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APPENDIX II: PART E
REPORT OF THE WORKING GROUP ON AGRICULTURAL
WEALTH

Prepared by PHILIP T. ALLEN

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PREFACE

The Working Group on Agricultural Wealth met on three occasions: May 20, July 10, and September 20, 1963. Mr. Griliches did not participate in the final stages of this report. Committee members other than Mr. Griliches participated in the discussions and reviewed a preliminary draft of this report; however, final responsibility for the report rests with the secretary.

A number of other persons attended meetings of the working group and made helpful suggestions including David J. Hyams, John W. Kendrick, and Neal Potter.

The report is, of course, the responsibility of the secretary. I have attempted to reflect the consensus of the group, although no member should be held responsible for all the views and recommendations contained in the report. Individual members of the working group were free to write supplementary statements, clarifying their individual views or dissenting from recommendations, but none chose to do so.

PHILIP T. ALLEN.



AGRICULTURE

I. USES ANTICIPATED FOR IMPROVED ESTIMATES OF AGRICULTURAL WEALTH¹

If existing estimates of agricultural wealth are strengthened and broadened as recommended in this report, we believe the data would be valuable in many ways. In the first place, the objectives of the overall study would be served—the wealth of the agricultural sector is, of course, a significant part of the Nation's total wealth. For this reason, reasonably accurate data on agricultural wealth on a basis comparable with that of the other sectors are essential.

But uses much beyond this minimum are possible, and in our opinion are a reasonable goal, well worth the additional cost. The improved wealth estimates would make possible the calculation of many economic magnitudes—such as capital invested per worker or per farm, returns to capital, and capital-output comparisons. With the figures available over time, by regions, and classes of farms, their potential value is great. In fact, a number of such calculations are made and used now even though the underlying data and concepts need to be strengthened.

An important part of the benefits of the wealth study would be the greater range of comparisons that would be made possible between the farm and the nonfarm sectors. Heretofore such comparisons have been of somewhat limited usefulness mainly because of the greatly different methods of valuing capital—agricultural values are largely on a market-value basis, while nonagricultural valuations are to a considerable extent on an original cost-less-depreciation basis.

We have suggested the use of surveys and other methods of obtaining needed improvements in the data that underlie some of the estimates of agricultural wealth. In addition to improvements in the data, we have recommended that greater detail be shown in the presentation of various statistics, particularly those on farm income, to permit different users of the data to make such combinations as desired for various purposes. Greater detail, and alternative presentations are also suggested for the "Balance Sheet of Agriculture."

These uses we visualize for agricultural wealth data are reflected in our recommendations appearing later in this report. In addition, our recommendations are influenced by the special characteristics of agriculture, and by the condition of the pertinent agricultural data. In agriculture, production and consumption aspects of living are intertwined to a much greater extent than in any other sector. Several of our recommendations relate to separating these two aspects. We have gone further along this line than has generally been done in the past partly because of the needs of comparability with other sectors of the wealth study and partly because, with the increasing com-

¹ The working group on agricultural wealth was the first of the 14 working groups to be organized as part of the Wealth Inventory Planning Study.

mercIALIZATION of agriculture, this division seems less artificial than it once did. However, we are insisting that separate figures be shown on the consumption or farm household aspects, so that data of this nature can be recombined with the production figures if desired.

The agriculture sector also is characterized by its rental of a sizable portion of the assets it uses. Thus our recommendations include means for separating ownership and use, both within the agricultural sector and outside. In a related way better information is especially needed on the expanding agricultural services industry, and on the wealth this sector provides to the farm sector.

Because of the increasing importance of borrowed funds in agriculture, even though in the aggregate the agricultural sector is still not heavily indebted at this time, it is desirable to have information on financial claims and also financial assets of the sector, that can be related to the estimates of the physical wealth of the agricultural sector, and to the income of the sector. The debt/asset and debt/income relationships in agriculture could also be compared, on a more adequate basis than is now possible, with debts, assets, and incomes in other sectors of the economy.

II. SUMMARY REVIEW OF AVAILABLE DATA RELATING TO AGRICULTURAL WEALTH

The principal physical asset in agriculture is farm real estate. As reported in the "Balance Sheet of Agriculture 1963"² the estimated market value of farmland including the residences of operators and hired hands as well as service buildings and other structures, on March 1, 1963, was \$144 billion. Other physical assets, defined in the balance sheet to include goods used for farm family living as well as goods used in farm production, were valued at \$55 billion. Within this group machinery and motor vehicles were largest in value, about \$19 billion, and livestock next largest—about \$17 billion. Nonphysical assets—mostly demand deposits, savings bonds, and investments in cooperatives—made up the remaining \$18 billion of the total value of assets of \$217 billion. Debts owed against these assets by the farm operator and landlord owners totaled \$30 billion.

Methods of valuing farm real estate and some of the problems that need solution for wealth study purposes are discussed in detail in a later section of this report.³ The basic data are from the periodic censuses of agriculture in which farm operators answer the question "about how much would the land and buildings (on this farm) sell for?" Values based on these answers have been given a variety of checks over the years by the Department of Agriculture and it has been found that the values approximate market values. The valuation of buildings as distinct from farmland presents some problems which are reviewed in this report. In general the underlying data on farm real estate are considered as strong. Adequate State estimates are

² Garlock, F. L., and others under the direction of Norman J. Wall, 1947-63. "The Balance Sheet of Agriculture," 1947 to date. Washington, D.C. USDA, Economic Research Service.

³ For a detailed description of farm real estate statistics see U.S. Department of Agriculture:

1957: Major Statistical Series of the U.S. Department of Agriculture. How they are constructed and used. Vol. 6: Land Values and Farm Finance, Agricultural Handbook 118. Other volumes in the handbook series may be of interest especially: Vol. 3: Gross and Net Farm Income. Vol. 8: Crop and Livestock Estimates.

available. The problems with which the agricultural working group was mainly concerned related to such matters as completeness of coverage, comparability with definitions in the overall wealth inventory planning study, and problems of data conversion to constant dollars.

The crop and livestock data needed for the wealth estimates are also strong and are available in considerable detail. A few small gaps in the data can be filled without difficulty.

