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Part One

ON THE MEASUREMENT OF NATIONAL WEALTH

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ON THE MEASUREMENT OF NATIONAL WEALTH[1]

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I Definition and Basic Approaches

1 DEFINITION OF NATIONAL WEALTH

Wealth can be defined most generally as the stock of economic goods. Economic goods, in turn, are sources of services for which people are willing to pay; and people are willing to pay for services only if a particular unit of the services has utility to them and is susceptible of disposition by them.

This definition may be used to segregate items that can be classified as economic goods and hence as the stock of wealth. But such an attempt yields no unique solution unless the active economic unit assumed in the analysis is specified: the congeries of items distinguished will be materially different from one type of economic unit to the next. True, willingness to pay can be tested only by an *individual's* experience and reaction. But in segregating wealth, an enumeration of all the objects for the services of which individuals are willing to pay will yield a much longer list if the individuals are considered solely in their individual capacity than if they are considered also in their capacity as members of a large social group, e.g., the nation. The first list will include all sources of services, regardless of the fact that what is service to one individual may be disservice to others and hence to the group as a whole. The second list will include only the sources of such services as, on the balance of satisfaction and dis-

[1] The first draft of this report was reviewed by Milton Friedman and W. H. Shaw' to whom I am indebted for many helpful comments.

satisfaction they yield to various members of the social group, are recognized as desirable both to individuals and from the viewpoint of the social group. By the same line of reasoning, the extension of the social group to include the world would still further restrict the list of wealth items. Items that may appear desirable from the viewpoint of a single nation (e.g., dreadnoughts and tanks) may not be sources of services desirable to the world as a whole, from the viewpoint of the individual as a member of the world community.

The fact that one and the same item in the stock of goods may be a source of conflicting satisfactions and dissatisfactions to various members of a social group reduces the list of wealth items as we pass from the individual taken in his individual capacity to a wider economic unit. But so far as scarcity affects desirability, passing to a wider unit increases the list of wealth items. Scarcity means that the utilization of a unit of a given good by an individual or a group makes it difficult or impossible for another individual or group to use another unit of the same good; hence the more extensive the group with reference to which we consider scarcity, the longer the list of scarce items. The services of a lake are not scarce to the few individuals who reside on its shores and thus have full access to all its services: the scarcity emerges when we consider the larger group of individuals whose access to the lake is limited. Items that appear abundant when we consider their availability to members of a single nation become scarce when reference is made to several or all nations.

Similarly, the power of individuals to dispose of sources of services or of the services themselves varies as we consider them purely as individuals or as members of social groups. A member of a nation considered as an individual has no power to dispose of the internal waterways, the fleet, and other collective goods; the same individual treated in his collective capacity does and can dispose of these goods. A single nation cannot dispose of the oceanic waterways; but the community of nations (the individuals as members of the world community) can dispose of them. Here again extension of the social group considered leads to an increase in the list of items that can be classified as wealth.

We can now define more clearly the concept of national wealth. National wealth is the stock of sources of events for which the aggregate of individuals who comprise the nation are willing to make sacrifices (i.e., to pay). It excludes all sources of events which, while desirable to single individuals, are undesirable from the viewpoint of the national group as a whole; includes not only the sources of desirable events whose supply is scarce as among various individuals within the nation but also sources that are scarce as among the various national groups; and covers not only such scarce sources of desirable events as are disposable by individuals *qua* individuals but also such as are disposable by individuals as members of the nation.

This analysis clarifies the relation between the wealth of a given social group and the sum of the wealth of its individual members. The identity of these two totals is assured only if in advance the individuals whose wealth is measured are treated both as individuals and as members of the given social group. The sum of the personal wealth of Smith, Jones, etc., will not yield the wealth of the nation of which Smith, Jones, etc., are members, unless they are considered not only as individuals but also as members of the collective that we designate as the nation; or to put it more explicitly, unless we consider Smith, Jones, etc., not only as completely independent individual entities but also as fractional shares of the nation's collective entity. Similarly, the addition of the wealth of all the individual inhabitants of the world will yield the total of cosmopolitan wealth only if the individuals are considered both as independent entities and as fractional parts of the world community.

2 THE TWO APPROACHES

Wealth being the stock of economic goods, the first step in its measurement is the identification of these goods. Such identification is possible directly because goods have, if not necessarily a material expression, at least a distinguishable and specifiable location. Where they assume a material form, that of commodities, the identification is relatively simple. But even where no obvious material form exists, e.g., in such items as the skill of a carpenter or the business connections of an entrepreneur, their location may be distinguished and their relevance to the measurement of a given nation's wealth established. It is thus possible to identify directly the actual sources of services by reference to the substantive characteristics of these sources, i.e., their material or immaterial form, their origin and place in the productive economic system, their actual location within the boundaries of the nation's economy. Measurement of wealth is then approached by listing all economic goods: commodities, institutional arrangements, human skills, natural resources, etc., placing values upon them, and summating the values into a comprehensive total. This procedure may be designated the substantive approach.

The sources of desirable events that are included in national wealth are apportioned among individuals, singly or in collectives, so that each individual has some claim to the disposal of some sources or of their yields. Their very scarcity, the indispensable attribute that characterizes them as economic wealth, makes it necessary for society to institute rules to govern the unavoidable struggle among members of the nation and the world for the possession and utilization of these sources. By these rules many of the sources are distributed so that each becomes subject to preferential claims by individuals as individuals; others are collective goods, at the disposal of individuals only as members of the social collective but barred to members of other collectives. This being the case, the measurement of wealth may be approached through the evaluation of the claims of individuals, considered in both their individual and collective capacity. For a considerable fraction of wealth these claims assume an overt form; are in themselves subject matter of economic activity; and can sometimes be more easily evaluated than can the sources to which these claims refer. The consequent procedure may be designated the claims approach.

Even if care is exercised to assign claims in all cases where a source of desirable events is identified (whether or not overt marketable expression is given to that claim) the totals of national wealth obtained by the substantive and the claims approaches will not be identical in either scope or magnitude. The former, relying primarily on location, yields a total of wealth within the nation's boundaries, but omits wealth outside these boundaries. The claims approach yields a total of wealth possessed by the members of the nation and thus may exclude some items located within the country and include some located outside the nation's boundaries. Differences in valuation are likely to produce further differences in magnitude between the two totals. The direct valuation of sources of wealth need not necessarily yield the same total as direct valuation of the claims to these sources: for a large group of wealth items there are striking short term disparities between the two totals.

But the most significant difference between the two approaches is in the classification to which they give rise. The substantive approach leads to a classification of wealth items by their substantive characteristics; and the categories it distinguishes are little related to the distribution of wealth among individuals. The claims approach, on the other hand, emphasizes the relation between the source of wealth and the individual; and is especially suited to be the basis of distribution of wealth among individuals or other operating units and of classification of wealth according to differences in the character of claims.

Actual estimates usually follow a combination of the two approaches; and in practical measurement one need not force the total of national wealth and its breakdowns to be consistent with only one of the two approaches indicated. But in the discussion of problems of scope and valuation the differentiation of the two approaches leads to a clear recognition of the various significant categories of wealth and to an easy definition of different variants of the national wealth total.

II Composition and Scope

1 SUBSTANTIVE APPROACH

The scope of national wealth in the substantive approach is best analyzed by considering the various classifications of wealth instruments[2] to which this approach gives rise. These classifications are familiar, having been evolved in the economic analysis of various types of goods. It will, therefore, suffice to indicate briefly the most important classifications; and then use the categories

[2] The term 'instruments' is used to designate the substantive sources of desirable events. The term 'items' is used to designate any unit in the stock of wealth whether the instrument itself or the claim to it.

established to describe the different variants of national wealth resulting from the substantive approach.[3]

a) *Material and non-material*

This distinction is most important in delineating the scope of national wealth estimates. Material sources of desirable events are usually interpreted as commodities and material natural resources, whether perishable or durable, movable or immovable. Under non-material, one usually finds the goodwill and patent and other monopoly powers of an enterprise, skills and capacities of the population, efficiency of the government and of other social institutions, etc. Strictly speaking, all sources of desirable events have a material expression, since no observable phenomenon is without some material substance and locus. The justification for classifying some as non-material is that their material expression is not easily distinguished and specified; hence, both in their role in economic life and in their susceptibility to measurement, they are significantly different from such wealth instruments as have a distinct and easily discernible material form.

b) *Reproducible and non-reproducible*

This is a distinction second in importance only to that under (a). Like the latter it cannot be applied strictly, since few existing sources of desirable events are reproducible in their exact form. Reproducibility thus refers to the possibility of producing a close substitute rather than an exact replica.

The distinction, when applied, segregates products of human labor of the type found from generation to generation from two other groups of wealth instruments—one, quantitatively the less important, represents products of past labor performed by exceptional human beings the like of whom do not appear again; the second represents non-reproducible and irreplaceable natural resources. The most important item in this second group is land; but it includes also mineral and other natural resources. The distinction between reproducible and non-reproducible applies to both material and non-material wealth instruments; and, disregarding the non-reproducible products of genius, is largely

[3] For a somewhat different classification see Roy Blough and W. W. Hewett, Part Four, Sec. II, 3(a).

identical with that between wealth instruments that are products of past labor and those that are not.

c) *Durable and non-durable*

Both durable and non-durable sources of desirable events should be included in national wealth. But the classification is significant because it distinguishes groups that are subject to substantially different patterns of temporal behavior and that offer substantially different problems of valuation.

In applying this distinction it is, of course, necessary to specify more definitely the attribute of durability; associate it with some minimum period of life of utilization of the wealth instrument; connect it with a distinction between finished and unfinished goods made with reference to the stage at which ultimate utilization is gauged as to duration; and perhaps establish a more detailed gradation of durability than that represented by the dichotomy between durable and non-durable.[4] It is important to note that the distinction between durable and non-durable wealth instruments necessarily implies a distinction between finished and unfinished.

In actual measurement, the categories of wealth items distinguished are largely institutional in character, and often result from the ways in which the available data are grouped. While many of these institutional categories (land and improvements, inventories, gold and silver, machinery, etc.) can be resolved into cross-combinations of the classifications listed above, other categories utilize substantive characteristics of wealth that have not been touched upon because they did not seem sufficiently important (e.g., the distinction between gold and silver and other commodities; between industrial machinery and farm machinery; between machinery and livestock). It will suffice here to call attention to the existence of these additional classifications, some of which may be strictly consistent with the substantive approach to national wealth and with that approach alone.

d) *Variants of national wealth total*

Several distinct variants of the national wealth total may be defined on the basis of the substantive approach. They all refer to

[4] See more detailed discussion in Simon Kuznets, *Commodity Flow and Capital Formation* (National Bureau of Economic Research, 1938), I, 6-8.

the stock of economic goods within the territorial boundaries of the nation, but differ in degree of comprehensiveness. These variants follow in declining order of comprehensiveness.

Variant S-I, the most comprehensive, would include not only all material but also non-material economic goods. With reference to the non-material items there may sometimes be a doubt as to the exact limits of location (cf. Marshall's discussion of the location of scientific progress vs. that of untranslatable national literature[5]).

Variant S-II would include only such economic goods within the country as have material expression (i.e., commodities, land, and other natural resources of a material character). The justification for the omission of non-material goods, if formulated on the level of the substantive approach only, would be the difficulties of discerning, segregating, and valuing the sources of desirable events that have no fixed material expression.

It may further be suggested that some material economic goods should not be included in the total of national wealth, because they are neither reproduced nor consumed and are thus exempt from the type of activity that is the essence of economic reality. Thus land, if we disregard improvements on it, should not properly be included, since an increase in its value reflects not an increase in its supply but a growing scarcity. Other indestructible national resources such as waterways and mountains should likewise be omitted. This application of the criteria of non-reproducibility and indestructibility (i.e., eternal durability) excludes only one group of material goods that perhaps should be inccluded: the product of past labor. But the volume of such goods, taken in their material aspect, is so small as to render its omission relatively insignificant. The third variant, S-III, would thus omit from national wealth not only non-material instruments but also such material ones as are non-reproducible and have a life that may be considered of infinite duration compared to the time periods relevant to economic analysis.

Furthermore, other non-reproducible natural resources, although destructible, may also be omitted. Such resources, typified by minerals in the bowels of the earth, are not products of past labor; their accurate measurement is often exceedingly diffi-

[5] *Principles of Economics*, 8th ed. (London, 1920), pp. 59-60.

cult, precisely because they are neither products of past labor nor reproducible; and changes in their value, when valuation is attempted, are often due to changes in the technique of measurement rather than to any actual increase or decrease in their volume within the nation's boundaries. The omission of such natural resources yields variant S-IV, which excludes not only all non-material goods but also all non-reproducible material goods, whether or not indestructible. The omitted material goods are not, by and large, results of past human effort.

2 CLAIMS APPROACH

Before the composition of national wealth from the viewpoint of the claims approach can be discussed, two comments are in order. First, the claims considered are not exactly identical with legal rights and claims as they appear on the statute books or in the decisions of courts. No mere economist is able to deal with the intricacies of a nation's legal framework in its bearing upon property rights or other rights of economic significance. Nor is it necessary to do so in the analysis of problems concerning the measurement of wealth. Our consideration of claims is based on general observation of how individuals behave, within the legal framework, with reference to various wealth instruments. Such general observation reveals that any given single wealth instrument is at the preferential disposal of a single individual or a limited group of individuals; that this single individual or limited group of individuals is at much greater liberty than others to utilize the given instrument of wealth, this 'greater' liberty being sufficiently appreciable to make for a significant difference in economic intercourse. These states of the preferential position of a single individual or of a limited group of individuals we designate as their claims, and as such are the subject of basic consideration in the claims approach.[6]

Second, there is extensive pyramiding of claims, of the type that cannot take place in a list of distinct instruments of wealth in the substantive approach. The claims of one individual or

[6] Some of them may not be legally enforcible. Thus a member of one nation (citizen or resident) has a claim to the use of certain collective goods that cannot be exercised by a member of another nation. But such claims of a citizen or resident are not legally enforcible against the nation's government.

group of individuals to a given source of services may be overlaid by claims of another individual or group of individuals to the same source. Hence if such claims are to be summated into a national wealth total, duplication can be avoided only if either of two procedures is followed: claims by one individual member of the nation against the others are excluded; or all claims are counted, but those against other members of the same nation are added in with negative signs. So far as each unit in this measurement is a claim, the pyramiding does not affect the scope of national wealth in the claims approach.[7]

a) *Direct and indirect claims*

The most important distinction among claims to wealth instruments arises in the association or lack of association of claims with the freedom of disposition. For a large group of wealth instruments, the claim of an individual is closely associated with freedom to dispose of the instrument or of its services. A skilled artisan who has the claim to his own skill is also the one who has the freedom to and usually assumes the disposition of the services of that economic good. An individual entrepreneur combines the claim to the capital of his enterprise with the freedom of active management and disposition of these goods. For the head of a household the claim to the goods in the household is also associated closely with their economic disposition. Such claims may be designated as *direct.*

However, for a large body of claims no such association between claims and the disposition of the *actual instrument of wealth* exists. The wealth instruments that constitute the capital of incorporated enterprises are subject to claims by bond- and stockholders and other individual creditors; but with the exception of one-man or family corporations there is usually little association between the claim of the security holder and the active disposition of the corporation's stock of goods. Every member of a nation has claims to the instruments of wealth collectively owned; and the same holds true of smaller public collectives, a city, a state, etc. But no member of the nation or of other collectives in his individual capacity is thereby given the freedom of active disposition of collectively held instruments of wealth. In these cases

[7] Except for the claims by and against members of other nations.

and many others, a host of institutional regulations and active groups intervene between the holder of the claim and the active disposition of the services to the source of which the claims refer. They may, therefore, be designated as *indirect* claims.

b) *Transferable and non-transferable claims*

The transferability meant is economic in character, in the form of purchase and sale. Some claims can be transferred easily from one individual to another, and actually change hands rather frequently in the ordinary course of economic life. Other claims are also transferable, although perhaps only a small part of them changes hands over a long period. By contrast, some claims are not transferable, the wealth instrument being so attached to the individual's identity as to constitute an inseparable possession.

