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# GOVERNMENT PRODUCT AND NATIONAL INCOME

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THIS paper deals with the problem of defining the product of government as a component of national income. It inevitably repeats some of the arguments and considerations advanced in my recent writings;[1] but adds more explicit statements and some analytical detail.

The paper falls into two parts. Part I discusses the net product of government, viewed from the approach to national income *via* final products. Part II deals with the treatment of government in the approach to national income *via* the flow of shares.

## I. DEFINING THE NET PRODUCT OF GOVERNMENT

### 1. *The setting of the problem*

National production aggregates fall into three different classes. The first includes approximations to the net yield of a nation's economic activity. The second includes measures of the total volume of activity in which the emphasis is on various institutional groups of producers and consumers, and the purpose is to study the interrelations of these groups in the economic process. The third includes combinations of the first two approaches but with the aim on certain policy targets, a casting up of national accounts designed to show attainment of such targets in the past and either expectancies or goals for attainment in the future. For brevity's sake, the first class may be designated measures of net product; the second, measures of production (the process, not product) or of transactions; the third includes what, at least in the United States, are designated national budgets.

The discussion here is of national income as a measure of net product, an approximation to social welfare. I have no quarrel with current practices of measuring the national aggregates *if*

[1] See particularly: *National Product in Wartime*, National Bureau of Economic Research, New York, 1944, Part I; *National Income: A Summary of Findings*, NBER, New York, 1946, Chapter IV; 'On the Valuation of Social Income', *Economica*, February and May 1948, pp. 1–16, 116–31; 'National Income: A New Version', *Review of Economics and Statistics*, August 1948, pp. 151–79.

they are viewed as totals of production or transactions, potentially useful in analyzing the interrelations of various institutional groups of producers and transactors. Nor is there any quarrel with the current practices of compiling national budgets for policy purposes. With particular relevance to the government sector, I can easily see the advantage of gauging it by the total volume of commodities and services purchased, with due attention to (although not inclusion of) transfer flows. But attempts to justify the current practices by claiming that they yield a *net product* in any meaningful sense of the term lead only to confusion; and serve to inhibit both students and laymen from developing measurement and analysis of national income as an approximation to net product or social welfare.

'Net product' and 'social welfare' as used here are closely related. The term 'product' conveys the idea of something positive, so that it is impossible to talk of product as a source of 'illfare'. The term 'net' implies that products are distinguished with reference to some set of goals, whose satisfaction is treated as a positive contribution. If by social welfare we mean a positive contribution to some socially determined set of goals, it is clear that 'net product' is an approximation to net additions to social welfare. I don't mean to imply that national income can be an accurate measure of social welfare; but it must be viewed as an approximation to it, since any measure of *net product* is an approximation to it. And there is no need to dwell further upon the inescapable relation of the concept of 'net product' to some set of goals, since the connection is tautological. Without final goals there is no final or ultimate consumer; nor can any distinction be drawn between final and intermediate products or between net and duplicating (gross) totals.

Two general aspects of this dependence of a net product total upon some set of goals should be stressed before we deal with the problem of defining *government* net product. First, the goals are not specified in a constitution, charter, or any other basic document. They must be read into the whole set and pattern of values that govern society; and an element of arbitrariness attaches to any attempt to do so. But in considering alternative formulations of such goals, one point must be clearly kept in mind. If comparisons of economies are to be in terms of 'better off' or 'worse off', such sets of goals must be recognized and so formulated as to *transcend* differences in economic and social

organization in time and space. No comparisons are possible if the goals are so narrowly defined as to be conditioned by a highly specific set of economic and social institutions. To illustrate, if the goal is identified with money income, no sensible comparisons can be made between two periods or two places that differ in the extent to which the money mechanism involves all economic activity. The more general and *invariant* the set of goals, the greater its potential efficiency in permitting comparisons of net product magnitudes across space and time.

But a second general implication also follows: in so far as the goals transcend specific existing social and economic institutions, any measure of net product that uses them as criteria must involve a recasting and sometimes violent alteration of the data directly yielded by these institutions. The data actually observed and given directly in information on economic operations yield, at best, totals of transactions among institutions. These transactions and their institutional groupings are never a clear reflection of net final flows, viewed from the standpoint of a relatively invariant set of goals. Retail sales are not a pure measure of flow of goods to ultimate consumers, purchases of goods and services by government are far from a measure of final product, and so on. In fact, the measure of any net product is but a crude approximation. This point must be stressed because scholars responsible for preparation of national income estimates find it comforting to cling closely to the raw data yielded by the economy. But close adherence would result in a set of measures with only the fuzziest relation to any system of economic concepts that transcends the transient boundaries of a given set of economic and social institutions. Even estimates of volumes of transactions or of national budgets are impossible without considerable adjustment and purification. And while one must always ask whether the analytical 'distortion' of the raw data is justified, the inescapable need for such distortion must be faced in deriving an approximation either to net product or to any other set of concepts.

We assume that the goal of economic activity is to satisfy wants of individual consumers who are members of the nation, present and future. This is the only goal that seems to underlie the performance of a variety of economies and the only one that can be associated with the economic aspect of social welfare. If any citations of authorities are needed, it will suffice to refer to

Pigou's definition[1]– emphasizing only that the association with the measuring-rod of money is stretched here to the utmost – so that the criterion has the widest validity in terms of economies with different social organizations and levels of technology.

With this criterion at hand, the final product of government activity (as distinct from its intermediate product) may be defined as (a) direct services by government to ultimate consumers plus (b) additions by government to capital stock, i.e. to the stock designed to provide services to future ultimate consumers. Questions that arise in attempts to identify these elements in practice are discussed below. Before dealing with them, we consider alternative criteria for distinguishing net product and government's contribution to it; and the several approaches used in the past, all based upon a general set of assumptions similar to those used here.

2. *Purchases not for resale (current, official approach)*

We begin with the official definition of final product, different from that suggested above, and the resulting definition of net product of government. The criterion or, as the authors prefer to designate it, 'convention' for distinguishing between final and intermediate products, was formulated recently by the scholars associated with the U.S. Department of Commerce in their reply to my review of their national income publication:

> We start with the obvious fact that individuals, non-profit institutions serving individuals, and general government are ultimate buyers in the sense that they do not buy for resale in the market. Accordingly, their purchases are not elements of cost in the value of other output produced for the market. Hence there is a presumption that their purchases should be regarded as final products in any measure which purports to give a complete accounting of the entire output of the nation. Business organizations and government enterprises, on the other hand, are intermediaries in the sense that they produce for sale in the market. Accordingly, their purchases, to the extent used up in further production, are included in the values of goods and services which business sells. Hence there is a presumption that such purchases are intermediate products and should not be included separately in a measure of value of national production.

[1] Pigou defines economic welfare as 'that part of social welfare that can be brought directly or indirectly into relation with the measuring-rod of money'. (*The Economics of Welfare*, Third Edition, London, 1929, p. 11.)

> Since the expenditures of individual consumers and of non-profit institutions serving individuals are incurred largely to meet the needs of individuals, they consist in the main of goods and services that are elements of what is commonly regarded as the standard of living. Government purchases consist essentially of goods and services provided on behalf of the population as a whole, which it has been found better to secure collectively than individually. They should likewise be included in a measure of the total goods and services provided to satisfy the needs of the members of the community. In contrast, the bulk of business purchases of goods and services consists of items that are raw materials in the production process, rather than items that directly satisfy human needs. Their separate count is accordingly not necessary in enumerating the flow of final goods and services.
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> We believe that this is a realistic description of the general nature of consumer, government, and business purchases and that our conventions for distinguishing between final and intermediate product are accordingly useful for segregating the major types of goods and services provided to satisfy the needs of individuals.[1]

The 'convention' just described may seem realistic, but it hardly provides a significant criterion for distinguishing final products. The difficulties emerge if we ask in what sense purchases by individuals for consumption are not for resale within the current time unit. That they are consumed and physically vanish (as is true of many of the goods in question) is no test: the same holds for raw material purchases by business firms. Many individual consumers are during the current time unit sellers of labor services: the food, clothing, etc. they buy for themselves and members of their families may, therefore, be classified as bought for resale, since the rendering of labor services is contingent upon life and minimum comfort of the worker and his family.

Clearly, in this criterion of purchase not for resale, the kind of resale by individual consumers just suggested is excluded because the use of the goods is recognized as *ultimate* consumption, rather than consumption in producing the labor force. Such classification is tantamount to saying that the life and happiness of individuals is an end purpose of economic activity; and that any good is final if it contributes to this purpose without further circulation within the economy. In other words, exclusion of resale by ultimate consumers is necessarily a reimportation of

[1] See *The Review of Economics and Statistics*, August 1948, p. 183.

the criterion of individuals' welfare as the basis for classifying some goods as final products and others as intermediate.

The next question arises as to the meaning of purchases of goods by government not for resale. Clearly, no process of ultimate consumption occurs in the case of government, except where services are provided to ultimate consumers. Outside of these cases and government capital formation, the purchases of government are not resold in the sense that a full specific price is charged for them; but they are passed on to enterprises and to society at large. Should the fact that no specific price is charged mean that we have no resale, and hence that the corresponding government purchases are final product?

If the answer is 'yes', two objections arise. The first is that within the private sector also some purchases are not for resale – in the sense that while the good purchased is passed on to business users, no specific charge for it may be made to the user. This is true of all monopolies that charge discriminatory prices to their customers. In such cases the monopolists purchase some goods or produce them directly, and then pass them on, to at least some of their business customers, for only a partial *quid pro quo*. Should we consider the purchases by these monopolists of the goods so passed on as part of 'final product'? And if the answer is that they are in fact sold but the price is paid by someone other than the specific business user, would not the same argument hold in case of government?

The second and more important objection is that failure to resell means 'finality' within the current time unit only if there is no chance of another enterprise using the good in question (or adding it to stock). But if failure to resell means only failure to charge a price and not failure to pass on the good to enterprises, then how can the good be treated as final? It can be used by business and other firms; and it can enter other products, and thus cause duplication. The argument that the specific price of the good in question is zero, or close to zero, is not relevant to the main criterion of 'finality' discussed here, viz., that of 'purchases not for resale'. If we also introduce the criterion of a 'fair' price, we should have to consider the problem of prices inflated by taxes, without a specific *quid pro quo*.[1]

[1] More specifically, a good, A, purchased by the government and then passed on *gratis* to a business firm (or to society at large) may have a price of zero to the recipient; but somebody else may be paying for it and including the cost in the price of his commodity or service (B, C, D, or E). In the final product approach

One can see that the linking of 'finality' of a product with 'not for resale', in the sense that it need not be sold for more than a token price, is important in a society where lack of means of payment in the hands of would-be purchasers is an ever-present threat; and on the theory that full employment of resources is conditioned by an adequate flow of purchasing power to consumers and of means of credit and existence of confidence on the part of business. The purchases not for resale are final in the sense that, once they have materialized, no further claims upon means of payment at the disposal of society (ultimate consumers, private business, government) are made. In other words, these are final *expenditures* which, if they can be made, will spell certain monetary levels of *gross* output. But failure to resell is, for reasons just advanced, clearly an inadequate test for identifying final product.

3. *Social framework as end-purpose*

It is contended below that most government activities are designed to preserve and maintain the basic social framework and are thus a species of repair and maintenance which cannot in and of itself produce net economic returns. Yet at certain junctures in the life of a country, e.g. in times of a crucial war, this interpretation may seem inadequate: it suggests the subordination of a life and death struggle to the flow of goods to individuals, and thus denies that at such times individuals' current welfare may be less important than survival of the social framework. The argument would lead toward temporary recognition of success in war and preservation of a country's social framework as a purpose at least equal in importance to welfare of individuals. The result would be to recognize all goods flowing into the armed conflict as final products; and to include in national income not only consumers' outlay and net output of government as defined below, but also all expenditures of government on war purposes.[1]

Reasonable as such an approach may seem in the stress and strain of a major war, it can be valid only during these extra-

we take B, C, D, and E at market prices, thus including the price of A. Hence, so far as A is a product absorbed in uses other than ultimate consumption, the fact that it was purchased by government not for resale does not prevent duplication if it is included along with B, C, D, and E.

[1] See *National Product in Wartime*, p. 17-19.

ordinary and necessarily brief intervals in the life of a body social. The elevation of success in war to a position in the hierarchy of social goals equal to the provision of welfare to individuals is warranted only if it can seriously be conceived that failure in the war is likely to result in a complete breakdown of the national economy. Conflicts of so crucial a character cannot obviously occupy more than a limited fraction of the secular run of a national economy's life. One must particularly beware of extending this viewpoint, justified by necessarily temporary crises in the life of a nation, to the common run of public activities involved in a continuous maintenance of the social framework within which the thousand and one economic activities are carried on.

This is not to deny that if a chronic state of crucial struggles ever arrives, there would be need for asserting two end purposes to economic activity: welfare of individuals, and preservation of the social framework. But in that case distribution of resources between the two end purposes would be determined by a variety of factors that cannot be encompassed in economic analysis; and while the results could be measured, a proper interpretation would have to await a new type of economic-political theory. The latter would include not only the factors now considered in the analysis of economic phenomena under conditions of peace and political stability, but also those that determine allocation of resources under conditions of external struggle and extreme pressures upon a nation's political framework.

It is clear that any change in the definition of end purposes of economic activity has an immediate bearing upon what is included in national income; and hence upon how the net product of public activity is defined. Indeed, choice of end goals as a criterion in defining net product affects even the recognition of factors. Factors are what factors do, and factors are identified by their participation in the creation of final net product. The yield of factors, their aggregate compensation, must equal the net product and hence be governed by the criteria that define the latter. However, there is little need to stress the point further. We return to our basic set of criteria – satisfaction of needs of ultimate consumers, present and future – and consider more closely how the net product of government activity can be distinguished from intermediate product.

4. *The three past approaches*

All the approaches cited in this section recognize the basic criterion just formulated. They differ, however, in their judgment as to how far the criterion can be applied in practice. They are dealt with briefly, in the way of a survey of the experience prior to the time when the official current estimates 'solved' the problem by raising government to the status of an ultimate consumer.

(*a*) The first approach may be designated one of total despair, being based on a view that no reliable bases, *in principle*, are available for distinguishing in government activity between final and intermediate output. To use a more neutral term, descriptive of its implications as to the treatment of government activity as a producer, the approach may be designated 'wholesale' since it involves either a wholesale acceptance of all government product (expenditures on commodities and services) as final net output; or wholesale rejection on the ground that none of it is final product.

This viewpoint may best be illustrated from the writings of J. R. Hicks. In an article (joint with U. K. Hicks), we read:

> . . . in the above classification no account has been taken of any deduction from the gross contribution of firms due to their utilisation of the free services of public authorities. In fact, the services of police, justice, and defence do contribute to production, and may be thought of as used in production in the same way as power and fuel. If we decide to give its full weight to this consideration only a fraction of the output of public authorities may have to be reckoned as entering into the final product. And in this case a deduction from our various totals equal to a large proportion of public net income must be made. . . .
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> It is, however, extremely difficult to see how much deduction should be made. The protection of life and limb is presumably a part of final output, so is the use of the roads for pleasure purposes. How do we draw the line between the value of these services and the value of those services which ought to be deducted? The division seems to be entirely arbitrary. Consequently, if we want to measure something and not to arrive at a figure for the national income which is what it is just because we say it is, it seems better to disregard this productive utilisation of public services, and to regard them (by definition) as being reckoned entirely into final output.[1]

[1] 'Public Finance in the National Income', *The Review of Economic Studies*, Vol. VI, No. 2, February 1939, p. 150.

