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The Income Side: Some Theoretical Aspects

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WITH the publication by the United States Department of Commerce of the *National Income Supplement, 1947*, to the *Survey of Current Business*, an exceptionally well organized and extensive body of information about the United States economy became available to users of income statistics. Although this supplement, like its predecessors, was oriented around the basic notion of income and net product, it represented new departures both in form and in concept. These changes reflected in large part recent developments in "social accounting." Some had been formulated as part of a tripartite agreement between Canada, Great Britain, and the United States. All of them had been given considerable critical review in 1945 by the Conference on Research in Income and Wealth.

Since 1947 the Department has issued two major compilations of national income statistics, the first in 1951 and the second in 1954. Each of the more recent publications, while retaining the general form and conceptual basis of the 1947 model, has provided additional information with respect to both methods and concepts. In our opinion the Department deserves high commendation for the excellence of the explanations of its statistical techniques and its conceptual framework.

As was to be expected, the Department's income accounts as published in 1947 and later years have given rise to a considerable body of critical literature. This literature has dealt mostly with selected details or special aspects of the accounts. It seems particularly pertinent, therefore, for this Conference to undertake a comprehensive review of the material and to devote its attention to certain major issues of organization and concept.

In the present paper we shall discuss the national income accounts from the standpoint of some of the questions which economic science attempts to answer when an economy's income is viewed as payments

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to producing factors or as product originating in the different industries. Our major attention is focused on two issues: first, the operational approach, whereby economic activity and its end product are defined in terms of purchases and sales on markets; and second, the problem of valuation of the national output on both product and income payments sides of the accounts.

Economists have always been interested in determining the magnitude of the end product of economic activity. They have called this end product income, because this is what the members of the economy receive as the result of economic activity. It becomes important, then, to specify what is meant by economic activity and what is meant by end product. Economic activity is defined as requiring the use of resources which are scarce relative to the demands of individuals. End product, which can be defined only with reference to some assumed ultimate purpose of economic activity, is generally taken to consist of all services and commodities consumed by individuals or added to their possessions during a given period. It should be noted that neither scarcity nor end product can be defined independently of purpose. In the development of Western civilization, the end purpose of economic activity has almost universally been held to be the satisfaction of the freely expressed demands of the individual members of the economy.

It is true, of course, that an economy can be considered to have purposes other than the satisfaction of individual consumers' demands, and that if it is viewed in terms of some other purpose, the end product too will differ. Furthermore, the purpose of economic activity as conceived by the members of the economy may change over time.

Irrespective of possible variations in what is recognized as an economy's purpose, the end of serving individual demand provides a way of appraising economic effort, and one that has been utilized quite generally in most of the literature of economic science. From this viewpoint, economists are interested in securing the following information that income measurement can help to provide:

1. The magnitude of the end product aggregate at any given time; how this aggregate changes over time; and the way it differs in amount and in rate of change for groups of people differing as to spatial location, for different functional groups, and for families or individuals at different income levels. In drawing these comparisons economists often want to be able to say that the differences indicate "better" or "worse."

2. The factors which *explain* differences in the final product over time and space. To this end, analysis has suggested additional break-

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downs of the totals which might show uniformities or which are needed to check hypotheses.

It is often stated that the derivation of a summary aggregate of the end product of an economy for a single income period has little meaning, and few economists would deny this as a general proposition. At the same time the importance of the aggregate as a concept is often overlooked. One of the most important features of national income statistics is the fact that they are centered about a basic notion of the end product of an economy which can be reduced to a single measurable total. And because this total is meaningful, so also are the elements or parts which go to make it up.

For the purposes of economic science it is important that this conceptual cornerstone, national income, be strong enough to support analysis that can range over different times and institutional arrangements and yet remain pertinent to the conditions of the moment. It is important that it be oriented, insofar as possible, to the elements in the economy that are persistent and not ephemeral. These elements are, we think, the essential similarity of people as consumers and the scarcity of resources to satisfy their wants. Yet in formulating the income concept and in making it operational we cannot neglect institutional arrangements, even though they are subject to change.

We shall seek in this paper to evaluate the Department's derivation of national income payments in terms of conceptual structure as well as the broad purposes which economists wish the data to serve and which we have listed in two categories above. We shall begin by reviewing briefly the rationale of the accounts and the aims underlying the Department's methods.

Rationale of the Department's Accounts

THE CONCEPT OF FINAL PRODUCT

The Department meets the issue of final product of economic activity quite specifically, but in an avowedly operational way, and with specific reference to the institutional arrangements of the United States economy. Economic activity it defines as all legal activity that is reflected in market sales and purchases.¹ It then defines the final product of such economic activity as any purchase not resold.² The Department recognizes that these basic criteria need to be modified in certain in-

¹ *National Income Supplement, 1954, Survey of Current Business*, Dept. of Commerce, p. 30.

² *Ibid.*, pp. 30 and 37.

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stances where it makes specific imputations. The imputations it does make are said to be "in the main, only of sizable and unequivocal types of factor income in kind which have come to be recognized through tradition as elements of real income."³

The Department defends this position by stating that "even if substantial departures from the present definition of final product were logically defensible and statistically feasible, they would not result in a measure of national product that could serve as a substitute for the present one."⁴ The reasoning behind this statement seems to be that the major uses of national income data concern the market economy, so that a measure of this part of the end product of economic activity is essential irrespective of other purposes. To this we agree in principle because market transactions are usually definite and unequivocal evidence of economic activity and because these transactions comprise by far the larger part of all economic activity in the United States. And policy decisions by government, as well as adjustments by firms and industries, are related largely to market-oriented activities.

We do not, however, agree that any change in the current definitions would impair the usefulness of the information provided for the purposes the Department specifies. In our judgment, the major changes necessary are *additions* to information which will allow users to modify the definitions and construct totals and parts of totals more meaningful for their purposes—particularly purposes of long-run analysis. We shall argue, moreover, that some conventions adopted in the *National Income Supplement, 1947*, could and should be modified even for the applications the Department recognizes, as well as for other uses.

INCOME PAYMENTS AND OTHER CHARGES AGAINST GROSS NATIONAL PRODUCT

In this section we set forth what we understand to be the logic of the items recorded by the Department as charges against the current market value of the "gross" final product of the economy during a specific time period. For the present we adhere strictly to a view of the economy as entirely oriented to the market, without reference to any imputations; and we also regard the economy's end product as consisting exclusively of purchases not resold. This approach will enable us, when certain issues of economic analysis are raised at a later point, to assess them more effectively in terms of the Department's derivation and interpretation of the economy's end product.

Table 1 presents in accounting form the various items appearing in the accounts of transactors who make both purchases and resales. We

³ *Ibid.*, p. 38.

⁴ *Ibid.*, p. 39.

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assume a single transactor who engages in all "transactions" possible for a purchase and resale transactor.

We can now ask the question, what portion of the "sales" here represented can be clearly conceived as entering, either directly or indirectly, into purchases by, or accruals to, transactors who do not resell any product resulting from such purchases?

TABLE 1
General Purchases and Resales Possible for
a Single Purchase and Resale Transactor

<i>"Purchases"</i>	<i>"Sales"</i>
1. From other purchase and resale transactors	13. Sales
2. From workers (compensation of employees)—charges include wages, salaries, and other assigned costs	14. Interest received
3. Interest paid	15. Dividends received
4. Dividends paid	16. Rent received
5. Rent paid	17. Subsidies received
6. Depletion of natural resources	18. Inventory change (book value)
7. Direct business taxes	(+ if increase)
8. Allowance for capital consumption	— if decrease)
9. Indirect taxes	19. Capital formation (gross)
10. Bad debts	20. Discovery of natural resources
11. Gifts	21. Capital and inventory value changes
12. Balancing item (+ or -)	(+ if gain)
Total	— if loss)
	Total

Clearly, the current market value of the purchases or accruals to transactors who do not make resales will consist of a consolidation for all resale transactors of item 13 (sales) — item 1 (purchases from transactors who do resell) + item 18 (inventory change) + part of item 21 (inventory value changes) + item 19 (capital formation, gross) + part of item 21 (capital value changes) + item 20 (discovery of natural resources in current price values). Such a consolidated total must be the gross market value in current prices of all purchases from or accruals to resale transactors by transactors who do not make resales. For a net market value in current prices, which excludes the replacement of capital facilities and natural resources used up, we must subtract from the total just defined item 8 (allowance for capital consumption) and item 7 (depletion).

