

December 31, 2019

Off to a Good Start: National Income and Economic Measurement at the NBER

Hugh Rockoff

**Distinguished Professor
Department of Economics
Rutgers University
75 Hamilton Street
New Brunswick NJ
08901
Rockoff@econ.rutgers.edu**

Abstract

The creation of the National Bureau of Economic Research was a response to the bitter controversies over the distribution of income that roiled the United States during the Progressive Era. Thanks to Malcolm Rorty, a business economist, and Nahum Stone, an independent socialist economist, a “Committee on the Distribution of Income” was created; what might be considered the first name of the Bureau. Funding was secured and the Bureau was chartered in 1920 and Wesley C. Mitchell was appointed the director of research. The Bureau’s first publication, *Income in the United States, its Amount and Distribution* was widely hailed as a major contribution. Further estimates of national income and its distribution were made by Willford I. King for the 1920s. The Great Depression led to calls for federal government estimates. Simon Kuznets was seconded from the Bureau to the Commerce Department where he led a team that produced the first federal estimates and established the bureaucracy to produce regular updates. The early investigators at the Bureau, particularly Mitchell and Kuznets, proved to be masters at combining sources of data to produce credible estimates, and in the process anticipated most of the criticisms of estimates of national income that have been raised subsequently. The result was estimates that still underlie our understanding of the growth and fluctuations of the American Economy.

1. A Time like our Own

The official birthday of the National Bureau of Economic Research falls in January 1920, 100 years ago. The push to start the Bureau had begun several years earlier but the final creation of the Bureau was delayed by World War I. It was a time very much like our own. The economy had righted itself after the devastating financial panic of 1907 when unemployment as a share of the civilian private nonfarm labor force soared to 11.75% (*Historical Statistics, Millennial Edition*, series Ba476). But then unemployment had jumped again to 13.37% after the outbreak of World War I and the associated financial crisis in the U.S. The business cycle clearly was on the public mind when an application for funding for the National Bureau was made to the Rockefeller foundation. It was, moreover, a period in which controversy over the distribution of income had risen to a fever pitch. Progressives blamed the growth of Big Business for an increase in inequality. Robber Barons such as oil man John D. Rockefeller and steel man Andrew Carnegie were stealing the fruits of the second industrial revolution. Many people also blamed a wave of immigrants from Eastern and Southern Europe for depressing wages.

In 1915 two books on distribution of the national income were published that would lead directly to the formation of the Bureau.¹ First, Scott Nearing, a passionate socialist, published *Income, an Examination of the Returns for Services Rendered and from Property Owned in the United States* (1915). After examining wages, dividends, interest, and so on in many different industries, Nearing concluded that far too much of the national income was going to the owners of property and far too little to

¹ Here I will be using the term national income to cover all measures of the size of the economy such as gross national product, gross domestic product, net national product, and so on.

those who worked to produce it. Here was the proof that inequality had been rising as a result of the depredations of what came to be called the Robber Barons. The intent was similar to Piketty (2014).

A month after Nearing's book was published Willford I. King published a different sort of book on the distribution of income. King, unlike Nearing, was part of the economic establishment; a professor of statistics at the University of Wisconsin and a student of Richard T. Ely, a founder and the first Secretary of the American Economic Association. King's book, unlike Nearing's, made use of techniques and presented its findings in ways that would be familiar to economists today. For example, King used and thus drew the profession's attention to the Lorenz curve which had been developed only a few years earlier by another University of Wisconsin Ph.D. King attempted, moreover, to put his estimates of returns to factors of production and the distribution of wealth and income into historical and international perspective. King found that the share of income going to labor (Nearing's focus) had declined in the two decades before 1910.² King suggested that the probable causes of the decline of labor's share were the decline in the amount of free land and "the great influx from abroad of labor of a low degree of efficiency" (King 1915, 163). King found, moreover, that there had been a "marked concentration of income" in the hands of the very rich" (King 1915, 231) between 1896 and 1910. And to explain it he engaged in some rabble rousing that Nearing would have approved.

