

CHAPTER 7

Economic Statistics: Measuring Economic Performance

EVERY DAY, NEWSPAPER, radio, and television reports offer the American public a wealth of information about the U.S. economy. They may tell us how many new jobs have been created, how many cars have been sold, or how much the prices for goods and services have changed. We may learn that interest rates have gone up or down, that exports have increased, or that personal saving has remained flat.

Economic data provide snapshots of the economy that answer a great variety of questions. How much is the Nation producing? How does the U.S. standard of living compare with Germany's or Japan's? How much of the Nation's income does the government collect in taxes? Without good data, these questions cannot be answered. Many questions require that snapshots be compared over time. How much has the standard of living increased over the past 30 years? How much more productive are today's factories than those that existed 10 years ago? And because the economy is continually changing, data that provided a focused picture 10 years ago may no longer adequately measure today's economy. To maintain an accurate picture, statistical measures—and the ways they are interpreted—need to account for the changing structure of the economy.

Individuals, corporate managers, and public policymakers all rely on economic data to make informed decisions that affect economic well-being and to judge whether they are achieving their goals. A consumer might use information about changing interest rates in deciding when to buy a new home. An automobile manufacturer is likely to use a wide range of data to determine how many cars to produce in the coming months. Sales data give useful information about the current demand for cars, while data on the number of people employed, changes in household income, and the level of consumer confidence are useful in assessing future sales.

Laws and contracts often depend on economic data for their operation. Some labor contracts, for example, include cost-of-living allowances that adjust wages in response to inflation. A measure of inflation is therefore needed to make such adjustments. Similar cost-of-living adjustments are made to Social Security benefits.

Because data are critical for charting the course of the economy, a large number of statistical tables have been included in every *Economic Report of the President* since 1947. This chapter is intended to help readers understand many of these commonly used economic statistics.

Care is needed in interpreting statistics. It is important that people who use data understand the concepts that lie behind the measurements, the activity actually measured by the published numbers, and the statistical accuracy of the data. Practical limitations often prevent economic statistics from corresponding exactly to the concepts the user is interested in. Some economic statistics—particularly early estimates based on incomplete data—inevitably contain a great deal of error. Changes in definitions or reporting conventions can be a source of confusion and in some cases may affect the consistency of the data over time.

Furthermore, substantial changes in the economy—for example, new technologies, demographic shifts, and changes in the nature and volume of international transactions—require statistical agencies to revise periodically the types of data they collect, the ways they collect the data, and the concepts they use to measure the economy. In November 1989 the President signed the Economic Statistics Initiative to upgrade the Federal statistical system. Its aim is to help the major producers of economic data develop new techniques to measure economic concepts, improve the accuracy of statistics, and provide a more complete framework for understanding the economy (Box 7-1).

USING THE MOST APPROPRIATE DATA

There are many sources of economic data. Any one set of statistics, however, is limited in the questions it can answer; the features that make numbers appropriate for certain uses may make them inappropriate for others. Unfortunately, sometimes data that can give a definitive—or even a very good—answer to an important question simply do not exist. Decisionmakers must be careful, first, to choose the most appropriate data to analyze issues and, second, to recognize the shortcomings of the measures they use.

Consider, for example, the number of people employed in the United States. According to the survey of households, published by the Bureau of Labor Statistics (BLS), 117,555,000 civilians were employed in October 1991. According to the BLS survey of businesses and government, known as the establishment survey, 109,796,000 people were on the Nation's payrolls in October 1991. Why are these numbers different, and is one better than the other?

The numbers are different because the two surveys measure employment differently and have different coverage. The household survey measures the number of *people* who are working, while the

Box 7-1.—The Economic Statistics Initiative: Improving the Quality of Economic Statistics

The U.S. statistical system is among the finest in the world, staffed by dedicated and highly competent professionals. The rapid pace of change in today's economy, however, strains the statistical agencies. Keeping abreast of these changes requires both the development of new measurement techniques and the timely improvement of the existing statistical system. In 1989 a working group, which included representatives of many of the major producers and users of economic statistics in the Federal Government, developed a package of high-priority projects designed to improve the quality of statistics. The President approved this package on November 25, 1989.

The programs are aimed at addressing many of the measurement problems discussed in this chapter. They include 1) improving and modernizing our national and international economic accounts, and making U.S. data more internationally comparable; 2) improving coverage and measures of service sector output; 3) extending existing methods and developing new techniques to incorporate quality adjustment in price indexes; 4) improving the establishment and household labor market surveys; 5) tracking changes across industries; 6) establishing a university center for graduate-level training in statistics for current and prospective staff of the Federal statistical agencies; and 7) sharing data among statistical agencies.

Work began on these programs in fiscal 1991. The President's fiscal 1992 budget proposed spending \$30 million on these programs. \$12 million was appropriated. The initiative envisions spending more than \$150 million during fiscal 1993–97. The funds are included in the budgets of the Census Bureau, the Bureau of Economic Analysis, the Bureau of Labor Statistics, the National Agricultural Statistics Service, and the National Science Foundation.

establishment survey measures the number of *jobs* on the payrolls of business and government. The establishment survey does not cover jobs in agriculture, the self-employed, proprietors, unpaid family workers, or household domestic workers; but the household survey counts these people as employed.

Consequently, one might think that the household number is a better measure of total employment. But it samples only about 60,000 households each month, while the establishment survey samples almost 370,000 establishments. Because the establishment survey counts a much larger number of workers than the house-

hold survey, it is less likely to suffer a random miss in its estimate of the true value for the entire country. On the other hand, a number of issues concerning the construction of the establishment survey make these data susceptible to certain nonrandom errors (those issues are discussed later).

Thus, neither employment measure is clearly "better." The user must judge which is better-suited to answering the question at hand. Many economists believe that on a month-to-month basis, the establishment survey probably gives a more accurate reading of job developments for the nonfarm economy as a whole because of its large sample. But if one is concerned with employment among teenagers or women, for example, then the household survey data are appropriate because the establishment survey does not collect comprehensive information on the demographic characteristics of the work force.

HOW MUCH DATA?

One of the most important principles of economics is that people are better off expanding an activity as long as the additional, or "marginal," benefit exceeds the marginal cost. This principle also applies to the collection of data—additional resources should be committed as long as the marginal benefit from additional data is greater than the marginal cost of collection. Costs and benefits often cannot be measured precisely, but expected costs and benefits should nonetheless be compared when deciding the amount of resources to devote to collecting data.

Clearly, it is too costly to measure all the household, business, and government activities in the economy every day, week, or month. Consequently, most economic data are based on only a portion, or sample, of individuals or establishments. The larger the sample, the smaller the probable error in estimating the true number. One basic question, therefore, is whether it is worth increasing the size of the sample to reduce the size of errors (Box 7-2).

A tradeoff also exists between the accuracy of data and the timeliness of their publication. For example, the first estimate of gross domestic product (GDP) for a given quarter is released during the month following the end of the quarter. To produce this "advance" estimate, the Bureau of Economic Analysis (BEA) of the Commerce Department estimates some important data that are not yet available. Other data are available only in a preliminary form and are subject to substantial revision. If the BEA were to wait several weeks until better data became available, it could publish more accurate GDP estimates. On the other hand, many private and public decisionmakers eagerly await the GDP data; they want a comprehensive summary of the Nation's economy as quickly as possible.

As more and better data become available, the advance estimate of GDP is revised in a "preliminary" and then a "final" estimate. These revisions are useful for judging the quality of the advance and preliminary estimates. Between 1977 and 1988, the final estimate of real GDP growth (at an annual rate) was within -1.0 to +1.6 percentage points of the advance estimate 90 percent of the time. Between the preliminary and final estimates, 90 percent of the revisions fell in the range of -0.6 to +0.7 percentage point.

Box 7-2.—Measuring the Quality of Statistics

A sample covers only a fraction of the firms or individuals in the economy. Because not everyone is counted, sample-based estimates do not give the actual numbers for the entire economy. The differences are called sampling errors. The larger the sample, the smaller is the error. For example, the second estimate of monthly retail sales, published by the Census Bureau, is based on a much larger sample of businesses than the advance estimate, and has a sampling error only one-third the size.

Other statistical errors, called nonsampling errors, occur because respondents misunderstand questions or provide incorrect information, because there are errors in data processing, or because systematic problems arise in sampling procedures. Such errors, however, often cannot be quantified.

Statistical errors can be reduced in several ways. Sample sizes can be increased. Procedures can be improved to avoid nonsampling errors. Surveys can be revised to account for structural changes in the economy. Some surveys suffer from poor response rates and imprecise answers; better survey methods can reduce the burdens on participants, making it easier for the public to play its part in providing high-quality data. Further automation for some surveys could improve the speed and quality of data collection and processing.

PROBLEMS WITH INACCURATE DATA

Data that are inaccurate can be misleading. From time to time, inaccurate preliminary estimates of key data, conceptual measurement difficulties, or other data problems have made it more difficult to implement sensible economic policy. Two examples follow.

Example: Business Inventories in 1973 and 1974

Early in the 1973-75 recession, businesses appeared to be controlling inventories fairly well. According to data available in April 1974, increases in inventories in constant dollars were not that large; inventory investment was estimated at 1.5 percent of total

gross national product (GNP) in the fourth quarter of 1973 and 0.6 percent of GNP in the first quarter of 1974. These figures suggested that firms probably would not have to cut production to work off excessive inventories and thus led policymakers to believe it was not necessary to stimulate the economy. Revised data, however, showed that serious inventory excesses actually had developed. Data available by July 1974 indicated that inventory investment actually had been 2.4 percent of GNP in the fourth quarter of 1973, and 1.3 percent in the first quarter of 1974. The subsequent liquidation of inventories placed a severe drag on GNP growth in 1975.

