TOTAL INCOMES IN THE UNITED STATES, 1959 AND 1969

BY ROBERT EISNER*

Northwestern University and National Bureau of Economic Research

Preliminary estimates of the total incomes system of accounts (TISA) are provided for 1959 and 1969. They extend conventional accounts to include all consumption services produced by government and households as well as by enterprises, but define household purchases of durable and semi-durable goods as investment. Acquisitions of capital throughout the economy, intangible as well as tangible, and not only in the business sector, are included in capital accumulation along with, for tangible capital, net revaluations, that is capital gains net of increases in the general price level. Imputations are offered for nonmarket consumption and capital accumulation, most prominently in unpaid household work and education. Much of government output, particularly police services and defense, is recalculated as intermediate, along with expenses related to work, while media services, treated by the United States Bureau of Economic Analysis (BEA) as business purchases of intermediate product, enter into TISA consumption. Subsidies are included in the value of product, as are services of volunteers and imputations for the underpayment of military conscripts and of jurors. Separate accounts are offered for the national income and product, business, nonprofit institutions, government enterprises, government and households.

The ratios of BEA to TISA Net National Product were 81.4 percent and 76.5 percent in 1959 and 1969, respectively. BEA national income was 74.1 percent of the corresponding TISA net national income in 1959 and 69.6 percent in 1969, reflecting a greater per annum rate of growth of TISA net national income, 7.49 percent, as against 6.82 percent for the corresponding BEA national income.

BEA gross private domestic investment, restricted to business acquisitions of tangible capital at original cost, was estimated as only approximately 22 percent of comprehensive TISA gross domestic capital formation in 1959 and some 20 percent in 1969. The BEA net private domestic investment growth rate of 7.32 percent per annum from 1959 to 1969 may be compared with a TISA net domestic capital formation growth rate of 9.42 percent.

*William R. Kenan Professor of Economics, Northwestern University, and Senior Research Associate, National Bureau of Economic Research. Preparation of this paper, presented in penultimate form to the 15th general conference of the International Association for Research in Income and Wealth in York, England, August 1977, has enjoyed the critical financial support of a National Science Foundation Grant, Number 72063, for the Measurement of Economic and Social Performance. Its final revision for publication has been supported by NSF grant number SOC77–17555.

I have drawn heavily on published and unpublished data of the Bureau of Economic Analysis of the U.S. Department of Commerce, and am indebted to a number of individuals in the BEA for unpublished tabulations and most particularly again to John C. Musgrave, who has been an invaluable source and guide. Arthur B. Treadway was helpful in earlier joint work on conceptual foundations, also sponsored by the National Science Foundation. I have benefited from comments on the conceptual framework by Solomon Fabricant, F. Thomas Juster, John W. Kendrick, Simon Kuznets, and Richard and Nancy Ruggles, and from further comments by John Gorman on the paper presented at York. Salvador Barbera, Anene Nnoli and Javier Ruiz-Castillo were helpful in first efforts at filling in numbers. Helen Tice offered a number of special tabulations used in my "Capital Gains . . . " paper (1976, 1977) which were again employed here.

Major contributions to our initial set of complete estimates were made by Augustine Fosu, John Graham, and Roy Webb. They, along with Marsha Courchane and René Moreno, Jr., who have toiled on the data collection and processing leading to the current product, really deserve recognition as co-producers of the accounts here presented. Shelly Lundberg, David Nebhut and Kyunghoon Rhie have assisted in final calculations.

Molly Fabian has again with her usual excellence and equanimity prepared successive typescripts of various revisions of tables and manuscript.

1. Concepts, Definitions, Sources and Methods[1]

This paper is an implementation of "TISA: The Total Incomes System of Accounts" [1] with specific, if preliminary, estimates for 1959 and 1969.

That earlier paper referred to the United States National Income and Product Accounts as a remarkable construct, appropriately hailed as the best available single measure of the progress of the economy as a whole and of overwhelming value in economic analysis and the formation of policy. Those valued accounts have, however, been criticized as inadequate or misleading measures of economic welfare. And except for several specific imputations, they do of course restrict themselves essentially to market activity and are incomplete measures of consumption and capital accumulation.

Picking among and combining various extensions to be found in the United Nations system of accounts, and in work of Richard and Nancy Ruggles [11] and [12], Juster [3] and [4], Nordhaus and Tobin [10], Kendrick [5], McElroy [6] and [7], and our own earlier papers [1] and [2], we are now utilizing the framework of the Bureau of Economic Analysis Income and Product Accounts of the United States to build a set of extended accounts for all of the years since 1946. We hope to be able to use them on at least an experimental basis in new estimates of basic structural relations involving consumption, investment and production as well as to present additional measures of income and product and its distribution.

We may list our major extensions and revisions of the conventional BEA accounts as follows:

1. Defining consumption as the total of household purchases of nondurable consumption goods and services and all production of other consumption services whether by enterprises, government or households, whether sold in the market or not.

2. Measuring capital accumulation as the total of acquisitions of capital throughout the economy rather than in the business sector alone, and including intangible as well as tangible investment.

3. Adding to income, product and capital accumulation the net revaluations—capital gains net of increases in the general price level—on tangible capital.

4. Adding new imputations of consumption and capital accumulation where they are not effected in market transactions, most prominently in unpaid housework and education.

5. Treating expenses related to work and much of government output as intermediate while counting much of media services now purchased by business as consumption transferred to households.

In addition to a national income and product account, we offer separate sector accounts for business (combining all corporate and noncorporate private enterprises other than nonprofit institutions), nonprofit institutions, government enterprises, government, and households. Debits in the national accounts are the sum of the individual sectors and net income originating in the rest of the world.

[1]A fuller, if now somewhat modified, set of concepts and definitions underlying our accounts is to be found in [1].

The national accounts allocate total gross product among the categories of consumption, gross domestic capital accumulation, net foreign investment and net transfer payments to foreigners.[2]

Credits of the business sector display the BEA gross domestic product for business and various additions and subtractions relating to differences between the BEA and TISA in definitions of the business sector and of intermediate product. We place the net space rent of owner-occupied nonfarm dwellings in households and the rental value of buildings owned and occupied by nonprofit organizations in the nonprofit sector. We also separate government enterprise product from business. Since we are interested in total factor and nonfactor incomes and charges rather than merely market output, we add subsidies to credits instead of subtracting them from debits or charges against gross national product. We also add an estimate for "expense account items of consumption," which is put in debits as an additional imputation in labor income.

Other items treated as intermediate products by the BEA but which we include in final output are business investment in research and development and media support. The first is a component of intangible investment and an addition to business income. The second involves an addition to consumption (in the form of entertainment and other services of television and radio broadcasting and newspapers and magazines) included in business transfers on the debit side of the account.

Where the BEA treats all goods and services purchased by government as final product, however, we include a major amount of government product, most importantly military and police services, as intermediate in the output of other sectors. In fact, there is a rough correspondence between our estimates of intermediate product furnished by government and the indirect taxes which may be thought of as paying for them. Hence, in each sector we net intermediate product from government against indirect taxes. The output of police services, for example, is thus treated in the same way when it is provided by local governments and essentially paid for by taxes, as it would be if it were provided by a private protection agency. In both cases TISA counts the output only once, as it is produced, and not again as part of value added of the business or other sector receiving it.

For nonprofit institutions, output plus intermediate product transmitted from government is allocated among consumption and capital accumulation. Government enterprise income and product is allocated among sales, transfers of consumption and investment, and accumulation in the form of net revaluations.

Allocation of credits of government income and product proved complex. Essentially, for most items, output was first assigned to government functions on the basis of compensation of employees and other charges against product. The output so assigned, plus the associated value of intermediate product received by government from other sectors, was then distributed among the other sectors and among consumption, capital accumulation and intermediate product, on the

[2]The last two items would in effect equal TISA net exports. These would be BEA net exports minus interest paid by government to foreigners which, consistent with our inclusion of government interest in national income, we treat as an import.

basis generally of compensation of employees and the functional characteristics of the output.