"But the greatest force in the last three decades making for income concentration has been the successful organization of monster corporations. The promoters and manipulators of these concerns

² More recent estimates of real wages show an increase in the real wages of production workers between 1896 and 1910, but a fall in the real wages of unskilled labor (www.mearuingworth.com).

have received, as their share of the spoils, permanent income claims, in the shape of securities, large enough to make Croesus appear like a pauper” (King 1915, 218).

As with Nearing the parallel between King (2015) and Piketty (2014) is clear.

Nearing’s book was not well received by economists, but King’s was. One of the negative reviews of Nearing’s book, surprisingly, was by Nahum Stone a passionate socialist in the *International Socialist*. Stone approved of Nearing’s focus on redistributing income, but thought that his statistics missed the mark. Nearing was right to try to divide income into service income which rightly went to workers and property income which wrongly went to the owners of property in a capitalist system. But Stone showed that Nearing had missed several important sources of service income. Malcolm Rorty, a conservative economist who had met Stone and read his review was impressed by Stone’s commitment to the facts. He invited Stone to lunch. And together they proposed what became the National Bureau of Economic Research.

2. The Committee on the Distribution of Income³

Rorty and Stone agreed that an organization that produced accurate nonpartisan statistics would advance public discussion of inequality and other issues. To be sure, the idea for such an organization was in the air. The short-lived Bureau of Economic Research was started in 1899, directed by John R. Commons and financed by George H. Shibley, a wealthy New York lawyer (Bureau of Economic Research

³ The following two paragraphs are based, except as noted, on Fabricant (1984).

1900). Edwin F. Gay had approached the Rockefeller foundation with such a proposal. And Irving Fisher (1919) advocated something along these lines in his 1918 Presidential address to the American Economic Association. But Rorty proved to be an exceptional organizer and fundraiser. He enlisted a number of top economists to form “The Committee on the Distribution of Income” which held its first meeting in June 1917. Indeed, It could be said that this was the first name of the Bureau. The Committee’s charge was to estimate accurately labor’s share in national income. Nearing and King had tried, but the Bureau, it was hoped could produce a study of such thoroughness that its conclusions would be accepted across the political spectrum.

Formation of the Bureau was delayed by World War I. But Rorty was able to lineup a sufficient list of donors and the Bureau was chartered in 1920. In 1921 the Carnegie Corporation made a three-year grant and beginning in 1923 ten years of support was obtained from the Laura Spellman Rockefeller Memorial.

3. The Bureau’s First Estimates of National Income

Wesley Clair Mitchell was appointed the first director; at once an obvious and inspired choice. Mitchell was already well known for the care he took in assembling data for his studies of the greenback during the Civil War and of the business cycle. Mitchell assembled a team that included King, Frederick R. Macaulay, and Oswald W. Knauth and set to work on the Bureau’s first project: a detailed “scientific” study of the amount and distribution of the national income. *Income in the United States, Its Amount and Distribution, 1909–1919* was published in two volumes (Mitchell, et al. 1921). Nearly 600 pages in all, it far surpassed anything that had come

before in terms of the amount of data utilized and the care taken in thoroughly double-checking the component estimates.

The study made a clever use of the circular flow. King was tasked with estimating national income from the side, and Knauth with estimating it from the payments-for-productive-services side. The two estimates turned out to be reassuringly close, at least in the Bureau's estimation. This was something that a team employed by a foundation could do, that would be difficult for a professor toiling alone in a library; a clear example of the value of a foundation dedicated to economic research.