Probably greatest attention will need to be given to measures of the value of farm machinery and equipment on farms, and to the value of liquid assets owned by farm operators. U.S. Department of Agriculture estimates of the value of farm machinery are based on an outdated benchmark, and on data of uncertain quality since the benchmark year. There is little direct relationship possible between estimated values and numbers of machines as reported in various censuses of agriculture. Moreover, State data on values are unavailable. Finally the determination of the present value of farm machinery and equipment has become increasingly complex because of the establishment of revised depreciation rules by Internal Revenue Service. This report considers means of achieving the desired improvement in the machinery and equipment data.

The USDA estimates of financial assets owned by farmers are also probably not very accurate. These estimates are based largely on indirect measures—such as basing estimates of saving bonds purchases by farmers on the saving bonds purchases of all persons in a particular region. It is not known to what extent these indirect measures are applicable. Sample surveys and other means are suggested in this report to improve these financial wealth estimates.

Information on the rapidly growing "agricultural services" industry is scarce and constitutes a major weakness in measuring the total wealth used in the production of farm products.

III. SUMMARY OF RECOMMENDATIONS

Our recommendations follow the traditional breakdowns and in this order—land and buildings, crops, machinery, livestock, and financial assets and claims. Our focus is on "census farms" as defined in the 1959 census with account being taken of underenumeration, of certain agricultural lands not included in farms, and of the few soil bank farms. While the agricultural services are to be covered by the services sector working group, we indicate in this report the need for new information in this area and the kinds of data we believe are needed.

We make three general types of recommendations:

1. Redefining concepts and providing for more detailed presentations of data to improve comparabilities within the agricultural sector, and between the agricultural sector and other sectors.
2. In the data collection category—recommendations for new data, more accurate data, or more detailed data.
3. Recommendations for the development of new measures of various items using existing data or data collected in 2 above.

The major recommendations, summarized here, are described in detail in later sections of this report.

1. Recommendations for redefining concepts and more detailed presentations:

(1) Land and buildings—to improve comparability with other sectors, the value of all residences on census farms should be transferred from the agricultural sector to the household sector.

(2) To permit more adequate comparisons with the wealth estimates we suggest that greater detail be shown in the “off farm” component of the income of farm operators. Sufficient detail is needed so that farm operators’ total income can be grouped into three classes, as follow :

1. Income from the sale of farm and forestry products produced on census farms.

2. Income from secondary sources associated with the same land and equipment that is used to produce farm products. Examples of such income are imputed rents of farm residences, mineral leases, royalties, and certain recreational income.

3. Personal income of the farm operator from wages, salaries, nonfarm investments, etc.

With income and expenditure items relating to the “imputed rental value of the farm residence” available in detail in the farm income accounts, comparisons of the appropriate income figures with estimates of farm wealth less the value of farm residences would thus be possible.

(3) To improve the comparability of concepts in the “balance sheet of agriculture” with concepts in farm income, crops under Commodity Credit Corporation loan should be excluded from balance sheet assets, and the loans excluded from the liabilities.

(4) The value of household furnishings and equipment (like the value of the farm homes), now shown as a balance sheet asset, should be transferred out of the agricultural sector. The physical assets remaining in the balance sheet would then be owned or rented assets that are used exclusively for the production of farm products; or used jointly for the production of farm products and of products that yield “secondary” income to the agricultural sector.

(5) Financial assets and claims associated with the farm household would be transferred out of the agricultural sector.

(6) The most important lessors of agricultural wealth are two types of landlords—either landlords who themselves operate farms in addition to farms they lease to others, or nonoperating landlords. We recommend that the wealth of farm-operator landlords be considered as entirely owned in the agricultural sector, and that the agricultural wealth of nonoperating owners be considered as owned by the real estate industry. Some of these nonoperating owners are governments and institutions. The wealth of all of these nonoperating owners would be considered as leased by farm operators from outside the agricultural sector.

(7) In all of the shifts listed above it is essential that separate detail be available for the items shifted so that regroupings or recombinations of the data may be made in any way desired.

(8) Classifications recommended for the presentation of the wealth data:

1. That the goal be to present the major part of the wealth data on a State basis, except in the few States where agriculture is a nominal industry, and regional groupings would suffice.⁴

2. That wherever feasible the State data be shown for four economic classes of farms as defined in the 1959 Census of Agriculture:⁵

(1) large commercial farms—1959 gross value of sales of farm products of \$20,000 or more.

(2) medium size commercial farms—commercial farms with value of sales of \$5,000 to \$19,999.

(3) small commercial farms—commercial farms with value of sales of less than \$5,000.

(4) noncommercial farms.

2. Data collection recommendations:

(1) Land and buildings:

1. Collection of value-per-acre data for specified classes of land to be used in the calculation of constant dollar values for farm real estate. As a minimum, separate valuations would be needed for irrigated cropland, nonirrigated cropland, and pasture.⁶

2. A special benchmark survey to provide a basis for allocation of values between farmland and buildings, and between farm residences and other buildings.

3. It is believed that the bulk of the information needed to determine the value of farmland that is rented, and the classification by sector of ownership, can be obtained from the census of agriculture. (As indicated later, perhaps one or two additional questions would be needed in the 1969 Census of Agriculture.)

(2) Farm machinery and equipment:

1. Collection of data showing numbers of farm machines, by appropriate classes and characteristics, to improve present value estimates and to permit State estimates. As indicated later, a pilot survey may be made to help determine whether farm machinery values can be estimated with reasonable accuracy by respondents.

2. As part of the above survey, information on the ownership of machinery can be obtained.

3. An important use of this survey data will be to assist in evaluating present USDA procedures for estimating de-

⁴ The working group on agricultural wealth did not specifically consider the potential value of wealth data for areas smaller than States. It has been suggested that one of the main uses of the wealth data might be in area development for which tabulations would be needed by groups of counties or other local governmental units. However, the cost of obtaining data at the county level may limit the number of items available at that level.

⁵ The decision regarding the exact class interval limits can be postponed until after the 1964 census. Continued increases in the average size of commercial farm suggest that by 1969 the upper open-end classification may be \$40,000 or more gross sales. Also, there is interest in the large number of farms of very small size. Thus more than the minimum number of classes suggested above may be desired, and, in view of continued improvements in data processing, such tabulations probably would not be excessively costly.

⁶ Mr. Hurley comments: "Increasingly tracts of land have value because of their effect on the scale of operations of the purchasers. Land is not sold by classes and there is no way of obtaining values by classes that mean anything."

preciation and the related values of the stock of machinery and equipment on farms.