Example: Mismeasurement of Consumer Price Changes Before 1983

A principal measure of inflation is the change in the consumer price index (CPI), which includes the prices of a wide variety of household goods and services—food, clothing, medical care, and so on. One of the largest household expenditures is for shelter. For those who rent their homes, statisticians have a relatively straightforward task—to find out how much rent actually is paid for an apartment or house. But how should owner-occupied housing be treated statistically?

Before 1983 the CPI did not capture the monthly cost of shelter associated with *living* in an owner-occupied house. Instead, the CPI measured the costs—in terms of purchase prices and mortgage rates—experienced by those people who *purchased and financed* a home. Furthermore, some analysts believe the weights on house prices and mortgage rates were overstated in the index. When housing prices and interest rates soared in the late 1970s and early 1980s, the CPI rose out of proportion to the actual costs of housing, because unrealized capital gains of homeowners were inappropriately treated as increasing the monthly cost of shelter. Because many wage, benefit, and transfer payments are tied by contract or mandate to the CPI, this overstatement of inflation caused unwarranted increases in wages and government transfers.

In 1983 the BLS acted to correct this problem in the CPI-U (CPI for all urban consumers); in 1985 the correction was made in the CPI-W (CPI for urban wage earners and clerical workers). Instead of looking at current purchase prices and interest rates, the BLS began to estimate the cost of the shelter provided by owner-occupied houses by looking at rents paid on houses and apartments that are comparable to the stock of owner-occupied housing. To have a series that is consistent before and after 1983, the BLS has constructed another index, the CPI-U-X1, that extends estimates of housing costs consistent with the new methodology back from 1983 to 1967.

Although those revisions were a major improvement, problems may still exist because many communities have very few rental

properties with attributes typical of the owner-occupied housing stock. Owner-occupied housing makes up almost 20 percent in the total CPI; therefore, a large component of the index could suffer from a sampling problem. The BLS has addressed this problem by screening areas with high concentrations of owner-occupied housing for suitable rental units and plans to study the cost-effectiveness of increasing the rental sample. Because of these and other sampling issues, the BLS suggests that users look beyond month-to-month variations in the data and consider changes over longer time periods when trying to discern trends in owner-occupied housing costs.

WHY THE GOVERNMENT IS IN THE DATA BUSINESS

The entire Nation benefits from having access to unbiased, high-quality economic data. It is unlikely, however, that the potential profits would be high enough to induce the private sector to produce the quantity, quality, and types of data that would balance society's marginal benefits and costs. It may be difficult, for example, for private data collectors to avoid unauthorized reproduction that would cost them sales. Furthermore, it often is less costly for the government to obtain data as a by-product of other activities than it is for private firms to collect statistics from scratch. Information on personal income and corporate profits, for example, are gathered in conjunction with tax collection. Survey participants also naturally prefer that their answers remain anonymous, and because of strong legal protection, government statistical agencies are able to ensure confidentiality more easily than private collectors can. Finally, the government may legally require people to respond, as in the case of the census.

Although it is appropriate for the government to gather economic data, there also is a role for the private sector in the Nation's statistical system. Some private businesses have found it profitable to collect some types of economic information. For example, private firms compile a large amount of balance sheet information for publicly traded corporations and sell it to investors and researchers. Other private businesses gather, organize, and interpret data for clients, adding value to data originally published by the government or other sources.

SUMMARY

- Individuals, business managers, and public policymakers all rely on economic data to make informed decisions that affect the economic well-being of the Nation.
- Users of economic data should be aware of the activity measured by published data, the statistical accuracy of the data,

and the effect that changes in the structure of the economy can have on their interpretation of economic statistics.

- Any set of economic statistics is limited in the questions that it can answer. The features that make numbers appropriate for certain uses may make them inappropriate for others. Even when used properly, however, imprecise data can mislead decisionmakers.

GNP AND GDP

GNP, or gross national product, is one of the most common measures of the overall performance of the economy. It is defined as the market value of all goods and services produced during a particular time period by U.S. residents, that is, U.S. individuals, business, and government. GNP includes income earned by U.S.-owned corporations overseas and U.S. residents working abroad; it excludes income earned in the United States by residents of the rest of the world.

A closely related measure, gross domestic product (GDP), is the value of output produced by people, government, and firms in the United States, whether they are U.S. or foreign citizens, or American- or foreign-owned firms. Profits earned by foreign-owned businesses in the United States are included in U.S. GDP, but not in U.S. GNP. In contrast, profits earned by U.S. firms abroad are included in U.S. GNP (because the firms are owned by Americans), but they are not included in U.S. GDP (because they are not earned in the United States). GDP is measured quarterly and annually. Data on GDP and its components are found in Tables B-1 through B-26 of Appendix B to this *Report*.

The distinction between GDP and GNP is not very great for the United States. Relatively few U.S. residents work abroad, and U.S. earnings on foreign investments are about the same as foreign earnings on investments in the United States. For other countries, such as Pakistan and Portugal that have many workers in foreign countries or Brazil and Canada that have more foreign investment in their country than they have abroad, the difference between GNP and GDP can be large. GDP corresponds more closely than GNP does to other indicators used to analyze short-term movements in the U.S. economy, such as employment and industrial production. This past December, the national income and product accounts (NIPAs) shifted emphasis from GNP to GDP.

GNP and GDP measure output at market prices. Because prices change over time, a distinction must be made between a change in the quantity of goods and services produced and a change in the prices paid for those products. Real GNP or GDP adjusts for inflation and measures the quantity of goods and services produced;

they are therefore better measures of output than nominal GNP or GDP.

MEASURING THE STANDARD OF LIVING

Growth in real GNP or GDP does not ensure an increase in the standard of living. If real GDP grew less rapidly than the population, for example, real GDP per person would fall. But even real GDP per person is not a perfect measure of economic well-being because some transactions are not recorded in GDP.

GDP measures principally the production of those goods and services that are sold through a marketplace. It also includes a few imputed items, such as the value of living in owner-occupied housing. Many nonmarket activities are, however, omitted from GDP even though they affect economic well-being. If a person mows his or her own lawn, for example, there is no entry in the GDP accounts, but if he or she hires a lawn service, the costs of the service are included in GDP. Similarly, GDP does not include volunteer work. Were the volunteers to work for a wage, GDP would rise, although economic well-being might not.

Changes in the condition of the environment affect well-being, but they are hard to quantify in the GDP accounting framework. An increase in pollution makes life less pleasant, but it is not subtracted from GDP. Indeed, if increased pollution leads to more expenditures for health care, it actually increases GDP. On the other hand, GDP does include the value of production of goods and services to improve the environment, such as catalytic converters or toxic waste consultants. The United States is examining how satellite accounts to the United Nations' system of national accounts would better measure the influence of natural resources and environmental factors on economic well-being (Box 7-3).

Leisure time affects economic well-being but is not counted in GDP. In the last two decades, real GDP per person rose almost 40 percent, while leisure—that is, time spent outside the workplace—increased by 7 percent (if it is measured by a decrease in the average hours worked per week). Did economic well-being rise by more than the 40-percent increase in output because working people also had more leisure time? Or did economic well-being rise by less than 40 percent because some of the increase in output came from an increase in the number of two-earner families for whom “family leisure” time declined. Vacation spending is another leisure-related issue. Money spent on airfares, hotels, and recreation increases GDP, while relaxing at home does not. Yet both types of vacations increase economic well-being.

Box 7-3.—System of National Accounts

Gross domestic product (GDP) is the primary measure of aggregate activity presented in the U.S. national income and product accounts. GDP measures the value of production in a given time period. But other indicators such as national wealth are valuable to gauge economic well-being. Saving links these two major concepts of economic well-being because saving out of GDP augments national wealth. But real wealth also is affected when the prices of the Nation's existing assets and liabilities change at different rates or when there is net lending or borrowing from other countries.

The United Nations' system of national accounts (SNAs) is an integrated presentation of an economy's stocks of assets and liabilities and its flows of income, production, consumption, and saving. The system of national accounts integrates the factors that affect national wealth with the GDP data, providing a more complete framework for analyzing the economy than do the national income and product accounts.

As part of the President's Statistical Initiative, the U.S. national accounts will adopt the SNAs' framework in the mid-1990s. The Federal Reserve Board already prepares much of the additional asset and liability information needed to fill in the framework. Because many countries already use the SNAs, developing these accounts for the United States will facilitate international comparisons of GDP, its components, and supporting financial data.

SUMMARY

- The United States recently shifted emphasis from GNP to GDP. In contrast to GNP, GDP includes income of foreign corporations and foreign residents working in the United States, but excludes the income of U.S. residents and corporations overseas. GDP corresponds more closely to other indicators of domestic short-term economic performance.
- Adjusting GDP and GNP for inflation and for population growth makes them better measures of the standard of living, but some factors that affect economic well-being, such as non-market activities and pollution, are not recorded in either measure.

EMPLOYMENT AND UNEMPLOYMENT

How many people lost their jobs during 1991? How many people found employment? What are the demographic characteristics of the unemployed? To answer such questions, one can turn to several sources of labor market data.

The most common data describing labor markets come from three sources: a survey of the Nation's households, a survey of the Nation's businesses and governments (the establishment survey), and the unemployment insurance systems of the States. No one of these sources records all labor market indicators, and the three sources sometimes give different readings of apparently similar labor market indicators. For example, nonfarm wage and salary employment *fell* 0.3 percent between April and November 1991 in the household survey, while jobs *rose* 0.1 percent in the establishment survey. To prevent confusion about these figures, it is important to understand how these labor market data are generated.

THE HOUSEHOLD SURVEY

The most familiar labor market statistic is the unemployment rate, which is based on information the Census Bureau collects for the BLS through the Current Population Survey. Many series from this survey are found in Appendix Tables B-31 through B-39. About 60,000 households are on the interview list; in any given month, on average, 4-5 percent of these are not interviewed for a variety of reasons. The population estimates underlying the survey are benchmarked every 10 years to the decennial census—that is, they are adjusted to make them consistent with the census.

