U.S. National Income and Product Statistics

Born of the Great Depression and World War II

By Rosemary D. Marcuss and Richard E. Kane

THE story of the first U.S. national income and product statistics illustrates how scholarly debates about the definitions of ideal measures gave way to the compromises required to produce real-world economic statistics when the need for such statistics had become critical. Then, as the workings of the economy became better understood—in part, through the use of statistics—economic theory advanced. And, as improved sources of data on incomes, production, and sales were provided, the statistics were improved in turn. The gross domestic product (GDP) statistics of today continue to exemplify the balance between theory, real-world data, and the economic questions of the day. The story of the creation of the first U.S. national income and product statistics shows how that process got started.

In 1934, the first in the series of continuing Department of Commerce U.S. national income statistics was issued to meet the need to describe consistently and in detail the economic toll taken by the depression that had begun more than 4 years earlier.[1] In keeping with the "income equals production" identity, national income would serve as an indicator of both U.S. income and output during the 1930s.[2] In 1942, the first in the series of U.S. gross national product (GNP) statistics was issued to meet the need to assess the economic feasibility of President Franklin Roosevelt's original war production program, which required national mobilization of an unprecedented scale.[3] In 1947, the first U.S. double-entry national income and product accounts (NIPAs) were issued to meet the need to provide a comprehensive picture of the workings of the economy. The accounts presented a framework for classifying and recording the economic transactions among major sectors: Households, businesses, government, and international (termed "rest of world.") Today, the records of all developed economies and most developing economies are characterized by like accounts. The United States was an early developer of those, although not the first.

National income to measure the Great Depression by

The proposition that, for a country as a whole, goods and services produced must equal incomes earned is old. It was explicated by William Petty as early as the seventeenth century. By the early twentieth century, U.S. national income was being measured periodically by certain individuals and organizations, but the concepts were murky, methods varied, and the estimates came long after the fact. It took the crisis of the Great Depression to create the demand for the U.S. Government to develop a continuing, timely measure of national income.

In June 1932, Senator Robert LaFollette introduced a resolution in the Senate stipulating that the Secretary of Commerce report statistics on economy-wide income in the United States from 1929 to 1931.[4] At that time, the Great Depression had been deepening for more than 2 years. Fully 24 percent of U.S. workers were unemployed, and many of those employed were only working part-time or on shortened weeks. Asset values had plummeted, the banking system was breaking down, deflation was reversing the gears of the economy, and sales were insufficient to keep businesses going. Farm income, on which one-fourth of the population depended, had fallen by a half. Neither the public nor elected officials understood the workings of the economy that seemed to be perpetuating the crisis, nor did they know quantitatively its scale and scope. The most up-to-date estimates of national income—that is, economy-wide income—were for 1929, a boom year for the most part, marred by the October stock market "crash," after which the economic slide had begun.

The most prominent national income estimation

1. In 1926, the Federal Trade Commission produced national income statistics for a series of years, but it did not persist in that work. The Economic Research Division of the Bureau of Foreign and Domestic Commerce, in the Department of Commerce, produced the 1934 statistics and retained responsibility for them. The Division was renamed the Office of Business Economics in 1947 and the Bureau of Economic Analysis in 1971.

2. The proposition that for a country as a whole, goods and services produced must equal incomes earned by its residents is precisely true only for a closed economy. In the 1930s, when statistical measures were being formulated and international flows were relatively small, the identity was retained by using a measure of production derived from labor and capital supplied by U.S. residents wherever the production takes place—that is, gross national product rather than gross domestic product.

3. GNP measures production by labor and property supplied by U.S. residents whether the production takes place in the United States or abroad. In 1991, GDP replaced GNP as the featured measure of U.S. production. GDP measures production by labor and property located in the U.S. regardless of who supplies those. The reasons for the change were that the coverage of GDP is closer to the coverage of other statistics, such as employment and industrial output, and its use facilitates international comparisons because it is the production measure emphasized by the United Nations *System of National Accounts.*

4. U.S. Congress, Senate, Resolution 220 (1932).

work undertaken during the 1920s was by the National Bureau of Economic Research (NBER) and the National Industrial Conference Board. The NBER estimates, produced by Willford King, were the most comprehensive, although various aspects were controversial, such as the inclusion in national income of household production and the services of consumer durables.[5] The Conference Board estimates were more timely, but they consisted of only aggregate measures moved forward by extrapolation.

It is not surprising that the Economic Research Division of the Department of Commerce's Bureau of Foreign and Domestic Commerce (BFDC) was assigned the task of producing national income statistics in 1932. The head of the office, Frederic Dewhurst, had testified before Senator LaFollette's committee about the meager economy-wide data at hand.[6] And the Department of Commerce was already in the data provision business. For more than a decade, it had been reporting to the public, weekly and monthly, what economic statistics there were—several thousand market-, commodity-, and industry-specific totes and indexes. Taken together, the available data painted a picture of economic activity but not a broad one. And they measured production and trade but not income. This journal, the SURVEY OF CURRENT BUSINESS, began publication in 1921 for the purpose of providing those data to the public.[7]

Senator LaFollette had Dewhurst in mind for the job, but Dewhurst left BFDC in 1932, and the Department fell short on staff. So the NBER was asked to contribute manpower and expertise to the project. Simon Kuznets of the NBER accepted the responsibility for producing the first statistics with Robert Martin and Robert Nathan of the Commerce Department as collaborators. Kuznets took charge in January 1933. He left Commerce a year later when the statistics were reported to the Senate.

Kuznets was a seminal theoretician of economic growth, an early estimator of GNP as well as national income and, for decades, an adviser on national income and product statistics. He had joined the NBER

5. Household production, referred to as "services of housewives and other members of the family," included services such as the preparation of meals, cleaning, and child care. Consumer durables included goods such as automobiles and home appliances.

6. U.S. Congress, Senate, Committee on Manufactures (1931).

7. Those who published the SURVEY appreciated the importance of the statistics to the business community. A celebratory note in 100th edition of the SURVEY, published in December 1929, stated with unfortunate timing: "While it may be too soon to say that the utilization of business data has entirely eliminated the business cycle, there is agreement today among business leaders everywhere that the wider use of facts will mitigate in a large degree many of the disastrous effects of the one-time recurrent business cycle."

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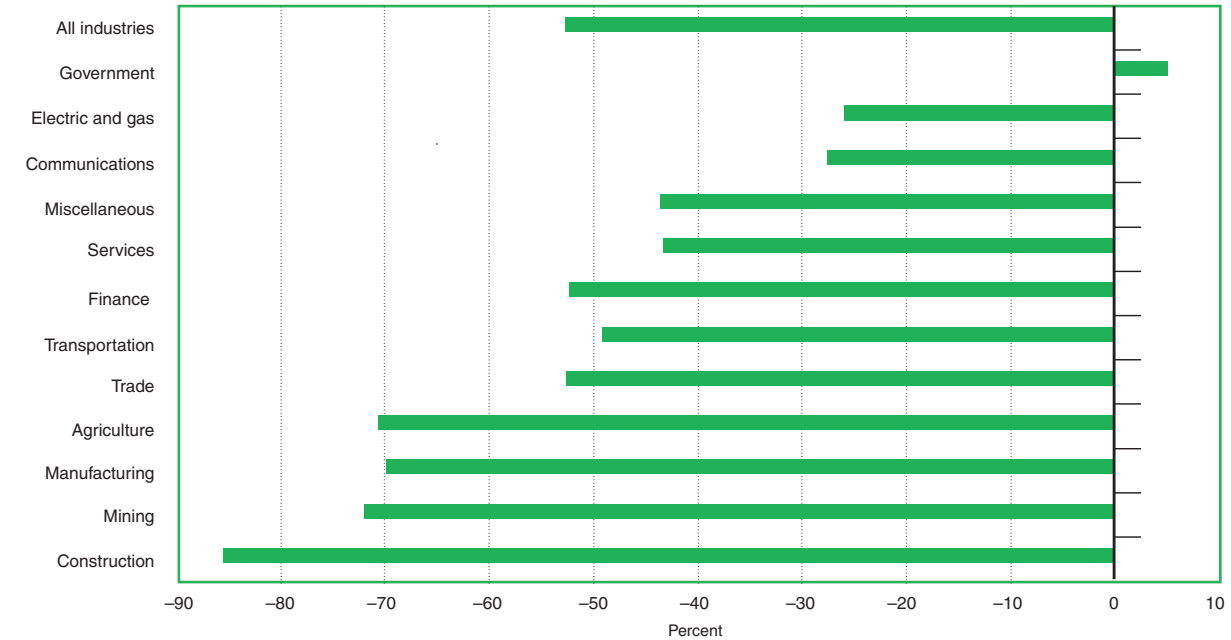
Chart 1. Percent Change in Current-Dollar National Income Produced by Industry, 1929–32