From this analysis we can see quite clearly that to obtain gross purchases and accruals to all non-resale transactors from all transactors who make both purchases and resales—i.e. gross national product as the Department defines it for the business sector—all the items on the sales side of the accounts except items 14 through 17 are added to-

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gether. This total is then made net of inter-transactor sales by the subtraction of item 1. In practice no attempt is made to estimate item 20, so that this item is not included by the Department. Similarly, for the "net product" at current market prices it is necessary to subtract item 8 (capital consumption allowance), but since discoveries of natural resources were excluded from gross product, the Department makes no allowance for depletion in obtaining the net product.

The above statement defines gross and net product in strict conformity to Department concepts before modifications for imputations and for government, and without reference to contributions to product by households. We should note, however, that in its method of estimation the Department does not use data in exactly the form here described, partly because it does not have complete information in this form, and also because it seeks to do more than merely to obtain the market value of the total product. It desires to determine what forms the product took in terms of specific items. This requires some knowledge of the kinds of items sold to non-resale transactors. The present analysis yields only a division between consumer expenditures and gross and net private investment.

Thus far our analysis has dealt only with market values in current prices. But a valuation question could be raised concerning these product totals. The various final products could be valued in a variety of ways—in terms of labor input, or capital input, or in terms of a more general criterion of input, namely alternative costs. It does not follow necessarily, except under conditions of perfect competition, that the relative market values of the different final products are the same as their alternative cost values. Such an alternative cost valuation of the same items on the product side would be very useful analytically. This point will be discussed in greater detail later.

We can now return to Table 1 and see how the Department, within its specifically market-oriented concepts, derives a distribution of gross and net product as a list of cost payments and other charges. What we are seeking is a sum of "purchases" which can be conceived of as having been made from transactors who do not make resales, and which will aggregate to the product totals on the other side of the account; these have been depicted above as purchases by, or accruals to, the non-resale transactors.

In our previous analysis of the "sales" side, item 1 (purchases from other resale transactors) was treated with the items on that side as a negative entry, and hence was eliminated from the "purchases" side. Of the remaining items, item 2 (compensation of employees) should be included. Items 3, 4, and 5 (interest, dividends, and rent) must be netted

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of the corresponding items 14, 15, and 16 since these latter items were not included in any of the product totals. Item 6 (depletion of natural resources) is left out by the Department because, as explained above, item 20 (discovery of natural resources) is not available. Except for item 17 (subsidies) on the sales side, which was not included in the product total, all other items on the sales side were added in. This means that after item 6 all other items on the "purchases" side must be added in (because item 12—the balancing item—made the over-all totals of the two sides agree), but net of subsidies.

It is at this point that the Department must make a decision if it wishes to distinguish "costs" from all other charges against the gross national product. The decision involves most fundamentally the definition of undistributed profits, which we take here to include both corporate and noncorporate elements. What the Department does in effect is to exclude from costs indirect taxes, bad debts, and gifts, the latter two under the single caption "business transfer payments." Profits then includes item 12 (balancing item) + direct business taxes + net dividends.

We can now write, in accordance with the Department's view regarding the final product arising from *transactors making both purchases and resales*, the following equations:

- (1) Compensation of employees + net interest + net rent + profits
= national income (or the factor cost value of net national product)
- (2) National income + indirect taxes + transfer payments - subsidies = net national product (market price value)
- (3) Net national product + capital consumption allowance = gross national product

One other element should be discussed here, since the Department's formula would include it: namely current surplus of governmental enterprises. We believe this has been treated correctly in our analysis above as a part of profits and is treated incorrectly by the Department as a modification of the subtraction of subsidies. In equation 2 above, instead of our subtraction of "subsidies," the Department would have subtracted "subsidies - current surplus of governmental enterprises." The enterprises referred to are those activities of government which, in their purchase-sales arrangements, are more closely allied to business than to government. Such enterprises may receive revenues in excess or deficit of their cost, and this difference will then modify governmental revenues for strictly governmental functions. But within the

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concepts here analyzed, and in conformity to the sector practices to which governmental enterprises have been assigned, these surpluses or deficits should have been recorded by the Department as a part of profits and hence of factor costs. As we drew up the system, this result would have been accomplished automatically by our balancing item.

We wish to note also certain other issues involving non-cost elements in the charges against gross and net national product. We do this at the present point in our analysis entirely within the framework of the Department's conceptual plan. To regard bad debts as a difference between factor cost and market price valuation can be defended, we think, so long as the general conceptual framework of the Department is accepted. But the treatment of business transfers other than bad debts does not seem to us defensible even by the Department's own conceptual criteria. If, after the market prices create a profit, the enterprise chooses to give some of the profit away (or even increase its loss), this choice is an element in secondary distribution and does not separate market prices from costs. Bad debts, on the other hand, are included in market prices, though in a certain sense the prices charged are not paid. Since the Department does not wish to disturb the market prices on the product side, it is certainly following its own logical framework in dealing with them as non-factor cost elements.

Up to the present we have considered only the elements that arise among transactors who make both purchases and resales, and have not discussed all of what the Department holds to be the final product of the economy. The Department recognizes two other sectors as contributing to final product and to factor cost in a somewhat different way, since both these sectors make purchases but no resales. The government comprises one of these sectors. Its purchases are regarded as being made for individuals, while its tax revenues are not taken to be the resale of anything. Furthermore, some of its expenditures are not held to be the purchase of anything. But wages and other compensation of employees and purchases of commodities and services from business are considered to involve a *quid pro quo* in which the government represents individuals. Since the purchases from business have already been treated as final product in its sales to non-resale purchasers, the only addition to final product originating in government is measured by compensation of employees. This amount must therefore be added on the cost side as compensation, and again on the product side as a service.

The other class of non-resale transactors consists of personal households. Again it may be recognized that purchases by households may involve some elements not purchased from the transactors who make

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resales, and thus are part of final product. These include direct compensation of employees by households and interest payments. These two elements must be added to both sides of the accounts to complete the final product picture and its factor cost valuation.

To summarize, we have described the Department's measurement of final product valued at market prices and, on the income side, at factor cost. We have found grounds for only minor objections to the Department's interpretation within the limits of its own conceptual framework, namely their handling of gifts by business and current surplus of government enterprises. Let us turn now to a consideration of imputations.

IMPUTATIONS

The Department modifies its operational concepts to undertake some imputations in the belief that this is required by tradition. But surely tradition is based on some reasons, particularly if the elements involved are sizable, as the Department indicates they are. And surely these reasons must add up to the desire to obtain a total for final product that represents all the clearly recognized aspects of economic activity. In every economy some part of the final product may fail to appear on markets as purchases not resold. Since these non-marketed elements may be more or less extensive at different times for the same economy, or for different economies at the same time, imputations are a necessary feature of national income measures intended for spatial or time comparisons.

The act of imputation is a recognition that some final product during a given income period was not revealed by the market activity, at least directly. If it is desired to keep separate records of product and payments, then the imputation must be made on both sides of the accounts and requires decisions as to what class of product and what type of income payment are involved. We are here particularly interested in the latter aspect. If final product is being valued in two ways, these two valuations will also have to be considered when imputations are made.

Table 2 provides a statement of the imputations made by the Department on the income payment side, by type of income payment. The notes to Table 2 give some indication of the industry aspects of these imputations, and also of the way in which they are recorded on the product side of the account at market prices.

In terms of total income payments for 1950 (line 18) imputations are relatively small, since they account for only a little more than 5 per cent. They are, however, quite sizable for certain types of income pay-

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TABLE 2
Imputed Elements in Income Payments—1950

Line	Type of Payment	Total Payments (millions of dollars)	Imputed Payments	Per Cent Imputed
1.	Compensation of employees	154,325	2,340	1.51
2.	Food furnished by government (including military and commercial employees) ^a		1,175	0.76
3.	Standard clothing issued military personnel ^b		274	0.18
4.	Meals furnished domestic servants and nurses ^c		323	0.21
5.	Employees' lodging ^d		148	0.09
6.	Farm labor perquisites ^e		420	0.27
7.	Income of unincorporated enterprises and inventory valuation adjustment	36,140	1,997	5.53
8.	Business and professional	(22,855)		
9.	Income of unincorporated enterprises	23,989		
10.	Inventory valuation adjustment	-1,134		
11.	Farm: income of unincorporated enterprises	(13,285)	(1,997)	15.03
12.	Food and fuel produced and consumed on farms by entrepreneurs ^f		1,587	11.94
13.	Net rent of owner-occupied farm dwellings ^g		410	3.09
14.	Rental income of persons	8,473	3,379	39.88
15.	Net rent of owner-occupied nonfarm residential real estate ^h		3,379	39.88
16.	Corporate profit and inventory valuation adjustment	35,106	none	zero
17.	Net interest	5,912	4,385 ¹	74.17
18.	National income	239,956	12,101	5.04

(All references are to the *National Income Supplement, 1954*, Dept. of Commerce, unless otherwise specified)

^a Table 39, line 2. The sectors involved are government and the following private industries: hotels, retail trade, medical services (non-governmental hospitals), and water transportation. The appearance of item 2 as an imputation on the product side is shown in Table 30, line 4.