And in a footnote to this statement the authors add:

> It may be noted that our fourth breakdown, by separating out public net income, provides an upper and a lower limit for the national income (with or without public income). It is open to anyone to decide what fraction of public output he considers to be a 'producers' good', and having made the necessary deduction, avoid the convention of classifying all public expenditure as final output.[1]

In a later article, devoted to a theoretical analysis of the welfare and productivity implications of the valuation of social income, Professor Hicks sees no reasons for changing his position. In discussing Colin Clark's formula, which includes indirect taxes fully, Professor Hicks says:

> There is, however, one substantial reason why Mr. Clark's formula must indeed be expected to overestimate the *Social Income including public services.* Some part of the output of public services is not final output, but plays its part in production by facilitating the production of other goods (maintenance of law and order, roads used for business purposes, and so on). To reckon this as well as the goods whose output is facilitated would involve double counting. I do not see how we can hope to do anything about this in practice, for we have no reliable criterion by which to distinguish that part of the output of public services which is not final output from that which is. We must just be prepared to remind ourselves that the Clark formula has not in fact succeeded in eliminating every sort of double counting.[2]

Three comments should help to elucidate the meaning of this approach. First, while the discussion is usually in terms of whether or not to add indirect taxes, the problem is being answered in terms of all taxes. Second, it would have been as simple a convention to classify all government activity as yielding indirect output alone, as to classify all of it as final output. If the latter convention is chosen, the implication must be that 'public services' are viewed as being *predominantly* of service to consumers or constituting additions to capital outside of the private sector. Third, while the statistical consequence of the choice of 'convention' here means identity of the measure with that of government product in the current official estimates, the

[1] *Op. cit.*, p. 151.
[2] 'The Valuation of the Social Income', *Economica*, Vol. VII (new series), No. 26, May 1940, p. 118.

theoretical position is different in principle: it does not accept the recent contention that identifies final products with purchases not for resale, and leaves the way open to a change in procedure when practical circumstances warrant. Indeed, in a recent publication Professor Hicks registers a change in his position:

> I have never denied that there is a distinction between those government activities which have to be regarded as a part of final output, and those which (at least in principle) are not. But I used to think that the distinction was too vague to be of much use to the statistician. Later on . . . my wife demonstrated to me that the making of a significant classification of public expenditure on these lines was a much less formidable task than I had supposed. The difficult cases are quantitatively of secondary importance, with (I think) the exception of road maintenance.[1]

(*b*) The second approach shares with the first its essential pessimism as to the feasibility of separating in government activity final from intermediate product. But it adopts a different convention as representing a more palatable practical compromise. It may conveniently be designated the tax-payments approach.

In its use in national income measurement, in the past work of both the National Bureau of Economic Research and the U.S. Department of Commerce, this approach has undergone some evolution and has emerged in two variants. Attention to these two variants serves not only to indicate how different assumptions can be made in interpreting government activity in terms of net output, but also how changing circumstances force revision of assumptions that seemed acceptable at a different time.

(i) The first variant involved two basic assumptions: (*a*) direct taxes paid by individuals measure the value of services by government to ultimate consumers, and (*b*) net business taxes (i.e. net of subsidies) represent full and complete payment for intermediate product of government.[2] The combination of these assumptions meant that final product of government, not

[1] *Economica*, August 1948, p. 164.

[2] These were the implicit assumptions of the estimates by the National Bureau of Economic Research, from the first set published in 1921 until the second variant was formulated and presented in *National Income and Its Composition* in 1941. The same was true of the U.S. Department of Commerce estimates of national income until the recent revisions (1947).

already represented by individuals' taxes, could take the form of additions to government capital alone and could be financed only out of deficit; and that domestic and foreign transfers also could be financed only out of deficit.

The acceptance of these assumptions resulted in a simple formula for national income: national income equals the sum of all income shares *gross* of direct taxes paid by individuals, the income shares including undistributed net profits or losses of private enterprises after all tax payments. Since additions to government capital could be only out of deficit, they did not have to be added; and neither were domestic transfers to be included. Foreign transfers, which should be subtracted if financed out of deficit, were neglected for the realistic reason that they were practically nonexistent in the United States (war debts resulting from World War I having been classified as true loans). And the whole calculation was in terms of current government accounts, disregarding repayment of debts. Taking the latter into account would not have changed the formula, or the resulting national income total.

This frankly conventional choice of assumptions, with their conveniently simple result, seemed fairly satisfactory during the 1920's and early 1930's in the United States, when the total scope of government as a producer or transfer agency was small relative to the private sector; and, particularly, when transfers and deficits were comparatively small. But when, as a consequence of the drastic depression, huge government deficits and large transfer activities (in the form of relief) made their appearance, it became dangerous to assume a neat correspondence between taxes and government product and a different variant was suggested.[1]

(ii) In the second variant (embodied in *National Income and Its Composition*) the first assumption, the equivalence of direct taxes paid by individuals and services by government to ultimate consumers, was retained. But the second was dropped. Instead, the other part of the final government product was secured directly, by a comparison of real capital formation under government auspices with changes in government debt. The

[1] This is not intended as an accurate description of the motives that led to the change in the assumptions in the National Bureau's estimates in the late 1930's. It is rather a post-facto rationalization of an adaptation of a conventional decision to changed circumstances, which was made out of intellectual discomfort caused by the old convention.

addition of this difference between change in real government capital and change in government debt included such net product of government (outside of services to individuals) as was financed out of taxes, included such repayment of domestic debt as was made out of taxes (which species of domestic transfers should be included); and was necessarily adjusted by also adding all other domestic transfers (e.g. relief) to the income shares. The final formula for the second variant is: national income equals (sum of income shares *gross* of direct taxes on individuals) plus (domestic transfers, not in repayment of debt) plus (excess of real capital formation by government over change in government debt).[1] As in the first variant, foreign transfers were neglected since they were nonexistent or insignificant.

(*c*) The third approach, while recognizing the difficulties of classifying government activities as final or as intermediate product, calls nevertheless for such segregation. Calling for detailed consideration and analysis of government activities and an allocation of the latter between final and intermediate products, it may properly be designated the 'specific' approach.

It has been used directly in national income estimating in Germany and Sweden; and partially in several attempts to establish fully individuals' share in national product or the share of some economic group.[2]

[1] The controversial question concerning valuation of government services at cost or market basis is no longer an issue, if we accept the assumption that direct taxes paid by individuals measure the value of services by government to individuals as ultimate consumers (see the discussion in *Studies in Income and Wealth*, Vol. Two, National Bureau of Economic Research, New York, 1932, pp. 269–316). On this assumption, domestic transfers must be added; and the excess of real capital formation over the change in debt must also be added to derive the correct total of national income as net output, at current market prices. It is true, however, that the assumption implies a market (payment) rather than cost basis of valuation of government *services to individuals*.

[2] For treatment in the estimates for Sweden see *National Income of Sweden*, 1861–1930, by Eric Lindahl, Einar Dahlgren, and Karin Kock, London, 1937, particularly Vol. I, pp. 226–31; for Germany: *Das Deutsche Volkseinkommen vor und nach dem Kriege*, Einzelschriften zur Statistik des Deutschen Reiches, im 24, Berlin, 1932, particularly pp. 14–16 and 134–41. Gerhard Colm presented this viewpoint and exemplified its application to the case of the United States for 1932 in his paper, 'Public Revenue and Public Expenditure in National Income', *Studies in Income and Wealth*, Vol. One (National Bureau of Economic Research, 1937, pp. 173–227). R. W. Nelson and Donald Jackson allocated in fairly detailed fashion the outlays of the federal government for fiscal 1936 between final and intermediate product preparatory to further allocating each between those going to farmers and to nonfarmers, in their paper, 'Allocation of Benefits from Government Expenditures', *Studies in Income and Wealth*, Vol. Two (1938, pp. 317–42). In his paper, 'Three Estimates of the Value of the Nation's Output of Commodities and Services – A Comparison', *Studies in Income and Wealth*, Vol. Three (1939, pp. 319–80), Clark Warburton estimates government services to

The approach involves a direct denial of the judgment of the first two approaches, viz. that government activities are not properly segregable into final and intermediate product because there is no reliable principle on which such segregation can be made.

Naturally, in its practical application the approach also involves conventions. Thus, when in the national income estimates for Sweden the expenditures for a large sector of government activity are apportioned, for lack of adequate basis for a more specific allocation, equally between final and intermediate product, the element of convention enters. But it may be claimed for the specific approach that conventional judgments are applied to a much narrower field than in either of the first two approaches; and that the limitation occurs by virtue of direct recognition of at least some sectors of government activity as belonging distinctly to the final or to the intermediate product category. If wide agreement is possible with reference to this latter step; if no demurrer can be entered against classifying, say, expenditures on health and education as direct government services to ultimate consumers, and expenditures on economic regulation as services to business, the conventions of the third approach are clearly to be preferred to those of the first approach; and even to those of the second approach in its more elaborate variant.

Disregarding for the moment the question whether the improvement in the estimate warrants the additional work involved in the application of the third approach, we may state that, *in theory*, the third approach is the only acceptable one – provided that agreement can be established as to principles of classifying government activity between final and intermediate products, principles so applicable to ordinarily available data on government expenditures as to permit a marked narrowing of the area within which purely *conventional* bases of allocation must be used. Such principles can be formulated, at least in tentative form, as an initial basis from which agreement may evolve. With their formulation, the specific approach to the measurement of final product of government activity is the only one that can and must

individuals *qua* consumers (see particularly the items on pp. 352–55). In a recent study for Great Britain, *Redistribution of Incomes Through Public Finance in 1937* (Oxford, 1945), Tibor Barna not only estimates services by government to individuals, but allocates the value of these services for the various groups in the distribution of income by size.

be followed in estimating net product of economic activity. And to return to the question of practical expediency, recent years have witnessed such enormous expansion of government activity, an expansion likely to persist into the future, that additional work devoted to the improvement of estimates of the final product of government is urgently warranted.

5. *Criteria for identifying final product of government*

Since final product of government consists of two distinct parts – consumers' outlay and private capital formation – criteria or principles of identification must be set up for each part separately.

The services by government to individuals, by which we mean activity of government that results directly in a flow of goods to ultimate consumers, can be identified with the help of three criteria. The first is that the individual recipient of the service from government pays no price or only a token price. This is to distinguish cases in which government acts in the sense of our analysis from those in which government acts as a business entrepreneur. To illustrate, we are concerned here with *free* public education but not with the activities of the post-office in which the service is rendered for a significant *quid pro quo*. Only if the price is a token price and only to the extent that services rendered are, therefore, financed out of taxes, deficit, or any other sources except specific fees paid by consumers, will the activity be classified under government service to individuals.

The second criterion is that the government service be available to the individual only upon his overt initiative, rather than to him as a member of a social group who, as an individual, may be quite unaware of the service. To illustrate: services of a government hospital, available to an individual upon request, would be classified by the criterion as a government service to individuals. But the services of the state legislature, higher judiciary, the army and navy, etc., for the preservation of the social order, and thus for protecting and extending the position of an individual as a member of society – a service which the individual may or may not be aware of, but which he cannot request on his individual initiative – is not recognized as service to individuals as ultimate consumers.

This criterion grapples directly with what is obviously the central difficulty in distinguishing between final and intermediate

output of government, viz. the numerous and recently enormous activities designed to maintain the society in internal peace and to preserve its position *vis-à-vis* other countries. It is this difficulty that leads in the first two approaches in section 4 to a denial of the feasibility of reliable identification of net product of government. The criterion resolves the difficulty by classifying all such activities as intermediate rather than final product.

The reason for so doing lies in the recognition that economic activity is contingent upon the existence of a given social framework – a set of working rules and institutions that govern members of society in their relation to each other – as well as a set of practices (unfortunately but few firm rules) that govern the relations of a given national economy to others. National income is a measure of net output of economic activity *within* the given social framework, not of what it would be in a hypothetical absence of the latter. The maintenance and modification of this framework, even though it employs scarce resources that may be secured on business markets, cannot in itself constitute part of the final product of economic activity. One could, if one wished, classify this social framework as a kind of basic capital, but not in the strict sense of economic capital whose increase and decrease can in and of itself enter economic accounting and national income. The activities by government designed to preserve or expand the framework involve economic costs to society at large; but any net returns from them cannot be associated directly with any changes in the framework, certainly not in terms of services to individuals. This does not mean that such changes in the social framework may not facilitate greater production in the future; but then it will be accounted for when such greater production means a greater flow of goods to individuals.[1]

In other words, the flow of services to individuals from the economy is a flow of economic goods produced and secured under conditions of internal peace, external safety, and legal protection of specific rights, and cannot include these very conditions as services. To include the latter implies feasibility of national income and of a flow of services to individuals outside the basic social framework within which economic activity takes place. There is little sense in talking of protection of life and

[1] The bearing upon government capital formation is noted below, in discussing the criteria for identification of that part of final product of government.

limb as an economic service to individuals – it is a pre-condition of such service, not a service in itself.[1]

Another important argument forces us to view government activities on internal and external defense and on economic and social regulation as costs rather than net product. One need not be an economic determinist to conclude that the growing magnitude of government activities of the type just mentioned is closely connected with the growing complexity of the economy and the international frictions which inequalities in the rate of economic growth among nations produce. The factors that made for increased economic productivity and increased flow of goods to consumers and to capital stocks – advanced technology with its change in scale of operation and magnitude of fixed capital investments, the increasing size of business enterprises, the better organization of labor, farm, and other groups, the social system that maintains the economic harmony of conflicting groups in a complex society – are the very same factors that made for increased activities by government. The latter are not natural calamities unconnected with the economic system; hence increased government outlays cannot be interpreted as if they were increased production of fuel occasioned by growing severity of climate – a realm beyond social control. On the contrary they are an increased cost of operating the economy, the other side of the shield of economic progress. It is difficult to understand why the net product of the economy should include not only the flow of goods to ultimate consumers, but also the increased cost of government activities necessary to maintain the social fabric within which the flow is realized.

[1] This explains why comparisons of economic measures among societies that differ materially in their social framework are so intellectually unsatisfying. Economic measures, by the nature of the case, must reflect results of economic activity *proper, with the framework of society taken for granted.* But individuals' total welfare, as distinct from economic welfare, reflects these basic conditions of the framework of society. The very fact that no one has as yet seriously proposed including in national income the economic value of individual liberty shows clearly that the services of social framework are not economic services to individuals as ultimate consumers; and should, therefore, be excluded by the criterion just suggested.

It is the acceptance of this view on government activities that lies at the basis of the abandonment of the convention used by the author in the past and described briefly under the second approach (section 4(b), above). One may also note that the criterion suggested would result in a different set of estimates of net output of government from those derived by the estimators who did use the specific approach in the past. In practically all cases, protective and legal services of government were included, at least in part, under services to individuals *qua* ultimate consumers (see references in footnote [1] on p. 190).