Inequality, the issue that had motivated formation of the Bureau, was discussed in the penultimate chapter of the summary volume. This chapter reviewed estimates of the distribution of income by factor of production (à la Nearing), estimates of the proportion the population earning less than \$2,000 per year (which is about \$33,000 per year in 2018 dollars inflating with the consumer price index), and estimates by Frederic Macaulay of the personal distribution of income in 1918 based on the newly available income tax returns. The data revealed substantial inequality: the share of income going to the top 1 percent was 14 percent, and the share going to the top 10 percent was 35 percent. The World Inequality Database (at <https://wid.world/>, accessed in September 2018), put these figures for 1918 at similar levels of 16 percent and 40 percent. The chapter on inequality in that first volume, true to the principles that were adopted from the start and that have been adhered to ever since, does not end with rabble-rousing or policy recommendations. Instead, it ends with a chart and an explanation of a 1918 Lorenz curve.

The reviews were uniformly positive, but not uncritical. Arthur Bowley (1923) writing in the *Quarterly Journal of Economics*, for example, began

by declaring that the volumes were a “landmark in the progress of statistical research, and that all future investigators in the field of National Income will take them as their guide and chart.” But he did have some complaints; the main one was about the treatment of the distribution of income in the summary volume (vol. I, chapter 3), the subject that he thought would be of most interest to the public. Bowley (1923, 511) thought that the estimates were so uncertain that they should have been excluded altogether or at most buried “in volume ii, under Mr. Macaulay’s mathematics.”

Knauth left the Bureau in the 1920s but work on the national income estimates continued throughout the 1920s under King’s direction. In 1930 the Bureau published new estimates (King and Epstein 1930) of a total that they called “Realized Income of the People of the Continental United States,” covering 1909 through 1928. They also addressed the touchy subject of the distribution of income. First they estimated the share of national income going to wages as opposed to salaries and pensions and so on. This share they noted was volatile and higher after the war than before, but they did not identify any long-term trends (King and Epstein 1930, 79-86).

King and Epstein then examined the distribution of income based mainly on the information generated by the Federal income tax. Rather than presenting Lorenz Curves and Gini coefficients, or the even the shares of income going to top percentiles, King and Epstein opted to present the shares of the population earning more or less than several benchmark levels of income. Their top group included those earning more than \$150,000 in 1913 dollars; about \$3.9 million today using the

Consumer Price Index to inflate.⁴ In general, King and Epstein did not find worrying trends in the distribution of income. In a counterfactual thought experiment they concluded (1930, 178) that even a massive redistribution would not help those earning less than \$5,000 very much. Their final conclusion (1930, 180) was that “there is practically no tendency towards the putting of more income into the hands of the extremely opulent sections of the community.” The times had changed, and perhaps also King’s disgust with the “Monster Corporations” had cooled.

This book was not widely reviewed in the economic journals. It was, after all, a continuation of the 1921 study. In the most detailed review that I have found Paul Brissenden (1932), a noted labor economist at Columbia, hammered away at King and Epstein’s treatment of inequality and concluded that a far less sanguine picture of the trends in inequality should be drawn from their data. But when he reflected on the overall quality of the work he concluded that it was “undoubtedly, the most important contribution ever made to the study of income.”

4. Enter Simon Kuznets

When I asked Google “who invented GDP?” the answer was “Simon Kuznets in 1934.”⁵ This is, at best, misleading. Estimates of national income have been made for centuries. And, I should add while GDP has

⁴ Samuel H. Williamson, "Seven Ways to Compute the Relative Value of a U.S. Dollar Amount, 1790 to present," MeasuringWorth, April 2019. URL: www.measuringworth.com/uscompare/.

⁵ On October 24, 2019.

become the statistic of choice, Kuznets preferred, as I will explain below, Gross National Product or better still Net National Product.

Kuznets grew up in what is now the Ukraine and came to the United States in 1922 with his brother Solomon. He studied economics at Columbia and earned his Ph.D. there under Wesley Mitchell (Weyl 2012). His dissertation, completed in 1926, was *Cyclical Fluctuations; Retail and Wholesale Trade, United States, 1919-1925* which was published by Adelphi. Kuznets then worked at the Bureau publishing articles and books on the business cycle. The emphasis on the business cycle at the Bureau in the 1920s made sense. The business cycle was one of Mitchell's primary interests and the United States had suffered financial panics in 1907 and 1914, and a severe cyclical contraction in 1920-21.