^b Table 39, line 3. This imputation is entirely in the government sector. Its appearance on the product side is shown in Table 30, line 13.

^c Table 39, line 4. Part of this item should be in income of unincorporated enterprises, but details are not published. So far as domestic servants and practical nurses are concerned, only compensation of employees is involved and this part of the imputation applies to the private household sector. Private duty nurses are, however, classified in the medical services industry, and to that extent this portion of the imputation should be income of unincorporated enterprises. This imputation is not shown separately on the product side.

^d Table 39, line 7. This item involves the following industries: religious organizations, water transportation, hotels, and medical services. Its appearance on the product side is not shown separately, but is included in Table 30, line 23 (see note to Exhibit 3, p. 87).

^e From *The Farm Income Situation*, Dept. of Agriculture, September-October, 1953, p. 35, Table 17.

^f The sum of lines 9 and 10 in Table 39 less farm wages in kind shown in Table

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ments, namely, net interest and rental income of persons, in which they comprise approximately 75 and 40 per cent respectively, and farm income of unincorporated enterprises, in which they account for slightly over 15 per cent.

In separate sections below we examine each of the four major classes of income payments which are affected by imputations.

Compensation of Employees

We agree with the Department that the imputations shown in Table 2 as affecting compensation of employees are appropriate. We would go on to suggest that industry breaks of items 2 through 5 should be provided; that item 6 not now shown in the Department's publication should be shown; and that the division of item 4 between compensation of employees and income of unincorporated enterprises should be provided. We believe also that the specific location of these items on the product side of the account should be indicated.

Two other observations concerning imputations affecting employee compensation seem to us worth making. First, these imputations have been declining in relative importance, particularly if we consider only the ones that involve the private business sector. Between 1929 and 1953 the percentage of imputation in the private sector declined from 1.5 to 0.6. The second point has to do with the difference between factor cost and market price, which is lost to sight in the imputations. The Department notes that, so far as imputations to wages and salaries are concerned, they are valued at cost to the employer. Thus these imputations are valued on both sides of the accounts at factor costs.

Income of Unincorporated Enterprises

As Table 2 shows, the specific imputations are all in the farm sector of unincorporated enterprises. They raise no major problems. The

2 above on line 6. The underlying logic is merely that the income of farm proprietors was higher than recorded by the amounts on lines 9 and 10 in Table 39, while their costs were also higher by the wages in kind paid to employees. On the product side the food portion of the sum of the imputations on lines 6 and 12 as shown in our table appears in the Department's Table 30, line 5. The fuel portion of the imputation is not shown separately.

^a Table 39, line 5 less item 2 in Exhibit 1, p. 86. This imputation is in the farm sector. On the product side it is part of the gross rental value reported in Table 30, line 24, which is 1,448.

^b Exhibit 1, item 2, p. 86. This is entirely in the real estate industry. On the product side this imputation is included in the gross total for space rental value for owner-occupied nonfarm dwellings reported in Table 30, line 22, which is \$12,195 millions. The difference between the space rental value and the net rent of persons from owner-occupied nonfarm residences is made up of depreciation, taxes, mortgage interest, and similar expenses.

¹ Table 37, line 4 minus line 6.

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Department explains that food and fuel produced and consumed on farms, in the amount recorded in Table 39 of the *National Income Supplement, 1954*, lines 9 and 10, is gross of expenses of production and therefore is not entirely income in kind so far as farm proprietors are concerned. Only the net value after expenses of production would represent entrepreneurial income in kind. But the expenses (except for consumption in kind by farm labor) have all been accounted for relative to the farm output sold on markets. This means that while the expenses associated with the production of what is consumed at home are not known separately, they have been included in connection with the market output and thus improperly reduce the enterpriser's income from this output. If, then, the gross value of the output not counted, less any amount of it paid to others, as shown on line 6 of Table 2, is added to entrepreneurial income, the proper correction will have been made for the income side.

It is of interest to note that in the instance here illustrated a decision *not* to make an imputation would have required nevertheless certain adjustments. The information on costs would have included the costs of the home-consumed products, and if such products were not included in sales the costs would have been inappropriate for those sales. In particular, income of unincorporated enterprises would have been incorrect. The correction of the income share would be very difficult, because the specific costs are unknown and they would have to be estimated in sufficient detail to permit appropriate subtractions from the proper cost elements. For all these reasons, an imputation is about the only feasible procedure. It should be noted, however, that the relative importance of this imputation has declined steadily since 1929, from 23 per cent of the income of unincorporated enterprises to 13 per cent in 1953. Except for rises in the percentages of such imputation in depressed periods, the decline has been persistent.

The income in kind from owner-occupied farm dwellings need not be discussed extensively here. In general principle it is identical with the nonfarm residential imputation, which we consider in connection with rental income of persons. It should be noted, however, that this item does not enter the rental income of persons, but appears in income of unincorporated enterprise for farming. On the other hand, the space rental of farm dwellings rented from nonfarm personal landlords does enter the total for rental income of persons.

The discussion of imputations in connection with the estimates of this type of payment may be quite misleading. The entire process of estimation really involves so many assumptions that imputations cannot be independent of them. On a formal basis, however, a question does

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arise as to why no imputations are recognized as appearing in sectors other than farming. Ordinary observation would indicate that in trade, and particularly in the retail trade of small unincorporated businesses, the families operating them must use some of the products they sell. How is such use accounted for? Often these families live in the residential part of the structure attached to the commercial part, and own both parts. How are these instances accounted for in the estimates? Physicians and lawyers frequently maintain similar business-residential quarters. In all such cases, while imputations may not be recognized, they must be present in the basic estimates.

Rental Income of Persons

We have shown in Table 2 that almost 40 per cent of the rental income of persons is imputed from owner-occupied nonfarm residential dwellings. The relative importance of this imputed share for all the years cannot be indicated on the basis of published information although we believe that such information can easily be provided and that it should be made available. Here again, however, we have an imputation that one can hardly avoid without giving rise to other inconsistencies that are very undesirable.

So long as new homes are to be handled as part of capital formation even when purchased by individuals for their own use, some attempt at imputation is virtually unavoidable if a consistent treatment is to be obtained. It is true that certain items—taxes, mortgage interest, and maintenance and repairs—associated with the use of these homes enter the accounts on both sides even without any imputations. But unless an imputation is made these items are charges against an item of end product which is not even counted.

It would be possible, of course, to treat purchases of new residences as a consumer expenditure, but this is clearly not desirable. If other items of durable purchases, such as automobiles, are ever to be included as capital formation, the problem of a similar imputation must also be considered.

In the industrial break of national income, rental income is shown under the real estate industry. This contrasts with the treatment followed with respect to the other factor payments, whereby an attempt is made to distribute them to the industry in which the factor was actually used. Ideally rent would be treated by the allocation of rents (monetary or imputed) on dwellings to the private households industry, and business and industrial rents to the industrial sector in which they originated. While this approach is presently feasible so far as rents on dwellings are concerned (though the data needed for this purpose are

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not published), statistical difficulties prevent the allocation of business and industrial rents. It is to be hoped that in the future it will be possible to secure an industrial distribution of rent paralleling that for the other factor payments.

Net Interest

As shown in Table 2, the imputed portion of net interest is large relative to total net interest; indeed it accounts for over one-third of all imputations on the payments side. Not only is this imputation of sizable quantitative importance, but it gives rise to conceptual questions considerably different from those associated with the imputations thus far considered. With regard to these latter, it was obvious that some product (and hence "payments") had been missed, and with very minor exceptions the logic of the additions on both sides of the account was not seriously disputable. In the case of the interest imputation, however, it is not as apparent that some product has been overlooked. Moreover, in our judgment this imputation shows clearly the limitations of any system of accounting rules as a method of estimating final output and income payments to factors. Any set of rules applied mechanically will lead to distortion of economic reality. Hence, the results obtained must be checked against reality at each step in the process, and, where conflicts arise, appropriate modifications must be introduced—modifications based on more fundamental criteria of economic activity and final product. The treatment of "net interest" in the present Department of Commerce system is a case in point. In the discussion to follow we first note the problem that arises if net interest is measured according to the usual rules. We then consider several alternative solutions and comment on the approach adopted by the Department and some of the issues involved. Finally, we call attention to the implications of the Department's solution to the interest problem for the treatment of government.

