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THE RECENT USE OF SOCIAL ACCOUNTING IN THE UNITED KINGDOM[1]

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I. THE PUBLISHED NATIONAL ACCOUNTS OF PAST YEARS

THE first national accounts of the United Kingdom were presented to Parliament in 1941. Judged by present-day standards they were unambitiously conceived. They consisted of three two-sided tables in the now familiar form: one showed breakdowns of national income and not national expenditure; the other two presented a revenue account of households and a combined capital account (or, as some would now prefer to say, resting account) so arranged as to focus attention on the central government's borrowing. The accounts did not, of course, form an articulated system.

Two things were especially remarkable about the estimates in this Parliamentary paper: they related to a year that had ended only three months before, and their form of presentation had been deliberately designed to help the Government in formulating its war-time financial policy. It was also then thought remarkable that the Government, having had the estimates made, should have published them. It is common knowledge that it was Lord Keynes who both investigated the calculations and urged their immediate publication.

The speed with which the estimates were made was possible only because of an exceptionally bold use of estimates obtained as residues. Both domestic investment (or, rather, disinvestment) and personal saving were obtained as residues.

Since then a similar paper has been submitted to Parliament each year before the Budget. The concepts of income and expenditure used in the latest of these papers[2] differ only in detail from those used in the pioneer document. Latterly, attention has perhaps been diverted from the net national income to the gross national product. This is because of dissatisfaction with the only

[1] I must emphasize that, although I am an official, nothing in this paper must be taken as expressing the views of the Central Statistical Office or any other part of H.M. Government.

[2] *National Income and Expenditure, 1946 to 1948* (H.M.S.O., April 1949, Cmd. 7649).

available figures of depreciation allowances. But the British figures have throughout remained faithful to the principle of valuation at factor cost, although it has long been recognized that in conditions where monopoly gains and quasi-rents may be earned in varying degree by all factors of production the concept of national income at factor cost, as conventionally measured, does not have an unequivocal meaning.

With the continuous increase in the quantity and improvement in the quality of statistical source material and with greater experience in the use of this material it has been possible to make finer breakdowns of the global aggregates of national accounting. As a result, this year's paper[1] contains for the first time a completely articulated system of accounts for the pre-war year 1938 and the three latest post-war years. These accounts now form the backbone of the paper. They are six in number. (With less than six it would not have been possible to have complete articulation without sacrificing some distinction important for policy purposes: e.g. the distinction between personal and business saving. More than six the data did not permit – at least to official statisticians bound to be more cautious than their free-lance colleagues outside the machine.) They are:

(a) a consolidated operating account of enterprises (including the trading branches of public authorities);
(b) an appropriation account of corporate enterprises;
(c) a revenue account of households;
(d) a revenue account of public authorities (local and central government);

(These last two accounts can be regarded as, in Mr. Stone's terminology, – apart from all differences of definitions – consolidations of the operating and appropriation accounts of households and public collective providers.)

(e) a combined capital account (or resting account);
(f) an account recording the current transactions of the British economy with the rest of the world.

Some of the items in these accounts are broken down in some detail in other tables; the expenditure of consumers (households) is classified under 42 heads, mixed incomes (the profits of unincorporated enterprises) are subdivided into three groups, direct

[1] *National Income and Expenditure, 1946 to 1948* (H.M.S.O., April 1949, Cmd. 7649).

taxes are allocated between different types of income and indirect taxes and subsidies between different types of expenditure, personal incomes are classified by size of income; the consolidation of the revenue account of public authorities is removed and separate accounts, in some detail, shown for the three different types of public authority; the relation of the central government's revenue account to the conventional cash accounts of the Exchequer is set out.

The main remaining defects of the accounts are these:

(1) Personal saving is still measured as a residue; no direct estimate of either total personal saving or the saving of particular income groups is available. Nothing is known of the forms in which different groups of transactors (e.g. households and enterprises) hold their accumulated savings. As a result, not only is the figure shown for personal saving highly suspect, but the combined capital account is a highly compressed statement which short-circuits altogether the flow of funds through different types of financial intermediary.

(2) The composition of the gross capital formation is still uncertain; in particular, the estimates of changes in inventories are shaky.