Surveyors ask respondents about the major activity of each member of their household 16 years and older. Those who are working, including the self-employed and unpaid workers in a family enterprise, are counted as employed. Those who are reported to be not working but who have actively sought work in the last 4 weeks or who were waiting to be recalled from layoff or report to a new job within 30 days are counted as unemployed. Those who are not looking for a job or who are unavailable for work are not considered part of the labor force. The unemployment rate is the number of unemployed people divided by the civilian labor force, which is the sum of the employed and unemployed. As discussed in Chapter 3, the unemployment rate does not count people who are not looking for work because they feel no work is available. Current Population Survey data on these "discouraged workers" are published once a quarter.

The household survey also includes a comprehensive set of questions concerning the household members' age, sex, race, occupation, industry of employment, number of hours worked, duration of any

unemployment, and whether the unemployed workers quit or involuntarily left their last jobs. People working fewer than 35 hours a week are classified as part-time workers. Data are published at both the national and State levels. Except for 11 large States, however, the State-level samples are small and monthly estimates cannot be obtained directly from the household survey. The monthly labor force and unemployment data published for these smaller States are based on estimating equations that use information from more than just the household survey. On an annual basis, however, the household survey does provide enough data for State-level estimates.

THE ESTABLISHMENT SURVEY

Every month, the BLS surveys almost 370,000 establishments that, combined, employ more than 40 million workers. For purposes of the survey, an establishment is a business or government operation that, in general, is at a single location and engages in one type of activity. The agricultural sector is not included. Private firms and State and local governments report information concerning workers who receive pay for any part of the payroll period that includes the 12th day of the month. Federal Government employment, which is counted on the last day of the month, covers only civilians. Some of the results from the survey are presented in Tables B-41 and B-42 in the Appendix.

The survey collects information by industry on the number of workers, the number of production and nonsupervisory workers, average weekly hours paid, overtime hours, and average hourly earnings. The survey does not distinguish between full-time and part-time workers in its count of jobs. The only demographic information published is gender. State and metropolitan area breakdowns also are published.

When a sample of establishments is surveyed, the question arises as to how employment in the sample is related to the total number of jobs. To shed light on this relationship and make appropriate adjustments in the survey results, the BLS each year conducts a more comprehensive study, or *benchmark*, of civilian nonfarm jobs, relying primarily on information that firms and government agencies are required by law to report to the State unemployment insurance systems. The benchmark indicates that the coverage of the monthly establishment survey is quite large; the establishments in the monthly sample employ 39 percent of the workers enumerated in the 1991 annual benchmark. Indeed, the BLS reports that the "sample of establishment employment and payrolls is the largest monthly statistical sampling operation in social statistics." Some issues have been raised regarding the survey, however. Its sample may overrepresent large establishments relative to their share of

employment. And, particularly in the short term, the survey probably has difficulty accounting for the emergence of new establishments and for firms that go out of business.

The establishment and household surveys measure different concepts. The establishment survey counts the number of jobs, not the number of employed people. Thus, a person holding more than one job is counted more than once in the establishment survey but only once in the household survey. The establishment survey counts hours paid, which includes, for example, paid vacations. In contrast, the household survey asks respondents the number of hours worked.

STATE UNEMPLOYMENT INSURANCE SYSTEM

Every week data are published showing the number of people who filed new claims for unemployment insurance—the “initial claims” figure—and the number of people covered by unemployment insurance who were unemployed for any part of the week—the “insured unemployment” number. These data, found in Table B-40, are compiled by the Employment and Training Administration of the Department of Labor, using information collected from the State unemployment insurance systems.

The insured unemployment count does not include workers whose unemployment insurance coverage has lapsed, initial claimants who do not qualify for benefits, workers who qualify but do not apply, or individuals not covered by unemployment insurance. This final category includes new entrants or reentrants into the work force who have not yet found jobs. These persons would be counted in the household survey if they met that survey’s tests for unemployment.

Once a quarter, employers are required to report the number of persons on their payrolls each month and the total wages that they paid. Because virtually all businesses are required to belong to the State systems, these reports provide very accurate readings of employment. Indeed, the data are used to benchmark the establishment survey’s estimates once a year. The State data are not very timely, however; the reports are not available until about 6 months after the end of the quarter.

WHEN TO USE THE DIFFERENT LABOR MARKET DATA

Each of the labor market data sources has its strengths and weaknesses (Box 7-4). The lag between the collection and publication of the initial claims numbers is less than 2 weeks; these data provide the most up-to-date, but quite incomplete, reading on unemployment conditions. Although the State unemployment system provides information about those persons seeking unemployment benefits, it does not provide timely information on jobs gained or

the industrial structure of employment, or offer any data on the number of hours people worked. The establishment survey does provide timely information on these questions. And despite some problems with the establishment survey, many economists believe that because of its large sample coverage, it generally provides a relatively accurate reading of month-to-month changes in the number of nonfarm jobs. It also provides useful industry detail.

Over long periods of time, the establishment survey and the non-agricultural component of the household survey generally yield similar trends. The establishment survey, however, does not contain any information about people who are without jobs. The household survey provides details of the demographic composition of the population with and without jobs, information on the duration of unemployment, and reasons why people may be working part time or have dropped out of the labor force.

Box 7-4.—Error and Revision Properties of Labor Market Surveys

Comprehensive work has been done to determine the statistical accuracy of the household and establishment surveys. The estimate of the civilian unemployment rate in the household survey has a standard error of 0.11 percentage point. This means that because of sampling error, there is a one-in-three chance that the true unemployment rate will be more than 0.11 percentage point higher or lower than the published number. Thus, for most analyses, one should not consider movements in the unemployment rate that are less than 0.2 percentage point as significant changes in the labor market.

One useful measure of the statistical accuracy of the establishment survey is how well the monthly survey forecasts the annual benchmark. For the past 10 years, the difference between the final monthly estimate of total nonfarm employment from the establishment survey and the benchmark has averaged 0.2 percent.

The first estimate of payroll employment for each month is revised in subsequent months as late reports are received and processed. Between the first and final estimates, there is approximately a one-in-three chance that the first reading of total nonfarm employment will be revised up or down by 78,000 jobs. One program in the President's Statistical Initiative will upgrade automated data collection techniques to improve the quality of the establishment survey's first estimate of employment.

OTHER SOURCES OF LABOR MARKET DATA

In addition to these three sources, several other important labor market surveys are published less frequently. These include the quarterly employment cost index, the survey of income and program participation, the national longitudinal survey, and the public use micro data sample from the decennial census. The employment cost index provides comprehensive information on wages and benefits at the industry level. The last three surveys record a variety of demographic, employment, income, and wealth information on an individual-by-individual basis.

SUMMARY

- Three sources of labor market data—the household survey, the establishment survey, and the State unemployment insurance system—give complementary, but sometimes differing readings of the labor market.
- The weekly data on initial claims for unemployment insurance are the most timely, if quite incomplete, report on unemployment. The establishment survey provides useful information on month-to-month changes in nonfarm employment. The household survey reports detailed information on the demographic and economic characteristics of the employed, the unemployed, and those people out of the labor force.

PRICES AND INFLATION

Inflation is an increase in the average level of prices. As discussed in Chapter 2, high and variable inflation inhibits the efficient allocation of resources in the economy, and if unanticipated, redistributes income and wealth capriciously. To achieve strong and sustainable economic growth over the long run, the Nation must maintain low and stable inflation rates. Good measures of prices and inflation are necessary to help gauge progress toward achieving this goal. Appendix Tables B-56 through B-64 provide a variety of price indexes that commonly are used to measure inflation (Box 7-5).

CHANGES IN QUALITY

Some price changes reflect changes in quality. For example, suppose the purchase price of a car increases solely because antilock brakes are added as standard equipment. Because the higher price reflects an increase in quality, it should not be included in a calculation of inflation. If such a price change were included in a price index, then inflation would be overstated. To avoid this problem, price indexes are adjusted for quality where possible.

Box 7-5.—Price Indexes

Inflation is measured using indexes that record price changes for a market basket of items representing the purchases or sales of some portion of the economy. Some price indexes, called fixed-weight or Laspeyeres indexes, weight items by their shares in the market basket during a base period. Examples are the producer price index, the consumer price index, and the fixed-weight price index for gross domestic purchases. (The BEA has shifted emphasis from the GDP fixed-weight index—which measures prices of everything produced in the Nation—to the gross domestic purchases index, which measures the price of everything purchased in the Nation, including imports.) In other price indexes, the weights change with every observation to reflect the current period's market basket. The most common example of such an index is the GDP deflator.

On a month-to-month or quarter-to-quarter basis, economists generally prefer measuring inflation using fixed-weight indexes. Because the weights do not change, movements in these price indexes reflect changes only in prices. In contrast, movements in deflators reflect changes both in prices and in the composition of the market basket. Indeed, even over long periods of time, point-to-point comparisons of deflators can be affected by unusual shifts in the composition of spending.

Over time, consumers and producers tend to shift purchases away from higher priced items, and advances in technology tend to reduce relative prices in many fast-growing sectors. Because of such substitutions and other changes in the economy, the composition of a fixed-weight index may become quite different from the market basket currently purchased by consumers and businesses. Consequently, fixed-weight indexes are updated periodically to keep pace with changes in the economy. In addition, price indexes constructed from various alternative weighting formulas are being used more frequently in economic analyses.

Some items are adjusted by "direct quality adjustments." Autos are an example. The average transaction price of autos sampled in the CPI for the 1992 model year was \$917.30 higher than for the 1991 model year. BLS analysts determined that \$259.79 of this change represented higher quality from better warranties, the inclusion of passive restraints, and other improvements. Thus, the BLS used a price increase of only \$657.51 (\$917.30 - \$259.79) to calculate the change in the auto component of the CPI.

