CHAPTER 7
THE PUBLIC SECTOR FINANCIAL BALANCE[1]

by Terry Ward

This chapter sets out estimates of public expenditure together with estimates of public sector receipts, using a common set of measurement conventions, in order to derive the 'full-employment' financial balance in 1975 and subsequent years. This involves calculating what public sector revenue and expenditure would be on existing tax rates and spending authorisations, if the economy were operating at full employment with a target balance of payments on current account.[2] The government's fiscal stance can then be seen clearly in terms of the effects of discretionary changes in fiscal policy, as distinct from other influences, such as the level of exports, import penetration, private saving, etc.[3]

The intention is, first, to show the limitations of the way in which public expenditure plans are currently presented and formulated, and to emphasise the importance of always setting out both sides of the public sector accounts, receipts along with expenditure, using a common set of conventions. It is argued, secondly, that fiscal decisions (both on taxation and expenditure) ought to be measured by reference to such a unified system of accounts and specifically by their effect on the 'full-employment' public sector financial balance (PSFB). Thirdly, estimates of the full-employment PSFB are shown for each of the years 1975 to 1980,[4] on the assumption that tax rates are generally adjusted for inflation. An indication is also given of the sensitivity of the PSFB to changes in real output and the rate of inflation (for any given fiscal stance).

The official presentation of public expenditure plans

Ever since the Plowden Committee Report of 1961, the government has carried out annual public expenditure surveys for five years ahead in order to meet the Committee's principal recommendation that expenditure should always be planned 'in relation to prospective resources'.[5] The results of these surveys have, since 1969, been published in annual Public Expenditure White Papers. A major intention of these White Papers, however, which is 'to show the likely claims on resources entailed by . . . public outlays'[6] has not been successfully achieved.

There are two main objections to the usual White Paper presentation. First, the definition of what constitutes expenditure is arbitrary and thereby ambiguous. For example, some charges, such as national health prescriptions, dental treatment and payment for school meals, are treated as negative expenditure on goods and services, whereas road fund licences are treated as taxes. In the case of nationalised industries, if revenue is below operating costs, the shortfall is included as part of public expenditure, but revenue gained on operating account appears as a public sector receipt (in the form of gross trading surplus) if it exceeds cost. Just as some (positive) receipts are treated as negative expenditure, some items resembling negative taxes are treated as (positive) expenditure. For instance, whereas investment allowances are treated as an offset to corporation tax, investment grants are counted as public expenditure. Similarly, family allowances are treated as an item of public expenditure, while child tax allowances affect the receipts side of the account in the form of lower income tax.

The second objection is that the expenditure categories are not all measured in equivalent units. There are two considerations here. Transactions in existing assets, such as the purchase of land and various types of lending to the private sector, may involve little if any additional demand on currently produced output.[7] Also, expenditure is shown in the form of gross payments, even in cases where part of such payments returns immediately to the public sector as tax receipts without generating any demand on resources. There is a crucial distinction in this respect between direct purchases of goods and services and transfer payments. In the former case actual expenditure – on wages and salaries, for example – gross of any tax feedback measures the resources preempted by the public sector, whereas in the latter case it is the spending indirectly generated which gives rise to a demand on resources. Taxes on transfer payments (e.g. on family allowances or debt interest) therefore need to be deducted from the gross expenditure figures presented in the White Paper.

These difficulties, as pointed out in the Green Paper, *Public expenditure: a new presentation*,[8] are intrinsic to any attempt to present one half of the public sector accounts entirely separate from the other; they largely disappear when both halves are displayed together. It is then a matter of subsidiary importance where

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[1] This chapter is based on research, sponsored by the Institute of Fiscal Studies, into 'Full employment balance in the budget'. A more detailed account of the characteristics and behaviour of the fiscal system and estimates of the full employment public sector balance for past years will be presented in a future publication.

[2] This latter condition is necessary to define uniquely the level of private expenditure on goods and services, and hence the implied revenue from indirect taxes levied at given tax rates.

[3] Samuel Brittan has recently advocated a similar approach. See *Financial Times*, 26 February 1976.

