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Part Five

PROBLEMS IN ESTIMATING
NATIONAL INCOME ARISING
FROM PRODUCTION BY
GOVERNMENT

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PROBLEMS IN ESTIMATING
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This paper is concerned with certain problems of estimating national income that arise because part of the nation's productive activity is carried on by government.¹ Disagreement has arisen as to the treatment of 'government savings' and this in turn resolves itself into a disagreement as to the method for valuing goods² produced by government. Dr. Kuznets, in a recent book³ uses taxes as the 'sales value' of the goods rendered by government to intermediate or ultimate consumers without specific payment. Here it is proposed that a basis of valuation be adopted that rests primarily on costs.

The whole system of concepts employed in estimating national income grows out of the system of concepts built up in the process of business corporation accounting. Corporate accounting concepts are appropriate to the estimation of income produced by corporations, but when applied to income produced by governments they have to be modified or adapted to meet situations

¹ For other discussions of this topic see *Studies, Volume One* (1937): Clark Warburton, Part Two, Sec. IV, and Gerhard Colm, Part Five, discussion by J. M. Clark, Simon Kuznets and Mabel Newcomer, and Dr. Colm's reply.

² Throughout this paper, the term 'goods' will be used to connote 'commodities and services' and the term 'wages' will be used to typify both 'wages' and 'salaries'.

³ *National Income and Capital Formation, 1919-1935* (National Bureau of Economic Research, 1937). See also *Volume One*, Part Five, Discussion II, pp. 233-8.

not met with in business corporation accounting. Before examining these new situations it will be useful to examine the methods of valuation relied upon in estimating income produced by business corporations.

In business corporation accounting, the two most important methods of valuation are (1) the use of the amount of money paid for a good in an actual exchange⁴, and (2) the sum of the costs attributed to a particular good. Goods sold to intermediate or ultimate consumers are customarily valued on the first basis. Likewise goods purchased and added to inventory or to capital account that are in the same condition as when purchased are for the most part⁵ valued at the amount of money actually paid for them. However, many goods included in the inventory and capital accounts have not entered into an actual exchange that could be used to measure their value in the form in which they currently exist. Inventory of finished goods and capital equipment constructed by the owning corporation have in whole or in part been 'produced' within the enterprise. Their value is customarily estimated by allocating to them certain material, labor, and other costs which in combination measure the value of the product. The latter (with the exception of depreciation where charged) are measured by money payments involved in actual exchanges, but the allocation of these costs to particular items of product is the function of the art of accounting, and the actual figures arrived at have no objective reality such as those referring to a specific exchange. This means that where an item produced has received a valuation in the market subsequent to 'production' it is valued on the objective basis of the money quid pro quo. Where it has not been so valued it is valued for the most part by allocating to it money quids paid for the goods, labor, etc., believed to have contributed to its production.

The rationale behind both methods of valuation is that when an exchange takes place the money exchanged for a good measures its value. It is assumed that no one will sell a good if it is worth more to him than the money he gets for it or than the goods that money will buy, and that no one will buy a good un-

⁴ More precisely, the amount of money contracted to be paid.

⁵ The formula, 'cost or market whichever is lower', applied to inventory adds a third but minor method of valuation, namely the use of the money paid (or contracted for) in an actual exchange of an essentially similar good.

less it is worth more to him than the money he pays or the other goods that money could buy. The value of the good is thus presumed to be close to the money exchanged for it. The problem of estimating income produced by government is to modify or adapt these basic methods of valuation to the conditions presented by government production.

The analysis and exposition of this problem will be simplified by dealing first with the problem of estimating national income in a pure government economy, i.e., an economy in which all productive activity is carried on by government agencies, and then expanding the discussion to include corporate business. In a pure government economy all the instruments of production would be owned by government units, and individuals would be able to carry on productive activity only if employed by some government unit. The supposition of such an economy does not in any way suggest its desirability. It is created only as a logical aid in analysis and exposition.

I Estimating National Income in a Pure Government Economy

A pure government economy would differ in four important and interrelated aspects from an economy carried on solely by business corporations. First, corporations are presumed to be profit-seeking undertakings. Second, corporations are presumed to be able to make money outpayments only out of proceeds from the sale of securities or the sale of goods, whereas governments are presumed to be able to make outpayments out of the proceeds from taxation as well as from the sale of goods or of securities.⁶ Third, transfers of money and of goods as between corporation and corporation, or corporation and individual, are presumed to occur only in quid pro quo *transactions*,⁷ whereas transfers of money or goods between government units and individuals may take the form of *transactions* involving a direct quid pro quo or of unilateral *transfers* involving no specific quid for the specific quo

⁶ For present purposes the issue of new money can be lumped with the sale of securities, though for many purposes the two should be kept distinct.

⁷ Except in the case of dividends which can for some purposes be regarded as involving transactions extending through time and for other purposes should be regarded only as unilateral transfers.

rendered, as in the case of money received as taxes or goods distributed without specific charge. (Whether taxes as an aggregate and goods rendered as an aggregate can usefully be treated as involving 'a transaction' with a specific quid for a specific quo will be discussed later.) Finally, it is presumed that corporations aim to realize, and in the aggregate do realize, something more than their operating costs plus depreciation from the sale of goods produced and handed over to consumers or to one another, whereas government units are not presumed to be subject to such an aim.

The transactions and transfers that could take place in a simplified pure government economy might be limited as follows:

TRANSACTIONS AND TRANSFERS IN THE SIMPLIFIED PURE
GOVERNMENT ECONOMY

(capable of being recorded as bookkeeping items)

Transactions

Government units

- hire workers paying cash
- purchase goods from other government units paying cash (can also be stated 'Government units sell goods to other government units receiving cash')
- sell goods to consumers receiving cash
- distribute cash to investors as interest
- sell securities to investors for cash
- retire securities, paying out cash

Transfers

Government units

- distribute goods without any specific item in exchange
- distribute cash without any specific item in exchange
- collect cash as a tax without any specific item in exchange

This simplified pure government economy has the same transaction categories as might be included in a pure corporate economy (interest taking the place of interest and dividends) and in addition three transfer categories not represented in the latter. As we shall see, the difficulties of applying corporate accounting procedures to government production lie, first, in the three

transfer categories which involve no specific quid pro quo, and second, in the fact that even in the case of *transactions* the quid cannot always be valued by the quo.

If we apply the basic definition of national income, 'net value of goods produced by the nation's economic system', to this government economy, the following statement can be made:

$$\begin{aligned}
 \text{Goods produced} &= \text{Goods produced and handed over to} \\
 &\quad \text{consumers} \\
 &+ \text{Goods produced and added to} \\
 &\quad \text{government inventories} \qquad (1) \\
 &+ \text{Goods produced and added to} \\
 &\quad \text{government capital accounts.}
 \end{aligned}$$

These three items would make up the sum total of goods produced. As in the case of a pure corporate economy, a figure for national income could be obtained by deducting from the values of these three items that part which should be attributed to the using up, distribution, or sale of items of inventory that were produced in a prior period and to the use of capital equipment produced in a prior or current period (depreciation). The formula for estimating national income would thus become:

$$\begin{aligned}
 \text{National income} &= \text{Value of goods sold to consumers} \\
 &+ \text{Value of goods distributed to consumers} \\
 &\quad \text{without specific return} \\
 &+ \text{Value of goods added to inventory} \qquad (2) \\
 &+ \text{Value of additions to capital equipment} \\
 &- \text{Value of deductions from inventory} \\
 &- \text{Total depreciation.}
 \end{aligned}$$

Up to this point there should be no disagreement as to the equation stating the national income for the simplified government economy. The real differences arise in the methods to be used in valuing the different categories. As already indicated, Dr. Kuznets uses taxes as the measure of the value of the goods produced and distributed to consumers without a specific quid for a specific quo. In contrast to this method of valuation, the present paper proposes a method based on the costs of production allocated to goods so distributed.

In the case of both these methods, the effort is being made to adapt one or the other of the two basic corporation accounting

methods to a new type of situation lying outside the logic of corporate accounting. Each is trying to adjust for the fact that three basic assumptions underlying corporation accounting are not met in the case of government: namely, that (1) all corporate transfers are transactions involving a specific quid for a specific quo, (2) goods are sold at neither more nor less than they are worth, (3) when wages are paid they are neither more nor less than the labor obtained is worth.

In the following pages the adaptation of the cost basis of accounting valuation will be discussed first, and then the adaptation of the sales basis, using taxes as the purchase price of goods rendered. In each case the analysis will first be made on the assumption that the transfers not involving a specific quid pro quo constitute the only significant factor in the government economy that is not a characteristic of a corporate economy, and then on the assumption that, in addition, the transactions are not all of such a character as to allow the money quid to be used as the value of the specific quo.

I THE COST APPROACH TO VALUATION

An examination of formula (2) given above for estimating national income in the simplified government economy will show that, with the exception of goods distributed without specific return, the items included are identical with those which might be included in the corresponding formula for a simplified corporate economy. If we regard all sales of goods as correctly recording the value of such goods and all wages paid as correctly recording the value of the labor given in exchange, then all the above items except 'goods distributed' could be valued in the manner employed in corporate accounting and the income formula would be:

$$\begin{aligned} \text{National income} &= \text{Sales to consumers} \\ &+ \text{The value of goods distributed to} \\ &\quad \text{consumers without specific return} \\ &+ \text{Additions to inventory}^8 \end{aligned}$$

⁸ The simplifying assumption is introduced that all inventory is in the form originally purchased and that therefore the value of the items in the inventory at the end of the accounting period and not in it at the beginning can be measured by their purchase price.