Other items are adjusted for quality by "price-linking" methods. For example, when a new item replaces an old one in the marketplace, the BLS also must make this substitution in the CPI's market basket. If the characteristics of the original and substitute items differ substantially, then the difference between their prices is assumed to reflect a change in quality and is not counted as a price change. The link is made when the price of the new item, adjusted for the amount attributable to the quality change, replaces the price of the old item in the index. Sometimes a new item is so different from the old one that the prices are not immediately comparable. Here, the quality adjustment is estimated as the difference between the price of the new item and a value imputed from the prices of a collection of items in the broader class, or stratum, of the CPI that includes the new item.

In a few cases, quality adjustment is made by statistically estimating the value of certain attributes that have changed over time. Such statistical estimates have been termed "hedonic quality adjustments." Two of the main areas that use hedonic quality adjustment are housing and computer equipment. Technological advances have significantly increased the processing speed and storage capacity of computers. Suppose a computer purchased today performs twice as many operations as a computer purchased 5 years ago for the same price. Because two 5-year old computers would be needed to perform the same tasks as one of today's machines, it is clear that the true price of computers has fallen substantially.

With the aid of private industry, the BEA has constructed statistical estimates of how the market valuation of various attributes of information-processing equipment has changed with technology over time. Such hedonic quality-adjusted prices for information-processing units fell at an annual rate of 23 percent between 1977 and 1984. In contrast, a price index constructed from a method similar to price linking fell at only a 12-percent annual rate over the same period.

For many items, particularly for services, adjusting prices for changes in quality is very difficult. Medical care services in the CPI, for example, are estimated in part from the prices paid for a set of common medical procedures. The prices have risen significantly over time. But some of the increases reflect advances in medical science that have resulted in better diagnoses, higher cure rates, and lower postprocedure complications. Ideally, the value of these improvements would be measured and prices adjusted accordingly. While such measurement is impossible in some areas, there clearly is room for improvement in others. As part of the President's efforts to upgrade the quality of economic statistics, the BLS

is undertaking research to improve quality adjustment in the service sector.

Because all changes in quality cannot be accounted for accurately, and because no explicit quality adjustments are made for some items, inflation may not be measured accurately in the United States or in other countries. Whether the measure is too high or too low is not known. Many economists believe that the scales tip toward inflation being overstated in the United States, perhaps by as much as a percentage point. Furthermore, because price indexes are used in the construction of some components of real GDP, long-run real GDP growth may be understated. The allocation of real GDP between sectors with and without adequate quality adjustment may be misstated as well. For example, real medical services likely have grown faster than shown in the national accounts because some real gains in services have been mistaken for inflation.

REBASING REAL GDP

Real GDP measures the value, at base-period prices, of all the goods and services produced in the Nation. Because all prices do not change at the same rate, the price of one item relative to another varies over time. Periodically, the BEA updates the base period so that real GDP reflects more recent relative values of goods and services. The base year was moved, from 1982 to 1987, in the benchmark revisions published in December 1991.

Rebasing can change the size, composition, and rate of growth of real GDP. The recent rebasing significantly reduced computers' share of real GDP because their relative prices had been falling so rapidly. Between 1982 and 1987, the deflator for information-processing equipment (which is much broader than simply computers) fell 4.4 percent while the deflator for total GDP rose 19.4 percent. Moving the base from 1982 to 1987 therefore substantially lowered the relative importance of computers in GDP. Because computers are a rapidly growing sector of the economy, reducing their weight in this way reduced the growth rate of real GDP. As the computer example illustrates, rebasing often can lower measured real GDP growth because it reduces the influence of fast-growing sectors with declining relative prices. When measured in 1982 dollars, real GDP growth from 1982 to 1987 averaged 4.1 percent per year; when measured in 1987 dollars, growth over this period averaged 3.8 percent per year.

Measuring real GDP at base-period prices has the virtue of being simple and easy to interpret. For some purposes, however, alternative formulas that do not restrict valuations to a single period may be better. The BEA plans to introduce such alternative measures for GDP and its components. Although somewhat more complex than the traditional formula, these measures of output and related

prices indexes are more flexible and will be useful for certain economic analyses.

SUMMARY

- Inflation is the increase in the average level of prices. Inflation is measured using price indexes, which calculate the change in prices for a market basket of items.
- Price indexes are adjusted so that price changes reflecting changes in quality are not counted in inflation. For many items, it is difficult to adjust completely for quality changes, particularly services. Consequently, inflation may not be measured accurately.
- Real GDP values items at prices in a base year. Because of changes in relative prices, it is necessary to change the base year periodically to reflect more current relative prices. Rebas-ing often lowers the growth rate of real GDP.

MONEY

Money greatly facilitates the efficiency of transactions by allowing producers to sell their goods and services for money instead of searching for someone willing to barter. Sometimes—during the early 1920s in Germany, for example, or recently in Russia—the government issues too much money, and as money loses its value, people resort to inefficient barter. But even in less extreme cases, monetary disturbances can create economic problems. The collapse of the U.S. banking system and the decline in the quantity of money in the early 1930s propelled the economy more deeply into depression. Changes in the rate of growth of money also have played a role in the more moderate fluctuations of recent decades—sometimes stabilizing and sometimes accentuating the business cycle.

By exercising influence over the quantity of money, the Federal Reserve can affect interest rates, prices, the availability of credit, and short-term movements in overall economic activity. To underline the Federal Reserve's responsibilities, the Congress has mandated that the Fed announce target ranges for money growth and report twice a year on the conduct of monetary policy with respect to those targets.

Timely and accurate measures of the quantity of money are important in developing and monitoring monetary policies. Because money supply data are available with only about a 10-day lag, the Federal Reserve is able to observe almost continuously how well money growth targets are being met. There are many ways to define money, however, and it has not always been clear which definition better serves as an intermediate target of monetary policy.

DEFINITIONS OF MONEY

Traditionally, economists considered assets to be money if they served as a medium of exchange, a unit of account, and a store of value. Given the large number of financial assets in today's world, however, the once well-defined boundaries between money and other financial assets have become increasingly fuzzy. Because it is difficult to pinpoint exactly which assets should be considered money, several definitions of money have been devised, each composed of a specific set of assets.

One narrow definition of the money stock is M1, which consists of items that are most commonly used to buy goods and services—specifically currency, travelers' checks, and checkable deposits. A broader definition of money, M2, includes all of the items in M1 plus savings and small time deposits, as well as some more sophisticated financial instruments such as money market deposit accounts, money market mutual funds, overnight repurchase agreements, and overnight Eurodollar accounts. Many of the components of M2 that are not in M1 can be used for transactions, but their primary use is as a store of savings. An even broader measure of money is M3, which includes the components of M2 plus larger, investment-type accounts that generally are held by businesses.

The Federal Reserve Board collects and publishes money statistics on a weekly basis. A number of these series are found in Appendix Tables B-65 and B-66. A primary source of these data is the balance sheet items that large banks and thrifts are required by law to report to the Federal Reserve each week in conjunction with required reserve regulations. These reports cover nearly 9,000 institutions that hold more than 90 percent of the deposit components of the monetary aggregates. Several additional surveys collect data from small banks and information on nondeposit components of the monetary aggregates.

CHANGES IN THE VELOCITY OF MONEY

The velocity of money—the ratio of nominal GDP to the money stock—is a commonly used statistic for summarizing the relationship between money and nominal output. The more stable and predictable the velocity of money, the greater the ability of the Federal Reserve to anticipate the effects of monetary policy on nominal GDP.

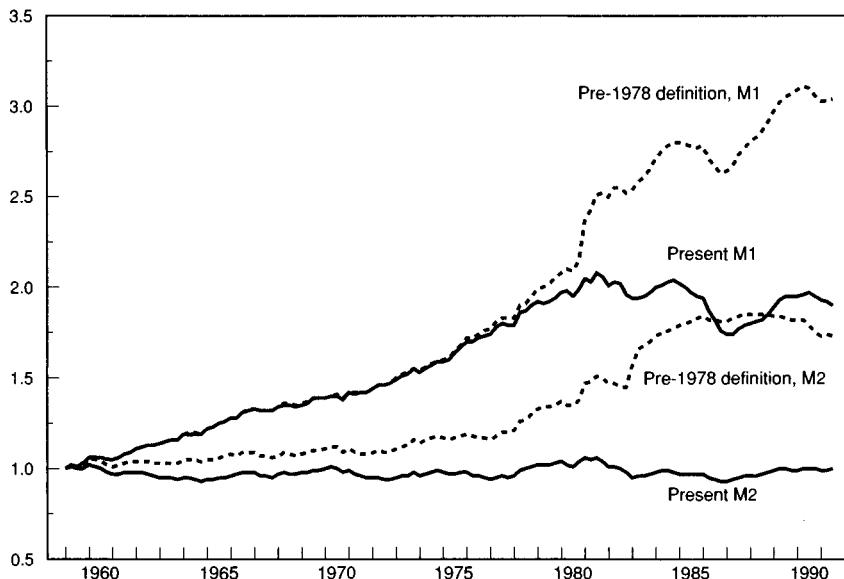
Until the mid-1970s, the velocity of M1 appeared to be on a fairly stable and predictable upward trend, as seen in Chart 7-1. This steady relationship stemmed largely from the use of M1 to facilitate transactions and from a fairly regular association between nominal GDP and the number of transactions occurring in the economy. Because M1 velocity was fairly stable, many economists

focused on M1 when discussing the effects of money on the economy, although some prominent economists advocated concentrating on broader measures of money.

Chart 7-1 Velocities of M1 and M2

As defined currently, the velocity of M2 is more stable than the velocity of M1 and the velocities of previous definitions of M1 and M2.

Index, 1958Q1 = 1.0



Note: Pre-1978 definitions are reconstructions from other Federal Reserve data.

Pre-1978 M2 is a proxy which excludes all large time deposits.

Sources: Department of Commerce and Board of Governors of the Federal Reserve System.