Three comments should be made concerning the attribute of transferability. First, in the case of direct claims, transferability and non-transferability should be judged with reference to the claim to the instrument of wealth rather than to the services the instrument yields. Thus a skilled artisan can and actually does transfer claims to the services of his skill in the form of a labor contract, but his claim with reference to his own skill is as a whole non-transferable.

Second, the attribute of transferability cuts squarely across that of the degree of directness of the claims and creates significant subgroups within each category. There are large groups of transferable and non-transferable among both the direct and indirect claims. Each of the resulting four classes of claims is significantly different from the others. Thus, transferable direct claims differ significantly from transferable indirect, for in the former a transfer implies the separation of an individual from direct disposition over the instrument of wealth while in the latter a transfer means no such separation. The distinction between transferable and non-transferable direct claims, or between transferable and non-transferable indirect claims is too patent to need comment.

Third, for the transferable claims alone must the offsetting operation for duplication be carried through. Only a transferable claim of one individual can underlie the claim of another individual, for in case of failure there should be the possibility of a transfer of the underlying claim. And while all the overlying claims are not necessarily transferable (consider the indirect claims of individuals implicit in a claim by a government agency for tax payments against another individual), it is necessary in correcting for duplication to adjust only one side of duplication, preferably the side of the underlying claim, that belonging to the debtor.

c) *Variants of national wealth total*

Other categories among claims could be established, especially by the use of legal distinctions among priorities, specificity of attachment to a given asset, order of enforcement, etc. But the classifications suggested and the brief discussion above suffice to indicate the scope of basic variants of the national wealth total for the claims approach. In all these variants the national wealth total is obtained by adding the values put upon the claims of all the individual members of the nation, allowing for duplication by adjusting the transferable claims for the value of claims overlying them. But the variants differ in comprehensiveness. In a decreasing order of comprehensiveness, they are as follows:

Variant C-I, the most comprehensive, conceives national wealth as the total value of all claims by individual members of the nation, but with the transferable claims offset by the claims outstanding against them, whether held by individual members of a given nation or by members of other nations. The claims are understood in the comprehensive sense in which they refer to all the identifiable sources of services located not only within the territorial boundaries of the given nation but also outside it.

The departures from this most comprehensive concept of national wealth follow naturally the line of excluding non-transferable claims: only those claims are included that actually appear on the market, and provide indisputable evidence of both the economic character of the item and of its economic magnitude. This procedure provides an easy way of disposing of the vexing problems that appear when more inclusive treatment is attempted: such problems as drawing a line between scarce and other sources of disposable services; or between sources that produce events whose desirability may be questioned from the standpoint of the aggregate of individuals comprising a nation and those which are indisputable instruments of wealth rather than of illth; or the problem of finding a measure of value for items that never appear as such on the market. But such a rigid limitation encounters the diffiulty that it omits too much; e.g., non-transferable claims to certain collective instruments of wealth, whose existence and value are patently clear.

We therefore obtain as the next variant of the national wealth total a concept that forms a transition step to the more rigidly restricted concept. This variant, C-II, defines the national wealth total as the sum of values of all transferable claims of individuals (offset as under C-I) and of all non-transferable indirect claims. It thus omits only the non-transferable direct claims.

The final basic variant in the claims approach, C-III, is the one that limits total national wealth to the sum of values of only transferable claims of individuals. This concept is broadly identical with that of *private* wealth, so long as such private wealth includes only economic goods, whether material or immaterial, that are external to the individual himself.

3 SUBSTANTIVE AND CLAIMS APPROACHES COMBINED

The different variants of national wealth so far listed yield different national wealth totals. The most comprehensive variant in the substantive approach, S-I, refers to all instruments of wealth within the nation's boundaries but takes no account of claims by the nation's members upon wealth instruments located abroad or of claims by foreigners upon the wealth instruments located within the given nation's boundaries. In this respect it is different from the most comprehensive variant in the claims approach, C-I. The next variant in the substantive approach, S-II, is significantly different from C-I, as well as from C-II and C-III. Both C-II and C-III refer not only to material but also to non-material instruments of wealth. For similar reasons S-III and S-IV are significantly different from any of the variants listed in the claims approach. In short, all seven variants defined so far yield totals of significantly different scope.

Furthermore, if we deal with categories consistent with one approach alone it is impossible to combine them into a total that has a clear-cut meaning in terms of the other approach. No matter how we combine the groups and cross-classifications of claims:

direct, indirect; transferable, non-transferable; enforcible, non-enforcible; etc., we cannot obtain a total that could be equally clearly determined by means of the categories of the substantive approach alone: material, non-material; reproducible, non-reproducible; products of past labor, not products of past labor; etc. Claims usually refer to complexes of wealth instruments, rather than to single distinguishable instruments, and a number of these complexes combine several categories of the substantive approach in varying mixtures.

Consequently, if the two approaches are to be combined in determining the scope of national wealth, this combination can be attained only by an addition to the attributes of one approach of attributes taken from the second. Wealth combines the idea of a substantive source of desirable events and the idea of ownership. The need for cross-classification of categories taken from both approaches is a natural consequence of this duality.

We may begin with the substantive approach and consider the distinctions that may be brought in from the claims approach. The first is suggested by the efficiency of the claims approach in distinguishing between claims of the members of the nation and claims of members of other nations. Under certain conditions it may be unimportant that the items included in national wealth are within the nation's boundaries: what may be important is the identity of the nation whose members can lay claim to the disposition of these items. The result of this application of the claims approach is to correct the totals obtained by the substantive approach for the net balance of claims against foreign countries. And for purposes of global measurement it may not be important to consider to what substantive categories of domestically situated wealth claims by foreigners refer; or to what substantive categories of wealth instruments situated abroad the claims by members of the given nation refer. Thus the adjustment for the net balance of claims against foreign countries may be applied to any variant in the substantive approach. Designating variants so adjusted by SC-I we may distinguish the subvariants, following the distinctions made heretofore among the various substantive categories.

The second attribute to be brought in from the claims approach is transferability. The importance of this attribute in economic analysis has already been commented upon. In this, and subsequent applications of it, we may assume that it already contains the adjustment for the net balance of claims against foreign countries. The result is another set of variants, generically designated by SC-III (for parallelism with C-III) but containing several subvariants following the substantive distinctions.

Finally, the application of the attribute of transferability by itself may be deemed to result in too narrow a delimitation of national wealth; and the cross-classification of the substantive categories should, therefore, be with the combination of all transferable and non-transferable indirect claims rather than only with the transferable claims. The introduction of non-transferable indirect claims makes it possible to include collectively held instruments of wealth.

These various cross-classifications yield the twelve variants set up in tabular form on p. 18. The meaning of and the significant differences among these variants need no comment, since they follow directly from the distinctions drawn in the discussion of each of the two approaches. But some ambiguity attaching to the expression 'instruments of wealth subject to transferable claims' should be cleared up. This expression may be understood to mean either that there is some connection between given instruments of wealth and the transferable claims; or that the connection is such that the transferability of the claim may lead to a transfer of the actual instrument of wealth or of its economic equivalent. The expression in the tabular outline is used in the latter, stricter meaning. Thus, SC-III-2 does not include material instruments held by government agencies even though public bonds may be outstanding.

This comment makes it clear that the twelve variants, in addition to the variants arising from the substantive and the claims approaches each taken singly, comprise all the significant versions of the national wealth total, as far as the scope of this total is concerned.[8] It is this list that will be referred to subsequently

[8] It will be noted that SC-I-1, SC-II-1, and SC-III-1 are identical with C-I, C-II, and C-III, respectively. Similarly, SC-I-1, SC-I-2, SC-I-3, and SC-I-4 are largely coextensive with S-I, S-II, S-III and S-IV, except for the adjustment in the former set for the net balance in claims against foreign countries. Subsequent discussion can thus be largely confined to the SC variants.

when the determination of the scope of the wealth concept in terms of the objectives that national wealth measures are to satisfy is under discussion.

Variants of National Wealth Totals resulting from the Combination of the Substantive and the Claims Approaches

SC-I *Substantive Variants adjusted for the Net Balance of Claims against Foreigners*	SC-II *Substantive Variants combined with the Category of Transferable and Non-transferable Indirect Claims*[1]	SC-III *Substantive Variants combined with the Category of Transferable Claims*[1]
1 Most comprehensive, incl. material and non-material instruments	1 All instruments of wealth subject to transferable claims and to non-transferable indirect claims	1 All instruments of wealth subject to transferable claims
2 Incl. only material instruments of wealth	2 Material instruments of wealth subject to transferable claims and to non-transferable indirect claims	2 Material instruments of wealth subject to transferable claims
3 Same as I-2, but excl. non-reproducible and indestructible instruments	3 Same as II-2, but excl. non-reproducible and indestructible instruments	3 Same as III-2, but excl. non-reproducible and indestructible instruments
4 Same as I-2, but excl. all non-reproducible instruments	4 Same as II-2, but excl. non-reproducible instruments	4 Same as III-2, but excl. all non-reproducible instruments

[1] Already inclusive of the net balance of claims against foreign countries.

Before leaving the subject of scope, it should be pointed out that the various classifications of wealth items have not been exhausted. Three comments should help to indicate the most important omissions.

First, the further distinction within the various substantive groups (whether or not cross-classified in the manner shown) between those items subject to direct claims and those subject to indirect claims is of considerable importance. It has no bearing upon the scope of national wealth estimates since both those items subject to direct claims and those subject to indirect claims are to be included. But once the scope of the national total is determined the distinction between those instruments of wealth that are subject to direct claims by individuals (even though at the same time they may be subject to indirect claims by other individuals) and those that are subject only to indirect claims is extremely significant. Thus, if this distinction is applied to SC-III-2 it results in the separation of goods held by consumers and unincorporated enterprises from the goods held by business and public agencies.

Second, there is the classification among goods held by consumers, by unincorporated enterprises, by business corporations, by public non-government agencies, and by public government agencies. This distinction results from a combination of the substantive and claims approaches, i.e., from the combination of the attribute of the directness with which the source produces desirable events (consistent with the substantive approach) with the attributes of transferability of claims and directness of claims attached (consistent with the claims approach). This distinction again has no bearing upon the scope of national wealth that has not already been considered in the variants discussed above, for there seems no good reason for omitting either goods held by consumers or those held by business enterprises (incorporated or unincorporated) or by non-government public agencies; and if one wishes to omit goods held by government agencies this can be done by taking any of the SC-III variants. But that such a classification is of high value in application to any national wealth total need not be argued.

Third, a comment should be made concerning the distinction between wealth instruments external to the individuals who possess them or have claims to them (although these wealth instruments may consist in certain predispositions of other individuals) and wealth instruments internal to the individuals who have claims to them.[9] This distinction again results from the combination of two opproaches in that it distinguishes the locus of the substantive source with reference to the individual claim. But it adds nothing new to the classifications and variants considered above. Internal sources of desirable events are largely identical with those subject to non-transferable direct claims. A substantive variant that would exclude them would be closely similar to SC-III-1, except that it would not be adjusted for the net balance in claims against foreign countries.

[9] See Marshall, *op. cit.*, pp. 56-7.

III Valuation

Once the scope of national wealth is determined, the problem arises of reducing the instruments of wealth or the claims to a common unit that will reflect the conomic significance of the various items. Without such reduction to a common unit, no addition of the items into a national total or comparison of their relative magnitude is possible. And unless the common unit to which the reduction is made is economic in character, the comparison and the total have no ascertainable meaning in economic analysis.

Items of wealth are important because and only because they are sources of desirable events. Thus their theoretically correct value is determined in terms of the services they yield, being generally definable as the value of the services they are expected to yield in the future, discounted at the appropriate rate of interest. The various methods of valuation of wealth employed in practice are designed to yield an approximation to this theoretically correct value; and should be judged with reference to it as the ultimate criterion.

The reason for the existence of several methods of valuation, instead of one based directly upon the discounting of expected services and incomes, is that in practice data for the direct capitalization of expected yield are not available, and by the nature of the case could not easily be available to an outside observer. The various methods of valuation will be discussed in the following order: (1) capitalization of income; (2) current market price; (3) current reproduction cost; (4) original cost.

1 CAPITALIZATION OF INCOME

If the theoretically defined value of wealth items is to be attained directly by a valuation procedure, the services yielded by the wealth item may be assumed to be represented by the net income it produces. On this assumption, the current value of any wealth item is determined by three variables: (1) the magnitude of future income streams; (2) the temporal distribution of these expected incomes in the future; (3) the rate of interest to be used for discounting. Lack of knowledge about any of the three variables makes it impossible to apply this method of valuation satisfactorily. And a brief consideration of each of the three variables will show that, by their very nature, *direct* information on them is not likely to be available for any but minor groups of wealth items.

The determination of the first variable requires data on incomes expected from the various items of wealth, the latter classified into the various categories it is important to distinguish. Since the requirement is for *expected* incomes, the relevant information is in the nature of a forecast rather than of a record of past or present economic events; and it is this characteristic that makes the information necessarily conjectural. Such estimates are assuredly made for some wealth items, and were the investigator to have access to them (in the files of appraisal and valuation companies or of business enterprises), the variable could be measured for selected categories in the national wealth total. But such access cannot be expected. Even were it given, the question would always arise whether in accepting these data, it is justifiable to hinge the wealth estimate upon such an elusive and highly variable basis as what people think the given items of wealth will yield in the future; without inquiring further as to why they think what they think, and whether some more definite and controllable criterion should not be applied with which to test and perhaps revise these opinions.

In practice, segregable data on the amount of expected incomes are not available; and at best, the investigator has at his disposal data on incomes for the current year and perhaps for past years, assigned to various categories of wealth items. In using such data one should, theoretically, consider both current and past incomes. But the difficulties of such a consideration, requiring a disentanglement of the various factors in the temporal changes of income and an evaluation of the likelihood of these factors acting in the future, are apparent and overwhelming. Hence, investigators who have applied the method have taken data on the current year's incomes, estimated the number of years the existing instruments of wealth are expected to be in use, and obtained the amount of expected income by multiplying the current year's income by this estimated number of years.

This procedure is open to several objections. First, it necessarily omits a large number of wealth instruments the income from which does not appear in an overt form on the market place. Second, the estimate of years of use is necessarily rough, and in many instances reduces itself to an estimate of the total life of the various wealth items rather than the expected life of the actually existing instruments. (Sometimes this estimate of life takes into account the discount rate to be applied.) Third and most important, the current year's income is a faulty guide to the incomes that my be expected in the future; and whenever any implicit estimate of such future incomes does occur in the market place, it is far from being fully based upon the current year's income (consider the prices of items whose current year's income is negative).[10]

It is equally difficult, if not more so, to obtain data on the temporal distribution of future incomes. The latter is often neglected in the discussion of this method of valuation. But obviously its effect on current value can be quite material—increasing as the rate of discount increases. Of two wealth instruments, both with the same amount of future expected income and the same total period of future life, one will have a greater current value than the other if a much larger share of its expected income matures earlier. As already indicated, the usual practice of investigators who follow this method is to assume implicitly that the temporal pattern of future incomes is a straight horizontal line on an absolute scale. It need not be argued that this is a gross oversimplification of reality.

Nor is it easy to determine the third variable, the rate of interest. If one assumes that forecastible risk elements have been fully taken into account in determining the first two variables, the third is the 'pure' interest rate, i.e., the rate that expresses

[10] This is one possible interpretation of the procedure used by Robert Giffen, Josiah Stamp, and most English estimators of national wealth, which consists in segregating current income due presumably to the use of given instruments of wealth and then multiplying it by 'years purchase'. If the estimate of 'years purchase' is based only or primarily upon the consideration of the prevailing rate of interest and the duration of life of the various instruments of wealth, the method is largely that of capitalization of income. But often the estimator considers also the prices at which the given wealth items change hands in the market and compares these prices with current incomes to derive the 'years purchase'. In this case the procedure is really based on the current market prices approach, current income being used only as a statistical device to pass from sample market prices to complete coverage. For the discussion of the current market price method see Sec. III, 2.

the marginal productivity of capital, the difference in risks involved in various groups of capital goods having been removed. If one proceeds on the more realistic assumption that only some of the most obvious risk differentials have been used in determining the first two variables, the third variable becomes an interest rate that preferably should vary from one category of wealth items to another, to reflect differences in risk not accounted for by the first two variables. In either case it is exceedingly difficult to ascertain the third variable even with rough accuracy. It may be argued that for an estimate of wealth at a given point of time it is not important that the interest rate used for the third variable be precise, since whatever error is implied in taking any given rate is the same for the component parts of wealth. But this contention is apparently true for the 'pure' interest rate alone; and even then it is misleading, provided there are differences in the temporal distribution and/or total period of future utilization. For goods differing in either of or both these respects, the effect of any given discount rate in reducing the gross amount of expected income to its current value will be different. An incorrect discount rate will then be tantamount to a distortion of weights in valuing the different component categories.