+ Purchases charged to capital account	} Value of goods charged to (3) capital account
+ Wages charged to capital account	
+ Depreciation charged to capital account	
- Deductions from inventory	
- Total depreciation.	

Each item in (3) is either a report of a transaction or an easily made accounting allocation, except the value of 'goods distributed' which stills remains to be measured. A possible method of measuring this item would be to treat the goods produced and distributed without specific return in the same manner that goods produced for a corporation's own account are treated, since in neither case is there a specific exchange to measure the value of the good produced. This would mean setting up a new account, which we shall call the 'distribution account', and charging to it all purchases made, wages paid, and depreciation properly allocated to the goods distributed without specific return. This would mean three instead of two accounts—an operating account, a capital account, and a distribution account. Adopting this procedure the above formula would become:

National income = Sales to consumers	
+ Purchases charged to distribution account	} Value of goods distributed without specific return (4)
+ Wages charged to distribution account	
+ Depreciation charged to distribution account	
+ Additions to inventory	
+ Purchases charged to capital account	} Value of additions to capital goods
+ Wages charged to capital account	
+ Depreciation charged to capital account	
- Deductions from inventory	
- Total depreciation. ⁹	

⁹ It would be possible to cancel out depreciation charged to the distribution and capital accounts, leaving only the negative item, depreciation charged to operating account.

Except for the problem of profits and interest, (4) would seem to be a satisfactory formula for estimating national income in the simplified pure government economy in cases where sales and wages could be relied upon to measure values. If the identical productive activity were carried on by a corporate economy in one case and by a government economy in a second case, and all transactions common to both occurred at the same prices, the estimates of income would be the same except for any profits made in the corporate economy on goods that in the government economy were distributed without specific return. If a closer agreement between the two estimates were desired it would be possible to impute interest to the capital goods used in producing such goods as governments distributed without specific return in lieu of business profits. This possibility will be discussed later.

Formula (4) is based on the assumption that the money paid for goods or as wages represents the value of the goods or labor rendered. Actually governments may sell goods at prices far below what the goods cost and below what common parlance would call their worth. Thus a nominal charge only is made for many books published by the government. Likewise government may intentionally pay more in wages than the results from the labor are expected to be worth, as is probably the case with much of the WPA wage payments. This valuation weakness affects, directly, sales, purchases, and wages and, indirectly, the other items in the formula.

A step toward simplifying the problem can be made by valuing sales to consumers on the basis of cost instead of on the basis of selling price. In this case, the value of goods sold to consumers would include all costs charged to the operating account, plus the items in inventory that were used or sold, minus any addition to inventory resulting from operation or purchase, and less any goods sold to other government units. It could be represented in the following formula:

$$\begin{aligned}
 \text{Value of sales to consumers} &= \text{Purchases charged to operating} \\
 &\quad \text{account} \\
 &+ \text{Wages charged to operating} \\
 &\quad \text{account} \\
 &+ \text{Depreciation charged to} \\
 &\quad \text{operating account} \qquad (5)
 \end{aligned}$$

- Sales to other government units
- Additions to inventory
- + Deductions from inventory.

When these items are inserted in the national income formula in place of sales to consumers it takes the following form:

National income =	[Purchases charged to operating account]	}	Value of sales to consumers
+	Wages charged to operating account		
+	[Depreciation charged to operating account]		
-	[Sales to other government units]		
-	[Additions to inventory]	}	Value of goods distributed without specific return (6)
+	[Deduction from inventory]		
+	[Purchases charged to distribution account]		
+	Wages charged to distribution account		
+	[Depreciation charged to distribution account]	}	Value of goods added to inventory
+	[Additions to inventory]		
+	[Purchases charged to capital account]		
+	Wages charged to capital account	}	Value of goods added to capital account
+	[Depreciation charged to capital account]		
-	[Deduction from inventory]		
-	[Total depreciation].	}	Value of above items attributed to prior production

In this formula the total of purchases charged to operating, distribution, and capital accounts just cancel 'sales to other government units'; 'total depreciation' just cancels the depreciation charged to the separate accounts and the inventory items cancel each other. The items that cancel are enclosed in brackets. Only the three items of wages remain. These could be lumped together into a single item to give the formula for a pure government economy:

$$\text{National income} = \text{Total wages paid out.} \quad (7)$$

In such a formula, the same method of valuation is being used throughout that is used in the case of the corporate economy in obtaining the net value of new capital goods produced for a corporation's own account. Since the production of capital goods for a corporation's own account is presumed to involve no profits, so, when the method is applied to total government activity and intergovernment transactions are canceled out, the net value of goods produced, whether the goods are sold, distributed without specific return, added to inventory, or added to capital account, would be measured by wages alone. These are presumed to reflect the value of a basic cost of production.

Two objections to formula (7) arise: first, wages may be an inadequate measure of the value of the labor exchanged; second, it takes no account of the contribution to national income made by the roundaboutness of production, i.e., the contribution made by the capital assets owned by government which is treated in theoretical economics under the heading of interest.

In normal times the great bulk of wages (or salaries) paid by government in our actual economy are paid for value received, and the wage (or salary) rates have a fairly close relation to wage rates in other parts of the economy. In depression times a fairly significant part of wage (or salary) payments may be in excess of value received. There is probably no way out of an allocation of such wage (or salary) payments into wages proper and relief payments paid out as wages. Only the former would then be included in the estimate of national income.

The question of interest will be taken up after the alternative method of valuing goods produced by government has been discussed, since it is not a basic element in the disagreement as to method but involves an additional problem.

2 THE SALES APPROACH TO VALUATION

The second approach to the valuation of goods produced in the simplified pure government economy is that which treats taxes paid by consumers as the price paid by them for the goods obtained without specific payment plus that part of the value of goods obtained with specific payment not covered by the specific payment. In using taxes in this way it would be appropriate to deduct from taxes the *money* distributed without specific returns. The valuation of inventory and additions to capital equipment would presumably follow the same techniques as in the case of corporate accounting. By this method the formula for income might be as follows:

National income = Sales to consumers + Taxes - Money distributed without specific return + Additions to inventory + Purchases charged to capital account (8) + Wages charged to capital account + Depreciation charged to capital account - Deductions from inventory - Total depreciation.	}	Total payment for goods rendered to consumers
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As will be seen presently, this formula has only limited application. A more general formula will be developed after examining Dr. Kuznets' method of handling production by government.

In dealing with government production Dr. Kuznets has taken over the distribution formula which he employed quite properly in estimating income produced by corporations. As applied to the simplified economies, the corporate economy formula:

$$\text{National income} = \text{Wages} + \text{Dividends} + \text{Net corporate savings,} \quad (9)$$

is paraphrased to become for the pure government economy

$$\text{National income} = \text{Wages} + \text{Interest} + \text{Net government savings.} \quad (10)$$

At first glance the government formula (10) appears to be quite as valid as the corresponding corporate formula (9). Also at first glance it appears to have no connection with the treat-

ment of taxes as the purchase price of goods obtained by consumers without equivalent specific payments. Careful analysis will show, however, that as the formula has been interpreted by Dr. Kuznets it does rely on the assumption about taxes, as he well recognizes, and that it yields results in a government economy quite different from those produced by the corresponding formula in a corporate economy.

Dr. Kuznets measures government savings by taking the expenditure on new capital equipment (and presumably that on net additions to inventory) and deducting all funds expended that were derived from sources other than 'government saving', including funds corresponding to depreciation, and funds obtained from the net sale of securities (and presumably any net reduction in money holdings).¹⁰ On this basis Dr. Kuznets' formula would be:

National income = Wages				
	+	Interest		
	+	<i>Value of additions to inventory</i>	} Net government (II) saving	
	+	<i>Purchases charged to capital account</i>		
	+	<i>Wages charged to capital account</i>		
	+	<i>Depreciation charged to capital account</i>		
	-	<i>Value of deductions from inventory</i>		
	-	<i>Total depreciation</i>		
	-	Receipts from sale of new securities		} Minus net new securities issued
	+	Securities retired		
	-	Cash in hands of government at beginning		} Minus Net reduction in money holdings
	+	Cash in hands of government at end.		

¹⁰ It is not clear that Dr. Kuznets includes 'net additions to inventory' and 'net reduction in money holdings' as indicated above. Logically they should be included.