Until the late 1970s, the definition of M1 included only currency and checking accounts, neither of which paid interest. During the 1970s and early 1980s, increases in market interest rates caused households and businesses to move their funds toward interest-bearing assets. New types of interest-bearing deposit accounts began to be offered as savings and loans (S&Ls), banks, and other institutions competed to attract funds. Many of these instruments carried check-writing privileges; in effect, they were interest-bearing checking accounts.

As seen in Chart 7-1 the emergence of new financial instruments that could play the traditional roles of money coincided with a large increase in the volatility of the velocities of M1 and of M2. The Federal Reserve responded by redefining the money aggregates in the late 1970s and early 1980s. Certain interest-bearing checkable deposits and travelers checks were added to M1 because they clearly were used for transactions purposes. Even with these changes, however, M1 velocity remained quite volatile, as consumers and businesses continually reshuffled their funds between assets included in M1 and those not included.

In addition to the assets added to M1, the Fed added certain savings-type deposits, overnight repurchase agreements, overnight Eurodollar accounts, and money market mutual fund accounts to M2 in the late 1970s and early 1980s. The relationship between redefined M2 and nominal GDP has been much more stable than the velocity of M1. Because of that stability and the relative trendlessness of M2 velocity, many economists have switched their primary focus from M1 to M2. Indeed, the Federal Reserve no longer announces M1 growth targets in its biannual reports to the Congress.

SUMMARY

- Accurate measures of money are important for managing monetary policy. But money is difficult to define because of the large number of financial assets that can play the roles of money.
- The more stable and predictable the velocity of money, the better the ability of the Federal Reserve to anticipate the effects of monetary policy on nominal GDP. The velocity of M1 became much more volatile following the financial innovations in the 1970s and 1980s; the relationship between redefined M2 and nominal GDP has been much more stable.

BUSINESS ACCOUNTING

Aggregate economic data, such as GDP and employment, are measures of how the overall economy is performing. However, the aggregate economy is composed of the productive activities of thousands of firms and millions of individuals. Measures of individual firm performances are sometimes used in the construction of aggregate measures of the economy, and they are also of particular interest to investors, suppliers, customers, and employees.

The Financial Accounting Standards Board, an independent rule-making body in the private sector, sets accounting standards for firms. The Securities and Exchange Commission also rules on the acceptability of various accounting procedures. Even so, accounting practices do not always constitute good economic measurements.

MARKET VALUE AND BOOK VALUE

One of the most important pieces of information about a firm is its net worth. Net worth, sometimes referred to as shareholders' equity, is the excess of the assets of the firm over its liabilities. An enterprise is solvent when its net worth is positive. In addition to physical assets, a firm has intangible assets, such as the value created by the firm in coordinating, developing, and deploying its physical assets. Intangible assets are often not included in the firm's balance sheet.

Tangible assets are typically registered on a firm's accounts at "book" value, which is their historical cost less depreciation. Assets can also be valued at market, the current prices that would be received if the assets were sold. The book value of an asset need not correspond closely with its market value.

A liability, likewise, can be valued at market. For example, the market value of a firm's pension liabilities could be measured by the price required to compensate someone for assuming the present and future financial obligations of the firm's pension plan. In practice, however, the balance sheets of firms do not measure the market value of all assets and liabilities. Often, market values cannot be determined because of the absence of active markets in particular assets and liabilities.

An example of the importance of the difference between book and market value is presented in Box 6-3 on measuring international investment. Data in the box show that the difference between book and market value of U.S. direct investment abroad amounts to hundreds of billions of dollars.

The difference between market value and book value is important for the government. It has an interest in the market value of assets and liabilities of private businesses, especially when it insures those liabilities, as it does for banks and savings and loan institutions. Deposit insurance represents taxpayers' commitment to reimburse depositors in the event the institution is closed because the market value of a bank's or S&L's assets (loans, for example) are less than the value of its insured liabilities (deposits).

Regulators of financial institutions are increasingly using tools such as stress tests to capture principles of market valuation in assessing net worth. Stress tests apply adverse scenarios to an economic model of an institution's balance sheet to determine the sensitivity of asset and liability values to changes in interest rates and other relevant economic variables. Regulators now routinely apply stress tests in the banking industry. Recent legislation would require some of the government-sponsored enterprises, such as the Federal National Mortgage Association and the Federal Home Loan Mortgage Corporation, to use stress tests to evaluate the soundness of their balance sheets.

ACCRUAL VERSUS CASH ACCOUNTING

Standard accounting practice registers assets and liabilities as they accrue rather than as cash is received or disbursed. A pension liability, for example, accrues as workers earn additional claims on their pension plan.

Until recently, firms were permitted to register nonpension benefits for retired workers, such as medical benefits, on a cash basis. As employers' commitments to provide these benefits increased, so

did concern that financial reporting did not adequately track the assumed liabilities. The Financial Accounting Standards Board statement, FAS No. 106 of 1990, requires firms to recognize postretirement benefit costs as the liabilities accrue rather than waiting until the benefits are actually paid out. To minimize disruptions to their balance sheets, firms can elect either to recognize these obligations immediately or to phase in recognition over 20 years.

SUMMARY

- Net worth measures the excess of a firm's assets over its liabilities. Book value measures assets at historical costs less depreciation and often excludes intangible assets. Market value is the current price that would be received or paid for an asset or liability.
- Under a recent ruling, firms are required to register their non-pension employee benefits as they accrue, rather than when the benefits are actually paid.

FIXED INVESTMENT

One of the important policy questions facing the Nation is whether Americans are investing enough to boost productivity and increase the standard of living. Business fixed investment represents the purchases of new structures and equipment. Data on investment are found in Appendix Tables B-1, B-2, B-14, and B-15. There are large fluctuations in business fixed investment, as Chart 7-2 shows; but the trend in investment over the past 30 years is not clear. As measured by the NIPAs, the ratio of real gross business fixed investment to real GDP appears to have a small upward trend, whereas the ratio of real net business fixed investment to real net domestic product has trended down since the mid-1960s.

The difference between the two ratios in Chart 7-2 is depreciation: Gross investment refers to total outlays for capital items, while net investment is gross investment less depreciation. Thus, net investment represents the net addition to the Nation's capital stock. (The NIPA measure of depreciation is called the consumption of fixed capital.)

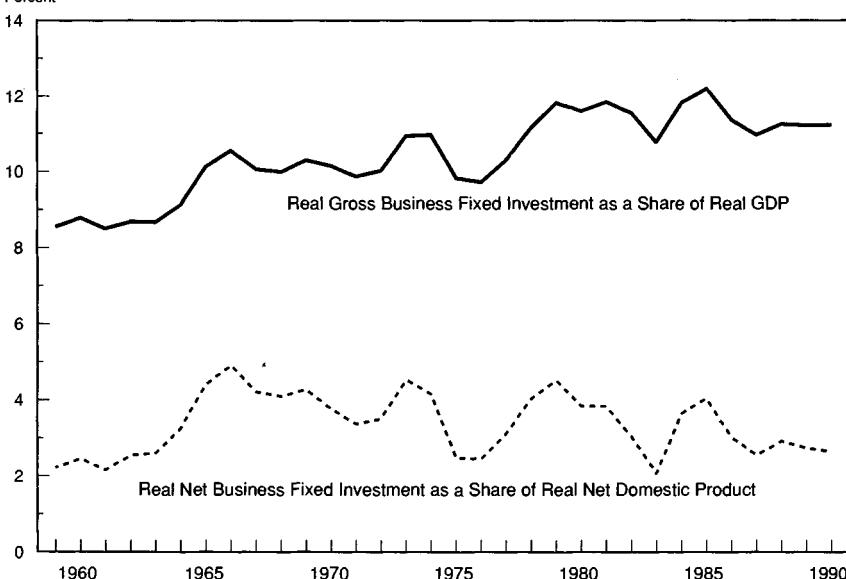
GROSS VERSUS NET INVESTMENT

Both the gross and net figures provide useful measures of investment trends. Real gross investment measures the flow of *new* capital into the capital stock. Real net investment essentially measures the change in the *quantity* of the capital stock. Many economists believe that the price indexes and depreciation allowances used to convert nominal investment to real investment do not completely adjust for changes in the quality of some capital. The prob-

Chart 7-2 Investment Shares of Output

Increased NIPA depreciation accounts for the rising gap between the shares of output accounted for by real gross investment and real net investment.

Percent



Note: Investment and domestic product are measured in 1987 prices.

Source: Department of Commerce.

lem is most notable for high-technology items that are adjusted for quality by price-linking methods. Because technology is continually improving, the real value of newly produced additions to the capital stock may be undervalued compared with the depreciated older capital stock. Thus, net investment may underestimate the value of the technological advances more than gross investment does.

MEASURING DEPRECIATION

The Department of Commerce defines NIPA depreciation as "the decline in value due to wear and tear, obsolescence, accidental damage, and aging." The construction of the NIPAs assume all capital items follow straight-line depreciation. Private capital items are classified into various categories of equipment or structures; items in each category are depreciated according to the estimated retirement experiences of items in that category. Special estimates of depreciation are made when unusual circumstances such as hurricanes or earthquakes damage large quantities of capital. Nominal NIPA depreciation measures the cost of replacing the capital item in the current time period. Constant-dollar NIPA depreciation measures the cost of replacing the item at base-period prices. A number of questions have been raised concerning the concepts and

statistical methods used to construct NIPA depreciation, however, and the BEA currently is reviewing its procedures to improve the estimates of depreciation.

The widening gap between the gross and net investment ratios in Chart 7-2 represents increases in NIPA depreciation: real depreciation rose from 66 percent of real gross business fixed investment in 1979 to 79 percent in 1990. In turn, the larger share of NIPA depreciation reflects a rise in the share of real gross business fixed investment accounted for by equipment; it increased from 64 percent in 1979 to 68 percent in 1990. Equipment has a much shorter service life than structures do, so it depreciates at a much faster rate.