(3) Livestock:

1. We believe adequate information on ownership of livestock could be obtained from a small survey of livestock ownership under various leasing arrangements. These data could then be expanded on the basis of the information obtained in the census on lease arrangements.

(4) Financial assets and claims:

1. Collection of data showing, by principal categories, holdings of financial assets of various types, by such regional grouping of States as are appropriate for the overall wealth estimates. State estimates of these items are considered to be unduly costly.

2. An effort will be made to allocate, on the basis of a small survey, financial assets and debts between farm business sector holdings and household holdings.

(5) Agricultural services:

1. We recommend that a detailed study be made of the standard industrial classification grouping of the agricultural services with a view toward developing a new grouping that would be more suitable than the present one for agricultural wealth measures.

2. That each of the agricultural services be covered by a census-type survey.

3. That sample farm survey data be developed on expenditures by farmers for agricultural services to supplement the data obtained in a survey of the services.

(6) Possible farm balance sheet, income and expenditure, and land ownership and use survey.

Because of the need to collect so considerable an amount and variety of wealth, income, and expenditure data as indicated in this report, we recommend that consideration be given to an alternative procedure of collecting all of the needed information (and perhaps data needed for other uses as well) in one broad survey of farm income and expenditures, of assets and debts, and of land ownership and use.

3. Development of new measures:

(1) Land:

1. To assist in developing a constant dollar measure of land values, a research project is recommended to investigate the value of private and public improvements to farmland such as drainage, land clearing, various soil conservation measures, and similar items.⁷ Present depreciation and investment accounts for farm buildings also need further study and refinement.

(2) Crops:

1. A technique for valuing growing crops as a "goods in process" component of agricultural wealth is outlined in the report for crops.

⁷ Mr. Hurley disagrees with this recommendation.

(3) Livestock:

1. Inventory values of "broilers"—for some reason not previously included in the value of livestock on farms—can be estimated by methods recommended later in this report.

IV. DEFINITION OF AGRICULTURAL SECTOR, ASPECTS OF COMPARABILITY OF WEALTH AND INCOME CONCEPTS, AND AGRICULTURAL SERVICES

Census farms are the focal point of the "agricultural sector" universe. We seek to measure the total wealth used on census farms (plus small acreages of land not included in census farms as indicated below). This wealth may be owned within the agricultural sector (by operators of census farms); or it may be owned in another sector (largely by nonoperating landlords) and leased to farm operators in the agricultural sector.

Census farms are farms of 10 or more acres with a value of agricultural products sold in 1959 of \$50 or more, and farms of less than 10 acres with a value of agricultural products sold of \$250 or more. This definition was used in the 1959 census; it would need to be adjusted for earlier or later censuses to the extent the definition differed from that used in 1959.

Census farms do not include all places on which livestock or poultry are kept nor all places on which crops are harvested. In 1959, there were an estimated 800,000 places not qualifying as census farms, on which some livestock or poultry were kept or crops harvested. Approximately 570,000 of these places were under 10 acres in size and 230,000 over 10 acres in size. These places would be excluded in their entirety from the agricultural sector.

The land in census farms does not include all land used for pasture or grazing. In 1959, there were approximately 64 million acres of grazing lands administered by the U.S. Forest Service and used for grazing under a permit. Likewise, rangelands administered by the Bureau of Land Management of the U.S. Department of Interior, used under permit are not included as land in census farms. These grazing lands totaled approximately 161 million acres in 1959. This land, like land rented from individual landlords, constitutes part of the wealth used to produce farm products, and as such should be valued and included as part of the agricultural wealth leased from others. Provision for accomplishing this is included in the section of this report dealing with farm real estate.

Census farms, land in farms, and the value of land and buildings include a large number of places not used primarily for agricultural purposes. The 1959 census included 882,000 part-time farms and 404,000 part-retirement farms. These "noncommercial" farms represent primarily homes for persons having nonfarm jobs or for persons fully or partially retired. These accounted for less than 4 percent of all farm products sold. However, they contained 9 percent of all land in farms and accounted for 11 percent of the value of farmland and buildings.

Included in the noncommercial farms, as reported in the 1959 census, were approximately 3,000 institutional farms. These farms contained about 43 million acres of land, about 4 percent of the national total of farmland.

The Standard Industrial Classification System (U.S. Executive Office of the President, Bureau of the Budget, 1957) provides the following definitions of agricultural operations:

"Agricultural operations consist of the production of crops or plants, vines, and trees (excluding forestry operations); or the keeping, grazing, or feeding of livestock for animal products (including serums), animal increase, or value increase. Livestock as here used, includes poultry of all kinds, rabbits, bees, and fur-bearing animals in captivity, in addition to mules, asses, burros, horses, cattle, sheep, goats, and hogs. This division also includes activities such as dry lot or farm dairies (and feed lots); nurseries, greenhouses, sod farms; bulb, flower, and vegetable seed crops; mushroom cellars; cranberry bogs; apiaries and fur farms."

Our committee felt this definition of "farming operations" should be broadened for purposes of income-wealth comparisons to take in account operations carried out on census farms of a type "secondary" or incidental to the output of farm products.

Many farm operators, in addition to income earned from their farm activities per se, also realize income from sources other than farming. Some of this income is earned by use of land or other capital normally employed in the farming activities. Income from hunting and fishing rights, for example, involves the use of a farmer's land and perhaps his time and some of his equipment normally used for farming. Income from oil leases and mineral rights, also, may be derived from his land. In pricing farmland, it is a common practice to include the capitalized value of such income, so that it is virtually impossible to separate this component of farmland values from the component reflecting the capitalized value of income from farming only. Much of the same problem exists for farm equipment used for purposes other than farming per se. On the other hand while the income and wealth associated with farm residences are closely associated with farming, we think the data are adequate to permit separation.

Income from oil leases, mineral rights and recreational uses of all or part of the farm is thus derived from an incidental or secondary use of capital resources normally or originally used in farming.

Wealth used in the agricultural sector, therefore, is considered to include wealth that is not used exclusively for the production of farm products; wealth used jointly to produce farm products and also these secondary products is considered to be entirely agricultural wealth except—as in the case of farm residences—where a separation is possible.

To facilitate relating primary and secondary farm income to the value of the capital resources used to produce this income, for the purpose of measuring returns, it is therefore recommended that income totals from such sources be shown separately, if possible, in estimates of income of farm operators from off-farm sources. Rate of return measurements on a comparable basis will thus be possible.

