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6 Round Table of GNP Users

The round table session on the national accounts, chaired by Stanley J. Sigel, was designed to elicit views from prominent users of the accounts. Each of the panelists submitted in advance a very short written statement, all of which are reproduced here. A discussion then followed, first among the panelists and then by members of the audience. Only some of the comments from the audience appear in the volume.

Statements

Introductory Statement

Edward F. Denison

Murray Foss asked me to remain on this panel of users of the national income and product accounts even though I have moved from the Brookings Institution to the fount of the estimates. I agreed to participate, but I shall speak in my previous capacity as an outsider who uses NIPA data in economic analysis.

Because my chief concern has been studying long-term economic growth, my main interest has been in the annual series that the Bureau of Economic Analysis (BEA) publishes each July rather than with current, more summarized, quarterly and monthly estimates. The interests of

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Written statements by Edward F. Denison, Otto Eckstein, Alan Greenspan, Lawrence Klein, Arthur M. Okun. Eckstein was unable to be present but submitted a statement. Discussion participants: among panelists—Edward F. Denison, Alan Greenspan, Lawrence Klein; from the floor—V. Lewis Bassie, Robert Eisner, Saul Hymans.

users in my category tend to be overlooked. At one stage of the Creamer Committee deliberations, it was even suggested that what were called the July "revisions" be skipped in alternate years. People seem to forget that most of the data that analysts like me require is first published in the July *Survey of Current Business*. The initial charge to the Creamer Committee overemphasized the timing and accuracy of the earliest quarterly estimates, but fortunately the report ended up with recommendations that were well balanced as among quarterly, annual, and benchmark data.

I have used NIPA data in four growth-accounting studies, scattered from 1961 to the present. Perhaps the most visible improvement in data for this use has been in the measurement of fixed capital. The improvement helped both my measure of ouput—the national income—and measures of capital input. In 1961, BEA's current dollar national income series was not usable without adjustment because business incomes were based on the depreciation charged on tax returns or calculated by BEA with original cost valuation. BEA had no series then for constant-dollar national income or for the capital stock. I therefore had to turn to outside sources for estimates of economic depreciation in current and constant prices, and of the capital stock. By my second study, around 1965, BEA's capital stock project was providing data for depreciation and capital stock in current and constant dollars that were consistent with the NIPAs. BEA was not itself using these data to measure national income, but it was easy for the user to do so. The situation was formally unchanged at the time of my third study, about 1971, but the capital stock estimates had been improved. One procedural change, introduction of the Winfrey S-3 distribution of retirements, significantly bettered the gross stock series. By my latest study, around 1978, economic depreciation had been incorporated into the NIPAs. National income in current and constant prices can now be taken directly from the NIPAs. The capital stock data had also been further improved. I suspect that they are now about as good as they can be made until new data sources, such as surveys of service lives, are developed.

Isolation of a separate housing sector in the latest NIPA revision was another change helpful in analyzing capital's role in growth. Since my second study, I have measured the contribution of residential capital to growth of output directly by finding out how much output the NIPA estimates include for the services of housing. Formerly, this required tracking through several BEA worksheets. With the new format, it can be done easily from published data.

Of the many other changes in the NIPAs over the same time span, most were improvements that provided more information or more reliable information. However, in statistics all is not onward and upward. Agencies upon which BEA relies for data have suffered from falling response rates to voluntary surveys. Tabulations of corporate tax returns were shifted from complete count to sampling, and then the sampling ratios

were reduced. New complexities in the tax laws have also introduced new problems.

Analysts of long-term growth and structural change have been needlessly plagued by incessant tinkering with the Standard Industrial Classification (SIC). So have the agencies that collect data or, like BEA, process them. No one would complain if all changes made had truly been required by real developments in the economy—although even then one might have expected comparability to be maintained at the most detailed level feasible, whether that is industry divisions, two-digit industries, or whatever. But I have been convinced for 35 years that the reasons for *most* changes in the SIC have ranged from marginal to frivolous, and that their effect is wholly mischievous from the standpoint of economic analysis. Assemble 10 people to develop a SIC for an industry division and they will come up with one classification. Assemble any other 10 people and they will propose a different classification. Reassemble either group a few years later and they will arrive at a third classification. The practice of reviewing the SIC periodically assures periodic changes having nothing to do with changes in the economy. Each new version of the SIC hampers time series analysis, the principal analytical tool open to economists. In addition, it requires agencies collecting data to spend large sums to reclassify respondents, money that could better be devoted to data improvement.

BEA has devoted much effort over the years to adjusting data by industry to obtain time series covering long periods. In the last NIPA Supplement, BEA managed to get by with two classifications, one covering 1929–47, the other 1948–74. (Within these periods the series obviously would have been more accurate if the basic data had been collected in accordance with a stable classification.) Now the 1972 SIC has made it impossible to continue the 1948–74 classification. Data now are on a new classification, with estimates starting only in 1973 so that time series against which to appraise current developments are available for only a very few years. Nor is this the end. The *Statistical Reporter* informs its readers of plans for still another round of SIC revisions. Why users of economic statistics do not rebel is beyond my understanding.