The basic formula for government produced national income has already been given as equation (2), and is repeated below for comparison with Dr. Kuznets' formula (11).

$$\begin{aligned}
 \text{National income} &= \text{Value of goods sold to consumers} \\
 &+ \text{Value of goods distributed to consumers} \\
 &\quad \text{without specific return} \\
 &+ \textit{Value of goods added to inventory} \quad (2) \\
 &+ \textit{Value of additions to capital equipment} \\
 &- \textit{Value of deductions from inventory} \\
 &- \textit{Total depreciation.}
 \end{aligned}$$

It will be seen that the items italicized in (2) correspond with the italicized items in (11), Dr. Kuznets' formula ('value of additions to capital equipment' being broken into its constituent items in the latter). This means that if (11) fits the basic definition (2) the items not underlined in (11) must in combination measure the value of goods handed over to consumers, whether sold or distributed without specific return. Setting these items against each other, we have:

$$\begin{aligned}
 \text{Value of goods handed over to consumers} &= \text{Wages} \\
 &+ \text{Interest} \\
 &- \text{Receipts from} \\
 &\quad \text{sale of new} \\
 &\quad \text{securities} \\
 &+ \text{Securities} \\
 &\quad \text{retired} \quad (12) \\
 &- \text{Cash in hands} \\
 &\quad \text{of government} \\
 &\quad \text{at beginning} \\
 &+ \text{Cash in hands} \\
 &\quad \text{of government} \\
 &\quad \text{at end.}
 \end{aligned}$$

But in the simplified pure government economy, the items at the right of the equation must be just equal to total taxes collected

The inventory item would be of little importance in practice, though change in money holdings might be quite important. Presumably any *new* issue of money could be treated as a new security issue for purposes of estimating income and perhaps Dr. Kuznets would treat any money received by government as a security retired.

plus money paid by consumers for goods purchased from government. This can be shown by putting down first the equation:

$$\begin{aligned} \text{Money receipts by government} &= \text{Money disbursements by} \\ &\quad \text{government} \quad (13) \\ &+ \text{Net addition to govern-} \\ &\quad \text{ment holding of money } (\pm). \end{aligned}$$

Going back of the particular items we have:

$$\begin{aligned} \left. \begin{array}{l} \text{Taxes} + \text{Receipts from sale} \\ \quad \text{of goods} \\ + \text{Receipts from sale} \\ \quad \text{of new securities} \end{array} \right\} &= \text{Money distributed without} \\ &\quad \text{specific return} \\ &+ \text{Wages paid by} \\ &\quad \text{government} \\ &+ \text{Interest paid by} \\ &\quad \text{government} \\ &+ \text{Securities retired} \quad (14) \\ &- \text{Cash in hands of} \\ &\quad \text{government at beginning} \\ &+ \text{Cash in hands of government} \\ &\quad \text{at end.} \end{aligned}$$

By transferring the last item on the left hand side of equation (14) and the first on the right, the equation takes the following form, in which the right hand side is identical with the right hand side of equation (12):

$$\begin{aligned} \left. \begin{array}{l} \text{Taxes} + \text{Receipts from sale} \\ \quad \text{of goods to} \\ \quad \text{consumers} \\ - \text{Money distributed} \\ \quad \text{without specific} \\ \quad \text{return} \end{array} \right\} &= \text{Wages} \\ &+ \text{Interest} \\ &- \text{Receipts from sale of new} \\ &\quad \text{securities} \\ &+ \text{Securities retired} \quad (15) \\ &- \text{Cash in hands of} \\ &\quad \text{government at beginning} \\ &+ \text{Cash in hands of} \\ &\quad \text{government at end.} \end{aligned}$$

Substituting from (15) into (12), we have¹¹

¹¹ It should be noted that in all the preceding cases in which a formula has been transformed, it has been solely through (1) displacing items by more basic items in terms of which they are *defined*, and (2) canceling out overlapping items. In this case there is the substitution of one set of items having a *numerical value equal* to that of another set of items.

$$\begin{aligned}
 \text{Value of goods handed over to consumers} &= \text{Taxes} \\
 &+ \text{Receipts from sale of goods to consumers} \\
 &- \text{Money distributed without specific return.}
 \end{aligned} \tag{16}$$

It should be clear then that in using government savings in estimating national income and defining it as he does, Dr. Kuznets must be implying that taxes other than those corresponding to money distributed without specific return can be used as a measure of that part of the value of goods handed over to consumers which is not covered by specific payments. Substituting this measure of value of goods handed over to consumers in the income equation (2), we get

$$\begin{aligned}
 \text{National income} &= \text{Taxes} \\
 &+ \text{Receipts from sale of goods to consumers} \\
 &- \text{Money distributed without specific return} \\
 &+ \text{Additions to inventory} \\
 &+ \text{Purchases charged to capital account} \\
 &+ \text{Wages charged to capital account} \\
 &+ \text{Depreciation charged to capital account} \\
 &- \text{Deductions from inventory} \\
 &- \text{Total depreciation.}
 \end{aligned}
 \left. \begin{array}{l}
 \text{Value of goods handed over to consumers} \\
 \text{Value of goods added to inventory} \\
 \text{Value of goods added to capital account} \\
 \text{Value of goods derived from prior production}
 \end{array} \right\} \tag{17}$$

When Dr. Kuznets uses his formula for estimating income produced by government and measures government saving as he does, he must be implying that the above formula holds.¹²

¹² Except as the above formula introduces a different treatment of depreciation charged to capital account.

It is a peculiarity of the above formula that the item 'taxes' stands unrelated directly to any other item in the formula. The amount of taxes could be altered without necessitating any other alterations in the formula. It is this fact that leads to the basic criticism of the method.

The first criticism of the above formula has to do with the effect on national income of the collection of taxes and the use of the proceeds on new capital equipment or additions to inventory. By Dr. Kuznets' formula, national income would be greater if new capital equipment were financed out of taxes than if it were financed through the net sale of securities. Thus if the productive activity in two economies were identical and the only difference was the financial one that in the first economy all net new capital equipment was financed by borrowing, whereas in the second it was financed by taxing, the national income would be greater in the latter by the amount of the net new capital equipment constructed. This arises because by Dr. Kuznets' formula, the taxes spent on net new capital goods are involved in national income twice, once in the extra value attached, because of the extra tax collections, to the goods handed over to consumers, and a second time in the value of the new capital goods created. In the case of a corporate economy, the action corresponding to the financing of new capital equipment out of taxes would be the sale of stock to finance capital equipment. But in the valuation of corporate production, when the proceeds from the sale of stock are used to finance the creation of new capital equipment, they are not *also* used in measuring the value of goods produced and handed to consumers.

Furthermore, if the construction of new capital equipment financed from taxes is going to increase the value attributed to goods distributed to consumers, consistency requires that when the new capital equipment is used in producing goods the reverse deductions be made. This means that if the new capital equipment is used to produce goods that are rendered to consumers without specific charge, then depreciation must be deducted from current taxes to arrive at the value of goods currently produced; or if the goods are sold to consumers, depreciation would have to be deducted twice from sales in order to arrive at the

value of goods currently produced and sold. The basis for these statements can be seen more clearly in the following simple example.

In one year let government collect \$2 billion of taxes, spend \$1 billion in producing goods which are distributed without specific return and the other billion to construct new capital equipment. Income produced, by Dr. Kuznets' formula, would then be \$3 billion, since the new equipment produced would be valued at \$1 billion and the value of goods distributed without specific return would be \$2 billion, since it is measured by the taxes collected. Then in the next year let government collect \$2 billion in taxes and use the proceeds to operate the new capital equipment, rendering the goods produced to consumers without specific charge and using up the entire capital equipment in the single year. If the depreciation of the capital equipment is not deducted from current taxes in measuring income in the second year, income produced would be valued at \$2 billion, with the result that income produced during the whole period would be valued at \$5 billion (\$3 billion the first year and \$2 billion the second). Yet, if both years were lumped together as a single accounting period, income produced would amount by Dr. Kuznets' method to only \$4 billion. In order to obtain essentially the same result regardless of the accounting period chosen, a deduction from taxes would have to be made in the second year for the using up of the capital equipment. If this were done, total income produced in the second year would amount to only \$1 billion and income produced during the whole period would be \$4 billion (\$3 billion the first year and \$1 billion the second). Likewise, if in the second year, no taxes were collected, but the goods produced were sold to consumers at cost including depreciation, i.e., \$3 billion, it would be necessary to deduct depreciation twice to obtain the figure of \$1 billion income in the second year and that of \$4 billion for the two year period.

There would seem to be no reasonable justification for making income in the first period large and that in the second small simply because taxes were used to finance the new capital construction. This particular objection to Dr. Kuznets' formula could, of course, be met by measuring the value of goods ren-

dered without specific return on the basis of only those taxes *not* used to finance new capital equipment. But this would radically alter the character of the formula as will be shown below.

The second criticism has to do with the effect on national income of the financing of the production of goods handed over to consumers out of funds other than taxes. By Dr. Kuznets' formula, national income would be less if goods produced and handed over to consumers were financed by borrowing, through a reduction of cash balances, or by failing to collect funds to cover depreciation, than if they were financed from tax collections. This result has been defended on the ground that, if people were not willing to pay in charges or taxes for the full cost of goods handed over to them by government, then the goods were not worth as much as they cost and should be valued on the basis of the charges and taxes that people were willing to pay for them.

This agreement could be interpreted in either of two ways. Either it is referring to the wills of individuals who are willing or not willing to make a specific payment or payments for a specific rendering of goods or it refers to some more generalized or socially complex concept. So far as it refers to purchases by individuals it can appropriately be applied when the purchases are made from government. Presumably few people will purchase goods from government when the government charges more than the individual is willing to pay.