Turning now to what is to be measured, we want to include all wealth (1) used to produce farm products and "secondary" products and (2) we want to know the sector of the owner of this wealth.

In the first place, the land, equipment, etc., owned and used by farm operators of census farms are of course wealth "in" the farm sector—both in a use sense and in an ownership sense.

Some farm operators own land and other wealth that they do not use exclusively, or at all, on the census farms they operate. This includes (a) the landlord activities of those farm operators who own land they rent to other farm operators and (b) the custom work that some farm operators perform on a fee basis for other farm operators. All of this wealth—the land rented to others, the equipment used for the custom work, and other such wealth—is considered as both used and owned in the farm sector. This treatment corresponds with that used by the U.S. Department of Agriculture in the farm income accounts, and adopted by the Department of Commerce in their national income and product accounts. However, in keeping with the overall plan of the wealth inventory and also because such information would be useful in its own right, provision is made for showing estimates of wealth rented within the farm sector.

Some persons or enterprises who are not farm operators own some farmland and other wealth used to produce farm products. We recommend treating this wealth (though used in the agricultural sector) as owned "outside the agricultural sector" as is now implied in the USDA and Department of Commerce treatment of farm income. On the other hand, in the "Flow of funds" accounts of the Federal Reserve Board, nonoperating landlords are considered as in the farm business sector. However, if adequate detail is shown, rearrangements of the data can be made as desired.

For some purposes it is desirable to show income by use of resources. Especially for productivity analysis, all resources used in an industry (regardless of ownership) should be included. Thus gross rent paid to nonfarm (that is, nonoperating) landlords for the use of these leased resources, which is now deducted from gross farm product and transferred to the real estate industry in the income accounts of the Department of Commerce, may be moved back into farm product in the farm sector for such purposes. Then both incomes and resources would be on a comparable basis.

Agricultural services

In addition to farm operators (including operators who do custom work), and nonoperating landlords, some other individuals and establishments own wealth that is used exclusively or in part in producing agricultural products. Much of this wealth is in the agricultural services industry, although a part is in other industries.

Very limited statistical information is available regarding the resources used for the performance of agricultural services. None of the agricultural services have been covered by agricultural or business censuses. As agriculture becomes more and more specialized and the span of operations on individual farms is narrowed, more and more agricultural operations are being performed by various custom operations, and service organizations. Failure to take such changes as these into account sometimes can lead to erroneous conclusions. For example, one of the most popular agricultural statistics is the number of persons fed per farmer, with the increases in this number implying gains in farm efficiency. Part of this gain, of course, is a result of increased use by the farm sector of products, labor, and capital goods from the other sectors. The lack of output, income, employment, wealth, and other data for this group of services constitutes a serious

gap in our basic statistical system and imposes a serious handicap on all studies relating to agriculture and related sectors.

The SIC classification of agricultural services, we feel, is in need of revision. In the first place, the classifications are at least partly obsolete—there are some services now being performed that are not listed (such as farm management services) and some of the services listed are no longer important (such as threshing). Furthermore, we would restrict agricultural services to those services performed for farmers and would exclude farm marketing services performed primarily for nonfarmers.

We would arbitrarily classify as "agricultural production services" those establishments in which more than one-half of their total income was paid to them by operators of census farms.

This treatment will result in a slight overstatement of wealth used in the agricultural sector that is provided by the agricultural production services. However, it will also be true that certain nonagricultural services may be providing services to farmers, and none of the wealth associated with these services will be included as wealth used in agriculture. We believe the overstatements of agricultural wealth will be approximately offset by the exclusions.

So far as agricultural wealth estimates are concerned, we would include as wealth used in agriculture all the land, structures, and equipment of the agricultural production services as defined above. Such wealth would be shown as leased by the farm sector from the services sector.

Recommendations

(1) That the classifications and concepts of agricultural services be studied carefully with a view of increasing their usefulness for the agricultural wealth estimates. The agricultural services would doubtless need to be studied in the context of the entire services sector.

(2) We tentatively recommend the following groupings of agricultural production services:⁶

1. Cotton ginning and processing.
2. Grist mills, including custom flour mills.
3. Poultry hatcheries.
4. Veterinarians and animal hospitals.
5. Miscellaneous animal husbandry services—animal breeding, boarding, and training of horses.
6. Corn shelling, hay baling, and threshing services.
7. Contract sorting, grading, and packing of fruits and/or vegetables for the grower.
8. Machinery and equipment leasing.
9. Bulk feed handling.
10. Crop dusting.
11. Bulk blending and direct application of fertilizer.
12. All other miscellaneous agricultural services—farm management services, fruit picking, grain cleaning, harvesting, plowing, etc.

⁶ This proposed subgroup differs in the following respects from the present SIC arrangement:

1. Two new groups have been added: (a) machinery and equipment leasing, (b) bulk feed handling.
2. Crop dusting has been taken out of miscellaneous and upgraded to a separate group.
3. Farm management services has been added to the miscellaneous services group.

Those services now included in present SIC service groups classifications should be broken out and transferred to the new subgroup.

In establishments conducting services for both farm and nonfarm sectors, classification would be made on the basis of whether a majority of their income is derived from sales to farm or nonfarm users.

The proposed creation of an expanded subgroup of agricultural production services industries quite naturally raises the question of whether such data should be collected as part of the Census of Agriculture or as part of the Census of Business. This jurisdictional question, however, should not be too difficult to resolve inasmuch as both data gathering groups are qualified to collect the necessary data. At any rate questions of jurisdiction or responsibility should not be allowed to negate the real need that exists for such data.

Data for such industries should be collected in either census on (a) sales by customer (farm and nonfarm separately, and (b) value of each of the major categories of physical assets, e.g., land, structures, equipment, and inventories.

(3) It may be desirable to obtain directly from farmers data showing the source and amount of their expenditures for services. This would permit services to be allocated by economic class of farm, and would serve to check the data obtained from a census-type survey of the agricultural production service industries.

Detail desired for agricultural wealth estimates

Much of this is covered in the various sections of this report. We make this overall recommendation:

(1) For broad groupings—land, machinery, etc., the data be shown by States, except in areas of limited agricultural activity where some groupings of States would be satisfactory.

(2) For each State the data be further subdivided into four farm classes:

Large commercial farms—farm product sales of \$20,000 or more.

Medium size commercial farms—sales of \$5,000 to \$19,999.