[4] These estimates are derived from a detailed analysis of the sensitivity of individual public sector receipts and items of expenditure to variations in income, expenditure and unemployment. The results of this analysis are incorporated in the model presented in this *Review* and the estimates described in this chapter are based on simulations of this model.

[5] *The control of public expenditure*, Cmnd. 1432, para. 12.

[6] *Public expenditure: a new presentation*, Cmnd. 4017, April 1969.

[7] Sales of development land are included as a negative item, but to the extent that purchases exceed sales – as they do in the February 1976 White Paper – public expenditure is shown as increasing.

[8] Cmnd. 4017, April 1969 (henceforth referred to as 'the Green Paper'), especially paras. 20-2 and 30.

exactly the line between expenditure and revenue is drawn: it is the balance between the two which counts.

A technical problem arises in tabulating forward estimates of public sector receipts together with those of public expenditure if national income concepts are used to measure volume. The problem is that the 'volume' concept does not take account of the relative price effect, which measures the extent to which the change in the prices of public sector purchases differs from that of prices over the economy as a whole. Only if expenditure is defined to include the relative price effect can both sides of the public sector account be displayed in the same table on a comparable basis, so that the balance between the two sides is meaningful.

The full-employment balance as a measure of fiscal stance

The ambiguity in the measurement of public expenditure is only part of the reason why estimated receipts should be presented with expenditure plans. Spending programmes are conventionally decided within a medium-term perspective while changes in tax rates are determined at a different time, generally with short-term objectives in mind. Unless expenditure plans are considered in the context of complete public sector accounts, expenditure decisions cannot take proper account of the tax implications.

A full set of accounts will show all the items making up the public sector financial balance (PSFB). To provide a measure of fiscal stance these accounts must be 'normalised' to compensate for the effects of inflation and fluctuations in the level of employment and net exports. What is needed therefore is a definition of 'full-employment' public accounts and public sector financial balance, adjusted for inflation.

The potential ambiguities in such a concept relate to the question of how full employment with a target balance of payments–taken here to be a zero balance– is assumed to be obtained. In general full-employment equilibrium, thus defined, could not plausibly be imagined to be consistent with the government's actual fiscal stance (defined in terms of expenditure decisions and tax rates).

When the problem is posed this way, the appropriate assumptions become clear. Obviously private expenditure, and tax receipts deriving therefrom, must be consistent with full-employment output less public expenditure and net exports. Equally private income, and net tax revenue derived from it, must be consistent with full-employment national income less property income directly accruing to the public sector. Thus if the government's fiscal stance, as measured by the full-employment PSFB, is not consistent with actually achieving full-employment equilibrium, then it is necessary to calculate public sector revenues entering the PSFB *as if* the private sector's expenditure and post-tax income were out of balance to the same degree as the PSFB itself.

Only one item in the public accounts does not lend itself readily to this treatment, namely interest paid on public sector debt. To calculate debt interest payments over a period of years *as if* full-employment equilibrium co-existed with the projected run of PSFBs (conditional on the existing fiscal stance) would not be useful or informative, because the assumption of full

employment is actually inconsistent with the existing stance. It is better to define full-employment debt interest payments as those which would be made if the public debt were to accumulate from now on in a manner consistent with continuous achievement of external and internal equilibrium, implying an appropriate change in fiscal stance.

To summarise, full-employment revenue should be defined as if private expenditure and private income were separately adjusted to levels consistent with full employment and external balance, given the government's actual fiscal stance, while full-employment debt interest should be defined as the counterpart of a zero balance of payments and a normal full-employment private surplus.

One or two further definitional issues remain. The first question is how net exports sufficient to provide a zero balance of payments at full employment are assumed to be achieved. The simplest procedure, which we prefer purely for measurement purposes, is to imagine an entirely uncovenanted adjustment of the volume of exports, which does not affect the terms of trade and the distribution of private income between wages and profits. Second, there is the question of fiscal stance in relation to inflation which affects the 'real' value both of nominal tax rates and allowances and of debt interest payments. Here for 1976–80 we assume a 'moderate' rate of inflation (falling progressively from its 1975 rate to a little under 10%) and full indexation of all tax rates and allowances from 1976 onwards.