As is well known, the difficulty in the measurement of net interest arises in connection with financial intermediaries. To illustrate the problem, we present below the Department's example of the treatment of commercial banks,⁵ adding to it an account for nonfinancial business—assumed to cover all remaining industry. The entries in the two accounts are largely self-explanatory, and we proceed at once to consider what the results are if the usual accounting rules are applied to yield net national product and national income. Final product is thus obtained as the sum of sales to households, while the total of income

⁵ *Ibid.*, p. 46. To simplify the subsequent discussion, it has been assumed that all service charges are paid by households.

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NONFINANCIAL BUSINESS

Wages	80	Sales to households	175
Interest	100	Sales to commercial banks	25
Profit	20		
	200		200

COMMERCIAL BANKS

Wages	50	Interest received	100
Profit	30	Service charges to households	10
Purchases from nonfinancial business	25		
Interest paid on deposits	5		
	110		110

payments is the sum of wages, profits, and interest, the latter being calculated as the excess of interest paid over interest received in each industry. The accompanying table shows the resultant figures, including a break by industrial origin on the payments side:

CASE 1

Income and Product by "Standard" Accounting Rules

	<i>All Business</i>	<i>Non- financial Business</i>	<i>Com- mercial Banks</i>	
Wages	130	80	50	Nonfinancial business sales to households
Interest	5	100	-95	
Profit	50	20	30	Commercial banks sales to households
	185	200	-15	10
National income				Net national product
				185

The problem, if this approach is followed, is readily apparent—a negative income originating in the commercial banking sector. The implication that commercial banking makes a negative contribution to national income would seem, to most estimators, difficult to accept.

Confronted with this result, the estimator is led naturally to re-examine the account for commercial banks. This re-examination may turn up several alternative procedures. For example, the estimator might reason as follows. The commercial banking account shows the purchases of this sector, e.g. of labor services or products from other business, to be sizable in amount, but the sales (service charges) to be almost negligible. Perhaps, then, the strange result obtained above is due to the treatment of commercial banks as a purchase and resale transactor, whereas the nature of the account shows this sector to be more

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nearly analogous to a purchase *not-for-resale* transactor. The purchases of this sector are to a negligible extent elements of cost in the value of other output produced for the market. Hence, there is a presumption that such purchases should be regarded as final products. In a treatment analogous to that of government, wages, profit, and purchases from nonfinancial business are added together to yield "commercial bank purchases of goods and services," while interest paid is treated as a transfer. To adjust "commercial bank purchases of goods and services" to a "not resold" basis, it is necessary to reduce the total by the small amount of sales made, namely service charges of 10. The following tabulation of income and product is then obtained:

CASE 2
Income and Product: Commercial Banks Treated as Purchase
Not-for-Resale Transactor

	<i>All Business</i>	<i>Non- financial Business</i>	<i>Com- mercial Banks</i>	
Wages	130	80	50	Nonfinancial business sales to households
Interest	100	100	0	175
Profits	50	20	30	Commercial banks sales to households
				10
				Commercial banks purchases of goods and services (not resold)
				95
National income	280	200	80	Net national product
				280

The procedure succeeds in overcoming the initial obstacle, the negative income originating in commercial banks. Yet this success is purchased at the cost of introducing on the product side of the account a final product entry that is hard to reconcile with any meaningful notion of the end product of the economy. What is the economic significance of "commercial bank purchases of goods and services" as an element of final product? Again the estimator is confronted with a result of dubious value. Yet, and this is the important point, there is nothing in the set of accounting rules that precludes this outcome. Indeed, there is good reason for arguing that the accounting rules create a strong presumption in favor of treatment of commercial banks on a purchase not-for-resale basis, and that the resulting income and product measures are more consistent with the rules than those derived in Case 1.

If, nevertheless, the national income estimator remains dissatisfied with this approach because of its patent conflict with reality, he may take a new look at the commercial banking account, setting aside the

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rules followed to this point and turning to the substance of the activities which are reflected in the entries. This examination might well lead him to the conclusion that the source of the initial problem, negative income originating, lies in the failure to recognize that a particular receipt of commercial banks, recorded under the institutional title of "interest," is in substance much more like a payment for services rendered, i.e. a receipt from sales. In this view, the initial treatment of commercial banks as purchase and sale transactors was correct, for the services they sell do enter as costs in the value of other output produced for the market. But now the sales take the institutional form of interest charges. According to this line of reasoning, commercial bank sales might be valued as equal to net interest received (95) plus service charges (10). Once the sales of the sector have been identified, there remains only the problem of allocating them between final and intermediate purchases, so that income and product measures may be derived. If all sales are assumed to be to households, the following result is obtained:

CASE 3
Income and Product: Net Interest Received by Commercial Banks
Treated as Sale to Households

	<i>All Business</i>	<i>Non- financial Business</i>	<i>Com- mercial Banks</i>	
Wages	130	80	50	Nonfinancial business sales to
Interest	100	100	0	households 175
Profits	50	20	30	Commercial banks sales to
				households 105
National income	280	200	80	Net national product 280

This approach seems to meet both the problems confronted above. The commercial banking sector shows no negative income originating, and the components of net national product appear meaningful as end products of the economy. If the objection is raised that commercial bank operations provide no services to ultimate consumers other than those measured by service charges, but merely facilitate the operation of non-financial business, this may be countered by explicit treatment of net interest receipts of commercial banks as sales to nonfinancial business. Such a treatment calls for an equivalent alteration of the interest paid entry in the nonfinancial business account, with 95 now recorded as purchases from commercial banks and only 5 as interest. The resulting income and product measures are as follows:

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CASE 4

Income and Product: Net Interest Received by Commercial Banks
Treated as Sale to Nonfinancial Business

	<i>All Business</i>	<i>Non- financial Business</i>	<i>Com- mercial Banks</i>	
Wages	130	80	50	Nonfinancial business sales to
Interest	5	5	0	households
Profits	50	20	30	Commercial banks sales to
				households
National income	185	105	80	Net national product
				185

Finally, if part of the commercial bank sales measured by net interest received are assumed to be to households, say 45, and part to nonfinancial business (50), the following income and product measures result:

CASE 5

Income and Product: Net Interest Received by Commercial Banks Treated as Sale,
in Part to Households and in Part to Nonfinancial Business

	<i>All Business</i>	<i>Non- financial Business</i>	<i>Com- mercial Banks</i>	
Wages	130	80	50	Nonfinancial business sales to
Interest	50	50	0	households
Profits	50	20	30	Commercial banks sales to
				households
National income	230	150	80	Net national product
				230

It is of interest to compare the results obtained in Cases 3, 4, and 5 and contrast them with those in Cases 1 and 2. Of Cases 3 to 5, Case 3 yields the largest total product of the economy, as would be expected when all commercial bank operations are assumed to benefit households. The total product shown by Case 3 is identical with that in Case 2, where commercial banks were treated as purchase not-for-resale transactors; the implication here is that the economic substance of the latter lies in the rationale of Case 3. Case 4, in which all commercial bank sales other than service charges are assumed to be to business, yields the smallest total product. This is equal in magnitude to that obtained in Case 1 by strict application of the accounting rules, and suggests that the view of commercial bank services implicit in the latter is as services rendered to business. Case 5, in which commercial bank services are assumed in part to benefit nonfinancial business, and in part to benefit households, yields a total product lying between the two extremes. The important point to be noted, however, is that in the last three cases the problems encountered in Cases 1 and 2—either

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negative income originating in the commercial banking sector or a meaningless final product entry—do not appear. And the problems do not appear because in these three cases we have bypassed the usual accounting rules and changed certain institutional entries into forms that are in closer accord with economic reality.

If we turn now to examine the technique employed by the Department of Commerce we find that it rejects the results yielded by the usual accounting rules (Case 1), and does not even consider the other possibility suggested by the accounting system (Case 2). In fact, the approach adopted by the Department corresponds exactly, so far as results are concerned, to Case 5 above, with the addition of a specific device for distributing commercial bank sales between final and intermediate. The reasoning underlying the Department of Commerce technique is more intricate, involving the introduction of several imputed interest flows, but the net effect of these entries and counterentries is simply to accomplish the results shown above. Net interest receipts of commercial banks are counted as sales of services and distributed between households and nonfinancial business, the "interest paid" entry for the latter being converted in part to a purchase from commercial banks.⁶ In our judgment the general approach followed by the Department—abandonment of the results yielded by the usual accounting rules and the consequent attempt to identify the product of financial intermediaries and allocate it between final and intermediate—is sound. This same viewpoint also underlay the earlier attempt to solve this problem by the aggregates-of-individuals technique, though the implications of the technique on the final product side were never as clearly developed as in the Department's approach.⁷ Whether the particular technique used by the Department is the best that could be devised is a problem which would require another paper by itself. We may note, however, several questions which seem pertinent. What are the implications of this technique for the measurement of the total return on property, and for comparisons of rates of return on property in different industries?⁸ What are the implications of the technique for the measurement of

⁶ In practice, dividend receipts (though not on a net basis) are also treated as a sale.