Source: Bureau of Foreign and Domestic Commerce, U.S. Department of Commerce (1934)

in 1929 to continue King's work on national income and arrived at the Commerce Department with a plan for improvements. In 1971, he received the Nobel Memorial Prize in economics for theoretical and empirical contributions to the measurement of economic growth.

The report delivering the first statistics to the Senate in January 1934 fulfilled the request for national income broken out by industry of origin and type of income.[8] It showed that between 1929 and 1932 national income had dropped by more than 50 percent.[9] Incomes in manufacturing had dropped by 70 percent, and incomes in construction had dropped by more than 80 percent. Government was the only industry that had grown over the period. Although the Federal Government remained relatively small—Federal tax receipts claimed only 3 percent of GNP in 1932—Federal, state and local governments accounted for 14 percent of income (chart 1).

Measured by type of payment, the income of wage earners had fallen more than those of salaried workers—60 percent, compared with just over 40 percent.[10] In terms of income shares: The labor share remained fairly constant, the "entrepreneurial" (business-owner) share fell, and the property share rose as interest payments held their own while dividends fell by half (chart 2). The finding that the Great Depression was less rough on salaried workers than on wage earners, that "payments to property holders formed a relatively increasing cost to the economic system as a whole,"[11] and that those who operated their own businesses lost ground relative to property holders had public opinion and policy implications at a time when government work relief programs were being planned and "big business" was a target for criticism by the Roosevelt administration.[12]

Two measures of national income were featured in the report—*national income produced* and *national income paid out*. The practice of presenting both persisted for most of the 1930s. National income produced was the broader measure. It comprised the net value of goods and services produced in the United States or, in other words, current production. It was net in the sense that it was measured after deducting depreciation, the decline in value associated with the aging of an asset. National income paid out was the income from current production actually received by individuals as workers and owners of capital. It consisted of wages and salaries, income from unincorporated businesses, dividends, interest, and rental income.[13] It was estimated using available data on industrial production, business payroll and income tax returns.

A statistic, *business savings*, was introduced to approximate the financial state of businesses given the limited amount of information available at the time. It was defined as the difference between the gross margin of businesses (the margin between revenues and costs)

8. U.S. Congress, Senate (1934): 10.

9. Figures cited are for national income produced measured in current-dollar terms. Adjusted for the drop in prices, national income produced had fallen by between 30 and 40 percent.

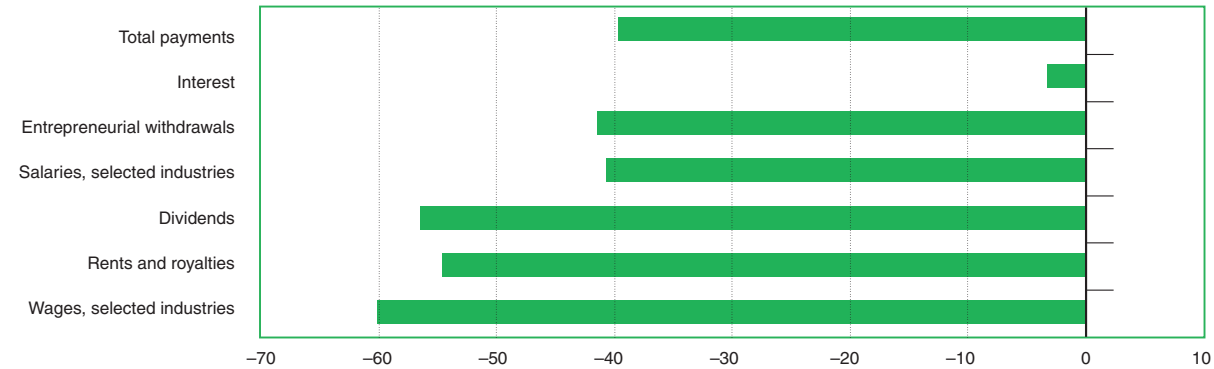
10. Salaries were distinguished from wages in only selected industries, mostly industrial ones, that accounted for less than half of national income.

11. U.S. Congress, Senate (1934): 5–6.

12. The importance of the new statistics to the economic debate of that time, near the bottom of the Great Depression, and the dangers of misinterpretation were understood by Kuznets, the author of the report. He warned, "The valuable capacity of the human mind to simplify a complex situation in a compact characterization becomes dangerous when not controlled in terms of definitely stated criteria. With quantitative measurements especially, the definiteness of the result suggests, often misleadingly, a precision and simplicity in the outlines of the object measured. Measurements of national income are subject to this type of illusion and resulting abuse, especially since they deal with matters that are the center of conflict of opposing social groups where the effectiveness of an argument is often contingent upon oversimplification."

13. The term *entrepreneurial withdrawals* was used to characterize income from unincorporated businesses—later called proprietors' income.

Chart 2. Percent Change in Current-Dollar National Income Paid Out by Type of Payment, 1929–32



Source: Bureau of Foreign and Domestic Commerce, U.S. Department of Commerce (1934)

and income payments to individuals (wages, salaries, interest, dividends, and other payments). In other words, it was the income retained by businesses from current production after purchasing materials, maintaining equipment and structures, paying taxes, interest, and compensation, and distributing dividends—or the sum of undistributed corporate profits and the savings of unincorporated businesses. For corporate business savings, tax return data on after-tax profits were adjusted for capital gains and losses, and dividend payments were subtracted from the total.[14] Tax-based depreciation was used as a rough approximation of the national income concept. For savings of unincorporated businesses, tax return data were also used, and an effort was made to distinguish business savings from income withdrawn by the owners.

National income produced was defined as the sum of national income paid out and business savings. In the Senate report, it was described conceptually as the value of "all commodities produced and all personal services rendered, . . . added together with their market values, . . . [minus] the value of goods, raw materials, and capital equipment expended in producing this total."[15] The broader of the two income statistics, national income produced is conceptually equal to the economic accounting concept of net national product, which is a comprehensive measure of the income that is available for either consumption or net investment and sometimes called sustainable income. Over the 1930s, BFDC raised the prominence of national income produced, eventually featuring it and referring to it simply as national income.[16]

Over 1929–32, when national income produced fell by over 50 percent and national income paid out fell by 40 percent, business savings became negative in 1930, and they remained negative through 1935 (chart 3). Businesses drew down financial reserves or borrowed in order to stay in operation when fixed costs and wages and salaries exceeded revenues. In terms of the new statistics, national income paid out exceeded national income produced. Even though business savings was only an approximate measure, it was an informative addition to the picture of the economy under duress.