Small commercial farms—sales of less than \$5,000.

Noncommercial farms.

Large commercial farms, as defined above, in 1959 would have included about 8 percent of the farms which produced 50 percent of the value of farm products sold; medium size commercial farms would have included 30 percent of the farms which produced 37 percent of the products; small commercial farms would have included 27 percent of the farms which produced 9 percent of the output; and the non-commercial group would have included 35 percent of the farms, producing 4 percent of the products. In 1964 and later years the large commercial farms would become relatively more important and the other three groups less important.

V. VALUATION OF FARM REAL ESTATE

Definitions, concepts, limitations of present estimates

Presently available valuations of farm real estate carried in the "Balance Sheet of Agriculture" and elsewhere in USDA statistics represent estimated current market values for all land in farms, as enumerated in the various censuses of agriculture, and include perma-

ment land improvements such as irrigation and drainage as well as farm dwellings and service buildings. Such estimates are available annually by States (except Alaska and Hawaii), and are calculated as of March 1 for each year. These estimates could be adjusted to January 1 by means of the index of average value per acre, as calculated by the USDA. These indexes are available for March 1, July 1, and November 1 of recent years.

Because these estimates are constructed at the census level of farms, and match census definitions as to land in farms, they contain the following deficiencies:

(a) Underenumeration, as determined by postcensus field checks. The land in farms reported by the 1959 census was estimated to be about 6 percent less than the true universe total. USDA has developed estimates of numbers of farms and land in farms taking underenumerations into account, but no valuation exists for such lands. However, if State average values for all land is attached to the land that was missed, the 48-State total is increased about \$6 billion for 1959, 5 percent more than was reported in the census.

(b) All rural properties that meet the definition of a farm are included in the value estimates. Farms are further classified in the agricultural census into two main classes—commercial and noncommercial. Noncommercial farms are essentially part-time and retirement places that could be removed from the agricultural sector if the wealth accounts are to be used as a measure of the principal assets used in agricultural production.

(c) Land in farms, as defined by census, includes substantial acreage of publicly owned lands in the Western States. Conversely, there is also a significant acreage of federally owned land used for grazing, but not included as land in farms because such lands are used jointly with other ranchers under grazing permits. In the first instance, an estimate of the value of publicly owned land would be necessary if it was desired to classify lands by sector of ownership. In the second instance, the value of such permit lands would need to be determined and added to land in farms if it was desired to obtain a measure of all lands used in agricultural production. The valuation of such public lands is more properly a problem to be handled by the working group concerned with natural resources, or with the government sector.

(d) Census valuation of land in farms include nonagricultural values to varying degree, depending upon the geographic area. In the Northeast, reported values are substantially above strictly agricultural values because of proximity to large urban centers and the potential site value of much of the land now in farms in this region. Similar site values are attached to farmland in metropolitan counties elsewhere in the country, notably in California and Florida. A part of the speculative value of subsurface minerals, particularly oil and gas, is also included in the values of farmlands reported in Texas, Oklahoma, and other States where such minerals are widespread. By no means all of the market value of minerals is included in land values, however, because mineral rights have been severed by separate deeds on many properties. As indicated previously, we are seeking to take some

account of as many of these farmland characteristics as possible by suggesting changes in the farm income accounts. Mineral rights associated with farmland may be of concern to the working group dealing with the valuation of natural resources.

Additional problems of measurement result from the need to allocate the total value of farm real estate between land and buildings. An annual series intended to measure production assets which appears in the Balance Sheet excludes the value of operators' dwellings. Separate estimates of dwellings and service buildings also have been made for use in the farm income estimates, but these are based on fragmentary, and often outdated benchmarks. The sharp decline in the number of farms in recent years has greatly complicated the construction of such estimates. A new survey conducted in April 1963 may provide the basis for more refined estimates than are currently available.

Valuation in constant dollars

The initial step in such estimates is a valid allocation of total real estate values between land and structures. The approach followed in the joint National Bureau-U.S. Department of Agriculture study of physical capital in agriculture⁹ was continued until about 1960 in the Balance Sheet accounts. However, some basic discrepancies have developed between market value estimates for buildings, and the net investment estimates carried in the farm income accounts. Briefly, the perpetual inventory method of valuing buildings produces estimates that are \$10 to \$15 billion higher than the estimate of current market values of buildings. This difference can be attributed chiefly to the decline in numbers of farms, and the resultant loss in the number of sets of farm buildings which was not specifically allowed for in the farm income estimates. Recent work appears to have removed most of this difference, although the results from the April 1963 survey referred to above have not as yet been incorporated into the revised estimates.

Even if the depreciation and capital investment accounts for buildings can be reconciled with changes in market values, difficult problems remain in the calculations of constant dollar valuations. The minimum approach would be to establish values for several broad categories of land use in the benchmark year, then to measure the shifts in acreages of land in various use categories that occur in subsequent years. The resulting constant-dollar valuations would then reflect changes in land quality, as well as changes in total acres in farms. However, value differentials by class of land are unobtainable from market sales data, and can only be roughly approximated by regression analysis. Judgment estimates supplied by farmers are available for irrigated and nonirrigated cropland and for pasture land. These were used in preparing State estimates for 1960 and published in the June 1962 issue of *Farm Real Estate Market Developments*, issued by the U.S. Department of Agriculture. Considerable refinement would be needed in these estimates if they were to be used as part of the basis for constant-dollar estimates.

⁹ Tostlebe, Alvin S., "Capital in Agriculture: Its Formation and Financing Since 1870." A joint study by the National Bureau of Economic Research, Inc., New York, in cooperation with the Bureau of Agricultural Economics (now the Economic Research Service), U.S. Department of Agriculture. Princeton University Press, Princeton, N.J., 1957.

A more refined approach would require the development of a gross investment account with respect to land, and also an offsetting account to recognize depletion and loss of capital value by various means. The gross investment account would include both private and public investments that become incorporated in land, such as drainage, irrigation, soil conserving structures, flood protection, upgrading of highways, and other off-site investments which contribute to agricultural output, reduce the cost of production inputs, or increase the price received for agricultural products. A new highway which improves access to a fluid milk market, for example, may substantially increase the net returns from farms served by the new highway, or make it possible to produce more profitable crops than before. How much of the total cost of such public investment is directly reflected in market prices is difficult to determine. Also, only fragmentary data are available to measure the extent of private investment in land improvements.

