Impact of the 1993 Floods and Drought

The national income and product accounts (NIPA's) reflect the effects of disasters such as this year's floods in the Midwest and drought in the Southeast. For the most part, these effects are embedded in the source data for the NIPA's; where they are not, BEA prepares adjustments to account for the effects. The adjustments for this year's natural disasters affect the estimates of gross domestic product (GDP), personal income, and other NIPA aggregates beginning with the third quarter (or July). For several reasons, BEA does not attempt to quantify the total impact of disasters such as the floods or the drought on these aggregates.[1] The following paragraphs describe the adjustments that BEA has prepared thus far.

GDP.—The third- and fourth-quarter estimates of GDP will reflect the adjustments to farm output for the effects of the floods and the drought. In constant (1987) dollars, these adjustments will reduce farm output by $7½ billion (annual rate) in the third quarter and by $2½ billion (annual rate) in the fourth.

The adjustments to farm output are based on the U.S. Department of Agriculture (USDA) forecasts of the physical quantity of farm output in 1993. To make the adjustments, BEA has assumed that the floods and drought are responsible for the difference between the June 1993 USDA forecast, which reflects conditions before the floods and drought, and the August 1993 forecast, which reflects conditions afterward.[2] This difference indicates losses amounting to about $2½ billion (in constant dollars) for the calendar year.

To spread this annual loss over the quarterly estimates, BEA has modified its normal procedure for calculating quarterly farm output. Normally, the current quarterly estimates are derived by interpolating between previous USDA annual estimates and the most recent USDA forecast for the current year. Using this procedure with the August forecast would have spread the losses over all quarters of the year, thus yielding a quarterly pattern of farm output that would not have properly recorded the timing of the effects of the floods and drought.

To obtain the proper timing, BEA is making adjustments to the quarterly estimates of farm output based on the June forecast and the normal interpolation procedure, which would have allocated production equally among the four quarters. For the first and second quarters, no adjustments are made, because the losses were not "recognized" until the third quarter and because farmers incurred expenses for those crops that were subsequently destroyed. For the third quarter, an adjustment reduces farm output based on the June forecast by the sum of the value of farm output related to the destroyed crops recorded in the first two quarters and the value of farm output that would have been recorded in the third quarter had there been no disasters. For the fourth quarter, an adjustment reduces farm output based on the June forecast by the value of farm output that would have been recorded had there been no disasters. Thus, the adjustments allocate three-fourths of the annual loss to the third quarter and one-fourth to the fourth quarter. (These types of adjustments, which have been used in the past for other disasters, result in a treatment that is consistent with the approach used to treat losses of nonfarm inventories.)

The adjustments to farm output primarily affect GDP and the other NIPA aggregates through the change in farm inventories. The extent to which the losses affect the estimates of the change in farm inventories (as opposed to the estimates of the other components of GDP in which the losses would be embedded) depends on the extent to which they affect sales; estimates of both current- and constant-dollar change in farm inventories are calculated by BEA as the difference between output and sales by farmers. BEA prepares estimates of quarterly sales on the basis of USDA receipts from farm marketings, and it does not appear that the crop losses will affect sales until the fourth quarter. Consequently, the change in farm inventories will be reduced by the full $7½ billion (annual rate) in the third quarter. In the fourth quarter, whereas GDP will be reduced by $2½ billion (annual rate), the change in farm inventories will be reduced by a smaller amount that will depend on fourth-quarter sales.

Personal income.—The third-quarter estimates of personal income will reflect adjustments for crop losses due to the floods and drought and for the destruction by the floods of residential buildings and of structures and equipment owned by unincorporated businesses. The largest adjustment, about $10 billion (annual rate), will reduce farm proprietors' income to account for the crop losses. This adjustment is based on the reduction in farm output valued at current prices. A second adjustment, about $1½ billion (annual rate), will reduce farm and nonfarm proprietors' income to account for unincorporated business property that was not insured. A third adjustment, about $2 billion (annual rate), will reduce rental income of persons to account for residential buildings that were not insured.

These adjustments have been incorporated into the personal income estimates for July and August.[3] As a result, farm proprietors' income was reduced by $26 billion (annual rate) in July and by $3 billion (annual rate) in August. For July, rental income of persons was reduced by $7 billion, and nonfarm proprietors' income by $2 billion (annual rate). The monthly adjustments that account for the crop losses were based on the quarterly adjustments described previously and on the assumption that these losses were "recognized" in July.

Other NIPA aggregates.—The third-quarter estimates of national income, gross national income, and net national product will also reflect adjustments for the floods and drought. National income will be reduced by the adjustments to proprietors' income and rental income of persons described previously. In addition, corporate profits may be adjusted downward to account for uninsured property losses. For gross national income, the reductions in business incomes will be offset by an upward adjustment in consumption of fixed capital; this adjustment reflects the writing off of the depreciated (or net) value of plant and equipment destroyed by the flood. Net national product will be reduced by the adjustment to the consumption of fixed capital.

1. It is very difficult to determine the total impact of natural disasters on the NIPA aggregates. First, most of the effects are embedded in the source data. For example, if a disaster temporarily curtailed home construction, then the housing start data from the Census Bureau would be lower than it otherwise would have been; however, this effect cannot be easily separated from those of other factors that may also have influenced starts. Second, reductions in production and incomes in areas hit by the floods and drought may be at least partly offset by increases in production and incomes elsewhere in the United States. Third, production and incomes in the flooded areas may be boosted by rebuilding efforts.

2. The June forecast was based on a survey of intended acreage plantings, which was conducted in March, and on USDA projections of prospective yields. The August forecast was based on surveys of actual acreage planted and of prospective yields, which were conducted in late July and early August.

3. The monthly estimates of personal income are found on page S-1 of the "Current Business Statistics" section of the SURVEY OF CURRENT BUSINESS.