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Capital Consumption and Net Capital Formation

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NEED FOR REVISION

ALTHOUGH I have but a few remarks to make, I hope I may be pardoned a general comment by way of preface. It applies, I suspect, not to the National Income Division alone but to most statistics-producing agencies. Put baldly, the comment is as follows: Economic statisticians must be constantly on the alert to the changes that go on in the world about them. Attention must of course be paid to revisions of basic data and the appearance of new and better data, and as we all know, the NID has made many improvements in its procedures and estimates. But the larger objectives of the measurements also must be kept constantly in mind and, if these objectives are to be attained in reasonable time, delay in adapting concepts and assumptions to the changing economic environment must be avoided. Yet the NID has not materially altered the basic structure or content of its accounts during the past decade. This strikes me as a misallocation of its resources.

Even if conditions had not changed, some of us would have expected the NID to reconsider and revise a number of its basic decisions. Many of the questions raised in the present discussion are not new; they were also heard at earlier meetings of the Income Conference, and particularly at the meeting held in November 1945, when Edward Denison reported on the tripartite agreement on national income measurement (*Studies in Income and Wealth, Volume Ten*, National Bureau of Economic Research, 1947). With some changes, the agreement became the basis of the *National Income Supplement, 1947* (*Survey of Current Business*, Department of Commerce), the first appearance of the current set of accounts. The agreement still constitutes the basis of the NID figures, and the questions raised about these figures ten years ago still have as much point as they had at that time.

In fact, what has happened since 1945 has sharpened the point of many of these questions. First, work during the past decade has helped to clarify our concepts and to improve our statistical data. Second, the uses to which national income accounts are now put are somewhat

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different in character and emphasis from those of 1945—or perhaps I should say 1938, for the agreement really reflected thinking based largely on the situation before the war. Finally, and most important, the economic world has changed in a number of significant respects. We have seen substantial rises in prices on top of those that came during the war, continuance of high income tax rates beyond the war period, substantial alteration in the tax regulations that govern depreciation charges, and growth of government and government capital to unprecedented peacetime levels. These and other developments have in some degree made obsolete the methods and assumptions decided on ten years ago. Some of the ground on which the NID stood in 1945—and still stands—has suffered erosion, and the NID's answers to our questions have become less acceptable than they were ten years ago.

But that is enough of looking back. The NID showed an exemplary scientific attitude when it agreed to this meeting. We may confidently have great expectations for the future.

TREATMENT OF GOVERNMENT SECTOR

The NID's treatment of the government is an important illustration of how the pressure of events makes procedures and assumptions obsolete. The trend of government activity, relative to the economy at large, has been upward for many decades; and today especially, when the cold war superimposes a long-enduring bulge on the rising trend line, the government is too big to be treated in a makeshift manner. Along with Everett E. Hagen and Edward C. Budd, Raymond T. Bowman and Richard A. Easterlin, and many other Conference members, I would urge the NID to reconsider its position. We need to eliminate intermediate government goods and services from the net national product as best we can. We need to impute a rent to government's capital goods and inventories. We need to distribute government's final products between the two classes, products for consumption and products for investment. And to approach a net national investment estimate, we need to measure government capital consumption.

None of us who takes this position means to minimize the difficulties. But the NID has not really avoided them. As Bowman and Easterlin stress, it has not abandoned the goal of comprehensive national totals: it does publish a net national product and income estimate, and it should publish a net national capital formation estimate.

Since 1945, a fair amount of work has been done which makes this a little easier. With respect to government capital formation and consumption, for example, we have improved data on capital outlays (including outlays on equipment) provided by the Bureau of the Budget

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for the federal government and by the Bureau of the Census for state and local governments. There are also the experimental estimates of capital assets, gross capital formation, and capital consumption, not all published but all available, prepared by Reeve and his associates, by Raymond W. Goldsmith, and by some of us here at the National Bureau.

Naturally, we would be better able to make these estimates if we could start from engineering surveys of existing government property. But even the very rough estimates now possible would be better than none, and they would help stimulate the interest that could lead to getting the data we want. Surely, when government's net capital formation is perhaps a third of the nation's total net capital formation, as it seems to have been in 1954, we can no longer ignore it. Probably the NID will have to wait on the studies suggested by Hagen and Budd before it can take the steps needed to put the government sector on a proper basis in the national accounts. I hope, however, there will be no delay in getting to work on government capital formation and consumption.

BUSINESS CAPITAL CONSUMPTION

Another important estimate needing revision is the NID's measures of business capital consumption, to which Hagen and Budd pay considerable attention. These estimates are taken, with relatively little alteration, from business calculations made in accord with accounting conventions as modified by tax regulations.