The statistic ultimately sought for capturing the economic state of the nation over time is income adjusted for changes in the price level, but the business and tax records used to compile national income statistics were not so adjusted. Like other business accounts, they recorded actual market transactions, so a means of adjusting those data for price changes was needed. By 1934, the Bureau of Labor Statistics was producing cost-of-living and wholesale price indexes, but those indexes were not sufficiently comprehensive to fully adjust the national income statistics to produce a set of price-adjusted measures. Nevertheless, because depiction of the evolving state of national income adjusted for price changes was deemed crucial, the 1934 report offered an approximate price adjustment to the national income statistics by comparing the current-dollar reduction in incomes to the reduction in the cost-of-living index. That produced an estimated drop in price-adjusted national income produced in 1929–32 of 30–40 percent.[17] Approximate aggregate adjustments for changes in the prices at the national income level continued while the full set of statistics was reported in current dollars.

National income becomes established

During the 1930s, national income became a regular product of the Department of Commerce. Accepted as the broadest reading on U.S. economic conditions, it was followed by the public and was used by the Roosevelt administration and the Congress to plan and

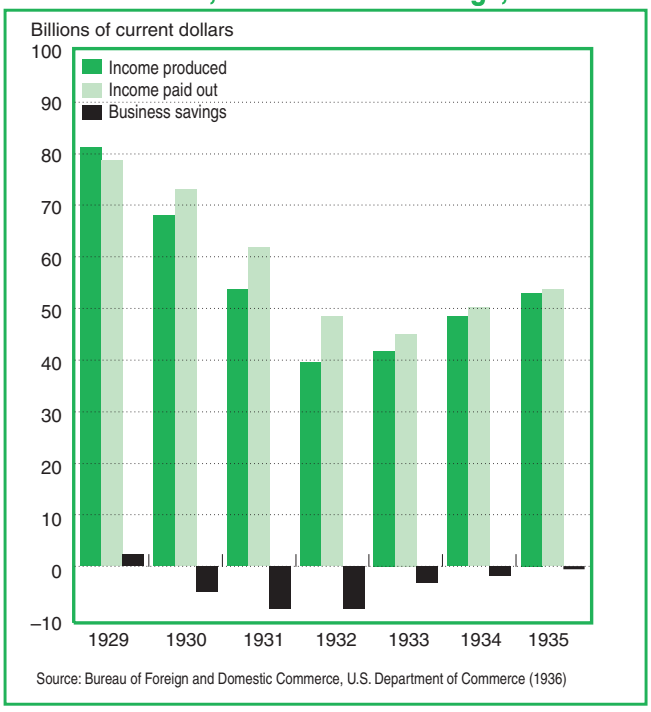
14. Unincorporated businesses were assumed to have net profit ratios similar to corporations.

15. U.S. Congress, Senate (1934): 1.

16. Bureau of Foreign and Domestic Commerce, U.S. Department of Commerce (1938) and Nathan (1939).

17. U.S. Congress, Senate (1934): 1.

Chart 3. U.S. National Income Produced, National Income Paid Out, and Business Savings, 1929–35



Source: Bureau of Foreign and Domestic Commerce, U.S. Department of Commerce (1936)

evaluate fiscal policy. By the time GNP was first provided by Commerce in 1942, national income had become the most cited U.S. macroeconomic statistic.[18]

In January 1934, when the national income statistics were first provided, it was not apparent that the worst of the depression was over. The industrial recovery begun in the summer of 1933 had petered out, and cooperation among industrial companies on prices under the National Industrial Recovery Act had raised the fear of inflation. The Roosevelt administration realized that the new measure provided an authoritative means of describing the dire economic conditions that its proposed New Deal programs were designed to address. For example, within two weeks of the release of the report, the Secretary of Commerce, Daniel C. Roper, cited the greater than 50-percent drop in national income between 1929 and 1932 in a speech explaining those programs.

In 1935, Robert Nathan began writing a series of annual SURVEY articles presenting the national income statistics for the preceding year and analyzing them in detail.[19] The next year, the Department of Commerce published a statistical compendium, *National Income in the United States, 1929–35,* presenting revised and extended statistics and explaining the concepts.

President Roosevelt was citing national income statistics in speeches as early as 1935—for example, in his statement of September 1935 on the state of the economy and the Federal budget. In April 1938, in his message to the Congress requesting additional spending for the new Recovery Program to address problems caused by the 1937 recession, the President described economic developments over 1929–1937 in national income terms. And, he described the goal for the program in national income terms as well: "We must start again on a long, steady, upward incline in national income."[20] Starting with the annual budget message to the Congress in January 1939, which presented his fiscal year 1940 budget, the President cited national income statistics as the primary measures of the state of the economy. In the 1939 message, he also highlighted the importance of these measures to economic policy making by showing how different levels of national income would generate different levels of Federal tax receipts.

Shortly after the annual income statistics had been established, work began on monthly measures that could track income developments quicker. Those statistics were first published in 1938 in response to the pressing need for monthly, rather than annual, statistics. Incomes had dropped 11 percent from a post–Great Depression peak in August 1937 to the recession trough in March 1938. By the end of 1938, about half that loss had been recouped in the recovery. Annual income statistics could not track such developments.

When the monthly income statistics were first provided early in 1938, the measure provided was national income paid out. Almost immediately, it was apparent that the measure was too narrow to answer the economic questions of the day. Information on the purchasing power of families was important for assessing the effects of income support programs, and a broader measure would be needed for that. So a few months after the initial release, the measure was expanded to include income other than that arising from current production. Those sources of income were rapidly becoming substantial props to family income. For the most part, they were the products of New Deal legislation or other programs of the 1930s aimed at fighting economic hard times and increasing income security for the retired. In particular, the new monthly income measure, referred to as "income payments to individuals," included the unemployment benefits enacted in the Social Security Act of 1935—retirement benefits under the act were first provided in 1940—veterans bonuses, direct relief payments, and Federal Government employee pension benefits. It excluded components of national income that did not provide current purchasing power: Employer and employee social security and unemployment insurance contributions and government employee pension contributions. In 1947, income payments to individuals was renamed *personal income.*

The U.S. economy gears up for World War II

Gross national product (GNP) statistics, like the national income statistics 8 years earlier, were launched by the Department of Commerce to answer pressing national policy questions for which analytical tools were inadequate. In 1942, the questions were, "Can President Roosevelt's World War II economic mobilization program be met and, if so, at what costs to the civilian standard of living and price stability?" As was the case for national income in 1934, the GNP concept by 1942 was not new, having been discussed and partially formulated during the 1930s. While progress had been made in developing theoretical and statistical standards for GNP, it took the policy need to call forth from the U.S. Government an authoritative, consensus-based statistic.

18. During the 1930s, work was underway formulating and estimating national product and expenditure concepts such as consumption, investment, and the government's contribution to output. For example, Simon Kuznets, then at NBER, and Clark Warburton, at FDIC, published early estimates of gross capital formation.

19. Robert Nathan was head of national income measurement from 1935 to 1941. Milton Gilbert took charge when Nathan left to join the National Defense Advisory Commission and served until 1949.

20. Roosevelt (1938): 12.

GNP makes up the other side of the national income equation—the production side to match the income-earned side (approximated by national income) of what would later be the double-entry books of the national economic accounts that would provide a complete picture of the economy. The publication of GNP in 1942 preceded the specification of those fuller accounts by 5 years.