The tax code provides another method for depreciation accounting. The tax law divides capital items into various categories of equipment and structures and specifies what percentage of the historical cost of the item may count as a tax deduction in each year following its purchase. There are two principal differences between NIPA and tax depreciation. First, NIPA depreciation is measured at replacement cost, while tax depreciation is measured at historical costs of acquisition. Second, the service lives and depreciation patterns for the NIPA differ from those for tax depreciation. This difference was larger when the tax laws allowed more-pronounced accelerated depreciation of certain capital items. Because of these differences, tax records are not used to estimate NIPA depreciation.

Depreciation and Changes in the Market Value of Capital

Under NIPA depreciation, service lives attempt to capture "normal" obsolescence, but not obsolescence due to irregular changes in prices or technology. In contrast, the market value of capital changes in response to irregular obsolescence. For example, even if an older, fuel-inefficient airplane were perfectly maintained, a sharp rise in the price of oil could drive down its market value.

There is some disagreement on whether such changes in the value of capital should be considered as depreciation. Some economists would say no; they prefer that depreciation measure only the decline in the physical productivity of capital. Other economists would say yes; they prefer that depreciation measure the change in the contribution of the capital stock to national wealth. Because the market price of a capital item reflects the present value of the flow of services from the item, the best way to measure this latter concept of depreciation would be as a decline in the market price of existing equipment and structures. (An increase in the value of the existing capital stock would be an appreciation.)

Difficulties occur, however, in making a market-based measure of depreciation operational. There is a relatively active market for some used capital, such as trucks and aircraft, but for many types

of capital, there are no active second-hand markets to provide price information. In addition, the value of some capital currently owned by a particular firm might be quite different if it were acquired by another company; the "market" value of such capital is difficult to determine.

SUMMARY

- There is a small upward trend in real gross investment relative to real GNP, while there is a small downward trend in real net investment relative to net national product.
- The difference between the two series is the depreciation in the capital stock as measured by the NIPAs. Both gross and net investment are important for measuring the effect of changes in the capital stock on productivity.

SAVING

Saving is the primary source of funds for investment and therefore is necessary to increase productivity, enhance growth, and improve the Nation's standard of living. Saving is also the vehicle by which households transfer consumption through time by building up funds for retirement, college expenses, hard economic times—"saving for a rainy day"—or other purposes.

Because saving is so important, there has been much concern that U.S. saving rates have fallen over time and in relation to rates in other countries. Saving, however, is difficult to measure. Alternative yardsticks can provide very different estimates of both short-term fluctuations and longer term trends in saving.

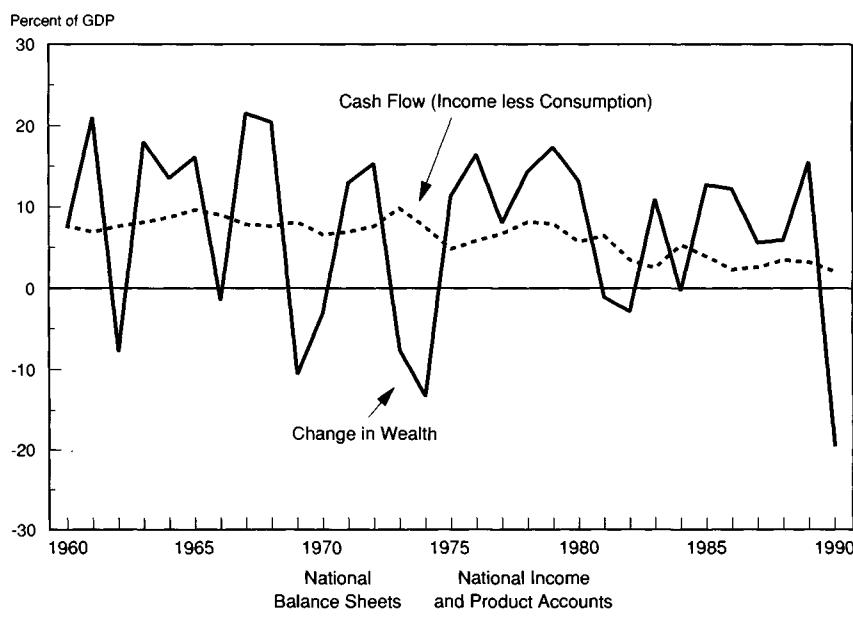
Saving can be defined two ways. First, cash-flow saving measures the excess of income or revenue over expenditures. Specifically, in the NIPAs, personal saving is disposable (after-tax) income less expenditures for consumption and net interest. For businesses saving is retained earnings; that is, net after-tax profit less dividends paid. For government, saving is revenue less expenditures, as explained later. Such saving data are presented in Appendix Tables B-24, B-26, and B-27. Second, saving may be defined as the change in real wealth as reported in the Federal Reserve Board's national balance sheets. These data are presented in Appendix Tables B-109 and B-110. In principle, the two definitions should provide the same answer: The excess of income over outlays should equal the increase in wealth. In practice, however, the two methods produce substantially different measures of saving because they implicitly define income, outlays, and wealth differently.

Chart 7-3 compares the cash-flow based national saving rate from the NIPAs with a measure of the change in wealth, specifically, the change in real household net worth (including ownership of

corporate stock) and in real government financial wealth taken from the Federal Reserve Board's national balance sheets. Because the saving rate from the national balance sheets is calculated using market prices for some assets, it fluctuates far more than the measure based on income and outlays. For example, the national balance sheets assume that a fall in the price of corporate common stocks represents "dissaving." And while a downward trend in the NIPA measure of saving is evident over the past decade, any trend in the national balance sheets saving is masked by its wide swings as asset prices fluctuate.

Chart 7-3 National Saving

Cash flow and change in wealth measures of saving provide very different estimates of saving patterns.



Sources: Department of Commerce and Board of Governors of the Federal Reserve System.

CASH-FLOW MEASURES OF SAVING

The NIPAs measure personal *expenditures* on consumer items. Because these include purchases of consumer durables, they are not necessarily the same as personal current-period consumption. Only part of expenditures on durables represents current-period consumption: The car, refrigerator, or other durable good purchased in January still has value at the end of December. Logically, this value (less depreciation of durables acquired in previous years) might be considered as part of this year's saving, but instead the entire purchase is counted as consumption in the NIPAs. On the income side, the NIPAs do not include capital gains or losses.

Excluding net capital gains leads to an understatement of income and therefore to an understatement of saving; the opposite would be the case in a year with net capital losses.

An alternative measure of personal saving, available from the flow of funds accounts produced by the Federal Reserve, does count consumer durable expenditures (net of depreciation) as saving. It also treats certain government insurance credits and realized capital gains as personal income. These additions make this personal saving measure higher than the NIPA measure.

Because cash-flow saving is measured as the difference between income and consumption, substantial measurement error may occur. An error in measuring consumption or income translates dollar for dollar into an error in saving. Because saving is much smaller than either consumption or income, the proportional effect of the error on saving is much larger than on consumption or income.

HUMAN CAPITAL

A significant omission from all the standard measures of saving is human capital, the productive skills people acquire through education, job training, and on-the-job experience. Like investment in physical plant and equipment, investment in human capital boosts productivity and increases the standard of living. Like other forms of capital, human capital depreciates over time; skills, like machinery, may become obsolete, and skilled people retire. Some studies have shown that investment in human capital is of approximately the same order of magnitude as investment in physical assets.

SUMMARY

- Saving is the source of funds for investment and a vehicle to transfer consumption through time. Different measures of saving can vary by large amounts, and each measure has errors.
- There are two basic ways to measure saving. The cash-flow approach measures saving as income less consumption. The change-in-wealth measure of saving is based on changes in market values and is highly volatile.

FEDERAL GOVERNMENT FINANCE

Economic measures of Federal Government activity encompass all of its spending, taxing, borrowing, and financing policies. Government expenditure and taxation data frequently are used to argue that government is too big or too small, that it is overly intrusive or insufficiently involved in various sectors of the economy, or that it neglects a particular constituency or concentrates too

many resources on it. A variety of statistics measuring government activity are found in Appendix Tables B-74 through B-84.

In fiscal 1991 total Federal outlays were about \$1.32 trillion, Federal revenues were about \$1.05 trillion, and the resulting deficit was \$269 billion. These broad aggregates, however, do not fully measure the extent of the Federal Government's involvement in the economy. Through a variety of special tax rules, credit subsidies, mandates, and quotas, the government affects the economy in ways similar to many tax and spending programs.

CONCEPTS AND MEASURES OF THE BUDGET DEFICIT

Several measures of the Federal budget deficit are shown in Table 7-1.

TABLE 7-1.—*Reconciliation Between Deficits in Fiscal 1990*

Item	Billions of dollars
On-budget-to-consolidated reconciliation	
On-budget deficit.....	277.1
Plus: Off-budget deficit.....	-56.6
Equals: Consolidated deficit	220.5
Consolidated-to-primary reconciliation	
Consolidated deficit.....	220.5
Minus: Net interest.....	184.2
Minus: Deposit insurance.....	56.7
Equals: Primary deficit (net of deposit insurance)	-20.4
Consolidated-to-real reconciliation	
Consolidated deficit.....	220.5
Minus: Decline in value of outstanding debt.....	97.8
Equals: Real deficit	122.7
Consolidated-to-cyclically adjusted reconciliation	
Consolidated deficit.....	220.5
Minus: Deposit insurance.....	56.7
Minus: Other NIPA adjustments ¹	6.3
Equals: NIPA deficit	157.5
Minus: Cyclic adjustment.....	-18.2
Equals: Cyclically adjusted NIPA deficit	175.7

¹ These adjustments include changing the timing of outlays and receipts to NIPA conventions, NIPA geographic exclusion, and other miscellaneous factors.

Sources: Department of Commerce and Office of Management and Budget.

The *on-budget deficit* is the difference during a fiscal year between the revenues and outlays that by law are classified as "on the budget." Currently, the only government operations treated as "off budget" are Social Security and the Postal Service.