Finally there is the question of how to adjust the magnitudes of revenues and expenditures in money terms for changes in the value of money itself. Here we use the price deflator for domestic expenditure as a whole at 1975 market prices.[9]

Note that our concern in this chapter is only with how to *measure* fiscal stance in a meaningful way. There will remain the all-important question of what fiscal stance should actually be adopted. This is a controversial matter discussed in Chapter 1. The view put forward by the CEPG has been that there is an equilibrium rate at which the private sector acquires financial assets (given the rate of inflation) and so the correct fiscal stance is generally to set the full-employment public sector deficit so that it equals the equilibrium private net acquisition of financial assets less the target surplus on the foreign balance.[10]

CEPG estimates of the full-employment balance

Estimates of the full-employment PSFB set out in the next two sections are derived from the CEPG model, which incorporates the results of a detailed examination of the behaviour of the existing fiscal system and which takes full account of the inter-relationship between public expenditure outflows and receipts from taxation discussed above.[11] For each year, it is assumed that the additional output necessary to

[9]See Appendix B, p. 93.
[10]This is essentially the concept of a 'par' PSFB devised by Wynne Godley and Francis Cripps. See, for example, their 'The par model', in Chapter 3 of *The medium term: models of the British economy*, edited by G. D. N. Worswick and F. T. Blackaby, Heinemann, 1974.
[11]The estimates presented in this paper should, however, be regarded not as final results of our research, but as preliminary explorations of the problem.

Table 7.1   The full-employment and actual public sector accounts in 1975 (£ million)

	Full-employment	Actual	Difference
Receipts:			
Direct taxes on wages and salaries [a]	18,400	17,700	700
Other direct taxes [b]	5250	5250	0
Net indirect taxes [c]	10,650	10,100	550
Property income [d]	5600	5300	300
Total receipts	39,900	38,350	1550
Grants and transfers:			
Current grants to households [e]	9150	9400	— 250
Other grants	2300	2300	0
Debt interest	4400	4450	— 50
Total grants and transfers	15,850	16,150	— 300
Disposable income after taxes and transfers	24,050	22,200	1850
Current expenditure on goods and services	22,500	22,600	— 100
Saving	1550	— 400	1950
Gross domestic capital formation [f]	8950	8750	200
Financial balance, excl. capital taxes	— 7400	— 9150	1750

Notes:
Public sector receipts at full employment are defined to be those which would accrue if private expenditure and private income were separately adjusted to levels consistent with full employment (650,000 unemployed) and a zero balance of payments, given actual tax rates and expenditure programmes. Full-employment debt interest is defined as the counterpart of a zero balance of payments and a normal full-employment private surplus. It is assumed that the rate of inflation is the same at full employment as it actually was in 1975.
[a] Income tax on wages and salaries, plus employees' and employers' national insurance contributions.
[b] Income tax on current grants, self-employment income, rent, dividends and interest and corporation tax.
[c] Indirect taxes less subsidies.
[d] Gross trading surplus of public corporations, rent and interest receipts.
[e] Social security benefits plus student maintenance grants.
[f] Including stockbuilding.

secure full employment (defined for our purpose as 650,000 unemployed – about 2·5 % of the labour force) is generated by appropriate levels of net exports and private expenditure, which also provide resources for a zero balance of payments on current account.[12]

The estimates of expenditure for future years are based on the volume figures in the February 1976 White Paper, but are expressed in our tables in 'real' terms including the relative price effect,[13] so as to be consistent with the receipts side of the account. Current expenditure on goods and services is divided between wages and salaries and other current purchases, the former being assumed to bear some relationship to private sector pay, the latter varying with average prices across the economy as a whole. In addition, social security benefits are linked to average earnings and therefore indirectly to national insurance contributions, which are themselves estimated from total earnings. Total earnings in the private and public sectors also determine income tax receipts, while indirect taxes are assumed to vary with average prices across the economy as a whole.

Capital taxes are not included in our definition of the full-employment PSFB, which therefore follows the treatment proposed in the Green Paper, but differs from that in the *Financial Statement* or other official publications.

The estimates of debt interest in future years are different from, and apparently contradict, the forecasts in the February 1976 White Paper. They are derived from a model of public debt which takes account of the need to refund debt falling due for redemption in future years at the prevailing rate of interest, as well as the need to pay interest on the addition to debt arising from the borrowing requirement.[14] The model also includes government receipts of interest from the private sector and abroad as an offset to debt interest payments.