In January 1940, 4 months after Germany had invaded Poland and Britain had declared war on Germany, President Roosevelt in his budget message to the Congress asked for a modest defense supplemental appropriation for fiscal year 1940 and a like increase in defense spending in fiscal year 1941, "in view of the current world situation."[21] In 1940, defense expenditures were more than $1 billion, about 14 percent of the budget. In his January 1941 budget message, Roosevelt asked for $25 billion in defense expenditures, 62 percent of the budget, reflecting "a world at war."[22] In his January 1942 budget message, President Roosevelt asked for $53 billion for defense, 90 percent of the budget, reflecting "a nation at war in a world at war." [23]

The week before that budget message and shortly after the attack on Pearl Harbor, the President had announced the goal of increasing the share of national income spent on war production from the current 17 percent to 50 percent by 1943.[24] The speed and scale of the mobilization program were beyond experience: "A national effort of gigantic magnitude," according to the President.[25] The U.S. rearmament program, begun in 1940, had boosted income and brought national income above the 1929 level for the first time—almost 25 percent above that level. The rise was steep: In December 1941, national income was 40 percent above its level of less than 2 years earlier. Putting the country on full war footing was going to boost income even more, but purchases of consumer goods and services, which had boomed in 1941, would be stymied because production for civilian purposes would need to be cut back to make way for the war program. Rationing, wage and price controls, and other consumption-damping regulations were on the table.[26]

Statistics measuring the total amount and the composition of goods and services being produced were requisites for the evaluation of the risks of shortages of civilian goods and services and the bidding up of prices, but those statistics were not available in the United States at the beginning of 1942.[27] National income sufficed at that time as an informative measure of the size of the economy, but it was not up to the task of evaluating production constraints and tradeoffs because it measured only the income earned in production and not the greater market value of the goods and services produced. Milton Gilbert and George Jaszi of BFDC later described the early days of war-mobilization planning like "bidding on a contract without knowing . . . the capacity of your plant or the financial facilities at the disposal of your business."[28]

GNP to measure mobilization by

Within 2 months of the January 1942 budget message, the Department of Commerce produced the first GNP statistics. Those distinguished only among major categories of expenditures, but they succeeded in bringing the war-production tradeoffs into the picture.

Statistical analyses of the day tended to provide overly grim assessments of the risks of shortages of civilian goods and inflation because, among other errors, they underestimated U.S. productive capacity. When GNP was first published in March 1942, it was offered as a new framework for assessing the feasibility of the 1943 war program by comparing it with 1941 national output. Two months later, historical GNP statistics for 1929–41 were provided.[29] The January 1942 budget message had foreshadowed the new statistical terms presented in the GNP, mentioning for the first time in a fiscal policy context "consumer durable goods" and "industrial plant and equipment" because the BFDC staff was at the time doubling as a research arm of the war agencies, which were formulating the war program.

Understanding the pressures of the huge proposed war expenditure program required consideration of competing expenditures in the economy, most simply, expenditures for the war and expenditures for everything else. The expenditure components of GNP provided the material for that comparison. Because GNP is measured in market prices and therefore includes

21. Roosevelt (1940).
22. Roosevelt (1941).
23. Roosevelt (1942).
24. Kluckhorn (1941).
25. Roosevelt (1942).
26. For example, gasoline rationing went into effect in the eastern United States in May 1942.
27. The development of national income and product statistics benefited from collaboration among experts in several countries. The United Kingdom began providing expenditure estimates in 1941. Australia, Canada, and Ireland began providing them within a few years. Richard Stone of the United Kingdom was awarded the1984 Nobel Memorial Prize in economics for the "epoch-making innovation" of creating the United Kingdom national income and product accounts while working in the British cabinet office under John Maynard Keynes.
28. Gilbert and Jaszi (1944). George Jaszi served as Chief of the National Income Division of BFDC from 1949 to 1959, Assistant Director of the Office of Business Economics from 1959 to 1963, and the Director of that office, subsequently renamed the Bureau of Economic Analysis, from 1963 to 1985.
29. Gilbert (1942b) and Gilbert and Bangs (1942).

taxes paid and depreciation allowances taken, which are not included in national income, it exceeded national income in 1941 by 25 percent ($23 billion)—and provided a better approximation of aggregate U.S. productive resources. National income does not include taxes and depreciation because it values output at costs paid or, put another way, as the income accruing to individuals in their capacities of workers and owners of capital, sometimes referred to as "factors of production." Taxes and depreciation are also charges against business revenues that are reflected in market prices, but they do not accrue to factors of production.[30]

The inclusion of business taxes and depreciation resulted in a production measure that was more appropriate for short-run analysis of the war program's burden on the economy in part because those flows were potential sources of program funding (chart 4). For example, in wartime, reserves for the replacement of capital goods might be delayed to free up resources for other pressing needs.[31]

GNP is defined as a comprehensive measure of the production of goods and services in the U.S. economy valued at market prices. In addition to being measured as the sum of production components, GNP can be measured as the sum of expenditures on goods and services for final uses (investment in structures and equipment, and household and government consumption) plus the change in business inventories. The ultimate consumers purchase products for consumption or investment after all stages of production of goods and services are complete. Put in other economic terms, GNP is defined as the sum of value added by all industries in the economy. Data available in the United States have generally provided more comprehensive measurement of expenditures than of industry value added; therefore, expenditure composition was adopted from the start for the U.S. GNP statistic.

Because data on expenditures were not fully available in 1942, GNP was estimated at first by adding business taxes and depreciation to the existing national

30. GNP terminology has changed over time, especially when new measures have been introduced. Beginning in 1942, to distinguish between the two measures of production, GNP was sometimes referred to as "national product valued at market prices," and national income (referred to upon its introduction in 1934 as "national income produced") was referred to as "national product valued at factor costs."

31. Depreciation in GNP, however, does not record the decline in the productive capacity of an asset but rather the decline in its value.