But the onset of the Great Depression brought national income accounting back to the front burner. The economic catastrophe from 1929 to 1932 produced a June 1932 Senate resolution, introduced by Senator Robert La Follette Jr., the Wisconsin Progressive, calling on the Department of Commerce to make estimates of national income from 1929-1931 (Dorfman 1959, p. 669). The point, clearly, was to justify sweeping governmental initiatives. The Department of Commerce turned to the Bureau for help and Kuznets, who had taken over the Bureau's project on the measurement of national income, was seconded to the Department of commerce to lead the team that would produce the estimates.

There he encountered and quickly recruited Robert R. Nathan, who had been his student at University of Pennsylvania, for the team he was assembling. The first report, submitted in January 1934 showed that national income had halved between 1929 and 1932, and although the depth of the Depression was obvious by that time, the report was still an

important call to action. President Roosevelt cited the figures, and later cited the updated figures that ran through 1937 when he sent a supplemental budget to Congress in 1938 (Coyle 2014, pp. 12–13). After getting things started at the Commerce Department, Kuznets returned to the Bureau.

Nathan, his protégé, also left the Commerce Department but only for a short time. Nathan soon returned to as chief of the National Income Section of the Division of Income Research (Durr 2013, 19-20). The Department's estimates were updated regularly and reported in the *Survey of Current Business* in articles written by Nathan.

Roosevelt also made masterful use of the national income estimates on the campaign trail. In a speech at Pittsburgh's Forbes Field in October 1936 Roosevelt – after a several baseball analogies, this was after all the home of the Pittsburg Pirates – he made the empirical case for the New Deal. He might have used one of older statistics: industrial production, employment, and so on. But instead he used the new national income statistics (Roosevelt, October 2, 1936, 2).

“By national income I mean the total of all income of all the 125,000,000 people in this country, the total of all the pay envelopes, all the farm sales, all the profits of all the businesses, of all the individuals and corporations in America,

During the four lean years before this administration took office that national income had declined from \$81,000,000 a year to \$38,000,000 a year – in short, you and I, all of us together, were making \$43,000,000 less in 1932 than we made in 1929.”⁶

⁶ Somewhere along the way some zeros were omitted; the correct numbers were, of course, billions. But aside from that the numbers he is quoting are taken correctly from the Commerce Department estimates. As can be seen in Table 1, Kuznets 1937 shows net national product falling by 43.8 billion.

After detailing the actions taken by his administration Roosevelt returned to national income accounts to prove they had worked.

“The national income was thirty eight billions in 1932. In 1935 it was fifty-three billions and this year it will be well over sixty billions.”⁷

Roosevelt had shown the way. From now on politicians would be using national income statistics to highlight their successes and their opponent’s failures.

Shortly after Pearl Harbor, Nathan was appointed chair of the Planning Committee of the newly created War Production Board, the agency charged with assuring that a sufficient supply of munitions would be produced. Kuznets readily agreed to work for his protégé as the Committee’s chief economist.

Before Pearl Harbor many liberal economists, including Nathan and Kuznets, were worried that the military was not expanding rapidly enough. Pearl Harbor unleashed a flood of orders from the military, and Nathan and Kuznets now worried that the spending plans of the military were too big. Excessive competition among contractors might slow production; there would be tanks without treads, aircraft without instruments, and factories without machines. And they worried that civilian consumption might have to be reduced to an unacceptable extent. Thus was born the “feasibility dispute.” In August 1942, Kuznets forwarded to Nathan a study which concluded that military spending of \$47 billion in 1943 and \$80 billion in 1943 were the limits of what was “feasible.” The military was unhappy with these limits because they thought adopting them would delay the invasion of Europe and the end war.