However, the second criterion which calls for individuals' initiative and action preceding the receipt of service does not exclude fully all government activities designed to maintain the social fabric. The reason for so formulating this criterion is that many government activities relating to the general social framework can only be undertaken by decision of public bodies. Indeed, where common interests of society are involved, individual action as contrasted with group action is often barred. But this second criterion is, itself, not sufficient. For there are numerous cases when the government acts in response to an individual's initiative, when action follows without any price or only at a token price, and yet no economic service, no final product can be recognized. To illustrate: an individual's appeal to a court resulting in judicial action is not followed by a government service that is classifiable as a final economic good (regardless of whether the verdict is favorable or unfavorable). Creation and destruction of rights is not in itself production of final goods, even though such rights may have high market value for individuals and firms. Yet we have here a case where both the first and the second criterion fail to bar recognition of the government activity as constituting services to individuals as consumers, i.e. as final product.

A third criterion must, therefore, be introduced. It requires, in addition to *gratis* basis and individual initiative or action, that the services by government to individuals have an analogue in the private markets. Only those government activities directed to satisfy individuals' wants are included which find their parallel, and on a substantial scale, in similar services purchased by individuals on private markets. This permits the inclusion of such services by government as education, which obviously finds its analogue in purchases of private education; medical services, with similar analogues in private medical service; parks, theaters, public tourist centers, amusements, etc. On the other hand, judicial, police, external defense, legislative, and all other similar services are excluded; and so also is excluded the vast network of government activities in the way of economic regulation and information, since any analogues that exist in the private market are constituted of purchases by individuals not in their capacity as ultimate consumers, but in their capacity as members of business firms.

It must be admitted that the third criterion breaks down if

stretched too far. If *any* appearance on private markets is considered as satisfying the test, many government activities will be classified as final product even though they cannot easily be acknowledged as such. People hire bodyguards, and one could, therefore, claim that police activities are economic services to ultimate consumers, whereas one should classify them as intermediate product, costs of maintenance of social order at large. Hence 'widespread' use in private markets is called for; and one could argue that if widespread use of private police is necessary, then the social framework does not recognize an overriding need for internal peace and under such conditions police activities by government should be counted as services to individuals. Yet 'widespread' is an elastic term.

Another difficulty with the criterion becomes apparent when what is obviously a service to an individual as an ultimate consumer becomes so well discharged by government that it ceases to be provided on private markets (e.g. free government medicine) and is discharged by government without any cost. Yet one could argue that in such a case free medical service has become part of the social framework, like free justice, free right to participate in elections, and free police protection. The examples illustrate that the line of distinction between activities designed for the benefit of society at large (i.e. as a body) and services designed for individuals as consumers is not constant – it changes with shifts in society's consensus as to the indispensable prerequisite of a satisfactory social framework.

Yet, the combination of the three criteria should provide a workable distinction of those government activities that can be classified as services to individuals as ultimate consumers. The first criterion distinguishes government business from government *par excellence*. The second excludes such government activities as find a widespread parallel on the private markets (purchases and production of certain types of commodities needed for the benefit of society at large, e.g. military airfields) but which, being for the benefit of society at large rather than the individual as ultimate consumer, do not follow or become available upon an individual's initiating action. The third criterion excludes such government activities as may follow an individual's initiating action, but are only the result of an attempt by the individual to adjust his position within the social framework: actions of the adjudicating, or legislative, or administrative type,

which do not find any widespread analogue on private markets for the simple reason that society does not entrust them to private business.

We turn now to the problem of identifying the capital formation component of the final product of government. Here analogy with the private sector is more helpful than in the case of government services to individuals. Net output includes not only goods that become available during the year to ultimate consumers, but also such additions to or drafts upon the stock of capital goods at the disposal of the country's economy as result from current productive activity. These changes in stock of capital goods are included because they mean increase or decrease in potential capacity of the economy to supply goods for consumers in the future – capacity in terms of ability to produce a larger final output with the same costs or the same final output with lower costs. Such changes in capital stock in any single country consist of two distinct parts: additions to or drafts upon the stock of real capital goods within the country (inventories, durable equipment, construction units, and the like); and change in the net balance of claims of the given country against foreign countries.

In defining and measuring changes in the stock of real capital goods within the country, three basic criteria are used. First, all capital goods are included regardless of their distance, in the customary chain of production relations, from such final goods as satisfy wants of ultimate consumers. Whether the capital good is of a type in which capacity to increase output of consumers' goods in the future may be clearly perceived (e.g. a residential building) or of a type in which connection with consumers' goods must be traced through several links of production-consumption relations (e.g. a blast furnace) is of no bearing: changes in both types of capital goods must be included in net output. The same criterion applies also to changes in the stock of real capital goods in the hands of government. Even if government capital is designed for turning out intermediate products alone (e.g. armament), changes in it should be included, because additions to such stock reduce the future cost of maintaining or extending the social framework which is indispensable for operation in the future, i.e. for the future output of consumers' goods. There is no inconsistency in including in the final product of government changes in the stock of armament, and yet excluding

from final product such government activities as are carried on by the country's armed services; as there is no inconsistency in including additions to the stock of blast furnaces in net output, and yet excluding pig iron from the flow of finished goods to the country's ultimate consumers.[1]

The second criterion uniformly followed in identifying changes in private capital formation is the exclusion of additions to, or drafts upon, stocks of intangibles and claims within the country. Internal claims are excluded simply because an increase in claims of one group is necessarily offset by an increase in obligations of another group. Intangibles are excluded for a somewhat similar reason. When acquired by private business firms, such intangibles are often in the nature of a preferential position *vis-à-vis* other firms – in the same or in other industries; and to that extent what is a gain to a firm that acquired the intangible is an equal loss to those that have been thereby put in a position inferior to that formerly occupied. Where gain in intangibles can be characterized as nonexclusive, their importance to the future productive capacity of society cannot be denied (consider, e.g., additions to scientific knowledge). Indeed, it may be said that the most important capital stock of society is intangible – consisting of the health, intelligence, and skill of the people who form the body social. But no attempt to measure the economic magnitude of changes in such a stock can even be visualized: only its effects can be, and are, measured in terms of changes in production of tangible goods included under national income. Were it possible to measure changes in the stock of intangibles in economic terms, it might not be necessary to measure and

[1] One may indeed question the usefulness of measuring changes in stock of armaments (and related products) in time of war, when it is quite apparent that the huge additions that may have been made by the end of a given year will be dissipated in the next year of continuing warfare. But the question here lies in the usefulness of a *year* as a unit of net output accounting, in connection with a process like a war that may last several years and which is, therefore, *incomplete* by the end of an annual time span; not in the legitimacy of including net changes in stocks in a given year's net output.

A more important objection to the inclusion of additions to armaments is that they, in fact, do not represent an increase in a country's capacity to maintain or extend its position in the world since they are inevitably offset by additions to armaments of would-be enemies. This argument is unanswerable if one grants the necessary connection between increases in armaments of one country and of its would-be enemy. Yet it can also be argued that, given the present organization of the world, there are many situations in which increase in armaments prevents rather than precipitates a conflict. The case is far from decisive; and under the circumstances it may be best to admit additions to stock of armaments as evidence that current production does contribute to future welfare by reducing future costs of maintaining a country's position in the world.

include changes in the stock of *tangible* capital goods. National income could then be made to comprise the current supply of consumers' goods and net changes in capacity for the future as reflected in the stock of our knowledge and ability, rather than in the stock of commodities.

The same criterion must be applied to measuring changes in the internal stock of capital goods under government auspices. Government activity can add enormously to the stock of intangible capital and can also result in heavy inroads upon the latter. The ability and willingness of members of society to cooperate in maximizing net output are greatly affected by the activities of their government. But there is, in the nature of the case, no way of assigning economic magnitudes to changes in such intangible capital directly: magnitudes can be assigned directly only to the tangible effects, in the form of production of commodities and services. We can, therefore, include under government capital highways, buildings, dams, battleships, etc.; but not intelligence, loyalty, and cooperativeness of citizens, or international prestige and popularity, internal peace, or external freedom.

No particular questions arise concerning the identification of the other segment of capital formation under government auspices, changes in net balance of claims against foreign countries. The inclusion of this item in capital formation, in the private or government sector, assumes that possession of a claim against a foreign country means command over that country's output; and the existence of a claim against one's own country by outsiders represents command by them over the country's goods. When world conditions validate such an assumption, changes in the net balance of claims against foreign countries must be included in current net output of a country's economy.

One important question, however, is still to be raised concerning capital formation by government. Unlike the private sector, in which changes in real stock of capital goods and in balance of claims against foreign countries is a result of economic activity, changes in the stock of goods or claims in the hands of government may result from war – overt military conflict or the hidden war that is often conducted in times of peace by diplomatic means. Should we include such changes, whether tangible (acquisition of land, equipment, etc.) or claims (reparations, etc.) in capital formation under government auspices?

The answer is not easily found. If additions to the stock of armaments are to be included in net product of government, on the ground that they mean an increase in the country's capacity to preserve its position with less drain upon future output, should not acquisitions resulting from war also be included as representing similar increases in the country's capacity to maintain and extend its international position? Yet the parallel is not quite true, since additions to the stock of armaments were assumed to be a result of a country's economic production – use of resources, bought mostly on private markets, to satisfy the ever-present need for protection. The additions to capital discussed here are assumed to be the result of war, a process that can hardly be characterized as economic production; and one in which resources are ordinarily used without strict regard for the rules of the private market. Were war classified as economic activity, we would have to deal with the problem of costs and returns to the members of armed services, mobilized by conscription and paid in terms economically incommensurate with their sacrifices.

The answer thus depends not upon whether or not booty acquired in war is a true addition to the capital stock of a nation: in many cases it definitely is, just as for the country defeated in war it is often a real economic loss. The answer depends upon whether we classify war as an economic activity; and upon whether it is useful in measuring net output of economic activity to throw into one total results of two different types of activity. Even in the private sector, only such changes in capital stock are recorded as result from the process of economic production. Changes due to factors outside the latter (e.g. the incalculable and uninsurable acts of God, either favorable or unfavorable) are ordinarily excluded. Unless by some unfortunate development of international relations war becomes an important and regularly practised process for securing economic returns (in which case society would have to undergo drastic changes that are likely to affect the whole theory of national income measurement), it seems best to exclude it from the realm of economic activity; and to exclude war-produced changes in capital stock from government capital formation, from government final product, and from the country's national income.

6. *Statistical problems*

Even in countries rich in a wealth of statistical data, the application of the criteria just suggested for identifying net product of government will encounter numerous difficulties. Such statistical problems cannot be discussed in general terms since they vary from country to country, and within the same country, from period to period. Nor would an attempt to apply the criteria to a given country for a given period necessarily reveal all the difficulties, or yield solutions of wide validity.

But some general consideration can effectively be given to the *kind* of statistical problem that is likely to be encountered, given the data that usually are available in the advanced economies of the Western world. The general paths which solution of such problems may follow can be suggested; and some indication given of the reasons for believing that it is possible, by using the criteria suggested above, to reduce to narrow dimensions the area within which *conventional* allocations of government between final and intermediate product would have to be made. The discussion that follows deals with (*a*) what is to be included to get the sum total of final products of government activity by adding the cost items ordinarily given in the data; (*b*) how to allocate joint costs; (*c*) what basis of valuation to use. These questions are common to the measurement of both government services to individuals and government capital formation. Questions specific to the measurement of the latter arise in (*d*) passing from gross to net capital formation, i.e. allowing for capital consumption.

(*a*) Once we identify a sector of government activity as yielding services to individuals or additions to capital, there is often no direct way of securing the economic magnitude of the resulting net product. It is true that when such net product is represented by repayment of government debt held abroad, a full measure of the market price is directly given; and the same holds when the product in question is only *paid for* by government, but is turned out on a contractual basis by a private firm that can then be confidently expected to charge a full price. In many cases, however, the government acts as its own entrepreneur; and the value of the net product turned out must be derived by adding the various outlays chargeable to the product in question.

Except for allocation problems, to be noted below, and the

ever to be considered paucity of data, no particular difficulties arise in securing outlays by government on the purchase of labor services and of commodities. Thus the cost of labor and materials is ordinarily given for an estimate of the value of net product of government; and being given fully, it can be used to measure – for given categories of final product – not only the input of direct labor and materials, but also the input of labor and materials on maintenance of whatever capital is used in producing the final product. But one cost item is almost necessarily lacking in the government cost accounting and present in the private firm's accounting: charges on the use of capital. Presumably capital used by government to turn out the final product, like capital used by private firms, yields interest. But while government records payment of interest on its debt, such payment cannot be considered equivalent to the yield of government capital used in turning out net product of government. To make the cost estimate of government's net product complete, interest charges must be imputed.

Whether such imputation is desirable is a practical question, to be answered in terms of labor involved in deriving a defensible estimate and of the desire to make the net product of government fully comparable with private product, if only on a cost basis. One might argue that even the labor and goods costs of government production are not truly comparable to those of the private sector. But if imputed interest on government capital used in the output of final product is to be included, then this interest should appear under the income shares in the analytical cases 1–7 in Part II. For in these cases the value of final net product is not fully covered either out of taxes or out of deficit: part of it is the imputed net yield of government capital already at hand.

(*b*) In the light of criteria distinguished in section 5, government activity may be divided into five broad classes: (i) yielding only services to individuals as consumers (schools, hospitals, parks, museums, etc.); (ii) yielding only services to business (business information and regulation activity); (iii) yielding only services to society at large (police, army, navy, legislative, etc.); (iv) resulting in additions to tangible government capital (construction of streets, highways, etc.); (v) joint activities, representing a combination of either (i) or (iv) with the others; or of (i) and (iv).

This classification is obviously designed with an eye to the application of the several criteria, and does *not* represent the way the government accounts are in fact grouped. But it is important to note that many of the institutional categories of government expenditures, usually organized by departments with some distinction between current and capital accounts, can be classified *en bloc* under (i) or (ii), and (iii) or (iv). This is certainly true of current expenditures on goods and services under such general headings as the military establishment, the economic branches of the government, public education, and public health service. It is thus reasonable to assume that a large proportion of total government activity can be classified under the 'pure' categories (i), (ii), (iii), and (iv); and that the scope of government activity which is joint and subject to further allocation, with possible recourse to conventional bases, is narrowly circumscribed compared with total government expenditure on goods.

Among the activities under (v) are cases of joint administration, typified by one and the same department administering activities representing current services to consumers as well as activities yielding only intermediate products (e.g. the Executive Offices of the President in the United States); and cases of joint direct activities which should be charged to both final and intermediate product (e.g. maintenance of highways used by both consumers and business firms). In either case it is easy to visualize data that would reveal the relative magnitude of activities or uses serviced by such joint administration or such joint maintenance. The extent to which allocation can be grounded upon specific information, and to which it must perforce be made in a conventional way, is a practical question answered in terms of balancing the improvement possible with the available data against the labor involved in so doing. In empirical work, efficiency of effort must be judged in value of marginal yield. All that one can say in general on this question is that, as in all empirical studies, data and more reliable results are in part a consequence of further attempts at utilization, just as effective utilization depends upon better supply of data. And in the last count, the relatively narrow scope of joint activities of government, compared with total scope of government as a producer, permits approximate allocations without the large errors that would follow the more arbitrary procedures involved in the 'wholesale' and 'tax payment' approaches.