In the household sector we include the capital services of durables and semi-durables—imputed interest and capital consumption—and of inventories. We impute the value of labor services in households on the basis of estimated time devoted to household labor and the mean compensation per employee for domestic service.[3] In addition, an imputation is made for opportunity costs of students' time, taken from Kendrick [5] for 1969 and extrapolated back to 1959.[4] These are credited to investment in education and training. On the basis of time devoted, we also allocate some of nonmarket household product to investment in child rearing, adding this to Kendrick's market expenses for child rearing investment.

In many cases, our total output, allocated on the credit side of the account, depends upon the imputations of income and other charges on the debit side. These offer a number of departures from conventional accounts.

Looking at the national income and product, labor income consists of compensation of employees—the sum of corresponding items in individual sectors and the rest of the world, taken from the BEA National Income and Product Accounts—and several imputations, from all of which we subtract expenses related to work. Expense account items of consumption, opportunity costs of students, and unpaid household work are all net additions to national income and product. The opportunity costs of the self-employed, however, involve merely a reallocation; they are netted out of net operating surplus.

Expenses related to work, which are subtracted to arrive at labor income, comprise transportation costs for getting to and from jobs. They might in principle include more, such as some extra costs of clothing and lunch in connection with being away from home, but do not.

Net imputed interest in the business sector does not affect total income because it is subtracted from corporate profits and private noncorporate income in arriving at the net operating surplus. Imputation of interest in the other sectors, however, does represent a net addition to income and product, except for the interest on equity in owner-occupied nonfarm housing, which reduces rental income on such housing. Consumer and government interest paid are both included in our income and product accounts. However, they do not affect total income and product in the household and government sectors since the interest component in these sectors is gross imputed interest, against which they are charged.

[3]In the paper presented at York we used estimated times devoted to various categories of household activities and wage rates for similar activities outside the household. The mean compensation per domestic worker was applied then only to a residual of time for which no specific wage rates were found. We have abandoned that method in this published version because the currently available wage rates, as for male janitors to apply to household cleaning, seemed too remote and questionable. The imputations for household service are now somewhat less than in the paper presented at York.

[4]Kendrick's 1966 estimate was projected to 1959 on the basis of changes in average annual compensation and school enrollment of those 14 years of age and older.

Net revaluations presented in the accounts are restricted to tangible (and nonhuman)[5] capital, that is, land, owner-occupied housing, all other structures and equipment, consumer durables and semidurables, and inventories. We have also prepared estimates of net revaluations on intangible capital in research and development, education and training, and investment in child rearing and health. We have not, however, included them, partly because of difficulties in putting together reasonably well documented figures. We might argue, moreover, that net revaluations or capital gains for intangible capital are not on the same plane as those for tangible capital in that such gains are rarely realized directly and, in the case of human capital, the conceptual market analog is generally illegal in non-slave economies. In any event, our private, preliminary estimates do not suggest that these magnitudes were large for either 1959 or 1969.

It should be noted that we have assumed that all research and development capital, wherever produced, is used in the business sector and that all human capital, wherever produced, is used in the household sector. The return to intangible capital is then assumed to be reflected in business and labor income. Intangible capital consumption is subtracted from income originating in the business and household sectors to arrive at what we call "net income originating," which is analogous to "income originating" in the other sectors.

Nonincome charges against gross national product include media support (under business transfer payments) and uncompensated factor services. Uncompensated factor services include the services of volunteers in nonprofit institutions and the difference between what might have had to be paid for military draftees in a free market and their actual remuneration by government. A similar imputation for underpayment to jurors is included under "other."

Capital consumption allowances for tangible business and government property are essentially taken from the BEA, either the national income and product accounts [13] or special published [14] and unpublished tabulations, inclusive of capital consumption adjustment, which puts them on a straight-line, replacement cost basis. We have subdivided capital consumption allowances into those for original cost and those for revaluations. The latter correspond, in the data taken from the BEA, to "adjustment of consistent accounting at historical cost to current replacement cost."

Capital consumption allowances for household durables were taken from unpublished tabulations of Helen Tice of the Flow of Funds section of the Federal Reserve Board. Investment in household semidurables includes expenditures for shoes and other footwear, clothing and other accessories, and semidurable home furnishings (lines 11, 13 and 33, respectively, of Table 2.6 in *NIPA* [13]). Straight-line depreciation with a three-year life is applied to these expenditures to derive capital consumption on original costs. Total capital consumption is calculated by depreciating investment in constant dollars and then reflating to current or replacement cost by application of relevant price deflators. The difference between the resultant total or replacement cost

[5]We depart from the usage of Kendrick, who counts child rearing as investment in tangible human capital. We choose to classify all human capital, as well as investment in research and development, as intangible.

depreciation and the original cost depreciation constitutes our capital consumption allowances on revaluations.

For intangible capital, series of gross investment in research and development, education and training, health, and the market costs of child rearing are taken from Kendrick. He applied declining-balance depreciation to intangible capital, however, in part to be consistent with his declining-balance depreciation on tangible capital. I have long felt that straight-line depreciation with appropriate lives generally offers a better measure of the decline in value of capital assets. Because of the nature of discounting of future returns many assets in fact lose little or no value, or even appreciate, in the early years of their lives.

Kendrick recognized the slow initial depreciation or early appreciation on much of his human and intangible capital. He therefore applied a variety of methods, including delaying the start of depreciation on human capital and on applied research and development, and infinite lives for investment in basic research and development. We have, with some misgivings, followed Kendrick on basic research and development but have used undelayed twenty-year, straight-line depreciation for the applied portion. We have chosen to apply to all human capital uniform straight-line depreciation with a fifty-year life, which last was found to result in approximate coincidence over recent years between the resultant calculations of changes in gross human capital stock and those estimated by Kendrick on a disaggregated basis. We have used as an implicit price deflator for intangible capital investment the ratio of Kendrick's current dollar to constant dollar aggregates of such investment.

Our underlying net stocks of intangible capital are hence generally more than those reported by Kendrick. Our capital consumption allowances, given the general growth in intangible investment, are less. These differences prove irrelevant to other elements in the accounts, however, since we make no imputation for interest on intangible capital, assuming as indicated previously that it is included in business and labor income, and since we have at least currently excluded net revaluations on intangible capital.[6]

Stocks of land, structures and equipment largely correspond to those utilized in our "Capital Gains . . ." paper [2], with structures and equipment coming from the BEA and a number of unpublished breakdowns furnished by John Musgrave. Land estimates were taken from unpublished tabulations made available by Helen Tice and estimates published by Grace Milgram [8].

We have obtained from the BEA unpublished data on government enterprise capital stocks and have prepared estimates of imputed interest, capital consumption and net revaluations on these stocks. The attempts to separate from the government sector all of the payments and imputations related to government enterprise capital turned out, however, to entail more complicated revisions than we were prepared to undertake at this time. We have therefore, at least to this point, continued the BEA practice of excluding capital stocks from government enterprise accounts, treating all government enterprise land, plant and equipment, but not inventories, as if they were owned by government directly.

[6]Net national income and net national product are of course greater to the extent that capital consumption allowances are less, but gross national product is unchanged.

We have departed from the TISA framework laid down in 1975 in a number of instances, either because of problems in securing or processing data or because of some second thoughts on what would be most appropriate. For one thing, we have aggregated the proposed corporate and noncorporate subsectors into one business sector. Also, we have not combined business with nonprofit institutions and government enterprises in a single enterprise sector as originally contemplated.

We have deleted the investment mobility category which we had originally thought to take from Kendrick. I would not be disposed to argue the point too strongly one way or the other but the notion of imputing output to idleness, a major element in Kendrick's mobility investment, seems to depart from the concept of accounting for goods and services produced, even though not necessarily in or for the market, which underlies our accounting framework.

We have, similarly, continued to exclude all other imputations for leisure time, such as were presented by Nordhaus and Tobin. One may well concede that two societies with equal total incomes as we define them are unequal in achieved welfare if they have different quantities of leisure (all of course on a *per capita* basis). We do not claim, however, to measure all aspects of social welfare in our total incomes accounts. There is much, from the comforts of weather to the pleasures of sex, that perhaps can and should be measured—but not here.