⁷ Roosevelt’s figures are about the same as Kuznets’s final estimates of Net National Product Variant I in current dollars (Kuznets 1961, 486).

Eventually, a compromise was reached and the military services were forced to make some cuts in their immediate spending plans and to lengthen their time table for the invasion of Europe. The effects that would have followed if the military's spending plans had been carried out in full are hard to estimate. Counterfactual history is always difficult, and it is especially hard in this case because of the limited historical experience with rapid mobilization. But two careful students of the feasibility dispute have credited the economists with a crucial contribution to the ultimate success of the munitions program (Edelstein 2001; Lacey 2011). The title of Lacey's book makes the case as far as most economists are concerned: *Keep from All Thoughtful Men: How U.S. Economists Won World War II*.⁸

5. The Influence of Simon Kuznets

Kuznets did not invent national income accounting, but he did have an enormous influence on the way estimates of national income are made and used. Here I identify six key sources of his influence, based first of all on Fogel, et al (2013).

(1) Kuznets was a leader in standardizing the definitions of the components of national income. He did so In part by exploring the philosophical underpinnings of the accounts; arguing forcefully that the welfare of consumers, normally, should be the ultimate determinant of how national income is measured.

Kuznets, of course, was not the first to think about how national income related to human welfare. Indeed, the *Wealth of Nations* begins --

⁸ The first part of Lacey's title was from a memo written by General Brehon B. Somervell, head of Army supply service, describing the memo written by Nathan based on Kuznets's study.

one can say economics as a scholarly discipline begins -- with the following two sentences.

“The annual labour of every nation is the fund which originally supplies it with all the necessaries and conveniencies of life which it annually consumes, and which consist always either in the immediate produce of that labour, or in what is purchased with that produce from other nations.

According therefore, as this produce, or what is purchased with it, bears a greater or smaller proportion to the number of those who are to consume it, the nation will be better or worse supplied with all the necessaries and conveniencies for which it has occasion.” (Smith 1976 [1776], 1).

Smith makes it clear from the outset that the flow of goods to consumers and not treasure chests full of gold and silver is the real wealth of a nation. And so Kuznets is following one of the oldest traditions in economics in making the flow of goods and services to consumers his lodestar.

Kuznets’s focus on consumer welfare explains why he favored GNP over GDP. Think, for example, of a country with a large sovereign wealth fund. GNP would exceed GDP and GNP would provide a better measure of the flow of goods and services to consumers, and therefore a better measure of the welfare of the population. In fact, Kuznets preferred to work with net rather than gross national product because deducting the depreciation of capital would bring us still closer to the flow of goods and services to consumers. But, of course, good scholar that he was, he would use GDP when that was all that was available (Kuznets 1956, 11).⁹

And it was GDP that became standard. Partly this was because it was easier to compute and so more countries could produce the statistic. And It is also true, as Coyle (2014, 20) explains, that the rise of Keynesian

⁹ In a JSTOR search this was the first time that Kuznets used the term gross domestic product. The term had been used previously mainly in British journals.

economics played an important role. Domestic production may be more closely tied to employment, the key concern in the wake of the Depression, than the flow of goods and services to consumers. So GDP would be a better guide than other income measures for policymakers intent on managing the business cycle and maintaining full employment.

While Kuznets began with the goods and services consumed and their market prices he recognized that many decisions had to be made before final totals could be calculated; decisions that raised important philosophical questions, especially if those totals were to be used in examining long-term trends in economic welfare.

The following are some examples of adjustments to raw spending totals that Kuznets thought were justified, depending on the purposes of the ultimate user of the estimates, even if the data was not then available to act on them. (a) There was the long standing problem of production in the home that the Bureau had addressed in its first study of national income. This was especially a problem when making long-term comparisons of national income because of the shift of production from the home to market. (b) Goods that were purchased by individuals as instruments of production, Kuznets thought, should be deducted, ideally, from net national product. Consider expenditures such as the additional cost of an expensive as opposed to a utilitarian automobile. This might be consumption for professor, but a cost of production for a real estate agent. (c) Personal costs of production needed to offset “the strains and pressures of modern life,” should also be deducted if one was seeking a measure of national welfare. And (d) ideally the amounts consumed by individuals should be Kuznets (1947, 23).