One may thus recognize that the current value of wealth is the discounted sum of its expected net yield, and still conclude that a valuation method based directly upon this definition is, in the nature of the case, subject to severe practical limitations. It is the basing of the procedure upon the evaluation of expectations that makes it directly consonant with the theoretical standpoint; but this very emphasis on the expected future, rather than on the observable past and present, makes the procedure impracticable and leads in its actual use to gross over-simplification. This suggests that other methods of valuation, which approach the measurement of discounted value of future earnings *indirectly*, may pass the test of the ultimate criterion more satisfactorily.

2 CURRENT MARKET PRICE

Since the discounted value of future incomes is presumably the touchstone that guides buyers and sellers on the market when items of wealth change hands, it may be suggested that the best guide to the value of wealth items is the prices they currently fetch on the market. If a substantive approach is followed, the prices used should be those realized in transactions in which the wealth instrument itself changes hands. If a claims approach is followed, the prices used should be those realized in transactions that represent transfers of claims from one individual to another. The method suggested is identical with that followed in national income measurements in which the various commodities and services included are weighted by their current market prices.

Further consideration reveals, however, three significant differences between national wealth and national income in their susceptibility to valuation at current market prices. First, national wealth is a stock, and as such refers to a moment or point in time; whereas national income is a flow, and thus refers to a span of time (a decade, a year, a month, etc.). Hence, the question as to what is meant by current market prices is easily answered for national income: prices that have materialized during the span of time to which the total refers (a decade, a year, a month, etc.). But what is the meaning of 'current' for market prices of a stock of wealth at a given moment of time? Strictly speaking, there are no transactions and no current prices at an instant of time, unless the price of a given good is conceived as being in continuous existence until it has been superseded by a new price resulting from a new transaction in the same or a comparable good.

This question is not an exercise in mental hair-splitting, but a practical problem in any estimate of national wealth. If we are told that the figure designated as national wealth on December 31, 1922 is obtained by evaluating the various items at current market prices, what exactly is meant? Are only those prices 'current market' that actually materialized in transactions that occurred on December 31, 1922? If so, it is quite obvious that prices would be available for only a minute fraction of the stock of national wealth and fail to represent significant constituent categories in it. Are current market prices as of December 31, 1922, then, to include not only prices realized in transactions actually occurring on that day, but also prices that have materialized in the most recent transaction involving the various items of wealth? If so, should not some limit be put upon the 'life' of a price materialized in a past transaction? If a coal mine (or an important constituent in that complex of goods) has not been sold since 1917, should the price at which the mine was sold in 1917 be considered as current on December 31, 1922? And what would be the treatment if a coal mine were actually to be sold on January 1, 1923 at a price one-third below that at which a mine was sold in 1917?

Evaluation of national wealth on the basis of current market prices can have a definite meaning only if a finite period is assigned within which market transactions are to be studied and the prices arising in them applied to the component items of the wealth total. This period cannot be very long, for then the result would be to combine prices that prevailed in transactions at one date with prices that prevailed in transactions at another date distantly removed from the first. Such heterotemporality of prices may result in an appreciable distortion of the weights of various wealth items and thus yield a national wealth total whose meaning is both ambiguous and misleading. It is also obvious that the period for which current prices are considered should not be confined to the time preceding the point of valuation, but rather should be spaced out on both sides of that point, so as to decrease the maximum time span between the instant to which the valuation is referred and the date on which any of the prices considered has actually materialized on the market.

The limited span of the period for which current prices must be observed in the valuation of national wealth at a given point of time accounts for the second significant difference between national wealth and national income in the applicability of current market prices to the two totals. The various *marketable* commodities and services included in the national income for a given year have actually passed through the market place during that year (with the minor exception of such items as farm products retained by farmers). It is thus possible to find prices for an overwhelming proportion of the marketable constituents of national income (we are disregarding for the time being such items as are produced within the family economy). But of national wealth, even when we consider marketable items alone, i.e., items that are bought and sold as such on the market, only a minor fraction actually passes through the market during the limited period that should be considered in establishing current market prices.

Thus, if we assume this period to be about a year, it becomes clear that of certain important groups of wealth instruments, such as industrial machinery and equipment, and real estate, only a minor fraction actually passes through the market and is evaluated in terms of current prices.

That current prices can relate to only a minor fraction of the national wealth total would not in itself constitute a disadvantage if these prices could be treated as a representative sample. But there is reason to suppose that, at least in the substantive approach, this is far from being the case. Thus the transactions involving a transfer of the actual instruments of wealth are usually of two types: (a) purchases made by users to replace or expand the available stock of wealth instruments; (b) sales and purchases (either voluntary or compulsory) that are largely a result of desire on the part of individuals and groups of individuals to terminate direct possession of the wealth instruments. For such important groups of marketable wealth instruments as durable equipment and durable consumers' goods, transactions of type (a), which represent largely gross capital formation, account for only a small fraction of the stock at a given point of time and thus may fail completely to cover large categories of goods; and even then they refer to instruments that qualitatively may be so different from the already existing ones that it would be difficult to consider their prices as representative of the current prices of the existing instruments of wealth.[11] Transactions of type (b), including largely forced sales and sales for purposes of consolidation or reorganization, would again account for only a minor share of the existing stock if the time span is limited and also fail completely to cover certain categories; and even then may be so dominated by transactions of an exceptional character (such as forced sales) as to yield prices quite unrepresentative of the economic value of the existing stock viewed from a broader standpoint of normal conditions and of a going economy.

By contrast, a large proportion of transferable claims passes through the market within a fairly limited time—a characteristic true especially of transferable indirect claims and hence true of

[11] So far as current market prices refer to replacement goods alone, the procedure becomes identical with that of reproduction cost valuation. For a discussion of the latter see Sec. III, 3.

total transferable claims (so far as the former account for a preponderant share of the latter). And even if the share actually passing through the market were not absolutely great, the market is so organized as to facilitate these transactions and thus free the prices established in these transactions from the peculiar influences that affect the sale of existing instruments of wealth. The difficulty with which the existing substantive wealth instruments can change hands is in part the reason for the creation of transferable indirect claims. Individuals may then participate indirectly in the economic process and may retain the freedom of easy withdrawal. Obviously, current market valuation is more easily established for transferable indirect claims than for the substantive instruments of wealth to which these indirect claims refer.

But the ease of measuring at current market prices a large body of transferable claims facilitates the problem of valuation only in the claims approach, not in the substantive approach. The current market value of transferable claims, which refer to a given complex of wealth instruments, cannot be taken to measure the current market value of that complex of instruments itself; cases may be easily found where this complex would change hands on a normal market at a price substantially different from that of the market price of total claims outstanding. The reason is that the prices of claims traded as such are affected not only by the current market values of the underlying instruments of wealth but also by factors immanent to the claims market itself, i.e., largely speculative factors which would exercise much less influence in a transaction involving a transfer of substantive items of wealth.

Finally, there is a third significant difference between national wealth and national income in the applicability of valuation based upon current market prices to the two totals: the larger share in national wealth of items that are not, as such, marketable at all, i.e., they never appear on the market. It is true that national income, broadly defined, also comprises large groups of commodities, and especially of services, that are confined to the family economy and never appear on the market (housewives' services, etc.). But the share of such items in national wealth is probably still more appreciable, largely because our institutional framework allows a much less extensive commercialization of wealth instruments themselves than of their services. Services of human skill and capacity are sold on the market, and their compensation forms a preponderant share of national income; but in modern society this stock of skill and capacity possessed by an individual is not a saleable merchandise. Also the services of certain collective goods do find a market evaluation in national income; but these goods themselves never appear on the market and a current price can never be found for them. This limitation of the valuation based on current market values is equally relevant to both approaches: if there is a large group of substantive wealth instruments that are never sold, there is also a large body of non-transferable claims.

To summarize, there is incompatibility between the concept of national wealth as a stock and a valuation approach based on current prices: by the nature of the case current prices are an aspect of a flow. This incompatibility leads to the difficulty that, in the substantive approach particularly, only a minor share of the existing stock is actually evaluated at current prices; moreover, this evaluation takes place under conditions that may render these current prices extremely unrepresentative of the whole body of existing instruments of wealth.[12]

3 CURRENT REPRODUCTION COST

This valuation of wealth at current reproduction cost is closely akin to valuation at current market prices. Like the latter, it utilizes prices that materialize in the current market; but the prices it utilizes are those of the means of production that would have to be employed to reproduce the given item of wealth, rather than the prices of the wealth items that have changed hands.

Where the wealth items treated are claims, there is no significance to be attached to 'reproduction cost' except that of 'replacement cost'; and obviously the replacement cost of a given

[12] Note that the difficulty of obtaining current market prices for existing fixed capital equipment is partly the cause of the use of other types of valuation by business enterprises in estimating the current consumption of capital. This gives rise to difficulties in the measurement of *net* national income. See Solomon Fabricant, *Studies, Volume One* (1937), Part Three, and *National Income and Capital Formation, 1919-1935*, pp. 23, 26, and Ap. D.

claim is the price it currently fetches on the market. For claims, the present method is thus identical with that of current market prices. Only in the substantive approach are significant differences between current reproduction costs and current market values likely to arise, with consequent differences in the applicability of the two methods of valuation. As indicated above, many transactions in which the substantive sources of wealth change hands materialize under conditions that result in prices completely unrepresentative of the bulk of existing wealth instruments; all such transactions during a relatively short current period account for only a minor fraction of the existing stock of wealth. But labor, materials, and other means usually employed in the production of wealth instruments have a wide and active market; their economic value receives a thorough and continuous testing in the market place. It is thus possible to use prices of new wealth instruments to measure the value of existing ones.

However, the method of valuing at current reproduction value is subject to several limitations. First, and most important, it cannot be applied to non-reproducible instruments of wealth such as land, natural resources, or products of human skill or gifts of exceptional kind. In addition, a large group of wealth instruments are reproducible, but not freely. The theoretical tendency of current reproduction costs to approximate capital value, the latter measured as the present value of expected money returns, can be assumed to be effective only when the wealth instruments in question are freely reproducible or equally easily adjustable upward or downward.[13]

[13] A more detailed formulation of the two qualifications to the operation of the tendency of reproduction costs to equal present value of expected returns has been suggested to me by Mr. Friedman. First, the tendency holds under conditions of competition alone, i. e., either when anyone (not only the present owners of the existing instruments of wealth) can reproduce the instruments, or when the number of present holders of the instruments is large and no one of them considers his own influence on price. For otherwise, the instruments will be produced only if expected *marginal returns*, i. e., the returns on the new instruments minus the losses on the old instruments through forcing down the price of their services, are greater than reproduction costs. There is thus, in such monopolistic cases, no tendency whatever for reproduction cost to equal the present value of expected returns.

In the second place, it seems evident that adjustments that involve additions to the stock of instruments can, in many cases, be made with greater rapidity than those which involve diminutions. If this is so, then, other things being equal—in particular, total demand—reproduction cost has an upward bias.

Second, even for freely reproducible instruments of wealth whose identity and cost of reproduction are easily ascertainable, the ease of establishing reproduction cost refers to *gross* value rather than *net*. For example, to find out the cost of reproducing, *in its unused form*, a steam engine that has been in operation for about three years may be relatively easy. But, with minor exceptions, it would be impossible to establish directly a reproduction value for the steam engine at the given age and stage of consumption, i.e., to measure its value adjusted for the consumption that has already taken place rather than its gross value. Thus, the applicability of the method of current reproduction value is contingent upon an estimate of the deduction for capital consumption to be applied to the existing instruments of wealth. The only assumptions upon which such a deduction could be dispensed with would be that wealth estimates are used for comparative purposes only and that in the categories or totals to be compared the ratios of accumulated consumption to gross reproduction costs of the instruments are identical. It is obviously impossible to accept either the limitation of use or the assumption.

The nature of the third limitation of the method depends largely upon the way in which the deduction for accumulated consumption is made. Obviously, one way of making such a deduction would render the present method identical with the current market price valuation. It could be contended that the amount of accumulated consumption for a given instrument of wealth is best measured by the difference between the gross reproduction price of the instrument (in its unused form) and the current market price of the given instrument at the present age and stage of its life. In this interpretation, the reproduction cost procedure becomes identical with that based on current market prices.

If the former is to differ from the latter, the estimate of accumulated consumption should be relatively independent of the current market prices of instruments of wealth. It is possible to attain this independence by basing the estimate of consumption upon long range assumptions concerning the probable life of the instrument and the shape of the consumption function during this life. These data provided, it is possible to arrive at the current value of a given instrument of wealth by considering first its current gross reproduction value and then reducing it in accordance with the ratio of future use to total use (including that already in the past).

If the estimate of accumulated consumption is based upon factors that bear but an indirect relation to the currently changing economic scene, however, there is a third limitation to the valuation of wealth by current reproduction costs. This limitation arises from the contradiction between the simultaneous reference of the minuend, i.e., gross reproduction cost, to currently changing conditions, and of the subtrahend, i.e., estimate of accumulated consumption, to a long range view that disregards current conditions. As a result, there may be considerable under- or overvaluation of instruments of wealth as compared with their current value as it would be if measured consistently as the discounted value of expected returns.

The second and third limitations of the present procedure, both arising from the necessity of estimating accumulated consumption, would be offset by practical advantages were such estimates easily available. But in actual practice, estimates of consumption are usually provided in conjunction with a basis of valuation distinctly different from the reproduction cost basis (see Sec. III, 4). There is, therefore, little immediate practical advantage that would offset the theoretical disadvantages of the current reproduction cost method of valuation.[14]

4 ORIGINAL COST

The first step in this valuation procedure consists of assigning to various wealth items the cost at which they were acquired by their present holders. The second step is to adjust this original cost for the accumulated consumption sustained by the given wealth item from the date of its acquisition by the present holder to the point of time at which valuation occurs. From the theoretical standpoint this method is a hybrid of those discussed in Sections III, 2 and III, 3, and has no specific features that would make its consideration worth while. From the practical stand-

[14] This is not to deny the usefulness of this basis of valuation when it can be derived by correcting values obtained by another method of valuation. Thus, it can be applied as a modification of the method discussed in Sec. III, 4. But the theoretical disadvantages are, of course, not obviated thereby.

point, however, it is the method by which business enterprises and many non-business agencies evaluate a large group of substantive wealth items and which, consequently, underlies a body of data exceedingly important in estimates of national wealth. It is, therefore, of interest to discuss briefly this method of valuation. Since its practical advantages are relevant only to the measurement based upon the substantive approach, the discussion is couched in terms of this approach alone.

In its first step, that of assigning values corresponding to original cost to present holder, the procedure is applicable to a much wider range of wealth instruments than either of the valuation methods discussed so far, even disregarding the impracticable capitalization of incomes. The reasons are, first, that original cost may be either reproduction cost or current market price at time of purchase; the original cost procedure thus combines the scope of both these methods of valuation. Second, original cost is taken whenever it occurred, whether or not within a recent period understood as 'current' in the two valuation methods discussed so far. Hence, it is possible to measure at original cost a much greater variety of wealth instruments than at either current market prices or current reproduction costs; also a greater variety than on the basis of market prices or reproduction costs separately, even though such prices or costs are taken from market experience covering a long period.