Chart 4. National Income and Product Concepts

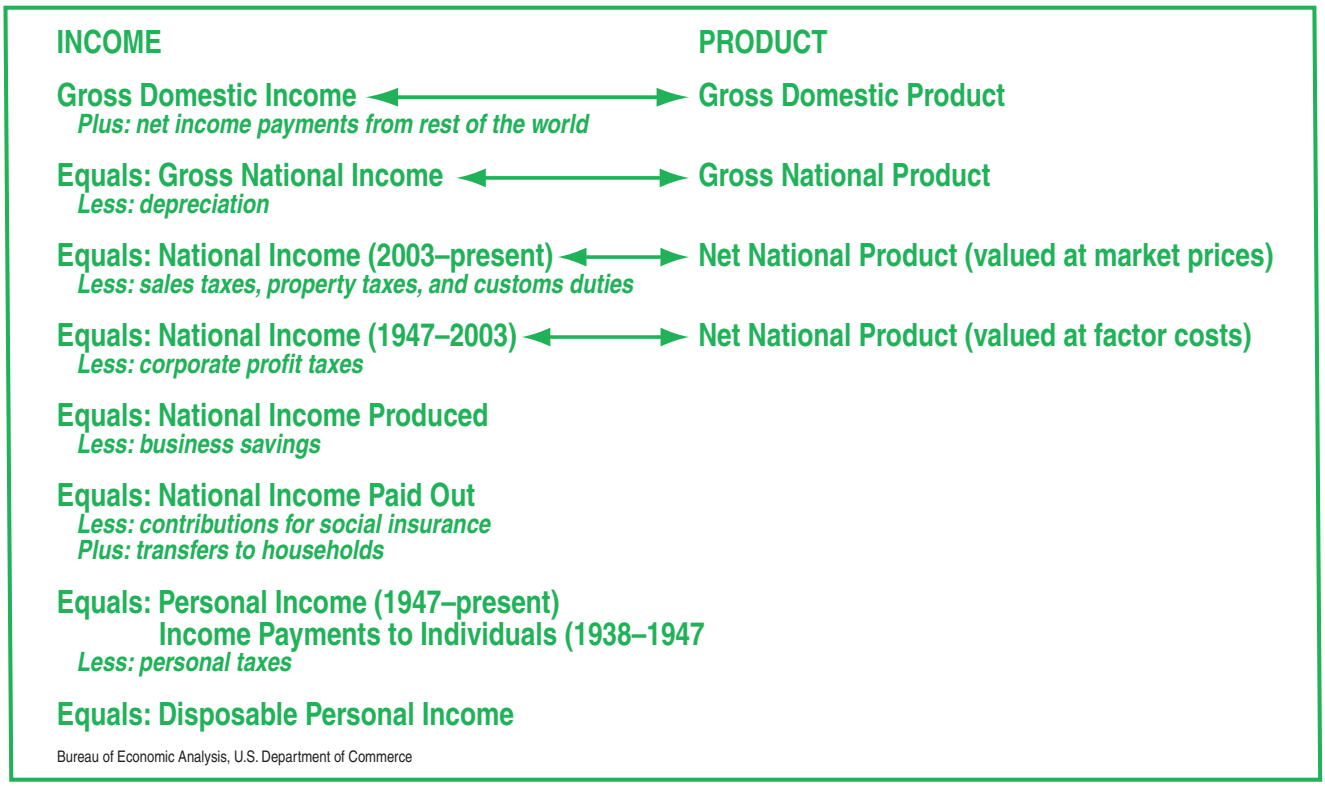


Table A. Gross National Product and National Income, 1941
First Presentation of GNP in 1942
[Billions of dollars]

Line	Relation of Gross National Product to National Income	
1	National income	94.7
2	*Plus:* Total business taxes	17.6
3	Depreciation and depletion charges	7.0
4	Income credited to other business reserves	1.6
5	Capital outlays charged to current expense	1.8
6	*Less:* Revaluation of business inventories	3.2
7	*Equals:* Gross national product or expenditure	119.5
Line	**Gross National Product by Use of Product**	
1	Gross national product	119.5
2	*Less:* Government purchases of goods and services	24.6
3	Federal Government	16.4
4	National defense	11.2
5	Other	5.2
6	State and local governments	8.2
7	*Equals:* Goods and services available for private use	94.9
8	*Less:* Gross private capital formation	19.1
9	Construction	5.2
10	Producers' durable equipment	8.9
11	Net export of goods and services	0.9
12	Net export of gold and silver	–0.6
13	Net change in business inventories	3.6
14	Net change in monetary stock	1.1
15	*Equals:* Goods and services sold to consumers	75.8
16	Durable goods	10.3
17	Nondurable goods and services	65.5
Line	**National Income by Use of Funds**	
1	National income	94.7
2	*Plus:* Transfer payments from government	2.4
3	*Less:* Corporate savings	2.6
4	Employment taxes	2.4
5	Direct personal taxes	3.8
6	Federal Government	2.1
7	State and local governments	1.7
8	*Equals:* Disposable income of individuals	88.3
9	*Less:* Consumer expenditures for goods and services	75.8
10	*Equals:* Net savings of individuals	12.5
Line	**Gross National Expenditure by Use of Funds**	
1	Gross national expenditure	119.5
2	*Less:* Total taxes	23.8
3	Business taxes	17.6
4	Federal	10.8
5	Corporate income and excess profits taxes	6.6
6	All other Federal business taxes	4.2
7	State and local	6.8
8	State corporate income taxes	0.3
9	All other state and local business taxes	6.5
10	Direct personal taxes	3.8
11	Federal	2.1
12	State and local	1.7
13	Employment taxes	2.4
14	*Less:* Total gross savings	22.3
15	Corporate	7.2
16	Net savings	2.6
17	Depreciation and depletion	4.4
18	Other business reserves	1.3
19	Capital outlays charged to current expense	1.5
20	Revaluation of inventories	–2.6
21	Noncorporate	15.1
22	Net savings of individuals	12.5
23	Depreciation and depletion	2.6
24	Other business reserves	0.3
25	Capital outlays charged to current expense	0.3
26	Revaluation of inventories	–0.6
27	*Plus:* Transfer payments of government	2.4
28	*Equals:* Total consumer expenditures	75.8

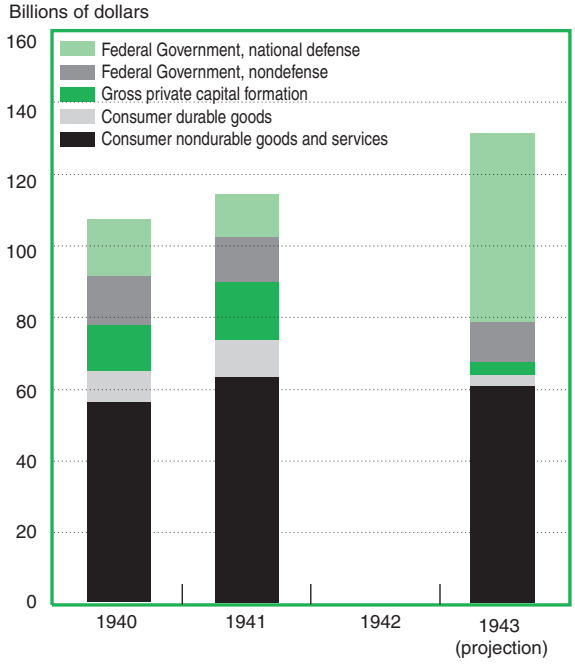
Source: "Preliminary Estimates of Gross National Product, 1929–41," Milton Gilbert and R. B. Bangs, SURVEY OF CURRENT BUSINESS (May 1942).

income statistic (table A). Government purchases were taken from the budget and other government sources. Investment ("gross private capital formation") was estimated from business records, including tax returns; and durable goods sold to consumers were estimated from Census Bureau and other government data.[32] Those expenditures were subtracted from GNP, leaving the combined category of nondurable goods and services sold to consumers as the residual. Direct estimation of all consumption components started in 1947.

Before GNP was made available, projected defense expenditures were sometimes erroneously subtracted from projected national income, producing a residual that was interpreted as the amount of production left for nonwar goods and services.[33] For example, in early 1942, analysts had subtracted President Roosevelt's proposed 1943 defense expenditures of $56 billion from projected 1943 national income of $110 billion, leaving a residual of 54 billion. Comparison of the 1943 residual with the same residual for 1941, $81 billion, indicated that income would have to be cut by a third if the resources required for the war program were to be made available. The assessment was overly grim because national income fell short of the total market value of goods and services produced, of which defense spending was a component.

32. Net exports were included in investment.
33. Gilbert (1942a).

Chart 5. Gross National Product, 1940 and 1941, Compared With War Program Objective for 1943



NOTE. The 1943 estimate for national defense is the Roosevelt Administration's objective for the war program. The other 1943 estimates show the disposition of resources required to meet that war program. The 1943 estimates are measured in 1941 prices and are fiscal-year estimates. The 1940 and 1941 estimates are calendar-year estimates.
Source: March 1942 SURVEY OF CURRENT BUSINESS
Bureau of Economic Analysis, U.S. Department of Commerce

Substitution of GNP for national income in such an analysis produced the findings that the effect of war mobilization on living standards would be less dire than had been predicted and that an even larger war program might be attainable. This was not only true because GNP was larger in value than national income (because it was measured at market prices, not factor costs) but also because the expenditure composition of national product showed how the income generated from national production was being spent. The expenditure composition of GNP showed that despite a potentially large forced reduction in nonwar spending much of the decrease would be absorbed by reductions in private investment and consumer purchases of durable goods, not in consumer purchases of nondurable goods and services, that is, purchases of food, clothing, and shelter—in other words, basic needs. The analysis suggested that only a 4-percent price-adjusted reduction in the consumption of nondurables and services below its 1941 level would be required to meet the President's war program goals for 1943, while private investment would have to decline by 80 percent and the consumption of durables by 70 percent (chart 5).[34]art 5]

Put another way, the GNP analysis showed that economic growth brought about by increases in employment and productivity spurred by the program and the diversion of heavy industry from civilian to war production could provide more than 90 percent of the additional resources needed for the 1943 program (chart 6).