Let me conclude by affirming my impression, based on use of NIPA data in growth accounting, that BEA was doing an excellent job within the limits of the possible. But much remains to be done.

The NIPA Accounts: A User's View

Otto Eckstein

The national income and product accounts are the central statistical construct of the U.S. economy. While there are other important statisti-

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cal systems such as the indexes of production, flow-of-funds accounts, and the input-output tables, most short- and long-run economic analyses use NIPA as the organizing framework. The United States is blessed that she possesses an elaborate and thoughtful system of accounts and that imagination and high intelligence continue to be applied to its development.

NIPA has many purposes: to gauge economic performance, compare economic welfare over time and across countries, measure the mix of resource use between the private and public sectors and between consumption and investment, and to identify the functional distribution of income and of the tax burden. Inevitably, these purposes clash and the accounts must be a compromise.

As the builder and user of a large econometric model, my needs are narrow, and I would like to see a particular emphasis in the accounts hardly likely to be shared by everyone. Since it is the purpose of this panel to identify the desires of a small sample of users, let me plead my case.

The National Income and Product Accounts as Information

To the econometrician forecaster, all time series, whether in NIPA or elsewhere, are simply information, grist for establishing historical relations that have predictive value in the future: it is information content which matters. Is the series based on reliable reporting systems in the economic units? Is it intrinsic to their operations? Is the underlying information audited by accountants to assure compliance with an accepted and recognizable body of reporting principles? Is it a survey, filled out because the respondent is under a legal obligation or cannot say no to an interviewer? Is the series an imputation, constructed by statisticians to fill a gap in coverage, designed for conceptual completeness or as a "correction" for some immeasurable effect?

There have always been some major series in the accounts which had little information content. The inventory valuation adjustment is a primitive calculation, fortunately with a known recipe, which can only bear a loose relationship to the concept it seeks to measure. The rent imputed on owned dwellings also has an ancient history. But in recent years the "conceptual" series have been proliferating, and there is steady pressure to add more of them. For example, the capital consumption adjustment to approximate replacement cost accounting has loosened considerably the relationship between the circular flow of income and observable information. When the SEC required the accounting profession to develop corresponding concepts to be included in the exhibits of annual reports of public companies, the initial experience was poor, and financial analysts feel that the initial figures that are being produced are of little value.

There is much interest in correcting the GNP for environmental factors, which could lead to a further injection of unmeasured series that

would identify, at least as a first approximation, the magnitudes of such effects. But I would urge BEA to adopt as one of its main guiding principles that it include nothing in the national income and product accounts which cannot be measured.

The Role of Estimation

Even within the more traditional areas of the accounts, I would urge BEA to do less estimating and more measuring. The areas that are information intensive provide much of the variation of the data. Many areas of the accounts have a weak information base and consequently are estimated to move rather gently. As a result, the volatile components of the GNP are diluted and the information content dissipated in a picture of the economy which is smoother and more regular than the reality.

At times, I have been tempted to build an econometric model out of the primary data that feed into the national income and product accounts, to link retail sales to payroll employment, plant and equipment to publicly reported returns, sales surveys, and capital costs, and measures of markets and output derived from industrial data. But even with its limitations, the NIPA data set adds so much through its logic, consistency, and data interpretation that it is still preferable to use it as the organizing principle of the analysis.

In summary, then, let me engage in some special pleading for information content rather than conceptual or theoretical neatness, and for the adoption of the principle that the NIPAs shall add nothing which cannot be measured. But win or lose, the econometric models will continue to stand on the firm foundation of the accounts as they are produced by BEA, and we will do well to work toward the same kind of solidity in the models as we find in the base on which they stand.

Weekly GNP

Alan Greenspan

I should like to use my opening remarks to recount a particular episode in which the GNP accounts, both in concept and in detail, became a critical issue in the formulation and, eventually, the implementation of economic policy.

In the fall of 1974, as you may recall, the bottom seemed to be dropping out of the economy. New orders were slipping, production began to fall rapidly, and unemployment started to increase in discontinuous jumps. That the economy was heading into a recession (if it were not, in fact, already in one) didn't require much debate. The key question for economic policy at the time was whether we were looking at an inventory recession, which meant a sharp but temporary erosion in production and

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employment, or a far more dangerous, final demand-oriented weakening in the economy.

As 1974 drew to a close, retail sales and home building were soft, and much of what we consider final demand was slipping, as was inventory investment. By Christmas 1974, the question of whether we were facing a sharp, but temporary, decline, or whether something far more profound was confronting us, was an up front issue for the president. An answer had to be formulated as quickly as feasible. The types of economic policy initiatives that one should employ depended on the answer. For a short-term inventory recession, the optimum policy was to do as little as possible and let the natural forces of the economy bring the recession to a halt. If it looked as though the bottom were falling out of final demand, much more drastic policy options would have to be confronted.