⁷ Cf. Simon Kuznets, *National Income and Its Composition, 1919-1938*, National Bureau of Economic Research, 1941, pp. 408-409. The recent suggestions by Richard E. Speagle and Leo Silverman would lead to a treatment of all product of commercial banks as intermediate (Case 4 above). Cf. "The Banking Income Dilemma," *Review of Economics and Statistics*, May 1953, pp. 128-139.

⁸ It should be noted that total property income differs in Cases 3 through 5, and varies directly with the amount of commercial bank sales assumed to go to households. Property income in nonfinancial business varies in a similar way, while property income in the banking sector is constant.

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relative factor costs in different industries and the analysis of the output effects of alternative allocations of resources? Finally, and perhaps most fundamental to the evaluation of any technique, what is the meaning of the "net interest" being measured—the meaning, not in the sense of the sum or difference of x institutional categories, but in its fundamental *economic* sense?

Before turning to the next topic, we should like to note the parallel between the problem posed by financial intermediaries and that posed by government in the measurement of national income. While the treatment of government is perhaps beyond the designated province of this paper, it seems necessary to state our views here as background for the discussion in the subsequent section. We have already hinted at the analogy between government and financial intermediaries in our discussion of Case 2 above. The similarity can be perceived clearly if "taxes received" is substituted for "interest received" in the commercial banking account, and "taxes paid" substituted for "interest" in the nonfinancial sector's account. Yet the approaches followed by the Department in the two cases are quite different. In contrast to its treatment of financial intermediaries, the Department accepts in the case of government the presumption arising from its purchase not-for-resale criterion that government is a final purchaser, and adopts a treatment corresponding to Case 2 above. The principal justification offered for this decision beyond the particular accounting rule just mentioned appears to be that "government purchases consist essentially of goods and services provided on behalf of the community as a whole, which it has been found better to secure collectively rather than individually."⁹ This argument seems to us no more valid than would an analogous argument to justify the treatment of financial intermediaries as a final purchaser. We believe an inquiry into the substance of government activities paralleling that into the activities of commercial banks will reveal a variety of intermediate services performed by government. The services involved in information and instruction to agriculture and business, in regulatory activities, and in the maintenance of public highways are only a few cases in point. It would be folly to argue that such services are not essential to maintain the output of the business sector at its present level, and that the removal of these services would in no way reduce the magnitude of the final product turned out by the business sector.

In our judgment a proper treatment of government must follow the lines laid down in the treatment of financial intermediaries. This means that on the basis of a careful examination of the activities of the

⁹ *National Income Supplement, 1954*, p. 38.

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sector in question, the total product should be identified and allocated between final and intermediate. The Department at one point appears to recognize the desirability of this approach. Thus it states, "It is possible to think of cases in which the treatment of government purchases as final product would not necessarily be the best procedure. For example, if certain government purchases reflected clear-cut aid to business it might be preferable to view them as 'subsidies in kind' and, in accord with the handling of subsidies, to eliminate them from government purchases and the national product."¹⁰ But this approach the Department rejects primarily on the grounds that such a treatment "would be somewhat artificial and statistically difficult, and would obscure the national economic accounts in their capacity *as records of actual transactions*, thus rendering them less meaningful for many purposes."¹¹ It is regrettable, in our opinion, that the Department should choose these grounds for rejecting this approach. It is difficult to see in what sense such a treatment would be "artificial" in securing a measure of the *net product* of the economy; if any treatment is artificial it is the present one. That it would be statistically difficult is not likely to be questioned, but one may question whether the difficulties involved are any more insuperable than many others that have been overcome in the long history of the development of national income measures. Finally, the point that it "would obscure the national economic accounts in their capacity as records of actual transactions" appears to us totally invalid. To our knowledge no one has argued that the present accounts must be replaced or reorganized in a manner that prohibits identification of "actual transactions" and thus reduces the usefulness of the accounts for purposes where knowledge of such transactions is desirable. All that is being argued is that if the accounts are to provide, in addition to records of actual transactions, measures of *national income* and *net national product*, then the recorded transactions must be analyzed in the light of these concepts and, where necessary, provision must be made for the modification of the accounting entries to secure a more meaningful approximation to the concepts. The Department recognizes the validity of this view in its acceptance of various imputations and in its treatment of financial intermediaries. It seems to us that government should be treated in a similar manner.

The Problem of Valuation

One of the principal innovations in national income work in recent years has been the introduction of two systems of valuation—market

¹⁰ *Ibid.*, p. 39.

¹¹ *Ibid.* Italics added.

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prices and factor costs. The present Department of Commerce system, for example, presents one aggregate, "national income," valued at factor costs, and another aggregate, different in magnitude, which is called "net national product" and is valued at market prices. In some respects the Department of Commerce arrangement is unfortunate, for it creates the impression that the introduction of two schemes of valuation destroys the identity of income and product which has played such a major role in economic analysis.¹² This, of course, is not the case, for conceptually there are two other value aggregates, not represented in the Department of Commerce system, whose introduction would restore the identity. Corresponding to national income at factor cost which appears on the payments side, there is, on the product side, an equivalent magnitude, net national product at factor cost. And corresponding to net national product at market prices, there is on the payments side, national income at market prices. While on either the product or the payments side the factor cost valuation may differ from that at market prices, the total of product and the total of payments, *if valued consistently*, are always equal. In our opinion it would be highly desirable for the Department to take steps to establish this more comprehensive system, not only to achieve logical clarity, but, as our subsequent discussion suggests, because it would enhance the uses of the accounts for economic analysis.

The discussion that follows is directed, therefore, toward the changes which, in our opinion, are needed to establish a more comprehensive system. The product side of the accounts is considered first, valued both at market prices and at factor costs. We then examine the payments side, also valued in both ways. As background for this discussion, a brief introductory section is devoted to the concept of factor cost.

THE CONCEPT OF FACTOR COST

The term "factor cost" as used in the present Department of Commerce system is, as we understand it, essentially an alternative cost concept. It seeks primarily to answer questions concerning the effects on output of alternative uses of resources. How much, for example, could the output of B be increased if the output of A were reduced by x units, under the assumption that the resources released by the decrease in A are used to produce B? This question calls for information on the marginal productivities of the resources in A and B—or stated differently, on the relative marginal costs of A and B. An extension of this application is the comparative measurement of productive capacity at two times or

¹² The total "charges against net national product" does little to alleviate this confusion.

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between two places. One might ask: Could the goods produced in situation 1 have been produced in situation 2? Again data on relative marginal costs are necessary, in this case to determine the effects of a shift of resources in situation 2 to the uses of 1.

It is apparent that a market price valuation of the product would not be satisfactory for these purposes if market prices deviated from marginal costs. To the extent that deviation between the two valuations occurs, market prices would provide misleading information on the effects of resource shifts. Monopoly, sales taxes, and subsidies are common factors which would give rise to differences between market prices and factor costs.

There is a second cost concept which should also be noted in this connection. This is more literally a *factor* cost concept than the first in that it seeks to identify the real payments which called forth the actual quantities of the productive services supplied for all purposes. While this concept might logically be described simply as "factor cost" in contrast to the "alternative cost" concept just discussed, confusion may be avoided if the more cumbersome term "cost of productive services" is used. In equilibrium the cost of labor equals the marginal rate of substitution of goods for leisure, and the cost of "capital" the marginal rate of substitution of present for future goods. Cost in the sense of "cost of productive services" is conceptually distinct from the alternative cost concept described above (though it too involves an alternative cost). The payments which called forth the labor services rendered would have to be measured net of direct taxes (plus any free benefits available), while the marginal productivity of labor would be measured gross of direct taxes. The Department of Commerce system makes no attempt to ascertain factor costs conceived as "cost of productive services," and for the present the discussion will be confined to the alternative cost concept. At a subsequent point, however, we shall have occasion to return to the "cost of productive services" notion.