But when applied to taxes and to goods obtained without specific payment, this thesis involving individual wills certainly does not and should not apply. The specific individual is not in a position to determine how much taxes he will pay. To the extent that he can control his use of the goods offered by government without specific charge, the individual would be making ineffective use of resources available to him if he conditioned his use on the taxes he as an individual was called on to pay either directly or indirectly. It is common knowledge that individuals seldom even compare the goods they as individuals obtain from government with the taxes they as individuals pay, let alone limiting their use of such goods in the light of the comparison. Presumably the above argument, so far as it applies to taxes and goods distributed without specific charge, is using the term 'people' in some social group sense.

When consideration is given to the process by which taxes are

determined and the way in which government decisions to supply particular goods are made, it must be clear that the matter is much more complex than that of balancing the willingness of a group of individuals to pay for goods with the goods they obtain. Taxes are for the most part decided on by people who do not pay them but who are subject to more or less influence from individuals who do pay them. But this influence is as a rule so uninformed, except perhaps as it comes from the high income brackets, that little reliance can be placed upon it in arriving at the value of goods produced by government.

The determination of the goods to be produced by government is a still more complex process, involving in most cases both legislative and administrative, and in some cases judicial, decisions. While the individuals participating in the process of decision are under the influence of the ultimate users of the services there is nothing as specific as would seem to be implied in giving one value to a supply of goods whose production costs were financed by taxes and quite a different value when the identical goods are financed in part by borrowing.

A second point against this argument is that many people believe that at times it may be desirable for government to finance current operations by borrowing as a matter of national economic policy, balancing operating costs with charges and taxes over a longer accounting period than is customarily (and quite arbitrarily) adopted in corporation accounting. If this principle becomes well established it would clearly make unjustified any evaluation of goods distributed without specific charge on the basis of annual tax payments.

Finally, if the financing of current production by borrowing is going to reduce the value of goods currently produced and distributed to consumers, consistency requires that the repayment of such debt from taxes in a subsequent period should add to the value of the goods produced in the latter period. Thus according to Dr. Kuznets' formula, the more debt that is retired from taxes, the greater the national income. The productive activity in two government economies might be identical, the only difference being the financial one that in the first economy no alteration in government debt took place whereas in the second a special additional tax was levied to retire debt so that total taxes were very much greater than in the first, the additional funds obtained

being used to retire part of the government debt. In such a situation the goods rendered to consumers by the two economies might be identical in physical characteristics, in the satisfactions obtained from their use by consumers, and in the taxes consumers were willing to pay for them, yet because in the second case consumers were willing to pay extra taxes to reduce government debt, national income in the second economy would be greater than in the first by the amount of the extra taxes. Just why a purely financial transaction in which special taxes are collected and used to retire an outstanding debt should add to the value of goods produced is not at all clear. This collection of taxes might be regarded as parallel to the purchase of new stock by stockholders of a corporation so that the proceeds might be used to retire corporate bonds outstanding. Such action would not affect national income. Thus it would seem that, in order for Dr. Kuznets to justify the method he uses, the burden of proof rests with him to show that national income, i.e., 'the net value of commodities and services produced', is increased by the collection of extra taxes to pay off a previously incurred debt just as it was lowered by the financing of current production from taxes.

If Dr. Kuznets' formula were to include adjustments for the taxes used to finance the production of new capital equipment and for the taxes used to finance current consumption, its character would be radically altered and it would become essentially a 'cost' formula. The adjustment for these other items could be made by the following formula:

$$\begin{array}{l} \text{Taxes not used to finance operations}^{13} = \text{Additions to inventory} \\ \quad + \text{Purchases} \\ \quad \quad \text{charged to} \\ \quad \quad \text{capital account} \\ \quad + \text{Wages charged} \\ \quad \quad \text{to capital} \\ \quad \quad \text{account} \\ \quad + \text{Depreciation} \\ \quad \quad \text{charged to} \\ \quad \quad \text{capital account} \end{array} \left. \vphantom{\begin{array}{l} \text{Additions to inventory} \\ \text{Purchases} \\ \text{Wages charged} \\ \text{Depreciation} \end{array}} \right\} \begin{array}{l} \text{New} \\ \text{capital} \\ \text{equip-} \\ \text{ment} \end{array}$$

¹³ The assumption is made here that 'receipts from sales' is less than operating costs.

- Deduction from inventory (18)
- Total depreciation
- Receipts from sale of new securities
- + Securities retired
- Cash in hands of government at beginning
- + Cash in hands of government at end.

When this item of taxes not used to finance operation is deducted from total taxes in formula (17) derived from Dr. Kuznets' equation (11) we get:

National income = Taxes

- + Receipts from sale of goods to consumers
- Money distributed without specific return
- [Additions to inventory]
- [Purchases charged to capital account]
- [Wages charged to capital account]
- [Depreciation charged to capital account]
- + [Deductions from inventory]
- + [Total depreciation]
- + Receipts from sale of new securities
- Securities retired
- + Cash in hands of government at beginning
- Cash in hands of government at end
- + [Additions to inventory]
- + [Purchases charged to capital account]
- + [Wages charged to capital account]
- + [Depreciation charged to capital account]
- [Deductions from inventory]
- [Total depreciation].

} Taxes not used to finance operations (19)

But the items remaining after cancelation, those not bracketed, just equal wages plus interest as indicated by formula (15), the expanded form of equation (13) equating all money receipts with all money disbursements plus a net change in money holdings. Dr. Kuznets' formula after adjustment then takes the form for the simplified pure government economy:

$$\text{National income} = \text{Wages} + \text{Interest.} \quad (20)$$

The same result can be arrived at by taking Dr. Kuznets' initial formula:

$$\text{National income} = \text{Wages} + \text{Interest} + \text{Net government savings.} \quad (10)$$

The adjustments called for and represented by 'taxes not used to finance operations' are identical with net government savings [see equation (11)] and cancel that item, leaving only wages and interest.

This formula differs from that derived directly by the cost method of valuation presented at the beginning of this section only in the item of interest. It was suggested in that analysis that the most desirable measure of national income produced by government would be

$$\text{National income} = \text{Wages} \quad (7)$$

or

$$\text{National income} = \text{Wages} + \text{Imputed interest.} \quad (21)$$

In the adjusted Kuznets formula

$$\text{National income} = \text{Wages} + \text{Actual interest.} \quad (20)$$

If interest is to be included at all in the estimate of national income for the simplified government economy, a good case can be made for the thesis that imputed interest is a more valid addition than actual interest. In corporate enterprise, interest and dividends for large groups of corporations bear a fairly consistent relation to the value of the instruments of production used or available for use in productive activity. In the case of government no such assumption can be made. At present the federal government pays interest on an appreciably larger volume of debt than is represented by the value of the instruments of production it possesses. More than half of its assets consist of loans and investments. For this reason the smaller figure arrived at by imputing current rates of interest paid by government to the value

of the instruments of production owned by government would seem to give a more accurate basis for valuing goods produced and handed to consumers or added to inventory or capital account than would the interest actually paid.

One final criticism needs to be made of the adjusted formula derived from that of Dr. Kuznets. No account is taken of wages paid in excess of the value of services rendered as a form of relief. Presumably Dr. Kuznets had this end in mind in attempting to eliminate that part of operating wages and interest which was paid through deficit financing. It seems preferable to take account of this factor directly by making a crude estimate of that part of wages which should be attributed to relief instead of to production. This would give the following formula for income in the simplified pure government economy:

$$\begin{aligned} \text{National income} &= \text{Wages paid by government (salaries)} \\ &\quad - \text{Wages attributed to relief} && (22) \\ &\quad + \text{Interest imputed to the instruments of} \\ &\quad \quad \text{production.} \end{aligned}$$

II Estimating National Income in a Compound Corporate-Government Economy

When the preceding analysis is applied to a simplified economy in which production is carried on both by corporations and by government units additional problems arise, though of a relatively simple character. All the transactions that can take place in the simplified pure corporate economy can occur in the corresponding compound economy. So also can all the transactions and transfers of the pure government economy. In addition, two new types of transaction and two new types of transfer can arise between government units and corporations of which account must be taken:¹⁴

Sale of goods by corporations to government units for cash

Sale of goods by government to corporations for cash

Taxes collected by government from corporations

Goods rendered to corporations by government units without specific return.

¹⁴ Other transactions such as interest payments by government to corporations are excluded by the simplifying assumptions.

The first two of these items introduce no serious problem since each cancels out when sales and purchases of government units and sales and purchases of corporations are combined in a single formula. Likewise if taxes paid to government by corporations were to be just equal in value to the goods rendered by government to corporations no problem would arise, since the two in combination could be treated as 'sales of goods by government to corporations'. However, to the extent that the amount of taxes paid by corporations cannot be used as the value of goods received without specific payment, a real problem of valuation arises.

This problem can be clearly seen by taking an extreme case in which a corporation receives a significant volume of goods from government but pays no taxes. The value of the goods produced by government would be included as part of the income produced by government. They might also constitute a part of the value of goods sold to consumers by the corporation. If the price of the goods sold to consumers was determined in a highly competitive market so that the value of goods obtained free from the government by a corporation was wholly passed on to consumers in the form of lower prices, there would be no double counting. But to the extent that any corporation's profits were greater because of the receipt of free goods from government, there would be double counting. A reverse condition would, of course, arise when taxes paid by a corporation were greater than the value of the goods received from government without specific charge.

