conditions likely to prevail in the period under review—the demand for, and the supply of, various types of credit, the forces operating on interest rates, and the kinds of financial assets most likely to be favoured. Such forecasts could be used to check the plausibility of the financial assumptions initially fed into the constant price forecasts; and could pose the question of financial feed-back into those forecasts. A prospective sharp rise in company liquidity might suggest, for example, that the original forecast of company dividend payments was too low; or that the forecast of company trading profits was too high (implying, perhaps, that the forecast of real personal disposable income was too low); or that the forecast of expenditure on fixed assets and stocks was too low. Alternatively, companies might react to their high liquidity by increasing their purchases of securities through take-over bids, or by reducing their capital issues, or by repaying bank advances. The first two of these courses of action would change the distribution of the personal sector's assets, in general making them more liquid, and could also give rise to capital gains that might marginally feed back into additional consumption. Repayment of bank advances would put the banks in a position to lend more to other sectors—an effect that could be significant if the banks were already fully lent. An increase in the personal sector's liquidity could, through its effect on the building societies, facilitate some demand for private building which might otherwise have been frustrated. In such ways, the financial forecasts might have significant implications for the underlying forecasts of real expenditure. These feed-backs cannot, however, be quantified at present, and the financial forecasts are used as general guidance in forming judgements about trends of expenditure.

A second use of the financial forecasts is to provide a background against which to consider the operations of debt management and monetary policy.

The forecast of the government's borrowing requirement (the net balance), together with the forecast of the balance of payments,(³) provides an indication of the sum that the government will need to borrow from domestic sources. The forecast pattern of sectoral surpluses and deficits will throw some light on how this borrowing requirement may be financed; a large personal sector surplus, for instance, might imply a good year for National Savings. In most years, however, a key consideration is the amount of government securities taken up by non-bank financial institutions (notably, insurance companies, pension funds, building societies and savings banks). Forecasts of this would depend *inter alia* on assumptions about the course of interest rates, expectations, etc. as well as on the likely availability of funds to the institutions and the likely supply of other fixed-interest securities (such as debentures and local authority bonds). The sector financing accounts provide a framework which enables some of the ramifications of different patterns of take-up of government securities to be explored and their consistency with the underlying forecasts of national income to be considered.

By selecting the most plausible of these alternatives an estimate is made of the total amount of government debt that is likely to be taken up by the personal sector, industrial and commercial companies and non-bank financial institutions; inevitably, this estimate is subject to a very wide margin of uncertainty. The difference between this total and the government's domestic borrowing requirement is the amount of debt that the authorities would have to place with the banks. This, in turn, with forecasts of private sector and local authority borrowing from the banks, leads on to a forecast of the prospective rise in bank deposits and the money supply(⁴), which is adjusted in the light of expectations about the demand for money by persons and industrial and commercial companies.

In conclusion, it must again be emphasised that this type of financial forecasting is still very much in its infancy, and that it is subject to great uncertainties of measurement. But it does offer a very considerable potential—both as a further check on the consistency of the underlying economic forecasts and as a means of throwing light on the probable context in which monetary policy will operate. It is hoped that this potential can be tapped increasingly as the basic statistics are further improved and, perhaps more important, as more experience is gained in their use.

(³) More specifically, what is required is a forecast of the effect of overseas transactions on the central government's financing. This entails forecasting certain items that are within the balance of monetary movements, notably the acquisition by overseas residents of non-government short-term debt.

(⁴) The statistical framework used is set out in the table, 'Factors determining changes in money supply', *Financial Statistics*, January 1968 (Table 47).