

GDP: One of the Great Inventions of the 20th Century

As the 20th century drew to a close, the U.S. Department of Commerce embarked on a review of its achievements. At the conclusion of this review, the Department named the development of the national income and product accounts as "its achievement of the century." Below is a brief overview of the national accounts that describes their purpose, their development, their impact, and their future; the overview also includes short notes of appreciation on the importance of GDP and the national accounts from prominent economists and officials responsible for U.S. fiscal and monetary policy. The overview is followed by remarks that were made at the press conference on December 7, 1999, that announced the Department's recognition of the national accounts: By the Secretary of Commerce, William M. Daley; the Chair of the Federal Reserve Board, Alan Greenspan; the Chair of the President's Council of Economic Advisers, Martin N. Baily; and Commerce's Under Secretary for Economic Affairs, Robert J. Shapiro.

The recognition of the national accounts is a testimony not only to Nobel laureate Simon Kuznets and the other economists who participated in their early development, but also to the staff of BEA and its predecessor organizations, who—working with academics, business persons, policy officials, and others—have continually updated and improved the accounts over the years to make them as accurate, useful, and relevant today as they have been since their creation over 60 years ago.

J. Steven Landefeld

Director, Bureau of Economic Analysis

While the GDP and the rest of the national income accounts may seem to be arcane concepts, they are truly among the great inventions of the twentieth century.

Paul A. Samuelson and William D. Nordhaus

The Gross Domestic Product and the National Income and Product Accounts

THE NATIONAL income and product accounts (NIPA's) are the comprehensive set of accounts that measure the total value of final goods and services (gross domestic product, or GDP) produced by the U.S. economy and the total of incomes earned in producing that output (Gross Domestic Income, or GDI). GDP measures final purchases by households, business, and government by summing consumption, investment, government spending, and net exports. GDI measures total incomes earned by households by summing wages and salaries, rents, profits, interest, and other income. The accounts also provide information on the prices at which the output is sold and measures of real, inflation-adjusted, measures of output and income.

This integrated set of accounts and the detailed sets of international, regional, and industry ac-

counts that support the national accounts allow for comprehensive and integrated analyses of the impact of alternative policy actions, or of external events, on the entire economy as well as on detailed components of final demand, incomes, industries, and regions of the country.

History of the NIPA's.—Prior to the development of the NIPA's, policymakers had to guide the economy using limited and fragmentary information about the state of the economy. The Great Depression underlined the problems of incomplete data and led to the development of the national accounts:

One reads with dismay of Presidents Hoover and then Roosevelt designing policies to combat the Great Depression of the 1930's on the basis of such sketchy data as stock price indices, freight car loadings, and incomplete indices of industrial production. The fact was that comprehensive measures of national income and output did not exist at the time. The Depression, and with it the growing role of government in the economy, emphasized the need for such measures and led to the development of a comprehensive set of national income accounts.

Richard T. Froyen

In response to this need in the 1930's, the Department of Commerce commissioned Nobel laureate Simon Kuznets of the National Bureau of Economic Research to develop a set of national economic accounts.¹ Professor Kuznets headed a small group within the Bureau of Foreign and Domestic Commerce's Division of Economic Research. Professor Kuznets coordinated the work of researchers at the National Bureau of Economic Research in New York and his staff at Commerce. The original set of accounts was presented in a report to Congress in 1937 and in a research report, *National Income, 1929-35*.

Early in 1942, annual estimates of gross national product were introduced to complement the estimates of national income and to facilitate war time planning. Wartime planning needs also helped to stimulate the development of input-output accounts. Nobel laureate Wassily Leontief developed the U.S. input-output accounts that subsequently became an integral part of the NIPA's. In commenting on the usefulness of the national accounts, Wesley C. Mitchell, Director, National Bureau of Economic Research, said: "Only those who had a personal share in the economic mobilization for World War I could realize in how many ways and how much estimates of national income covering 20 years and classified in several ways facilitated the World War II effort."