“...combined by an acceptable system of weights, based on some cogent theory of equivalence of individuals, not by the market prices that reflect monopolistic distortions and inequalities in distribution of income by size.”

These concerns were present from the beginning of Kuznets’s work on national income. The initial report on national income by the Commerce Department, much of it probably written by Kuznets, contains explanations of many limitations of the national income statistics. After listing them, it summarizes with the following often quoted conclusion about the relationship between national income and national welfare (United States, Office of Business Economics, 1932, 7).

“The welfare of a nation can, therefore, scarcely be inferred from a measurement of national income as defined above.”

Perhaps the most controversial illustration of Kuznets’s efforts to apply a consistent philosophical framework to his estimates of national income occurred in a debate that he ultimately lost. Kuznets thought that in peacetime most military spending should be excluded from national income. Why? For Kuznets military spending was an intermediate good not a final good like wheat or haircuts that directly produce consumer utility. The cost of the scarecrow that keeps the crows from the wheat is already included in the price of the wheat. The military which scares away our would-be enemies and prevents them from attacking our fields is also an intermediate good.¹⁰ In World War II, however, Kuznets (1945, 17) thought that

¹⁰ This is, of course, my analogy and not Kuznets’s.

“for the transient period of a major war we might recognize two purposes coequal in primacy: provision of goods to consumers and for war use.”

After the war Kuznets wanted to return to a peacetime definition of national product that excluded consumption of war goods. But the Commerce Department decided to include current consumption of military goods. There were, probably, several reasons. In part, including military spending made sense because the role of the military in peacetime had changed. In his study of productivity for the Bureau John Kendrick (1961, 25), for example, utilized a version of Kuznets’s national product estimates that included military spending on the grounds that national security is “at all times” a prime objective. We hadn’t returned to the economy of the 1920s when it was assumed that the military would have little to do. Rather, we had moved from a shooting war to a *cold war*. There may well have been other factors such as the rise of Keynesian economics in which increases in GDP are critical for maximizing employment. If securing full employment is a prime goal, then including military spending makes sense.

(2) Kuznets was also remarkably creative when it came to finding sources to complete the national income accounts and effective in demonstrating to his students and colleagues how to do it. Nathan (1994, 3) recalled what it was like to work under Kuznets’s direction to produce the first Department of Commerce estimates.

“We had to do our own quickie surveys. We found a survey here, a master’s thesis there, or a Ph.D. dissertation somewhere else. Bit by bit we assembled bases for estimates from scattered studies and reports to develop reasonable estimates.”

One of the surveys undertaken by the Commerce Department for those first official estimates became the basis for an important book by Milton

Friedman and Kuznets (1945): *Income from Independent Professional Practice*, which also served as Friedman's Ph.D. dissertation.

(3) Kuznets also contributed to the development of national income accounting by showing how important carefully constructed national accounts were for addressing a wide range of important questions. As we noted above In World War II he argued forcefully that the military's spending plans in the wake of Pearl Harbor were not feasible. That argument was effective because he was able to bring the national income estimates to bear.

After the war he focused first on the distribution of income, the concern that had motivated establishment of the Bureau. In 1950 the Bureau published "Shares of Upper Income Groups in Income and Savings." Economists had long argued that one of the key benefits of inequality was that it increased savings because the rich saved more than the poor. But Kuznets wanted to know, as he always did, how good the quantitative data was and what did it show. In this paper he showed that the affluent did provide a large and more stable share of total savings. The top 5% of households measured by their share of income accounted for about two-thirds of the nation's saving (Kuznets 1950, 52) and their savings rate varied less over the business cycle.