The credit side of the national income and product accounts allocates total output among consumption, domestic capital accumulation, net foreign investment and transfers to foreigners. The last two items are taken directly from the BEA accounts. Consumption and domestic capital accumulation cannot be arrived at, however, by simple aggregation of our own sector accounts. Rather they are the sum of consumption and investment expenditures available from the BEA, with some reallocations, plus the additional imputations of consumption services and capital produced in households and government. Total investment in education and training, research and development, and health, and sectoral allocations where available, were taken from Kendrick. Like Kendrick, we count half of health services output as consumption and half as investment.

Government intermediate product transferred to business and government enterprises is presumed to be included in the value of consumption and investment expenditures for goods produced and sold by those sectors. For government enterprises, we add an imputation of consumption and investment equal to the sum of negative surpluses and our imputed interest, which may be taken as subsidies of government enterprise output. The allocations between consumption and investment, as with subsidies themselves, followed the ratios of all other consumption to investment (at original cost).

The contribution of households to consumption and capital accumulation was taken as the sum of household output and the intermediate product from government that went into that output. In practice, all of the charges against gross household product were allocated to consumption or accumulation except a small portion of indirect taxes not related to owner-occupied housing. It did not seem clear that those taxes should be counted in the output of the household sector.

In imputing the production of consumption and capital in the nonprofit sector we have again added intermediate product transferred by government. To calculate total consumption in our national income and product accounts we have then subtracted the nonprofit compensation of employees. We may have omitted from total consumption and investment, however, some final product corresponding to intermediate product purchased by nonprofit institutions from other sectors.

In view of the difficulties encountered thus far in being precise, and for some other reasons, known, suspected and perhaps unknown, we may expect some statistical discrepancy, in addition to that already recorded by the BEA, between total charges and credits of gross national product.

2. Estimates for 1959 and 1969

The numbers in the national income and product account and in the five sector accounts can largely tell their own stories. Table 7 puts together the estimates of gross national product, net national product and net national income and Table 8 offers selected BEA–TISA comparisons.

First, looking at the national accounts, we note that our imputations are only a modestly smaller component of labor income than the traditionally measured compensation of employees, $213 billion as against $280 billion in 1959 and $422 billion as against $571 billion in 1969. By far the largest of the imputations, not surprisingly, were for unpaid household work, amounting to $137 billion and $268 billion in the two years. Opportunity costs of students rose very substantially from 1959 to 1969, in part because of a large increase in the number of students.

The opportunity costs of self-employed are very likely underestimates, based upon earnings of employees in various major industry groups. One might expect the labor time of the self-employed to be more valuable than that of employees. (Underestimates of the opportunity costs of self-employed would not affect our measure of national income, however, because this imputed labor income, it will be recalled, is in turn subtracted in arriving at net operating surplus.)

Our imputed interest estimates, based partly on various presumably appropriate rates employed by Kendrick [5] and Juster [3], were large.[7] Thus net imputed interest, over and above interest paid, came to $97 billion in 1959 and $241 billion in 1969. Subtraction of all of the imputed factor incomes in business, both labor and capital, reduces the net operating surplus to $17 billion in 1959 and to a deficit of almost $15 billion in 1969. From the total for these two years it would appear that, even after capitalization of business research and development expenditures, what might be considered entrepreneurial profits is readily attributable to labor and capital income.

[7]In the business sector, corporate bond rates were applied, 4.65 percent for 1959 and 7.36 percent for 1969. For nonprofit institutions and for households, FHA mortgage rates of 5.98 and 7.99 percent were used for land, dwellings, structures and nonprofit equipment and, following Juster, 15 percent was applied to consumer durables and semidurables in both years. For government capital we used the yields on long-term government bonds, 4.08 percent in 1959 and 6.1 percent in 1969.

The large net imputed interest on owner-occupied nonfarm dwellings converts the BEA rental income into sharply negative figures in our accounts, −$9 billion in 1959 and −$30 billion in 1969. This suggests one or a combination of three possibilities: 1) the BEA is underestimating space rent on owner-occupied housing and hence its residual of rental incomes; 2) there are significant advantages of home-owning, captured by neither the BEA nor us, which may include both notorious tax advantages and extra, feasible opportunities for nonmarket output and psychic income; 3) there are substantial positive net revaluations or capital gains expected on owner-occupied dwellings and the land associated with them, along with substantial debtor capital gains, not considered in this paper, in the inflation-induced decline in the real value of mortgages.

Inclusion of estimated net revaluations does indeed result in positive net surpluses for both years, $23 billion in 1959 and $13 billion in 1969. A reward to entrepreneurship may after all be found in capital gains, as perhaps we should have expected.

The national income figures of $612 billion and $1249 billion may be misleadingly high in that they include the income earned or imputed in producing intangible capital without subtraction of intangible capital consumption. Such subtraction brings us to our "net national income," $536 billion for 1959 and $1103 billion for 1969, which is essentially comparable to national income in BEA accounts. Table 8 reveals that BEA national income was only 74.1 percent of TISA net national income in 1959 and 69.6 percent of TISA net national income in 1969. Put inversely, TISA net national income was some 34.9 percent and 43.6 percent more than BEA national income in 1959 and 1969. The differences can be accounted for, and more than accounted for, by the items of unpaid household work and opportunity costs of students.

Our movement from net national income to net national product offers some items not found in the traditional BEA accounts. First, we include in business transfer payments estimates of media support of $6.6 billion in 1959 and $12 billion in 1969. As pointed out earlier, these constitute output of television, radio, newspapers and magazines which are netted out of the conventional accounts as intermediate product purchased by one business from another. Paradoxically, in the BEA accounts, gross national product, net national product and national income would all rise if more of our television and radio industry were nationalized as in much of the rest of the world. For its output would then be treated as final product purchased by government. The TISA figures would be essentially unaffected by nationalization of the broadcasting industry.

The new item of uncompensated factor services comes to $8 billion in 1959 and $22 billion in 1969. The figure for the latter year was exceptionally large because of the magnitude of the imputation for uncompensated military service in connection with the war in Vietnam.

Intermediate product transferred from government came to $53 billion in 1959 and over $111 billion in 1969. Netting them against indirect taxes may be taken to suggest that they are essentially akin to goods and services purchased by business from any other producer, paid for by taxes where government is the producer.

Our statistical discrepancies turned out happily to prove modest in both years. We of course inherited the BEA statistical discrepancy in constructing our accounts. Our trivial "additional discrepancy, business sector" stems essentially from use of rounded published numbers in some instances where unpublished data to millions of dollars were not readily available.[8] The statistical discrepancy we list under "other" is what has been added in our TISA extensions. It came to −$1.1 billion in 1959 and −$0.5 billion in 1969.

Total capital consumption allowances of $210 billion in 1959 and $379 billion in 1969 are replacement cost estimates, conceptually similar to the BEA's new capital consumption allowances with capital consumption adjustment. Our tangible capital consumption allowances are considerably larger than those of the BEA national income and product accounts because ours include consumption of capital in government, households and nonprofit institutions. It may be useful to note that capital consumption allowances on tangible capital attributable to revaluations, or the differences between replacement cost and original cost, are roughly matched by the positive net revaluations of 1959 and 1969, somewhat less for 1959 and somewhat more for 1969. In the latter year, net revaluations came to almost $28 billion while the increase in capital consumption allowances attributable to replacement cost accounting was only $22 billion. This suggests rather forcefully the inconsistency in reducing income to reflect the depreciation on increases in property values while not adding to income the increases in property values themselves.

The revaluation components of capital consumption allowances on intangible capital were particularly large, reflecting presumably the fact that as real *per capita* output rises, wages increase more rapidly than prices. The replacement cost of human capital, at least by these measures, is very much higher than its original cost of production.

TISA net national product was $541 billion in 1959 and $1,115 billion in 1969. By comparison, BEA net national product was 81.4 percent of that of TISA in 1959 and 76.5 percent in 1969. These ratios are both significantly higher, by some 7 percentage points, than those noted previously for net national income. This relates chiefly to our reduction of net national product by intermediate product transferred from government, which we view as double counted by the BEA as both product of government and product of the BEA business sector which uses the government output as its own input.