Were the present procedure confined to the first step, the results, largely for the same reason that makes this first step of such wide applicability, would fail to conform to any reasonable interpretation of the goal. There would still be some substantive instruments of wealth missing, i.e., those that have never been produced, acquired by private interests, or exchanged on the market. In addition, and of greater importance, the items actually valued would be weighted at prices far apart; and a number of these prices would presumably be subject to all the defects that attach to current market prices (see Sec. III, 2).

It is the second step that transforms the valuation to one more closely relevant to the current value of wealth. This adjustment cannot make up for the omitted items, but it can allow for (a) the accumulated consumption, of the type considered in connection with the current reproduction cost method; (b) the change in either market price or reproduction costs that occurred from the time of acquisition of the given instrument to the time at which the current valuation is being considered. So far as such a double adjustment is possible, we arrive in a circuitous way at the current value of wealth.

The difficulties of such an adjustment are obvious, and the likelihood of failure constitutes the serious defect of the procedure. But it must be noted that in practice such adjustments are continually being made; and that business and other enterprises prefer to arrive at current values of many wealth instruments not by direct capitalization of expected incomes, or by using directly current market prices, or by estimating current reproduction costs and then making an adjustment for accumulated consumption, but by considering first the original cost of the item and then allowing for accumulated consumption and changes in value of expected incomes whenever the latter are appreciable. The reasons for such a procedure can be easily surmised. The deficiencies of a direct capitalization procedure, the sparsity and lack of representativeness of current market prices, and the limited applicability of current reproduction costs make it difficult to use these methods. But original cost is an item clearly apprehended by the enterprise that sustained it, and the estimate of consumption is already implicit in planning investment and activity. Allowance for changing expectations and discount rates is an adjustment that business enterprises prefer to delay as much as possible, rather than be forced to make continually. But when the change is considerable, the adjustment is usually made in the form either of revised valuation by the original owner or of a sale to a new owner at a valuation different from the one that would result from the adjustment of the original cost for the accumulated consumption alone.

It is not suggested here that this circuitous valuation of the current value of wealth instruments by enterprises is either precise or sensitive. But the fact that such valuation is pursued by business enterprises and is tested, even if not too promptly, in the crucible of economic experience, makes it, in the light of the weaknesses of the other methods discussed so far, perhaps the most suitable for a large body of substantive instruments of wealth that are at the direct disposal of business enterprises.

5 LIMITATIONS IMPOSED BY DIFFICULTIES OF VALUATION

The discussion in Part II emphasized primarily the wide scope of the concept and the variety of categories that may be distinguished within it. In contrast, the emphasis in the discussion of valuation is upon the difficulties inherent in the problem. The contrast is not accidental; it is typical of many a treatment of national wealth (and for that matter of national income) in which the investigator begins with a broad survey of the field and is then hemmed in by limitations arising when the problem of measuring the magnitudes in the field arises. It is a contrast manifest when one compares the breadth of discussion in the purely qualitative treatments of national wealth with the narrowness of the actual measurements in the statistical studies providing the estimates.

The immediate bearing of this contrast is that it narrows the field of choice among the variants of national wealth listed above and that should be considered further with reference to the various objectives that estimates of this total are supposed to satisfy. It is, therefore, important to indicate how some of the limitations of valuation methods are overcome in practice, and to suggest the possible effects of these practices.

One way of repairing such shortcomings of valuation methods as reside in the lack of data is to transfer the task of estimation to the shoulders of individuals closely connected with various wealth items and hence likely to be in possession of information not ordinarily available to an outside investigator. This practice, particularly common in this country, consists of asking the owners of wealth items, or the users of wealth instruments, or the taxation authorities to supply the missing data in the form of an estimate of the value of the wealth with which they are connected. It is assumed that in such cases, even though objectively observable data (such as prices in current transactions) are not and perhaps cannot be available, the persons connected with the wealth items will be able to utilize all relevant information, including that which is accessible to them alone, and thus provide a satisfactory estimate of current value.

The nature of these estimates cannot be discussed here even briefly, since they vary from one type of estimator to another, from one investigation to another, and from one type of wealth item to another; and I know of no publised comprehensive analysis and test of such data. One surmise, however, seems plausible: these estimates must essentially be the result of a mixture, in varying doses, of the different methods of valuation discussed above. In some cases, they are likely to be dominated by valuations at current market prices; in others, they may take into account current reproduction costs; in still others, original cost, roughly adjusted, may be the basis of the figure provided; in still others, some crude capitalization of incomes may be employed. In many estimates there is perhaps a simultaneous combination with some rough and unconscious weighting of several of these valuations. The important point is the essential ambiguity of such estimates, if they are to be taken in any sense other than that to which they literally correspond, viz., the magnitudes reported by certain groups of people in the present connection, as the values of given wealth items.

Another way in which the limited applicability of each method of valuation taken separately can be overcome is for the estimator himself to combine the various methods, applying one to one group of wealth items and another to another group. Thus, when the substantive approach is used, wealth held by business corporations may be measured at original cost adjusted for the accumulated consumption, since this is the way in which business enterprises in general value their wealth instruments. Goods held by consumers may be evaluated on the basis of current reproduction cost, adjusted for accumulated consumption. Other groups of wealth instruments, especially real estate, may be evaluated on the basis of current market prices. Still others, notably wealth represented by the skill and capacity of people, may be evaluated as the discounted value of expected earnings. These various partial totals may then be added into a comprehensive national wealth total.

This practical expedient is effective in extending the scope of measurable wealth and raising the comprehensiveness of the estimate. But its results are subject to serious qualifications. The first and most obvious is that the use of different valuation methods may make for lack of comparability among parts and hence for ambiguity in the resulting total. True, in some cases such use of different valuation methods is necessitated by essential differences in the institutional framework within which various groups of wealth instruments are utilized. Thus, current market value can be applied to private real estate and cannot be applied to the real estate property of the state (to which only a reproduction cost or original cost method of valuation is applicable). In such cases lack of comparability among values is deeply rooted in the division of the social organization between private and public sectors, and the expedient under discussion does not introduce specific limitations of its own. But in other cases the variety of methods used may be due to differences in the supply of data rather than to basic differences among the groups of wealth items evaluated. In these cases the expedient makes a net contribution to a lack of comparability among parts and to the ambiguity of the total.

The second, less obvious danger of applying different valuation procedures to different groups of wealth items is that it may lead to duplication of values and an inflation of the total. This danger is especially apparent in the simultaneous treatment of public and private wealth. The construction of a park is significant because the park is expected to yield desirable events. With the construction of the park (for which perhaps a special assessment was imposed upon the surrounding real estate) the current market value of surrounding real estate rises, and this rise is reflected in the valuation of this real estate at the current market price. On the other hand, the value of the park may be estimated on the basis of original cost (or reproduction cost). If, then, the results are added in the national total, one and the same instrument of wealth is evaluated twice: in the increase in the current market value of the real estate, and again in the orginal cost value of the park.

This duplication is specific and thus different from the more general interrelation of all values in an economic system. The value of a wealth item, no matter by what method measured, is observed for the item as an integral part of the economic system; and it is thus interrelated with all other values. But this general contingency of values of one group of goods upon the values of other goods does not justify specific duplications of the type indicated above: such duplications do not usually occur within the private sector of the economy proper and are therefore beyond the range suggested by the general interrelation of all prices in the economy. Nor are they likely to occur if one method of valuation is adhered to throughout.

Finally, it is clear that neither supplementation of established evidence by estimates of people closely connected with certain wealth items nor the combined use by the estimator of different methods of valuation assures the possibility of providing even a rough value for *all* the items in a comprehensive national wealth total, as such totals have been defined in Part II. For large groups of wealth items none of the methods of valuation listed can be applied; and these items are not closely bound up with any specific groups of people who could provide estimates of satisfactory trustworthiness. Who can place a value upon the rivers of this country, or upon the skills and capacities of the nation's housewives?

The only solution of such difficulties is to limit the scope of the estimate. The extent of this limitation will depend partly upon the supply of available data, partly upon the skill and daring of the estimator, and partly upon the degree of accuracy he desires in his totals. Whenever such restriction of scope occurs, there may be adequate reasons for it, besides the sheer impossibility of setting a value upon the parts omitted. And one might suggest that these reasons are provided by the objectives of national wealth measurement. But as we shall see presently, these aims, as usually formulated, call for comprehensive scope and unambiguous valuation; and their consideration serves only to emphasize the difficulties of national wealth measurement brought out above.

IV Objectives of Measurement

The estimation of national wealth is not undertaken for any psychic income that the operation itself yields to its performers; or for the pleasure that the large global totals may yield to some members of the nation, who experience a glow of pride at the astronomical figures that gauge the nation's and thus, indirectly, their own wealth. The serious objectives of the measurement are to provide estimates whose meaning makes them useful data in economic analysis; and such objectives must obviously exercise a controlling influence on the solutions of the various questions that arise in determining the scope of the estimates and the basis of valuation.

In the consideration of these objectives it is most convenient to begin with a review of the aims as they have been stated by students in the field; reformulate these somewhat so as to facilitate their analysis; and then consider each objective separately in an attempt to ascertain what particular approach is required in order to render a satisfactory result probable, and whether national wealth measures are at all likely to produce results satisfying the aim in question.

1 THE OBJECTIVES AS STATED

The most detailed list of objectives that measures of national wealth may be deemed to satisfy, or uses to which they may be put, has been provided by Robert Giffen.

"The uses to which the figures can properly be put, regard being always had to the fact that the data and methods employed are sufficiently alike for the special purpose in hand, appear to be the following:

1. To measure the accumulation of capital in communities at intervals of some length—not less, perhaps, than ten years—this . . . being perhaps the most important use to which such figures can be put.
2. To compare the income of a community, where estimates of income exist, with its property.
3. To measure the burden of national debts upon different communities.
4. To measure, in conjunction with other factors, such as aggregate income, revenue, and population, the relative strength and resources of different communities.
5. To indicate generally the proportions of the different descriptions of property in a country to the total—how the wealth of a community is composed.
6. To measure the progress of a community from period to period, or the relative progress of two or more communities, in conjunction with the facts as to progress in income,

population, and the like; to apply, in fact, historically and in conjunction with No. 1, the measures used under the above heads 2, 3, 4 and 5 for a comparison at a given moment.

7. To compare the aggregate accumulation in a community with that portion of the accumulation which can be described as free savings, and which is gradually invested through the agency of the Stock Exchange.
8. To throw light on the question of changes in the value of money, which are themselves among the facts to be investigated and allowed for in comparing the valuations of different countries or the valuations of the same country at different times."[15]

Later investigators, whenever they dealt directly with the uses of national wealth figures and the aims of measurement, have added but little to the list; the additions that have been made are refinements that can be brought under one of the heads listed by Giffen. Thus G. H. Knibbs in an official report recapitulates Giffen's list and adds:

9. "To determine the distribution of wealth among the individual members of the community, and thus to furnish a measure of the relative degree of opulence or penury of the various classes and the number of persons in each of such classes."
10. "To enable a comparison of wealth with income to be made in respect of the various classes."[16]

The only new objectives that Josiah Stamp adds to the above list reflect the spirit of the times:

11. "Consideration of the applicability and yield of schemes of taxation, e.g., the capital levy . . ."

and

12. "Questions relating to War indemnities."[17]

Some of the uses listed above are by-products of wealth measures that would satisfy other aims, and hence cannot exercise an independent influence on the determination of the estimates.

[15] *Growth of Capital* (London, 1889), pp. 136-7.

[16] *The Private Wealth of Australia and Its Growth* (Commonwealth Bureau of Census and Statistics: Melbourne, 1918), p. 177.

[17] *Wealth and Taxable Capacity* (London, 1922), p. 6.

Thus, revelation of changes in the value of money (objective 8) is a by-product of wealth measures that satisfy objective 1, the need for gauging the accumulation of wealth. Other stated objectives are also not independent, in that they constitute but a reformulation, from a somewhat different angle, of another aim (compare 7 with 1, or 6 with the preceding ones). For purposes of the discussion below, the list can be condensed into a smaller number of wider objectives:

1) Comparisons of 'strength' among various countries at a given moment.

2) Comparisons for the same country among successive points of time, in order to reveal wealth accumulation and provide a test of 'progress'.

3) Comparisons of the stock of wealth with either yields (income) or burdens and drafts (debts, taxation, indemnities, etc.).

4) Determination of the relative proportions of various wealth categories in the country's total, the distribution of wealth by size being comprised among such composition studies.

The discussion under these four headings will be governed by one consideration not introduced heretofore. In asking whether a measure of national wealth can satisfy a given purpose the question will be considered on the assumption that national income measures are available. The question is then reformulated to read: do national wealth measures contribute to the satisfaction of the objective at hand some element that is not already provided by a measure of national income? This reformulation may seem to make too severe a demand upon national wealth estimates. But it is justified by the fact that national income measures do answer a number of important questions that no wealth measurement can answer; that, consequently, national income measures will be provided, if the available data allow, whether or not national wealth estimates are provided. It would therefore be highly unrealistic to discuss the purposes national wealth estimates may be deemed to satisfy, disregarding completely the availability of national income measures.

2 INTERNATIONAL COMPARISONS

In considering the possible use of national wealth estimates for measuring the comparative 'strength' or 'power' of nations, some assumptions must be made concerning the scope of this attribute.

Economic strength and power are presumably to be defined with reference to economic activity; but even so, they may be defined narrowly or broadly. A nation's power to overcome the effects of a flood, to withstand the pressure of an economic boycott, or to engage in war may be quite different from that involved in carrying on normal economic activity. Unless we want to subject national wealth measures to such narrow tests, our discussion must be predicated upon the assumption that economic strength or power of a nation means, most generally, its ability to solve the tasks arising in the ordinary course of economic activities, i.e., the tasks of production and distribution on as large and satisfactory a scale as possible.

If national wealth measures are to be used in comparing the economic power of nations so defined, three conditions follow. First, the concept of national wealth required is that resulting from the substantive approach, since it is the sources of desirable events themselves, rather than claims to them, that should be identified, evaluated, and classified in order to take account of a nation's productive power. The only modification that could be introduced by the claims approach is an adjustment for the net balance of claims against foreign countries (thus using variants of the type SC-I); but even this modification is in order only if normal economic conditions imply international relations in which international debts are more than a scrap of paper. Second, the national wealth total demanded is obviously most comprehensive in scope (S-I or SC-I). All types of wealth instruments have a bearing upon the economic power of a nation: those that have material form and those that have no specifiable material form; reproducible and non-reproducible; products of past labor and not products of past labor; perishable and durable. Third, the method of valuation should allow adjustment for differences in valuation levels as among different nations. Of the various methods of valuation listed in Part III, that of current reproduction costs best satisfies this criterion, since it places most reliance upon prices of standardized goods. The other valuation methods, with their emphasis upon the pricing of existing, qualitatively variegated instruments of wealth, would offer almost insuperable difficulties in the way of adjustment for international price disparities.

It will be noted at once that a contradiction exists between the requirements of scope and valuation. The former calls for a most comprehensive national wealth total; the latter for a valuation method that can refer only to a restricted part of national wealth —that freely reproducible. This contradiction cannot be resolved by assuming either that the relative proportions of freely reproducible to total wealth are the same for the nations compared, or that the international differences in the price levels of freely reproducible goods are parallel to international differences in the valuation of other goods. Both assumptions are disproved by observation. Finally, it must be remembered that even if all the methods of valuation were combined it would be impossible to measure the national wealth total taken most comprehensively. The essential contrast between scope and valuation, indicated above, persists here for the simple reason that international comparisons call for the most comprehensive concept of national wealth.

Let us assume, however, that it would be possible to value comprehensively the total wealth of different nations by a method that enables adjustment for disparities among the national price levels. Do the measures of national wealth contribute any distinctive element to the comparison that is not already provided by a similar comparison of national income? As between equally comprehensive sets of national income and national wealth measures, is there a specific contribution made by the national wealth comparisons?