Over time, in response to policy needs and changes in the economy, the accounts have been expanded to provide quarterly estimates of GDP and monthly estimates of personal income and outlays, regional accounts, wealth accounts, industry accounts, and expanded international accounts. In the past decade, the accounts have been updated by introducing measures of real output and prices that reflect current expenditure patterns; quality-adjusted prices for high-tech goods; and most recently, investment in computer software and a new measure of banking output that recognizes ATMs, electronic funds transfers, and the wide range of other services that banks provide.

A time line of the major innovations introduced in the accounts in the last 50 years would include the following:

- In the 1930's, in response to the information gap revealed by the Great Depression, Simon Kuznets developed a set of national income accounts.
- In the 1940's, World War II planning needs were the impetus for the development of product or expenditure estimates (gross national product); by the mid-1940's, the accounts had evolved into a consolidated set of income and product accounts, providing an integrated birds-eye view of the economy.
- In the late 1950's and early 1960's, interest in stimulating economic growth and in the sources of growth led to the development of official input-output tables, capital stock estimates, and more detailed and timely State and local personal income estimates.
- In the late 1960's and 1970's, accelerating inflation prompted the development of improved measures of prices and inflation-adjusted output.
- In the 1980's, the internationalization of trade in services led to an expansion of the estimates of international trade in services in the NIPA's.
- In the 1980's, BEA did pioneering work with IBM in the development of quality-adjusted price and output measures for computers.
- In the 1990's, BEA introduced more accurate measures of prices and inflation-adjusted output, developed estimates of investments in computer software, and incorporated updated measures of high tech products and banking output.

The contribution of the NIPA's to stability and economic growth.—The importance of the national accounts is well summarized by Nobel laureate Paul Samuelson and his coauthor William Nordhaus in the 15th edition of their textbook, *Economics*:

Much like a satellite in space can survey the weather across an entire continent so can the GDP give an overall picture of the state of the economy. It enables the President, Congress, and the Federal Reserve to judge whether the economy is contracting or expanding, whether the economy needs a boost or should be reined in a bit, and whether a severe recession or inflation threatens.

Without measures of economic aggregates like GDP, policymakers would be adrift in a sea of unorganized data. The GDP and related data are like beacons that help policymakers steer the economy toward the key economic objectives.

1. Although Simon Kuznets is often best remembered for his creation of the U.S. national accounts, his Nobel Prize was awarded for his "empirically founded interpretation of economic growth which has led to new and deepened insight into the economic and social structure and process of development." Professor Kuznets shares credit in developing economic accounts with Sir Richard Stone of the United Kingdom, who subsequently won the Nobel Prize for "having made fundamental contributions to the development of systems of national accounts and hence greatly improved the basis for empirical economic analysis."

The national accounts have become the mainstay of modern macroeconomic analysis, allowing policymakers, economists, and the business community to analyze the impact of different tax and spending plans, the impact of oil and other price shocks, and the impact of monetary policy on the economy as a whole and on specific components of final demand, incomes, industries, and regions.

The national accounts, in combination with better informed policies and institutions, have contributed to a reduction in the severity of business cycles and a post-war era of strong economic growth. Prior to World War II, the business cycle was much more severe and more frequent. There were 6 severe depressions between 1854 and 1945 with an average duration of nearly 3 years. Including recessions as well as depressions, the average downturn between 1854 and 1945 was 21 months, with a contraction occurring on average once every 4 years. During the postwar era the length of the average downturn has been halved to 11 months, with a contraction occurring on average once every 5 years.


The post-World War II era stands out as a period of unprecedented growth for the United States. Real GDP per capita and real wealth has more than doubled since 1948. This period of economic prosperity has not only dramatically improved standards of living but has contributed to large improvements in social conditions, cutting poverty in half, raising life expectancy, and adding to leisure time.

The bank runs, financial panics, and depressions that were recurring problems before World War II became a thing of the past. The business cycle was not eliminated, but its severity was curtailed. This post-war success was based on a more stable economic environment that was due in significant part to the timely, comprehensive and accurate data on the economy provided by the national accounts.

