Balancing the GDP Account

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There are two estimates of GDP in the NIPA's, one based on final expenditures data and one on income data. Although, in theory, the two estimates should be equal, in practice there are substantial differences.   In recent years, concern has grown about the differences that the two measures provide as to the economy's long-term rate of growth. In 1993, the statistical discrepancy peaked at $63.8 billion, or 1.0 percent of current-dollar GDP. Since then it has declined in most years, reaching $83.7 billion, or -0.9 percent of GDP, in 2000. The real growth rate of the income-side measure, gross domestic income, which averaged 4.3 percent at annual rate over the seven year period, was 0.3 percentage points above the product-side measure of real GDP growth, which averaged 4.0 percent. The persistence of this difference, as well as a pattern of upward revisions to nominal GDP over this period, have been of much concern to important users of the estimates. Policy analysis frequently requires an estimate of the future long-term growth rate, and a 0.3 percentage point difference over a number of years will often swamp the difference between policy alternatives. The uncertainty associated with the statistical discrepancy is also reflected in increased uncertainty about the other major aggregates in the NIPA's: personal income, national saving, personal saving, etc.

BEA's research program is constantly attempting to develop better measures of poorly measured GDP components, and in 1997, BEA held a conference to solicit ideas from outside experts that could reduce the statistical discrepancy. This research led to several methodological improvements that have moderated the trend without eliminating the difference in growth between the two estimates. BEA researchers continue to investigate problems with source data that may contribute to the discrepancy. An additional line of attack, however, would be to combine information from the product and income accounts to better estimate the true rate of growth. It is reasonable to expect that by combining or averaging the expenditures- and incomes-based estimates, an estimate of GDP could be obtained that is more accurate than either taken alone.

Balancing national economic accounts to obtain a single, consistent estimate of major aggregates was first proposed by Richard Stone, David Champernowne, and James Meade in 1942. Their method assumed the availability of estimates of the variances of GDP components. At present some form of balancing is carried out for GDP in the national accounts of the U.K., Canada, and Australia. Within BEA, balancing is carried out in the preparation of the input-output tables. However, because of the difficulty of estimating the reliability of the full set of GDP components, none of these countries has adopted the Stone-Champernowne-Meade method. Canada simply averages the product-side and income-side estimates. The U.K. reconciles its product- and income-side estimates at annual revisions

with the aid of an annual input-output table, for which a large-scale expenditures survey of businesses provides statistical support. However, the reconciliation process is ultimately subjective and takes place in staff meetings. Recently, Australia has adopted the British approach to reconciling the national accounts.

The Canadian and British approaches each have obvious shortcomings but may nevertheless provide useful guidance. The Canadian 50/50 split seems arbitrary, but an alternative could focus on just the relative reliability of the expenditure-based and incomes-based estimates, and GDP could be estimated by combining the expenditures and income-based estimates in fixed proportions other than 50/50. The subjectivity of the British approach might raise questions on the part of users if used as a reconciliation method, but it highlights the importance of strengthening the annual input-output estimates as a guide to NIPA estimation. In particular, it illustrates the importance of developing new data sources that can fill existing gaps.

Two other approaches to balancing the NIPA's could be pursued. (1) With regard to the Stone-Champernowne-Meade approach, substantial portions of GDP are based on scientific samples with known sampling errors. This information could be supplemented by expert judgment as to the relative reliability of the other components. Research continues at the U.K.'s Central Statistical Office on making this method more practical. An interesting property of the Stone-Champernowne-Meade approach is if the estimates of the relative reliability of the components are correct, all the components are at least as accurate after adjustment as before. (2) The expenditures-based and incomes-based estimates could be analyzed econometrically as time series measured with error, and GDP could be estimated as the solution of a signal extraction problem. In particular, we see an analogy between the problem of finding the "true GDP" from the product-side and income-side time-series, and the approach followed by James Stock and Mark Watson in the early 1990's to finding "the business cycle" using time-series for a collection of statistical indicators. Their approach used a state-space model and the Kalman filter. Other econometric approaches are possible. Research to date shows that the quarterly product- and income-side estimates of GDP are co-integrated, and this finding provides information about the appropriate model. Finally, these approaches could be combined. For example, econometric estimates could be constrained not to contradict prior knowledge about the reliability of component series.

In any event, research at BEA on balancing the accounts is at a very early stage, and no decision has been reached as to which, if any, of these approaches to pursue. If BEA does decide to adopt some balancing procedure, we believe it is essential to use a set formula for allocating based on the research described above, to update the allocations as part of regularly scheduled NIPA revisions, and to provide the public with information about the adjustments. Additional issues include whether current estimates as well as annual revisions would be adjusted, and if so, whether the methodologies for current and annual revisions could be made consistent.

In summary, arguments in favor of balancing the GDP account are:

- Improved accuracy of the GDP estimates and growth rates, reduction in annual and benchmark revisions to nominal GDP growth, and an increase in confidence in the estimates.
- Possible improvement in the accuracy of GDP components.
- A single integrated, consistent set of estimates.

Arguments against balancing the GDP account are:

- Although increased accuracy should raise public confidence in the estimates, to the extent the adjustments are perceived as a "black box," there may be an offsetting loss of confidence in the estimates.
- If adjustments are made to components at the deflation level to obtain a consistent estimate of real GDP, there would be a sizable computational burden and a need to substantially modify the GDP estimation systems.
- If balancing is done for quarterly estimates, information on several income-side components would not be available for the advance estimates, which could result in large revisions when the complete income-side data become available.