The full-employment financial balance in 1975

Table 7·1 shows what the PSFB in the calendar year 1975 would have been at existing tax rates and public expenditure authorisations, but at 'full-employment'

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[12]Throughout the following analysis, 'full employment' has this precise meaning.
[13]The relative price effect is here measured with respect to the price deflator for domestic expenditure as a whole.

[14]The formal model was constructed by John Rhodes and is described in the appendix to this chapter. This model formed the basis of the present author's criticism of the Treasury's forecasts of debt interest published in the February 1976 White Paper. See 'A critique of Cmnd. 6393', *Minutes of Evidence to the Expenditure Committee*, Session 1975-76, H.C. 235-i.

output. The table also shows the preliminary estimate of the actual financial balance in 1975. Estimates for the various broad categories of revenue and expenditure are also included.

The table shows the public sector financial deficit would have been £7400 million instead of an estimated £9150 million – a reduction of £1750 million – if full employment had been achieved, which would have required domestic output to have been 5·5% higher than it actually was. As a proportion of national income the financial deficit is reduced from 9·0% to 6·9%, which is marginally *lower* than the actual deficit in 1974, when the average level of unemployment was close to our definition of full employment, though the balance of payments was far from the target set here. Nevertheless it would seem that the observed rise in the financial deficit between 1974 and 1975 was much more a consequence of the increase in unemployment which occurred than of a decline in tax rates or growth of expenditure programmes. In other words, there is little evidence of a major underlying change in the fiscal stance adopted by the government between the two years.

Table 7·1 also shows the changes in broad categories of revenue and expenditure which result in the financial deficit being lower at full employment than under the conditions prevailing in 1975. This gives some indication of the sensitivity of individual receipts and items of expenditure to a change in real output.

Direct tax receipts, which comprise income tax, corporation tax and national insurance contributions (both of employees and employers), are shown to increase by about 2·5%. The major element here is taxes on wages and salaries and national insurance contributions, the yield of which tends to rise by 1·5 times the increase in income from employment under the existing system of taxation, the marginal rate of tax being greater than the average rate by approximately this ratio. Income from employment, however, in 1975 would be only about 3% greater at full employment.

Full-employment revenue from corporation tax is little different from actual revenue because in 1973, the year from which 1975 corporation tax (other than advanced corporation tax) mainly derives, the economy was approximately at full employment. Company profits rise more than in proportion to real output in 1975, and this will add to tax receipts in 1977, but the operation of tax allowances means that actual payments into the Exchequer will rise by less than in proportion to gross trading profits. This is because both investment and stockbuilding, which qualify for tax relief, would have been greater in 1975 had the economy been operating at full employment.

The higher net indirect taxes arise both from an increase in value added tax receipts and certain specific duties (those on beer, spirits and wine)[15] and from a reduction in subsidies paid to public corporations, which tend to decline more than in proportion to the growth of output for any given policy pursued in this

regard by the central government.[16] At the same time, there is an increase in the gross trading surplus, which is included in property income.

On the expenditure side of the accounts, current grants are lower because of the fewer numbers unemployed, average benefit paid per person unemployed being about £850 in 1975.[17]

The full-employment balance in the years 1975 to 1980

The full-employment PSFB in future years is estimated by assuming, first, that tax rates remain at their 1975 levels *in real terms*. This means that both specific duty rates and personal income tax allowances are adjusted in line with price inflation, while local authority rates, having been forecast from assumptions about expenditure and the rate support grant, are adjusted with public sector pay. Second, it is assumed that the volume of expenditure turns out to be as forecast in the February 1976 White Paper – with the exception, of course, of debt interest. The adjustment of volume figures to current prices was described above.

The results are set out in Table 7.2, which shows public sector receipts, expenditure and the balance between the two expressed at 1975 prices, the method of calculation – following that proposed in the Green Paper – being to estimate individual receipts and items of expenditure as a percentage of current price national income in each of the years and then to apply these percentages to the constant price national income projections. The figures are thus adjusted for the general increase in prices and are inclusive of the relative price effect.