BEA and the GDP of the next century.—In the next century, the needs of the information age will only get larger, and if the national accounts and the rest of the U.S. statistical system is to meet that challenge, several things must happen. First, the Bureau of Economic Analysis, the Bureau of the Census, and the rest of the U.S. statistical system must take a strong leadership role

in the harmonization of economic and financial standards in the United States and abroad. The U.S. statistical agencies will also need to continue their work with business and government to increase the use of electronic data collections and administrative records. This will require not only harmonization of financial and accounting standards, but also the adoption of common product and industry codes, the sharing of data between statistical agencies, strong assurances of confidentiality, improvements in administrative records, and an information technology system in the U.S. statistical agencies that is equipped to handle the information needs of the 21st century.

If all this comes to pass, one can imagine a Bureau of Economic Analysis in the future that will obtain its national accounts data from coordinated electronic data collection systems. These systems will use existing electronic data from business accounts, administrative records, and financial clearance systems. The trend toward harmonization of business and economic accounting standards will have reached the point where the data can be used interchangeably. Standardized business, financial, and administrative codes will become so commonplace, and electronic confidentiality protections so secure, that economists and statisticians at BEA, the Census Bureau, and elsewhere in the U.S. statistical system will be able to simply “sample” data plucked from the existing stream of business, financial, and administrative transactions.

Not only will respondent burden be substantially reduced, but the timeliness, accuracy, and quality of the national accounts will also be dramatically improved. Data will be available on a continuous flow basis, and new firms and firms going out of business will be instantly identified. Given the universal use of common scanner, billing, and Internet order codes, the level of detail available from the accounts will exceed anything imagined today. Finally, the internationalization of markets and the need to coordinate government policy will mean that this same type of data will be available globally, as well as nationally. Such a system will produce a quantum leap in the quality and efficiency of the information infrastructure available for marketing, for business, household, and government transactions, for planning, and for decision making. 

Notable Quotes

Information is fundamental to understanding all human endeavor. The national income accounts, and the data they use and produce, are our core economic information. While they can—and with adequate human, financial, and organizational resources, will—be continually improved; without them we would be in economic dark ages.

Michael J. Boskin

T.M. Friedman Professor of Economics, Stanford University
Senior Fellow, Hoover Institution
Former Chair, Council of Economic Advisors

The ability to measure our economy accurately is absolutely critical in the formulation of the federal budget. Indeed, it would be difficult for government to function today without the excellent information provided by the Commerce Department's GDP series.

U.S. Senator Pete V. Domenici
Chair, Committee on the Budget

[The national income and product accounts are] among the major contributions of this century to economic knowledge.

Robert Eisner

Former President, American Economic Association

BEA has the largest macroeconomic job in the entire statistical system. BEA is responsible for measuring the nation's income and product accounts. . . Using the national income accounts framework developed by Simon Kuznets a half century ago, BEA has become the keeper of the nation's economic accounts.

Janet L. Norwood

Senior Fellow, The Urban Institute
Former Commissioner, Bureau of Labor Statistics

In an era when it is fashionable to criticize government or minimize its contributions, the development of the GDP measure by the Department of Commerce is a powerful reminder of the important things that government can and does do to make the private economy stronger and our individual lives better.

Robert E. Rubin

Director, Citigroup, Inc.
Former Secretary, U.S. Department of the Treasury

The GDP accounts provide Congress and the rest of government with vital signs on our economy's health. We are making better economic

policy today because the GDP accounts give us a better understanding of what policies work. We should devote more resources for modernizing the GDP accounts to keep our statistical infrastructure in step with our rapidly evolving economy.