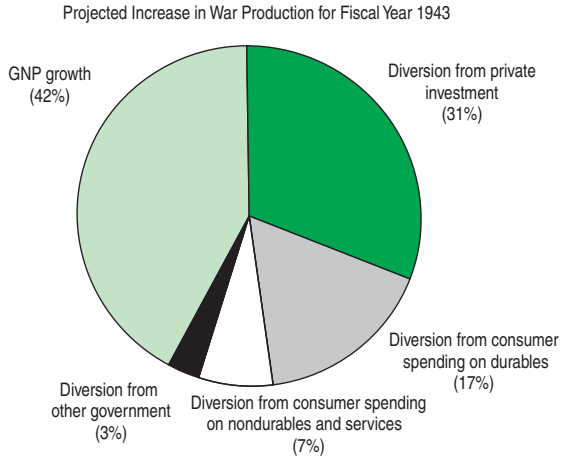
U.S. public concern about the danger of inflation preceded the promulgation of the war mobilization program. To address that and related concerns about the concentration of economic power, the Roosevelt administration and the Congress had established a joint Temporary National Economic Committee in 1938. The committee held hearings on inflation as early as 1939.[35] In 1940, in "*How to Pay for the War*," John Maynard Keynes popularized the concept of the "inflationary gap" as an analytical tool for assessing inflation risk.[36] The insight underlying the inflationary gap is that an excess of aggregated demand for goods and services over their supply will lead to inflation.

In the United States, a variety of estimates of the inflationary gap were offered by economists and brought to the attention of the war planning boards.[37] The analysis usually took the form of an estimate of the gap between the future demand for and supply of consumer goods and services, measured at a given price level. The proposition was that the growing incomes earned in war production, coupled with the shrinking supply of consumer goods and services that resulted when productive resources were converted to war-related production, would lead to excess spending power and inflation.

Estimates of the size of the inflationary gap and therefore the threat it posed to price stability relied critically on statistics measuring income and its disposition among taxes, consumption, and saving. The 1942 GNP statistics provided expanded income-side measures important to those calculations, including taxes, disposable income, and personal savings (table A). The use of those statistics in inflationary gap analysis was explained when they were provided.[38] Those

34. Real declines measured from end of 1941 through fiscal year 1943.

Chart 6. Possible Sources of Additional Resources Required To Meet Proposed 1943 War Program



NOTE. The amount of additional resources required, measured relative to 1941 levels, was estimated to be $41 billion. The growth in GNP would be achieved through increases in employment, hours, and productivity.
Source: March 1942 SURVEY OF CURRENT BUSINESS
Bureau of Economic Analysis, U.S. Department of Commerce

35. Established by Joint Resolution of Congress on June 16, 1938, and abolished April, 1941. It was established in response to concerns stated by President Roosevelt in April 1938, about the effects on the economy of monopolies, the price system and industrial pricing policies, and existing tax and patent laws, anti-trust policies and other government regulations. It was charged with holding hearings on those subjects and recommending legislation to the Congress. It sponsored over 40 monographs on those subjects.

36. Keynes (1940). In earlier work, published in *The General Theory of Employment, Interest, and Money* (New York: Harcourt, Brace and Co., 1936), Keynes had contributed to the vocabulary of GNP statistics by emphasizing the importance of looking at the workings of the economy in terms of flows of income and expenditures.

37. Examples of U.S. inflationary gap analysis are Salant (1942) and Friedman (1942).

38. Bangs (1942).

formulating wartime controls aimed at dampening inflation pressure through reductions in current income via voluntary saving and tax increases benefited from the improved analysis made possible by the new statistics.

By 1945, GNP was supplanting national income as the main measure of the U.S. economy used in the discussion of fiscal policy. In January 1945, the President's budget message to Congress cited GNP for the first time. It was presented alongside the budget estimates, in a table, "The Government's Budget and the Nation's Budget."[39] Earlier budget messages had cited only national income. By 1945, demobilization and the challenge of sustaining high employment were focuses of policy. The Federal Government was purchasing almost one-half of the GNP, one person in five was in the military, and most people were employed directly in war production or providing for civilian needs in the war economy. The budget message cited the calculation that real consumer expenditures and private investment would have to exceed their 1939 levels by 50 percent in order to fully employ the U.S. work force after the war, yet at the time, those were at the low levels necessary to accommodate the war. Even though there was pent-up demand, the post-war recovery in consumer spending and private investment would depend on jobs and confidence in future prosperity. President Roosevelt acknowledged in his budget message the important policy-guiding role of the GNP and other economic statistics: "Statistical information concerning business activities and markets, employment and unemployment, incomes, expenditures, and savings is urgently needed as a guide for economic policies during the remainder of the war and during the reconversion and post-war period."[40]

Investment and government activity better understood

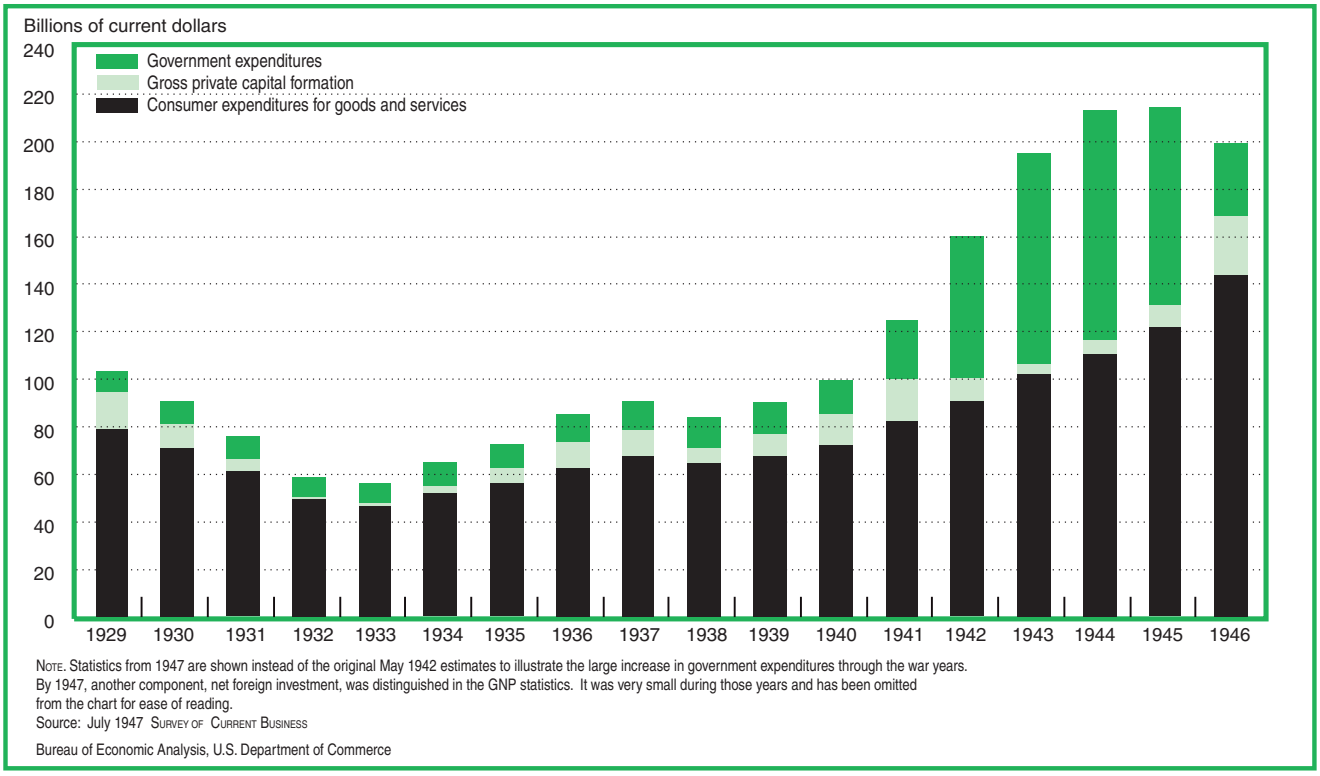
The provision of GNP in 1942 moved national product measurement away from factor income measurement and brought more uniformity to the treatment of taxes. The largest component of the difference between GNP and national income was business taxes (all taxes collected from businesses—income taxes, sales taxes, and other charges). The addition of business taxes provided a more complete accounting of the income flows generated from current production. For World War II policy analysis, it made sense to track the dramatically increasing government tax receipts that were helping finance the war (chart 7).