We don't have, as you well know, even a monthly GNP series, but I submit that, starting in December 1974, we had what amounted to a weekly GNP. It may not have passed the rigid statistical standards of the BEA, but it was more than adequate—in fact quite instrumental—in answering the question of whether we had an inventory recession, or a final demand recession, or both.

While the Department of Commerce has since abandoned its presumably poor weekly retail sales series, it nonetheless did yeoman service during that period in indicating that personal consumption expenditures was not undergoing a downward plunge. Trade sources coupled with the latest data on building permits, and housing starts outlined the residential sector on a weekly basis. The plant and equipment survey and some monthly machinery shipment data were a crude proxy for producer's durable equipment.

From the insured unemployment system we were able to get a rough indicator of aggregate work hours, which with a guess at output per workhour yielded total real GNP.

Putting all of these unquestionably "exact" statistics together indicated something which we knew for a fact only much later; that the rate of inventory liquidation, that is, the gap between GNP and final demand, was exceptionally large by historic standards and was unlikely to get wider in the period immediately ahead. Therefore, if final demand continued to stabilize, as apparently it was doing in the early weeks of 1975, the recession's low point was close at hand and a marked recovery from it was a statistical necessity. It soon became clear from the insured unemployment data and several qualitative indicators that the worst was over.

At that point we could conclude that the administration's rather moderate tax-cut proposal was adequate, and further expansionary measures would, in the long run, turn out to be counterproductive. Short-term emergency GNP monitoring was no longer necessary, and the short history of the weekly GNP came to a creditable end.

What I believe this episode demonstrates is that, while our underlying GNP data system is less than perfect, it nonetheless sets a structure for understanding what is happening in the economy at any particular point in time, which considerably facilitates our capacity to make current evaluations and short-term forecasts. Without the existence of third-quarter 1974 detailed data and some rough cuts of the fourth quarter, the weekly GNP system would not have been possible for the weeks immediately preceding, and following, Christmas of 1974.

NIPA Statistics: A User's View
Lawrence Klein

I am going to approach this problem from the point of view of a model builder. We would say, "Count your blessings." We are pleased with the numbers, but there is no point in telling this group how great they are.

I prepared a kind of wish list or Christmas list of things we would like to have that follows these remarks. It is very much like trying to find out what present to get for the person who has everything.

There are three kinds of issues in this list that I would like to focus on. One set of issues deals with a more complete reconciliation and integrated publication of national income and product accounts, input-output accounts, and the flow-of-funds accounts. For that purpose I have sketched out a set of boxes (fig. 6.1). This is very important in the kind of model building we do in the Wharton group, particularly for medium- to long-term modeling. We actually do integrate an input-output system of intermediate flows, which is the center square, and a rectangular flap at one side, which is the GNP, delineated in columns with the deliveries from each of the producing sectors to that final demand category. And then the rectangular flap at the bottom is the value added or the national income by sector. Each column of that array would give intermediate and value added inputs in terms of product originating, and each row would give intermediate and final delivery output adding up to gross output in terms of delivery. We make use of this very intensively and particularly in terms of the things that were discussed at the previous session dealing with the vast changes in oil prices, the vast changes in exchange rates associated with the floating rate system, and other kinds of relative price adjustments in the economy. We find there is a need for making a very close monitoring of the shifting of the production process through time. The initial goal, of course, is to have such an integrated system of technical and expenditure and income accounts on an infrequent basis, maybe once or twice a decade. But we would really like to see this on an annual basis. In fact, we are in the position of trying to interpolate such

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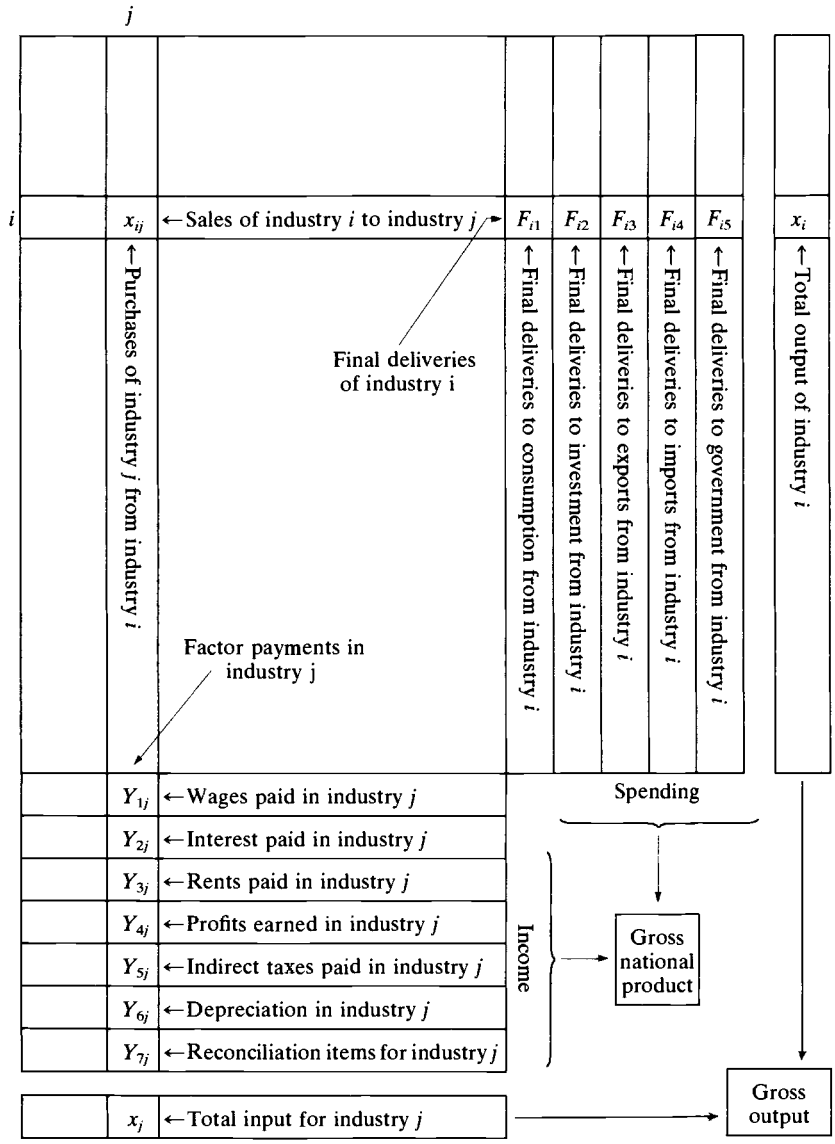