(3) No reliable estimates of the amount of income or gross product generated in different industries are available. As a consequence, we can show only a consolidated operating account of enterprises.

(4) The estimates of the profits of enterprises are not purified of all that the economist would regard as capital gains or losses (through inaccurate provision for depreciation and through revaluation of inventories).

(5) Except in the case of consumers' expenditure it has not so far been possible to deflate the expenditure figures so as to eliminate the effect of price changes. As a result we are in some doubt as to year to year changes in real income. Rough calculations made from the expenditure side have so far given results appreciably different from equally rough calculations from the side of real output.

(6) Nothing is known of the expenditure patterns of different income groups, or, as a consequence, of the incidence of indirect taxation on different classes. This gap could only be filled by continuing family budget enquiries.

(7) No breakdown is available of public authorities' purchases from enterprises. This is, of course, due to the fact that the Government's accounts are kept on what is sometimes called an 'objective' basis. For Parliamentary purposes it is essential to know how much of the Government's spending is the responsibility of a particular Department, but it is not essential to know how much the Government as a whole is spending on the products of any particular industry.

(8) Some of the estimates in the balance of payments are, because of the methods of estimation used, too 'net' to fit ideally into a system of articulated accounts. This results in the totals on the operating account of enterprises being too low on both sides. Moreover, the balance of payments used for operational purposes in the United Kingdom is essentially a cash account: its use in the national accounts therefore necessitates tiresome adjustments to the other accounts which are on an accruals basis.

(9) Some of the estimates actually made and published rest on a quite inadequate statistical foundation. This is particularly true of the household expenditures on consumer services.

(10) The estimates come from many diverse sources. With the best will in the world it is impossible always to be satisfied that they are logically consistent with one another. As an example of this one might mention our estimates of capital formation. They are made mainly from the supply side: that is, by estimating the output of capital goods by particular industries. As long as this method is used there must always remain some doubt whether the implicit assumptions as to the borders of capital expenditure are the same as those that underlie the Inland Revenue's figures of assessable profits.

(11) The reader of the official estimates is given no guidance as to what margins of error their compilers would assign to the various estimates. It is, I think, important that something rather like the practice followed by Dr. R. C. Geary in publishing the estimates of the national income of Ireland should be adopted in this country.

(12) Only in the case of consumers' expenditure have quarterly estimates been published.[1] But for many purposes of policy, particularly in years of turning-points, a time unit of a year is too long. It would be a tremendous improvement if provisional

[1] These figures are published in the *Monthly Digest of Statistics* (H.M.S.O.).

quarterly accounts could be published, say, two months after the end of each quarter, even at the expense of some (inevitable) loss of accuracy.

II. THE USES OF NATIONAL ACCOUNTING AND NATIONAL BUDGETING

It is unnecessary to enlarge on the value to clear thinking of the systematic presentation in a logical system of accounts of the past transactions of an economy. In this country it can, I think, be said that the level of contemporary comment on economic and financial policy is fairly high. For this the regular publication of such accounts by recent Governments is partly responsible. It is now much less easy for enthusiasts for this or that course of action to overlook the fact that the effects of their pet policies cannot be isolated to one sector of the economy. An advocate of a cut in public authorities' current expenditure of £x million can, by looking at the accounts, see what proportionate increase in expenditures (whether by foreigners on exports, by households on consumption or by enterprises and public authorities on capital formation) it would permit. And if outside comment is made more coherent it is natural to suppose that the same must happen inside the government machine. To what extent that is or is not so, it is not I think for me, as an official, to judge. But there would be general agreement among economists in this country that the habit of looking at economic questions in their general context in quantitative terms has spread in government circles in the last ten years.

The indirect effects on policies of this method of classifying economic data are therefore probably considerable even when it is applied to the data of the past. But it is only when the method is applied to estimates of the future that it can have its full impact on the policy-maker.

Before I refer directly to the British experience in this direction perhaps some general remarks on model-building and its uses will not be out of place.

First, one must obviously distinguish between models composed of forecasts and those where the model-builder has started out with some prior knowledge of the plans of some important transactor, such as the Government.