Even though acceptable solutions could be found for such problems, costs of land improvements are not necessarily directly reflected in market values nor in the productivity of the land resource. Some types of investments may enhance land values by more than their cost, while others may be only partially recoverable in the market. Public investments in land improvements are especially difficult to appraise in these respects.

Although land does not depreciate in the same sense as buildings, numerous examples of different kinds of depletion can be found. Changes that result in a downgrading in land use from cropland to pasture, or pasture to forest may be accompanied by a loss of capital value. Irrigated lands become waterlogged or accumulate salts which forces the shifts of such lands to lower-profit crops. Ground water levels have declined in some areas, increasing irrigation costs, and threatening eventually to make irrigation infeasible. Yields of orchards, vineyards and groves, likewise, decline after a period of years. Such deterioration of soils could be treated in much the same manner as depreciation of buildings. However, comprehensive data are almost totally lacking with respect to the investments made in such types of land improvements, and the number of years over which depreciation should be charged. Likewise some attention also should be given to the stock of plant nutrients stored in the soil in which withdrawals as a result of crop production would be matched against fertilizer applications to arrive at net gains or losses in soil fertility. Such changes have occurred over long periods of time in other countries, and this may be an appropriate time to initiate work in this area. Considerable exploratory work would need to be done with soil scientists and agronomists to determine the validity of the stock concept of soil-held plant nutrients, the empirical evidence now available, and the research techniques needed to yield definitive results.

Allocation of value of residences on farms between farm business and household sectors

Considerable discussion has been directed to alternative concepts for handling the valuation of dwellings on farms. Present estimates of values of farm real estate include all dwellings on farms, including those occupied by farm operators, workers, and nonfarm families.

One approach, followed in the present estimates of farm production assets as developed by the U.S. Department of Agriculture, is to exclude the value of dwellings from the asset accounts. When returns to these production assets are computed the imputed rental value of dwellings is excluded from the income account. The rationale here is that dwellings on farms represent a household investment entirely separate from the farm business.

An alternative approach, which would have merit in achieving greater consistency among sectors, would be to retain a part of the value of operators' dwellings in the farm business sector, and allocate the remainder to a nonfarm account. Present tax laws which permit an allocation of certain expenses associated with the operators' dwelling as a deductible farm business expense support this approach. We have no information as to how widely this practice is followed, nor the basis used by taxpayers in making the permitted allocations. Internal Revenue has suggested guidelines in terms of the proportion of the total floor area of the structure that is devoted to business use. Implementation of this concept would likely require a rather arbitrary determination of the business-household ratio as only judgment estimates could be obtained directly from farmers. In view of a series of problems that becloud the issue we recommend that no account be taken of the small portion of the value of farm residences that could properly be considered essential to the conduct of the farming operations.

The value of all dwellings on farms should be allocated outside the agricultural sector. When comparisons of wealth estimates with income estimates are made, the imputed rental value should be transferred from the present farm income account. These accounts presently include the imputed rental value of all dwellings on farms in gross farm income in part because farm expense estimates include the expenses on all dwellings.

Valuation by sector of ownership

In addition to the private-public sectoring referred to previously, it will be necessary also to allocate privately owned land in farms between farmer and nonfarmer landlords. The present basis for this allocation in rental estimates is the physical residence of the landowner, as determined by a benchmark survey many years ago. Substantial improvement would be possible by using recent agricultural census data with respect to the acreage of land owned by farm operators and rented to others; the difference between this figure, and total land rented from others (also a census figure) can be assumed to be land rented from nonfarmers. A small number of these "nonfarm" individuals may physically reside on farms as fully retired farmers and the like but they would be treated as if they were a part of the nonfarm sector. Such discrepancies are bound to exist between an occupational, and a residential classification, but the occupational basis for classification is the most compatible with classifications used in other sectors.

Recommendations

1. The 1969 Census of Agriculture is likely to provide the best benchmark of the market value of farm real estate. This estimate should be adjusted for underenumeration, and further allocated between commercial and noncommercial farms, as these may be defined at that time. The feasibility of obtaining farmers' estimates of market values for

several major classes of land (cropland, pasture, etc.) in their farms also should be explored.

2. A supplemental benchmark survey should be conducted, either as a part of the 1965 or the 1970 Agricultural Censuses, or as a part of a special census of structures, to determine a basis for the allocation of total value of farm real estate between land and structures. Farm structures should be further allocated between operators' dwellings and service buildings.

3. Research should be undertaken to develop appropriate capital investment and "depreciation" accounts for land, apart from structures, which will provide a basis for developing and maintaining estimates of the value of farm real estate in constant dollars.¹⁰

4. Several specific questions and appropriate tabulations should be planned in connection with the 1969 Agricultural Census to permit allocation of market values of farm real estate by sector of ownership, as well as by sector of use. This would require specific determination of the acreage and market value of publicly owned lands included in farms. Data on land owned by private landlords can be obtained from present censuses of agriculture.

VI. CROPS

Data available

Estimates are available of the stocks of most major crops at mills, elevators, warehouses, and processing plants as of January 1. The onfarm inventory position comes from estimates of the Crop Reporting Board, SRS, USDA, and includes all crops stored on farms, including crops under loan to the Commodity Credit Corporation. The CCC owned or controlled stocks are reported by the Agricultural Stabilization and Conservation Service. Data are available both for stocks on farms under CCC loan and for stocks not under loan.

For certain crops whose stocks are not estimated by the Statistical Reporting Service, it is assumed that the quantity held by farmers for sale as of January 1 represents the farm inventory. For example, peanut stocks on January 1 are estimated as the difference between the total quantity to be sold from the crop year production and the quantity actually sold or put under loan through December.

Using the bushelage or poundage data reported as the January 1 inventory estimates, a value estimate of the farmer-owned crops stored on and off farms (including crops under loan to CCC) can be obtained covering 27 crops—wheat, buckwheat, rye, rice, soybeans, cottonseed, flaxseed, peanuts, corn, barley, grain sorghum, oats, hay, corn silage, corn forage, sorghum forage, cotton, cabbage, onions, potatoes, broom-corn, dry edible beans, dry field peas, tobacco, tung oil, and seeds for hay and pasture crops.

Prices received by farmers on December 15 for the various items are used as the best available indicator of the unit price of the various items.

For most of the major items for which data are available, regional and State allocations can be made with little difficulty.