Fig. 6.1 Relationship between interindustry transactions, final demand, and factor payments.

annual estimates, in large measure using economic theory, trying to estimate, by some surrogates of elasticities of substitution, the way in which the input-output table would move through time and also the way in which the industrial composition of the GNP or the value added would move through time. I find that very important in trying to introduce the

concept of more supply side modeling into our system. I think that our models are terribly deficient in this respect, and this is one of the central things that we must push for.

In a similar way, with these kinds of diagrams or accounting statistics for things like national balance sheets and the NIPA statements, one would want an integration between the flow-of-funds accounts and the national income accounts. I take the view that we would know as much as we want to know about the economic functioning of our system if we could put those three accounts (NIPA, input-output, flow of funds) together, and, indeed, if one were building up an accounting system for a large-scale enterprise we would want a sources-and-uses statement, an income statement, an operating statement (physical operations), and a balance sheet. Then we would know as much as is needed to be known about the financial and physical operations of that enterprise. We would like to do the same for the nation. I think that this has high priority and is, perhaps, one instance where other countries are ahead of us in terms of more frequent updating of input-output tables with better integration of these accounts. I think we should move very much in that direction.

One of the items on my wish list, of course, is more frequent publication of the national income accounts. That really follows directly on what Alan Greenspan had to say about weekly and monthly GNP. Being a big user of the personal income by months, then the wish list says, Couldn't we have a broader or more comprehensive set of measures at more frequent intervals?

In a vein similar to the integration of the input-output, flow of funds, and the national income accounts would be regional integration of accounts. That would be an essential item in the concept of trying to model the nation or the country by the summation of regional models, which is a challenging exercise that I and some of my associates are engaged in at the moment. In order to complete that we are lacking two fundamental sources of information. (1) Interregional trade on the same kind of basis as we have for international trade. This is naturally a thorny problem, a messy problem, a lack-of-data problem, but it does seem to be one that has high priority. (2) The other issue is the allocation of corporate profits by region. I feel those two things are the two biggest stumbling blocks to putting together a consistent set of regional accounts that add up to the national accounts. Now what do we do? In fact, in our approach to regional modeling, we finesse the problem by building systems that don't make use of the interregional flows or that don't make use of the regional allocations of corporate profits. But, to use the econometric lingo, we derive reduced forms and use all other kinds of techniques to avoid the issue, although we don't face up to the issue. That certainly would be an area for which we need much better accounting information and a direction in which the national income accounting activities ought to move.

A great deal of model building activity that I am engaged in at the moment deals with international model building for the world, as a whole, treating America as a component of a world system. In that respect, the most serious issue is developing appropriate price data for valuing exports and imports. Naturally, I am aware and appreciate the attempts to move from overall unit value indexes for exports and imports to genuine price indexes. But I find that an appropriate kind of modeling at the detailed level requires looking at types of exports and imports, in particular, by Standard International Trade Classification (SITC) categories. That may be somewhat arbitrary, but it is a very convenient one and the one that has widest international usage at the moment. For that, many surrogates are used. Foreign wholesale prices properly marked up for duty and exchange rate are used as our estimates of price indexes of American imports. Quotations on world markets for basic commodities are used in order to find some of our import prices by SITC category. Of course, whenever we are engaged in model building we always want a long history of these. We want to recover the last 20 or 30 years. This may be overcome to the extent that in the last year or two one finds a shift to proper indexes by the Bureau of Labor Statistics. But then the individual researcher is forced to extend the series back in order to establish the basic relationships. It seems to me that a genuine set of price indexes for imports and exports by fairly refined classes is needed. I think that this country should follow the German practice of publishing these indexes in detail. Now we are forced to use a large number of surrogates in order to deal with that kind of issue.