Second, models may be either 'complete' or 'incomplete'. By a complete model I mean one which satisfies the condition that

must be satisfied by the national accounts of a past period: namely, that all the accounts in it add up. In an incomplete model this condition is not satisfied. The emergence from his calculations of an incomplete model implies, of course, that the model-builder has made inconsistent assumptions. A business analyst advising a private firm operating in a *laisser-faire* economy will complete his model by varying his original assumption (a forecast) about, say, the size of the national income; an economist working a planned economy does not, presumably, himself complete his model: he hands it over to the policy-makers with the observation that present plans, as disclosed to him, are inconsistent and will have to be revised in one of a number of possible ways.

Third, models may relate to an accounting period relatively close to the present or to one rather remote in time. (In this context, and in present conditions, I would class a period three years hence as remote.) This distinction is important not only because the methods of estimation suitable for constructing a short-period model may be quite different from those suitable for a long-period model, but also and mainly because the uses which the two types of exercise can serve is in my view rather different.

Official statisticians had their first experience of model-building in 1943. In that year a model (or, rather, a series of models on alternative assumptions) of the British economy in a post-war, post-transition year was constructed. Since that time a series of further long-period models have been constructed. The value of these exercises has been that both Ministers and officials concerned with detailed administration have been able to choose at what level they should set their sights for the main conventional aggregates: government expenditure, gross investment, consumption and foreign investment. It would be ridiculous to suggest that these 'targets' have made up a detailed policy: what can fairly be said, I think, is that particular decisions have been taken in the light of these long-term targets to which we are assumed to be working. In particular, the proportion of the gross national product which it has been thought proper to aim at allocating to investment was fixed after taking account of the general picture presented by such long-period surveys.

Since the war we have, in addition, each year constructed a model of the next year of account. These models have all been

based partly on governmental plans and partly on forecasts. The mixed character of the assumptions reflects the mixed character of an economy where some transactions are subject to direct governmental control (by rationing, licensing or prohibitions) and some are left to be determined by the play of market forces. The models were always, at first, incomplete. The gaps in them were then stopped by government decisions which made some of the original assumptions invalid, and lately the completed model has been published in the *Economic Surveys* for the year in question.

But whereas in the case of the incomplete long-period model the Government has had an embarrassing choice of possible ways of completing the model – by operating on any of the four expenditure aggregates either directly or through income and its distribution[1] – by contrast, in the case of short-period models the Government has only a narrow choice of alternatives. Most of the decisions have already been more or less irrevocably made, piecemeal, by the time the model is constructed, and all that a government can do at that stage to complete the model (to close the gaps) is, I would suggest, to adapt its fiscal and financial policy. Short-period models, in other words, are useful only in guiding a government's fiscal policy. If one forgets this, one is likely to make exaggerated claims for the usefulness of the social accounting technique as applied to estimates of the future. (It is surely no coincidence that those economists who make the boldest claims for this technique are also, in this country at any rate, those who equate economic policy with fiscal policy.)

My point will perhaps become clearer if I illustrate it by describing, rather laboriously, the way in which the short-period models of the British economy (the unpublished incomplete ones posing questions for ministerial decision) have in fact been constructed.

[1] I do not mean to imply that long-period models are useful only in exposing inflationary or deflationary gaps. A government making a decision on the appropriate size of a particular industry would be greatly helped by having before it a rather complicated model showing the main inter-industry flows as well as the usual aggregates. In the United Kingdom we certainly hope to develop long-period models similar to Leontief's input-output tables for the American economy of 1929 and 1939, when we have complete data from our first post-war census of production.

III. THE METHODS USED IN MODEL-BUILDING IN THE UNITED KINGDOM

The first practical questions to be decided at the outset of all model-building are these: What level of prices shall be used? And at what point in the system of flows shall the initial estimates be made? The British practice has been to work with existing prices and existing tax rates, and to start the process of estimating with the balance of payments.

Exports to each currency area have first been estimated. (This implies making prior assumptions about the distribution of the labour force and the state of foreign demand for British products. It also implies, strictly, a question-begging assumption about the level of imports of raw materials.) To the total of exports there has then been added an estimate of net invisible receipts from abroad, and from the sum of these two items there has been deducted the positive foreign investment to which we are committed. The resulting difference is clearly equal to the sum of imports and foreign disinvestment. A view then has to be taken as to how much foreign disinvestment can be financed. This determines the level of imports.