(*c*) The suggested valuation of net product of government is clearly at cost to the government, not at market value as established by purchasers, since the recipients of the net product receive it free. For government capital, the difference between valuation at cost and in the private market sector is, in theory, negligible: like private firms, government either contracts with private producers for capital supply or produces capital with factors under its own management. In either case, the cost of capital additions to government, like the cost of capital additions to private firms, is equivalent to the market price of the capital addition to its purchaser and user. But in case of services to individuals as ultimate consumers, valuation at cost when provided by government is not similar to valuation of consumer goods when provided by private firms: in the latter case they are valued at market prices, which may differ substantially from costs as incurred by government.

This inconsistency cannot be remedied. While government services to individuals are in part distinguished by the existence of a counterpart on private markets, the parallel is as to class and not as to sufficiently specific goods to permit use of specific market prices. Even when some consumers buy a service on the private market because they are barred from government services by a sufficiently high income status (e.g. medical provisions), one can never be sure that the two services are identical and the market price of one can be substituted for the value of the other; let alone the fact that in such cases private market prices are skewed by the limitation of the demand groups to upper income levels. The inconsistency is there because, by social consent or otherwise, the private market is not allowed to operate freely in the case of the services in question; and the attempt to remedy it by trying to visualize what would happen were it to operate freely is doomed to failure, because our analytical tools and our data are insufficient for a reliable reconstruction of this hypothetical situation.

This need not be fatal to the meaning of national income as a measure of net output, provided that the differences between costs and market values are not so large as to put the two valuation bases on entirely different levels of magnitude. They are not *that* different on the private markets; and by analogy, we may assume that devotion by society of a certain magnitude of resources measured at cost to a certain aggregate of consumer

goods *via* the government does not mean something very much different, in terms of final product, from an identical cost total of resources in the private sector and hence a corresponding total of final products on the private markets. Just as we accept differences in valuation on the market resulting from differences in extent of monopoly in various private industries, so we may accept the cost basis for valuation of government services to individuals – even though other consumer goods are priced at market values.

(*d*) The measurement of *net* capital formation under government auspices involves an estimate of current consumption of durable capital, to be deducted from the gross value of flow of durable equipment to government. While some questions arising in measuring government capital consumption are parallel to those in the estimation of the gross flow, other problems arise.

As in the case of gross capital formation, only tangible goods are to be included; and no depreciation measures are to be applied to the stock of 'loyalty', 'international goodwill', etc. As in the case of gross capital formation, consumption is to be calculated for all capital goods, whether they are used directly for producing services to consumers or are far removed from the latter in the chain of production-consumption relations. But as distinct from gross capital formation, consumption of government capital is to include *all* capital available at the beginning of the year, whether such capital was yielded by the ordinary use of economic resources in the past or acquired by such extra-economic means as war. The calculation for each time unit must begin with the complete set of resources at the disposal of the economy and in that sense it always begins *ab ovo*.

A more important difference between gross capital formation and capital consumption is that the former is a current flow that usually passes through the markets and is thus inevitably provided with current valuation; whereas consumption of *durable* capital goods within any limited period, such as a year, is an implicit and non-visible process the economic magnitude of which can only be approximated. The difficulties of arriving at such an approximation even in the private sector are well known; and even in the latter, conventional methods are indispensable if a definite result is to be secured. In the case of government, where the pressure for strict accounting is not as great and the need for estimating consumption of durable capital is not so urgently forced by income tax laws or competitive

pressures, the basic data needed for even a conventional estimate of durable capital consumption are rarely available.

Without going into details, which are always determined by the specific characteristics of government accounting in a given country and at a given time, only two general suggestions can be made. First, for government durable capital that is analogous to private durable capital – either with respect to function or regularity of economic use (schools, hospitals, roads, dams, streets, public utility structures, office buildings, etc.) – an estimator would be warranted in borrowing the accounting conventions of private business; and applying, with or without modifications suggested by economic theory, the long-term, simple-curve apportionments of the total value of the durable good over the roughly estimated span of its economic life. In so far as we allow government a modicum of economic rationale in its calculation, it, like private enterprise, will discard a capital item as soon as its economic obsolescence – i.e. cumulated excessive cost of its further use (compared with a more modern substitute available) – justifies replacement. Granted the difficulty of actually finding the rates in question, as well as the bases (capital values) to which to apply them, such estimates should raise no particular theoretical problems.

The second suggestion bears upon such durable equipment in the hands of government as is not used for ordinary economic processes – notably armaments. In so far as these and other war goods are for an investment in peace, the consumption estimate should be that of current depreciation in the stock of peaceful existence.[1] But interesting as the concept is, it involves an assumption of regular occurrence of armed conflict and introduces the notion of intangible capital which we excluded from national income estimates. It seems best, therefore, to measure consumption of capital goods of this type only when they are actually discarded as obsolete or are actually destroyed in armed conflict.

### 7. *Concluding comments*

There is little need to summarize the essential position taken here in defining national income or net product and the consequent formulation of the net product of government activity. Those interested in the technical details of following through

[1] See the discussion in *National Product in Wartime*, National Bureau of Economic Research, N.Y. 1944, pp. 8-10.

this viewpoint in estimates by flow of income shares will find such an analysis in Part II. But in concluding this fundamental part of the paper it may be well to comment briefly upon the obvious value for various purposes of a 'grosser' definition of both national production aggregates and government activity.

Even if we are interested in net product proper, the real contribution of the economy to what we consider the goals of economic activity, it is clear that these measures, in and of themselves, are inadequate as a basis for understanding how such net flows are produced; or for analyzing any policies designed to increase them or change their structure. To illustrate: it is difficult, if not impossible, to understand and measure the factors that determine net product originating in agriculture without estimates of the gross product of that industry, the flow of that gross product into various channels, flows from other industries into agriculture (that appear in the latter as costs of production), and the like. Similarly, it is obvious that a policy designed to control the net product from agriculture (e.g. United States agricultural income parity policy) may be better designed if it acts directly on the gross product of agriculture (e.g. by way of price floors for certain major agricultural commodities) than by way of direct adjustment of the difficult, and often administratively unascertainable and unmanageable, net product flow. What is true of agriculture is true of all the other sectors of our productive system, or of any other institutional groupings; their overt appearance is in the nature of gross flows, and their accessibility to policy influence, in the way of tariffs, quotas, subsidies, etc., is most often *via* gross volume of activity rather than *via* the refined and elusive net product yield. Net product may thus be viewed as the result of a complicated chain of actions and relationships, which cannot be understood without recognizing and measuring the latter and which cannot be affected efficiently by policy measures except through the impact of such measures upon the gross, clearly perceived forms of economic activity.

These general considerations suggest the great usefulness of defining government product as the U.S. Department of Commerce does, i.e. as all goods and services purchased by the government. When this definition was urged by the pressures of the war production program, the policy problem was not how much net product government activity yields; the question was

rather how many commodities and services government needs for the prosecution of the war and how many will remain for other needs, such as indispensable capital formation and minimum supply of goods to ultimate consumers. Likewise, when concern about employment prospects emerged in the early stages of demobilization and government activity was viewed as a source of employment, the question was not as to the net yield of such activity but rather how many goods it meant, and goods in this connection meant how much demand for employment and labor. With government product thus defined, and this definition was indispensable for these and other analytical and policy uses, it was only natural to devise a total of which such government product could be conceived as a proper part.

Clearly, the 'grossification' of government product was justified by the uses for short-term problems that loomed uppermost during the war and the post-war years; and further grossification may well be warranted by other purposes. The major objection here is not to such a definition of government product, but to the claim, in all seriousness, that it is a definition of a component in a final, net product total.

## II. TREATMENT OF GOVERNMENT IN THE INCOME SHARES APPROACH

This part discusses the treatment of government in measuring national income as a sum of income shares, i.e. payments to factors of production. While we analyze various categories of government activity as part of such an estimate, the solution in each case cannot be reached except by considering its meaning in terms of national income as a *net product* aggregate, for which the bases and criteria were laid down in Part I. The discussion thus assumes throughout that the national income as a net product total is *known*; and in the light of such knowledge arrives at decisions as to how various controversial items in the government sector should be treated in deriving national income as a sum of income shares.[1]

[1] This approach is similar to the one used by Gottfried Haberler and Everett E. Hagen in their paper, 'Taxes, Government Expenditures and National Income', *Studies in Income and Wealth*, Vol. Eight, National Bureau of Economic Research, N.Y., 1946, pp. 1–33. It is identical with their test of invariance, to the effect that 'The measure of *real* national income should be invariant to all purely institutional, monetary, and price changes.' The conclusions here are similar to those derived by Haberler and Hagen; but the discussion below is more explicit in its treatment and leads to a different interpretation of some of the positions adopted in the past.

In estimating national income as the sum of income shares, the practice has been to begin with payments to or income of factors (wages and salaries, dividends, interest, rent, undistributed net profits of enterprises after taxes – all, except undistributed net profits, *including* direct taxes) and then consider whether or not indirect and direct business taxes should be added. Another question that arises with particular reference to government activity, is whether, in counting payments to productive factors, to include what appear to be transfer payments from governments (e.g. relief). In the present analysis it is preferable to begin with payments or incomes to factors, net of *all* taxes, direct or indirect; as well as net of all receipts from the government that can in any way be interpreted as transfers.

We are interested here in government whose quintessence is imposing taxes (and other compulsory charges) without necessarily rendering a specific return to the taxpayer; and providing *goods* to individuals and business, without making a specific charge to the beneficiaries. In so far as government conducts a business enterprise operated on a basis similar to private business enterprises, we classify it outside of government – with other business enterprises. Likewise, government-operated insurance plans, either fully or partly contributory, are classified with similar private business enterprises. This is not to deny that government business enterprises may not in fact be conducted on principles different from those of private business. To the extent that they are (i.e. with deficits financed out of general taxes), they belong to the category of government in our analysis and are covered under one or several categories analyzed below. But it would only burden the discussion, without adding to clarity, to include government business enterprises or to segregate their contribution to the magnitude of government *par excellence* as an institution operating outside ordinary private market rules.[1]

With this definition of government and the initial total of income shares excluding all taxes, we are ready to consider the treatment of the following controversial items in the govern-

[1] The exclusion of government business enterprises (and insurance schemes) means that in our analysis payments to factors exclude taxes, but include compulsory contributions to insurance (whether by beneficiary or firm) and include earnings of funds of such insurance agencies. Likewise, transfers from government to individuals do *not* include payments of insurance but are confined to transfers that are not in the nature of a return of contributions previously made.

ment sector: (1) indirect business taxes; (2) direct business taxes; (3) direct taxes on individuals; (4) government product not financed by taxes – non-inflationary; (5) government product not financed by taxes – inflationary; (6) subsidies to domestic business; (7) transfers to domestic units; (8) foreign transfers.

1. *Indirect taxes*

The addition of indirect taxes to income shares has been justified on two somewhat related grounds: (*i*) the differential impact of such taxes on prices when taxes change from one year to the next (and differ from one country to another); (ii) the utility of a net product aggregate at market prices resulting from the inclusion of indirect taxes, as against the net product aggregate at factor costs derived by excluding them.

(i) The first case is stated most clearly by A. C. Pigou who discussed measurement of national income essentially as the sum of income shares approach:

> ". . . the main part of what the Treasury receives in customs and excise duties ought, paradoxical as it may seem, to be counted, in spite of the fact that it is already counted when in the hands of the tax-payers and that it is not paid against any service. The reason is that the prices of the taxed articles are pushed up (we may suppose) by nearly the amount of the duties, and that, therefore, unless the aggregate money of the country is reckoned in such a way that it is pushed up accordingly, this aggregate money income divided by prices, that is to say, the real income of the country, would necessarily appear to be diminished by the imposition of these duties even though it were in fact the same as before."[1]

To this statement Pigou adds a footnote indicating that only part of indirect taxes should be added, in so far as prices are not raised by the full amount of the tax; and that these taxes may indirectly cause production to decline. Other writers tend to follow the same line of argument, without the qualification added by Pigou (see, e.g., Colin Clark's *National Income and Outlay*, London, 1932, pp. 11–12, and *Conditions of Economic Progress*, London, 1940, pp. 30–1).

The validity of the argument depends upon the effect of the imposition of indirect taxes on the *output* of net product. The effect of such taxes upon *prices* of taxed articles is no basis for

[1] *The Economics of Welfare*, 3rd edition, London, 1929, p. 41.

deciding whether they should or should not be added to income shares already recorded. For if the taxes are spent in payment of wages and salaries to government officials whose activity does *not* add to the net aggregate of final products, their inclusion is not warranted. And if they are included in the current money total of national income, an adjustment for price changes by the usual and relevant price indexes will translate an imposition of indirect taxes into a rise in real national income where no such rise has in fact taken place.

In order to make this argument clear a hypothetical illustration is set forth in detail as Case 1. In this case we assume in time unit I no taxes; and also, to simplify the picture, no government capital that could yield final products. There is thus a complete and easy balance of the sum of income shares with the market value of net product, i.e. of national income or product measured by the income shares and final product approaches. And while the example assumes the extremely simple situation of a single product, this does not affect the argument that follows.

In time unit II government appears on the scene and imposes an excise tax on the article. We assume, again for simplicity, that the tax is shifted completely to the price of the article; and that this rise in prices has no effect on supply and demand. The analysis is unaffected if this simplifying assumption is dropped: the whole case could be restated, with the same consequences, on the assumption of a partial shift of the tax to price and of a corresponding reduction in undistributed net profits.

The magnitude of the real net aggregate produced in time unit II depends upon what the government does with the taxes. We distinguish in Case 1 six possible types of use, all involving the use of either commodities or services; the other possible uses of taxes (e.g. transfers) are not considered here, but are dealt with under the headings of subsidies and transfers (Cases 6, 7, and 8).