U.S. Senator Paul Sarbanes

Ranking Member, Committee on Banking, Housing
and Urban Affairs

GDP! The right concept of economy-wide output, accurately measured. The U.S. and the world rely on it to tell where we are in the business cycle and to estimate long-run growth. It is the centerpiece of an elaborate and indispensable system of social accounting, the national income and product accounts. This is surely the signal innovative achievement of the Commerce Department in the 20th century. I was fortunate to become an economist in the 1930's when Kuznets, Nathan, Gilbert, and Jaszi were creating this most important set of economic time series. In economic theory, macroeconomics was just beginning at the same time. Complementary, these two innovations deserve much credit for the improved performance of the economy in the second half of the century.

James Tobin

Nobel laureate

Yale University Professor Emeritus of Economics

The quality of business decisions depends on information—more information means less uncertainty and better decisions. The U.S. national income accounts provide business leaders with critical information about the trends shaping their market opportunities and challenges. These accounts are a critical component of the institutional infrastructure on which the health of our market economy depends.

Laura D'Andrea Tyson

Dean, School of Business, University of California at Berkeley
Former Chair, Council of Economic Advisors

For decades, the Department of Commerce, in maintaining the statistics, has also nurtured and protected a group of statisticians/economists that have made an enormous contribution to independent, authoritative, and timely analysis. It is of great benefit to the United States and unmatched in the world.

Paul A. Volcker

North American Chairman of the Trilateral Commission
Former Chair, Federal Reserve Board

Press Conference Announcing the Commerce Department's Achievement of the Century

December 7, 1999
Washington, DC

Remarks by William M. Daley Secretary, U.S. Department of Commerce

THIS IS a very proud day for the men and women of the Commerce Department. We will be honoring some of their outstanding work this afternoon at our annual awards ceremony.

And since it is the last one of the century, I wanted us to look back and select our greatest achievement. Let me tell you, it wasn't easy. We are a very diverse Department with a long history. Teddy Roosevelt created us early in the century, but some of our agencies have been around since the earliest days of the Republic, including the Census Bureau and the Patent Office.

We are the smallest of the Cabinet agencies, but we have accomplished the most—in my unbiased opinion.

We issued over 5 million patents in the last 100 years, compared with about 600,000 in the late 18th and 19th centuries combined. We will present number 6 million on Friday. Census takers have knocked on a billion and a half doors. Our weather forecasters went from standing on

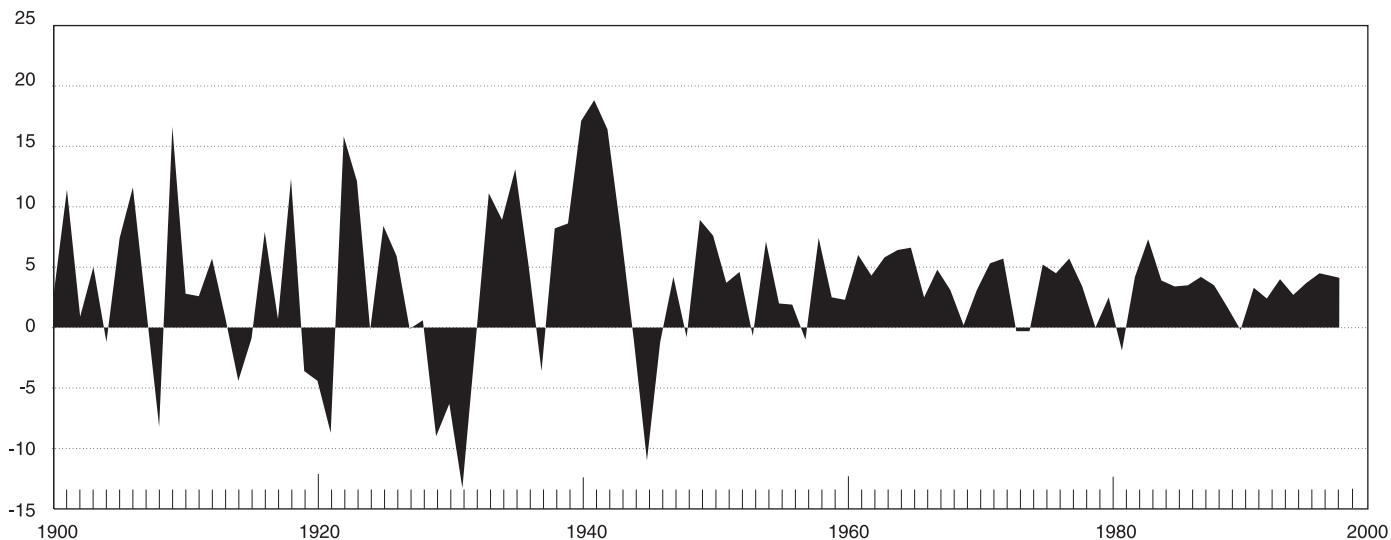
the beach to predict the coming of a hurricane, to running the largest fleet of civilian satellites in the world.