The decision how to allocate these imports between food, raw materials and manufactured goods has, in post-war Britain, been essentially a 'strategic' decision, to which no close economic calculus can be applied. In the absence of convertibility, of course, the number of degrees of freedom of decision is (fortunately for the planner) considerably reduced. The existence of long-term contracts with particular countries reduces the number still further. In deciding on the allocation of the sums not, as it were, earmarked in this way, the factors to be balanced against one another are, of course, the level of home consumption and stocks of particular foods and the desirability of having a flow of raw materials sufficient to keep industry going without hold-ups. (In a sense, as I pointed out above, some assumption about imports of raw materials has to be made when estimating exports.)

To calculate the gross national product it is necessary to make assumptions about the level of employment, the industrial distribution of the labour force, the productivity of labour (by which I mean, in this context, the value at factor cost of the output – before deduction of provision for depreciation – of goods and services per man-year of employment) and the level of incomes from dwelling-houses and investments abroad, to

which labour makes no contribution. (These assumptions are obviously not completely independent: the level and composition of imports is one of the determining factors of total employment as well as of the industrial distribution and productivity of the labour force. Similarly, both the total level of employment and its industrial distribution determine in part productivity.)

To the gross national product so obtained is added an estimate of the amount of transfer incomes and debt interest that will be paid by the government and other public authorities to households and enterprises. The estimation of this sum is not difficult: the number of pensioners and sick people is fairly accurately known, the amount to be paid in unemployment benefit and assistance is a function of the number of unemployed assumed in estimating gross national product, rates and conditions of social security benefits are known, the amount of debt interest is insensitive over short periods (in peace-time) to changes in government borrowing.

A small part of this sum (gross national product *plus* transfer incomes) will go direct to public authorities as income from property. A part of the remainder will reach the government as direct taxes on income. To estimate receipts from direct taxes, it is necessary to make some allocation between different types of income, which will bear tax at different rates. The minimum necessary allocation is between provision for depreciation, wages and salaries, company profits (distinguishing between distributed profits and additions to reserves) and other property incomes. Given existing standard rates of tax and a hunch as to the effective average rate of tax on wages and salaries, the receipts of direct taxes can now be calculated.

The chanciest estimate of all still has to be made: the propensity to save out of personal income. Once this has been determined the consumption expenditure of households emerges as a residual.[1] From this the yield of indirect taxes (at existing rates) and the amount of subsidies required to maintain retail prices unchanged can be calculated. This, of course, necessitates some breakdown of consumption, but fortunately, in the United Kingdom, no very thorough one. (This is because indirect taxes and subsidies are both concentrated on a rather narrow range of commodities.)

[1] In fact, the calculation has in the United Kingdom sometimes been made the other way round, so that saving has emerged as a residual.

It remains to write down the two remaining items of the national expenditure: government expenditure and capital formation. The one emerges from the Parliamentary Estimates which Departments prepare for the Treasury each year (and the similar Estimates of Local Authorities). The other emerges as a datum given by a prior 'strategic' decision by the Government. I would suggest that this is likely to be true of all 'semi-planned' economies: different European countries may have different ways (by interest rates, direct controls, etc.) of allocating this total between its component parts, but the total is, in any economy not exclusively *laisser-faire*, something that is fixed independently and in the last result arbitrarily.[1] There are no rules to determine it: a government must take a definite decision itself.

Now all the items of the revenue account of public authorities are there – except one, and that one, public authorities' saving (in the case of the central government, the true surplus (or deficit) on current account), can be obtained by difference.

Only by a miracle will the sum of this surplus (or deficit), undistributed profits and private saving be even approximately equal to investment. It is at this point that the statistician retires and the public financier takes over. But you will see that it is the public financier and not the planner of import or investment programmes who takes over. The decisions of the latter have in general already been taken.