TISA gross national product was $751 billion in 1959 and $1,494 billion in 1969. BEA gross national product was only 64.8 percent of TISA gross national product in 1959 and 62.6 percent in 1969. The GNP comparisons, however, can be misleading because gross national product in both cases includes the double counting of capital consumption, and capital consumption is much larger in the broadened TISA categories of capital.

[8]Individual items are listed in our accounts to whatever degree of accuracy was provided in their source, generally to millions of dollars but to tens of millions in Kendrick's data and to only hundreds of millions in some few of the figures taken from the BEA published accounts [*NIPA*, 13]. While we have generally done no further rounding, our totals in many cases can hence be presumed accurate to no more than tens of millions, and, in some instances, hundreds of millions.

Viewing the credit side of the national income and product accounts, we note that TISA consumption totals $403 billion for 1959 and $774 billion for 1969, figures some 30 and 33 percent greater than the personal consumption expenditures listed in the BEA accounts. The expense account items of consumption clearly contribute only small portions of the differences, although a more comprehensive effort to impute such items would be likely to increase their amount. Subsidies allocated to consumption are even more modest in magnitude; the media support is somewhat greater. Transfers from government enterprises, essentially the negative surpluses akin to subsidies, are also modest.

We do impute a significant amount of government production to consumption, $17 billion in 1959 and more than $44 billion in 1969. These magnitudes stem from sums of estimates of services of government relating to health, sanitation and sewage, transportation (including highways, air and water), parks and recreation, and a broad welfare category including public housing and community development. In current BEA accounts these services, or expenditures for the capital that provides them, are all lumped into final product purchased by government.

Our capital services of durables and semidurables add up to more than the comparable items in the BEA personal consumption expenditure series, including both our three-year straight-line depreciation charges, and an imputed interest calculated as 15 percent on net stocks, taking the rate from Juster [3] and the stocks from perpetual inventory accumulation. The predominant factor in the excess of TISA consumption over BEA consumption, however, is our imputation of a value to unpaid housekeeping services. The great bulk of these are allocated to consumption, the exception relating to child rearing investment.

Our gross domestic capital accumulation of $348 billion in 1959 and $719 billion in 1969 are between four and five times the BEA gross private domestic investment figures. In 1959, BEA GPDI constituted only 22.3 percent of TISA gross domestic capital formation and in 1969 the figure was an even lower 20.3 percent. BEA net private domestic investment was only 22.7 percent of TISA net domestic capital formation in 1959 and that ratio was a still lower 18.7 percent in 1969.

Our gross tangible investment at original cost was $179 billion in 1959 and $326 billion in 1969, both figures themselves well over twice as large as BEA gross private domestic investment. The differences relate in small part to the nonprofit institution investment in structures and equipment of $2.6 billion in 1959 and $5 billion in 1969, and to the corresponding government enterprise investment, here listed separately, of $3.2 billion in 1959 and $6.7 billion in 1969. The major components of the excess of TISA tangible capital accumulation over that of the BEA are to be found in government investment, $27 billion in 1959 and $40 billion in 1969, and in household investment in durables, $42 billion in 1959 and $85 billion in 1969, and semidurables, $29 billion in 1959 and $50 billion in 1969. (The magnitudes of our investment in inventory additions are small for government and very tiny for households, in the latter case because only nondurable goods, assumed conservatively to last on the average two weeks, are included in household inventories.)

We have included in our domestic capital formation major amounts of intangible investment which are of course not included as such in the BEA accounts. Our totals for intangible investment were $161 billion for 1959 and $362 billion for 1969. As mentioned above, most of the components are taken directly or projected from Kendrick [5]. We have, however, added to Kendrick's child rearing investment, based entirely on market expenses, imputations for household labor services related to child rearing, amounting to some $26 billion in 1959 and $52 billion in 1969.

Research and development investment totaled $13 billion in 1959 and $26 billion in 1969. Much of this was done by government, more than $8 billion in 1959 and $15 billion in 1969, and assumed transferred, along with nonprofit R and D investment, to the business sector.

Education and training investment is produced largely in government and in households (the opportunity costs of students). Here too, we assume that all of the resultant capital goes to one sector, in this case households. The total magnitudes are substantial, $71 billion in 1959 and $192 billion in 1969.

Half of health services was classified in consumption. The half shown as intangible investment, also transferred to households, amounted to $12 billion in 1959 and $28 billion in 1969. Child rearing investment totalled more than $64 billion in 1959 and more than $115 billion in 1969.

Small amounts of subsidies and government enterprise transfers, akin to subsidies, are allocated to investment, magnitudes of about $1 billion and $3 billion in the two years. Of more substantial size are net revaluations of $6 billion in 1959 and more than $27 billion in 1969. Sizable portions of these are related to increased values of land, whether due to development or greater scarcity. In 1969 there were large capital gains of $32 billion in structures and equipment but losses in 1959, and losses in both years in household durables and semidurables and in inventories.

Turning to rates of growth of investment and capital formation, while comparisons in constant prices would be more meaningful, our available current dollar figures, shown in Table 8, are striking. Per annum growth in BEA gross private domestic investment from 1959 to 1969 was only 6.55 percent; that of TISA gross domestic capital formation was virtually a full percentage point higher, at 7.52 percent. The difference is even greater on the net investment and capital formation figures, with the BEA showing a rate of growth of 7.32 percent per annum from 1959 to 1969 while our TISA estimates indicate a 9.42 percent rate of growth, more than 2 percentage points higher. These compare with estimates of the rate of growth of consumption which are 6.5 percent for the BEA personal consumption expenditures and 6.75 percent for the TISA consumption estimates.

Further, while BEA net private domestic investment was 7.14 percent of BEA net national product in 1959 and only a slightly higher 7.47 percent in 1969, the comparable ratios of TISA net domestic capital formation to TISA net national product were 25.58 percent and 30.53 percent, respectively. The large and rising TISA ratios stem significantly from net intangible capital formation (excluded by the BEA), 15 percent of net national product in 1959 and 18.8 percent in 1969. Concerns that investment in the U.S. has been too small and

not growing sufficiently rapidly, usually related to BEA-type investment, would confront quite different sets of numbers in our more comprehensive TISA measures of capital formation.[9]

Let us look now at individual sectors, although some of their major elements have already been discussed in connection with the national account. Beginning with the business sector, we should note that imputed factor incomes in business largely wipe out the operating surplus, bringing the "net operating surplus" to −$23 billion in 1969, but then much of this latter deficit was cancelled out by positive net revaluations. Also, while we have credited business investment in research and development of $4 billion in 1959 and $10 billion in 1969 to the operating surplus and business income, this does not fully offset the capital consumption on all research and development (since R and D capital is all considered held in the business sector) of $5 billion in 1959 and almost $12 billion in 1969. The implications of different treatment of these stocks of R and D capital can readily be inferred from the breakdown of intangible capital consumption allowances.

The credits of the business income and product accounts indicate explicitly the factors in differences between BEA gross domestic product of business and TISA gross business product. Exclusion from the business sector of net space rent of owner-occupied nonfarm dwellings, government enterprise product and the rental value of buildings owned and occupied by nonprofit organizations brings the BEA business product down from $428 billion to $396 billion in 1959, and from $798 billion to $732 billion in 1969.

The other differences, relating to disparate conceptions of final as opposed to intermediate product, are dominated by TISA's intermediate product received from government, coming to $34 billion in 1959 and $70 billion in 1969. TISA gross business product is less than that of the BEA because of differences in definition of both sector limits and the lines dividing intermediate and final product.

Our imputations of consumption services produced by nonprofit institutions, $14 billion in 1959 and $32 billion in 1969, are only modestly higher than the compensation of employees of nonprofit institutions counted as personal consumption expenditures in the BEA accounts. TISA imputations of interest income, net revaluations and particularly the services of volunteers, however, result in higher estimates of gross nonprofit product, $16.3 billion in 1959 and $43.5 billion in 1969. With some further addition of intermediate product from government, $1.4 billion in 1959 and $4 billion in 1969, our allocations then leave substantial amounts, $4.0 billion in 1959 and $16.9 billion in 1969, to be credited to capital accumulation. The imputed value of services of volunteers came to $6.2 billion in 1959 and $11.5 billion in 1969.