Offhand, one would be inclined to answer in the affirmative and assume that differences in average life of existing wealth instruments would make for differences in national wealth, even on the assumption of equal national incomes. It would thus seem, at first, that of two nations with the same national income, that nation in which a larger share of the net national product is yielded by durable wealth instruments would show a larger national wealth total. But this impression is misleading. If the nations have equal national incomes, that with the less durable wealth stock is obviously as capable of taking care of its larger annual replacement bill as is the nation with the more durable wealth stock and a relatively smaller annual replacement bill. But if replacement is maintained, the stock of non-durable wealth instruments is, strictly speaking, of eternal life; and so is any stock of wealth instruments that is maintained and replaced. Hence, the only factor that, with equal national incomes, could yield different wealth totals for two nations would be either the discount rate or the expected annual net return in the future.

But if current national incomes are the same for two nations, and current incomes alone are used in evaluating national wealth, the totals cannot be different. For if current national income alone is considered, the interest rate that should be applied for discounting, i.e., expressive of the marginal productivity of the total stock of wealth, is necessarily the same; and, by assumption, there cannot be any differences in the expected annual return. In short, if national wealth is evaluated on the basis of current national income, the evaluation of the global total of the former cannot add anything to the comparison in terms of national income alone. Of course, if wealth were to be estimated not as a global total but by its component parts, additional information would be provided, its usefulness depending upon the type of breakdown. If this breakdown sheds light on such questions as the interrelations of stocks of various goods in the maintenance of large volumes of activity, dependence for maintenance upon products from abroad, specificity of capital instruments, then, national wealth measurement will contribute to the understanding and appraisal of the economic strength of nations elements that are not contained in comparisons of national incomes. But such use of national wealth estimates comes under the head of the fourth objective, the possible uses of measures relating to stocks of wealth of various description, rather than the use of the national totals.

If a national wealth measure, based upon consideration of current national income, does not add anything to a comparison of national incomes proper, can it not be claimed that national wealth measures reflect not only current national income, but also the past, and are adjusted by a forecast of the future? Granted that national income measures for two nations contribute all that is indicated by a comparison of their national wealth totals, it may be contended that as between national wealth estimated as of a certain date and national income measured for a given year, the former magnitude is more efficient: it reflects not only the current year's income but also the past and a reasonable forecast of the future. Thus on practical grounds of a more comprehensive consideration of national income, a measure of national wealth for a given point of time is to be preferred in international comparisons to a measure of current national income.

This advantage of national wealth estimates for purposes of international comparisons is not to be denied. But it is fairly limited, since for years in which current national income is disturbed by peculiar conditions, national wealth is also affected, although perhaps to a more limited extent. On the other hand, the advantage is more than offset by the difficulties attaching to a national wealth valuation that do not characterize national income estimates to the same degree. The latter can be made much more comprehensive; can be more thoroughly evaluated; and will permit a number of important uses that national wealth measures cannot satisfy.

Thus, for purposes of international comparisons, estimates of national wealth are of little value if estimates of national income are available. Once the latter are given, national wealth measures are of importance only so far as they serve to reveal areas not easily observable in national income measurement (e.g., consumers' goods in households, the imputed income from which is more elusive than their existing stock). But such areas are necessarily very restricted, and would hardly justify the compilation of national wealth totals; or be of importance in determing their scope and characteristics.

3 COMPARISONS OVER TIME

The purpose of comparisons of wealth estimates at successive points of time is to reveal the total accumulation of wealth during the period elapsed. Whether this total accumulation will then be compared with 'free savings' in Giffen's terminology; studied by various categories; compared with the change during the same period in income, debt, taxation, etc., is not directly relevant to the discussion at hand.

This objective again leads to certain conditions to which national wealth estimates must conform. First, as in all cases where the substantive significance of wealth is emphasized, the use calls for a substantive approach, perhaps modified by the adjustment for the net balance in claims against foreign countries. Second, while it is necessary to make the derived measure of wealth accumulation as comprehensive as possible, this does not mean that the wealth estimates themselves at the successive points of time have to be most comprehensive. For obviously, as long as the nation's boundaries are constant, the natural resources that are neither reproducible nor destructible need not be taken into account. Third, in valuing the various instruments of wealth at different points of time, that method of valuation is to be preferred which most easily allows for adjustment for changes in price and value levels from one point of time to the next. For reasons similar to those mentioned in Section IV, 2, the current reproduction cost method is the most suitable of the four.

The difficulties involved in obtaining a comprehensive national wealth estimate, even if it excludes non-reproducible, non-destructible items, and especially the complexities of any adjustment for differences in valuation levels between successive points of time lead one to the question, why employ such a circuitous way of measuring wealth accumulation. Why not measure directly the current flows to and from the stock of wealth and obtain as a result the net accumulation of wealth during any given time unit?

Giffen, who considers this particular use of national wealth estimates most important and to whom this use was the primary reason for the attempt to estimate national wealth, faces the question squarely. His discussion of it is interesting.

"The object being to ascertain the accumulations of capital, and not primarily the amount of capital itself at a given time, it is an obvious suggestion that the problem may be attacked directly. Why not, it is said, reckon up the savings annually as they are made in the different forms in which they are made? . . . this question of method is of some importance, and, perhaps, demands somewhat fuller illustration.

"The objection to the method of merely recording investments as they are made, instead of valuing the whole property of the country at different dates, is, first of all, its incompleteness. It is difficult, if not impossible, if we follow it, to take any account of the regular annual investment by individuals in their own business or properties, which must always be the most important form of saving—far more important in amount than the visible public investments. Next, even if it could be complete, this method makes no allowance for bad investment, for the waste of capital which is possible (the investment so-called having been merely a form of throwing money into the sea), and it makes no allowance for the depreciation or loss of capital in old investments which have become obsolete or useless. By valuing property at different times as it stands, any inclusion of capital which has been merely wasted, or which has depreciated, is avoided. At each date only effective capital is reckoned. No doubt in many cases the valuation may represent a greater sum than has actually been invested, even when allowance is made for changes in prices; but the element of judiciousness in investments is as much to be allowed for as any other in a question of the amount of property in a country, and this is really a reason for the method and not against it. For these two reasons mainly, then, the method of valuing property at different times is to be preferred to the method of investments as they are made . . . . There is a third reason in its favour. The figures when obtained by it can be compared with those obtained from the annual records of investments, and this comparison is useful in many problems, of which the amount of free savings coming on the general investment markets—i.e., the Stock Exchange—and the proportion that amount bears to the whole savings of a country is one.

"Of course . . . the exact meaning attached to the word accumulation must always be kept in mind . . . . No method can be quite perfect. If we record merely investments as they are made, without considering whether they are judicious or not, and disregarding altogether the loss and depreciation of old investments, we get a fact which may be useful in some discussion, though not in others; and may call it, if we so please, the annual accumulation of capital. If we wish, however, to compare effective capital or property at one time with effective capital or property at another, we must proceed by the method of periodic stocktaking and valuation, and call the difference between the valuations at different times, allowing for changes of prices, the accumulation of capital. The amounts to be dealt with in either case might not in some cases differ greatly from each other, but the different senses in which the words may be used, and the possibility of differences in the amounts of the accumulations as differently defined and ascertained, should, of course, be kept in mind."[18]

If by annual accumulation we mean with Giffen the annual flow of savings, as reflected in the money streams, Giffen's strictures on this method and his preference for the periodic national wealth estimates can easily be understood; and can be considered valid even now for most of the countries in which the freedom of individuals to invest their savings and the complexity of the channels through which such savings flow would make it exceedingly difficult to attain either a comprehensive estimate or one free from duplications. Also, with reference to flow of savings, it would be difficult to take account of any waste or depreciation. However, it is possible to study annual accumulation not through the observation of monetary flows, but of the flow of commodities and services. It is possible to measure gross formation of wealth and then net formation of wealth, with a fair degree of comprehensiveness.[19] Since the basic data needed for this task are a product of the censuses of production, transportation, and distribution, this method should be the most practicable in all countries that have the usual fundamental censuses.

This method of measuring annual and total accumulation seems to possess advantages lacking in the method of comparing national wealth estimates at successive points of time. First, the annual measurement of gross and net formation of wealth is, for the same level of accuracy, necessarily more comprehensive than the estimate of national wealth, for the simple reason that production and transportation (and even to some extent distribution) are concentrated in the hands of a smaller number of units than is true of the various wealth instruments; and the flows of commodities and such services as cumulate into wealth are more easily observed than the total stock of national wealth (consider e.g., the difficulty of estimating wealth in the hands of households, of government agencies, of wealth represented by education). And while such a difficulty affects also the measurement of

[18] *Growth of Capital*, pp. 3-6.

[19] I am referring here to the National Bureau's studies of capital formation and capital consumption. Broadly defined, capital is synonymous with wealth; and is so used in the studies referred to, subject to limitations imposed by available data.

net additions (through its influence upon estimates of consumption of wealth), its weight there is not as large as it would be in a direct measurement of wealth. Second, for obvious reasons the current flow of goods into wealth is more easily priced, since it passes through the markets during the year; and such thoroughness of valuation means ease in adjusting for changes in price levels. Third, the separate treatment of gross formation of wealth and of consumption, revaluation, etc., is an advantage, since measures of gross formation of wealth have distinct uses of their own; and it is best to deal separately with the involved problem of consumption of wealth (whether 'productive' or 'unproductive') instead of assuming that it is adequately taken account of in successive estimates of national wealth. Finally, the measures of the annual accumulation of wealth, being measures of flow, bear an intimate connection to the estimates of the annual national income, and allow an important breakdown within the latter total.

As compared with these advantages, the method of deriving the accumulation of wealth from national wealth estimates at successive points of time, with the immense difficulties of adjusting for changes in prices and valuation, does not seem a practicable and reliable way of measuring accumulation. To be sure the method has some specific uses. For certain groups of wealth instruments the net accumulation even now can be measured best by a comparison of stocks at successive points of time rather than by observing the flows (e.g., inventories). But such uses of national wealth estimates are obviously few and necessarily transient: the moment our basic data on sales and purchases become more comprehensive, we cease to need the data on year-end inventories in order to measure changes in them.

If there is a place for national wealth estimates in gauging the accumulation of wealth, it is largely as a rough check upon the cumulated results of the annual observation of flows to and from the stock of wealth. To have more than one method of obtaining a final result is always useful, if each of the two methods is of sufficient accuracy so that the result of one can be used to check the result of the other. But if national wealth estimates are to be used for such purposes, their degree of accuracy will have to be closely tested to make certain that it is sufficiently high for any effective use as a statistical check. The troublesome problem of scope, and especially of valuation, will have to be solved more satisfactorily than has been done heretofore, if the resulting wealth estimates are to be sufficiently accurate to serve even as rough checks upon the results of the analysis of annual gross and net accumulation.

4 COMPARISONS WITH YIELDS AND DRAFTS

Comparisons of national wealth with national income, with the total amount of public debt or of debt more widely defined, or with any other yields and drafts appear at first meaningful, because one tends to think of such comparisons in terms of an individual's experience. An individual may compare his wealth with his income, his obligations, his taxes, etc., with results that are enlightening in the consideration of his economic power. But, as will be seen presently, no definite significance can be ascribed to such comparisons when carried through for national totals.

We may first consider the comparison of national wealth with national income; and proceed on the assumption that the two measures are coterminous, i.e., that their scope has been defined equally broadly, so that every item of wealth that yields income (whether positive or negative) is included under national wealth, and every income stream from existing sources is included under national income. Three possibilities may then arise: national wealth may be valued by methods other than capitalization of incomes, or it may be valued by capitalizing incomes, whether only current or current combined with past, or it may be valued by capitalizing current income alone. Of these possibilities, only the first two can yield independent comparisons of wealth and income.

If national wealth is valued by a method that does not take directly into account the income streams, what does the comparison with national income show? It would obviously show what factors, other than current income stream, determine the value of wealth. Such factors are the particular market conditions under which wealth changes or changed hands, the prevailing rate of discount accounting for the preference of present over future goods, the income streams in the past, and so on. The ratio is thus affected by a congeries of factors and can hardly be interpreted satisfactorily. An identical income-wealth ratio for two nations at the same moment of time or for the same nation at two different moments of time conveys no definite information. If one is interested in the peculiar market conditions affecting prices of wealth items in their actual transfer, or in the 'pure' interest rate, or in the differences between past, current, and future income streams, these factors have to be studied directly. The national income-wealth ratio is too ambiguous a measure to be of much help.

This conclusion is equally valid for a comparison of national wealth with national income when the former is valued by capitalizing income streams, that have a coverage wider than the current national income. Here again the resulting ratio reflects the capitalization discount rate and the differences between such income streams as have been considered in the valuation and those that represent the current income flow. Equality of, or differences among, such ratios are not susceptible of clear interpretation and, again, anyone interested in the factors underlying these ratios will have to study them directly.

Moreover, we have assumed thus far that in the comparison national wealth and national income are of equally comprehensive scope. As a matter of practice they rarely are. Few if any estimates of national wealth include the value of human skill and capacity, i.e., the source of incomes that accounts for the most important share of current national income. Thus, during the post-war decade wages and salaries alone accounted for over 60 per cent of total national income in this country; and this percentage should be raised to take account of the service part of entrepreneurial incomes. The failure to include the value of the source of service incomes in total national wealth means that when the latter is compared with total national income, the comparison is of a minor fragment of national wealth with income the bulk of which does not arise from this fragment. Nor can one assume that at various times or among various nations the proportion of the value of human skill and capacity to total national wealth is the same. The ambiguity of the income-wealth ratio as actually computed from usually available measures of national wealth and national income is thus still greater than it would have been were the two totals coterminous.

What of the comparison of national wealth with debt? Here again, excluding the case when the net balance of foreign indebtedness is considered in determining the scope of the national wealth total, little definite meaning attaches to the comparison. Debts are significant primarily as indicators of forced streams of payment of either interest or principal. Their importance is thus best evaluated by comparing either the sum total of interest payments and repayments with the gross income of the debtor or the total of interest payments with the net income of the debtor. A direct comparison of national wealth with debt yields only ambiguous results: total debt may increase more than national wealth, but with a lower scale of interest payments and a higher income flow to the debtor group the economic magnitude of the debt may actually have shrunk.

The same reasoning applies to any comparison of national wealth as a positive item with debts, claims, etc., as negative items. Except when a consideration of these negative items is needed in order to ascertain the net total of national wealth (without duplications) little significance attaches to the comparison. The enlightenment that is sought in such cases is more directly obtained by comparing the forced flow resulting from the existence of debt with the flows to the debtors. And so far as the relation between wealth and debts leads to significant groupings within the national wealth total itself, this use of national wealth estimates is one best characterized as the use for composition analysis (Sec. IV, 6).

5 COMPOSITION ANALYSIS, SUBSTANTIVE APPROACH

The discussion of aims of national wealth measurement has yielded negative results so far. On the assumption that measures of national income are available, the use of national wealth estimates for comparing economic 'strength' of nations, for deriving accumulation of wealth over a period, or for comparisons with incomes, debts, etc., does not seem to promise significant results and justify the attempts to compile the estimates. Only when we reach the use under discussion, the possibility of measuring the relative magnitude of the various component parts of the national wealth total, do specific contributions of the measures seem probable. Because the categories of wealth items are so distinct for the substantive and the claims approaches, separate treatment for each approach is provided.

Some of the significant categories of wealth instruments have been distinguished in the discussion of the composition of national wealth in the substantive approach (Sec. II, 1) and in the discussion of the two approaches combined (Sec. II, 3). In addition to these categories of material and immaterial, reproducible and non-reproducible, perishable and durable, consumers', business and public, some others may be of interest. Of apparent interest are: the distinction (1) among the total of wealth instruments used by the business system proper of the sub-totals disposed of by various branches of the economic system (agriculture, mining, manufacturing, etc.); (2) among various types of consumers' goods by their durability; (3) between monetary metals and other goods.

But what is the reason for this importance and the potential value of measuring the magnitude of existing stocks of goods by the categories mentioned above? The first answer that suggests itself is this: the various categories represent results of activities that are affected by significantly different combinations or factors, or if affected by the same factors, seem to respond in significantly different ways. Thus we distinguish goods held by consumers from those at the disposal of business enterprises, because the disposition of the former goods seems to be influenced by factors, and their flows are subject to temporal patterns, significantly different from those for the latter. Similarly, we keep reproducible goods apart from non-reproducible, because the response of these two categories to an identical stimulus, e.g., a rise in demand, is likely to be entirely different.