Among the six types of government activity concerned with commodities and services are (*a*) payments to employees (or to already existing capital) for assistance to business. In this case no addition to final product occurs, and yet these payments (equal to indirect taxes) appear under income shares. A second type is (*b*) use of current production or stocks also to assist business. In this case no addition appears under income shares,

## CASE 1

### *Indirect Taxes*

Time Unit I

| | |
|---|---|
| Production, private sector, quantity | 100 |
| Market price per unit | 10 |
| Value product (market) | 1,000 |
| Breakdown of value product, private sector, by income shares and taxes: | |
| Wages and salaries | 700 |
| Property income paid out | 200 |
| Undistributed net profits | 100 |
| Taxes | 0 |
| Total value product | 1,000 |
| Production and receipts, government sector | 0 |
| Assumption: No government capital yielding final product | |
| Total national product or income, final product approach | 1,000 |
| Total national production or income, sum of income shares | 1,000 |

Time Unit II: Imposition of indirect taxes

| | |
|---|---|
| Production, private sector, quantity | 100 |
| Market price per unit | 12 |
| Value product (market price) | 1,200 |
| Breakdown of value product, private sector, by income shares and taxes: | |
| Wages and salaries | 700 |
| Property income paid out | 200 |
| Undistributed net profits | 100 |
| Indirect taxes | 200 |
| Total value product | 1,200 |
| Production of government sector, alternative uses of taxes (same assumption as in Time Unit I as to government capital): | |
| (*a*) Wages and salaries paid to employees assisting private sector (e.g. business analysts) | 200 |
| (*b*) Purchase of goods (current output or stock) to be used in assisting private sector | 200 |
| (*c*) Wages and salaries paid to employees providing services to individuals (e.g. medical care) | 200 |
| (*d*) Purchase of goods (current output or stock) to be used for assistance to individuals (e.g. medicine) | 200 |
| (*e*) Wages and salaries paid to employees who add to government capital (e.g. build a school) | 200 |
| (*f*) Purchase of goods (current output or stock) to be employed in adding to government capital | 200 |

Total national product or income, final product approach, alternative uses of taxes:

| Alternative Uses | Private Sector | Government | Total |
|---|---|---|---|
| (*a*) Current prices | 1,200 | 0 | 1,200 |
| Quantity units | 100 | 0 | 100 |
| (*b*) Current prices | 1,000 | 0 | 1,000 |
| Quantity units | 83.3 | 0 | 83.3 |
| (*c*) Current prices | 1,200 | 200[1] | 1,400 |
| Quantity units | 100 | 16.7 | 116.7 |
| (*d*) Current prices | 1,200 | 0 | 1,200 |
| Quantity units | 100 | 0 | 100 |
| (*e*) Current prices | 1,200 | 200 | 1,400 |
| Quantity units | 100 | 16.7 | 116.7 |
| (*f*) Current prices | 1,000 | 200 | 1,200 |
| Quantity units | 83.3 | 16.7 | 100 |

Total national product or income, by income shares and taxes, alternative uses of taxes:

| Wages and Salaries | Property Income | Undistributed Net Profits | Taxes | Total |
|---|---|---|---|---|
| (*a*) 700+200=900 | 200 | 100 | 0 | 1,200 |
| (*b*) 700+ 0=700 | 200 | 100 | 0 | 1,000 |
| (*c*) 700+200=900 | 200 | 100 | 200 | 1,400 |
| (*d*) 700+ 0=700 | 200 | 100 | 200 | 1,200 |
| (*e*) 700+200=900 | 200 | 100 | 200 | 1,400 |
| (*f*) 700+ 0=700 | 200 | 100 | 200 | 1,200 |

[1]In this and subsequent examples price or cost per unit of government product is assumed equal to price per unit of private product.

and there is no addition to net product either. But the goods used in assisting business come either out of current production or out of stocks. In either case they are a draft upon the output of the economy, so that net output must be after subtraction of goods bought with the proceeds of indirect taxes. Consequently, national product, in quantity terms, is, on assumption (*b*), smaller in time unit II than in time unit I.

In contrast to alternatives (*a*) and (*b*), that under (*c*) involves additions by the government sector to net output of final goods. For on this assumption indirect taxes have been used to hire resources (e.g. employees) that were hitherto not engaged; and they have been put not on activities that do not add to final output (as in alternative (*a*) ), but on activities that are of direct service to individual members of society whose welfare is our basic criterion.

In alternative (*d*) indirect taxes are used to buy commodities to be used for direct benefit to individuals. Here government does not add to the real net product, but neither does it subtract from it by using up goods in the process of production without additions to current net output. It withdraws some final net products from disposition by individual income recipients and places them under its own control; but the goods are turned back to individuals during the current time period, e.g. the use of indirect taxes to buy medicine and distribute it to supplement incomes of low-level income recipients.

Alternatives (*e*) and (*f*) are parallel to (*c*) and (*d*). In (*e*) we assume as in (*c*) that government uses the taxes to engage productive factors (previously unemployed) to add to the final net output of the economy – not in the form of services to individuals (as under (*c*)), but in the form of additions to capital – under government auspices – that would add to the future ability of the economy to provide for the welfare of the country's inhabitants. Alternative (*f*) differs from (*e*) in that such additions to productive capital are attained by the consumption of already existing commodities (out of stock or out of current output), so that in fact the drafts upon current output are only balanced by those capital additions and no change in total net output occurs.

If we are clear as to the magnitude of national product, in current prices or in quantities, under these alternative uses of indirect taxes in time unit II, we can see equally clearly under what assumptions indirect taxes should or should not be added to income shares. Whenever government activity is *not* used for the direct benefit of individuals or addition to productive capital as in alternatives (*a*) and (*b*), taxes should *not* be added. Whenever it is, as in alternatives (*c*) through (*f*), they should be added.

Two general conclusions follow from this analysis. The first is that whether taxes are fully or incompletely shifted is of no relevance to the question whether indirect taxes should be added to income shares.[1] The second is that the decision to add or not

[1] Thus if we assume that indirect taxes have been shifted only 50 per cent, i.e. value product of the private sector in time unit II is 1,100, distributed; wages and salaries=700; property income=200; undistributed net profits=0; indirect taxes=200, national product under various assumptions as to use of taxes is reduced 100 (in current prices) and remains the same in quantity units; and national product, by income shares and taxes, is also reduced 100 units for each of the various alternatives (with the 100 unit reduction coming out of undistributed net profits). All that happens in this case is that the implicit price index (time unit II to the base of time unit I) is 110 and not 120, as in the assumption of complete shift.

to add indirect taxes to income shares is directly determined by the use the government makes of them. Since in practice it is impossible to distinguish various categories of government activity by the sources of their financing, it means – to forestall our final conclusion – that in practical work income shares excluding taxes should be used and augmented by the value of government services to individuals and government additions to productive capital.[1]

(ii) The second justification for the indiscriminate inclusion of indirect taxes has been provided in recent years most explicitly in the writing of the national income estimators at the U.S. Department of Commerce. This consists in the statement that the net aggregate product of the economy, if valued at market prices, should include all business taxes (indirect as well as direct, if the latter are not included in income shares or factor payments). The exclusion of indirect taxes means that the same net product aggregate is valued at 'factor costs'.

Perhaps the clearest formulation of this distinction appears in the first article in the *Survey of Current Business* in which what was then a new approach was translated into estimated totals:

> The national income . . . measures the *net* value of current output as the sum of the net returns to the various factors of production in the form of wages, salaries, interest, rents and royalties, and net profits earned. . . . There are two major changes which must be made in order to convert national income into a measure of the aggregate of goods and services at market prices. In the first place, a significant proportion of proceeds realized from the sale of privately produced goods and services accrues directly to the Government in the form of corporation income taxes, excise taxes, and other business taxes and does not ever appear in the income accruing to any of the factors of production. Thus, it does not appear in the national income. The Government, itself, in other words, may be said to be the recipient of a distributive share of the income paid out by business. Clearly, the amount it receives in this fashion must be added to the national income if a total is to

[1] Pigou recognizes that where indirect taxes are used to pay for services to business they should not be added (see *The Economics of Welfare*, footnote on p. 42). But seemingly he does not attribute to the whole question of uses of government funds, i.e. the real contents of government activity, its cardinal importance as a criterion for deciding upon inclusion or exclusion of taxes.

be built up which measures the value *at market prices* of all final output.[1]

For a complete understanding of this statement two points must be kept in mind. First, net returns to factors as measured at that time under national income by the U.S. Department of Commerce were net of *direct* business taxes. For this reason the adjustment calls for the addition of *all* business taxes, not only indirect. The recent change in practice, agreed upon by the U.S. Department of Commerce and English and Canadian official estimators, will call for adding direct business taxes (such as corporate profit and excess profit taxes) to 'factor costs'. And in this case the difference between net output at factor costs (to be designated, according to the same agreement, 'national income') and the identical net output at market prices (to be designated 'net national product') would be the inclusion of indirect business taxes in the latter.[2]

The second, and more crucial point, in the present context is that national income, as referred to in the quotation just given, includes returns to all factors of production whether engaged under private auspices or employed by the government. The addition of indirect taxes, to convert a net aggregate product at factor cost into one at market prices, is over and above any government payments to productive factors engaged under its auspices (whether labor, capital, or enterprise).

The distinction between the factor cost and market price valuation in terms of indirect business taxes is at first plausible and useful if one thinks of a specific final product subject to excise taxes. If we assume an integrated plant that uses no pro-

[1] Milton Gilbert, 'War Expenditures and National Production', *Survey of Current Business*, March 1942, p. 10. The second adjustment proposed is to add the allowance for consumption of durable capital; thus taking current output gross of such consumption. This adjustment is not discussed here since it is not relevant to the problems at issue.

For another discussion of the distinction between 'earned income' and 'value of product', see John Lindeman, 'Income Measurement as Affected by Government Operations', *Studies in Income and Wealth*, Vol. Six, National Bureau of Economic Research, New York, 1943, pp. 2–22. The theoretical discussion underlying the distinction provided by J. R. Hicks in his 'Valuation of the Social Income', *Economica*, May 1940, has been critically reviewed by me in the paper in *Economica* referred to in note 1 on p. 178.

[2] Edward F. Denison, 'A Report on Tripartite Discussion of National Income Measurement', *Studies in Income and Wealth*, Vol. Ten, National Bureau of Economic Research, New York, 1947. This is not the only difference between the two totals; but the major one relevant in the present connection. The tripartite agreement referred to by Denison included official estimators for three countries, but other scholars in the field were not consulted.

ducts of other business concerns and maintains its capital unchanged, its production of X cigarettes during the year is a net output aggregate. If we value it at factor costs the total will be, let us say, 1 million dollars, consisting of $700,000 in wages and salaries, $200,000 in property income payments, and $100,000 in undistributed net profits. An imposition of a 100 per cent excise tax will raise the market value of the same volume of cigarettes to 2 million dollars. Here is a distinction between factor cost and market price totals of net output; and here is a basis for inclusion of indirect taxes if one wishes a market value appraisal of the net national product.

But even in this specific case the difference is not that simple. The 1 million dollars of factor costs include only factors engaged within the private firm on the production of cigarettes. But there may be productive factors engaged under government auspices that are also contributing directly and specifically to the production of cigarettes and their distribution to ultimate consumers: e.g. chemists at the Bureau of Standards or the Department of Agriculture working on improvement of the quality of tobacco, on tobacco machinery, etc. Should not part of indirect taxes used for compensation of these factors be assigned to the factor costs of this particular final product? And should not even the less specific services of government to business, in the way of general provisions facilitating production anywhere, be allocated, in some fashion, to the factor costs of the cigarette output total?

Thus even for a specifically defined final product indirect taxes do not in fact measure the difference between costs of factors whose production can reasonably be assigned to the good in question, and the market value of the good at the going prices. Where indirect taxes exist they are likely to exaggerate the excess of market values over the specifically assignable factor costs. Market values of goods free of indirect taxes (on the assumption of no other sources of government revenue and a balanced budget) will fall short of, rather than exceed, the costs of factors that contributed to their production.

However, the fact that, for specific categories of product, factor costs assignable to the final goods differ from the market price values of the latter; or that in some specific groups of final products indirect taxes may be used as a rough approximation to such a difference between factor costs and market prices, is

of no relevance to the argument in terms of the national product *aggregate*. In arriving at this aggregate we may use factor costs if we employ the income shares approach and may or may not have to add indirect business taxes. In arriving at this aggregate we use market prices if we employ the final product approach. But we are attempting to measure one and the same real aggregate; and it remains to be demonstrated that the use of factor costs, i.e. including returns to all employed productive factors, will yield a net product aggregate which must fall short by the amount of indirect business taxes of the total derived by using market prices of final products.

Case 1 shows the specific assumption under which this statement is true. *Only* if the full amount of indirect taxes is used by the government to render services, or to provide finished goods to ultimate consumers, or to add to productive capital in a way that would not be recorded by the private enterprises themselves as additions to their capital, need we add indirect taxes to the payments to secure the net aggregate product, at market prices. *Only* on these assumptions will factor costs fall short of net product at market values by the amount of indirect taxes. On the other hand, for alternatives (*a*) and (*b*) in Case 1, indirect taxes should not be added to factor costs because such addition would result in an exaggerated national product total; and the U.S. Department of Commerce 'net national product' (to use the new terminology) would contain an element of duplication and inflation that would not be corrected by any adjustment for price changes.

That factor costs and factor costs plus indirect taxes represent the same net aggregate product, but valued on two different bases, only on the restricting assumption that the taxes are used to turn out *final* goods, is a conclusion whose importance cannot be exaggerated. We shall find the same conclusion true of factor costs excluding all taxes (direct or indirect) compared with factor costs plus all taxes. To assume that the huge volume of taxes collected by governments in recent times represents services to individuals or additions to capital outside the private sphere implies an heroic overestimate of the welfare significance of government outlays. It is therefore important from the start to be clear as to the implications in this recent justification for the inclusion of indirect business taxes: that positive significance in terms of welfare or capital formation is attributed to *all* govern-

ment expenditures out of taxes, and that none of these expenditures represents costs of operation of society.

2. *Direct business taxes*

Two arguments have been adduced for including direct business taxes when estimating national income as the sum of income shares. (i) Where such shares, or factor costs, have been taken net of direct business taxes, the argument has been that since these taxes form part of final price they should be added to derive the full market value of net output. To cite Pigou again: 'What the Treasury receives in (the now abolished) excess profit duty and corporation tax, as operated in England, stands, however, on a different footing. It should be counted because the incomes of companies and individuals were reckoned as what was left *after* these taxes had been paid, so that, if the income represented by them had not been counted when in the hands of the Treasury, it would not have been counted at all.'[1] (ii) A second argument called for including them in factor costs – as specified by the official United Kingdom-United States-Canadian agreement mentioned above. The nature of the argument is briefly suggested by the statement that with this inclusion 'national income [using the term in its new meaning] will more accurately reflect factor costs of current production. . . . The rationale for the inclusion of corporate profits before taxes must rest ultimately, of course, on the incidence of taxes on profits. Although this question probably cannot be settled definitively, the weight of theoretical and statistical evidence is that changes in corporate profit tax rates affect profits after taxes more significantly than prices of output. Certainly, the high proportion of profits taken in taxes during the war period meant a substantial reduction in the income accruing to stockholders'.[2]

In the light of our discussion of indirect business taxes it should be clear that neither argument for inclusion of direct business taxes is acceptable. Whether or not the tax constitutes a cost and thus enters the market price of a good was found to be irrelevant in the case of indirect taxes; and is likewise irrelevant here. It all depends upon the use of the tax, i.e. whether

[1] *The Economics of Welfare*, 3rd edition, 1929, p. 41.

[2] See *National Income, Supplement to the Survey of Current Business*, July 1947, pp. 11–12. The other reason given, viz. the difficulty of computing net profit after taxes because of carry-over provisions, is a matter of statistical technique and is neglected here.

or not the use adds to final net output of the economy. The argument for inclusion under current factor costs rests upon the exact meaning of that term; and whether or not it is used interchangeably with the term 'net returns to factors'. If by factor costs we mean costs to private firms, then surely direct business taxes are to be included; but indirect business taxes are also costs to the private firms, and they may well be costs of factors located elsewhere. If, however, we are trying to get at 'net returns to factors', then obviously there is little ground for including direct business taxes in the factor account.