In modern industry there must be many occasions when taxes collected from corporations do not reflect accurately the value of the goods rendered and when the prices of goods sold by corporations to consumers do not fully reflect this difference. This means that the amount of taxes paid by corporations cannot be taken as the measure of the value of goods that are provided by government without specific charge but are charged by corporations to consumers.

As a practical matter, the correction of this error would involve a highly involved if not impossible task of measurement,¹⁵

¹⁵ See, however, R. W. Nelson and Donald Jackson, Part Six, for an attempt quantitatively to allocate government expenditures between expenditures for services rendered to business enterprises and those for services rendered ultimate consumers.

and it is likely that the error to be corrected would be small. For this reason, there is ample justification for treating the amount of taxes paid by corporations as the value of the goods received from government without specific charge.

The error involved in adopting this method of valuation is set forth here to indicate that the use of this method in the case of corporations does not necessarily justify its use in the case of individuals. It can be used as a measure of the value of goods received without specific charge from government by corporations only because (1) to a considerable extent the value of the goods is passed on to consumers without charge, and (2) the remaining error is likely to be not significant. For these reasons, the use of taxes as the basis for valuing goods received from government without specific charge in the case of corporations cannot be used to justify the adoption of the same procedure in the case of individuals, unless it can be shown that the error in doing so would not be significant. Reasons have already been given in Section I as to why the error arising from the use of this method in the case of individuals is likely to be large.

No effort will be made to carry the line of analysis adopted in this paper beyond the simplified corporate-government economy. While great complexities would be introduced by making the assumed economy more realistic, we believe that the conclusions arrived at in analyzing the simplified economy would hold without essential modification in the more complex realistic economy.

Discussion

I SIMON KUZNETS

It would perhaps clarify the problems incident to measuring income originating in government activity if we begin with (1) an operational definition, one that describes what to us is the most suitable statistical measure of that income. Once this operational or statistical definition is clearly formulated, its implications become apparent and (2) can, in their turn, be set forth. The paper under discussion criticizes some of these implications and suggests an alternative basis of valuation. We proceed then (3) to deal with the several criticisms of the procedure described under (1) and analyzed under (2). Finally, the comments conclude by (4) indicating more specifically the disadvantages of the alternative procedure suggested.

I THE OPERATIONAL DEFINITION

We propose to measure income originating in government activity (or income produced by the government industry) as the algebraic sum of (a) all income payments made by government agencies to individuals as individuals, and (b) net savings of government agencies.

The first item comprises payments (in either money or kind) to government employees, disbursements to individuals that are not necessarily related to services currently performed by individuals employed by government (pensions, relief payments, etc.), payments to individuals and associations of individuals of interest on government securities. The only receipts by individuals from government agencies excluded from item (a) are such receipts as accrue to individual entrepreneurs in their capacity as representatives of separate business enterprises (payments to farmers, individual contractors, etc.). These disbursements rep-

resent activities of business enterprises not belonging to the government industry proper; are similar to payments by government agencies for material and supplies bought from business enterprises; and are taken into account most properly under the various industrial branches of the national economy, outside of the field of government industry itself.

The measurement of payments to individuals by government agencies, covered under item (a), is strictly parallel to the measurement of payments to individuals by other industrial branches of the national economy. For private business also these payments include not only compensation for the current services of individuals or of individuals' capital (wages, salaries, dividends, interest), but also disbursements that have no direct relation to these current services (pensions). However, non-service payments may be absolutely and relatively larger for government agencies than for private enterprises.

Net savings of government agencies are the disparity between their total receipts for current services to individuals and to business enterprises and the outlay for these services. These outlays or costs comprise the value of materials and of durable equipment consumed in the production of the services, and the payments to individuals (the latter being identical with item (a) above). Were the accounts of government agencies set up in a way similar to those of business enterprises, so as to emphasize the determination of costs chargeable to the final products sold, it would have been possible to measure net savings of governments directly. But in the absence of the profit motive, which, for business enterprises, compels the proper measurement of costs chargeable to current returns, government accounts fail to reveal such costs and make impracticable any attempt to determine government net savings directly. An alternative procedure that appears somewhat more practicable is to measure net savings by a comparison of changes in the net obligations of government agencies with changes in their tangible assets.

This substitute procedure, although somewhat more practicable, suffers from two disadvantages. First, it requires the most comprehensive coverage of both sides of the comparison. The measure of net obligations should be based upon a complete consideration of all gross debts, reduced by all obligations due the

government; include short term as well as long term debts and claims; and cover both direct and contingent debts and claims. The tangible assets should comprise not only durable equipment of most obvious social utility (highways, bridges, parks, etc.), but also goods of less apparent utility (battleships, tanks, etc.); not only durable goods but also inventories of materials and supplies. In the practical task of statistical measurement such completeness is impossible with the present data.

A second and perhaps more important difficulty is that not all changes in the comparison suggested above can be interpreted as a proper measure of net savings. If government agencies change their net position by canceling some of the debts due them or by deriving some improvement in their claims position by taking a profit on a change in the value of a capital asset, the resulting decline or rise in the results of the comparison is not part of net savings: the latter are, and should be treated as, shares of value of current production of commodities and services. With business enterprises, we try to exclude from net savings any elements that are due to upward or downward revaluation of capital goods; and if such revaluations as are represented by bad debts in excess of the usual amount interpretable as current production costs are included, such inclusion is due largely to the difficulties of the necessary adjustment. With government agencies, any measure of change in net obligations, used in determining net saving, should be adjusted to exclude changes due to revaluations or other modifications of capital values not associated with the current production of commodities and services.

In the light of these statements, the crudity of the approximation to net savings of government agencies which was used in *National Income and Capital Formation 1919-1935*, is obvious. This approximation was obtained by a comparison of the gross volume of public construction reduced by the current consumption of this type of public goods (as the net change in tangible assets) with the change in total long term debt of all governments (as the change in net obligations). We are now engaged on a revision and refinement of this approximation, attempting to take more complete account of both assets and net obligations; and to exclude from the latter changes not due to diversion of current income. But the results of this attempt are still problematical.

These statistical difficulties need not, however, affect the theoretical argument at hand. From the viewpoint of the latter, the use of the indirect procedure of measuring net government savings is a statistical accident: the attempt is to measure indirectly the same theoretical concept that is measured for business enterprises in direct fashion. The identity of the concept of net savings of government agencies with that of net savings of business enterprises is obvious. And as a result of the strict conceptual identity of items (a) and (b) for governments on the one hand, and for business enterprises on the other, the measure of income originating in government activity (or income produced by the government industry) is strictly consistent with that of income originating in or produced by the various branches of the private sector of the national economy.

Finally, this procedure of measuring income originating in government activity is used conjointly with the following treatment of payments made to government agencies by business enterprises and by individuals. Payments to governments by business enterprises are considered production expenses and are, therefore, excluded from the net income originating in the payer-industries. Payments to governments by individuals, as individuals, are treated as payments for services rendered by governments to individuals as individuals, and are therefore not deducted from the income receipts of the individuals comprising the nation.

2 IMPLICATIONS

The assumptions implied in the statistical procedure described above can now be set forth.

a) The first and foremost assumption is that the net value of the current services of government agencies is equal to the total receipts for these services minus the current value of commodities (raw materials, semifinished goods, or durable equipment) consumed in the process of producing these services. The corollary assumption is that the total receipts, i.e., the various payments to government agencies by individuals and business enterprises, are analogous to prices paid in the market place for the final products of the various enterprises in the private sector of the national

economy. It is this assumption that is criticized in the paper; and these criticisms are discussed in Section 3 of the present comments.

b) Because of the insistence that it is not total *costs* of government activity that represent the value of the current services of government to the individuals and enterprises of the nation, the procedure proposed emphasizes that government activities result in two types of net product: current services to ultimate consumers and to enterprises, and capital formation. Capital formation, in this connection, comprises both additions to or drafts upon the stock of commodities in the hands of government agencies and such of the net changes in claims by these agencies against units either within or without the country as result from the disposition of the current income produced. As will be pointed out below, this distinction between current services and capital formation tends to be neglected in the approach where costs of government activity are taken as the value of its current services.

c) It is further assumed that the distinction between current services of government agencies rendered to business enterprises and those rendered to ultimate consumers is impracticable;¹ and that, similarly, it is impossible to allocate as between business enterprises and ultimate consumers the part of income originating in government activity that represents capital formation. A corollary of this assumption is that when governments show positive or negative net savings, i.e., disparity between costs and receipts, such net savings cannot be segregated into those originating in the transactions of the governments with business enterprises and those originating in the transactions with ultimate consumers.

The paper under discussion does not deal with assumption (c) except incidentally; and since this assumption was discussed in connection with Dr. Colm's paper in *Volume One*², it does not seem necessary to consider it in the present connection. The critical comments in the paper deal primarily with assumption

¹ See, however, Nelson and Jackson, Part Six, for an attempt to make such an allocation of government expenditures.

² Part Five, pp. 234-36.

(a); and we may now pass to a direct consideration of these comments.