Economists are interested in the way in which business firms keep their books, for this exerts some influence on economic behavior. Whether or not business accounts are taken with a grain of salt by managers, investors, and others, they must be taken, for there are no other figures on the profits, assets, and net worth of individual companies. But this is not a reason for using business calculations as they stand in the national accounts. Rough as the result must be, national income estimators are duty bound to adjust business accounting figures, if they are used, to fit better than they do now the concepts appropriate for national income.

This means, first, including in gross capital formation certain items now charged to current operations, with appropriate inclusion of their wear, tear, and obsolescence in capital consumption. Not only "capital outlays charged to current expenses" are in question here. As Hagen and Budd remind us, there are also large repair and maintenance charges that are not now included in capital consumption, and which, I would add, may have grown in this era of high income tax rates.

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Second, we need a time distribution of capital consumption different from that provided in business accounts. The radical changes in the time distribution of depreciation and obsolescence resulting from war and postwar changes in the tax regulations should not be allowed to influence our capital consumption estimates. (Similar changes before the war, for example, those resulting from the promulgation of Treasury Decision 4422 in 1934, were much less important.) There is, further, the old doubt about the straight-line depreciation formula.

Finally, realistic national income accounting means valuation of capital consumption at current prices rather than in terms of original cost. The NID has already taken a big step toward the proper position. Even in 1945 it accepted the inventory revaluation adjustment and the current-price estimates of farm depreciation, and since that year it has made valuable estimates of the adjustment needed for depreciation of nonfarm equipment. Further, the NID accepts current-price valuation of all capital consumption "in principle." I find it hard to understand their hesitation in accepting it in practice. Of course, there are difficulties owing to scanty price data, among other things. As in some other sections of our national accounts, we shall not be able to come as close to the truth as we would like. But surely when price changes have been as large as during the past twenty-five years, and as might be expected in the next twenty-five, it would be better to revalue than to stand still.

We must in fact give up starting with business calculations of capital consumption and then adjusting them. I agree with Hagen and Budd that the time has come when we must abandon business calculations entirely and turn to "synthetic" estimates of the kind now calculated by the NID for housing. Comprehensive estimates of this type, made in the past by others, look reasonable when compared with depreciation charges reported in *Statistics of Income* for the interwar years, a period when book depreciation was acceptable.

True, the synthetic figures could not be calculated with reasonable accuracy for individual industrial groups. We would have to use "tax depreciation" estimates for individual industrial groups, reconciling their total with the "economic" estimate; or we would have to abandon the idea of showing separate figures for individual industrial groups. I would favor the former alternative.

As for the treatment of subsoil assets, I do not believe that the easy way out—omitting depletion because "discoveries" are omitted—is the proper choice. If discoveries are capital gains, then I fail to see the logic of the choice made by the NID and supported by Hagen and Budd. The current depletion of *any* valuable resource, whether man made or a gift of the gods, is a current cost which should be charged

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off against gross product. If, as I am inclined to believe, discoveries more usually constitute not "windfalls" but the fruits of a process of investment, then it is doubtful if the average value of these discoveries or their time distribution is sufficiently similar to that of depletion to justify the NID's procedure. The proved petroleum reserves of the United States, for example, show a pronounced upward trend.

DEFLATION OF DEPRECIATION AND INVENTORY CHANGE

When book values of depreciation charges and inventory changes are converted to values expressed in current prices, use is made of the current (replacement) prices of the specific types of plant and equipment undergoing depreciation or of stocks of goods undergoing change. Hagen and Budd refer to the suggestion, sometimes made, that a more general price index be used, but dismiss it as inappropriate for most purposes. The point is worth further comment.

Consider the purpose of the inventory revaluation adjustment.¹ The basic idea is to keep out of business income, and thus out of national product, profits or losses—realized or unrealized—that arise out of mere changes in the prices at which the existing stock of the nation's wealth is assessed. The nation *as a whole* is no better or worse off simply because the current value of a fixed number of units in its stock of goods has expanded or shrunk. (I pass over the exception created by international trade.) But is this true of the individuals or firms that own a stock of goods the value of which has changed?

It is clear, of course, that the property holder is in fact neither better nor worse off if the unit value of his inventory has merely paralleled the general price level. But what if the two have diverged? Suppose, for example, that owing to the depletion of our resources, the unit value of the stock of copper held by nonferrous-metal refiners rises more rapidly than the general price level; and that, owing to technological advances, the unit value of the stock of rayon fiber held by rayon manufacturers rises less rapidly than the general price level. Can we really say that the one group has not gained, nor the other lost, by this differential price movement? Offsets through other consequences of these developments will be accounted for in other places in the accounts.

When specific price indexes are used, as the NID now does, it should be noted explicitly that the adjusted figures presented for an individual industry or for industry as a whole, are exclusive of its gains or losses from differential price movements. Such figures measure, in a sense,

¹ In what follows I draw on a few paragraphs read before the Institute of Trade and Commerce (see its *Current Business Studies*, 1949).