Finally, I would like to close this talk about the wish list to argue that we are living in a more interdependent, international world. It seems to me that it would be more useful if thinking in this country could be shifted to analysis of the GDP instead of the GNP, so as to be more in line with international comparisons. Not that we don't publish it, but that it's not our central focus of interest, and I think it ought to be. It ought to be so in an era where oil earnings on the international market are so vast that it makes a big difference on occasion.

At the same time, we should try to become more uniform in our breaking down of government spending into a current account and capital account, because in studying fiscal and other kinds of policies across countries it is quite important to separate out public spending in those two categories.

Year by year, benchmark by benchmark, the NIPA accounts improve both from the viewpoint of the general user and the professional. My comments have focused on what I perceive to be the needs of the econometrician, who will never be completely satisfied despite the steady progress that is being made.

Standard issues of concern:

1. Statistical discrepancies—their size, their instability, their allocation.
2. Valuation adjustments—depreciation and inventory change.
3. Measurement of capital stock.
4. Government spending—separation into current and capital account, especially to study more carefully government capital formation and output originating in the public sector.
5. More complete reconciliation and integrated publication of national income and product accounts (NIPA), input-output accounts (I-O), and flow-of-funds accounts (F/F).
6. More frequent compilation of I-O accounts.
7. More frequent publication of main aggregates in NIPA accounts—monthly and weekly data for deeper monitoring of business conditions.
8. Reconsideration of estimation of *potential* output.
9. Further analysis of net economic welfare (NEW)—elaborating the approach of Tobin and Nordhaus.

The BEA should be congratulated for paying more attention to systematic reporting of revision changes and estimated amounts for the preliminary releases. Continued expansion of information relating to errors in the data is a splendid activity.

International aspects: the world *is* becoming more interdependent, and the international economic position of the United States should be more carefully reported. Relevant issues for the NIPA accounts, in this respect, are:

1. Our basic measure of gross output should be GDP instead of GNP—in accordance with the growing importance of international investment income for the United States and conformity with practice in other countries.
2. Preparation and use of genuine price indexes of imports and exports by SITC classes—to replace unit values.
3. Speeding up of reporting of international data on current account and balance-of-payments account.
4. Preparation of quick updates of fully balanced matrices of world trade/payments—including both merchandise and invisibles.
5. Publication of comparative NIPA data for main trading partners, for the world as a whole, and for indexes of exchange rates.

The National Accounts in an Inflationary World

Arthur M. Okun

I will focus my remarks on a few issues about the national accounts that stem particularly from our era of chronic inflation.

The late Arthur M. Okun was a senior fellow at The Brookings Institution.

Output Measurement

In principle, there are two basic strategies of estimating output: (1) direct measurement of physical volume, and (2) indirect inference from applying a deflator to a dollar volume of sales. The latter, deflation technique, is used for most of the components of real GNP, although the former is applied in important areas like home building, mobile homes, automobiles, and the gross government product. And I believe that reflects sound judgment. Most groups of products are too heterogeneous and too poorly defined to permit reliable direct measurement of output. On the other hand, it is clear why the good data on units provided by automobile manufacturers give us a sterner basis for measurement of real automobile consumption than could be derived by applying a deflator to retail sales data that necessarily combine sales of new cars with those of used cars and parts. I suspect that, in a fair number of areas, a case could be made for either volume measurement or deflation.

I want to stress that the more variable and volatile changes in prices are, the more attractive physical volume estimation becomes relative to deflation. The deflation of flows rests heavily on the assumption that our price indexes are good measures of actual transactions made during the relevant period. If the P that is measured by price indexes does not match the unobserved but "true" P in the transactions that are reflected in PQ flow data, then deflation will introduce errors in the measured growth of output that are equal proportionately and opposite in sign to the errors in the price index. In the quarterly relationship between percentage changes in real product and percentage changes in price, any errors in the price indexes will tend to bias the observed price elasticity of demand toward -1. The quarterly data since 1972 show changes in real food consumption are reduced by .69 percentage point for each one percentage point increase in the food deflator during the quarter. Since all the evidence I know suggests that the price elasticity of demand for food is far less than .7 in absolute value, I offer this as a bit of circumstantial evidence of deflation bias. I would urge that similar (and indeed more sophisticated) checks be made on all components of GNP to identify suspected areas of deflation bias. I would also urge a major effort to develop direct estimates of physical volume in "fringe areas," initially for use as a cross check to deflation rather than to supplant it.