IV. SOME WEAKNESSES OF THE BRITISH MODELS

The first main criticism that could justly be made of the British 'national budgets' relates to the price assumptions made. In principle, all the calculations of incomes and expenditures have been made in terms of the prices ruling at the end of the previous year. But there is one exception to this. In calculating receipts from direct taxes on wages and salaries, we have in fact always tried to take a realistic view of the probable level of taxable income. This has not unnaturally sometimes differed appreciably from the level of income implied by the general assumption of unchanged factor prices. The inconsistency is not great, but it is undoubtedly there.

Second, it is sometimes objected that the estimates of personal saving available in the United Kingdom are so subject to errors

[1] This is not, of course, to say that the decision may not have been taken in the light of an earlier long-term survey.

of estimation that it is ludicrous to base important decisions on them. Thus, Mr. C. F. Carter[1] recently commented that 'there was some danger of the "nose" for good statistics losing its sense of smell. This seemed to show itself in the statistics of savings which were the foundations of this year's Budget, and which, in fact, were extremely bad statistics.' I would not disagree with this.

What has happened in the United Kingdom is that a method of estimation that was, though not of course ideal, adequate during the war and immediately afterwards, has continued to be applied in conditions to which it is quite unsuitable. In wartime the interest focused on the Government's borrowing needs and it was comparatively unimportant whether these were met out of current saving or current domestic disinvestment. (Indeed, in the first White Paper on National Income, personal saving and domestic disinvestment were bracketed together in the capital account.) Immediately after the war no very accurate figures were needed to reveal the existence of a large inflationary gap. Nowadays, an *ex ante* gap of £100 million is an important gap. But such a gap is well within the margin of error of the estimates of either personal income or personal expenditure.

It is in the measurement of saving, therefore, that the most urgent improvements are needed. The problem needs, probably, to be approached from two sides simultaneously: the analysis of the statistics of financial intermediaries (but before the statistics can be analysed they have to be corrected) and the sampling of family budgets. In neither field have we in this country had much experience. In the meantime important decisions will have to be based on bad evidence, which is, however (*pace* Lundberg), better than no evidence.

There are other soft spots in the British estimates for future years. Some are due to the inadequacy of data which I touched on in the first section of this paper. I will give only one example. Part of our investment planning is done partly in terms of quantities *times* prices, partly in terms of money expenditures. But as we have no adequate indices of the prices of capital goods it is impossible to be certain that the price assumptions implicit in this second block of investment are consistent with those made in calculating income.

[1] *Journal of the Royal Statistical Society*, Series A, Vol. CXI, Part III, 1948, p. 220.

Other soft spots are due more to weaknesses of theory. Thus, we have so far shirked clearing our minds on how one can measure changes in the productivity of government employees and the employees of certain other service industries. This problem is mainly relevant if one is concerned to obtain an index of real income. But it is not without importance even in calculations of money income. For by assuming constant wages per unit of *output* in industries where a conventional measure of productivity increase is available and constant wages per unit of *effort* (i.e. per man-year) in industries where no such measure is at hand, we have in effect assumed that workers in the latter group of industries will be content to see their money incomes fall behind those of workers in other industries. Which may not be a particularly plausible assumption, at least in the long run.

Lastly even where theory and statistics are satisfactory there is a grave danger of inconsistencies arising. This is partly, of course, owing to the large number of assumptions that have to be made, but it is accentuated by the fact that, if the best advice is to be obtained, they have to be made by an almost equally large number of people. The compilation of an economic survey by government departments is a very different game from that played by the academic economist working out a model as an individual. Moreover, it necessarily takes time. This means that the estimates will not be made simultaneously. Later evidence will be available when some are made than could be so in the case of others.

It is possible that I am here overemphasizing the difficulties of a transitional stage. We are living today at a time when the refined techniques of demand analysis can hardly be used for short-period projections because the earlier periods for which income and price elasticities of demand have been calculated were, on the whole, periods when direct limitations on particular demands were non-existent. It may be that, as we gradually relax direct controls on particular demands and accumulate up-to-date data on the patterns of demand of different income groups, the individual economist using modern techniques of analysis will come back into his own and it will be possible to make projections by soundly based calculations of propensities. But until then the problems of model-building will continue to be strikingly unlike the picture given in most of the literature on the subject.