3 THE CRITICISM CONSIDERED

Since in the measurement of national income the general basis of valuation of commodities and services is the price they fetch in the market, it would seem that the services rendered by government agencies should be valued on the same basis. Where the results of activities are as yet not ready to appear on the market, and no comparable prices can be found, the cost of these activities is perhaps the best possible substitute basis of valuation. Hence, as the paper under discussion properly points out, business enterprises value the products sold on the market at the market price, and activities whose product has not yet been tested on the market at the current cost of these activities. Assumptions (a) and (b) of the procedure suggested follow exactly the same methods of valuation. The payments by individuals and enterprises to government agencies are taken as the market values of current services rendered to the former by government. The activities of government that represent capital formation are evaluated on a cost basis.

In discussing this procedure, the paper makes two critical comments; and we proceed to treat the two separately.

a) The first criticism advanced is that "national income would be greater if new capital equipment were financed out of taxes than if it were financed through the net sale of securities". And this result is attributed to the fact that in the formula used by us "the taxes spent on net new capital goods are involved in national income twice, once in the extra value attached, because of the extra tax collections, to the goods handed over to consumers, and a second time in the value of the new capital goods created". It is also contended that "in the case of a corporate economy, the action corresponding to the financing of new capital equipment out of taxes would be the sale of stock to finance capital equipment. But in the valuation of corporate production, when the proceeds from the sale of stock are used to finance the creation of new capital equipment, they are not *also* used in measuring the value of goods produced and handed to consumers" (I, 2).

This seems a misstatement of the case. It is true that when new capital construction is carried on by government agencies out of taxes, the amount is counted twice; but the same holds for the corporate economy. The parallel case in a corporate economy is not capital construction financed by sales of securities, but capital construction financed from funds obtained as a differential between total expenses and the receipts from the sale of products, i.e., from the net savings of the corporation. In this case obviously the same amount is counted twice: first as net savings, i.e., as part of the price of goods to consumers, and second as the wages, salaries, etc., disbursed to the producers of the capital equipment. Only when the government finances its net capital additions out of the proceeds of security sales is the parallel case in a corporate economy capital investment from proceeds of security issues, and then in both cases the amount is counted only once.

The difference in the source of financing net capital investment by the government does affect national income, even though the volume of productive activity may be the same. This is for the reason that national income is not a measure of productive activity solely, productive taken to mean the quantity of commodities and services at a constant valuation. National income varies with the valuation, i.e., with the prices charged for the various commodities and services. The fact that in one case net capital investment is financed from taxes and in the other case by borrowing can mean one of two things: either that in the first case the quantity volume of services rendered by the government directly to ultimate consumers and other agencies is smaller than in the second; or that with the quantity of these direct services the same, the price is higher in the first case than in the second. In either interpretation, national income measured in current prices should be affected.

It should also be noted that the analysis requires deductions for the use of new capital equipment in direct services, as the paper claims. Such deduction is actually provided for in the proposed procedure as described in Section 1. The cost of current services, as indicated there, is assumed to include current consumption of durable equipment used by government agencies; and, practically, this allowance is expressed in the consideration

of the *net* change in tangible assets, i.e., the change after deduction for depreciation, etc., incurred during the current time unit.

b) The second criticism suggests that there is no basis for assuming consent on the part of the would-be consumers of government services to pay the price represented by the taxes. Granted that no such consent on the part of specific individuals or business enterprises can be claimed, unless the whole matter of tax collection is conceived as an irrational procedure, one cannot but interpret taxes as a price that society as a whole puts upon government services. That in the case of such prices society acts through the constituted authorities rather than through the free market on which the purchasing power of individuals and business agencies is allowed full sway does not constitute a difference sufficient to put government services completely outside a process of social valuation, similar, if not identical, with that of the market.

This interpretation of government taxes is applicable to a variety of prices charged by monopolistic agencies subject to public supervision. The price of electric current is not the result of the consent of individual purchasers. It is true that these purchasers have the alternative of using more or less current or abstaining from using it completely. But such alternatives are open also in connection with government taxes. Where the tax is collected upon certain commodities, the would-be consumer has the choice between using these commodities or abstaining from their use. Where the tax is on income, there is the alternative of remaining a member of a given community or not. There are cases of people leaving this country because they think the price of government services too high. Indeed, the assumption of social consent is so clearly implicit even in the private market structure, in the sense that freedom of determination of the market price is contingent upon the existing social structure, that it appears illogical to consider government charges as belonging to a category entirely different from market prices.

As to the decision of people to finance a part of government services by borrowing (I, 2), it is difficult to see how it alters the case. Such decisions are only a roundabout indication of the people's opinion that the price of the needed government services would be too high if covered completely by taxation. This is

clearly suggested by the terms in which taxation and government expenditures are discussed in legislative bodies. The constant reference to tax burdens is but another way of weighing *prices* of government services and setting a valuation upon them that is more flexible, more responsive to current economic conditions than are the *costs* of these services.

c) A third criticism of the sales approach may, however, be suggested. One can accept the notion of consent by society as a whole and of its evaluation of government services, but go further and claim that in this consent and evaluation a segregation is made between payments destined to cover current services by government and those made to government in order to make possible capital investments or pure transfer disbursements, such as relief to individuals or bounties to certain industries. Thus it may be said that when society, represented by the constituted authorities, decides upon taxes whose volume exceeds the cost of current services by government to the total body of payers, this excess payment is approved not in recognition of the corresponding value of current services but in recognition of the advisability of: (a) the government's adding to the stock of public goods; (b) the government's acting as an income-redistribution agency and paying relief to individuals or enterprises that the private business system appears incapable of supporting. In such cases, the taxpayers, as represented by the constituted authorities, decide that, instead of distributing bounties or relief on their personal initiative and in their individual capacity, they prefer to make a larger payment to the government than is warranted by the value of the latter's current services; or that instead of making private investments in certain types of capital goods, they prefer to pay the government a sum that will leave a positive net saving available for financing such capital formation.

To the extent that this viewpoint is valid, the sales approach cannot, obviously, be retained. For then relief or bounty payments would have to be considered pure transfers, similar to gifts by one group of individuals and/or enterprises to another group of individuals and/or enterprises; and any other excesses of government receipts over cost of current services would have to be treated on a par with invested savings of individuals or enterprises, and hence could not appear as positive net savings in

income originating in government activity. It therefore is in order to consider this viewpoint in detail, first with reference to the excess intended for public capital formation and then to excesses intended for transfer payments.

In the case of public capital formation, the basis for the interpretation just suggested seems weak. For the choice is obviously open to the constituted authorities between financing such capital formation by taxation and financing them by borrowing. If additions to the public stock of commodities seem warranted and if the value of the current services to the taxpayers is not sufficiently high to provide a net savings margin for financing such capital formation, the natural result would be to finance it by the issue of government securities. If, therefore, the taxes are sufficiently high to allow government positive net savings available for financing capital formation, there seems little ground for assuming a direct intent of demanding payments greatly in excess of value of current services. The same argument holds even where this excess is applied toward a reduction of the outstanding government debt: the indispensable permissive condition of such a policy is that the value of the current government services is sufficiently high to allow this excess of charges over costs. Perhaps the only cases where the viewpoint is valid are 'special assessments' with a direct connection between payments and capital construction by public agencies for the special benefit of payers.

The case for the interpretation under discussion is much stronger with reference to relief, bounty, and other purely transfer payments: it may be claimed, on reasonable grounds, that the constituted authorities of the body social recognize that these payments do not constitute direct current services to taxpayers; that the case for financing such expenditures by borrowing is much weaker than with substantive additions to the stock of public capital goods; and that the excessive charges made to taxpayers are distinctly recognized and consented to as measures of income-redistribution.

But even in this case three circumstances qualify the bearing of this interpretation upon the sales approach. First and foremost is the one just mentioned, viz., that any decision to keep government charges at high levels is necessarily based upon a recognition that the value of government services justifies such levels;

that, in other words, the level of valuation set upon government services is not so high as to become intolerable. For when the limits of tolerance are exceeded, it would obviously be more practicable to finance even pure transfer payments by borrowing. Second, when such transfer payments are financed by borrowing, the statistical procedure based on the sales approach remains valid. Third, when relief payments to individuals are financed from taxes upon business enterprises, the statistical procedure described in Section 1 still leads to a correct national income total (even though to a wrong industrial apportionment), since the failure to include taxes paid by business enterprises under net income originating in the respective private industries makes it necessary to cover these taxes at points where they are disbursed without any services being rendered directly to the payers. The same is true of bounties paid to some industries and financed from taxes paid by other industries. The only cases where, with the interpretation under discussion valid, the statistical procedure described in Section 1 would distort the national income total are those of relief payments to individuals financed from taxes on other individuals; and bounties to industries financed from taxes on individuals.

There is thus some validity to the criticism under discussion in that the financing of a limited group of government expenditures from current charges to the body of taxpayers cannot be interpreted as net savings by government industry; in other words, the taxes in this case are somewhat more than the current value of current government services to society at large. But the segregation of this group of expenditures, and especially the collating of expenditures with sources of funds, is exceedingly difficult. And if, in the attempt to adopt practicable if crude procedures, one has to choose between the cost and the sales approaches, it would seem more realistic to treat payments to government as the most nearly valid measure of the current market value of their services.