Table 7.2 indicates that, on the assumption that net exports grow enough to generate full employment – giving rise to a growth in domestic output of about 4% a year on average – the public sector financial deficit will decline £2 to £3 billion per year at 1975 prices or by some 2½ percentage points relative to national income in 1976, 1977 and 1978. By 1978 the full-employment PSFB becomes zero, and thereafter moves into surplus. This would suggest some scope for reducing real tax rates in the future, given the public expenditure programmes published in the February 1976 White Paper, if full employment could be achieved and maintained for a number of years. Alternatively, it indicates some leeway for a higher level of public expenditure than currently planned if tax rates are kept at their present real values.[18]

The change in the PSFB shown in Table 7.2 is achieved as a result of total receipts, in real terms, increasing by 7.5% a year on average between 1975 and 1978, while expenditure (inclusive of the

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[16]A 1% growth in real output tends to reduce subsidies to public corporations by about 3%.

[17]This relates to both unemployment benefits and supplementary allowances. The figure is lower than might have been anticipated, since not all those unemployed actually receive benefit and, at the same time, the amount received by any individual declines significantly when eligibility for earnings-related supplement is lost. The figure understates average income received by the unemployed since it excludes tax rebates (which are allowed for under taxes on income from employment).

[18]The scope for budgetary relaxation would be affected if, as is likely, the external policies required in order in reality to achieve full employment and external equilibrium entailed a change in the terms of trade and a change in the full-employment distribution of income between wages and profits.

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[15]The income elasticity of demand for tobacco and hydrocarbon oil tends to be much less than unity.

Table 7.2   The full-employment public sector accounts, 1975 to 1980 (£1975 million at 1975 tax rates)

	1975	1976	1977	1978	1979	1980
Receipts:						
Revenue from North Sea	50	100	250	350	850	1200
Direct taxes on wages and salaries	18,400	20,050	20,550	21,300	22,200	23,100
Other direct taxes	5250	4700	6250	7250	7250	7500
Other net indirect taxes	10,600	11,800	12,550	13,400	14,200	15,050
Property income	5600	6150	6650	7200	7800	8300
Total receipts	39,900	42,800	46,250	49,550	52,300	55,150
Grants and transfers:						
Current grants to households	9150	9550	10,600	11,100	11,450	11,800
Other grants	2300	2400	2500	2650	2800	3000
Debt interest	4400	5100	4950	4450	4000	3550
Total grants and transfers	15,850	17,050	18,050	18,200	18,250	18350
Disposable income after taxes and transfers	24,050	25,750	28,200	31,350	34,050	36,800
Current expenditure on goods and services	22,500	22,750	23,100	23,300	23,750	24,400
Saving	1550	3000	5100	8050	10,300	12,400
Gross domestic capital formation	8950	8550	7950	7560	7600	7850
Financial balance, excl. capital taxes	− 7400	− 5550	− 2850	400	2700	4550

Notes:
Tax rates and allowances are assumed to be fully indexed with inflation, which is assumed to fall progressively from its 1975 rate to just under 10%. Public expenditure is consistent with the forecasts contained in the February 1976 White Paper. The price deflator for domestic expenditure as a whole at 1975 market prices is used to adjust expenditure and receipts to constant prices.

See Table 7.1 for the definition of full employment and of the categories of expenditure and receipts.

relative price effect) increases at an average rate of only 1·5% a year. The latter reflects the cutback in expenditure programmes announced in the February 1976 White Paper and the former also owes something to the same source. In particular, the White Paper plans imply a marked decline in the real value of subsidies between now and 1979, which results in *net* indirect taxes increasing much more than in proportion to the growth of real output, whereas indirect taxes *gross* of subsidies tend to increase more or less in line with private expenditure, given the assumed indexation of specific duties.

Direct tax receipts increase by an average of about 5·5% a year between 1975 and 1980, compared with an average growth rate of national income of just over 4·5% a year. The relative expansion of the former is a consequence of two principal factors. First, taxable profits increase relative to gross profits with an anticipated fall in the value of stock relief (as stock appreciation declines as a proportion of gross trading profit). Second, taxes on North Sea oil profits begin to be paid in 1979 and 1980, the total yield being estimated at about £550 million at 1975 prices in the later year. Third, income tax revenue is higher by some £600 million in each of the years 1976 to 1980.