With the services of its capital attributed to government, our totals for the government enterprise sector's gross product came to only $7.7 billion in 1959

[9]Whether we in fact have an optimal mix in capital formation is another matter. On this I have argued on a number of occasions that there is some reason to expect systematic *under*investment in human capital and, contrary to some political views, substantial tax advantage, in the United States at least, to private investment in tangible capital on which interest costs are tax-deductible and capital gains lightly taxed if at all.

and $12.6 billion in 1969. The sum of the absolute values of negative surpluses, as categorized in the published BEA accounts, came to $1 billion, with some uncertain projection, in 1959, and to $2.8 billion by exact summing of the categories in 1969. The negative surpluses and imputed interest (on inventories), allocated as transfers to consumption and investment, amounted to $1.9 billion in 1959 and $2.5 billion in 1969.

TISA gross government product estimates of $80 billion in 1959 and $188 billion in 1969 are considerably higher than the BEA gross figures of $44 billion and $104 billion. These differences relate mainly to our attribution of income and product to government capital, with interest imputations of $16 billion and $43 billion, and capital consumption allowances of $22 billion and $30 billion for each of the two years. Uncompensated factor services, discussed earlier, come to $2 billion and $10.5 billion. Since we include an imputation of services of government capital where the BEA does not, a more meaningful comparison would be between BEA product (net and gross, which are identical) and our TISA net government product. Even here, however, after deduction of capital consumption allowances, we find the TISA product considerably higher, at $59 billion for 1959 and $159 billion for 1969. TISA government product also shows a markedly higher per annum growth rate, although again in current dollars, 10.43 percent as against 8.95 percent for the BEA.

Except for small amounts of government product accumulated within the sector (chiefly additions to inventories, some development of natural resources, and net revaluations when they were positive), all of government income and product plus intermediate purchases from other sectors are considered transferred, either to households as consumption or investment in education and training and health, to business as investment in research and development, or to each of the non-government sectors as intermediate product. Government transfers of consumption came to $17 billion in 1959 and over $44 billion in 1969. The capital items transferred, shown in detail in the table, totalled almost $35 billion in 1959 and almost $90 billion in 1969.

Details of the household sector not already presented in connection with the national income and product may best be viewed in the household accounts. The BEA in effect considers total product of households to be equal to its paid compensation of employees, that is wages paid for domestic service. As against these trivial figures of $3.55 billion for 1959 and $4.92 billion for 1969, we estimate gross household product at some $277 billion in 1959 and $555 billion in 1969. Approximately half of this is of course attributed to unpaid housework, $137 billion in 1959 and $268 billion in 1969. The opportunity costs of students ($29 billion and $92 billion) are major imputations of labor income in the household sector.

Since all human capital stocks are considered held in the household sector, we also subtract, from the $216 billion and $443 billion of income originating in the sector in 1959 and 1969, estimates of human capital consumption on the capital invested in child rearing, education and training, and health, $71 billion in 1959 and $134 billion in 1969. Hence, net income originating in households came to $145 billion in 1959 and $308 billion in 1969. Net household product totalled $134 billion in 1959 and $288 billion in 1969.

Total household product consumed was $232 billion in 1959 and $439 billion in 1969. Total household product accumulated came to $61 billion in 1959 and $149 billion in 1969. The totals of consumption and accumulation were some $16 and $33 billion more than gross output in each of the years because, again as we have explained earlier, it was necessary to include in household product consumed and accumulated the intermediate product transferred from government.

3. Conclusion

We confess to a conviction of some accomplishment merely in being able to implement empirically the conceptual framework of TISA. While not ruling out the possibility of some offsetting errors, we are heartened at the relatively small amount of additional statistical discrepancy which has resulted from the vast extensions we have undertaken. And while our estimates, however complicated the procedures used, were in many cases crude or even improvised with various projections, extrapolations and interpolations, we have some hope that, subject indeed to refinement and improvement, they have currently sufficient credibility to be of interest.

The main quantitative impact of our revised definitions and concepts is to be found in imputations of household production, both housework and the opportunity costs of students' time, the imputation of output to the services of government and household capital, and the attempt to avoid double counting of what we consider to be the intermediate product of government.

In allocating all of output, except for relatively small items of net foreign investment and transfer payments to foreigners, to consumption and domestic capital formation, we have added a great deal to the latter, particularly in the form of investment in intangible capital. In the BEA accounts these have been subsumed in government purchases of goods and services for education and research and development, in business-expensed R and D, in personal consumption expenditures for health and child rearing and in unmeasured nonmarket product which we have imputed.

We are impressed at the magnitude of our estimates of capital formation, including intangible and tangible capital investment, in nonprofit institutions, government enterprises, government and households, as well as in business. Conversely, we are impressed by the very small relative magnitude of BEA investment, running to roughly one-fifth of our total. It seems clear that application of economic analysis to the implications of investment for consumption and growth must avoid confusing the relatively small quantity of conventionally measured investment with the much larger amount of more comprehensively defined capital formation.

Finally, while we feel that we have come a significant way over a rather long period, we may outline some of the considerable task which we see ahead. First, we would most welcome criticisms, suggestions and help in improving the estimates herein presented and the procedures underlying them. We are completing preparation of a voluminous description of our sources and methods which we propose to make available to those interested.

Second, we plan to extend these estimates to all of the years from 1946 to 1975, and later as additional data become available. Third, we shall undertake preparation of comparable estimates in constant dollars. And fourth, we hope to utilize our new sets of estimates to develop new substantive findings regarding income distribution and basic behavioral relations bearing on consumption, investment and production.

This then is hopefully a conclusion to a beginning.

TABLE 1

NATIONAL INCOME AND PRODUCT ACCOUNT

	Billions of Dollars 1959	1969
DEBITS		
1. Labor income	479.068	967.864
1. Compensation of employees	279.574	571.356
2. Additional imputations	212.975	422.314
1. Expense account items of consumption	3.884	6.599
2. Opportunity costs of self-employed	42.611	55.685
3. Opportunity costs of students	29.31	92.27
4. Unpaid household work	137.17	267.76
3. *Less*: Expenses related to work	13.481	25.806
2. Interest	118.770	298.918
1. Interest paid	20.730	56.867
2. Net imputed interest	97.353	241.366
1. Gross imputed interest	118.083	298.233
1. Land	17.551	52.620
2. Owner-occupied dwellings	17.11	40.99
3. Structures and equipment	49.597	138.729
4. Consumer durables and semidurables	26.60	47.55
5. Inventories	7.225	18.344
2. *Less*: Interest paid	20.730	56.867
3. Net interest, rest of world	0.687	0.685
3. Net operating surplus	17.000	−14.895
1. Corporate profits	48.244	81.445
2. Private noncorporate income	53.354	74.123
3. Business investment in research and development	3.98	9.96
4. Government enterprise surpluses	2.490	4.701
5. *Less*: Imputed factor incomes in business	91.068	185.124
4. Rental income on owner-occupied nonfarm dwellings	−9.32	−30.25
1. Gross	7.1	10.2
2. *Less*: Net imputed interest on owner-occupied nonfarm dwellings and land	16.42	40.45
5. Net revaluations	6.464	27.682
1. Land	21.098	11.267
2. Owner-occupied dwellings	0.15	5.48
3. Structures and equipment	−7.972	26.637
4. Consumer durables and semidurables	−1.04	−9.20
5. Inventories	−5.772	−6.502
6. Net surplus (3+5)	23.464	12.787
7. National income (1+2+4+6)	611.982	1249.319
8. *Less*: Intangible capital consumption	76.131	146.204
1. Capital consumption on all research and development	4.981	11.864
2. Capital consumption on human capital	71.15	134.34
9. Net national income (7–8)	535.851	1103.115
10. Business transfer payments	8.333	15.816
1. Media support	6.562	11.978
2. Other	1.771	3.838
11. Uncompensated factor services	8.229	21.961
1. Volunteers	6.19	11.50
2. Draftees	1.910	10.143
3. Other	0.129	0.318