One final observation with reference to the interpretation just discussed: such an interpretation is not without validity even in the case of market prices, whether the market is regulated or free. In the case of regulated markets (public utilities) the prices charged and permitted quite often include a provision for a rea-

sonable amount of net savings to finance a reasonable expansion of the capital plant of the enterprises; or a reasonable amount of certain types of transfer expenditures (private relief, pensions, etc.). And even for the free market or the purely private sector of a given national economy, the preferential treatment given to domestic industry through tariffs, or to local units by various devices intended to favor them as over against 'foreign' units, is really a consent on the part of the payers to a charge higher than would otherwise be required, this excess being intended to favor local capital formation or disbursements to the 'native' population of payments not dissimilar to relief or bounty payments by the government. In the case of private industries or public utilities we do not, in measuring income originating, assume that the prices paid by consumers for the products may be in excess of the value, this excess being intended by consumers as a substitute for gifts, charity, or investments of their own. And the real question is whether government charges are so greatly different that, if a consistent procedure is to be applied, the sales approach is invalid. This question is answered here negatively. But it is recognized that further analysis of government expenditures and revenues, and especially the improvement of the data on government receipts and disbursements, might make it possible so to classify them and so to correlate significant classifications that the modifications of the sales approach, suggested by the criticism, might become practicable.

4 DISADVANTAGES OF THE COST APPROACH

The serious disadvantages of the cost basis of valuation in its application to income originating in government activity should already be apparent. But it may be useful to state them more explicitly.

Foremost is the inconsistency of this basis with that employed for the other branches of the nation's economic system. This inconsistency, admitted by the advocates of the cost approach, is justified by saying that the government industry is essentially different from other industries, specific reference being made to the compulsory character of its charges and the absence of the profit incentive. But these differences recognized, it still does not follow that the services of government agencies cannot be evalu-

ated in a way analogous to that of the market place. And while one cannot say 'triumph consistency, perish commonsense', it does seem that a consistent principle of valuation should be maintained as far as possible, in order to prevent a serious distortion of weights in the national income total. A national income measure follows of necessity a consistent principle of weighting; and it necessarily overlooks substantial differences in the character of the markets for the various industrial branches, on the assumption that such disregard is unavoidable if comparisons and additions into totals are to be made. Granted that there is some value in doing most logically such an essentially illogical thing, can it be said that the difference between government activity and the activities of some public utilities are more cardinal than, let us say, between these public utilities and farming? Considering that the payment of the buyers is the most efficient available method of valuing the final product of the sellers, is there sufficient basis for exempting government activities from this criterion? It is in this exemption of government activities, combined with the application of the criterion to all other activities, that the basic disadvantage of the cost approach lies.

From this basic disadvantage there flow others, which may be treated as so many specific aspects of one and the same difficulty. Two have been mentioned in the paper itself: "first, wages may be an inadequate measure of the value of the labor exchanged; second, it takes no account of the contribution to national income . . . made by the capital assets owned by government" (I, 1). The magnitude of these disadvantages is, however, insufficiently stressed. The first is particularly important and cannot be dealt with satisfactorily by excluding relief payments. An adjustment limited to such an omission would overlook the fact that with changes in economic conditions, the cost value as measured by wages lags appreciably behind the market value. For business enterprises this lag is adjusted for by the item of net business savings, and the inclusion of this item would perform the same service for activities of government agencies. It may be conjectured that the distortion implicit in this lag of costs is more appreciable than that of relief payments, and that the removal of the latter takes care of the smaller part of the necessary adjustment.

The second difficulty of the cost formula mentioned, the failure to take account of the contribution of capital equipment, is likely to become more serious as a result of the rapid increase in the amount of capital equipment in use by government agencies. This striking upward tendency is one of the conclusions of the National Bureau's study of the volume of capital formation, and is so pronounced as to be observable even with the naked eye. Under such conditions it becomes all the more important, both for the government agencies themselves and for students of economics, to take cognizance of the extent of current consumption of capital equipment, both in the evaluation of the net product of government activity and in the intelligent consideration of present and prospective capital investment by government and by the national economy.

Another difficulty of the cost approach is that it requires segregation between current services of government agencies to business enterprises and to individuals; and correspondingly, a segregation in the capital formation by government agencies between that accruing in favor of business enterprises and that in favor of individuals as individuals. The necessity of this distinction is a direct consequence of refusing to accept payments as the measure of the value of current services, and is recognized in the paper (II). The distinction seems to me impracticable, on both theoretical and statistical grounds, for it is based on disregarding the most essential characteristic of government activity, namely, that its services are destined for society at large.³ It is difficult enough to apply this distinction to industrial production in which the locus of immediate use can, in most cases, be clearly defined. But in government activities, of which such a large part represents intangible services and capital formation destined for use by the body social as a whole, the distinction seems to me neither possible nor fruitful.⁴

On the other hand, the cost approach tends to overlook one distinction that does appear important. The approach applies the same basis of valuation to the current services of government agencies and such of their activities as represent capital formation. It therefore provides no incentive for a study of the results

³ See discussion in *Volume One*, referred to above, and Nelson and Jackson, Part Six.

⁴ With the exception of the areas discussed in Sec. 3, (c) above.

of government activities that would lead to a distinction between current services and capital formation; although, of course, there is nothing in the approach to bar such a distinction. It seems to me to be a significant advantage of the statistical procedure described in Section 1 that it requires a more detailed study and appraisal of the results of government activities as between present and future. In view of the increasing importance of these activities, the need for evaluation of their results on a basis comparable with that of the private sector of the economy becomes more and more pressing. The consideration of government agencies as institutions unto themselves, that cannot be appraised with the yardstick applied to other parts of our economic system, could be tolerated so long as the economic activities of the government were minor in scope. The persistence of this viewpoint, embodied in the cost approach, threatens, with an increase in government activities, to introduce a serious distortion in our measurements of the national product.

II G. C. MEANS;

LAUHLIN CURRIE AND R. R. NATHAN,
CONCURRING

The two preceding papers have outlined alternative approaches to the estimation of government produced income and have served to clarify the assumptions underlying each.

The procedure advocated by Dr. Kuznets rests on two independent assumptions, the first of which he states clearly as follows: "The first and foremost assumption is that the net value of the current services of government agencies is equal to the total receipts *for these services* minus the current value of commodities (raw materials, semifinished goods, or durable equipment) consumed in the process of producing these services."¹ The second assumption is not explicitly stated by Dr. Kuznets but appears to be as follows: "The total receipts *for these services*" is the sum of total government receipts from actual sale of goods plus total tax receipts."²

¹ Sec. 2(a), italics ours.

² Taxes being defined broadly to include tariff receipts, etc., but to exclude government borrowing and interest or dividends on securities held by government.

The procedure advocated by us likewise rests on two assumptions. The first is that the net value of the current services of government agencies is equal to the total current expenditure *made in rendering those services*, minus the current expenditure on commodities (raw materials, semifinished goods, or durable equipment) made in rendering these services. The second assumption is that the expenditure *made in rendering these services* is the total of government expenditures³ less expenditures adding to the capital assets⁴ of government and less direct relief expenditures.

Presumably neither protagonist accepts the basic assumptions of the other. Possibly Dr. Kuznets would accept our second assumption, though rejecting the first. With respect to his assumptions, he implies that we have accepted his first assumption and overlooked the second. Actually neither assumption seems to us acceptable for reasons that will be indicated below.

In practice the difference between the two procedures is significant only when there is a difference between (1) tax receipts and (2) expenditures on current operations. In a situation not involving specific sales of government services, the two procedures would give identical results (except for interest) if (1) all taxes were used to finance current services, and (2) if all current services were financed from taxes. A difference in result would arise when taxes were used either to add to capital assets or to finance relief and when borrowings were used to finance current services.

Dr. Kuznets' argument in support of his procedure seems to consist of two major elements: (1) an appeal to an analogy between business and government; (2) an analysis of the social consent involved in the determination of taxes and the expenditure of government funds. We would support our procedure (1) on the basis of the lack of analogy between profit-seeking business and non-profit-seeking government, and (2) on the basis of a different analysis of the social consent implicit in government taxation and expenditures.

³ Expenditures are being defined broadly to include direct and work relief payments but not to include retirement of debt or interest on debt. (The problem of including actual or imputed interest as part of the cost of rendering current services is disregarded here for simplicity.)

⁴ Including both fixed capital and inventory.

I THE BUSINESS CORPORATION—GOVERNMENT ANALOGY

On the analogy with business, as a basis for justifying his two basic assumptions, Dr. Kuznets says he is making the assumption "that the total receipts, i.e., the various payments to government agencies by individuals and business enterprises, are analogous to prices paid in the market place for the final products of the various enterprises in the private sector of the national economy". He further recognizes that this line of argument is being criticized. Unfortunately he makes no reasoned defense along this line, nor does he seek to rebut directly the argument that the collection of taxes and rendering of services by government does not exactly correspond to the quid pro quo of a business transaction. Since he has introduced the analogy the burden of proof rests with him to establish that there is sufficient analogy to justify the treatment of the taxes collected (or any part of them) as analogous to prices paid.