The *consolidated deficit* is the sum of the on-budget deficit and the deficit of the off-budget activities, that is, Social Security and the Postal Service. If the off-budget activities run a surplus, as is currently the case, the consolidated deficit is lower than the on-budget deficit by the amount of the surplus. Because any surplus from off-budget programs must be invested in Treasury bonds, the consolidated deficit measures the borrowing that must be met from nongovernment sources.

The *primary deficit*, net of deposit insurance, measures the deficit net of spending on inherited liabilities, such as interest pay-

ments on the government debt and payments to cover losses in previous years of insured depository institutions. Large current deficits do not imply that the Nation is creating large *new* burdens for future generations. Table 7-1 shows that in fiscal 1990 the entire current consolidated deficit was attributable to deposit insurance expenditures and net interest payments, which are most properly viewed as borrowing to finance the continuing costs of previously incurred liabilities.

Inflation reduces the value of outstanding government debt; it acts as a tax on holders of debt. The consolidated deficit adjusted for the reduction in value of government debt due to inflation provides a measure of the *real deficit*. Table 7-1 shows that this adjustment can be large. In fiscal 1990 the inflation adjustment was almost half as large as Federal borrowing from nongovernment sources.

The *NIPA deficit* measures the difference between government expenditures and revenues in a manner consistent with national income accounting. For certain receipts and expenditures, NIPA conventions involve somewhat different classification and timing than the on-budget and consolidated budgets. For example, asset sales and other financial transactions are excluded from the NIPA deficit. For this reason, outlays for deposit insurance are not included in the current year's NIPA deficit.

Business cycle fluctuations cause changes in the deficit. When the economy contracts, the government's deficit increases even if there is no change in tax rates or spending programs. As incomes fall, tax revenues fall and government expenditures for unemployment and welfare benefits increase. Likewise, when the economy expands, income tax receipts rise and unemployment and welfare benefits typically fall. These changes in tax collections and expenditures automatically dampen the impact of economic fluctuations. That is, they act as *automatic stabilizers*.

It is informative to separate changes in the deficit that occur automatically, as a result of cyclical swings in the economy, from those that result from explicit policy changes, such as changes in tax rates. This is the purpose of the *structural or cyclically adjusted deficit*. This measure shows what the NIPA deficit would be, with existing tax rates and existing programs, if the economy had no cyclical fluctuations and maintained a constant unemployment rate of 6 percent. Table 7-1 shows that the unadjusted NIPA deficit was lower than the cyclically adjusted deficit in fiscal 1990. This occurred because the unemployment rate was below 6 percent during fiscal 1990. Because it eliminates the automatic cyclical changes in tax collections and expenditures, changes in the cyclically adjusted deficit are a better measure of discretionary fiscal policy than are changes in the unadjusted NIPA deficit.

ACCOUNTING FOR GOVERNMENT ASSETS AND LIABILITIES

Like private businesses, governments have assets and liabilities. These can be tangible or intangible, and physical or financial. A government purchase of assets at market value without an accompanying increase in taxes increases measures of the deficit discussed in Table 7-1, even though it increases government assets and government liabilities by the same amount. To measure changes in government assets and liabilities in the Federal budget, a separate capital account would have to be established. The Federal Government would, of course, continue to maintain a current account, which measures revenues arising from and expenses for current operations. With separate current and capital accounts, depreciation on government capital would appear as an expenditure in the current account.

Because the Federal budget treats all borrowing the same, it imposes a bias in favor of current-account spending relative to spending for long-term infrastructure and productivity-enhancing programs. Furthermore, financing that lowers front-end costs of an acquisition (such as leasing) might be preferred to an economically superior decision that has higher front-end costs (such as buying). The budget agreement of 1990 sought to eliminate some of these biases toward leasing.

Moving to a system of capital accounting would require resolving some conceptual issues surrounding the definition of capital. First, valuing intangible capital, such as investment in human capital or research and development, is problematic. Second, government capital accounting, like private sector capital accounting, would require estimating the depreciation of capital, but how is an aircraft carrier to be depreciated? Despite these difficulties, however, many countries and State governments have incorporated aspects of capital accounting.

Separating the Federal budget into a current and capital account could dramatically alter the way the public views fiscal policy, as well as the way the public views particular components of government spending. The spending devoted to building the interstate highway system during the Eisenhower Administration, or the spending on infrastructure in the Intermodal Surface Transportation Efficiency Act signed by the President in 1991, would be considered investment and thus an addition to government assets. The value of these assets would decline over time due to depreciation unless offsetting maintenance or improvement expenditures were made in the current account.

The United States will adopt the United Nation's system of national accounts (SNAs) in the mid-1990s. The SNA framework will

provide more information on government assets and liabilities. (Box 7-3).

ACCOUNTING FOR INTERGENERATIONAL REDISTRIBUTION OF WEALTH

The government's assets and liabilities are owned and owed collectively by all of the Nation's citizens. By reducing government assets or increasing government liabilities, the current generation can increase its consumption at the expense of future generations. Many factors affecting intergenerational burdens are not captured in cash-flow measures of the deficit. For example, a pay-as-you-go Social Security system would have no impact on the deficit in any year, but it would redistribute wealth from generations with few people in the labor force to generations with a large number of Social Security recipients. Government expenditure on scientific research that is paid for by current taxes does not affect the deficit but redistributes wealth to future generations who will reap the benefits of the research.

As discussed in the fiscal 1993 budget, generational accounting is a new method for comparing the fiscal treatment of different generations. It is still being developed, and a number of the assumptions used are controversial. Generational accounts measure, from a particular base year, the present value of the future taxes that the average person of each age is estimated to pay to the government minus the present value of the future transfers that the average person of that age is expected to receive. The difference is the net payment to government.

ALTERNATIVES TO DIRECT EXPENDITURES AND TAXES

Government programs frequently are structured in ways that produce a similar allocation of costs and benefits to society, but have different effects on *measured* government spending and taxes. Direct spending, for example, can be replaced with a tax expenditure, provision of credit guarantees, or a mandate for private action. Direct taxation can be replaced with a quota or restriction. These alternatives are not scored in the budget even though the government influences the economy through their use.

Tax Rules as an Alternative to Expenditures

Many alternatives to direct Federal spending can be found in the tax code. An example is the deduction for State and local income and property taxes. This deduction has the same economic effect as a grant to the individuals paying those taxes. If the deduction were converted to an actual grant, both reported taxes and reported Federal spending would be higher.

Such special tax rules are sometimes known as tax expenditures. The Congressional Budget Act of 1974 defines tax expenditures as “revenue losses attributable to provisions of the ... tax laws which allow a special exclusion, exemption, or deduction from gross income or which provide a special credit, a preferential rate of tax, or a deferral of liability.” This concept, however, is controversial because of disagreement over how to define a neutral, or “baseline,” tax system—that is, one that is free of special exclusions, exemptions, or deductions.

Direct and Guaranteed Loans

The government often makes loans to finance agriculture, housing, education, medical facilities, purchases of arms by foreign governments, rural development, railroads, and other activities. These loans can be financed with either taxes or Federal borrowing. Sometimes, the Federal Government guarantees loans issued by others. Government loans and guarantees affect the availability of credit, most notably to homebuyers, students, and small business owners.

Before the Omnibus Budget Reconciliation Act of 1990, the budget treated the two kinds of loans very differently. Direct loans were treated as an expenditure at the time the loan was issued and as a negative expenditure when the loan was repaid. A loan guarantee was treated as an expenditure only when a default occurred.

Because a direct loan is only costly to the government when a default occurs, the expected cost of a direct loan is the same as that of a guarantee of a loan made to the same borrower at the same terms. As a result of the 1990 budget act, the budget accounts for direct loans and guaranteed loans in the same manner.

The President's fiscal 1993 budget proposes that these credit reform principles be extended to deposit insurance and pension guarantees. Budget outlays for banks and thrifts would be calculated in terms of a measure of accrued costs instead of cash disbursements starting in fiscal 1992. Accrued costs can be measured from financial information provided quarterly to regulators by each institution. An aggregate measure of accrued costs would constitute an estimate of what it would cost the insurance fund to recognize all current insolvencies.

Mandates

As a substitute for direct spending, governments can require individuals or businesses to perform certain actions. The Federal Government even imposes mandates on State and local governments. Requiring owners of public buildings to install access facilities for handicapped persons, for example, is equivalent to the government installing those facilities with revenues from a tax on

building owners. If the latter program were counted in the budget, it would increase both spending and revenue figures.

Quotas

The Federal Government may also limit certain economic activities through direct prohibition or quotas. This alternative is an important issue in international trade, where both quotas and taxes (that is, tariffs) commonly are used to restrict imports. A tariff causes the quantity of imports to fall by increasing their price. A quota sets specific limits on the quantity of imports. Either a tariff or a quota on a particular good restricts markets and shifts income away from consumers of the good toward domestic producers of the good. Under a tariff, the government collects revenues. Under a quota, the revenue goes instead to the fortunate businesses who are granted the right to import the limited quantity.

SUMMARY

- Different measures of the budget deficit are used to gauge the stimulus to the economy from current policies and the government's borrowing requirements. A new measure is being developed to assess the intergenerational burden of government programs.
- Large current deficits do not in themselves mean that the Nation is currently generating new large burdens on future generations. Today, virtually all of the consolidated deficit is accounted for by deposit insurance and net interest outlays, which represent borrowing to finance previously incurred liabilities.
- Cash-flow measures of the deficit do not reflect changes in government assets and liabilities. Issuing debt to finance government investment projects represents an increase in both assets and liabilities, although under current budgetary practices it is scored as an increase in the deficit.
- The size and effects of government are reflected through a variety of policies such as mandates, quotas, and tax expenditures, as well as through the more obvious channels of spending and taxation.