TABLE 1—*continued*

NATIONAL INCOME AND PRODUCT ACCOUNT

	Billions of Dollars 1959	1969
12. Net indirect taxes	−9.709	−21.684
1. Indirect taxes	43.326	88.987
2. *Less*: Intermediate product transferred from government	53.035	110.671
13. Statistical discrepancy	−1.381	−3.824
1. BEA	−0.220	−3.269
2. Additional discrepancy, business sector	−0.018	−0.075
3. Other	−1.143	−0.480
14. Charges against net national product (9+10+11+12+13)	541.323	1115.384
15. Capital consumption allowances	209.981	378.588
1. Tangible	133.850	232.384
1. Original cost	120.787	210.171
2. Revaluations	13.063	22.213
2. Intangible	76.131	146.204
1. Original cost	47.144	92.891
1. On research and development	3.684	11.461
2. On human capital	43.46	81.430
2. Revaluations	28.997	53.313
1. On research and development	1.297	0.403
2. On human capital	27.70	52.91
16. Charges against gross national product (14+15)	751.304	1493.972
CREDITS		
17. Consumption	402.591	773.856
1. Household expenditures for services and nondurables (less nonprofit compensation of employees)	120.424	220.871
1. Gross expenditures included from BEA personal consumption expenditures (less nonprofit compensation of employees)	133.905	246.677
2. *Less*: Expenses related to work	13.481	25.806
2. Expense account items of consumption	3.884	6.599
3. BEA imputations other than owner-occupied nonfarm dwellings	8.7	17.7
4. Subsidies allocated to consumption	0.530	2.222
1. Total included in business income	0.981	4.207
2. *Less*: Subsidies allocated to investment	0.451	1.985
5. Transfers	40.583	92.454
1. From business	8.333	15.816
1. Media support	6.562	11.978
2. Other	1.771	3.838
2. From nonprofit institutions	14.15	31.73
3. From government enterprises	1.017	1.332
4. From government	17.083	43.576
6. Nonmarket services produced in households	228.47	434.01
1. Net space rent of owner-occupied nonfarm dwellings	24.5	50.0
2. Other capital services	92.79	168.02
1. Durables	56.73	105.91
2. Semidurables	35.90	61.77
3. Inventories	0.16	0.34
3. Labor services	166.48	360.03
4. *Less*: Services allocated to investment	55.30	144.04

TABLE 1

NATIONAL INCOME AND PRODUCT ACCOUNT

	Billions of Dollars 1959	1969
CREDITS—*continued*		
18. Gross domestic capital accumulation	348.435	719.140
1. Original cost	340.656	688.282
1. Tangible	179.266	326.092
1. Structures and equipment and household durables and semidurables	171.628	316.023
1. Business	46.610	103.430
1. Nonresidential	41.305	91.701
1. Structures	14.989	31.119
2. Equipment	26.316	60.582
2. Residential other than owner-occupied nonfarm dwellings	5.305	11.729
2. Nonprofit institutions	2.622	5.085
1. Structures	2.324	4.495
2. Equipment	0.298	0.590
3. Government enterprises	3.162	6.671
1. Structures	2.932	6.162
2. Equipment	0.230	0.509
4. Government	27.319	40.300
1. Structures	12.093	20.524
2. Equipment	14.198	15.866
3. Product accumulated	1.028	3.910
5. Households	91.915	160.537
1. Owner-occupied nonfarm dwellings	20.743	24.780
2. Durables	42.436	85.478
3. Semidurables	28.736	50.279
2. Change in inventories	7.638	10.069
1. Business, nonprofit institutions and government enterprises	5.227	9.372
2. Government	2.236	0.529
3. Households	0.175	0.168
2. Intangible	161.39	362.19
1. Research and development	12.93	26.18
1. Business	3.98	9.96
2. Nonprofit institutions	0.37	1.11
3. Government	8.58	15.11
2. Education and training	71.44	192.38
3. Health	12.45	27.89
4. Child rearing	64.57	115.74
1. Market expenses	38.58	63.96
2. Household imputations	25.99	51.78
2. Subsidies and government enterprise transfers allocated to investment	1.315	3.176

TABLE 1—*continued*

NATIONAL INCOME AND PRODUCT ACCOUNT

	Billions of Dollars 1959	1969
CREDITS—*concluded*		
3. Net revaluations	6.464	27.682
1. Land	21.098	11.267
1. Business	10.866	2.187
2. Nonprofit	0.86	1.58
3. Government (including government enterprises)	2.332	−0.980
4. Households	7.04	8.48
2. Structures and equipment	−7.822	32.117
1. Business	−4.901	13.967
2. Nonprofit institutions	−0.58	2.13
3. Government	−2.491	10.540
4. Households	0.15	5.48
3. Household durables and semidurables	−1.04	−9.20
1. Durables	−0.48	−6.59
2. Semidurables	−0.56	−2.61
4. Inventories	−5.772	−6.502
1. Business (including nonprofit)	−5.373	−1.304
2. Government enterprises	0.628	−1.481
3. Government	−0.947	−3.657
4. Households	−0.08	−0.06
19. Net foreign investment	−2.007	−2.000
20. Transfer payments to foreigners (net)	2.285	2.976
21. Gross national product	751.304	1493.972

TABLE 2

BUSINESS INCOME AND PRODUCT

	Billions of Dollars 1959	1969
DEBITS		
1. Labor income	254.297	470.493
1. Compensation of employees	218.226	427.316
2. Additional imputations	46.495	62.284
1. Expense account items of consumption	3.884	6.599
2. Opportunity costs of self-employed	42.611	55.685
3. *Less*: Expenses related to work	10.424	19.107
2. Interest	50.176	143.861
1. Interest paid	1.719	14.422
2. Net imputed interest	48.457	129.439
1. Gross imputed interest	50.176	143.861
1. Land	8.423	26.301
2. Structures and equipment	35.711	101.694
3. Inventories	6.042	15.866
2. *Less*: Interest paid	1.719	14.422
3. Operating surplus	103.769	161.809
1. Corporate profits	46.435	77.726
2. Noncorporate income	53.354	74.123
1. Noncorporate proprietory income	47.224	66.218
2. Net rental income of persons	6.130	7.905
1. Total rental income	13.230	18.105
2. *Less*: Owner-occupied nonfarm rental income	7.1	10.2
3. Business investment in research and development	3.98	9.96
4. *Less*: Imputed factor incomes	91.068	185.124
1. Opportunity costs of self-employed	42.611	55.685
2. Net imputed interest on tangible capital	48.457	129.439
5. Net operating surplus	12.701	−23.315
6. Net revaluations	0.592	14.850
1. Land	10.866	2.187
2. Structures and equipment	−4.901	13.967
3. Inventories	−5.373	−1.304
7. Net surplus (5+6)	13.293	−8.465
8. Income originating (1+2+7)	317.766	605.889
9. *Less*: Capital consumption on all research and development	4.981	11.864
10. Net income originating (8–9)	312.785	594.025
11. Business transfers	8.333	15.816
1. Media support	6.562	11.978
2. Other	1.771	3.838
12. Net indirect taxes	3.423	3.876
1. Indirect taxes	37.092	73.670
2. *Less*: Intermediate product transferred from government	33.669	69.794
13. Statistical discrepancy	−0.238	−3.344
14. Charges against net business product (10+11+12+13)	324.303	610.373
15. Capital consumption allowances	43.803	80.220
1. Tangible	38.822	68.356
1. Original cost	36.355	65.335
2. Revaluations	2.467	3.021