But this answer, referring as it does to differences in response and temporal pattern, relates to a distinction among flows rather than among stocks. It justifies the segregation in the total volume of production or consumption of the various categories mentioned. But if goods held by consumers respond differently from goods disposed of by the business system to such a factor as an expected price rise, all one need do is to distinguish between the flow to and from the stock of consumers' goods and the flow to and from the stock of goods at the disposal of the business system. Assuming that it is possible to measure such flows comprehensively and in detail, would anything be contributed by a measure of the *stocks* of these goods?

The answer is in the affirmative because within these categories stocks bear a significant relation to volume of activity. Hence a consideration of the magnitude of stocks is indispensable for an understanding of the changes in the flows to or from them. Thus, the stock of economic goods we designate as 'inventory' is itself an instrument of production in the hands of a merchant, and bears a significant relation to the volume of activity that can be performed by a merchant within a given period. Unless we measure the inventory and appraise the bearing of its magnitude upon sales, it is impossible to understand the changes in the flow of purchases and sales by the merchant. The same reasoning applies to many other groups of wealth instruments. As illustrations, consider the influence of: (1) inventories and fixed capital goods held by producers on the flow of production, (2) the stock of monetary metals on the operation of the money and credit system, (3) the stock of goods held by ultimate consumers on their demand, (4) the stock of human skill and capacity on adaptation to changing demand for labor of various types. With the existence of significant relations between the magnitude of such stocks and the volumes of the flows to which they contribute, the measurement of the magnitude of the former is an indispensable step in the analysis and understanding of the changes that occur in the latter.

This reasoning may at first seem to be in contradiction to the statement above of the ambiguity of a comparison between national wealth and national income. If the stock of goods bears a significant relation to the flows it assists in producing, and if the magnitude of the stocks has to be studied preliminary to an analysis of factors that affect the flows, is not the same true of the bearing of national wealth upon national income? But the contradiction is only apparent. First, the magnitude of stocks of economic goods is important only if measured for various significant categories, and the categories must be significant in the sense stated above, i.e., they must segregate groups in which economic activity seems to be affected by significantly different factors. The trouble with a national wealth-national income ratio is precisely that it results from comparisons of global quantities in which the significant subcomponents are hopelessly intermixed. Second, national income is only one type or, rather, aspect of the flow to which national wealth contributes. There are other types with reference to which the magnitude of existing stocks of goods, when distinguished by significant categories, bears a more determinate relation: e.g., the total volume of activity of a given sector of the economy rather than the share of national income originating in it.

If this argument as to the importance of measuring *stocks* of goods by significant groups is accepted, several inferences can be drawn. First, any changes or differences in the relative magnitude of these stocks signify changes or differences in the way the fluctuations in activity within the various categories combine into a total characterizing the economy as a whole. A shift in the relative importance of inventories and fixed capital equipment is important in understanding how the fluctuations in the volume of fixed durable investment will combine with the fluctuations in the volume of short term investment in inventories. Hence, if comprehensive measures of flow are not available, and they are rarely available, the totals of stocks of various groups of wealth instruments provide the needed weights with which measures of change of various degrees of incompleteness may be combined. And sometimes the data on stocks may be available by categories for which the data on flows may not be available; in which case the former will provide a substitute for the latter. Here again, the use of wealth data for significant categories rather than for the global total admits of a promising use, which, when applied to the latter, would yield results of little importance.

Second, to measure existing stocks of wealth instruments is important only for groups in which the bearing of the stock upon volume of activity and changes in activity is perceived; and whatever national wealth total is to be formed by adding the magnitudes for the various categories distinguished should be limited by relevance to economic analysis. This consideration seems to have influenced, if unconsciously, most estimates of national wealth made in the past. All estimates of national wealth include inventories and fixed capital equipment of the business system because of the obvious significance of these stocks in determining the volume of economic activity, and the importance of having the magnitudes available for understanding why the business community acts as it does. The reluctance to include such an item as public wealth resides in a doubt that the volume of public wealth is definitively determined by the volume of activity of public agencies, and that the activity of public agencies is as clearly subject to economic analysis as that of the business system. The reluctance to deal with the value of human skill and capacity lies not so much in the difficulty of measurement (other elements included in some estimates may have offered greater difficulties) as in the doubt that the production of such skill and capacity, as determined by the man who will eventually possess them, is influenced by factors susceptible to economic analysis.

This leads to the other part of the same inference, viz., that the national wealth total itself is largely conditioned by the nature of the economic problem in which the measures will be utilized. For some problems the consideration can be limited to wealth disposed of by the business system proper; for other problems the scope will have to be much wider. Any 'general' statements made with reference to categories and totals will be general only because predicated upon prospective use for the most obvious economic problems of a given country and time. If problems of occupational composition of the population had been more in the foreground of economic analysis, the estimates of national wealth would have paid more attention to the evaluation of the stock of human skill and capacities. And it is equally obvious that if speculation and activity in real estate had not played a prominent part in the changing economic activity of this and other countries, less attention would have been paid to the inclusion of this item (especially the value of land) in the national wealth totals.

The demands of the economic analyses in which estimates of groups of wealth instruments are to be used should dictate the answer to the questions not only of scope but also of valuation. For some problems the gross value of such instruments, at either original or reproduction cost, is more significant than the gross value adjusted for accumulated consumption. For other problems either original cost or reproduction cost is the valid method. For still others the current market price may be the only admissible basis of valuation. No general statement can be made except the need of considering the various problems in which the estimates are to be used in deciding the questions of valuation. And it is quite possible that such consideration will call for application of different methods of valuation to different groups of wealth instruments, as the only condition of the comparability of the latter and of their addibility into a significant total.

6 COMPOSITION ANALYSIS, CLAIMS APPROACH

It has just been contended that the magnitudes of stocks of wealth instruments, by significant groups distinguished largely from the viewpoint of the substantive approach, are important in analyses that seek understanding of the causes and the course of economic change. A similar contention may be made for magnitudes that would result for wealth categories distinguishable in the claims approach. If measures of inventories and fixed capital equipment are necessary to understand fluctuations in flows of the goods to which they contribute, it is equally true that measures of various types of claims are needed to understand fluctuations in a number of monetary flows: distinguishable types of claims signify differences in the freedom and hence elasticity with which various monetary streams can adapt themselves to changing conditions or different stimuli. Indeed, complete analysis requires measures of wealth items based upon both approaches; if the two are treated here separately, it is largely a matter of convenience in presentation, rather than of essential independence of results of the two approaches in the treatment of economic problems. It follows that categories, methods of valuation, and totals of national wealth consistent with the claims approach are also conditioned by the demands of the economic problems in the analysis of which the results are to be used.

However, for the important uses under discussion, the claims approach, as analysed above in connection with the scope of national wealth totals, should be extended in one important respect. So far we have dealt primarily with the *net* total of claims; and while the duplication and multiplication of offsetting claims was mentioned, the scope of national wealth could be determined in terms of the net total, disregarding the pyramid of claims superimposed upon the base area of net equities. This emphasis on the *net* total led directly to the treatment of all claims as residing in individuals; for after all the offsetting is done, the aggregate of individuals comprising the nation may be recognized as the ultimate claimants.

In considering the possible use in economic analysis of measures of groups of claims, this net residue approach seems oversimplified. For any operating economic unit, the net total of claims by individuals it represents does not describe adequately its magnitude and role in economic activity. For this purpose all claims that impinge upon this unit should be considered, the gross value of both claims that individuals exercise through it and obligations to which the same individuals subject themselves through the same unit. Thus in considering, for purposes of economic analysis, the complex of claims represented by a business corporation, it is not sufficient to compute only such net worth as represents the net claims of the individuals who are the corporation's stock and bond holders. Before offsetting, one should consider also the indebtedness of the corporation and the gross value of individuals' claims upon it. For, obviously, the character of the claims that are used as the offsetting quantity, as well as of those used to derive the positive value of the complex of claims, is an important element in the analysis that traces the connection between stocks of claims and flows of payment.

But in such treatment, what becomes of the reference of all claims to individuals as ultimate claimants? We may either abandon or retain this reference. Abandonment would involve the admittance of claimants that are not individuals but are either legal or other operational entities. Business and other enterprises would appear as such entities, with the result that claims by these enterprises and obligations upon them would be recognized, instead of only claims by and to individuals. Retention of the reference of all claims to individuals would be possible on two conditions: (a) that detailed distinction of individuals' claims by degree of indirectness be introduced, in addition to all other classifications that may seem necessary in the analysis; (b) that in considering claims for each individual, his gross claims and offsetting obligations be measured and classified separately (in the various classifications that may be deemed necessary), and the measure thus go beyond the net residue of claims for each individual.

The choice between these alternatives is determined largely by the problem in the analysis of which the measured magnitude of claims is supposed to assist. When the problem involves the consideration of activities of non-individual entities as such, recognition of these entities as claimants is necessary and the reference of all claims to individuals must be abandoned. In this case, claims and obligations of business and other enterprises are to be treated directly and measured as such; and the individuals will be considered only as they appear at one of the ends of binary links that are represented by claims or obligations in this approach. If the problem involves the consideration of individuals as individuals, and of them alone, then, of course, reference of all claims to individuals as the ultimate claimants is indispensable. Instead of binary links, the chain of claims and obligations may and will necessarily be stretched longer until it reaches from one individual to the next; but for every individual his gross claims and offsetting obligations are to be considered and measured separately.

This discussion has direct bearing upon one classification that is peculiar to the claims approach and is not significant in the substantive approach, distribution of wealth by size among individuals or families. In view of the wide interest in this calssification and the frequency with which, in the past, data have been tortured into a semblance of a distribution, a few comments are perhaps not out of order.

The basic purpose of apportioning wealth by size among individuals and families is to measure their relative economic power and to ascertain how equally or unequally such power is distributed. It follows from the discussion throughout this essay that a satisfactory distribution of wealth by size among individuals or families should conform to the following requirements: (a) it should be most comprehensive, i.e., include all items of wealth, all scarce sources of desirable and disposable events with reference to which there may be inequality among individuals and families; (b) it should consider not only the net balance of claims and obligations, but also the gross claims and obligations, since variation in the character of the two affects the meaning of the net residual; (c) it should distinguish various types of claims, and especially operate with the indispensable distinction between direct-indirect, transferable-non-transferable; (d) it should likewise distinguish various types of obligations, by characteristics important to the debtor; (e) it should allow either directly or by cross-classification with the relevant variable (e.g., regional location) for differences in the purchasing power of the money in which the claims and obligations are evaluated.

As contrasted with a distribution of wealth by size so articulated, the usual estimates customarily begin with a national wealth total (net in character) which omits such an important source of income as skill and capacity; proceeds to distribute this net total by size among individuals and families without reference to the character of the claims and obligations, or the purchasing power of the monetary equivalents. In such an estimate a farmer whose only wealth is a farm with a gross value of $20,000 and a mortgage of $15,000 is as rich as a young physician who during his first few years of practice saved $3,000 and invested another $2,000 in office equipment, etc., a result patently absurd as a measure of economic power, whether one treats it as power in the long run of normal economic activity or as reserve power for emergencies. Such distributions seem to be on a par with other uses of national wealth totals of the type discussed in the early parts of the present Section of this paper. They represent misuses of statistical data due largely to a failure, often unconscious, to analyse closely the relation between the aim of the measure and the conditions it should satisfy.

V Summary and Conclusions

Section I defined the concept of national wealth and described the two basic approaches to its measurement and analysis. Section II is devoted to a description of the variants of the national wealth total and their composition, from the viewpoint of each approach taken separately and then of the two combined. In Section III, in considering the problem of valuation, we encountered the basic difficulties of measurement of national wealth and indicated that such difficulties could be solved only by a drastic limitation of the scope of the concept. In Section IV the discussion of the various aims of national wealth measurement indicated that for important groups of uses the most comprehensive concept should be employed; and that even then the specific contribution of national wealth totals is insignificant, provided that national income measurements are available and that measurement of the current flows to and from the stock of wealth is practicable. The only significant uses to which wealth measurements can be put are in composition analysis, i.e., in the valuation of stocks of wealth items for groups significant in that for such groups stocks have a definite bearing upon changes in the flows in whose production they are indispensable.

The dependence of wealth measures upon their use in analysis of various economic problems makes it impossible to define exactly the scope, composition, and basis of valuation of national wealth estimates, without a specific definition of those economic problems in the elucidation of which such measures are important. This accounts for the vagueness of the discussion in Sections IV, 5 and IV, 6 where we could indicate only the directions in which measures of stocks of wealth items might prove to be of use. There is thus a disturbing but unavoidable contrast between the specificity of our negative results with reference to the uses claimed in the past for national wealth measures and proved to be of illusory value and the vagueness of our positive statements with reference to the uses in which the measures of national wealth, by various categories, may prove to be significant.

Some of these uses are already apparent, thanks to studies that have been made in the past that have indicated significant relations between stocks of wealth instruments and the fluctuations in the flows to which they contribute. Many others will become more securely established as a result of further experimental study. For such study we shall need both more data than we now possess and further refinements of the already available data. Thus for the measurement of wealth in the substantive approach we need data on stocks of wealth instruments in the hands of public and semi-public agencies, these stocks appropriately classified; on stocks of goods in the hands of ultimate consumers; on value of real estate not covered under corporate reporting or in the Census of Families, with the indispensable breakdown between the value of land and improvements; data on the value of human capital; information upon the pricing and evaluation of various items of wealth. And there are refinements of already available data that would increase their usefulness considerably: segregation of land from improvements, and of real estate from machinery and equipment in all corporate reports on fixed assets; the provision of data separately on gross value and on accumulated consumption of such assets; the breakdown of producers' inventories among raw materials, in process, and finished products; and the provision of detailed information on the methods by which values of wealth instruments now recorded have been obtained.

A similar list of needs can be easily prepared for the claims approach. We obviously lack data on the volume of obligations by individuals as ultimate consumers, including personal loans, installment credit, open book credit, loans on insurance policies, etc.; on obligations of individuals as holders of real estate, whether residential or not; on claims and obligations of individuals, security investors, and speculators; on the volume of both claims and obligations of non-incorporated enterprises, whether private or semi-public; and perhaps most important of all, on terms under which claims are born and die. Obvious refinements of existing information are also in order, such as more adequate indication of the industrial direction of claims by one group of business enterprises upon the others; a better breakdown of miscellaneous assets and liabilities, and of surplus plus undivided profit items.

But it is unwise to attempt to set out in detail here the specific positive uses to which national wealth estimates, properly broken down, may be put; and the specific areas of the field in which there is need for further data or analysis, that would make it possible to prepare estimates suitable for significant uses. The first task requires a careful inventory of the various studies that have already utilized wealth measures of varying degrees of inclusiveness and an evaluation of the indispensability and fruitfulness of such measures in the analyses made. The second task requires, in addition, a careful inventory of all the materials now available bearing upon wealth measurement as a basis for listing what appears to be missing. Neither task can be handled easily within the confines of this paper, and within the present competence of its author.

Discussion

I R. T. BYE

Formerly, economics was thought to deal primarily with wealth; income was given a distinctly subordinate position. Economics, indeed, was often defined as 'the science of wealth'. Even the subject of distribution, which really deals with income, was referred to as 'the distribution of wealth'. Yet, on careful reflection, it must be recognized that it is income, not wealth, that is the primary objective of economic endeavor. Wealth has no meaning except through its association with income. This is well illustrated by the principle, long recognized, that the mere creation of material things does not result in wealth; material goods are wealth only when they yield some useful product, that is, income. By the same token, the value of wealth depends upon the income it yields, being derived therefrom through the process of capitalization or discounting, as Dr. Kuznets observes. Since the very concept of wealth is thus a correlative of income and consists in its power to yield income, rather than in its materiality, there seems to be a logical basis for abandoning the idea that wealth is confined to material objects and to recognize that any source of income is wealth, just as any income-bearing asset has a capital value. So construed, the term wealth will include human beings, as well as such intangibles as acquired knowledge and skills, and even the inventive genius of a people and the political forms and habits of a nation, all of which affect its productive power. In these matters, therefore, I find myself in substantial accord with Dr. Kuznets, as well as with Irving Fisher and others who have expressed similar views.