On the expenditure side, public sector purchases of goods and services increase at 1975 prices (inclusive of the relative price effect) by only ·5% a year on average, while the annual growth of grant payments is largely determined by the excess of the rise in average earnings

over average prices.[19] The markedly greater rise in this item in 1977 results from the proposed extension of family allowances to the first child from April 1977 onwards, which will cost about £550 million at the current rate of allowance. Part of this, however, is clawed back, appearing as additional tax revenue in the receipts half of the table, and does not impose any extra demand on resources.

Debt interest at 1975 prices declines after a peak in 1976. This occurs mainly because, on a continuous full employment basis, the borrowing requirement starts from a figure below its present actual level and becomes negative in the later years. The result is also affected by the assumption made about the future rate of interest relative to the forecast of inflation. Plausible variations in this assumption, however, will not change debt interest so much as to change significantly the movements in the full employment PSFB in Table 7.2: an improvement of the order of £12 billion between 1975 and 1980.

The effect of inflation on the financial balance

As noted above, forward projections of public sector receipts and expenditure are adjusted in the previous section for the general increase in prices. The actual rate at which average prices are assumed to

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[19]Long-term benefit rates are statutorily related to the movement in average earnings or prices, whichever is the higher, while short-term rates are related to average prices. The former represent the bulk of such payments.

increase does not alter the financial balance one way or the other to any significant extent.

The question thus arises as to the effect of a change in the rate of inflation on the PSFB if personal tax allowances, specific duties and other receipts are assumed not to be indexed. If, for example, an un-anticipated increase in the rate of inflation occurred between budgets, would this tend to raise public sector outlays more than receipts or *vice versa?* The general answer seems to be that changes in the rate of price increase have an approximately proportionate effect on the two sides of the account, as long as pay rises in the public sector are similar to those in the private sector (which was certainly not the case in the 1974/5 financial year, for example). This result arises from the tendency, on the receipts side, for the yield of income tax and national insurance contributions under the present system to vary more than in proportion to income – the elasticity being about 1·5 on income from employment – and for this to offset the fact that the revenue derived from specific duties[20] and local rates is little altered by inflation.

The effect of growth on the financial balance

As an approximate rule of thumb, a 2% rise in growth of domestic output can be regarded as reducing the PSFB by just under 1% of national income at the present time.[21] The reasons for this are fairly clear from the figures shown in Table 7.1 and from the discussion of that table.

Conclusions

Three points in particular emerge from the above analysis:

1. The full employment PSFB is the correct measure of fiscal stance and can be precisely defined and estimated.

2. There appears to have been no change in the government's fiscal stance between 1974 and 1975. The large increase in the public sector financial deficit between these two years can be attributed to the substantial rise in unemployment.

3. If full employment and a zero balance of payments could be attained and if tax rates were fully indexed and present public expenditure plans achieved, the public sector financial deficit would be rapidly eliminated – at the rate of about £2·5 billion a year – and the PSFB would move into surplus within three or four years.

APPENDIX PUBLIC SECTOR DEBT INTEREST

by John Rhodes

This note describes how a model was constructed to predict the future level of debt interest paid by the public sector.

Among the factors which were taken into account were:

(a) Some debt interest payments are received by the private rentier sector; the remainder by foreign residents.

(b) The debt of one public authority is frequently held by another public authority – for example some local authority borrowing is from central government, which in turn borrows from the rentier sector or from abroad. This model is concerned with interest payments made by the public sector as a whole and transactions internal to the public sector have therefore to be netted out.

(c) While the public sector as a whole borrows large sums from the private rentier sector and from abroad, it also lends to those sectors (mainly the former), but on a smaller scale. It is necessary therefore to be clear that we have to predict *net* public

sector interest payments by deducting public sector interest receipts from gross public sector interest payments.

(d) Net debt interest payments by the public sector will be determined partly by the extent of old debt previously incurred and partly by the size of the

[20]There will tend to be some increase in specific duties even at unchanged nominal tax rates, since the price of duty items will increase by less than prices in general and this will tend to stimulate additional sales.

