PERSPECTIVES ON THE NEW ARCHITECTURE FOR THE U.S. NATIONAL ACCOUNTS

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Paul Samuelson once called the National Income and Product Accounts (NIPAs)

one of the great inventions of the 20th century. He was right. It is difficult to imagine

modern economics and even public discourse on the economy without them. The NIPAs

(and related accounts) provide the basic set of estimates on a wide range of economic

variables of interest to economists, citizens, policy makers, firms, investors, workers and

consumers. They enforce important economic and statistical properties and reveal, at

least retrospectively and historically, many of the most important features of the

evolution of the economy. In short, it would be difficult to imagine where our

understanding of recent economic events and economic history would be without the

NIPAs.

The NIPAs are based on an analytical framework and innumerable decisions on

how to categorize economic activities and how to measure variables of interest. Doing so

requires many judgments and, in an economy that evolves rapidly, a willingness to

reconsider those judgments. Fortunately, in most major statistical agencies around the

world, especially in the U.S. including the Bureau of Economic Analysis (BEA), a high

level of professionalism has led to many improvements, and to making most of the

historical time series consistent with the new measures.[1] One important example is the

reclassification of software as investment.

Some of those judgments are large, some negligible, some fundamental, e.g. the decisions to leave non-market activity generally out of the NIPAs, on how to measure prices and hence to decompose nominal variables into quantity and price components, and on the boundaries between consumption and investment in a changing world with more and more intangible output and input. Even a short list of some of the major improvements of recent decades, of important historical changes, is impressive. That list includes: 1. The development and implementation of chained Fisher ideal indexes – with their superlative properties (W. Erwin Diewert 1976). 2. The highlighting of the difference between government consumption and investment; 3. The reclassification of software as investment (for many firms, the most important investment); 4. Computer price hedonics. Add to these an array of improvements in source data and the changes are impressive indeed. However, the economy evolves very rapidly, so our statisticians and their measurements are constantly playing catch-up with a moving target.

Thus, it is potentially quite important when a major new architecture (NA) is developed and implemented for such a fundamental part of our economic knowledge, a project that promises to be the most important improvement in the national economic accounts in at least a generation.

In my time on the BEA Advisory Panel, I made two major suggestions, and I am delighted to see the BEA is following through on both of them as part of the NA. The first was to develop greater consistency among industry accounts and between industry accounts and aggregates. This requires understanding the covariance structure of the

estimates and how inaccuracies or measurement problems might propagate through the system from the perspective of managing the accuracy of the overall data, rather than just looking at each individual item separately, e.g. weighting by the accuracy of the data. The second and more fundamental was to develop a consistent set of production, income, accumulation and wealth accounts.[2]

This and related work has come to be called a New Architecture for the U.S. National Accounts. It is not so much a single discrete change as a major series of continuous improvements in source data sharing, consistency of concepts, definitions, boundaries, reconciliations of alternative approaches and gap filling based on a comprehensive conceptual framework. All economists who use or refer to the NIPAs, should familiarize themselves with the issues involved and participate in the debate about the evolution of the accounts.

I. The New Architecture: A Conceptually Consistent and Complete Set Of National Accounts.

The principal value added of the new architecture consists of the following (Dale W. Jorgenson, J. Steven Landefeld and William Nordhaus includes excellent detailed papers on each of the subjects below): a) A consistent set of production, income and accumulation accounts with inputs as well as outputs in current and constant prices; b) greater consistency and reconciliation across industry accounts and between industry level data and aggregates; c) greater consistency and integration between real and financial accounts; d) Non-market satellite accounts, e.g. for time use, the environment

and natural resources; e) more complete accounts via gap filling, extensions and reconciliations, e.g. capital accounts and capital services estimates for farm, government, household and nonprofit sectors; and broader measures of investment, e.g. in R&D, human capital, land and mineral rights[3] and their concomitant capital services.

The major advance in the new architecture is a consistent, coherent conceptual framework for the complete set of economic accounts that will better integrate economic growth accounting and the National Accounts. A major key is developing estimates of real capital services,. With large gaps in market rental prices, such prices are imputed from the user cost of capital formula (Jorgenson 1963). Both the of lack of consistency and gaps in data derive from the decentralization of the U.S. statistical system and related historical missions of the various statistical agencies. The BEA's GDP accounts and industry level data are not consistent with the BLS's productivity data; the BEA's reproducible assets data are not consistent with the FED's balance sheet and flow of funds data, etc. It is not always easy, or even possible, to reconcile those differences. Sometimes the differences rise to consequential inconsistencies, e.g. between the FED balance sheet and NIPA saving measures; among alternative productivity measures; and among various industry-level measures. For example, it may be important to understand the difference between changes in variables generated by current flows or by market revaluations. We have unfortunately learned from the late 1990s technology stock bubble and the 2000s housing bubble and their respective crashes, that wealth can change quickly. There are many issues in measuring saving from the NIPAs (see William G. Gale and John Sabelhaus) – importantly, that saving is treated as a residual and that

measurement errors in income or consumption propagate dollar-for-dollar to the smaller

saving figures, and hence are proportionally larger. Saving is also the change in real net

worth including capital gains and losses which can be derived from the FED balance

sheet net worth data. It would be broadly useful to have a consistent set of data showing

what was saving generated by not consuming all income and what was revaluations of

assets and liabilities.