However, it is not so clear that measures of wealth can be entirely discarded for measures of income. Income statistics show us what our product has been in the past, but wealth is productive capacity for the future. A measurement of wealth, therefore, if a satisfactory one can be found, will indicate what our future income is likely to be. The difficulty is to secure a satisfactory measurement. The income of future years is a matter of uncertainty about which the best predictions are none too good; it can be questioned, therefore, whether estimates of wealth can be very reliable. No doubt the capital valuations of the market place are an attempt to discount the future, but the speculative element in them is so very great that one cannot place much reliance upon the figures, and of course they are confined almost entirely to material wealth, ignoring intangibles.

Apart from the difficulty of measuring the non-material forms of wealth, there is a further question, voiced by Lionel Robbins, as to the validity of statistical value totals. Robbins argues that, since values are merely expressions of exchange ratios between different goods, their total has no meaning. Prices are, of course, merely monetary measures of value ratios. Suppose we have two factories, one valued at $200,000, the other at $100,000. This merely means that one is worth twice as much in exchange as the other. Of what significance then is the sum of $300,000, which represents the addition of the two combined? Is it not a logical absurdity? This objection applies to income totals as much as it does to wealth totals.

Yet both wealth and income have objective reality apart from their exchange ratios. Commodities and services, capital equipment, inventions, and other forms of productive power do exist, and ought to be susceptible to measurement. Is there, perhaps, a more suitable method of measuring them than the value totals that have usually been employed? I have a feeling that, in our search for objective concepts that can be expressed quantitatively we tend to take the easiest path, rather than the most correct. This underlies the desire on the part of many to define wealth in terms of materiality, so that the elusive and baffling intangibles may be omitted from the picture, and it is perhaps the reason for attempting to measure wealth and income in terms of value totals. But we are only deluding ourselves if we imagine that we get fundamental measures of economic phenomena by such means. No mere aggregates of wealth or income will ever tell us anything about changes in the content, the kind and quality of the stock of wealth, or the income flows; yet these qualitative changes are more significant than any others. I believe that if statisticians would devote more effort to problems of this sort, some progress might be made. I have in mind more investigations similar to that made by Willard Thorp in a Census monograph of some years ago, when he attempted to estimate the increase in our productive capacity by expressing it in terms of the horsepower of existing mechanical equipment, and such physical indexes of production as that of W. W. Stewart. I believe that if statisticians would go resolutely at the task, they might eventually find some way to measure changes even of the qualitative sort.

Dr. Copeland objects to any attempt to define wealth in terms other than the pecuniary values of the market. He argues that other units of measure, such as the foot, are purely arbitrary and relative and have no meaning other than that given to them by accepted usage. This seems to me to be confusing the unit of measurement with the thing to be measured. The concept of wealth is one thing; the unit we should use to measure it is another, and we need to define that concept with care. Surely Dr. Copeland must know that everyday usage of such terms as wealth and income are vague, varying, and inconsistent. They will not suffice for scientific purposes. We cannot hope to arrive at useful measures of economic phenomena until we first carefully define the thing whose measurement we are attempting, and we cannot avoid the difficulties of handling such imponderables in economics as non-material wealth by arguing that we must take the concepts of the business world as we find them. However, I do not think we need take Dr. Copeland's remarks on this subject too seriously, for his and Mr. Martin's paper[1] is admitedly an attempt to get behind the value measures of income afforded by the market to the concept of physical or real product as conceived by the economist. Therefore, we may assume that he would deal similarly with wealth.

[1] Part Two.

II GERHARD COLM

Dr. Kuznets' examination of the concept and the measurement of national wealth leads to the conclusion that measures of national wealth are more dubious than measures of national income and their use much more restricted in economic analysis. Since national wealth and national income totals represent attempts to grasp more or less the same phenomenon, Dr. Kuznets believes that national wealth totals are of little use when estimates of national income are available. Composition analysis alone may result in additional information.

I agree that the concept of national wealth raises more problems than the concept of national income, and I should like to add a few arguments to those suggested by Dr. Kuznets in this respect. On the other hand I should like to emphasize the relative usefulness of estimates of national wealth within the limitations that are rightly stressed by Dr. Kuznets.

The measurement of national wealth has a lower degree of reality than the measurement of national income. However national income may be defined and measured, it comprises the whole or a part of the national product of a period. During this period the major part of the national product is exchanged at certain prices. These prices are the basis for the measurement of national income and they are *real* because the product was actually sold and bought at these prices. Only for measuring a relatively small part of the national product must fictitious prices be used in imputing values.

National wealth is a measure of the stock of instruments that at a specific moment are disposable by the members of a nation individually or collectively for use in production or in consumption. Only a small fraction of all these instruments actually change hands. Therefore actual prices that can be used in evaluating these instruments relate to a much less significant part of the total than in evaluating the social product. Most of the prices on which the estimates of national wealth are based are fictitious.

In two instance of major importance, however, the estimate of national income is more fictitious or incomplete than the estimate of the corresponding items in national wealth. It is easier to estimate the value of personal property such as jewels, furniture, pieces of art in private possession, household equipment, at a specific moment than the services that may be derived from them during a period. Except in the case of houses owned by their occupants an attempt has seldom been made to measure such services, because an evaluation would be fictitious, while an estimate of the value of personal property is less difficult. The same holds true for the measurement of public properties like roads, buildings, dams, waterways, bridges, libraries, warships, and cannons. It is possible to evaluate these items on the basis of cost or reproduction prices, while measurement of the value of current services derived from such properties would be very unreal. The correct evaluation of consumptive and of public wealth involves difficult problems; yet an inclusion of the services of these instruments in national income estimates is even more difficult. When it has been attempted, the property value has first been estimated and from this an income estimate derived.

For the whole sphere of production for profit it remains true that the measurement of current yield provides the basis for the measurement of the capital value. I have very little to add to Dr. Kuznets' excellent discussion of the various methods of valuation. For this whole sphere of instruments owned for profit the capitalization of revenue is the decisive method. The capitalization may be performed either by the statistician on the basis of an estimate of expected future revenues or by the parties selling and buying capital goods or capital claims in the actual economic process. The latter is the method if market prices are used in estimating capital value.[1] In both methods the fundamental question arises what the *real economic significance of the capitalization of expected revenues* is. The capitalization of an expected revenue has been developed as a means for comparing various types of investment. By capitalizing the expected revenue of an enterprise the question can be answered how much loan capital a capitalist must invest in order to receive as interest the same annual revenue that he expects to receive from the enterprise whose valuation is under consideration. An investor, in deciding how much he is willing to pay for the purchase of an enterprise

[1] Here we do not need to deal with the secondary factors in addition to the capitalization of expected revenues which determine the price of capital goods.

or of shares in an enterprise or of real estate, must compare how much he would receive as interest if he invested a corresponding amount with a savings bank or in first grade bonds. Capitalization is a means for comparing various types of investment. Can it be used for measuring wealth which comprises all possible types of investment? This is of course a question similar to the old problem of measuring the world by units that were designed for the comparison of weight. This consideration supports Dr. Kuznets' conclusion that national wealth as an absolute expression of welfare is an erroneous concept. This conclusion does not, however, seem important if we consider that national wealth estimates have mainly been used either for comparison from time to time and from country to country or for composition analysis.

The use of national wealth estimates for comparison from country to country or from time to time has meaning only if the interest rate in both countries or at both times is similar and has the same importance for the capital market as a whole. In recent times the general rate of interest has declined in importance because the capital market has been split into various sections with relatively little interdependence. This is, of course, a situation quite different from the conditions at a time when the capital yield for various types of investment was closely correlated to the interest on first grade bonds.

The comparison of national wealth estimates further presupposes that the distribution of income among the various factors of production is similar. If national wealth is defined not only as the stock of instruments for production or consumption but includes in addition 'human capital', as Dr. Kuznets suggests, then the estimate comprises a capitalization of profit, interest, and wages. Then a difference in the distribution of income among the various factors connot influence the sum total of wealth. The inclusion of 'human capital' does not, however, seem to me feasible. In this respect I should like to venture a criticism of Dr. Kuznets' paper. Wealth always implies a subject that can dispose of an object. It could be construed, of course, that the worker owns his ability to work and capitalizes his reward in order to measure its value. But he can capitalize only his net revenue, i.e., the revenue after deduction of current expenses. I do not see any practical way of dividing the wage into two parts, one considered as compensation for expenses for the reproduction of the ability to work, one as a net return from the 'human capital'. The expenses for the reproduction of the ability to work comprise the 'investments' necessary for raising children up to the age of gainful occupation, including the public costs of education; the current expenses for making a living during the time of gainful occupation and an amount for depletion of the ability to work. A further deduction is needed for the fact that those men and women who are able to earn must support those who are unable to work. This deduction may take the form of expenses for the support of members of the family, of charity payments, or of taxes for the support of people on relief. In any case, there is a human liability to be deducted from the human assets in calculating the net value of the 'human capital'.

Now it appears that this net value of 'human capital' will not be an item comparable in size to the value of the 'instruments' of production and consumption; its calculation implies arbitrary assumptions of imputed values; and it is superfluous for most purposes of composition analysis of national wealth. Therefore, I suggest that estimates of wealth be confined to the realm of the 'instruments' of production and consumption.

The computation of the value of human capital would be feasible only in the case of some rare and highly desired skills where the reward is obviously higher than the costs of reproduction. Yet even in such a case I should prefer to count only the products of such a genius, be they patents, paintings, books, or achievements in organization (which are all expressed in other items of wealth) and to regard the skill that may lead to further achievements as belonging to the category of *potential* wealth which will be counted only after it creates *actual* wealth.[2]

Another construction could regard the net value of 'human capital' as the difference between the productivity of labor and the cost of labor to the entrepreneur. This net value of 'human capital' cannot be added to the value of instruments of production because it is already one factor that determines the revenue

[2] This eliminates the 'capital' a great singer has in his voice. He creates not wealth but services, unless he produces phonograph records.

that can be expected from the material capital and that determines thereby the capital value. There is no capital value of instruments of production independent of the net value of 'human capital', in this meaning of the word.

If the net value of human capital is not counted as a separate item in national wealth, then an increase in labor costs without a corresponding increase in productivity of labor, i.e., an increase in labor costs at the expense of profit or of interest, affects total wealth. An increase of the ratio of labor in the social product does not in itself make a country really poorer. Therefore a comparison is possible only upon the assumption that the distribution among the factors of production is not changed except by changes in their relative productivity.

The national wealth estimate must use various methods of valuation for the various parts of national wealth. While the method of capitalization of future revenues (in the form either of capitalization by the statistician or of the market price) may be used for the whole sphere of profitable instruments, costs of production or reproduction are mainly used for evaluating public property. By using these two methods an estimate of national wealth "reflects not only the current year's income but also the past and a reasonable forecast of the future" (IV, 2). It is also true that the estimate of annual national income is determined by some factors determined by past events (depreciation and obsolescence) and some factors anticipating future events (investments for future production), yet this problem of time as a determining factor is of much greater importance in the estimate of national wealth. Exact capitalization does not imply the multiplication of the current year's revenue by some multiplier. The real meaning of capitalization requires that future revenues be transformed into their present day value by the method of discounting. The present day value of a future return becomes smaller the more distant the future is. Oil sources that can produce a certain quantity per year during fifty years and oil sources that can produce the same quantity per year during one hundred years have almost the same present day value. A dam or a canal designed to last centuries has virtually the same present day value as a dam or canal that will necessitate major expenses for repairs after several decades, because the expenses for repair that will be necessary in some future decade have a relatively small present day capital value. If measured at cost prices of reproduction, however, the value of a dam or canal so solidly built that it will last a century without major repairs will be much greater than of the construction that will necessitate early repairs. What are the 'real' values of future returns? I doubt whether in the sphere of public properties the capitalization of future returns would be more nearly correct than the application of cost or reproduction values, even if it were feasible to use the capitalization method for such projects. Behind the fact that dams and canals are built to last a long time, behind the whole policy of the conservation of natural resources and many other government policies lies the opinion that the future requires a consideration by the government different from the one that results from discounting future returns. It is not a result solely of a lack of accounting practice in public administration that in countries where public and private forests exist side by side the prevalent types of trees in the public forest are those which require a much longer period from planting to commercial use than in private forests. From the point of view of business accounting, investments in such public forest must be regarded as waste because the investments are more expensive than the sum of discounted expected returns. This does not mean, of course, that for a consideration of public policy a return of a distant year ought to be valued equally with a return of next year. It means only that the valuation of future returns from the point of view of public policy may differ from the valuation that results automatically from the capitalization method. To apply cost values (minus depreciation and obsolescence) to public investments seems to be justified under the assumption that the public authorities pay due attention to the relation between present expense and future returns. The application of different methods of valuation in the public and private sphere can therefore not be regarded as a fundamental objection against the computation of national wealth totals.[3]

I should like to mention in this context the problem of evaluating natural resources in private or public hands that are not yet being used at the time of the estimate. They must be regarded

[3] It is impossible to deal here in detail with the interesting problem of the valuation of time in the public and private spheres of the economy.

as *potential* rather than as *actual* wealth so long as they are not yet used as an instrument for production. Drawing the line between actual and potential wealth is another of the great problems involved in the concept of national wealth.

National wealth and national income are two totals that can be used to compare the welfare of various countries and various periods. Either total can be used for this purpose only with great reservation. The greatest shortcoming of national income estimates is that they can cover but a portion of the total national product[4] and that they depend on the accidental conditions of the period for which the estimate has been made. National wealth estimates are less dependent on fluctuating business conditions, but this advantage creates at the same time great difficulties. It results in the necessity of employing fictitious values and of meeting the baffling problem of the time factor.

Despite these additional difficulties an estimate of national wealth is not useless even if reliable income estimates are available. First, even assuming that national wealth is only another expression of the phenomenon that is measured also by income estimates, it would not be useless. If for a comparison of two countries or two periods, national income figures are available, the comparison would be checked by national wealth estimates which are based on entirely different statistical sources. Moreover, it makes possible, as Dr. Kuznets rightly says, other classifications. The distribution of income and of property are not identical. Private indebtedness can be measured only by comparing it with capital values. The comparison of the growth of productive and consumptive wealth, of private and public property, of incorporated and non-incorporated capital, are of the greatest interest. For all such classifications an estimate of national wealth is needed not as a measure of absolute value in itself but as a figure to which the parts can be related in order to show the relative importance of certain elements of national wealth. This figure of reference will be either the most comprehensive estimate of national wealth or a part of it, such as total private wealth or total productive wealth (capital) corresponding to the problem under consideration. Thus I conclude that the

[4] Compare my article in *Volume One*, Part Five, Sec. I.

concept of national wealth is meaningless as an *absolute* expression of economic welfare; it has a limited value for international and intertemporal *comparisons*; it is almost indispensable for analyzing the *composition* of wealth and for the international or intertemporal comparison of this composition. I believe that this conclusion is in agreement with Dr. Kuznets' except perhaps in the emphasis.

III M. A. COPELAND

Dr. Kuznets' paper might be summarized as follows: wealth is defined in abstruse terms; several variants of the wealth concept are distinguished as well as a variety of valuation bases for wealth measurement; wealth is held to be more difficult to measure than income and a global measurement of wealth to be of little use. To say the least, this is hardly an optimistic view of the prospects of adding to our knowledge through the development of wealth measurements.

I should like to try to indicate why I think a somewhat less pessimistic view is warranted. First, I suggest a word of comment on his abstruse definition of wealth. To me it seems a definition that does not define (i.e., delimit adequately), for I submit that except for the unanthropomorphic connotation of the word 'stock' it is a fairly good characterization of a primitive conception of the deity—"the stock of sources of events for which . . . individuals . . . are willing to make sacrifices (i.e., to pay)" (I, 1). I may add that virtue, beauty, social distinction, and truth are evidently included in wealth according to Dr. Kuznets' concept.