TABLE 2—*continued*

BUSINESS INCOME AND PRODUCT

	Billions of Dollars 1959	1969
DEBITS—*concluded*		
2. Intangible	4.981	11.864
1. Original cost	3.684	11.461
1. On business research and development investment	1.397	4.066
2. On research and development investment transferred from government and nonprofit institutions	2.287	7.395
2. Revaluations	1.297	0.403
1. On business research and development investment	0.552	1.231
2. On research and development investment transferred from government and nonprofit institutions	0.745	−0.828
16. Charges against gross business product (14 + 15)	368.106	690.593
CREDITS		
17. BEA gross domestic product, business	427.7	798.1
18. *Less*: Net space rent of owner-occupied nonfarm dwellings	24.5	50.0
19. *Less*: Government enterprise product	6.0	13.5
20. *Less*: Rental value of buildings owned and occupied by nonprofit organizations	1.0	2.7
21. BEA-type gross domestic product of TISA business sector	396.2	731.9
22. Subsidies included in business income	0.981	4.207
23. Expense account items of consumption	3.884	6.599
24. *Less*: Expenses related to work	10.424	19.107
25. Business investment in research and development	3.98	9.96
26. Media support	6.562	11.978
27. Net revaluations	0.592	14.850
28. *Less*: Intermediate product from government	33.669	69.794
29. Gross business product	368.106	690.593

TABLE 3

NONPROFIT INSTITUTIONS INCOME AND PRODUCT

	Billions of Dollars 1959	1969
DEBITS		
1. Labor income	8.37	23.23
1. Compensation of employees	8.79	24.32
2. *Less*: Expenses related to work	0.42	1.09
2. Interest	1.92	6.88
1. Interest paid	0.32	1.43
2. Net imputed interest	1.60	5.45
1. Gross imputed interest	1.92	6.88
1. Land	0.67	2.65
2. Structures and equipment	1.25	4.23
2. *Less*: Interest paid	0.32	1.43
3. Net revaluations	0.28	3.71
1. Land	0.86	1.58
2. Structures and equipment	−0.58	2.13
4. Income originating (1+2+3)	10.57	33.82
5. Imputed value of services of volunteers	6.19	11.50
6. Net indirect taxes	−1.30	−3.87
1. Indirect taxes	0.06	0.10
2. *Less*: Intermediate product transferred from government	1.36	3.97
7. Charges against net nonprofit product (4+5+6)	15.46	41.45
8. Capital consumption allowances	0.88	2.08
1. Original cost	0.64	1.50
2. Revaluations	0.24	0.58
9. Charges against gross nonprofit product (7+8)	16.34	43.53
CREDITS		
10. Consumption	14.15	31.73
11. Capital accumulation	3.97	16.86
1. Research and development	0.37	1.11
2. Education	1.57	5.25
3. Health	1.75	6.79
4. Net revaluations	0.28	3.71
12. *Less*: Intermediate product transferred from government	1.36	3.97
13. *Less*: Expenses related to work	0.42	1.09
14. Gross nonprofit product	16.34	43.53

TABLE 4

GOVERNMENT ENTERPRISE INCOME AND PRODUCT

	Billions of Dollars 1959	1969
DEBITS		
1. Labor income	4.850	10.508
1. Compensation of employees	5.093	11.000
2. *Less*: Expenses related to work	0.243	0.492
2. Interest	0.428	0.615
3. Surpluses	2.490	4.701
1. BEA surplus	1.037	2.793
2. Sum of absolute values of negative surpluses	1.453	1.908
4. Net revaluations	0.628	−1.481
5. Net surplus (3+4)	3.118	3.220
6. Income originating (1+2+5)	8.396	14.343
7. Net indirect taxes	−0.742	−1.730
1. Indirect taxes	0.044	0.067
2. *Less*: Intermediate product transferred from government	0.786	1.797
8. Charges against net and gross government enterprise product (6+7)	7.654	12.613
CREDITS		
9. Sales, minus receipts of intermediate goods and services and expenses related to work	5.145	11.571
10. Transfers (interest+negative surpluses)	1.881	2.523
1. Consumption	1.017	1.332
2. Investment	0.864	1.191
11. Net revaluations	0.628	−1.481
12. Gross government enterprise product	7.654	12.613

TABLE 5

GOVERNMENT INCOME AND PRODUCT

	Billions of Dollars 1959	1969
DEBITS		
1. Labor income	41.771	98.843
1. Compensation of employees	43.995	103.740
2. *Less*: Expenses related to work	2.224	4.897
2. Interest	16.079	43.437
1. Interest paid	6.291	11.225
2. Net imputed interest	9.788	32.212
1. Gross imputed interest	16.079	43.437
1. Land	2.848	9.109
2. Structures and equipment	12.636	32.805
3. Inventories	0.595	1.523
2. *Less*: Interest paid	6.291	11.225
3. Net revaluations	−1.106	5.903
1. Land	2.332	−0.980
2. Structures and equipment	−2.491	10.540
3. Inventories	−0.947	−3.657
4. Income originating (1+2+3)	56.744	148.183
5. Uncompensated factor services	2.039	10.461
1. Draftees	1.910	10.143
2. Other	0.129	0.318
6. Charges against net government product (4+5)	58.783	158.644
7. Capital consumption allowances	21.718	29.718
1. Original cost	16.232	22.806
2. Revaluations	5.486	6.912
8. Charges against gross government product (6+7)	80.501	188.362
CREDITS		
9. Transfers	104.651	243.993
1. Consumption items	17.083	43.576
2. Capital items	34.539	89.740
1. To business (research and development)	8.401	15.077
2. To households	26.139	74.663
1. Education and training	23.777	69.120
2. Health	2.362	5.543
3. Intermediate product	53.028	110.677
1. To business	33.669	69.794
2. To nonprofit institutions	1.356	3.972
3. To government enterprises	0.786	1.797
4. To households	17.217	35.114
10. Government product accumulated	2.212	10.342
1. Original cost	3.318	4.439
2. Net revaluations	−1.106	5.903
11. Gross credits	106.863	254.335
12. *Less*: Intermediate purchases from other sectors	26.362	65.973
13. Gross government product	80.501	188.362

TABLE 6

HOUSEHOLD INCOME AND PRODUCT

	Billions of Dollars 1959	1969
DEBITS		
1. Labor income	169.86	364.73
1. Compensation of employees	3.55	4.92
2. Imputations	166.48	360.03
1. Opportunity costs of students	29.31	92.27
2. Unpaid household work	137.17	267.76
3. *Less*: Expenses related to work	0.17	0.22
2. Interest	49.48	103.44
1. Interest paid	12.40	29.79
2. Net imputed interest	37.08	73.65
1. Gross imputed interest	49.48	103.44
1. Land	5.61	14.56
2. Owner-occupied dwellings	17.11	40.99
3. Consumer goods	26.76	47.89
1. Durables	18.25	34.09
2. Semidurables	8.35	13.46
3. Inventories	0.16	0.34
2. *Less*: Interest paid	12.40	29.79
1. Owner-occupied dwellings and land	6.30	15.10
2. Consumer interest	6.10	14.69
3. Rental income on nonfarm owner-occupied dwellings	−9.32	−30.25
1. Gross	7.1	10.2
2. *Less*: Net imputed interest on owner-occupied nonfarm dwellings and land	16.42	40.45
4. Net revaluations	6.07	4.70
1. Land	7.04	8.48
2. Owner-occupied dwellings	0.15	5.48
3. Consumer goods	−1.12	−9.26
1. Durables	−0.48	−6.59
2. Semidurables	0.56	−2.61
3. Inventories	−0.08	−0.06
5. Income originating (1+2+3+4)	216.09	442.62
6. *Less*: Intangible (human) capital consumption	71.15	134.34
7. Net income originating (5–6)	144.94	308.28
8. Net indirect taxes	−11.09	−19.96
1. Indirect taxes	6.13	15.15
2. *Less*: Intermediate product transferred from government	17.22	35.11
9. Charges against net household product (7+8)	133.85	288.32
10. Capital consumption allowances	143.58	266.57
1. Tangible (nonhuman)	72.43	132.23
1. Original cost	67.56	120.53
2. Revaluations	4.87	11.70
2. Intangible (human)	71.15	134.34
1. Original cost	43.46	81.43
2. Revaluations	27.70	52.91
11. Charges against gross household product (9+10)	277.43	554.89