II. Policy Implications

There are numerous implications of the New Architecture (NA) for economic

policy. First and most obvious is that the NA will provide more accurate and consistent

estimates of long-run trends in economic growth, particularly real GDP, productivity and

inflation, and enable more accurate analyses of the sources of economic growth over time

in the United States and across countries (e.g. Jorgenson, Mun S. Ho and Kevin J. Stiroh,

2001). That information forms the background for the most fundamental debates and

decisions in our economy. For example, a major reason most Americans support a more

limited role of government in the economy than Western Europeans do is the perception

– partly based on National Accounts data and descriptions, discussions and debates about

them – of substantially better economic performance associated with our more modest tax

and government spending than the high tax and spending Western European social

welfare states (GDP per capita roughly 30% higher). While the pendulum is swinging

back to a somewhat larger and more activist government, how far it goes surely will be

affected by that perception and reality.

Second, monetary and fiscal policy depend crucially on forecasts of key macroeconomic variables such as potential GDP and productivity, the forecasts of which in turn are usually related to their recent trends. The substantial upward revision of real GDP growth when BEA introduced hedonics for computer prices certainly raised many researchers' and government staffs' estimates of future productivity and potential GDP growth. Virtually all fiscal decisions flow from, are based in, abetted by, and/or are tempered by forecasts of revenues and outlays that depend (conditional on tax and spending program structure and demography) primarily on forecasts of income by type – wages, corporate profits, etc., which flow from forecasts of real GDP (or state gross product) growth and inflation. So the improvements enabled by the NA will be reflected in the myriad tax and spending (and therefore deficit and debt) decisions of fiscal authorities that in combination account for roughly 30% o GDP.

At the federal level, estimates of productivity growth are the most central input into the Administration's economic projections produced by the Troika (CEA, Treasury, and OMB) which underlie the President's budget. They certainly did when I was the CEA chairman. Likewise, they underlie the Congressional Budget Office's (CBO) economic projections which forms the basis for its ten year budget outlook that Congress uses for tax and spending policy decisions.[4] Professional economists at CEA and CBO (and the CBO's Panel of Economics Advisors of leading macro and public finance economists) play a key role inputting productivity data in fiscal policy decisions.

Since Congress often focuses on 10 year forecasts, differences of a few 10th of a percentage point per year cumulating over 10 years can lead to large differences in revenue projections and hence deficits and debt, which sometimes feed back into the framework for fiscal decisions. Indeed, the poor productivity performance of the 1970s and 1980s was reflected in low estimates of future productivity growth well after the productivity resurgence of the late 1990s began, which in turn led to optimistic projections to start this decade. The resulting deficit and then surplus outlook played key roles in fiscal decisions. Of course, more accurate history does not guarantee the ability to quickly identify trend changes. Differences in productivity growth estimates are the primary cause of differences in real GDP growth projections and have an even more consequential effect on longer time frame projections such as the 75-year horizon of the SSA trustees actuarial projections that guide Social Security reform policy debate.

Thus, consistency or at least reconciliation of the BEA GDP estimates and the BLS productivity estimates should strengthen those processes. As Bob Gordon (2001) has demonstrated the several different BEA and BLS output measures lead to conflicting estimates. So that part of the NA will make "productivity estimate shopping" more difficult or at least more transparent.

The NA also has important implications for monetary policy. Not only will the price data in the NA be one of the inflation measures the Fed must consider as it forms forecasts of inflation, but improved estimates of potential GDP, based partly on productivity projections, will feed directly into forecast of potential GDP and

implementation of any monetary policy rule that weights deviations of output from potential, such as a Taylor rule. For example, the late 1990s rapid price declines for computers, software, and telecom equipment lowered inflation forecasts and raised forecasts for potential real GDP and thus allowed the FED to conduct an opportunistic disinflation.