Data for Alaska and Hawaii are not available in most cases. However, increasingly in the next several years, most series will likely include data for these two States.

¹⁰ See footnote 6.

Several important product items on farms are not covered in periodic SRS reports. These include forest, nursery, and greenhouse products on farms.

Also, growing crops (not harvested or still maturing) on January 1 are excluded from all inventory valuations. Winter wheat and barley, for example, are in the ground and citrus products are on the tree.

Recommendations

(1) For items for which inventory data are not available such as forest, nursery, and greenhouse products we recommend estimating such values by calculating the ratio of the inventory value of all known crop items to cash receipts from marketings of these crop items; this ratio would then be applied to the estimated cash receipts of the items for which inventory data are not available.

(2) For goods in process, such as the winter wheat crop, we recommend estimating the per acre outlays incurred up to January 1 for major inputs such as seed, labor, herbicides, and others (not including overhead costs). This estimated outlay would be applied to the estimated fall wheat plantings as reported in the USDA intentions report. For citrus, we recommend somewhat the same procedure as for wheat in attempting to estimate the value of the crop on the tree or in process of maturing on the tree.

VII. FARM MACHINERY AND EQUIPMENT

Data available

Numbers of autos, tractors, and trucks on farms are available by States through 1959. From 1960 on, motor vehicle numbers have been estimated on a U.S. basis and distributed among the States on the 1959 basis.

Estimates of the numbers of certain types of farm machinery are prepared annually for the United States by the Farm Production Economics Division, ERS, USDA; Census data supply benchmarks by States. For the minor types of farm machines and equipment on farms, the National Survey of Farm Machinery, 1956, conducted by Agricultural Research Service, USDA, furnished benchmark data for the United States.

Prices by States are available for new tractors and selected items of farm machinery from the Statistical Reporting Service, USDA. Unit prices paid by farmers for new autos and trucks are not available by States but State-to-State differences in prices paid are probably small. Data on prices of used farm machinery and equipment are scant and of doubtful accuracy.

Data on the value of farm machinery and equipment on farms are much less reliable than are the data on numbers. In making estimates of value the USDA values the stock on farms at estimated current replacement cost. The value of the stock on farms is the cumulative total resulting from carrying forward yearend depreciated values. There have been no benchmark surveys of the total value of all farm equipment since 1945. All computations are made on a constant dollar basis and converted to current dollars by use of suitable prices paid indexes. The current replacement cost of capital equipment on farms is conceptually the dollars necessary to replace existing capital equip-

ment with similar equipment of the same capability and with the same remaining "life."

Limitations and recommendations

The overriding limitation on an inventory of farm capital equipment lies in the absence of reliable State, regional, and national estimates of values. Currently, the estimate of the stock value is based on an outdated benchmark, and on annual data since the year of the benchmark that are incomplete and of unknown accuracy.

Sector of ownership is unknown for farm capital equipment.

In order to meet the needs of a "Wealth Inventory" for agriculture, we recommend a benchmark survey that would provide State data as follows: (1) Type of equipment on farm; (2) age of equipment; (3) value of equipment—both current market value and original cost; and (4) ownership and use of equipment by sector. This survey should be repeated, at least on a sample basis, to provide more timely estimates. A survey may yield information on age and type of equipment by economic class of farm, by regions, and perhaps by States. However, response to value type questions is more difficult and pilot surveys may have to be undertaken and compared with available data such as used machinery prices to determine whether respondents can approximate the value of their capital goods at current prices.

Furthermore, such a survey of machinery stocks may aid in reconciling the several depreciation rates considered applicable to capital goods used in agriculture. For example, the USDA considers the tractor depreciation rate to be about 18.5 percent annually. Based on a study of used machinery prices, Zvi Griliches of the University of Chicago estimates the rate to be around 12 percent, while the IRS apparently suggests a rate somewhat over 20 percent annually.

VIII. LIVESTOCK

Data available

The Statistical Reporting Service reports the January 1 position *on farms* of numbers of cattle (by age and classes), hogs, sheep, chickens, and turkeys. Livestock and poultry *not on farms* are excluded. An inventory value of livestock on farms is arrived at by using the average price per head for various classes of livestock and poultry reported as prevailing in localities at the time of inventory by crop reporters.

Current estimates do not include horses or mules on farms—this presents a minor problem in estimating price per head since a quantity figure can be arrived at with reasonable accuracy. Goats on farms are reported for Texas only on both a quantity and price basis (i.e., $p \text{ times } q = \$25.8 \text{ million, January 1, 1963}$).

Commercial broilers are not included in the inventory position as reported.

In general, State and regional data are available in reports on the livestock inventory of U.S. farms.

Recommendations

(1) Our recommendation is to obtain a cumulative total of weekly broiler placements for the 10 weeks prior to January 1, and adjust this total for under enumeration (reports are made for only 22 States). Since on the average the broilers would be only half grown we would take only one-half of the cumulative total. We would apply an average farm price for commercial broilers to this estimated number to

arrive at a January 1 inventory value figure for the United States and then allocate this total to the States based on placements and other data.

(2) The inventory position of several minor "livestock" items such as ducks, geese, pigeons, rabbits, and fur-bearing animals on farms are not reported. For these items, we recommend the application of the ratio of the value of the stock of certain poultry items to cash receipts for those items to be applied to the estimated cash receipts from marketings total for miscellaneous and other livestock items.

IX. FINANCIAL ASSETS AND CLAIMS

Financial assets and claims, together with the value of the physical assets used in agricultural production, residences on farms, and "household furnishings and equipment," are combined into "The Balance Sheet of Agriculture" which is published each year by the Department. Physical assets are treated elsewhere in this report and will be referred to here only in their Balance Sheet context. The estimates of farm debts and to some extent the financial assets have a wide variety of uses apart from their use in the Balance Sheet.

TABLE 1.—Balance sheet of agriculture, January 1, 1963

ASSETS		<i>Billion dollars</i>
Farm land and buildings (including residences).....		142.8
Physical production assets other than land and service buildings, total.....		45.9
Livestock.....		17.2
Machinery and motor vehicles ¹		19.5
Crops stored on and off farms.....		9.2
Household furnishings and equipment.....		8.7
Financial assets.....		18.4
Total.....		215.8
LIABILITIES		
Real estate debt.....		15.2
Non-real-estate debt, total.....		16.6
Owed to reporting lenders (except CCC loans).....		8.5
Owed to nonreporting lenders.....		6.0
Owed to Commodity Credit Corporation.....		2.1
Total debt.....		31.8
Proprietors' equities.....		184.0
Financial assets were reported in the following detail :		
Liquid financial assets :		<i>Billion dollars</i>
Currency.....		1.9
Demand deposits.....		4.0
Time deposits.....		3.3
U.S. savings bonds.....		4.4
Total.....		13.6
Other financial assets: Investment in cooperatives.....		4.8
Total financial assets.....		18.4

¹ Includes the estimated total value of automobiles on farms rather than only the 40 percent of value estimated as used for farm production purposes.