Our international trade people helped America's exports grow to nearly a trillion dollars from a little over a billion dollars at the turn of the century. And they helped us win the Cold War, also, by controlling high-tech exports with military applications. We helped create 4 million jobs in distressed communities. We helped half a million minority businesses to grow. We built the first atomic clock. And we had a hand in creating the 911 emergency phone number.

But as we searched for our greatest achievement, something the bright minds at Commerce created from scratch and that had the greatest impact on America, it was the invention of the national economic accounts—what we now call the gross domestic product, or GDP.

Pioneered by our own Dr. Simon Kuznets in the early 1930's, he later won a Nobel Prize for his work. Ever since, the GDP accounts have been used by government and business officials to guide their economic policymaking.

Chart 1 – A More Stable Economy: Annual GDP Growth in the 20th Century



Obviously, I don't have to convince our guests—Chairman Greenspan and Chairman Baily—or any economist or business leader that this is one of the greatest inventions of the 20th century. Some of them have sent us letters, including Paul Volcker, Laura Tyson, and Bob Rubin.

Without these key statistics, they could not do their jobs as well as they do. Without the big picture the GDP gives us, they would not have the information they need to figure out what's going on in our economy and take appropriate action.

In fact, it was the great need for information that led to the creation of the GDP accounts. We were in the middle of the Great Depression. Franklin Roosevelt and his advisers were perplexed at what to do, largely because of a lack of information about the overall economy. They knew that rail shipments were way down, that steel production was plunging, that millions of people were out of work. But they didn't have the big picture.

Think of it this way. A doctor can only make a diagnosis and prescribe a treatment after first sitting down and piecing together all the test results that have been taken. And economic policy makers are very much like doctors. So what the GDP accounts have done is to give us the tools to make those critical decisions.

If I can have the first chart, we can see the results: It shows the ups and downs of the U.S. economy during the 20th century. Note that since the end of World War II, when the GDP accounts were more fully developed and in wider use, the boom and bust swings are much less severe. You don't see as much [shaded area].

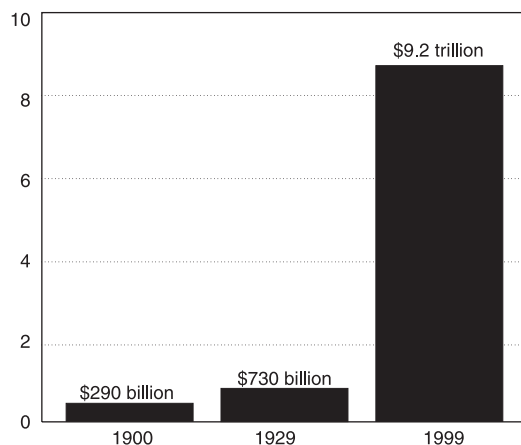
The biggest drop in GDP—a 13-percent reduction—came in 1932. In contrast, the biggest drop in the last 50 years came in the 1981–82 recession, when GDP fell just 1.9 percent. In short, the business cycle, while still with us, has lost the harshness of the past. Gone are the bank runs, the financial panics, the deep and drawn out recessions, and the long lines of the unemployed.