Personal taxes were included in national income, so personal and business taxes were put on an even footing in GNP. The focus of the income and product statistics was moving away from tracking income

39. Roosevelt (1945).

40. Roosevelt (1945).

Chart 7. Gross National Product by Use of Product, 1929–46



NOTE. Statistics from 1947 are shown instead of the original May 1942 estimates to illustrate the large increase in government expenditures through the war years. By 1947, another component, net foreign investment, was distinguished in the GNP statistics. It was very small during those years and has been omitted from the chart for ease of reading.
Source: July 1947 SURVEY OF CURRENT BUSINESS

Bureau of Economic Analysis, U.S. Department of Commerce

accruing to individuals to measuring the broad range of economic transactions among economic sectors—households, business, government, and the rest of the world. By including all government purchases as part of national product, the GNP statistics established the role of government in the economy as that of an ultimate consumer, that is, a purchaser of goods and services for final uses. The 1930s national income statistics treated government as an industry, providing income to employees. In the World War II setting, it was more natural to categorize government as a purchaser for final uses, given its preponderant role in the economy.

Before the war, during the 1930s, when national income and product concepts were being formulated, no subject was more controversial than the treatment of government. The position of Simon Kuznets, reflected in the early U.S. national income statistics, was that business taxes should be excluded from national product on the grounds that they served as a proxy for the value of government services to business. The reasoning was that business taxes were production expenses and therefore excluded from the net income originating in the industry of the business paying the taxes. On the other hand, taxes paid by individuals served as proxies for payments for services rendered by the government to those individuals and were therefore not deducted from their incomes. Put in other terms, taxes paid by individuals were treated as though they represented purchases by them and therefore were classified as purchases for final uses, which are included in national product. On the other hand, taxes paid by businesses were treated as though they represented purchases by businesses and therefore treated as intermediate purchases, which are excluded from national product. The provision of statistics that bore out that view entails distinguishing between government services to individuals and those to business, which was not feasible. For that and other reasons, Milton Gilbert and others at BFDC ultimately rejected that view, beginning with the publication of GNP in 1942.[41]

The correct way of measuring capital formation in national product—net or gross of depreciation—was also debated during the 1930s. In addition to a lack of confidence in estimates of depreciation, the decision by BFDC to include gross capital formation in national product was influenced by the policy uses to which the GNP would be put, which differed from those to which national income had been put in the 1930s. National income had been used to explain and measure the recovery from the Great Depression. including the effects on household incomes of programs such as the Civilian Conservation Corps and unemployment insurance. GNP was called on to evaluate World War II economic mobilization, so a broader measure of economic resources that could be diverted to the war effort was needed.

The inclusion of net capital formation in U.S. national income during the 1930s followed from the concepts and methods of early research that focused on national income as a measure of the change in national wealth. However, the position that gross capital formation is the proper concept for national product was not new; estimates of gross capital formation (investment) had been compiled by Clark Warburton in 1932 and Simon Kuznets beginning in 1933.[42] The first two volumes of the Conference on Research in Income and Wealth (1937–38), a program within the NBER that focuses on national income and product measurement, show broad agreement that gross capital formation is the preferred concept.

1947: The national income and product accounts complete the picture

The Department of Commerce had been formulating more detailed expenditure-side concepts, making preliminary estimates using available data and refining income-side concepts throughout the war years as resources allowed. The pace of that work picked up after the end of the war, and the first complete set of interrelated and consistent national income and product statistics was published in 1947. It placed the GNP statistics in the broader context of the economy as a whole and provided a more complete picture of how the economy works.

Put in economic accounting terms, the national income and product statistics were recast in 1947 into a comprehensive national economic accounting framework. While the framework has been modified since then, in 1958, 1991, and 2003, the picture of the economic relationships among households, businesses, government, and the rest of the world depicted in the 1947 accounts remains substantially the same.

The 1947 framework and statistical improvements refined concepts, clarified terminology, and provided the first full system of national economic accounting in the form of consolidated (later called summary) accounts for each major sector of the economy. The new accounts presented—in a double-entry, sources-and-uses-of-funds format—all the productive activity in

41. Gilbert, Jaszi, Denison, and Schwartz (1948).

42. Warburton (1934) and Kuznets (1934).

the current accounts of the four sectors. The system included two other accounts: An economy-wide savings and investment, or capital, account, and a summary national income and product account that comprises all productive activity balanced against the costs of production. The full complement of GNP statistics adopted the title of that account and became known as the national income and product accounts (NIPAs) (table B).]

Although the 1947 NIPAs went further than the

Table B. National Income and Product Account, 1939
First Summary Accounts (Published in 1947)
[Millions of dollars]

Account 1. National Income and Product Account

Line			Line		
1	Compensation of employees	47,820	22	Personal consumption expenditures	67,466
2	Wages and salaries	45,745	23	Gross private domestic investment	9,004
3	Supplements	2,075	24	Net foreign investment	888
4	Income of unincorporated enterprises and inventory valuation adjustment	11,282	25	Government purchases of goods and services	13,068
5	Rental income of persons	3,465			
6	Corporate profits before tax and inventory valuation adjustment	5,753			
7	Corporate profits before tax	6,467			
8	Corporate profits tax liability	1,462			
9	Corporate profits after tax	5,005			
10	Dividends	3,796			
11	Undistributed profits	1,209			
12	Inventory valuation adjustment	–714			
13	Net interest	4,212			
14	**National income**	**72,532**			
15	Indirect business tax and nontax liability	9,365			
16	Business transfer payments	451			
17	Statistical discrepancy	462			
18	*Less:* Subsidies minus current surplus of government enterprises	485			
19	**Charges against net national product**	**82,325**			
20	Capital consumption allowances	8,101			
21	**CHARGES AGAINST GROSS NATIONAL PRODUCT**	**90,426**	26	**GROSS NATIONAL PRODUCT**	**90,426**

Account 2. Consolidated Business Income and Product Account

Line			Line		
1	Compensation of employees	38,011	26	Consolidated net sales	78,877
2	Wages and salaries	36,250	27	To consumers	63,816
3	Disbursements	36,250	28	To government	5,375
4	Excess of accruals over disbursements	0	29	To business on capital account	8,563
5	Supplements	1,761	30	To abroad	1,123
6	Employer contributions for social insurance	1,330	31	Change in inventories	441
7	Other labor income	431			
8	Income of unincorporated enterprises and inventory valuation adjustment	11,282			
9	Rental income of persons	3,465			
10	Corporate profits before tax and inventory valuation adjustment	5,569			
11	Corporate profits before tax	6,283			
12	Corporate profits tax liability	1,462			
13	Corporate profits after tax	4,821			
14	Dividends	3,659			
15	Undistributed profits	1,162			
16	Inventory valuation adjustment	–714			
17	Net interest	3,284			
18	**Income originating**	**61,611**			
19	Indirect business tax and nontax liability	9,365			
20	Business transfer payments	451			
21	Statistical discrepancy	462			
22	*Less:* Subsidies minus current surplus of government enterprises	485			
23	**Charges against net product**	**71,404**			
24	Capital consumption allowances	7,914			
25	**CHARGES AGAINST BUSINESS GROSS PRODUCT**	**79,318**	32	**BUSINESS GROSS PRODUCT**	**79,318**