To what extent can the concept of alternative cost be approximated by national income data? Although some adjustments of market price data for business taxes and subsidies may be possible, a correction for monopoly seems clearly out of the question. This means that use of the data for the problems posed rests on the assumption that the data reflect a perfectly competitive situation. Moreover, even if the data are considered to reflect marginal cost with the requisite accuracy, it is necessary to assume constant cost conditions for any problem involving more than a small transfer of resources. Since the factor cost data for each product refer only to a single point on the cost function, problems involving sizable transfers cannot be answered unless an assump-

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tion is made regarding the shape of the function, the usual assumption being constancy. Finally, it is necessary to assume that the total supply of resources remains constant, or, stated somewhat differently, that it does not react to changes in the composition of output. If a transfer of resources from A to B leads to a withdrawal of factors from the market, relative marginal costs will not correctly measure the amount of A that must be given up to obtain a given amount of B.

While the foregoing appears to be a rather formidable list of limitations on the possibility of using national income data for the purposes noted, one cannot gauge their importance until serious attempts are made to utilize the approach in actual practice.

THE PRODUCT SIDE OF THE ACCOUNT

Table 3 sets forth the present Department of Commerce system. Where necessary we have added what appear to be the implied modifications necessary to show two valuations on both the product and the payments side. Panel A presents a market price valuation of net national product and national income subdivided according to their respective components, Panel B a factor cost valuation of the two sides of the account, and Panel C a reconciliation between the market price and factor cost totals for net national product and national income. The only change on the payments side is the renaming of the total "charges against net national product" as "national income at market prices." On the product side several modifications have been introduced to secure a factor cost valuation of net national product. Each of the product categories—personal consumption expenditures, net private domestic investment, and so on, is adjusted first to exclude the total value of indirect business taxes levied on the goods included in that category; e.g. consumer expenditures would be reduced by the amount of taxes collected on tobacco products, alcohol, telephone service, railway transportation, etc. The second, very minor, adjustment is the exclusion from each product category of the value of business transfers assignable to the goods included therein. For example, the value of automobiles and other consumer durables would be reduced by the annual amount of consumer bad debts chargeable to these items. Finally product subsidies are added to the product categories to which they are assignable. Thus government subsidies to ship construction would be added to that component of the net investment category. The result of these adjustments would be a series of figures for the individual final product categories showing the factor cost of producing them, rather than their market value to consumers.

As appears from the table, information that would permit adjust-

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ment of the individual product categories to a factor cost basis is not now available in the Department of Commerce system. Since such a valuation would be preferable for many purposes, e.g. the resource allocation problem noted above, there seems to be a definite need for

TABLE 3

Two Valuations of Income and Product, 1948: Department of Commerce Framework
(billions of dollars)

A. National Income and Net National Product at Market Prices

	(1)		(2)
Compensation of employees	140.2	Personal consumption expenditures	177.9
Income of unincorporated enterprise	40.0	Net private domestic investment	25.1
Rental income	7.5	Net foreign investment	1.9
Corporate profits	31.7	Government purchases	36.6
Net interest	4.3		
Indirect business taxes	20.4		
Business transfers	0.8		
Less: Subsidies—current surplus	^a		
NI at market prices ^b	244.7	NNP at market prices ^b	241.5

B. National Income and Net National Product at Factor Cost

Compensation of employees	140.2	Personal consumption expenditures	} ^d
Income of unincorporated enterprise	40.0	— (business tax and transfers) ^c	
Rental income of persons	7.5	+ subsidies	
Corporate profits	31.7	Net private domestic investment —	
Net interest	4.3	(business tax and transfers) ^c +	
		subsidies	
		Net foreign investment	
		Government purchases — (business	
		tax and transfers) ^c + subsidies	
NI at factor cost ^b	223.5	NNP at factor cost ^b	220.3

C. Reconciliation of Market Price and Factor Cost Valuation of National Income and Net National Product

NI at market prices	244.7	NNP at market prices	241.5
Less: Indirect business taxes	20.4	Less: Indirect business taxes	20.4
Business transfers	0.8	Business transfers	0.8
Plus: Subsidies — current surplus	^a	Plus: Subsidies — current surplus	^a
NI at factor cost ^b	223.5	NNP at factor cost ^b	220.3

^a Negligible

^b Statistical discrepancy between NNP and NI = 3.2

^c Includes indirect business taxes and business transfers assigned to specific product category

^d Cannot be shown separately for each item

Source: *National Income Supplement, 1951, Survey of Current Business*, Dept. of Commerce.

TABLE 4 (continued)
(billions of dollars)
C. Reconciliation of Market Price and Factor Cost Valuation of National Income
and Net National Product

	(1)	(2)	(3)	(4)	(5)	(6)
NI at market prices	208.1	244.7	224.7	204.9	241.5	221.5
Less: Government transfers	10.4	10.4	10.4	20.4	20.4	20.4
Government interest	4.5	4.5	4.5	0.8	0.8	0.8
Business transfers	0.8	0.8	0.8	•	•	•
Government savings	8.2	8.2	8.2	•	•	•
Government final product	0	36.6	16.6	36.6	0	20.0
Plus: Personal taxes	21.1	21.1	21.1			
Corporate profits tax	13.0	13.0	13.0			
Social Security contributions	5.2	5.2	5.2			
NI at factor cost ^f	223.5	223.5	223.5	220.3	220.3	220.3
NP at market prices						
Less: Indirect business taxes						
Business transfers						
Plus: Subsidies — Current surplus						
Government intermediate product						
NP at factor cost ^f				220.3	220.3	220.3

^a Includes personal tax and non-tax payments, social security contributions, and corporate profits tax assignable to specified item.

^b Cannot be shown separately for each item.

^c Includes indirect business tax and business transfers assignable to specified product category.

^d Includes government intermediate product and subsidies minus current surplus of government enterprises assigned to specified product category.

^e Negligible.

^f Statistical discrepancy between NNP and NI = 3.2.

Source: Data from *National Income Supplement, 1951*, and Dept. of Commerce, and *Survey of Current Business*, June 1952, p. 22.

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information on the amount of indirect business taxes allocable to specific product categories. The need is less apparent in the case of business transfers, mainly because of their relative unimportance, but also in part because the conceptual basis for their exclusion, particularly an item such as corporate gifts to nonprofit institutions, is less certain. Subsidies, too, are a relatively small item, and here again the need for detail is less urgent, though in relation to some of the detailed product categories subsidies might appear more sizable. It would be preferable, in our view, to show the current surplus of government enterprises separately from subsidies, since a good case can also be made for treatment of this current surplus as a factor cost, indicating that the present subtraction of the item is inappropriate.¹³ In Table 3, however, we have had to continue to treat subsidies and current surplus of government enterprises in combination.

In Table 4 we present a somewhat different arrangement of these accounts which we believe improves their usefulness for certain purposes of economic analysis. A comparison of the product side of this table with that presenting the Department of Commerce system shows only one difference with regard to the market price valuation. This is the replacement of the Department's "government purchases of goods and services" by the entry "government final product," which ideally would be subdivided into services to ultimate consumers and public capital formation. We have indicated elsewhere our reasons for considering a separation of government expenditures into "final" and "intermediate" essential to a measure of the net product of the economy.¹⁴ The present table has accordingly been constructed to embody this alteration so that its implications may be more fully examined. Three different assumptions with respect to the magnitude of government product have been made: first, that it is wholly intermediate (columns 1 and 4); second, that it is wholly final product (columns 2 and 5); and third, that it is divided between final and intermediate in roughly equal proportions (columns 3 and 6). As is to be expected, the consequence of these assumptions is that net national product is largest in column 5, where all government product is assumed to be final, next largest in column 6, where roughly half is final, and smallest in column 4, where none is final.

It would also be desirable, in our judgment, to include an allow-

¹³ The Department seems to recognize this, but is reluctant to follow this procedure for statistical reasons. *Ibid.*, p. 49.

¹⁴ Cf. pp. 168-169 above. Also "An Interpretation of the Kuznets and Department of Commerce Income Concepts," *Review of Economics and Statistics*, February 1953, pp. 47-49.

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ance for the imputed return on government capital. Were this included, total government product would be raised by the magnitude of the imputation, and the imputation would have to be distributed between final and intermediate product.