INTERNATIONAL STATISTICS

As the United States becomes more integrated into the world economy through trade and financial flows, international forces exert a greater influence on the Nation's economic performance and affect the transmission of domestic economic policies to the national economy. International statistics help us better understand these influences. Data that are comparable across countries can lead to a better understanding of the interactions among nations'

economies and therefore can improve policy coordination and facilitate international negotiations. It is, moreover, natural to want to compare U.S. economic performance with other countries. Data on transactions between the United States and the rest of the world, exchange rates, and a number of measures of economic activity in other major industrial nations can be found in Appendix Tables B-99 through B-108.

WHERE DO INTERNATIONAL DATA COME FROM?

International statistics as they relate to the domestic economy come from many of the U.S. statistical agencies discussed earlier in this chapter. For internationally comparable data, the international institutions are the most important source. The Organization for Economic Cooperation and Development prepares extensive internationally comparable data for the industrial market economies, including measures of economic activity, labor market structures, consumption and saving, and financial flows. The International Monetary Fund compiles data from member countries on a variety of macroeconomic measures, including monetary and fiscal data, price indexes, exchange rates, and balance of payments data. The World Bank publishes development indicators, such as life expectancy and literacy, and measures of the structure of production, exports and outstanding debt, among other data. The United Nations and the Secretariat of the General Agreement on Tariffs and Trade prepare disaggregated trade data and compile information on trade barriers. A host of other organizations keep internationally comparable data on specific topics.

DIFFICULTIES IN INTERNATIONAL COMPARISONS

Each country's data system focuses on and is influenced by the characteristics of its domestic economy. Because these characteristics vary from country to country, the statistical methodology, sector detail, and degree of economic aggregation also differ among countries. Thus, constructing comparable data requires detailed knowledge of the individual national data sources. Of course, comparable data are only as good as the underlying national data. Quality and availability of data remain a problem in some countries (Box 7-6). In the developing countries, the funding for statistical systems is particularly tight as governments balance the value of statistics for policymaking against social needs.

International comparisons often require converting data from valuation in national currencies to a common unit of account. Standards of living, for example, are commonly compared by converting per capita GDP into dollars. But how should foreign currencies be converted into dollars? To compare income or living standards, the exchange-rate conversion should take into account

the goods and services that a currency actually can buy within a country. When calculated using these “purchasing power parity” exchange rates, U.S. GDP per person in 1990 ranked first in the world, about 8 percent above the next highest country, Canada; 25 percent above Japan; and 35 percent above Germany.

Box 7-6.—Measuring Economies in Transition

Unique data problems occurred in centrally planned economies where the planning agency that set targets for output was also the agency that collected statistics. When reporting data, factory managers had an obvious incentive to tell their overseer in the planning agency that they had fulfilled their assigned tasks. The resulting statistics were often poor indicators of what was actually happening in the economy.

Those countries moving toward a market economy and private ownership have generally eliminated centralized pricing and production quotas, but the statistical framework for measuring market-based transactions is not yet in place. Some privately owned factories in Central and Eastern Europe, for example, are not reporting data to any statistical authority. As the private sector has grown, a larger fraction of output has gone unrecorded. This accounts, in part, for the dramatic decline in measured GDP. Without adequate data, changes in production and income in these economies, and ultimately the success of their economic reform programs, are very difficult to assess. These issues are manifest in Eastern and Central Europe, and in the new nations of the former Soviet Union.

A common mistake in comparing living standards across countries is the use of market exchange rates to convert GDP from national currencies into dollar terms. Market exchange rates affect what people can buy *from foreign countries*, and therefore are an appropriate measure of the purchasing power of income only if people spend *all* of their income on foreign goods or services. Americans, for example, spent only about 14 percent of their income on imports between 1988 and 1990. To see how misleading market exchange rates can be, consider an example. In 1985 German per capita income calculated using market exchange rates was 63 percent below the United States. Real income per capita grew about 5 percent more in Germany than in the United States over the next 5 years. Yet, when compared at the market exchange rate, income per person in Germany had vaulted 9 percent ahead of the United States by 1990. This anomaly is explained by the sharp real depreciation of the dollar against the German mark; as noted above, using the prices of products actually purchased in each country, in

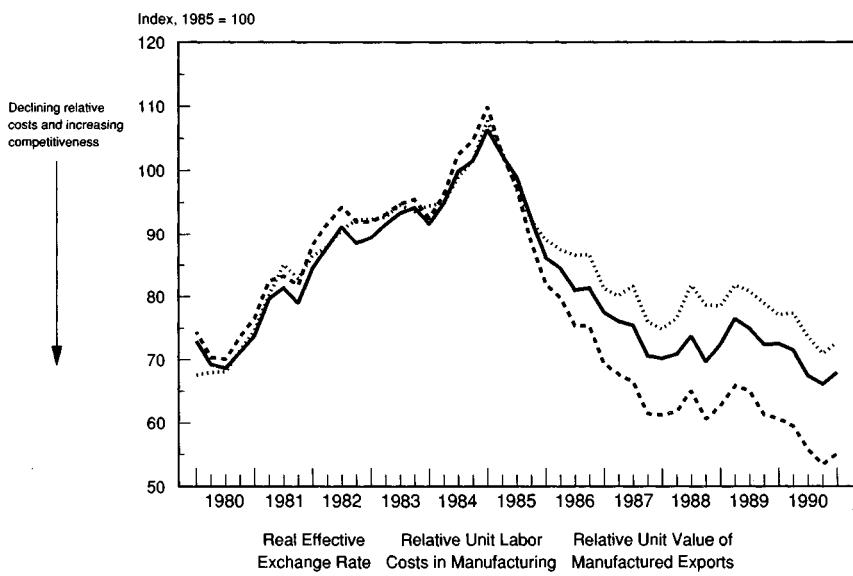
1990 real GDP per capita was 34 percent higher in the United States than in Germany.

INTERNATIONAL COMPETITIVENESS

Global integration has heightened interest in U.S. international competitiveness, another difficult concept to define and measure. Chart 7-4 shows movements in three measures of international competitiveness. Relative unit labor costs measure changes in the relative *cost* competitiveness of goods produced with U.S. labor. Relative average unit value of manufactured exports indicates changes in the relative *price* competitiveness of U.S. exports. The real exchange rate is the nominal exchange rate adjusted for changes in the relative consumer price indexes at home and abroad and therefore broadly indicates changes in the real purchasing power of money in terms of foreign goods and services.

Chart 7-4 Measures of U.S. Competitiveness

All measures of U.S. competitiveness have improved, but the competitiveness of U.S. labor has improved the most.



Source: International Monetary Fund.

All three series show the same trend because the nominal exchange rate is a common factor in all three measures. Nonetheless, these indexes do differ significantly. From 1985 to 1990, U.S. international competitiveness based on relative unit labor costs improved 60 percent more than the measure based on relative unit value of exports of manufactured goods. The difference occurs because unit labor costs measure only one input into the production

process for exports, because the unit value of manufactured exports can move differently from labor costs due to changes in exporters' price-cost margins, and because real exchange rates are affected by differences across countries in the composition of consumer market baskets that include nontraded goods and services.

DISCREPANCIES IN INTERNATIONAL ACCOUNTS

Because international data systems vary and statistical systems sometimes are limited, international flows of goods, services, and capital may be mismeasured, and worldwide aggregates may deviate from accounting identities. In theory, for example, the sum of all of the world's current account balances should equal zero—one country's exports of goods and services and investment income are another country's imports of goods and services and investment payments. Likewise, the global capital account should sum to zero—one country's capital outflows are another country's investment from abroad. After carefully accounting for flows of goods, services, and investment income, the global current account has been calculated at close to zero. Several statistical agencies have tried to account for all international flows of capital, but without complete success; the calculated global capital account in 1989 was about \$80 billion. That implies that all the countries of the world combined were a net importer of capital—an obvious impossibility.

The U.S. international accounts show a discrepancy between current account and capital account transactions of \$18 billion in 1989 and \$64 billion—more than 1 percent of GDP—in 1990. The discrepancy, which is both large and volatile, arises from imperfect recording of many items in both the capital and current accounts. An important source of the discrepancy is the underreporting of investment income that is based on estimates of U.S. portfolio investment abroad. The last benchmark of these data occurred during World War II; it has been proposed that a new benchmark be made. In addition, financial innovation and the globalization of financial markets have made capital flows more difficult to track accurately. Direct transactions between U.S. and foreign residents bypass the recording system altogether. Moreover, increased foreign holdings of U.S. currency abroad is omitted entirely from the accounts and was an important source of the U.S. statistical discrepancy in 1990.

SUMMARY

- Internationally comparable data lead to a better understanding of the interactions among nations' economies. Yet, accurate comparisons are often difficult because each country's data system focuses on and is influenced by characteristics of the domestic economy.

- Exchange rates are often required to compare data recorded in different currencies. The choice of exchange rate has an important effect on the comparison and must be made with care.
- The difficulty of generating internationally comparable data is illustrated by the discrepancy between recorded current and capital accounts, both for the United States and for the world.

CONCLUSION

Economic data are essential tools for describing the state of the economy, investigating how the economic well-being of the Nation has changed over time, and comparing the economic performance of the United States with that of other countries. Economic data are valuable inputs to the decisionmaking processes of individuals, businesses, and public policymakers.

Users of economic data should be aware of a number of factors that can complicate their analyses. The available economic data may not correspond well to the concept the analyst wants to measure. Changes in the structure of the economy can alter the relationships among various economic statistics and may render certain measures obsolete. It takes time to become familiar with new definitions, refined methodologies, and improved reporting conventions. Some economic statistics—particularly early estimates based on incomplete data—contain measurement error and must be used with caution.

The economy is made up of complex interactions among individuals, businesses, and government, and these relationships change rapidly. By continually developing new measurement techniques and improving the accuracy and collection of statistics, the Nation's statistical system can reflect these changes and provide a more complete framework for understanding the economy.