Income Adjustments

Inflation raises serious conceptual and analytical issues about the measurement of income and income shares. Our national accounts show two kinds of income adjustments for inflation—the inventory valuation adjustment, and the capital consumption adjustment. A number of other adjustments have been suggested, but I believe they are analytical—not

accounting—adjustments and hence cannot usefully be incorporated in the national accounting system. I favor the two adjustments that are being made, but I want to urge that the capital consumption adjustment should be presented differently. First, the two distinct parts of that adjustment should always be shown in the process of aggregation. One part corrects capital consumption allowances a la IRS to consistent accounting at historical cost. Because economic lives of assets, as estimated by the Department of Commerce, are longer than the lives used in tax returns, that correction lowers capital consumption allowances. The other part is the inflation adjustment, moving from historical cost to current replacement cost. Because of inflation, that correction necessarily adds to the uncorrected figure. These are entirely different animals and should be shown separately whenever the overall adjustment is shown.

Second and more important, the inflation adjustment applies to corporate-profits and corporate-interest-paid combined—not to profits alone, as now shown. When physical capital is debt financed, the expectation of inflation is reflected in the interest payments, and the "real" risk of deviations of inflation from that expectation is borne by the bondholder. Allocating the inflation adjustment between the property income of shareholders (called profits) and the property income of bondholders (called interest) is an intriguing analytical issue that our national accountants should leave to academic researchers. But the tables in the national accounts now appear to make an allocation—100% to profit, 0% to interest. That possibly misleading presentation can be remedied. The tables should show the sum of corporate profits and net interest originating in corporations and *that sum* (not any of its parts) should incorporate the inflation component of the capital consumption adjustment.

As a further example of an analytical problem that is not an accounting problem, I turn to the inventory valuation adjustment. The IVA is sizable because many corporations do not take advantage of the permission under the tax laws to use last in first out (LIFO) accounting. The national accounts, on the other hand, apply the equivalent of LIFO accounting to the entire country; I believe that is the correct decision. Yet, I also believe that the attachment to first in first out (FIFO) accounting by firms is well-founded—not, as some have suggested, as an effort to fool the shareholders about their profitability but as a correct scoring system given their pricing practices. If all firms priced all current sales on a LIFO-cost basis, their quarterly uncorrected before-tax profits should be up $1 for each $1 increase in the absolute value of the IVA; that is, IVA-corrected profits before tax would be uncorrelated with IVA. In fact, I can report that statistically that coefficient is less than one-half. Firms are not collecting their inventory capital gains from their customers; rather the FIFO accounting firms are to a significant extent setting their prices on a

FIFO basis—marking up actual historical costs rather than replacement costs. And, if we had the time, I would be glad to argue that that pricing strategy is thoroughly consistent with rationality and optimization.

The fact is that a slowdown or speedup of cost inflation is passed through by firms into final prices only with a lag. The national accounts reflect that one way, and the pricing and accounting systems of much of business reflect it differently. And both are right for their purposes. If this seems perplexing, it is only one of many confusions introduced by an era of inflation.

Discussion

Among Panelists

SIGEL: Let's try to get the speakers to react to some of the issues that have been raised. Some of the speakers offered shopping lists of what the accounts should be doing given the kinds of short-run economic policies that were being considered and the kinds of economic analysis being made. Two speakers did not, and I wonder if they would care to.

GREENSPAN: I have always believed that one of the critical areas for economic analysis that can be improved upon is the inventory system. As you know, we rely almost wholly on owned book-value data, but that system has several faults. The critical issue, especially in a period of inflation, is to get as refined an estimate as we can on real inventory change. We have a substantial amount of physical volume data on inventories which I believe can be appropriately embodied into an inventory estimate system. While that obviously raises many technical questions of where you displace the owned-inventory data system with physical volume parts, it nonetheless, in my judgment, will probably significantly improve the physical volume estimating of one of the most important statistics in the GNP accounts for the short term.

There are obviously major problems with LIFO and FIFO estimation and the price indexes. Frankly, I am surprised that the data look as good as they do considering their essential weaknesses. Another subject I have always thought we should really look at, and which I have discussed with George Jaszi and others, concerns inventory in transit. We do not capture this inventory in our accounting system. When a good is shipped out of an establishment, it moves from "inventory" to

Discussion participants: Edward F. Denison (The Brookings Institution); Alan Greenspan (Townsend-Greenspan & Co., Inc.); Lawrence Klein (University of Pennsylvania); Stanley J. Sigel, moderator (Federal Reserve Board).

"accounts receivable" and it stays there until it arrives into the bookkeeping system of the receiver, when you get a credit to "inventory" and a debit to "accounts payable." There is always a net receivables in our system. In large part this reflects inventory in transit, the total of which we know is always a positive number. As a consequence, since there is a long-term uptrend in our economy, it must also follow that the expected value for in-transit inventory investment is positive, on average. It strikes me therefore that we have a bias in our statistical discrepancy account reflecting this gap in the data. I am not sure how large it is, but since we know its bias—since its expected value is positive—it strikes me that even a rough estimate is better than none.

I have a very long shopping list, but I guess I will stop there because that's the one for which I think the most advance can be made at this time.