Moving from the market price to the factor cost valuation of the product side, we find the same adjustments that appeared in the Department's system plus one addition. After deducting business taxes and transfers and adding subsidies for a given product category, a new adjustment is made, namely the addition of the value of government intermediate production assigned to that category. (Ideally, the imputed return on government capital used in such production would also be included). The logic of this adjustment may be brought out by a simple illustration. Assume an economy in which government plays no part, and in which two kinds of goods are produced, bread and suits of clothes. Bread production is carried on in two separate stages, wheat production and "all other." Then assume that in some subsequent year wheat production is taken over by the government and wheat is supplied free of charge to the private processors at the subsequent stage of production. In this second situation the relative outputs of bread and clothing, the quantities of resources employed in each branch of production, and their earnings remain the same as in the first situation. Now the government pays the resources employed in wheat production from the proceeds of a sales tax levied on clothing. If the factor costs of the two final products are calculated by deducting business taxes from their market prices, the factor cost of clothing is found to be the same as in situation 1, while the factor cost of bread has fallen in relation to that of clothing, despite the fact that there has been no change in outputs and inputs and hence in the relative productivities of the resources engaged in the two lines. The explanation is that the market price of bread in situation 1 is reduced because an element of cost in the manufacture of bread has been removed—this is the wheat now supplied free by government. Clearly if a correct picture of the relative factor costs of bread and wheat is to be obtained, the factor costs incurred by government in the production of wheat must be added to the market value of the bread. (Of course, if any business taxes were levied on bread, they would first have to be deducted from the market value).

The foregoing illustration is intended to show why the value of government intermediate services should be added when any given product category is adjusted to a factor cost basis. These services constitute in effect subsidies in kind—goods or services which are essential to the production of the particular final product but for which no charge is re-

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corded in the books of the firm and hence in the cost of business output as a whole. Of course, if a broader view is taken and all adjustments due to the government—indirect business taxes, subsidies, and intermediate services in kind—are considered as one, then it is possible to think of the difference between market price and factor cost simply as a measure of the extent to which net business payments to government (indirect business taxes less money subsidies) differ from government intermediate services. And in the situation in which these payments just equal government services—as is assumed in Kuznets' *National Income and Its Composition*—there are no deviations of factor cost from market price that would be attributable to government.

Why is there no need for an adjustment for government subsidies in kind in the present Department of Commerce system? The answer is to be found in a comparison of the reconciliation of net national product at market price and factor cost presented in Panel C of Table 3 with the corresponding reconciliation in Table 4. This comparison shows that the Department's system corresponds exactly to a situation in which all government production is final. Since there are no intermediate government services, it is not necessary, in moving to a factor cost basis, to adjust the final product categories for government subsidies in kind.¹⁵

If, however, some government services are recognized to be intermediate, then an adjustment is needed. And acceptance of the conceptual validity of such adjustment becomes a corollary to the admission that not all government expenditures can be considered final. Unfortunately, agreement to a conceptual correction is one thing, while statistical implementation is another. We may, however, offer one suggestion which, if valid, would go far toward reducing the difficult problem of assigning to particular products the government services that are not considered final. Let us consider this problem more closely. For certain types of services, e.g. governmental measures to prevent the spread of disease among livestock, the connection between the services and specific final products may be fairly obvious. But there are many services that cannot very well be identified with a specific product or class of products e.g. the services of legislatures, courts, federal investigators, and so forth. The most important instance of "non-product specific" services is government military expenditures, if we assume for

¹⁵ The equality of columns 4 to 6 of Table 4, Panel B of the net national product *total* at factor cost gives the misleading impression that the results of the adjustment to factor cost are the same irrespective of the nature of government services. If it were possible, however, to distribute these totals by specific product categories the differences which arise in the three cases would immediately be apparent.

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the purpose of the present discussion that these services are not classified as final products. How much, if any, of the services of the armed forces can be considered a cost of producing, say, television sets? He would be a brave man who would name the figure. Yet it would be foolish to deny that such services are costs, for the output of business products would certainly be smaller in the absence of government services aimed at providing external and internal security.

The point is, of course, that at any given time these services are really fixed costs of the economy as a whole. The use of factors in the production of these services is a necessary precondition of the operation of the present business system, and hence of turning out the final product *in toto*. But these services do not affect the relative costs of individual business products and thus are not relevant to the study of the effects of alternative uses of resources within the business sector. An analysis of the output effects of a transfer of factors from, say, the production of clothing to the production of rugs might ignore the cost of government services which, though intermediate to both, are not specific to either, since the transfer would carry with it no implications for the use of resources in government employ.

Over time, however, these "non-product specific" services of government are less fixed, and for certain intertemporal or interspatial comparisons it may be desirable to treat at least a portion of them as variable. Suppose the question is raised how much more the economy of the United States might have produced in 1945 than in 1935 if the country had not been at war. In attempting to answer this question we should consider the bulk of the services of resources engaged in war production as variable, though if we were to look at problems associated with the year 1945 alone, we would regard such services as fixed.

To come now to the bearing of these observations on the problem of assigning government intermediate services to particular products: if our reasoning is sound, there would have to be added to the left-hand side of the account in Panel B of Table 4 a new entry, labeled, say, "government intermediate product—overhead costs," with such detail (possibly presented elsewhere) as would permit evaluation of the extent of its fixity over time. Only the remaining government intermediate services would have to be distributed by product. Thus to the extent that an analysis of government intermediate expenditures revealed them to be overhead costs of the economy rather than "product specific," the task of distributing them by product categories would be eased.

We suggest, then, certain modifications in the product side of the Department of Commerce accounts. These may be summarized as follows:

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1. With respect to the market price valuation, government purchases of goods and services should be replaced by government final product.

2. A factor cost valuation of the product side should also be presented or should be obtainable from accompanying data. The data specifically needed are:

- a. A distribution of indirect business taxes by final product or product or product class
- b. Subsidies (with current surplus of government enterprises separated out) similarly distributed, and (of considerably less importance), business transfers so distributed
- c. Government intermediate product subdivided into overhead costs and "other," the latter distributed by final product

3. The possibility of estimating an imputed return on government capital and distributing it according to government final and intermediate product should be investigated.

THE PAYMENTS SIDE OF THE ACCOUNT

We turn now to an examination of the payments side of the account, considered first as a sum of factor costs, then as a distribution of the market value of the product. The Department of Commerce treatment is presented in the left hand side of Panel B and Panel A, respectively, of Table 3. Compensation of employees, income of unincorporated enterprises, rental income of persons, corporate profits, and net interest, all inclusive of direct taxes, are summed to yield the factor cost total. One might argue that logically the current surplus of government enterprises (which includes interest payments by those enterprises) should be included in the total of factor costs, and the question might also be raised whether at least a part of business transfers should not be included as well. Both these items are quite small, however. As suggested earlier, an attempt might be made to estimate an imputed return on government capital, and this too should be included in factor costs. On the whole, however, the Department of Commerce factor cost treatment of the payments side seems substantially correct. In Panel B of Table 4 we reproduce this treatment without having attempted to allow for the minor qualifications just noted.

To secure a distribution of the market value of the final product on the payments side, the Department of Commerce adds to the factor cost total indirect business taxes, business transfers, and the current surplus of government enterprises; it deducts subsidies (Table 3, Panel A). For purposes of economic analysis this arrangement would appear

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somewhat less satisfactory than the factor cost valuation. How, for example, would the Department's arrangement resolve the question: What are the relative shares of labor and capital in the total product? This question does not, of course, exhaust the possible applications of the payments break, but it would certainly be one of the first that economists would raise in seeking to utilize the data.

Before we turn to the possible Department of Commerce solutions, it may be worthwhile to consider why the market price distribution of payments, and not the factor cost break, is relevant to this question. The reason can be stated simply: the market price valuation is relevant because the question is concerned fundamentally with the relative *welfare* of labor and capital. To illustrate, let us assume a situation in which, if national income is valued at factor cost, the share of labor exceeds that of capital, while if valued at market prices, the reverse is true. Which group is better off? If we apply the usual reasoning for intertemporal or interspatial comparisons, it seems clear that the answer must be capital. For the larger share of capital in the market price situation means that the suppliers of property could have bought the goods going to labor, but chose not to, preferring the goods they actually purchased. On the other hand the goods going to capital could not have been purchased by labor. The fact that a larger proportion of resources was devoted to the production of labor's goods implies nothing with respect to the relative well-being of the two groups. It appears, therefore, that it is the market price, not the factor cost, valuation of national income that applies to our problem.

If we now attempt to answer the question initially raised—what are the relative shares of labor and capital in the total product—using the present Department of Commerce conceptual framework, we are immediately confronted with the problem of how indirect business taxes should be treated and what the conceptual implications of their treatment are. There seem to be several alternatives:

1. We might ignore these taxes and simply calculate the ratio of the sum of compensation of employees plus income of unincorporated enterprises to net national product, and similarly for the share of property. This seems patently unsatisfactory, for it leaves a sizable share of the product represented by indirect business taxes mysteriously dangling in mid-air with no apparent claimant for it.