Obviously, the GDP accounts are not solely responsible for putting America's economy on a steadier track—as much as I'd like to make that claim. But no question about it: They have had a very positive effect on America's economic well-being, by providing a steady stream of very useful economic data.

And we're always trying to improve our product. Just a few weeks ago, we started treating computer software as an investment instead of an expense. I know Chairman Greenspan is particularly happy about this. And we revised the measure of banking services to incorporate ATM and other electronic transactions. Look at the second chart and you see how our economy has grown. In 1900, GDP was just under \$300 billion. Today, as we enter the new millennium, it is over \$9 trillion. As of February, we will be in the middle of the longest expansion in our history, in war or peace time. And I want to thank Chairman Greenspan for all he has done to help give America this steady, upward growth.

In closing, I want to make a prediction, even though it might be a little risky in front of so many distinguished economists. I cannot say what the size of the economy will be 1 year from today or 100 years from now, but I can say that when we reach the next milestone—\$10 trillion—will depend a lot on our next speaker, Chairman Greenspan.

**Chart 2 – Real GDP in the 20th Century:
1999 dollars**



Remarks by Alan Greenspan Chair, Federal Reserve Board

Thank you very much, Mr. Secretary.

Beside the fact that you leave me speechless, which is a remarkably difficult thing to do, I very much appreciate your comments. Let me just start by saying that we look at the gross domestic product and its predecessor, the gross national product, as a measure of output of goods and services at market prices, and it's a crucially important statistic to get a sense of where the overall economy is and where it has been. Nonetheless, the Department of Commerce has treated the national income accounts, and specifically the GDP, as living documents; that is, an endeavor

to recognize that the American economy is continuously changing. Its nature is being altered by technology and all sorts of other institutional effects. And as a result, how one measures the notion of what is the market value of goods and services produced, of necessity, has been changing over the years. And I must say that it is really quite impressive the extent to which the Department of Commerce has been able to keep up with the various changes that have evolved. For example, clearly the need to have a gross national product to get a sense in World War II of what the capacity of the American economy was so that you could fit defense expenditures and defense production in the system was a crucial issue at that time. And in the subsequent years, there have been many changes. We found, for example, that during the inflationary periods of the 1970's, the notions of what constituted depreciation, and hence profitability, became a serious problem.

And they succeeded in developing such arcane issues as the capital consumption allowance adjustment, which effectively normalized the system and in a very helpful way. They introduced hedonic pricing of computers several years later. And more recently, they introduced chain-type pricing in the GDP accounts, largely because it became very apparent that the growth rates that we were observing in the old constant-dollar data were a function of what particular base period you chose. That clearly was not something that you wanted to hang on, where you had alternate potential definitions of what was going on. Most recently, as the Secretary mentioned, it's become evident that there has been an increasing technological change within our system, which has muddied the distinction between what we call capital investment and current expense. And 20–30 years ago when you built a steel plant, it was perfectly obvious what it was and it was capitalized. And when you consumed coke or ore, it was expensed. But in today's world it has become very much more difficult to figure out whether a particular outlay is expensed and not included in the measure of the GDP, or whether it is capitalized and it is. It's an all-or-nothing operation. And as a consequence of that, having moved to capitalizing the software that is not embodied in the hardware, a major shift in the process of how one evaluates what we're producing is occurring.

And it's only the beginning, because what we see in, for example, differential stock prices company by company, is that those companies that have very large proportions of their outlays,

which are truly for the future of the company and hence by definition capital expenditures, are, for tax and other reasons, expensed. And as a result of that, we are finding increasingly this issue of the dividing line being crucially important between what is expensed and what is capitalized, and it's effectively the market capitalization in the stock market—not its levels, but its difference from company to company—which is telling us that the markets are saying that certain outlays are indeed capital expenditures irrespective of what the accountants call them. And BEA is becoming clearly more oriented to what economists do as value creation as distinct necessarily from what the accountants are doing. There are going to be a lot of problems in the future. There are going to be very great difficulties in deciding how to divide a particular dollar amount of output at market prices into physical volume and into price. The issue is becoming increasingly muddied, but I won't get into this because that will go on for an hour and a half, and we won't come to any particular conclusion.