The point warrants a more explicit statement. The main argument for the specific usefulness of the 'factor cost' and 'market value' bases is that the former provides a total for which factor allocation may be more usefully gauged; and the latter a total for which allocation among various categories of finished output can be more usefully determined. But in measuring the relative magnitude of various factors we should presumably evaluate them in terms of what *net* returns these factors secure. Their gross costs are of little importance in gauging the relative economic weight, if such gross costs are affected in different ways by taxes, subsidies, etc. The true economic magnitude of factors is the net return, including the net monetary return from the enterprise plus the services provided by government. Adaptation of factors of production to competing uses within the productive system would naturally be to those real returns. In any rational economic calculation a choice among alternative uses of labor and capital is guided not by gross payments expected, but by net returns excluding all taxes and other elements from which no specific benefit is secured. It is for this reason that the discussion of various controversial items in the government sector here begins with the income shares net of all taxes; and then deals with the question of inclusion or exclusion of taxes by the use of criteria of what might be called ultimate productivity.

Once this position is accepted, the case of direct business taxes becomes parallel to that of indirect business taxes except that no rise in market prices results from the imposition of the former. The illustrative analysis is set out as Case 2, with the same six alternative assumptions concerning the use of taxes.

The results are naturally parallel. If taxes are used in rendering services to business – either in the form of labor or com-

## CASE 2

### *Direct Business Taxes*

Time Unit I

| | |
|---|---|
| Production, private sector, quantity | 100 |
| Market price per unit | 10 |
| Value product (market) | 1,000 |
| Breakdown of value product, private sector, by income shares and taxes: | |
| Wages and salaries | 700 |
| Property income paid out | 200 |
| Undistributed net profits | 100 |
| Taxes | 0 |
| Total value product | 1,000 |
| Production and receipts, government sector | 0 |
| Assumption: No government capital yielding final product | |
| Total national product or income, final product approach | 1,000 |
| Total national product or income, sum of income shares. | 1,000 |

Time Unit II: Imposition of direct business taxes (e.g. corporate profit or excess profit tax)

| | |
|---|---|
| Production, private sector, quantity | 100 |
| Market price per unit | 10 |
| Value product (market) | 1,000 |
| Breakdown of value product, private sector, by income shares and taxes: | |
| Wages and salaries | 700 |
| Property income paid out | 200 |
| Undistributed net profits | 20 |
| Direct business tax | 80 |
| Total value product | 1,000 |

Same alternative uses of taxes, (*a*)–(*f*), as in Case 1.

Total national product or income, final product approach, alternative uses of taxes:

| Alternative Uses | Private Sector | Government | Total |
|---|---|---|---|
| (*a*) Current prices | 1,000 | 0 | 1,000 |
| Quantity | 100 | 0 | 100 |
| (*b*) Current prices | 920 | 0 | 920 |
| Quantity | 92 | 0 | 92 |
| (*c*) Current prices | 1,000 | 80 | 1,080 |
| Quantity | 100 | 8 | 108 |
| (*d*) Current prices | 1,000 | 0 | 1,000 |
| Quantity | 100 | 0 | 100 |
| (*e*) Current prices | 1,000 | 80 | 1,080 |
| Quantity | 100 | 8 | 108 |
| (*f*) Current prices | 920 | 80 | 1,000 |
| Quantity | 92 | 8 | 100 |

Total national product or income, by income shares and taxes, alternative uses of taxes:

| Wages and Salaries | Property Income | Undistributed Net Profits | Taxes | Total |
|---|---|---|---|---|
| (*a*) 700+80=780 | 200 | 20 | 0 | 1,000 |
| (*b*) 700+ 0=700 | 200 | 20 | 0 | 920 |
| (*c*) 700+80=780 | 200 | 20 | 80 | 1,080 |
| (*d*) 700+ 0=700 | 200 | 20 | 80 | 1,000 |
| (*e*) 700+80=780 | 200 | 20 | 80 | 1,080 |
| (*f*) 700+ 0=700 | 200 | 20 | 80 | 1,000 |

modities – they should *not* be added to the sum of income shares excluding all taxes. Only if taxes are used for services to individuals – either in the form of labor or of commodities – or for additions to capital beyond the private sphere, should the taxes be added to all factor costs excluding taxes.

One curious implication of the analysis should be noted. The inclusion of direct business taxes in factor costs by the U.S. Department of Commerce may well result in an aggregate net product at factor cost that *exceeds* aggregate net product at market prices. In the extreme case that direct business taxes are the only revenue, that the government expenditures balance revenue, and that the taxes are used for services to business, the national income (the new definition, i.e. at factor cost) will exceed national product at market prices by the full amount of direct business taxes.

### 3. *Direct taxes on individuals*

Direct taxes on individuals are customarily included in income shares in the estimates of national income that use this approach. The usual basis is that such taxes are part of the factor cost of production and of the market prices of goods turned out.

But in the light of the preceding discussion, direct taxes on individuals are in the same category as all other taxes. If our aim is a national income total that represents correctly the market price of final net output, the treatment of any tax is contingent upon the character of government activity financed with it. Consequently, the illustrative analysis of direct taxes on individuals in Case 3 provides an exact parallel to those of indirect and direct business taxes in Cases 1 and 2. Only if direct taxes paid by individuals represent cost of final output

## CASE 3

### *Direct Taxes on Individuals*

Time Unit I

| | |
|---|---|
| Production, private sector, quantity | 100 |
| Market price per unit | 10 |
| Value product (market) | 1,000 |

Breakdown of value product, private sector, by income shares and taxes:

| | *Income excl. taxes* | *Taxes* | *Income incl. taxes* |
|---|---|---|---|
| Wages and salaries | 700 | 0 | 700 |
| Property income | 200 | 0 | 200 |
| Undistributed net profits | 100 | 0 | 100 |
| Indirect taxes | | 0 | |
| Total value product | | | 1,000 |

| | |
|---|---|
| Production and receipts, government sector | 0 |
| Assumption: No government capital yielding final product | |
| Total national product or income, final product approach | 1,000 |
| Total national product or income, sum of income shares. | 1,000 |

Time Unit II: Imposition of direct taxes on individuals (e.g. individual income taxes)

| | |
|---|---|
| Production, private sector, quantity | 100 |
| Market price per unit | 10 |
| Value product (market prices) | 1,000 |

Breakdown of value product, private sector, by income shares and taxes:

| | |
|---|---|
| Wages and salaries, excluding tax | 600 |
| Property income, excluding tax | 150 |
| Undistributed profits | 100 |
| Direct taxes on individuals | 150 |
| Total value product | 1,000 |

Same alternative uses of taxes, (*a*)-(*f*), as in Case 1.

Total national product or income, final product approach, alternative uses of taxes:

| Alternative Uses | Private Sector | Government | Total |
|---|---|---|---|
| (*a*) Current prices | 1,000 | 0 | 1,000 |
| Quantity | 100 | 0 | 100 |
| (*b*) Current prices | 850 | 0 | 850 |
| Quantity | 85 | 0 | 85 |
| (*c*) Current prices | 1,000 | 150 | 1,150 |
| Quantity | 100 | 15 | 115 |
| (*d*) Current prices | 1,000 | 0 | 1,000 |
| Quantity | 100 | 0 | 100 |
| (*e*) Current prices | 1,000 | 150 | 1,150 |
| Quantity | 100 | 15 | 115 |
| (*f*) Current prices | 850 | 150 | 1,000 |
| Quantity | 85 | 15 | 100 |

Total national product or income, by income shares and taxes, alternative uses of taxes.

All income shares *exclude* taxes.

| Wages and Salaries | Property Income | Undistributed Net Profits | Taxes | Total |
|---|---|---|---|---|
| (*a*) 600+150=750 | 150 | 100 | 0 | 1,000 |
| (*b*) 600+ 0=600 | 150 | 100 | 0 | 850 |
| (*c*) 600+150=750 | 150 | 100 | 150 | 1,150 |
| (*d*) 600+ 0=600 | 150 | 100 | 150 | 1,000 |
| (*e*) 600+150=750 | 150 | 100 | 150 | 1,150 |
| (*f*) 600+ 0=600 | 150 | 100 | 150 | 1,000 |

undertaken by the government, i.e. of services and goods flowing to ultimate consumers or of additions to capital not already covered in the business sector, should those taxes be added to income shares in arriving at the national income total. But if they are used to finance indirect output, a far from improbable occurrence, they should not be added to income shares taken net of all taxes.

All the arguments adduced in the previous section are relevant here and need not be repeated. But at this juncture we note a related point of importance in income measurement. If income shares are to be taken net of direct taxes, on the ground that the latter may or may not in fact represent net returns to factors, we should reduce income shares even further by the exclusion of any parts that might represent occupational or business expenses. If a wage includes the cost of work-clothing or personal tools – an amount that varies from one job to another because of different requirements for such purely business equipment – should we not take wages net of these amounts, so as to gauge correctly the net return to factors *qua* factors?

The argument for excluding such occupational expense items, when they are not in fact excluded in the statistics of income payments, is valid; and there is correspondingly an argument for excluding such equipment from the aggregate of final net output of the economy. Were the data available, such exclusion should become standard practice in estimating national income.

At any rate, the practical difficulties of refining the totals of income shares, excluding all taxes, so that they do represent clearly the real net returns to factors, are no basis for not excluding taxes. The latter are segregable with the available data; and if, in order to secure a correct estimate of national income,

such taxes should be excluded and the net output of government activity estimated directly, there is no reason for not doing so just because the result is only an approximate measure of net final output.

4. *Government product out of savings*

In discussing treatment of various taxes we dealt with classes of government activity that involve purchase of goods and services. The use of taxes for other types of government expenditures, i.e. transfers (either as subsidies to business, or transfers to individuals and firms within the country, or as subsidies or loans to foreign countries), is still to be considered. Before we pass to these classes of government expenditures we must, however, consider the treatment of government purchases of goods financed out of sources other than taxes.

From the standpoint of the present analysis such non-tax sources fall into two distinct types: government activity financing that causes no inflation, i.e. no rise in the price level, and government activity financing that causes inflation. The former is typified by financing out of borrowing, with funds coming from current savings of individuals and business enterprises; the latter by government financing *via* the money printing press, under conditions of such relatively full employment of resources that the issue of money more than offsets current idle savings of individuals and business. It should be noted that in reality borrowing by government may represent inflationary, and printing money non-inflationary financing. We discuss the non-inflationary financing under Case 4, the inflationary under Case 5.

Since the illustrative analysis uses the same alternative assumptions concerning government activity, and the same figures concerning the activity in the initial situation in the private sector, the effect of introducing the government as a producer upon the *quantity* volume of net output is the same in the case of borrowing as it was in the case of taxes. If government uses the proceeds to employ additional resources to turn out final output, the real product increases. If government uses the proceeds to *divert* part of existing stocks or current output to turn out final products, real product does not change. If government uses the proceeds to divert part of existing stocks or current output to provide intermediate output, there is a corresponding decline in real product. The magnitude of the real product, in our analysis, is

## CASE 4

*Government Product Out of Savings (Borrowing from Individuals and Business)*

Time Unit I

| | |
|---|---|
| Production, private sector, quantity | 100 |
| Market price per unit | 10 |
| Value product (market) | 1,000 |
| Breakdown of value product, private sector, by income shares and taxes: | |
| Wages and salaries | 700 |
| Property income | 200 |
| Undistributed net profits | 100 |
| Taxes | 0 |
| Total value product | 1,000 |
| Production, government sector | 0 |
| Assumption: No government capital yielding final product | |
| Total national product or income, final product approach | 1,000 |
| Total national income or product, sum of income shares. | 1,000 |

Time Unit II: Introduction of government production (or purchases) financed out of savings. Assumption: Individuals and business save 200 units and transfer it immediately to government, which proceeds to spend it and thus put it back into the old channels of circulation.

| | |
|---|---|
| Production, private sector, quantity | 100 |
| Market price per unit | 10 |
| Value product, private sector | 1,000 |
| Breakdown of value product, private sector, by income shares and taxes: | |
| Wages and salaries | 700 |
| Property income | 200 |
| Undistributed net profits | 100 |
| Taxes | 0 |
| Total value product | 1,000 |

Note that no interest receipts on loans to government are assumed.

Using the same alternatives of use of money by government as in Case 1, we get the following estimates of total national product or income on the final product approach:

| Alternative Uses | Private Sector | Government | Total |
|---|---|---|---|
| (*a*) Current prices | 1,000 | 0 | 1,000 |
| Quantity | 100 | 0 | 100 |
| (*b*) Current prices | 800 | 0 | 800 |
| Quantity | 80 | 0 | 80 |
| (*c*) Current prices | 1,000 | 200 | 1,200 |
| Quantity | 100 | 20 | 120 |
| (*d*) Current prices | 1,000 | 0 | 1,000 |
| Quantity | 100 | 0 | 100 |
| (*e*) Current prices | 1,000 | 200 | 1,200 |
| Quantity | 100 | 20 | 120 |
| (*f*) Current prices | 800 | 200 | 1,000 |
| Quantity | 80 | 20 | 100 |

Total national product or income, by income shares and taxes, different alternatives as to government product out of savings:

| Wages and Salaries | Property Income | Net Profits | Adjusted for unproductive use of Resources | Total |
|---|---|---|---|---|
| (*a*) 700+200=900 . | 200 | 100 | −200 | 1,000 |
| (*b*) 700+ 0=700 . | 200 | 100 | −200 | 800 |
| (*c*) 700+200=900 . | 200 | 100 | 0 | 1,200 |
| (*d*) 700+ 0=700 . | 200 | 100 | 0 | 1,000 |
| (*e*) 700+200=900 . | 200 | 100 | 0 | 1,200 |
| (*f*) 700+ 0=700 . | 200 | 100 | 0 | 1,000 |

determined only by the initial assumptions concerning the private sector (the same for each case) and by the different alternatives concerning the character of government activity as a producer (the same six alternatives for each case); and is *not* affected by whether the government finances its activity as a producer out of indirect or direct taxes, borrowing, or printing money.

The method of financing does affect the current prices at which net product must be valued. Thus the introduction of indirect taxes raised the price level over the initial situation; whereas in the cases of direct taxes and of non-inflationary borrowing or money printing, the prices remain unchanged from time unit I to II.

The methods of financing also affect the analysis in the sense of indicating what particular item in the government sector should be considered for inclusion, in addition to income shares net of all taxes. In financing out of taxes we must consider whether or not to *add* the taxes. In financing out of borrowing, the question, as indicated by the analysis in the illustration, is whether or not to *subtract* the borrowing from the income shares, taken net of all taxes.

If borrowing is used to finance additional net output by government, the income shares, net of all taxes, represent correctly the current market value of output. For in that case any additional employment of resources is matched by additional final output; and any diversion from stocks or current output is matched by final output under government auspices. But if borrowing is used by government to provide intermediate output, i.e. services that do not represent more goods to consumers or more capital, then any additional factors that may have been

employed fail to add to final output; while any stocks or current output that have been diverted represent a diminution of current net output, with the same factors, without an offsetting increase in net final output in the government sector. In this case, represented by alternatives (*a*) and (*b*), the sum of income shares, net of all taxes, is *greater* than the current value of net final output – greater by the amount of borrowing that was spent on what, from the standpoint of the current year's output, was an unproductive use of resources. It is for this reason that the amount of borrowing appears with a negative sign, under the heading 'adjustment for unproductive use of resources' in the allocation of national income by shares in illustrative Case 4.