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what the industry or property holders as a whole put *into* the national product, rather than what they get *out* of the national product—the income they produce, rather than the income they receive.

We are, however, often interested in what property holders get out of the national product. That is, we are concerned with how the purchasing power resulting from business operations is distributed among industries or firms or between property holders and others. In that case, whether these profits or losses are or are not included in estimates of national product does make a difference, and for a particular industry sometimes even a great deal of difference.

One may grant that such gains and losses are real, yet argue against including them in the measure of business income, on the ground that they are not part of current income but windfall or capital gains or losses. Hagen and Budd seem to take this position. But business enterprise does not view price movements as mere disturbances of the situation in which business is done, but part and parcel of it. Business enterprise aims at profiting, or avoiding loss, from such movements. The exercise of foresight in this connection is a characteristic function of entrepreneurship, and active planning by business men to influence prices—whether those of goods purchased or of goods sold—rather than passive adjustment to them, is not rare.

Indeed, when the objective is to measure the distribution of income, the whole question of the treatment of capital gains and losses in the national accounts may warrant an answer different from the one generally given. The exclusion of capital gains and losses finds its logical basis in the assumption that the only thing being measured is the industrial or other distribution of income *produced*.

What I am suggesting, then, is that the NID consider calculating the inventory revaluation adjustment not only with the use of specific deflators, as at present, but also with the use of a general price index, which would retain in business income the differential price gains or losses experienced by inventory holders. This suggestion applies also to the valuation of capital consumption in current prices, as I have already indicated. And the calculation of total business income, as well as of its industrial distribution, is at issue.

A similar point can be made for the measures in constant prices. Gains and losses due to differential price movements accrue also to particular groups of workers and to property owners apart from the revaluations of assets. In fact, with Hagen and Budd I would suggest for use in calculating the real income *received* by an industry (or any group) an index of the prices of the particular goods and services purchased by the members of the group with the money income they re-

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ceive. But I doubt that we are ready to take this additional step on the comprehensive basis needed if we are to put these measures into the framework of the national accounts.

DEFLATION OF FOREIGN INVESTMENT

Essentially the same point arises in connection with the deflation of net foreign investment. Hagen and Budd refer to the problem in their analysis of the terms of foreign trade but do not bring foreign investment into their discussion.

The NID obtains its deflated net foreign investment series by first deflating gross current-price imports of goods and services (including services of foreign capital invested in the United States) by a specific price index, then by deflating gross current-price exports by another price index, and finally by taking the difference between the deflated gross flows.

It would be better to deflate current-price net foreign investment directly by a single price index.

Consider the simple case of a country which has no foreign assets or liabilities. Suppose that it exports a constant stream of raw materials and spends the full proceeds—but no more than the full proceeds—on imports of manufactured goods, which it consumes. Suppose, further, that improvements occur in its terms of trade, so that the constant volume of exports yields a rising purchasing power, and therefore a rising volume of manufactured imports. Were we to deflate imports and exports separately—that is, express imports and exports in terms of constant (base-year) prices—we would find the two to be different in every year except the base year itself. But we assumed no net foreign investment, in current prices, to exist. Does it then make sense to show some real foreign investment?

Instead of measuring the deflated net foreign investment (in this case, capital imports, since import quantum is assumed to exceed export quantum), the difference between deflated imports and exports measures the gain from changes in the terms of trade. If this (negative) difference were to be added to real domestic consumption and domestic capital formation, following the NID procedure, it would make net national income lower than it should be even though no foreign obligations had in fact been incurred. Surely national product is higher if improved international terms of trade permit greater imports for a given volume of exports. Only if we want to measure real “geographical product,” rather than real national product, is it appropriate to follow the procedure of the NID.

I doubt, however, that geographical product is appropriate for

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measuring the product or productivity of an economy.² The productivity of any group—national, intranational, or international—viewed from the standpoint of that group is measured by what it gets out of the resources it puts into production. Its “geographical product” is in part an intermediate product, a step in the conversion of resources into final product. I agree that measurement of geographical product is useful in *analyzing* productivity, among other things, and second the suggestion by Hagen and Budd that geographical and national product both be shown in the national accounts. However, I must quarrel with their suggestion that the components of net foreign investment be substituted for the net item itself in the basic tables. I have no objection, of course, to putting these components into a supplementary table. To substitute them for the net item, however, would tend to support the present position of the NID on the deflation of net foreign investment, and might lead to “deflating out” the gains from changes in terms of trade which Hagen and Budd properly wish to retain.

There is a further question as to the appropriate deflator for net foreign investment, but it is logically separate from the previous question. Without going into the matter in detail, I would suggest simply using the index of prices implicit in the deflation of net national product (or gross national product), exclusive of net foreign investment.

² Hagen and Budd say “for analyzing the productivity,” but they seem to mean “for measuring.”