But let me just say that while the GDP is continuously changing its stripes as the BEA tries to improve on the system, it is still the best measure of market value of goods and services, it is not necessarily a measure of welfare or even a significant measure of standards of living. I think we're all acutely aware of the fact that, for example, there are a number of southern states that use a huge amount of air conditioning in the summer and that appears as output in the GDP. The wonderful breezes you get up in northern Vermont during the summer, which eliminates the requirement for air conditioning, doesn't show up in the GDP. And other things equal, the standards of living are the same, but the GDP will be less in Vermont than it will be in the South, and clearly that is not a measure of welfare. I can go into innumerable examples and recognize the fact that we've had this problem going back a long way. Indeed, one of the very early debates in the construction of the national income accounts was how do you handle the obvious economic product that homemakers produce? Should it be imputed in the system or not? That was one of the big debates at the time, and even in today's market (a homemaker—who used to be called housewives, but now men do it as well, and in increasingly large numbers), somebody who is working at home and producing certain types of obvious goods that are not included in the GDP. But if you go out and you hire somebody to do it, obviously it's a market transaction and the value

of the GDP goes up. It's hard to say that there's been a significant change in standards of living in that particular context.

What is not really readily understood, except by those of us who employ complex computer-based models for forecasting, is how much the total set—the national income and product accounts—reduce forecast error. If you are forced to make the product and income sides of the national accounts balance, there are certain, potentially otherwise credible, scenarios that are immediately ruled out. The consistency-forcing structure of the national accounts has been one of its most significant contributions and least heralded. I'm aware that we've got a statistical discrepancy which creates all sorts of havoc, especially in the short run. But what is really quite extraordinary is how small that number is in a \$9 trillion economy. This is testament to how significantly detailed and analytical the BEA and the practitioners have been in succeeding in considering and solving these problems.

Before concluding, let me comment on one very crucial aspect of the national accounts and the hard-working economists and statisticians who compile them. Though these estimates have a profound influence on markets when published and are the basis for Federal budget projections and political rhetoric, I do not recall a single instance when the integrity of the estimates was called into question by informed observers. This is so despite the fact that, for many of the published preliminary figures, judgmental estimates for data not yet available are made, many of which affect the message of the accounts. It is a testament to the professionalism of the analysts that these judgments are never assumed to be driven by political imperatives. This cannot be said of statistical operations of all countries, and I think it is fair to say that the consequent ability of people to make decisions with greater confidence in the information at their disposal has contributed, in at least a small way, to our nation's favorable economic performance. Just as John Maynard Keynes once said that the ideas of economists and political philosophers are more powerful than is commonly understood, I personally would be inclined to say that the accuracy and conceptual rigor of our underlying data systems are more powerful and important than is commonly understood. Therefore, I can only add my applause for the Commerce Department's many efforts to maintain and improve the national income accounts and express my

hopes that the next century will see the program continuing to advance. Thank you very much.

Remarks by Martin N. Baily Chair, President's Council of Economic Advisers

It is a great pleasure to be here today and to say a few words about the meaning and importance of the GDP data and the national income and product accounts. I would like to make some personal observations, based on the ways in which these data have been important to my work.

I started my career as an academic researcher with a strong interest in macroeconomics, and it is hard to imagine how I, or anyone else, could have talked about the U.S. economy and the business cycle without timely and accurate information about GDP, or GNP as we used back then. One issue that I explored 20 years ago was the extent to which the economy has become more stable over time.

I carried out a series of econometric tests, examining the response of consumption, investment, and inventories to cyclical shocks. But it turned out the most compelling evidence came from simply plotting the growth rate of GNP over time. The resulting chart, subsequently reproduced in the *New York Times*, showed a dramatic decrease in the volatility of GNP in the postwar period.