Account 3. Consolidated Government Receipts and Expenditures Account

Line			Line		
1	Purchases of goods and services	13,068	15	Personal tax and nontax receipts	2,440
2	Purchases of direct services:		16	Corporate profits tax accruals	1,462
3	Compensation of employees	7,629	17	Indirect business tax and nontax accruals	9,365
4	Wages and salaries	7,343	18	Contributions for social insurance	2,136
5	Supplements	286	19	Employee contributions	596
6	Employer contributions for social insurance	199	20	Employer contributions	1,540
7	Other labor income	87	21	Business	1,330
8	**Income originating and net and gross product**	**7,629**	22	Government	199
9	Net purchases from business	5,375	23	Households and institutions	11
10	Net purchases from abroad	64	24	Deficit (+) or surplus (–) on income and product transactions	1,867
11	Transfer payments	2,512			
12	Net interest paid	1,205			
13	Subsidies minus current surplus of government enterprises	485			
14	**GOVERNMENT EXPENDITURES**	**17,270**	25	**GOVERNMENT RECEIPTS AND DEFICIT**	**17,270**

Account 4. Rest of the World Account

Line			Line		
1	Net payments of factor income to the United States	313	12	Net disinvestment in the United States	888
2	Wages and salaries	2			
3	Interest	127			
4	Dividends	137			
5	Branch profits	47			
6	**Income originating and net and gross product**	**313**			
7	Net purchases from the United States	575			
8	From business	1,123			
9	From government	–64			
10	From persons	–484			
11	**NET CURRENT PAYMENTS TO THE UNITED STATES**	**888**	13	**NET DISINVESTMENT IN THE UNITED STATES**	**888**

Account 5. Personal Income and Expenditure Account

Line			Line		
1	Personal consumption expenditures	67,466	17	Wage and salary receipts	45,159
2	Purchases of direct services	3,166	18	Disbursements by:	
3	Compensation of employees	2,178	19	Business	36,250
4	Wages and salaries paid	2,150	20	Government	7,343
5	Supplements paid	28	21	Households and institutions	2,150
6	Employer contributions for social insurance	11	22	Rest of the world	2
7	Other labor income	17	23	*Less:* Employee contributions for social insurance	596
8	Interest paid	801	24	Other labor income	535
9	**Income originating in and net product of households and institutions**	**2,979**	25	Business	431
10	Institutional depreciation	187	26	Government	87
11	**Gross product of households and institutions**	**3,166**	27	Households and institutions	17
12	Net purchases from business	63,816	28	Income of unincorporated enterprises and inventory valuation adjustment	11,282
13	Net purchases from abroad	484	29	Rental income of persons	3,465
14	Personal tax and nontax payments	2,440	30	Dividends	3,796
15	Personal saving	2,701	31	Personal interest income	5,417
				Government transfer payments	2,512
				Business transfer payments	451
16	**PERSONAL OUTLAY AND SAVING**	**72,607**	32	**PERSONAL INCOME**	**72,607**

Account 6. Gross Saving and Investment Account

Line			Line		
1	Business purchases on capital account	8,563	6	Excess of wage accruals over disbursements	0
2	Change in business inventories	441	7	Undistributed corporate profits (domestic)	1,162
3	Net disinvestment in the United States by rest or world	888	8	Corporate inventory valuation adjustment	–714
4	Government deficit (+) or surplus (–) on income and product transitions	1,867	9	Statistical discrepancy	462
			10	Capital consumption allowance by private business	7,914
			11	Foreign branch profits (net)	47
			12	Institutional depreciation	187
			13	Personal saving	2,701
5	**GROSS INVESTMENT AND GOVERNMENT DEFICIT**	**11,759**	14	**GROSS PRIVATE SAVING**	**11,759**

NOTE. These accounts were modified in 1958, 1991, and 2003.
Source: "National Income and Product Accounts of the Untied States, 1929–46," Milton Gilbert, SURVEY OF CURRENT BUSINESS (July 1947).

Documents Cited in This Article

The BEA digital library, launched on June 30, 2006, presents important documents related to the history of the U.S. national economic accounts. It contains many of the references cited in this paper, such as the 1934 Senate report presenting the first Department of Commerce estimates of national income, the SURVEY OF CURRENT BUSINESS articles providing early estimates of gross national product during World War II, and the first publication of the U.S. national income and product accounts in 1947.

Users of the Digital Library can further explore the early motivations behind key economic measures and the policy concerns brought about by the Great Depression, WW II mobilization, and the transition back to a peacetime economy after the war. Currently, the library includes 89 SURVEY articles published from 1934 to 1947, as well as the first two volumes from the Conference on Research in Income and Wealth published in 1937 and 1938. Additional materials will be added in the future. The digital library can be accessed from the BEA home page <www.bea.gov>.

original GNP estimates by providing both more data and a more complete picture of the economy, many of the key characteristics of the NIPAs were already part of the GNP estimates. Both the GNP estimates and the NIPAs included income and expenditure measures that could be added up to get the total value of national product. Both focused on the composition of national product among the institutional sectors of government, business, and individuals and used a set of tables to show the relationships between key economic measures. The GNP estimates had served as a predecessor to the NIPA summary accounts: All of the sources and uses of funds found in the summary accounts can be found in the GNP estimates in related presentations.

Organizing the national income and product statistics into the 1947 system of accounts brought advantages. It added clarity to the debates about what components to include in the valuation of income and production. It created a schematic in which different types of measures could be used consistently; in a field where concepts continue to evolve, a consistent set of measures allows analysts to distinguish between differences resulting from the use of different concepts and differences resulting from the use of different data.[43] And the "booking" of income and expenditure items in double-entry form provides a means of cross-checking income and expenditure estimates that are derived from a mélange of sources.

In addition, the 1947 accounts brought statistical improvements. The most important of those was the direct estimation of consumptions expenditures. Despite the scale of those in the economy—they made up 75 percent of GNP in 1947—important components, mostly the consumption of services, had been estimated as residuals since 1942.

In 2003, the summary accounts took their present form. They were modified on that occasion to conform more closely to the United Nations *System of National Accounts* guidelines for national economic accounts. The first (overall) summary account is now measured consistently on a domestic basis, reflecting the present emphasis in international statistical guidelines on gross domestic product instead of gross national product. An additional summary account has been added to tie the "gross operating surplus" concept featured in other countries to the "profits from current production" concept featured in the United States.[44]

43. For example, the national income concept in the present NIPAs differs from that of 1947. It was redefined in 2003 to include all net incomes (that is, incomes net of depreciation) earned in production rather than only incomes accruing to factors of production which defined the scope of the earlier concept. The largest components newly included in national income are sales taxes, property taxes, and customs duties ("taxes on production and imports"). The new concept is consistent with United Nations *System of National Accounts* guidelines, which do not feature the factor-cost concept.

44. Mayerhauser, Smith, and Sullivan (2003).

The national income and product accounts have continued to develop since 1947, and that development has continued to exemplify the balance between theory, real-world data, and the economic questions of the day. Price-adjusted (real) GNP statistics were developed when inflation concerns persisted. Quality-adjusted price indexes were developed when the growing use of computers began the age of information technology. Changing-weight price- and quantity-indexes were substituted for fixed-weight indexes when the technology boom brought plunging prices in that sector in the face of rising prices in most other sectors, which imparted instability to the statistics. And closer integration with international trade and finance accounts and the national accounts of other countries were provided when the need for a global economic picture became compelling. Those stories are no less interesting.

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