DENISON: Mostly, I will pass on grounds of conflict of interest, but there is one small thing that will set me off completely from everyone else. The basic data now begin with 1929, which really is fine, but it would be much better if one could just go back a little bit farther. One really can't use 1929 without knowing what the years immediately preceding were like, so one has to look at them too. I think it would be possible and useful to go back to about 1926 with much the same sort of data as are used in 1929–39. I do not say BEA is going to do it, or even that it should have a high priority. But at some point, it really would be very useful. A lot has been done on those years, and I don't think it would be an enormous job to complete a set of estimates. A few years for the period immediately preceding the depression would be better than one.

SIGEL: One other issue that was raised by some of the speakers touched on the problems that the rapid rate of inflation might create for the use of the accounts for certain kinds of analysis. Is the usefulness of the accounts and the ways they are used affected by rapid rates of inflation as opposed to moderate rates?

GREENSPAN: I would just like to raise an issue which really has not been discussed here, namely, the extent to which real GNP changes are a function of the arbitrary choice of the base we employ for pricing. We will get a significant revision by moving the base of the price index from 1967 to 1972, or from 1972 to 1977. It is fairly obvious when you try to employ various bases that you will get different views of history. The problem of pricing becomes a terribly critical issue in a period such as this. The most important advances we can make at this stage, as Art Okun correctly points out, is to see whether we can create alternate systems in a physical volume sense. I don't know whether Art has looked at the unit food consumption series that the Department of Agriculture employs, which theoretically tries to go directly to a

physical volume basis. I have not checked it recently against the deflated series, but I suspect we will find a lot of problems there, largely because of indexing and deflation problems. There is no doubt that Art raises the critical question at this point, namely, that the usefulness of the GNP accounts will now require far greater concentration on deflation than they had either in the very early years of formulation or more specifically, in the years when the major expansion in the accounts occurred, that is, during periods in which inflation really wasn't all that important. Whether you chose an index which was 102.1 or 102.2 really didn't make that much difference. Now the problem is whether prices are rising at an 8% or 9% rate. That does make a difference.

KLEIN: There is an issue about the base, but I don't think it is an inflation issue. I think it is a relative price issue. If one looks at the U.K. accounts, one sees that the new figures in 1975 prices give an entirely different story about very short-run growth of that economy compared with the older one, which was based on pre-1973 prices. When you have an economy that is producing a lot of oil and you give it a very high weight in the present statistics with a very high price, then it gives an entirely different picture on growth. That is an old index number problem. I don't think that is particularly an inflation problem.

GREENSPAN: But isn't it, in the sense that the dispersion of prices is a function of change in level?

KLEIN: Yes. However, I have in mind that the old arguments between American and Soviet statisticians about the use of 1926 rubles all during the thirties involved a question of heavy production of goods that had gone up in value a fair amount. It wasn't an overall inflation issue. We are now getting that with oil. However, there are one or two interesting little things about the inflation situation. Art mentioned the IVA and the depreciation adjustments. I can well appreciate from an intuitive point of view the fact that the IVA should be very sensitive to short-run inflation. I think it is less obvious that the depreciation or capital consumption adjustment should move significantly when you have spurts of inflation. If you think that a principal reason for wanting the capital consumption adjustment as being one in which you want to get a replacement value of capital assets, you must bear in mind that you've got a big slow-moving stock and a period in the distant future when you want to replace that stock. Under these circumstances I feel that the depreciation adjustment ought to be very smooth and not jump around with short-run bursts of inflation so much, although it is not completely insensitive to that particular issue.

Another problem that I find troublesome with the inflation situation is in dealing with the statistical discrepancy. When the 15-day estimate comes out every quarter, I have the problem of deciding what the profit figure was, and that is the problem of deciding where the

statistical discrepancy is going to be. The statistical discrepancy by all tests that have been made in the past is not a random series; maybe it would be good if it were but it is not a random series by tests of randomness. It seems to make violent moves from quarter to quarter. It can swing quite easily by $5 billion at an annual rate in one quarter. Somehow that just doesn't sit right with me. If it did depart from a random series then one would expect very high serial correlation. There isn't. Serial correlation is moderate but not high. The statistical discrepancy is closely enough associated with rather sensitive issues about profits in a period when there are very high prices, so that it seems to me that it is much too erratic a series to satisfy the user.

DENISON: We have a productivity disaster, according to the data for the last five years. I have given quite a lot of thought to what might be responsible for it. One suggestion is that something is wrong with the data. But I don't know of anything that's likely to have gone wrong with the current dollar data, other than perhaps things associated with the measurement of inventory change, which itself depends on the price data. So if there is something wrong with the output data—the labor and other data may also have errors—then it probably would be underdeflation. But I really haven't thought of anything that would tell me exactly why a high rate of inflation would make changes over a period extending for a few years less reliable.

Even for quarterly changes, it is not clear that high rates of inflation would make the consumption data worse, since BLS collects price data directly from retail stores. Inflation clearly causes some problems for GNP components for which there are both contract prices and delivery prices or for which there are special timing problems, or for which there is reporting of list prices that differ from actual prices. But these cases don't account for a whole lot of total output. And the things that are likely to be wrong with them seem to relate more to short-term ups and downs than to changes over, say, three or four or five years. I have not concluded that inflation necessarily makes the data worse nor, if it does, in which direction it would be likely to bias real output series. I am not aware of evidence that it really makes estimates worse over any sustained time period.