We see here another instance in which national income at 'factor cost', as the term has been used in the current official estimates in the United States and the United Kingdom, may exceed national income at market prices. This will be the case if government expenditures on intermediate output, out of non-inflationary borrowing, are larger than indirect taxes; or, if the government expenditures on intermediate output, out of both non-inflationary borrowing and direct business taxes, are larger than indirect taxes – even though indirect taxes are all spent on final output.

5. *Government product out of inflation*

Case 5 combines the features of that relating to indirect taxes (Case 1) and the one just discussed relating to financing of government as producer out of non-inflationary borrowing (Case 4). As with indirect taxes, inflationary financing of government results in a rise in prices from time unit I to time unit II. As with borrowing, inflationary financing may result in an unproductive use of resources, in the sense that either factors or goods are diverted without any corresponding increase in total net output of the economy. In the latter situation, exemplified by alternatives (*a*) and (*b*), a negative adjustment for unproductive use of resources, equal to the amount of the government's inflationary financing, appears in the distribution of national income by income shares.

As in all the cases discussed, the analysis is oversimplified in that it does not allow for any effects of price changes, or of government's appearance on the scene as a producer, on the supply and demand of factors and of products in the private

## CASE 5

### *Government Product Out of the Printing Press or Money Balances (Inflation)*

Time Unit I

| | |
|---|---|
| Production, private sector, quantity | 100 |
| Market price per unit | 10 |
| Value product (market) | 1,000 |

Breakdown of value product, private sector, by income shares and taxes:

| | |
|---|---|
| Wages and salaries | 700 |
| Property income | 200 |
| Undistributed net profit | 100 |
| Taxes | 0 |
| Total | 1,000 |

| | |
|---|---|
| Production, government sector | 0 |
| Assumption: No government capital yielding final product | |
| Total national product or income, final product approach | 1,000 |
| Total national product or income, sum of income shares. | 1,000 |

Time Unit II: Introduction of government production financed by printing paper money. Assumption: Additional flow of money is spent as before, with no savings by individuals or business. There is a consequent rise in prices, accruing completely and exclusively to entrepreneurs (undistributed net profits). Hence:

Breakdown of value product, private sector, by income shares and taxes:

| | |
|---|---|
| Wages and salaries | 700 |
| Property income | 200 |
| Undistributed net profits | 300 |
| Taxes | 0 |
| Total | 1,200 |

With the same alternative uses of government money as in Case 1, we get: National product or income, final product approach, alternative uses of government money.

| Alternative Uses | Private Sector | Government | Total |
|---|---|---|---|
| (*a*) Current prices | 1,200 | 0 | 1,200 |
| Quantity | 100 | 0 | 100 |
| (*b*) Current prices | 1,000 | 0 | 1,000 |
| Quantity | 83.3 | 0 | 83.3 |
| (*c*) Current prices | 1,200 | 200 | 1,400 |
| Quantity | 100 | 16.7 | 116.7 |
| (*d*) Current prices | 1,200 | 0 | 1,200 |
| Quantity | 100 | 0 | 100 |
| (*e*) Current prices | 1,200 | 200 | 1,400 |
| Quantity | 100 | 16.7 | 116.7 |
| (*f*) Current prices | 1,000 | 200 | 1,200 |
| Quantity | 83.3 | 16.7 | 100 |

National product or income, by income shares and taxes, different alternatives as to use of government money:

| Wages and Salaries | Property Income | Undistributed Net Profits | Adjustment (as in Case 4) | Total |
|---|---|---|---|---|
| (*a*) 700+200=900 | 200 | 300 | −200 | 1,200 |
| (*b*) 700+ 0=700 | 200 | 300 | −200 | 1,000 |
| (*c*) 700+200=900 | 200 | 300 | 0 | 1,400 |
| (*d*) 700+ 0=700 | 200 | 300 | 0 | 1,200 |
| (*e*) 700+200=900 | 200 | 300 | 0 | 1,400 |
| (*f*) 700+ 0=700 | 200 | 300 | 0 | 1,200 |

sector. Since the existence and functions of government as a producer (or in subsequent cases as an agency that redistributes the flow of money payments) have, in fact, substantial effect on the structure of production and of demand, the analysis falls far short of reality. But it is next to impossible, in national income measurement, to estimate the effects of any existing institution, or of changes in the scope of its activity, in all its ramifications. We are concerned here with measurement of final results of economic activity, regardless of what particular factors and causes have tended to produce the result. We are, therefore, interested in the controversial items in the government sector only in so far as they do or do not *represent* final product; not in so far as they signify forces that may have *caused*, fully or in part, the net output of the economy to attain the magnitude and structure which it in fact attained.

6. *Subsidy to business*

The five cases considered so far cover the different possible classes of government financing: taxes and non-inflationary or inflationary non-tax sources. The five classes do not exhaust the great variety of specific types of government revenue, since the latter may include many others ranging from special assessments and fees to confiscation of property. But a great proportion of these non-tax revenues are connected with the government as a business entrepreneur and hence are not relevant to government in the special meaning of the term used here. Many others fall under one or another of the five types of financing or represent (as in the case of confiscation) a disguised tax.

But we have discussed so far only such government expenditures as involve the government as a producer. Government, however, is also a transfer agency of substantial dimensions. It

may use its revenue to transfer means of payment to the country's business enterprises, with the intention of reducing the prices of the enterprises' product to the purchasers; it may transfer means of payment to individuals or firms in the country without subsidy implications; or it may either lend or give means of payment to foreign countries. Of the list just cited, the only case covered so far is government lending to foreign countries with an expectation of return – a case of genuine loan rather than of gift or subsidy. This type of loan may be treated as an addition to the country's capital, not recorded anywhere within the private business sector as a capital addition; and hence represents a species of alternatives (*e*) and (*f*) in the five cases considered so far – i.e. use of factors or of stocks and current production to add to the country's capital under the government's auspices. We should note, however, that in this case it is not the amount of the loan granted to the foreign country, but the amount of the loan actually *drawn upon* that should be entered under government expenditures and used in passing from the sum of income shares excluding all taxes to net output at current prices.

The other types of government expenditures, which are in the nature of transfers, are still to be discussed. We may classify them for our analysis into three distinct groups: (i) price reduction subsidies to business firms considered part of the country's economy, i.e. all domestic firms, whether their plant is actually located within the country or abroad (in which case they belong to the country's residents); (ii) transfers to individuals or firms within the country – relief payments, special bonuses, repayment of government debt, or, if one interprets the government debt as a 'deadweight' debt, interest payments on government debt; (iii) transfers to foreign countries – free subsidies to foreign governments, to foreign business firms, or to foreign individuals.

In the earlier discussion of treatment of government *revenues* of various types we had to decide the cases on the basis of what the government did with the proceeds, i.e. the type of activity the proceeds were used to finance. Now that we know in advance what government does with the proceeds – in the present case it grants them as a subsidy to domestic business – the analysis must recognize different *sources* of the proceeds. And since we distinguished in our earlier discussion five types of financing, three representing tax and two representing non-tax sources,

## CASE 6

### *Government Subsidy to Domestic Business, Alternative Methods of Financing Subsidies*

(*a*) Subsidy out of indirect business taxes

Time Unit I: Assume two industries, X and Y, comprising the whole economy. The production of the economy, all private sector, is then as follows:

| | X | Y | *Total* |
|---|---|---|---|
| Quantity in units | 100 | 50 | 150 |
| Market price | 10 | 10 | 10 |
| Value product | 1,000 | 500 | 1,500 |

Breakdown of value product, private sector, by income shares and taxes:

| | | | |
|---|---|---|---|
| Wages and salaries | 700 | 350 | 1,050 |
| Property income | 200 | 100 | 300 |
| Undistributed net profits | 100 | 50 | 150 |
| Taxes | 0 | 0 | 0 |
| Total | 1,000 | 500 | 1,500 |

Total national product or income, final product approach 1,500
Total National product or income, sum of income shares 1,500

Time Unit II: Assume that an indirect business tax of 100 units was imposed on products of industry X and the proceeds used as a subsidy to industry Y; and that the corresponding shift in relative prices of products X and Y has no effect on the relative demand or supply of the two products. Consequently, the product in Time Unit II will be:

| | X | Y | *Total* |
|---|---|---|---|
| Quantity | 100 | 50 | 150 |
| Market price | 11 | 8 | (weighted mean) 10 |
| Value product | 1,100 | 400 | 1,500 |

Breakdown of value product, private sector, by income shares and taxes:

| | | | |
|---|---|---|---|
| Wages and salaries | 700 | 350 | 1,050 |
| Property income | 200 | 100 | 300 |
| Undistributed net profits | 100 | 50 | 150 |
| Indirect taxes | 100 | 0 | 100 |
| Subsidy | 0 | −100 | −100 |
| Total | 1,100 | 400 | 1,500 |

Total national product or income, final products approach:
1,100+400=1,500
Total national product or income, sum of income shares:
1,050+300+150=1,500.

(*b*) Subsidy out of direct business taxes

Time Unit I: Same as under (*a*)

Time Unit II: Assume that a direct business tax of 100 units (e.g. corporate profit tax) was imposed on industry X and the proceeds used as a subsidy to industry Y; and that the corresponding shift in relative prices of products X and Y had no effect on the relative demand or supply of the two products. Consequently, the product in Time Unit II will be:

| | X | Y | *Total* |
|---|---|---|---|
| Quantity | 100 | 50 | 150 |
| Market price | 10 | 8 | (weighted mean) 9.33 |
| Value product | 1,000 | 400 | 1,400 |

Breakdown of value product, private sector, by income shares and taxes:

| | | | |
|---|---|---|---|
| Wages and salaries | 700 | 350 | 1,050 |
| Property income | 200 | 100 | 300 |
| Undistributed net profits | 0 | 50 | 50 |
| Direct business tax | 100 | 0 | 100 |
| Subsidy | 0 | −100 | −100 |
| Total | 1,000 | 400 | 1,400 |

Total national product or income, final product approach:
1,000+400=1,400.

Total national product or income, sum of income shares:
1,050+300+50=1,400.

(*c*) Subsidy out of direct taxes on individuals

Time Unit I: Same as under (*a*) – sum of the two industries.

Time Unit II: Assume that a tax of 150 units was imposed on individual income recipients and paid out as a subsidy; and that the corresponding lowering of price had no effect on supply and demand.
Consequently, production in Time Unit II will be:

| | |
|---|---|
| Quantity | 150 |
| Market price | 9 |
| Value product | 1,350 |

Breakdown of value product, private sector, by income shares and taxes:

| | *Excl. tax* | *Tax* | *Incl. tax* |
|---|---|---|---|
| Wages and salaries | 950 | 100 | 1,050 |
| Property income | 250 | 50 | 300 |
| Undistributed net profits | 150 | 0 | 150 |
| Indirect taxes | 0 | 0 | 0 |
| Total | 1,350 | 150 | 1,500 |

Total national product or income, final product approach: 1,350

Total national product or income, sum of income shares: 950 (wages and salaries excluding tax)+250 (property income excl. tax)+150 (undistributed profits excl. tax) 1,350

(*d*) Subsidy out of borrowing (savings of individuals and enterprises)

Time Unit I: Same as under (*a*) – sum of the two industries.

Time Unit II: Assume that the government, having induced individuals and enterprises to save 150 and lend it to the government (at no interest), immediately expends it as a subsidy to business; and that the resulting decline in market price has no effect on supply and demand. Then production in Time Unit II will be:

| | |
|---|---|
| Quantity in units | 150 |
| Price | 9 |
| Value product (market) | 1,350 |

Breakdown of value product, private sector, by income shares and taxes:

| | |
|---|---|
| Wages and salaries | 1,050 |
| Property income | 300 |
| Undistributed net profits | 150 |
| Taxes | 0 |
| Subsidy | −150 |
| Total | 1,350 |

| | |
|---|---|
| Total national income or product, final product approach | 1,350 |
| Total national product or income, sum of income shares: 1,050+ 300+150−150 (subsidy) | 1,350 |

(*e*) Subsidy out of printing money (inflation)

Time Unit I: Same as under (*a*) – sum of the two industries.

Time Unit II: Assume that the government prints 150 units and hands them out as a subsidy to business; that the operation has no effect on supply and demand, and that the offsetting price (on account of inflation) and price decline (on account of subsidy) merely result in a corresponding increase of the undistributed net profit. Hence the product account in Time Unit II will be:

| | |
|---|---|
| Quantity in units | 150 |
| Price | 10 |
| Value product | 1,500 |
| Breakdown of value product, private sector, by income shares, taxes, etc.: | |
| Wages and salaries | 1,050 |
| Property | 300 |
| Undistributed net profits | 300 |
| Subsidy | −150 |
| Total | 1,500 |
| Total national income or product, final product approach | 1,500 |
| Total national income or product, sum of income shares: 1,050+ 300+300−150 (subsidy) | 1,500 |

these five types now constitute five alternative sources out of which subsidies to business may be financed; and are so distinguished in the illustrative analysis of Case 6.

There is no need to repeat here the assumptions and steps in this analysis. We treat directly only the case of subsidies to firms engaged in production at home which directly affect either the prices or undistributed net profits (or payments to other factors) within the country. A subsidy granted to a firm that engages in sales largely abroad, if its major effect is to reduce the price to foreign buyers, is in fact a subsidy to the latter – i.e. a transfer to a foreign country (Case 8) and does not belong to the analytical case presently under discussion.

With this qualification the conclusions concerning the treatment of business subsidies in estimating national income by sum of income shares (excluding all taxes) can be briefly indicated. If subsidies are financed out of taxes of *any* kind (whether indirect, direct business, or direct taxes on individuals), they should neither be added to nor subtracted from income shares excluding taxes. Subsidies financed out of non-tax funds, whether non-inflationary or inflationary, should be *subtracted* from the sum of income shares excluding all taxes. To put it

differently: if business taxes are to be added to sums of income shares (net of taxes) in order to secure a correct estimate of net output at current prices, the addition of such taxes must always be *after* subtraction of business subsidies. And to the extent that subsidies are out of non-tax sources, they should be subtracted from the net income shares themselves.

*7. Domestic transfers*

Domestic business firms may receive payments from the government which are neither subsidies nor payments by government for goods purchased. They may be in the nature of payment on government debt – either interest or principal.[1] Domestic individuals may also receive payments from government that do not represent compensation for any services rendered by them or their capital to the government: repayment of government debt, a payment of interest (in the 'deadweight' interpretation); bonuses, e.g. veterans' bonuses, or relief and assistance payments where no work is required.

These domestic transfers (see Case 7) are analyzed as were subsidies to domestic business. The effects, however, are different, because transfers, unlike subsidies, do not reduce prices of goods produced under business auspices or increase income shares. On the contrary, in two of the alternative sources of financing transfers the transfers raise the market prices of net final output; and in none of the five alternatives does the sum of income shares, net of all taxes, show any increase from time unit I to time unit II.

In consequence, while we had to decide when to *subtract* and when not to subtract business subsidies from the sum of income shares, in the case of transfers to individuals we have to decide when to *add* and when not to add them to the sum of income shares. The general answer is provided by the illustrative case.