[21]The above observation raises a question-mark over the forecast of the financial deficit published in the *Financial Statement and Budget Report, 1975-6* of £7·6 billion for the current financial year. Figures for the first two quarters of 1975-6 suggest that the outturn may be between £8 billion and £8·5 billion. Real output is likely to be over 3% lower than the Treasury forecast in the *Financial Statement*, which ought to add between £1 billion and £1·5 billion to the financial deficit forecast. At the same time the volume of expenditure is estimated in the February 1976 White Paper to be about £1 billion higher than was forecast in the January 1975 White Paper. These two considerations taken together suggest a financial deficit in 1975/6 of between £9·5 billion and £10 billion – at least £1 billion higher than implied by figures for the first two quarters of the financial year. This casts doubt on the *Financial Statement* as a conditional forecast, though a possible explanation for the apparent discrepancy might lie in terms of a divergent movement in prices as between the private and public sectors. Thus in the first two quarters of 1975/6 the average prices of goods and services purchased by the public sector increased by less than the rise in average prices over the economy as a whole, which is the reverse of the long-term tendency. There is no way of knowing, however, what relative price movement as between the two sectors was assumed at the time the *Financial Statement* forecast was formulated.

public sector borrowing requirement currently being incurred or which will be incurred in the future.

(e) The *structure* of the debt previously incurred will also be an important determining factor in two ways:

  (*i*) firstly by variation in the split between short-term and long-term debt,

  (*ii*) secondly by the age structure of the longer term debt and the consequent amount of debt to be redeemed in any one year.

For reliable forecasts of debt interest payments there is no alternative to examining in some detail these two structural characteristics of the existing debt. This is because all the short-term debt and that part of the long-term debt due for redemption will require to be 'rolled over' at current rates of interest – and insofar as these differ from past rates of interest the total interest payments figure will be significantly affected. Even if interest rates and the total volume of debt were to be stable for two or three years the roll-over of long-term debt, contracted at rates of interest ruling some ten or more years earlier, can bring about variations in the total current debt interest payments.

The formal model

The formal model is:

$$NG' = tr + NG'_{-1} - NDR + 0.5 (RI(BG' + ADR) - NDR) + 0.5 (RI_{-1}(BG'_{-1} + ADR_{-1}) - NDR_{-1}) - (NGC' - NGC'_{-1})$$

where: NG' is net interest payments

  tr is a time trend

  NDR is the interest saved from current redemptions

  RI is the average current rate of interest

  BG' is the borrowing requirement

  ADR is the debt rolled over

  NGC is interest receipts

The two subscripts indicate variables lagged one year.

The model states that, for any year, net debt interest payments can be expressed as the payments in the previous year, less the interest no longer being paid as a result of current redemptions, plus the net addition to debt – a weighted average of this year's and last year's borrowing requirement and the debt to be rolled over, multiplied by the average current rate of interest and minus the interest saved from current redemptions. Net debt interest is derived by deducting interest receipts (the last term in the equation) from payments.

The data for current and past years are as follows:

(a) The current rate of interest (RI) is the minimum lending rate (previously bank rate) averaged for the year.

(b) Debt redemption (ADR') and the resulting reduction in interest payments (NDR') are constructed from a detailed examination of each component of debt over the period 1958 to 1975. All the short-term debt components are assumed to be redeemed each year and are thus included in ADR' with their previous interest payments included in NDR'. Examination of each item of long-term debt reveals a time series of annual redemptions – again with the effect of such redemption on interest payments.

(c) Public sector interest receipts (NGC') can be extracted directly from the National Income Blue Book, together with the dependent variable (NG') and the public sector borrowing requirement (BG').

For forecasting purposes the independent variables are estimated as follows:

(1) ADR' and NDR' are regarded as exogenous variables and are thrown forward using our knowledge of: (a) known long-term debt redemption in the future and the interest payments they will no longer generate, and (b) estimates of short-term debt (and its equivalent interest payments), again based on knowledge of this in the past.

(2) The interest rate (RI) is related statistically to the level of world interest rates, which is itself forecast exogenously (after taking a view – or a range of views – about future world inflation and other international factors) and to variations in the exchange rate.

(3) Debt interest receipts (NGC') are related to the rate of inflation in the domestic economy, which is generated elsewhere within the overall model.