General comments

1. Assets and liabilities are included that are associated with farm household activities, as well as the assets and liabilities connected with the production of farm products or "secondary" type products.

2. Assets and liabilities of farm operators, and the farm-related assets and liabilities of all landlords, including nonfarm landlords, are both intended to be included in the balance sheet.

3. Generally the data on farm debt have a much stronger statistical base than the financial assets. Judgment is liberally used to supplement the scarce data on the financial assets. Although of relatively small magnitude, the financial asset estimates carried in the balance sheet are probably in greater need of improvement than are any of the other asset or liability items which have been considered in this report.

Available data and their limitations

Currency.—Estimates are based on the assumption that farmers hold the same amount of currency in relation to their demand deposits as do all individuals, including farmers. It is not known how accurate this assumption is. Nothing is known about whether reasonable State figures could be derived.

Demand deposits.—For a number of years up to 1960 demand deposits owned by farm operators were estimated by the Board of Governors of the Federal Reserve, based on an annual sample survey of commercial banks. The estimates were intended to cover only the deposits held by farmers as businessmen; nonbusiness deposits were excluded. The estimates were reported by Federal Reserve districts. Since 1960 the Board has not been making its surveys, pending study of various aspects, and it is not clear when the survey will be resumed, or whether farm operators' business-type demand deposits will be reported separately.

In the meantime USDA estimates are based primarily on changes in total demand deposits held by Federal Reserve member banks in cities of under 15,000 population. It is not known how good these estimates are. Presumably regional estimates could be made on this basis, but probably not State estimates.

Time deposits at banks.—Time deposits are estimated as a percentage of the estimate for former-owned demand deposits at banks. This percentage is derived in part from yearend ratios of time deposits to demand deposits in banks in 600 counties which, based largely on data in the 1940 census, were defined as "primarily agricultural counties." One question is whether this method of estimating agricultural totals from data for primarily agricultural counties is appropriate now—because the county has become so much less rural than it was in earlier years.

U.S. savings bonds.—Farmers' ownership of savings bonds is based on data and judgment. The data are mostly annual U.S. Treasury Department reports on purchases of the various types of bonds in some 600 agricultural counties. Per capita farm purchases by regions are surmized from these data. Farmers are assumed to redeem bonds more slowly than nonfarmers; this assumption is based on some bond redemption data by counties that were available for 1945-52. These estimates of purchases, together with estimates of accrued interest, are added to the previous year's estimated outstanding balance, and redemptions subtracted.

Regional estimates of annual bond purchases by farmers have been published on occasion, but not estimates of the value of farmers' total holdings of bonds.

It is not known how good these estimates are, but they could probably be improved considerably. Consideration is currently being given to obtaining certain sample data on bond holdings and other liquid assets of farmers in the next census sample survey of agriculture.

Investments in farm cooperatives.—Balance sheet data on this item are obtained from several sources, mostly the Farmer Cooperative Service of USDA, the Rural Electrification Administration, and the Farm Credit Administration. The Farmer Cooperative Service has underway quite a comprehensive survey which will yield better estimates than heretofore of the net worth of marketing and purchasing associations (which together make up about one-half the total of farm cooperative investments). State estimates will be obtained from the survey data.

A problem in this area is that some of the net worth of farmers' cooperatives is owned by nonfarmers.

Financial assets not included.—Some important farm business and farm consumer financial assets are not included in balance sheet estimates because of lack of data:

1. Corporation stocks, various bonds other than U.S. savings bonds.
2. Savings in financial institutions other than commercial banks.
3. Cash value of life insurance.

Goals for financial assets and claims reporting

Since detailed data on financial assets and liabilities are not considered as essential to the accomplishment of the national wealth inventory as are some of the physical asset data, it may be satisfactory to report these items in less detail, and perhaps with less accuracy, than is desired for the physical asset items. We, therefore, suggest these as reasonable goals:

1. To present data for suitable regional groupings of States, rather than for individual States.
2. To improve the accuracy of the financial asset data used in the balance sheet and to broaden the coverage of financial assets.
3. To permit preparation at the regional level of a variety of balance sheets as follows:

(1) Operators of census farms showing:

(a) Production and consumption assets and liabilities separately.

(b) Showing owned and rented assets separately.

(c) Showing the four groupings of farms separately (large, medium, and small commercial, and noncommercial).

Recommendations

To accomplish the goals listed above we make these recommendations:

1. To improve the financial asset figures, we recommend first a pilot survey, and later a survey of the necessary size for making regional estimates:

(1) Of financial assets now in the Balance Sheet.

(2) Of financial assets not now included in the Balance Sheet.

(This recommendation to be coordinated with the household wealth

working group, and the financial claims working group; and also plans for the 1965 Sample Survey of Agriculture.)

2. As part of the pilot survey above, to determine whether there is a feasible way to obtain from respondents the data needed to allocate financial assets between business and household purposes. Otherwise this allocation may need to be done arbitrarily.

3. A part of the above survey, or by including additional questions on debt in the samples survey of agriculture, to obtain the data needed to allocate debts between business and household purposes.

4. Estimates of debt held by "nonreporting lenders" are being considerably improved as a result of the 1960 Census Sample Survey of Agriculture. Future benchmark surveys of similar nature will be needed.

5. The debt questions in subsequent sample surveys of agriculture should be of such nature that farm debts of nonfarm landlords can be separated from those of farm operator landlords. Also, at some time the size of the sample should be increased to permit needed regional estimates.

6. The census mortgage surveys of operators and landlords, if continued at 5-year intervals, should largely care for the mortgage debt needs.

7. Some part of the farm debt, especially mortgage debt, is owed within the agricultural sector. How this is to be treated will depend in part on overall wealth inventory study decisions.

8. Commodity Credit Corporation loans, and the assets securing these loans, should be excluded from the balance sheet data.