A scientific definition of wealth would seem to me to run in terms of the method of measurement, i.e., in terms of a consolidation of balance sheets. A definition of this type has already achieved widespread recognition in the case of social income, i.e., in terms of a consolidation of the income statements of the enterprises of which a society consists. I have suggested elsewhere that if economists define basic economic concepts such as wealth and income by specifying only the processes of measurement, e.g., if they define wealth by specifying those processes which lead them to conclude that the wealth of the United States at a given date is so and so many billion dollars, they will have followed the example of the physical sciences.[1] Thus the physicist defines the distance between two points in terms of the number of separate superpositions of a specified type that can be made upon a straight line between them by a given meter stick or standard bar. Again, the mass of a body may be defined in terms of the process of comparison with a standard gram on a suspension balance.[2] Properties other than the property of measurability (or observability) in the specified way are irrelevant to the definition. They are not ruled out, however, but are determined by subsequent observations; for example, it may be determined that the attraction of two bodies varies directly with the product of their masses and inversely with the square of the distance between them.

When Dr. Kuznets says of an analysis of national wealth into claims that "the claims considered are not exactly identical with legal rights and claims as they appear on the statute books or in the decisions of courts. No mere economist is able to deal with the intricacies of a nation's legal framework", he appears definitely to deny an accounting approach to wealth, for the mere accountant admittedly deals with legal claims and rights. The avoidance of an accounting approach is, I believe, responsible for Dr. Kuznets' holding that "even if care is exercised to assign claims in all cases where a source of desirable events is identified . . . totals of national wealth obtained by the substantive and the claims approaches will not be identical in either scope or magnitude." His substantive approach is primarily an approach in terms of assets; his claims approach is primarily an approach in terms of equities. The failure to obtain identical totals through the substantive approach and the claims approach is due chiefly to two facts: (a) valuations of assets and of equities may be independent and inconsistent; (b) for a non-isolated economy

[1] Cf. 'National Wealth and Income—An Interpretation', *Journal of the American Statistical Association*, June 1935, pp. 377-8.

[2] I do not mean here to be presenting a definition of any of the four items: wealth, social income, distance, and mass. I merely intend to indicate the general characteristics I believe a definition of each of these four concepts should have. Most of my paper in *Volume One*, Part One, was devoted to a definition of social income of the type here advocated.

some assets may be equities in other parts of the world and are thus not regarded by Dr. Kuznets as items of (non-material) 'substantive' wealth. I suggest rewording Dr. Kuznets' proposition in terms of assets and equities and omitting the word 'not', thus: "If care is exercised to identify the equities in all cases where an asset is identified, and conversely, totals of national wealth obtained by the asset and equity approaches will necessarily be identical if the valuations are consistent."

Since Dr. Kuznets' argument is largely negative in character it may be appropriate to suggest that when he finds difficulties in estimating wealth he is in some degree hitting at a straw man. Few economists have regarded human beings as forms of wealth. An accounting approach to wealth would exclude them from the leading or basic concept of wealth except where slavery prevails. Dr. Kuznets has not found it practicable to include in national income many items that correspond to items in the global conception of wealth which he finds so difficult to measure, e.g., the value of housewives' services. A more modest and usual conception of wealth would be easier to measure.

Incidentally, for any given concept of national wealth there is a corresponding concept of national income, and conversely. Dr. Kuznets does not investigate the concepts of national income that correspond to each of his variants of national wealth. Consequently, when he comes to assert of his most global concept of national wealth, "On the assumption that measures of national income are available, the use of national wealth estimates for comparing economic 'strength' of nations, for deriving accumulation of wealth over a period, or for comparisons with incomes, debts, etc., does not seem to promise significant results" (IV, 5), he is using the term national income in an unspecified sense. Presumably, if he is consistent, compensation for damages to human beings will not be a part of this national income, nor will the costs of maintenance and repairs of human beings; but the value of the annual addition to the stock of human beings will be a part of the (saved) income of the nation just as will the value of the addition to other livestock.

Dr. Kuznets' difficulty in finding use for a global estimate of wealth may be explained partly by noting that a similar difficulty exists if we attempt to explain the use of a mere global estimate of national income. Such general statistical measures as a global figure for national income or an all commodity wholesale price index are of little use until we begin to investigate their breakdowns.

However, when Dr. Kuznets argues that the global figure for wealth adds nothing to the global income figure for international comparisons and time comparisons, one may note that he does not recognize adequately the possibility that he has not exhausted all the cases. Thus, he tells us that a wealth-income ratio (presumably a wealth-property income ratio if capital values of human beings are excluded) either reveals nothing but the method of computation of wealth or is difficult to interpret. As indicating one possible omission in his argument by elimination I suggest that he did not, in writing this passage, contemplate the use of wealth measurements in making comparative measures of changes in social input and output as discussed by Mr. Martin and myself.[3]

Dr. Kuznets also argues that for purposes of time comparisons global national wealth estimates add little to global saved income estimates. One may agree with him that saved income and the increment in wealth are identical and still find it advantageous to compare the amount of the increment with the amount of total wealth, as indeed Dr. Kuznets does on pages 50-51 of *National Income and Capital Formation, 1919-1935*. The interrelation of the physicist's concepts of velocity and displacement does not make either a substitute for the other; nor does the interrelation between saved income and wealth, as Dr. Kuznets seems to urge. Moreover, when Dr. Kuznets suggests that measurements of wealth are not yet sufficiently accurate to afford a check on measurements of saved income (IV, 3) he is in difficulty. "The troublesome problem of scope, and especially of valuation" is probably no less troublesome when applied to measure gross and net capital formation than when applied to those items of wealth that need to be measured to provide a check on annual measurements of gross and net capital formation. So far as the 'troublesome problem' of *scope* goes, clearly the case is precisely on all fours. The crucial importance of *valuation* for the measure-

[3] Part Two.

ment of annual increments may be seen by saying that 60 to 65 per cent of gross capital formation, 1920-35, according to Dr. Kuznets, was for replacements. I see no reason to believe that the difficulties of valuation here are less than in the case of the corresponding wealth measurements, and the wealth measurements are presumably more sensitive.

Three minor comments on Dr. Kuznets' paper may be offered.
1) The scheme of classification of claims or equities might well include priorities as a basis of classification.
2) His discussion of the capitalization of income (III, 1) might give an appropriate separate recognition to a fourth item in the analysis (in addition to expected income, its time-shape and the rate of interest), namely, the probable error of each installment of expected income. This seems especially advisable since he assumes that the current rate of interest to be used is "the 'pure' interest rate, i.e., the rate that expresses the marginal productivity of capital", whatever that may be.
3) Dr. Kuznets' discussion of reproduction cost (III, 3) seems to me to fail to recognize the complexity of this method of valuation as it has been revealed in practice in the case of public utility valuations. I suggest these difficulties may be a reason for giving more attention to book valuation.

IV E. M. MARTIN

Dr. Kuznets devotes a substantial portion of his paper to proving that national wealth estimates have no use that cannot be better served by national income figures. I believe he has under-estimated the importance of at least two uses that national wealth estimates alone can serve.

The ratio of annual additions to the stock of wealth to total wealth at the beginning of each year is important as a measure of the rate of wealth accumulation. Theoretically such ratios should be based on estimates of both wealth and additions to wealth in terms of the same set of prices. Nevertheless, ratios derived from the book value of the stock of wealth and values in current prices of additions to that stock would fill an important gap in our economic information. Both alone and in relation to other factors, such as the rate of population growth, data on changes in the rate of wealth accumulation would be of value in understanding the economic development of a nation. The comparison of rates of wealth accumulation in different countries would throw substantial light on variations in economic conditions.

Moreover, unless wealth is defined as capitalized current income, hardly a defensible concept, the comparison of the national wealth of different countries is a necessary complement to national income comparisons in measuring relative economic strength. National wealth estimates make at least two important contributions to such comparisons. In the first place, wealth figures include the value of known natural resources, of raw materials, and of unconsumed finished goods. These values are reflected only partly, if at all, in national income figures, yet in time of crisis they may be of decisive importance. In the second place, national wealth estimates include a more or less rough measure of the total productive capacity of a country, whether currently in use or not. The value of the unused plant and equipment of a country in the throes of a depression must not be overlooked in making comparisons with nations enjoying relative prosperity. National wealth estimates avoid to a large extent the wide cyclical fluctuations in economic activity which are fully reflected in national income.

Dr. Kuznets has discussed briefly (IV, 2) the value of national wealth estimates for purposes of international comparison. Without making all the points noted above, he concludes, "Thus on practical grounds of a more comprehensive consideration of national income, a measure of national wealth for a given point of time is to be preferred in international comparisons to a measure of current national income."

If Dr. Kuznets had stopped with this sentence, it would not be possible to disagree with him. But a few sentences later, the final paragraph of the Section starts: "Thus, for purposes of international comparisons, estimates of national wealth are of little value if estimates of national income are available." It is difficult to understand how the existence of national income estimates cannot only deprive national wealth figures of their 'preferred' position, but also render them of 'little value'.

Nor does the intervening paragraph throw much light on this transformation. Its main point is that national income is easier to estimate and has more numerous uses, advantages which 'offset' the preferred status previously given to national wealth figures. It may readily be conceded that national income estimates should be made first, but their 'offsetting' advantages cannot deprive national wealth estimates of their 'preferred' status for international comparisons. And "if estimates of national income are available," the 'offset' becomes irrelevant and the estimation of wealth the most important next step in improving international comparisons of economic strength. For many countries, including the United States, national income figures are available and national wealth estimates are the immediate problem.

V SIMON KUZNETS

Before considering the issues raised by the discussants, it may be advisable to indicate the points of agreement. I find myself in complete accord with Dr. Colm's remarks; and while in his emphasis he is somewhat more optimistic than I as to uses of national wealth totals, his discussion provides a valuable supplement to mine. I also agree heartily with most of Dr. Bye's statement; although there are grave doubts in my mind as to the validity of any yardstick in economic measurement other than that of market value, modified, to be sure, to meet the test of the fundamental criteria of real needs and real costs. The argument that values are merely exchange ratios can only mean that any value total is dependent upon the composition of the goods basket of the economy. This does not exclude the possibility of making these totals comparable with reference to a given basket of goods, difficult as it may be to reduce income or wealth totals for various periods and countries to such comparable complexes of goods. Finally, I cheerfully acknowledge the sins of omission with which Dr. Copeland charges me in his three minor comments. The second and third of the suggested additions would only serve to reenforce the statements made in my paper.

It is with reference to the major sins of commission that I find myself recalcitrant. Dr. Copeland and Mr. Martin raise several important questions. While an adequate treatment is impracticable here, it might clarify matters if a brief statement were to be made on each point raised.

1) To begin in a lighter vein with the 'deity' argument. Two important elements in the definition of wealth given in my paper should bar a theological interpretation. First, the definition refers to sources of desirable events, while gods have been notoriously lavish with undesirable works. Second, the sources of desirable events are susceptible of disposition by man, either in his individual or collective capacity; while gods have again been well known for evading control by ordinary humanity. Of course, if one wishes to confine deity to the favorable gods and looks upon material sources of satisfaction as an uncontrollable and animated cornucopia, then wealth is a deity; and has been worshipped accordingly by some of the more devout practitioners of the cult of Mammon.

2) Both national income and national wealth are essentially appraisals of the economic system, the former in terms of the positive content of the goods it produces for ultimate consumption (present or future) and the latter in terms of the stock of such goods at any moment of time. The measures lose most of their significance if they are identified, along the lines of Dr. Copeland's suggestion, with mechanical totals of what entrepreneurs, or accountants, *think* income or wealth is. Just because in business intercourse accountants are charged with the duty of recording returns, costs, and values and making entries for claims and obligations, it does not follow that the consequent ease of measurement justifies identification of national income and wealth with the sum total of accountants' income sheets or balance statements. As Dr. Bye pointed out, Dr. Copeland himself refuses to accept one of the basic assumptions of accounting procedure, the stability of the monetary unit. Why should we accept other assumptions of accounting technique implicit in their valuation of various assets and liabilities?

3) The distinction between the substantive and claims approaches is neither identical nor comparable to the distinction between assets and liabilities. The latter terms are both comprised under the claims approach. The essential lack of identity between the totals in the two approaches, and especially the dif-

ferences in the type of classification to which the latter give rise, is an important consequence of the dual character of wealth. Note that this distinction between the two approaches has no comparable significance for national income.

4) It is true that, as Dr. Copeland states, "for any given concept of national wealth there is a corresponding concept of national income, and conversely." But the statement has little bearing upon the discussion of uses. In the discussion in my paper the assumption that national income estimates are available referred to national income measures usually provided in economic literature; and there seemed to be no need to specify them, since their broad outlines, i.e., their reference to the products of the business and public economy and almost complete exclusion of products of family economy, are fairly standard. It is in comparison with these measures of national income that national wealth estimates, even when made impracticably comprehensive, seemed to contribute little of specific value for most of the uses discussed.

5) In this connection one may agree with Mr. Martin's statements that "wealth figures include the value of known natural resources, of raw materials and of unconsumed finished goods"; and that they are "a more or less rough measure of the total productive capacity of a country, whether currently in use or not." But so do national income measures, with the qualifications noted in Dr. Colm's comments. The only serious claim that can be made for the specific contribution of national wealth totals is that they reflect not only the current production but also that expected in the future; and it is this claim, in connection with international comparisons, that is referred to in Section IV, 2. But the sentence that Mr. Martin cites from that Section is just a description of the claim, not an acceptance by me of its validity. On the contrary, it is the definite conclusion of the paper that this presumptive advantage of national wealth estimates is more than offset by their necessarily more limited coverage in other respects; and the more fictitious character of the values employed.

6) The use of national wealth totals to measure the relative rate of accumulation of wealth has been suggested by both Dr. Copeland and Mr. Martin. Such comparison of annual accumulation of wealth with the existing stock is undoubtedly interesting. But

its usefulness is either conditioned upon the significance of wealth as a stock of goods at the disposal of the nation for the satisfaction of present and future needs, or would be warranted by a search for regularities over time that would be more probable in the percentage rate of accumulation than in the absolute totals of net wealth formation. The first source of interest is severely limited by the difficulties encountered in a comprehensive measurement of wealth as the stock of all goods, and in its evaluation in terms of price levels comparable with those of annual accumulation. The second source of interest calls for composition analysis rather than for totals, since the secular tendencies in the rate of accumulation would presumably be different for different groups of wealth instruments.

7) Dr. Copeland's statement that all the difficulties encountered in measuring national wealth are applicable to the estimate of net wealth formation, because the existing stock of wealth must usually be evaluated before current wealth consumption can be measured, is quite correct. I also agree with his claim that the difficulties of finding proper uses for a global estimate of wealth would be encountered also for a global estimate of national income. And yet there are significant differences in both comparisons, in disfavor of national wealth estimates. In contrasting direct measurements of gross and net wealth formation with comparisons of national wealth totals at successive points of time, there is the fact that difficulties of estimating comprehensively national wealth affect only a part of gross wealth formation and that the latter measure is of interest on its own account. In the case of national wealth and national income, I should be the last to deny that an unadorned global estimate of national income is in itself of no great utility. But as Dr. Colm and I have pointed out, national income totals still possess much greater reality than national wealth totals because they refer to a process that itself provides the measures of its results; and are necessarily a more comprehensive reflection of the activity of the economic system.

In conclusion, it is important to note that as far as the practical bearing of the discussion is concerned, there seems to be no substantial disagreement between the position taken in the paper and the viewpoints of the discussants. This practical application is in the direction of discouraging attempts at global estimates of national wealth and encouraging studies of separate groups of wealth instruments and claims. The purposes of such studies would be to establish more adequately the significant classifications within the complex of wealth instruments or claims; to explore the various difficulties that would arise in the evaluation of the different groups; and to point a way to measurement of national wealth that would be directed from the beginning at the significant classifications in the field. The very fact that estimates of national wealth have recently receded in importance and public use as compared with measures of national income, and that the latter thus bear the brunt of satisfying the need for a single figure appraisal of the workings of the economic system, provides an opportunity of reviving quantitative studies of national wealth on the basis of strict subordination to purposes of economic analysis. That these purposes demand emphasis on composition analysis and a healthy scepticism of presumably all-inclusive global totals was the paper's main conclusion, if not its sole thesis.