The NA will also improve our understanding of numerous key relationships that might influence policy makers, or the people – including economists researching these issues – who influence policy makers and thus might lead to different and hopefully improved policy decisions. For example, the part of the NA that will lead to better integration and reconciliation of real and financial data, such as the NIPA saving and Fed balance sheet change in net worth data, might better inform and expand the pool of those potentially concerned about the difference between saving out of income flows and saving resulting from revaluations of assets. The late 1990s technology stock and/or 2000s housing price bubbles might have been more apparent with better information on the respective price rises relative to GDP and profits, or income and rent, respectively. Of course, monetary, fiscal and regulatory decision makers had other contemporaneous information that may have rendered even recent historical information from the National Accounts less vital, but the broader and deeper understanding of these phenomena with the NA improved data may have helped nudge policy in a more prudent direction. The ability to examine the entire interactive economic system and trace through implications with a conceptually consistent new architecture will provide a more coherent framework to analyze effects on production, expenditure, income, accumulation and wealth. It will

provide a system of double checks and balances on magnitudes of flows and stocks of important economic variables.

I have two suggestions for extensions of the NA and its use. The first is to return to the fundamental analysis of household saving and insurance. Resources devoted to these purposes constitute current purchases of claims to goods and services in different states of the world and future times. Starting with indirect utility, household expenditure and saving accounts, allowing for heterogeneity of saving motives and liquidity constraints, and household characteristics such as age and family compensation, could be placed on a conceptually more consistent basis emphasizing forward prices of future consumption, analogous to the production frontier forming the conceptual basis of the production account. The second is to produce multifactor productivity estimates and analyses of the sources of economic growth based on alternative technology assumptions, e.g. than Hicks-neutrality and constant returns, although those may be natural base cases. We have data on inputs and outputs, but the returns to scale and bias of technical change assumptions can have large effects on productivity estimates and analyses of the sources of economic growth. For example, if tangible capital and human capital (skill) are complementary and if technical change is capital augmenting, what I have labeled (Boskin and Lau 2000) generalized Solow-neutral, more growth would be attributed to technical change and less to growth in labor inputs.

It also turns out that much of the difference in the Denison vs. Jorgensen and Griliches long debate on the sources of economic growth turns out to be that Denison

simply assumed increasing returns to scale (remarkably he buried his assumption of returns to scale of 1.1 in a footnote). Whether our improved living standards have mostly been due to technology or more inputs (capital deepening and better labor as well as more) turns on assumptions of returns to scale and the bias of technical change. The answer to this question has fundamental implications for growth policy, e.g. for the mix of government R&D spending, R&E tax credits, faster tax depreciation and education subsidies. Estimates produced under different assumptions or scenarios would be helpful, as would additional research on these issues.

III. Conclusion

Once thriving areas of inquiry and considered very important for practicing economists, teaching and research on national income accounting and price indexes, with vital exceptions in academe and government, declined for decades in relative importance. Congress indexed Social Security benefits in the 1970s and income tax brackets in the 1980s. And concerns about budget deficits led to the greater reliance on productivity growth forecasts in generating medium term fiscal projections.

The New Architectures for the U.S. National Accounts promises to be the capstone of the remarkable renaissance of research and policy interest in these very practical issues, which was sparked by the realization of the immense consequences of decisions based on inaccurate statistics (Boskin et al 1996). Economists and statisticians in and out of government will contribute as much or more social value-added here as in virtually any other area of economics. While perhaps regretting their lost innocence,

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those working on such government statistics hopefully will be more than adequately

compensated by their increased relevance.

Footnotes:

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[1] In Boskin (2000), I noted that the episodic major revisions invariably had led to sizable upward revisions in current dollar GDP. These conceptual, classification and source data improvements displayed a remarkable degree of one-sidedness.

[2] Dale Jorgenson was also a member of the committee and is now its chairman, has thought deeply about these issues and in his own research and that of many of his students has fostered it. I am delighted that Steve Landefeld and his colleagues have taken up these suggestions and that Dale is working closely with them.

[3] Some of my earlier research was devoted to a more comprehensive and consistent federal balance sheet and capital and operating budget, e.g. Boskin (1985) and Boskin, Robinson and Huber (1989).

[4] These decisions have sometimes even been constrained by these estimates and associated revenue projections. For example, the Gramm-Rudman-Hollings budget rules required Administration forecasts of future deficits to meet certain targets, declining towards budget balance. These created pressure to engineer the economic forecasts to produce the desired results (e.g. even down to the level of the final Reagan Administration's forecast having the CPI-U and CPI-W differing by a full percentage point to utilize the different indexing of tax brackets and Social Security payments). As the targets were too politically painful to meet, they were breached, then raised and delayed, then replaced by rules on actual outcomes (OBRA '90) rather than forecasts of future outcomes. OBRA '90 did indeed limit discretionary spending and its paygo rules prevented major new entitlement expansions until these constrains were abandoned in 1998 and 2002. The breaching then delaying the targets was repeated by some large European economies' failure to meet their Maastricht Treaty deficit commitments.

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