[1] We do not deal here with the controversial question as to whether interest payments on government debt – particularly war debts – are transfers or factor costs. In fact, in the treatment suggested by the present analysis, the interpretation of interest on war debts, for example, makes no difference *so long* as it is not (as it cannot be) interpreted as final output – i.e. services to consumers or addition to capital. On that condition, if interest payments are included under income shares, they would not appear under transfers and would not be *added* if paid out of taxes (see Case 7); or if not included under income shares, they would be included under transfers and would be added if paid out of taxes. If interest payments are out of non-tax sources (i.e. out of deficit, see section 9 below) they would not appear in the total at all; for whether included under income shares or under transfers, they would in either case be offset by subtraction of deficits.

## CASE 7

### *Domestic Transfers*

Time Unit I: Assume private sector coincident with the whole productive economy of the same magnitude, as in Case 6:

| | |
|---|---|
| Quantity in units | 150 |
| Market price | 10 |
| Value product | 1,500 |

Breakdown of value product, private sector, by income shares and taxes (no taxes at all):

| | |
|---|---|
| Wages and salaries | 1,050 |
| Property income | 300 |
| Undistributed net profits | 150 |
| Taxes | 0 |
| Total | 1,500 |

| | |
|---|---|
| Total national income or product, final product approach | 1,500 |
| Total national income or product, sum of income shares | 1,500 |

Time Unit II: Assume that the government pays to domestic individuals and firms 150 units as pure transfers. There follow alternative assumptions concerning the financing of these transfers, the alternatives being similar to those distinguished for Case 6:

(*a*) Financed out of indirect business taxes.
(*b*) Financed out of direct business taxes.
(*c*) Financed out of direct taxes on individuals.
(*d*) Financed out of borrowing (from individuals and enterprises).
(*e*) Financed out of inflation.

We also retain the same assumptions as in Case 6 concerning lack of effect of taxation, transfers, and price changes on supply and demand of goods.

National income or product, final product approach, alternative assumptions as to financing of transfers:

| | Quantity in Units | Price | National Income or Product |
|---|---|---|---|
| (*a*) | 150 | 11 | 1,650 |
| (*b*) | 150 | 10 | 1,500 |
| (*c*) | 150 | 10 | 1,500 |
| (*d*) | 150 | 10 | 1,500 |
| (*e*) | 150 | 11 | 1,650 |

The breakdown of income shares etc. in such a way as to equal national product, by final product approach, is as follows:

Total national income or product, sum of income shares, etc., alternative assumptions as to financing of transfers.

All income shares given below exclude all taxes.

| | Wages and Salaries | Property Income | Undistributed Net Profit | Transfers | Total |
|---|---|---|---|---|---|
| (*a*) | 1,050 | 300 | 150 | 150 | 1,650 |
| (*b*) | 1,050 | 300 | 0 | 150 | 1,500 |
| (*c*) | 950 | 250 | 150 | 150 | 1,500 |
| (*d*) | 1,050 | 300 | 150 | 0 | 1,500 |
| (*e*) | 1,050 | 300 | 300 | 0 | 1,650 |

Whenever the transfers are so financed as to increase the market prices of the economy's net output, the transfers (or, what is the same thing, the indirect taxes or inflationary sources used to finance them) are to be added to the sum of income shares (net of all taxes) to secure a correct estimate of national income. Whenever the transfers to individuals are so financed as not to increase market prices (i.e. out of direct business taxes, direct individual taxes, and non-inflationary borrowing), the sum of income shares, without adding the transfers, yields the correct total of national income at current prices. As in the case of business subsidies, the transfers should be counted at the point of actual disbursement of the money by the government to the recipient.

8. *Transfers to foreign countries*

In the case of government subsidy to a foreign country it makes no difference to the national income accounting of the lender country whether the subsidy is extended to the foreign government, the foreign business firm, or foreign individuals. But it does make a difference how we interpret the subsidy from the viewpoint of the lender country. If it is a matter of free gift, without any consideration of immediate and ultimate benefit for the lender country, the case becomes completely identical with that of transfers to a country's own citizens and residents. In that interpretation the lender country's national income, i.e. net output at market prices, includes also the output that is purchased by foreigners with the means of payment secured by the subsidy; and as will be seen from the illustrative analysis under Case 8, the breakdown of the national income by income shares is identical with that of Case 7 – it must include the subsidy if the latter is financed out of indirect taxes or out of inflationary non-tax sources, and disregard (but not subtract) the subsidy if it is financed out of direct taxes or non-inflationary borrowing.

But it may be more realistic to consider at least some subsidies to foreign countries not gifts free of ulterior considerations, but as designed to assist the foreign country on policies which the lender country considers beneficial to its own position in the world. In that case the subsidy is like an expenditure by the lender country on its own military establishment, i.e. an intermediate product of use in maintaining or expanding the coun-

## CASE 8

*Government Subsidy to Foreign Countries*

Time Unit I: Same as under Case 7.

Time Unit II: Assume that the government grants free credit to foreign countries of 150 units as a gift and that foreign countries use the 150 units to import to that amount during Time Unit II. There follow alternative assumptions concerning the financing of this subsidy, the alternatives being the same as for Cases 6 and 7, viz. (*a*) out of indirect business taxes; (*b*) out of direct business taxes; (*c*) out of direct taxes on individuals; (*d*) out of non-tax sources, non-inflationary; (*e*) out of inflationary sources. We also retain the same assumptions as in Cases 6 and 7 concerning lack of effects of taxation, transfers, and price changes on supply and demand of goods.

Then national income or product, final product approach, will be:

| | Quantity in Units | | Price | Net Output | |
|---|---|---|---|---|---|
| | Domestic | Given to Foreign Country | | Domestic | Given to Foreign Country |
| (*a*) | 136·4 | 13·6 | 11 | 1,500 | 150 |
| (*b*) | 135 | 15 | 10 | 1,350 | 150 |
| (*c*) | 135 | 15 | 10 | 1,350 | 150 |
| (*d*) | 135 | 15 | 10 | 1,350 | 150 |
| (*e*) | 136·4 | 13·6 | 11 | 1,500 | 150 |

Distribution of national income or product by income shares, excluding all taxes, is then:

| | Wages and Salaries | Property Income | Undistributed Net Profits | Foreign Subsidies | Total |
|---|---|---|---|---|---|
| (*a*) | 1,050 | 300 | 150 | 0 | 1,500 |
| (*b*) | 1,050 | 300 | 0 | 0 | 1,350 |
| (*c*) | 950 | 250 | 150 | 0 | 1,350 |
| (*d*) | 1,050 | 300 | 150 | −150 | 1,350 |
| (*e*) | 1,050 | 300 | 300 | −150 | 1,500 |

try's position *vis-à-vis* other countries. If so, the lender country's national income as a total of net output must exclude the goods that were purchased by the foreign country with the proceeds of the subsidy. And the accounting, as shown in Case 8, becomes on that condition different from Case 7.[1]

The subsidy to a foreign country, interpreted as an expenditure on intermediate product, should not be added to the sum

[1] On this interpretation flow of finished products to consumers or additions to stock in the borrower country would *not* be counted in the final product of the lender country; and might also be excluded from the national income of the borrower country, since it is *not* a product of its economic activity. The strict application of the *national* viewpoint thus results in omitting from *world* income elements that unquestionably belong to it as a means of net product flow to world population. This is one of several paradoxes that may be revealed when we try to add the national income estimates into a consistent world whole.

of income shares if it has been financed out of taxes; and should be *subtracted* if it has been financed out of sources other than taxes – regardless of whether these non-tax sources are non-inflationary or inflationary.

What is true of the interpretation of subsidy presented in Case 8 is also true of such transfers to foreign countries as represent current payments on legal obligations of a given government to foreign countries. This species of transfers, unlike transfers to domestic firms and individuals, indicates that part of the productive factors operating within the country is owned outside of it. Since national income is net output of a country's economy only to the extent that the productive factors are owned by the country's citizens and residents, it cannot include such part of current output *within* the country as is associated with factors owned outside. Hence, national income must exclude current interest charges on government debt owned abroad – *whether*, in fact, such payments have been made or were accrued to increase indebtedness abroad.

As distinct from the domestic case and from foreign subsidy, interest obligations by a government to foreign countries should appear in Case 8, whether actually paid or not; and, unlike Case 7, *repayment* of principal to foreign holders of government debt is not a transfer but an addition to government capital, i.e. falls under the alternatives (*e*) and (*f*) in Cases 1 to 5.

9. *Summary of analysis*

We now summarize the analytical cases discussed and observe the treatment of various sectors of government activity in passing from the sum of income shares (net of all taxes) to a correct estimate of national income, taken as net final output at market prices. Cases 1 to 8 are brought together, with foreign subsidy interpreted as expense on intermediate products.

In this summary, which merely restates the conclusions of our discussion, the last three columns cannot be handled in any empirical work, because the decision rests upon source of funds; and it is impossible to say whether, in fact, transfers or subsidies have been made out of taxes or out of other sources. We must therefore restate the conclusions in columns 6–8 to permit their application in combination with the conclusions in columns 1–5.

To do this we first consider business subsidy as a charge against business taxes, on the cogent ground that *net* payments

*Summary of Cases* 1–8

*(The column numbers are identical with the number of the analytical case)*

| Sum of Income Shares (excluding all taxes) | Government Expenditures on Goods out of: | | | | | Transfers: | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Non-tax | | Domestic | | |
| | Indirect Taxes (1) | Direct Business Tax (2) | Direct Tax on Ind. (3) | Non-inflationary (4) | Inflationary (5) | Business Subsidies (6) | To Individuals (7) | Foreign All (8) |
| Always add: Wages Salaries Dividends Interest Rent<br><br>Undist. net profits and losses of business firms | Add if used for final output<br><br>Otherwise do not add | Add if used for final output<br><br>Otherwise do not add | Add if used for final output<br><br>Otherwise do not add | Do not add if used for final outp.<br><br>Otherwise subtract | Do not add if used for final outp.<br><br>Otherwise subtract | Do not add if out of bus. taxes<br><br>Add if out of tax on indivi.<br><br>Subtract if out of non-tax funds | Add if out of taxes<br><br>Do not add if out of non-tax funds | Do not add if out of taxes<br><br>Otherwise subtract |

by the whole business sector to government are not the gross total of business taxes, but only the excess over subsidies drawn upon. We also assume, realistically, that business taxes *exceed* business subsidies; which permits us to treat Case 6, in combination with Cases 1 and 2, as indicating that business subsidies are not to be added; and that final products out of business taxes are always sufficiently less than those taxes to allow an offset for business subsidies. Next we define several types of government surplus and deficit as follows:

| | | |
|---|---|---|
| I | Surplus or deficit on current and debt repayment accounts. | Excess or shortage of all taxes over all (government outlays, including repayment of debt). |
| II | Surplus or deficit on total current account. | Excess or shortage of all taxes over all (government outlays, excluding repayment of debt). |
| III | Surplus or deficit on domestic current account. | Excess or shortage of all taxes over (government outlays excluding repayment of debt and excluding foreign transfers). |
| IV | Surplus or deficit on goods account. | Excess or shortage of all taxes over (government outlays on goods and services, i.e. total government outlays excluding repayment of debt, excluding foreign transfers, and excluding domestic transfers). |

If there is a surplus on I, there must be a surplus on II, III and IV unless the government receives transfers from foreign countries or domestic sources rather than disburses them. These cases, however, can be treated simply. Transfers from foreign countries represent free additions to goods at the disposal of a given country, but are not a result of the working of its economy and should, perhaps, be excluded from national income. However, if they *are* to be added to national income, the decision of how much to add depends upon what part of these transfers

are used to provide final net output – goods for consumers or additions to capital. When transfers are from domestic sources they have already been accounted for; and as a matter of fact appear in our analysis as non-inflationary or inflationary non-tax sources of government financing. We may therefore proceed with the discussion on the more realistic assumption that transfers are to (rather than from) foreign countries and to (rather than from) domestic firms and individuals.

On that assumption the following situations may be distinguished:

A. *There is a surplus under I* (and hence surpluses under II, III and IV).

In this case government expenditures on goods are all out of taxes and the entries under columns 4 and 5 in the summary above are 0; domestic transfers (column 7) should be added, since they are out of taxes; and foreign transfers should be neither added nor subtracted. National income is then: (income shares, excluding all taxes) plus (net final output by government, including additions to government capital represented by reduction of foreign held debt) plus (domestic transfers, including repayment of debt). No account is taken of the surplus, since it has not entered the nation's net final output at current prices.

B. *There is a deficit under I and a surplus under II* (hence a surplus under III and IV).

In this case some of the repayment of debt is out of deficit; which means that if it is either to foreign countries or domestic holders, that part which is out of deficit should not be added to final product of government or to domestic transfers (see columns 4, 5 and 7). If we include these last two items fully we must make the adjustment by subtracting the deficit. Hence national income equals: (income shares, excluding all taxes) plus (all net final output of government, including reduction of foreign-held debt) plus (domestic transfers, including repayment of debt) minus (deficit under I).

C. *There is a deficit under II, but a surplus under III* (and hence a deficit under I and a surplus under IV).

Here the treatment is exactly as under B, except that foreign transfers are to be subtracted in so far as they are financed not

out of taxes but out of *deficit*. If, therefore, we add income shares, final net output of government, and domestic transfers, we have to subtract the deficit. The formula for national income is then as under B, but subtracting the deficit under I (which is now larger).

D. *There is a deficit under III but a surplus under IV* (and hence deficits under I and II).

Here the treatment is as under C, except that all foreign transfers are to be subtracted and not all domestic transfers are to be added, since only part of them are out of taxes. This subtraction of foreign transfers and partial exclusion of domestic transfers is obviously accomplished if we reduce the sum of income shares excluding taxes, final net output of government, and domestic transfers by the full deficit under I.

E. *There is a deficit under IV* (and hence deficits also under I, II and III).

Here the treatment is as under D, except that domestic transfers are to be fully omitted (since they are all out of deficit) and not all government expenditures on goods are to be included, since part of them is out of deficit (i.e. non-tax sources). In this case (see columns 4 and 5 of the summary) final output is not to be added, and intermediate output is to be subtracted. If we *add* all final output by government financed out of deficit, then we should subtract the full deficit on goods account and not only that part of it that goes on intermediate product. Hence, in order to subtract all foreign transfers, to omit all domestic transfers, and to subtract only that part of government expenditures on goods that is used to produce intermediate output out of deficit, all we need do is reduce the sum of income shares excluding all taxes, all final net output of government, and all domestic transfers by the full deficit under I.

Thus in each of the possible situations with reference to government surplus and deficit the formula for deriving national income from the sum of income shares is exactly the same. National income equals:

(sum of all income shares, excluding all taxes) plus
(final net output of government at cost, including repayment of foreign-held debt) plus

(all domestic transfers and subsidies, including repayment of debt) minus
(deficit on total current and repayment account).

Deficit in this formula means shortage of revenues compared with all government outlays, including all transfers and repayment of debt. In case of surplus *no* addition is made.

If it is desirable to exclude repayment of debt, which means excluding it from government outlays, the formula stands, except that the deficit referred to is replaced by deficit on total current account; repayment of foreign-held debt is excluded from final net output of government; and domestic transfers exclude any payments that represent amortization of domestically held debt.