I argued, as I still believe, that sound and cautiously active monetary and fiscal policy, together with automatic stabilizers, have been important to the increased stability of the macroeconomy. Others have disagreed as to whether policy is really stabilizing and even whether the economy has become more stable. But of course this debate would not have been possible without good historical GNP data.

More recently I, along with a team of researchers, have worked on a number of studies, trying to understand the differences in productivity across countries. This work has been based on the scrutiny of very detailed, micro-level firm and industry data. But each study began with an aggregate analysis that featured GDP per capita as the best overall measure of economic performance across countries. We selected industries to study largely on the basis of whether they would add to our understanding of cross-country GDP per capita differences. By starting with a micro database and building up to tell a macro GDP level story, I believe this work has added to understanding of the reasons for

economic performance differences across countries. It would not have had the same impact or validity without good underlying GDP data.

A major task in my current position is to work with others in preparing the administration's forecast for budget purposes. GDP and its growth over time are the centerpiece of this exercise. We recognize the tremendous uncertainty in trying to predict GDP 10 years into the future and the need to make policy decisions which recognize that uncertainty. But we rely on a solid starting point for our work—the GDP data prepared here at the Department of Commerce.

Working with our forecast, however, makes me realize the need for continued progress. Why was there a slowdown in productivity growth in 1973? Has the trend of productivity growth increased in the 1990s? How is the digital revolution affecting businesses and consumers? Does the rise in the stock market reflect an increase in intangible capital accumulation by companies? These are tough questions, central to any forecast, and finding the answers would be helped by better GDP data.

Major improvements have been made—the shift to chain indexes, the use of better price indexes both by BEA and the Bureau of Labor Statistics and the incorporation of software investment. But more needs to be done to capture a rapidly changing economy where services account for much of GDP, where the digital revolution is in full flight, and where quality changes may be as important as quantity changes. If our statistical agencies are to keep up with the demands of the economy, they need to be adequately funded to support the wealth of commitment and expertise of the people that work there.

My experience as an academic, as an economist in the private profit-making sector, and as a member of the administration tells me that good GDP data are vital to high-quality research, a greater understanding of the U.S. economy, and, ultimately, to sound decision making.

**Remarks by Robert J. Shapiro
Under Secretary of Commerce for
Economic Affairs**

I want to say only a few words, as the proud and lucky head of the Economics and Statistics

Administration. The tradition of excellence exemplified by Simon Kuznets is carried on today by the Bureau of Economic Analysis, including its director Steve Landefeld, his deputy Rosemary Marcuss, the lead analysts of GDP, Bob Parker and Brent Moulton, and others. They are all here today. I salute them.

The national accounts are a living, growing monument to the ability of American economic genius to meet the challenges of every period. In the 1930's, Americans decided that deep depressions had to stop. In response, Kuznets here at the Commerce Department's Division of Economic Research—the predecessor of today's BEA—created the first systematic and comprehensive way of measuring an economy's performance.

When America went to war to be sure that democracy would survive, the Division extended the early accounts to also track production and to produce the first quarterly and annual estimates of GNP, so the government could mobilize the economy for the war effort. After the war, to help manage the Marshall plan and the transition back to a peacetime economy, the Division created new accounts for the balance of payments and began measuring individual industries, sectors, States and regions. Then, as the government assumed its modern role in macroeconomic policy, the BEA extended the national accounts again, to measure capital stock, investment, and other sources of growth. And when stagflation shook the economy, BEA developed new ways of tracking prices and measuring real output.

BEA remains the world's leader and pioneer in measuring what's happening in an economy. And globalization and the IT revolution are central to what's happening now in our economic lives. So 2 months ago, BEA officially revised the national accounts and the existing GDP series—providing new and better ways of measuring international trade, of treating software spending as business investment, of capturing the full output of banks and financial institutions using technologies like ATM's and of tracking the rising quality of IT hardware and software.

No one knows what our GDP will be in the future. We can be confident that whatever it is, we will be able to understand and make the best of it through the great and growing achievement of the national income and product accounts. 