From Floor

BASSIE: I would like to make a plea here regarding the mention of monthly GNP data. Thirty years ago I constructed a monthly GNP series and carried it out for several years into the mid-1950s. It wasn't much good. I decided then that it wasn't worth doing because it was too erratic. The monthly estimate depends so much on highly variable

Participants from floor include V. Lewis Bassie (University of Illinois, Urbana), Robert Eisner (Northwestern University), Saul H. Hymans (University of Michigan).

items, namely, what was then the net foreign investment and the inventory change. The monthly series misbehaved in various ways. I decided it wasn't worth the time and effort, so after a while I dropped it.

Now I would like to comment also on integrating the accounts. The more integration we do, the more we have to build boxes with rather crude estimates. Adding these to good data creates problems. It is like some proposals to add more imputations to the gross national product. The more we do of this sort of thing the cloudier the whole process of interpretation becomes. I would like therefore to put in a plea for keeping clean data as clean as possible and not messing them up. The same thing happens in the business of reconciliation. I don't like reconciliation much, because it means that you make modifications in the things you are reconciling. You make modifications in the direction of "improving" the estimate. Those improvements don't give us a really better basis for analyzing the economy. Very often they are distortions of the kind we should best avoid.

EISNER: I would just like to pick up quickly on three related matters—on the capital consumption adjustment, on inflation, and on the use of flow-of-funds balance sheets. If we make a capital consumption adjustment for inflation it is important to recognize not only increased cost in terms of capital being used up but increased value of existing capital. As we look at inflation we try to note what is happening, for example, to interest rates. Another way of looking at inflation is to note that there is a very substantial capital gain on the part of all those who have fixed money obligations, and a capital loss for those who have fixed money assets.

If we are interested in distribution of income, interested in investment, interested in implications of asset holdings and net worth positions for consumption, it is very important to take into account what is happening, for example, to the real asset position of homeowners. This may leave them both able to consume more and, looking prospectively at what happens to their real assets in home ownership, to buy more homes.

A lot of the focus on the alleged high cost of investment or the alleged shortage of capital may get a different perspective if we have data handy which will show us the true cost of capital. We will then recognize the capital gains that businesses get when obligations to pay nominal interest and principal lose real value as interest and discount rates, along with inflation, rise above those anticipated, and as they therefore realize capital gains due to declines in the real value of their liabilities. Indeed, any reconstruction of accounts to adjust for distorting effects of inflation may leave us worse off than with no adjustment if it does not include full and proper accounting for capital gains and losses.

HYMANS: I would like to make three quick comments mostly about data reliability: Every time I am at a meeting like this and somebody starts saying "monthly GNP" I start to get the willies. The Grimm-Hirsch paper discussed this morning dealt with revisions that are quite different from what we would be dealing with in the case of monthly GNP. Hirsch and Grimm dealt with revised data that resulted from a benchmark revision. There is also the problem, about which one can draw no inferences from the kind of paper we heard this morning, about what happens if one could improve those first estimates of GNP that are published 18 days after the end of the quarter. Those are very noisy data, as we know. The authors indicated a couple of reasons why. And that gives quite a different story about how much better one would be able to do in short-term forecasting with better GNP data, in that sense, not in the sense of benchmark revision of already revised data. So that is a quite different problem.

We heard some talk yesterday and again today by Lawrence Klein about regional modeling and yesterday about sectoring. Let's mention regional modeling. We run and maintain a model of the economy of the State of Michigan. For reasons that Larry mentioned, that model has to be built on state personal income statistics rather than product statistics. In terms of regional modeling we don't have any kind of product data. That would be very useful in addition to the interregional trade. It would be nice to have product data. What we do have—the state personal income data—is atrocious. First of all, the data come out with a four-month lag, which is an inconvenience for many users. Second, they come out with very substantial revisions, year by year. The whole series of state personal income data come out late, are very inaccurate, and cause enormous problems in regional or state modeling.

In terms of sectoring—a number of us—including myself, have had experience building industry models. There we have to deal with data like industry shipments data. Those are also atrocious data. And that—the published industry shipment data—I am convinced does not have to be as bad as it really is. I have been building a model for the furniture industry. The National Association of Furniture Manufacturers, just as an example, surveys its members every month to get shipments data from the members, which they put together into an aggregate shipment series. It turns out that this comparatively small sample of shipments data is extremely accurate by standards of the *revised* industry shipments data which the government comes up with a year later. The government shipments data that come out month by month and which can be put together into quarterly shipments bears very little resemblance to what the government will publish as the within-the-year shipments movements one year later when the numbers are revised. But the industry association can put together month

by month an aggregate shipments series that comes very close to what the government data will say a year later. We should be able to do better, it seems to me, in state personal income data and in industry shipments data or in industry new orders and so on than we are doing now. I think it is a far higher priority to try to improve the quarterly first-shot GNP numbers than to worry about monthly numbers.