TABLE 6—*continued*

HOUSEHOLD INCOME AND PRODUCT

	Billions of Dollars 1959	1969
CREDITS		
12. Household product consumed	232.02	438.93
1. Market (labor services in household)	3.55	4.92
2. Nonmarket	228.47	434.01
1. Net space on owner-occupied nonfarm dwellings	24.5	50.0
2. Capital services other than on owner-occupied dwellings	92.79	168.02
1. Durables	56.73	105.91
2. Semidurables	35.90	61.77
3. Inventories	0.16	0.34
3. Labor services	166.48	360.03
4. *Less*: Services allocated to investment	55.30	144.04
13. Household product accumulated	61.37	148.74
1. Original cost	55.30	144.04
1. Child rearing	25.99	51.78
2. Education and training	29.31	92.27
2. Net revaluations	6.07	4.70
14. *Less*: Net intermediate product transferred from government	15.79	32.56
15. *Less*: Expenses related to work	0.17	0.22
16. Gross household product	277.43	554.89

TABLE 7

SUMMARY TABLE, NATIONAL AND SECTOR ACCOUNTS, GROSS AND NET NATIONAL PRODUCTS AND NET NATIONAL INCOME

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	1959			1969		
	GNP	NNP	NNI	GNP	NNP	NNI
	(Billions of Dollars)					
National	751.304	541.323	535.851	1493.972	1115.384	1103.115
Business	368.106	324.303	312.785	690.593	610.373	594.025
Nonprofit	16.34	15.46	10.57	43.53	41.45	33.82
Government Enterprises	7.654	7.654	8.396	12.613	12.613	14.343
Government	80.501	58.783	56.744	188.362	158.644	148.183
Households	277.43	133.85	144.94	544.89	288.32	308.28
Rest of World	2.416	2.416	2.416	4.464	4.464	4.464
Discrepancy	−1.143	−1.143	—	−0.480	−0.480	—

TABLE 8

SELECTED COMPARISONS OF BEA AND TISA ESTIMATES

(1)	(2)	(3)	(4)	(5)
	Billions of Dollars and Percents		Percent Changes, 1959 to 1969	
	1959	1969	Total	Per Annum
National Aggregates				
BEA Gross National Product	486.465	935.541	+92.31%	+6.76%
TISA Gross National Product	751.304	1493.972	+98.85%	+7.12%
BEA as % of TISA	64.75%	62.62%		
BEA Net National Product	440.356	853.051	+93.72%	+6.84%
TISA Net National Product	541.323	1115.384	+106.05%	+7.50%
BEA as % of TISA	81.35%	76.48%		
BEA National Income	397.083	767.929	+93.39%	+6.82%
TISA Net National Income	535.851	1103.115	+105.86%	+7.49%
BEA as % of TISA	74.10%	69.61%		
BEA Gross Private Domestic Investment	77.552	146.200	+88.52%	+6.55%
TISA Gross Domestic Capital Formation	348.435	719.140	+106.40%	+7.52%
BEA as % of TISA	22.26%	20.33%		
TISA, Gross Tangible Cap. Form. at Orig. Cost	179.266	326.092	+81.90%	+6.17%
BEA GPDI as % of TISA Gross Tang. Cap. Form. at Original Cost	43.26%	44.83%		
TISA Gross Intangible Capital Formation	161.39	362.19	+124.41%	+8.42%
BEA Capital Consumption Allowances with Adjustment	46.109	82.490	+78.90%	+5.90%
TISA Tangible Capital Consumption Allowances	133.850	232.384	+73.62%	+5.67%
BEA as % of TISA	34.45%	33.50%		
TISA Intangible Capital Consumption Allowance	76.131	146.204	+92.04%	+6.74%
TISA Total Capital Consumption Allowances	209.981	378.588	+80.30%	+6.07%
BEA as % of TISA Total	21.96%	21.79%		
BEA Net Private Domestic Investment	31.443	63.710	+102.62%	+7.32%
TISA Net Domestic Capital Formation	138.454	340.552	+145.97%	+9.42%
BEA as % of TISA	22.71%	18.71%		
BEA Net Private Domestic Investment as % of BEA Net Nat'l. Product	7.14%	7.47%		
TISA Net Domestic Capital Form. as % of TISA Net Nat'l. Product	25.58%	30.53%		
TISA Net Tangible Capital Formation without Net Revaluations	45.416	93.708	+106.33%	+7.51%
As % of Net Nat'l. Product	8.01%	8.16%		

TABLE 8—*continued*

SELECTED COMPARISONS OF BEA AND TISA ESTIMATES

(1)	(2)	(3)	(4)	(5)
	Billions of Dollars and Percents		Percent Changes, 1959 to 1969	
	1959	1969	Total	Per Annum
TISA Net Revaluations	6.464	27.682	+328.25%	+15.66%
As % of Net Nat'l. Product	1.14%	2.41%		
TISA Net Intangible Capital Formation	85.259	215.986	+153.33%	+9.74%
As % of Net National Product	15.03	18.82%		
TISA Investment Subsidies	1.315	3.176		
As % of Net National Product	0.24%	0.28%		
TISA Consumption	402.591	773.856	+92.22%	+6.75%
As % of Net Nat'l. Product	74.37%	69.38%		
BEA Personal Consumption Expenditures	310.768	579.711	+86.54%	+6.43%
BEA Personal Consumption Exp. as % of TISA Consumption	77.19%	74.91%		
Net Product by Sectors				
BEA Business	381.6	715.6	+87.53%	+6.49%
TISA Business	324.303	610.373	+88.21%	+6.53%
BEA as % of TISA	117.67%	117.24%		
BEA Households and Institutions	12.3	29.2	+127.40%	+9.03%
TISA Households plus Institutions	149.31	329.77	+120.86%	+8.25%
BEA as % of TISA	8.23%	8.85%		
BEA Government	44.0	103.7	+135.68%	+8.95%
TISA Government	58.783	158.644	+169.73%	+10.43%
BEA as % of TISA	74.85%	65.39%		

REFERENCES

[1] Eisner, Robert. "TISA: The Total Incomes System of Accounts," presented to the Fourteenth General Conference, International Association for Research in Income and Wealth in Aulanko, Finland. Photocopied, Evanston, Illinois: Northwestern University, 1975.

[2] ———. "Capital Gains and Income: Real Changes in the Value of Capital in the United States, 1946–75," presented to the Conference on Research in Income and Wealth in Toronto, Canada, 1976, revised in 1977. To be published in Usher [15].

[3] Juster, F. Thomas. *Household Capital Formation and Financing, 1877–1962.* New York: NBER, 1966.

[4] ———. "A Framework for the Measurement of Economic and Social Performance," in Moss [9], pp. 25–84.

[5] Kendrick, John W. *The Formation and Stocks of Total Capital.* New York: NBER, 1976.

[6] McElroy, Michael B. "Capital Gains and the Concept and Measurement of Purchasing Power," in *1970 Proceedings of the Business and Economic Statistics Section—American Statistical Association.* Washington, 1971, pp. 132–139.

[7] ———. "Capital Gains and the Concept and Measurement of Income," unpublished doctoral dissertation, Northwestern University, 1970.

[8] Milgram, Grace. "Estimates of the Value of Land in the United States Held by Various Sectors of the Economy, Annually, 1952–1968," in *Institutional Investors and Corporate Stock.* Goldsmith, Raymond W., ed., New York: NBER, 1973, pp. 343–347.

[9] Moss, Milton, ed. *The Measurement of Economic and Social Performance.* New York: NBER, 1973.

[10] Nordhaus, William and Tobin, James, "Is Growth Obsolete?" *Economic Growth,* Fiftieth Anniversary Colloquiem V. New York: NBER, 1972, and in Moss [9], pp. 509–532.

[11] Ruggles, Nancy and Richard. *The Design of Economic Accounts,* New York: NBER, 1970.

[12] ———. "A Proposal for a System of Economic and Social Accounts," in Moss [9], pp. 111–146.

[13] U.S. Department of Commerce, Bureau of Economic Analysis. *The National Income and Product Accounts of the United States, 1929–74, Statistical Tables.* Washington: U.S.G.P.O., 1976. [*NIPA*]

[14] ———. *Fixed Nonresidential and Residential Capital in the United States: 1925–1975.* Washington: U.S.G.P.O., 1976.

[15] Usher, Dan, ed. *The Measurement of Capital Studies in Income and Wealth,* vol. 45, for the NBER, forthcoming.