In justifying the analogy there appear to be two points that Dr. Kuznets must establish. First, he must justify the treatment of government on a profit and loss basis. When he treats taxes as though they were payment for services rendered in analogy to the specific quid pro quo of a business transaction, he is, by implication, treating any taxes collected in excess of costs of rendering services as 'profits' and any deficiency of taxes as 'losses'. This conception of government as 'operating at a profit' by collecting extra taxes used to retire debt or to finance addition to capital assets, or of government as 'operating at a loss' when it finances current operation from reserves or by borrowing is quite foreign to the usual conception of government activity.⁵

Second, even if there is agreement to treat government on a profit and loss basis, Dr. Kuznets must justify the use of the difference between tax collections and the amount necessary to finance current consumption (including a depreciation allowance) as the 'profit' made or the 'loss' incurred by government.

In contrast to Dr. Kuznets' position on this point we hold the view that government is essentially a non-profit-seeking organi-

⁵ Dr. Kuznets' conception of government as operating at a profit or at a loss should not be confused with the current conception of surplus or deficit operation. Borrowing to add to capital assets might reflect a deficit in the current sense but not an operating loss in Dr. Kuznets' sense.

zation and there there is no analogy *significant for the evaluation of government services* between the specific and clearly defined meeting of minds presumed to exist in the individual business transactions of the market place, which are used as the basis for valuing the business contribution to national income, and the two general and vaguely related activities of taxation and the enjoyment of often ill defined and sometimes unrecognized services rendered by government.

If Dr. Kuznets insists on maintaining an analogy between corporate activity and government activity, there is still serious question whether taxes should be regarded as the 'price paid' for current services. This arises because a corporation has bondholders, stockholders, and customers whereas government has only two groups, bondholders and the public or 'customers'. The question must be raised—who are the stockholders of government? If government activity is treated on a profit and loss basis, who is to be regarded as deriving the profits or who incurs the losses? To validate Dr. Kuznets' position, the bondholders would have to be regarded as also equity holders, i.e., as summing all the interests of the bondholders and stockholders in the corporation whereas the public would have to be regarded solely as consumers. Then the total receipts obtained in the form of taxes could be allocated to consumption and treated as the price paid by consumers for the services rendered by the bondholders' government while services financed by further borrowing would involve a loss to the bondholders and taxes collected in excess of the cost of services could be regarded as a profit to the bondholders. If, on the other hand, the people of the United States were to be regarded as not only consumers of the services rendered by government but also as corresponding to stockholders, i.e., being the general beneficiaries of the government's activities, then taxes collected would have to be allocated between taxes corresponding to the price paid for current services and taxes corresponding to the price paid for new stock issues.

The corporate-government analogy appears to break down when applied to the financing of current consumption through borrowing. Business corporations are neither ultimate consumers nor associations organized to service their members. It is contrary to their function to borrow and use the proceeds to finance

consumption. If, through error or force of circumstances, a business corporation renders commodities or services to consumers at less than cost and makes up the difference through borrowing, the accountant must perforce say that such action was contrary to the functions of the corporation and register the difference as a business loss, indicating that the goods rendered were worth less than they cost.

To find activity analogous to government financing of consumption through borrowing one must go to other non-profit associations such as the family. If a family borrowed \$100 to employ a doctor to treat one of its members, Dr. Kuznets would take the payment received by the doctor as the measure of the services rendered. He would not say that the family suffered a business loss of \$100, and in estimating national income, offset this loss against the doctor's productive contribution. In the same way, when government borrows to employ workers, who render services to consumers or to business, it would seem appropriate to value the services rendered to members of the community on the same basis as the family doctor's services, i.e., at their cost to the association obtaining services for its members. It is primarily because of the lack of any analogy between the business corporation and government on this important point that we reject Dr. Kuznets' analogy.

2 SOCIAL CONSENT

The second line of argument by which Dr. Kuznets seeks to validate his procedure turns on the question of consent by the taxpayers. He makes much of the idea that the financing of government services from taxes shows that the taxpayers think them worth that much as current income whereas their financing through borrowing shows that the taxpayers do not consider their present value equal to their cost.

In following this line, Dr. Kuznets builds up a concept of social consent to which no one can take exception. At the same time, he fails to face the question—to *what* do the taxpayers consent? Do they consent to be taxed only to the extent of consumption or do they consent to be taxed in order both to consume currently and to build capital equipment to facilitate future consumption?

Dr. Kuznets arbitrarily assumes that general taxation is consented to only for the purpose of current consumption, thus begging the basic issue. In this connection, however, Dr. Kuznets makes two admissions that clearly indicate the weakness of his position. He says, "perhaps the only cases where the viewpoint [regarding the payment of taxes that are used in capital formation as involving social consent to capital formation] is valid are 'special assessments' with a direct connection between payments and capital construction by public agencies for the special benefit of payers" [3(c)]. This concept, even as it stands, undermines Dr. Kuznets' most absolute thesis, that taxes in toto constitute the price paid for current services, and necessitates a significant qualification at every point in his analysis. In addition, he accepts the thesis that taxes collected with the explicit purpose of making purely transfer payments may properly be excluded from taxes used in valuing current services, thereby further modifying his former position.

The logic of these two admissions should lead to agreement on the basic issue. Assume a situation in which all taxes are specially assessed and earmarked at the time of collection so that the taxpayers are aware of the destination of each of their several tax payments. In such a case, Dr. Kuznets would agree that the taxpayers had consented to the specific use of each part of taxes and that to the extent that taxes were earmarked and used either to redistribute buying power or to finance capital formation, they should be excluded from the taxes used in valuing current services. We should agree that the taxes specifically raised and used to finance current consumption could be used to measure the value of the current services rendered since they would exactly correspond to the expenditures made in rendering such services. Thus if all taxes raised by government were earmarked in this fashion and no production of current services were financed through borrowing (or use of reserves), there would be no issue between Dr. Kuznets and ourselves.

This leaves two situations in which there appears to be disagreement—unearmarked taxes and financing current activity through borrowing. In the first, the problem is to determine what the taxpayers have consented to in paying unearmarked taxes. Dr. Kuznets assumes that in the case of unearmarked

taxes the taxpayers necessarily consent only to the use of taxes for consumption. He gives no reasons for this arbitrary assumption, yet it implies that when Congress, an integral part of the consent process, levies unearmarked taxes and applies the proceeds to the creation of new capital equipment, it is acting contrary to the consent of the taxpayers.⁶ This presumption is so contrary to the generally accepted conceptions of government processes that it seems open to serious question. On this point we take the position that the actual use to which unearmarked taxes are put is, on the whole, the best and perhaps the only available guide to the directions of use to which taxpayers both direct and indirect have consented.

On the remaining point at issue, that of financing the production of current services by borrowing, there seems to be no less reason for assuming consent to such financing than for assuming consent to the financing of capital formation from taxes or to the financing of consumption from taxes. Could the authorization and raising of funds by liberty loan bonds have been accomplished without the general consent to finance the current consumption of the War on the basis of borrowing? Does the incurrance of a debt in a depression period, to finance current consumption, involve no element of social sanction? Just as the family can, under particular circumstances, feel that it is appropriate to finance current consumption by borrowing, so the people of the country, acting as a social unit through government, can finance the production of current services with borrowed funds. Thus our whole analysis of social consent points to the conclusion that the prices paid or the costs incurred by the government in obtaining services for the public constitute the nearest economic measure to their value that is likely to be obtained. The problem of allocating actual expenditures between those involving (a) capital formation, (b) redistribution of income, and (c) the production of current services would still remain, but would seem to be implicit in any realistic approach to the estimation of government produced income.

⁶ The alternative is for Dr. Kuznets to assume that taxpayers consent to the levying of heavier taxes than are necessary to finance current operations so as to create a 'profit' and, in addition, consent to the use of this 'profit' to finance capital formation.

In attempting to clarify the issue further we have not dealt with specific points raised by Dr. Kuznets except as they seemed basic to the furtherance of the discussion. It does seem important, however, to point to the frequency with which he assumes the point at issue. Thus he says: "The identity of the concept of net savings of government agencies with that of net savings of business enterprises is obvious." Yet implicit in the point at issue is whether there is such a thing as government savings. Such savings would appear to arise only if government is treated as making profits, part of which can be saved. Again Dr. Kuznets says: "There are cases of people leaving this country because they think the price of government services too high." Had he said that they left because taxes were too high his statement would be acceptable, but to make taxes synonymous with the 'price' of government services is to prejudge the issue. The same prejudgment is involved when he says: "The second criticism suggests that there is no basis for assuming consent on the part of the would-be consumers of government services to pay the price represented by the taxes"; when he says: "Unless the whole matter of tax collection is conceived as an irrational procedure, one cannot but interpret taxes as a price that society as a whole puts upon government services"; and when he says: "The constant reference to tax burdens is but another way of weighing *prices* of government services and setting a valuation upon them that is more flexible, more responsive to current economic conditions than are the *costs* of these services." These assumptions of an identity between taxes and the value of government services do not help to clarify the discussion since they assume away the point at issue, while the assertion that any other interpretation implies an irrational tax procedure is simply a denial that the point at issue is moot and not an argument in support of Dr. Kuznets' procedure.