2. We might choose to avoid the argument just presented for a valuation at market prices, and calculate the ratio of employees and proprietors' income to national income at factor costs. This not only appears conceptually unsatisfactory from the valuation point of view,

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but it overlooks the fact that the incidence of direct taxes on the two shares may be unequal, while factor incomes may be supplemented by government transfer payments or by free goods provided by government.

3. We might introduce a third share, assignable not to labor or capital, but to "government," and computed either as the sum of all direct and indirect taxes or as the sum of such taxes less transfer payments by government (i.e. "net" government taxes). In the latter case these transfers might be assigned either to labor or to capital or treated separately.

This separate treatment would perhaps be most consistent with the treatment of all government purchases of goods and services as final in the derivation of net national product, and in fact the two would seem to stand or fall together in terms of conceptual validity. If it is deemed unsatisfactory to regard government as an ultimate consumer, then the differentiation of a government share on the income side would seem similarly unsatisfactory.

In Table 4 a somewhat different arrangement of the distribution of the market value of the product is presented.¹⁶ While the five principal items included in the Department of Commerce treatment—employee compensation, income of unincorporated enterprises, rent, corporate profits, and interest—again appear, they are listed now net of direct taxes (personal tax and nontax payments, social security contributions, and corporate profits tax). To these are added government transfers, government interest, and business transfers, also taken net of direct taxes. Finally, government savings, equal to government deficit or surplus on current account,¹⁷ and government final product are added, and certain direct taxes not allocable to any of the foregoing items are deducted.

Two lines of reasoning may be used to justify this arrangement, though one requires more detail than is presented in the table. The first and simpler approach measures claims to the product arising from three sources:

1. The provision of current labor services in production

¹⁶ The figures shown utilize data presented by Edward F. Denison, "Distribution of National Income," *Survey of Current Business*, June 1952, p. 22. Due to the nature of the published data, part of the direct taxes on transfers have been incorrectly assigned in the present illustration to employee compensation, income of unincorporated enterprises, rent, corporate profits, and interest.

¹⁷ Ideally, in calculating government savings, government capital formation would be separated out of government final product and added to government surplus on current account.

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2. The provision of property
3. All other

For example, on the basis of the data in column 1, it might be stated that the provision of current labor services gave rise to claims against the total product of \$161.8 billion, or approximately 78 per cent of the total product. Claims arising from the provision of property amounted to \$28.3 billion, or somewhat less than 14 per cent of the total product, and net claims from all other sources amounted to \$18 billion, or slightly less than 9 per cent of the total product. It might be possible, of course, to sharpen the distinction among the three groups by attempting to separate the property element included in the income of unincorporated enterprises, or by assigning part (equal to the imputed return on government capital) or all of government interest to the property share. Nor is there any necessity of restricting to three the sources of claims which are distinguished. For example, in the "all other" group, claims due to past participation in the productive process (social security benefits, pensions, veterans' benefits, and so forth) might be separated out. But these crude calculations will suffice to illustrate the approach.

The rationale of this treatment may be stated as follows. The theory of perfect competition, which portrays a situation in which the sum of factor claims against the product exhausts the total, does not provide a fully accurate picture of reality. In the real world, provision may be made through the mechanism of government for the distribution to individuals of claims to the product for reasons other than their participation in the productive process. Congress passes laws establishing machinery whereby persons secure rights to a share in the total product because they are unemployed, because they are veterans, because they are blind, or for similar reasons. Or governments may take measures to assure the provision of medical or educational services to needy persons irrespective of their productive activity. In short, society may choose to modify the institutional setting of economic activity to attain certain desired ends, and the distribution of the total product will reflect not only the operation of competitive markets, but also these structural changes in the setting of economic activity.

In contrast, the second approach, to which we now turn, reaffirms the identity of what the factors produce with what they receive. It starts with the observation that the total product results from the contributions of labor and property services in production and then asks: What was the payment which induced the observed amount of labor services? It is obvious that the answer is not simply the amount of pay-

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ments (net of taxes) disbursed by enterprises. Certainly the supply of labor was influenced by the availability of veterans' benefits, social security benefits—and even assistance to the blind. In the absence of such payments, equivalent amounts would have had to be provided from other sources to secure the same quantity of labor. Similarly the provision of property is affected not only by the direct return secured, but also by the availability of such supplementary income sources. Thus in this view while certain claims to the product were distributed for reasons other than the provision of labor or property in production, the recipients of these claims were, nevertheless, members of either the working or capitalist class, and the total product is assignable to one or the other group. The subsistence payment by which a veteran is enabled to reduce his working time (possibly to zero) so that he may attend college should be counted along with his wages, if any, as part of the income of the working class.

This view presupposes the possibility of dividing the population into workers and their dependents and capitalists and their dependents, in contrast to the first approach which does not draw upon any classification of the population, but rests on a distinction of sources of claims to the total product. It may, of course, be objected that the same person may be both laborer and capitalist, and to the extent that this is true, the division of the population into these two groups is artificial. Yet one may argue that discussion in economic theory of the relative shares of capital and labor always presupposes the possibility of a meaningful division of the population along these lines. If each person acted both as laborer and as capitalist, the significance of much of the discussion would be lost. It is the fact that the share of labor may be roughly associated with an identifiable group of persons in the real world—a group largely distinct from that obtaining the share of property—that gives meaning to the question of the relative welfare of labor and capital. To this question an answer cannot even be offered by the first approach, limited as it is to a differentiation of sources of claims.

It is the second approach that yields a total of factor costs equal in amount to the market value of the final product. But the concept of factor cost that is now relevant is not the alternative cost concept followed by the Department of Commerce; it is the "cost of productive services" concept mentioned earlier in this paper. Cost in this sense is viewed as the amount necessary to induce the provision of labor and property services or, stated differently, the amount necessary to overcome the preference for leisure over work and the preference for present over future goods. The share of labor in the market value of

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the total product is the same as the costs necessary to call forth the total quantity of labor supplied; the share of property is the costs necessary to call forth the total quantity of capital supplied; and hence the market value of the total product is identical with the cost of producing it. This statement implies, of course, that national income data constitute a reasonable approximation to long-run perfectly competitive equilibrium, with all elements of monopoly and quasi-rents eliminated.

Not only does this approach seem more pertinent to the question of the relative welfare of labor and capital, but it bears also upon questions involving the analysis of factor movements among industries. For example, if we seek to explain the movement of labor from agriculture to nonagriculture, it is the relative payment necessary to induce labor to accept employment in nonagricultural industry that is important.

While this second approach appears more useful for purposes of economic analysis, its statistical implementation does entail considerably greater difficulty. Each of the items must be allocated, if only roughly, according to the proportion received by labor and capital, respectively. This means that one must attempt to identify the recipients of government interest and the various types of government transfers—social security benefits, relief, and the like—as either laborers or capitalists. Government final product expenditures, such as medical clinics, services of public parks, must be similarly allocated. So too must government savings, the treatment of which would likely pose some thorny conceptual questions as well. On the other hand, the rather awkward entry, “other direct taxes,” which appears in the first approach would be eliminated (at least conceptually) in this case, since it would be distributed to labor and capital according to whether the persons who bore the taxes were members of one or the other class. Statistically, of course, this too might be no mean feat.

Let us summarize the conclusions suggested by our discussion of the payments side:

1. The factor cost valuation is substantially satisfactory, though current surplus of government enterprises, imputed interest on government capital, and possibly some business transfers might preferably be added.

2. With regard to the market price valuation, a minimum requirement to permit the “sources of claims” approach is data on the incidence of personal tax and nontax payments and social security contributions by type of payment and industry.

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3. To test the feasibility of the "cost of productive services" approach, exploratory studies might be undertaken to ascertain the approximate division between labor and capital of government transfers, government interest, business transfers, government savings, government final product, and those direct taxes not allocable by payment.

So far as statistical feasibility is concerned, the suggestions under (1), with the exception of that relating to interest on government capital, could be implemented at the present time. The possibility of substantially realizing the suggestions under (2), at least so far as the distribution by type of payment is concerned, is attested to by the study of Denison cited earlier. It is, however, with respect to the suggestions under (3) that the greatest difficulties would arise.

Indeed, merely to itemize the requirements of this approach tends to breed despair of its feasibility. Yet it should be recognized that the magnitude of the items listed, while significant, is not overwhelming, and that rough approximations of their distribution between labor and capital may be satisfactory. Furthermore, if the purpose of the break is not an allocation according to labor versus capital, but a study of factor shifts among industries, it may be possible to avoid the allocation problem for items which cannot be considered specific to particular industries. But the principal point to be borne in mind is that work along these lines is necessary to improve the usefulness of national income data for economic analysis, and, difficult or not, it must be attempted.