Kuznets's work on the distribution of income led eventually to his well-known presidential address to the American Economic Association, "Economic Growth and Income Inequality" (1955). It was in this address he described what became famous as the "Kuznets Curve"; the inverted U relationship between economic development and income inequality. Whatever one may think of the long-run relevance of the curve, the address still stands as a model of careful and modest handling of empirical data.

After the war Kuznets also intensified his research on economic development, work for which he ultimately became the second American to win the Nobel Prize in economics (1971). This work went a long way toward demonstrating the worth of national income accounts compiled according to recognized standards.

(4) Kuznets was a major institution builder and educator. The Bureau's Conference on Research on Income and Wealth which played a major role in developing and standardizing the methodology of national income accounting was his idea. Founded in 1935 its first publications dealt with the measurement of income and its distribution by size. The Conference has produced over seventy books examining issues in economic measurement, Fogel et al (2013, 110-112).

(5) Kuznets built on the tradition established by Mitchell and his collaborators in the Bureau's first study of national income of explaining the sources of his data and the margins of error in complete detail. No reader could be in doubt as to the amount of work that went into constructing the estimates or the likelihood that they could do better. Kuznets also included discussions of the philosophical basis of his estimates. The results were enormously persuasive documents.

(6) Finally, there was an aspect of Kuznets's legacy that is hard to quantify -- an unfortunate fact for a paper about the Bureau -- but nevertheless important: he was an inspiring teacher and mentor. One can point, of course, to some of his students such as, Milton Friedman and Robert Fogel who were Nobel Prize winners. But exactly how he did it is unclear. Robert Nathan (1994, 1), who had an outstanding career in government and the private sector, remembered Kuznets this way.

“I learned to always sit in the front row because I had trouble hearing his lectures - he mumbled, and he chewed his words. One had to listen carefully to put it all together. But he was an excellent teacher, and his brilliance revealed itself from the first day of his classes. I thoroughly enjoyed my two graduate years with him.”

6. The test of time

Many criticisms have been leveled at the national income estimates over the years. These criticisms were always taken seriously by the economists at the Bureau, even if they were not always able to deal with them to everyone's satisfaction. For example, it has often been pointed out that production within the household is excluded from GDP and other measures of national income. This was recognized in the Bureau's first book, *Income in the United States* by Mitchell and his collaborators which noted that their estimate of national income of \$61 billion did not include the monetary value of unpaid work in the household which probably amounted to “several billions” (Mitchell, et al. 1921, 143).

Over the years scholars have addressed many other potential problems. John W. Kendrick (1961) relied on Kuznets's estimates for his famous and still important study of total factor productivity. However, as I noted above, he rejected Kuznets's exclusion of a good part of military spending from the peacetime totals. Friedman and Schwartz (1982) used Kuznets's estimates of national income for their studies of the demand for money reported *Monetary Trends in the United States and the United Kingdom*. They also rejected Kuznets's exclusion of most military spending from peacetime net national product. And they were skeptical of Kuznets's deflator for the war years. They thought that price controls had produced

black markets, quality deterioration, and other forms of evasion that led to measured prices that understated the true rate of inflation. They then devised a technique for generating more correct measures of wartime inflation, using nominal income as an interpolator for the price level.¹¹

Recently, the main complaint of critics of the national income estimates is that they do not adequately stress rising inequality and therefore give a misleading picture of how well the economy is doing, and how well it is providing for the average citizen. We have returned in other words to the concerns that motivated formation of the Bureau. The response of the Commerce Department will be to release estimates of income by distributional class alongside its estimates of total income (Leonhardt 2019). The goal of the advocates of this change in the Commerce Department's policies, of course, is to reinforce calls for redistribution. The Bureau, as we have seen, was concerned from the beginning with the distribution of income. There were chapters on the distribution of income in its first study, as announced in the full title: *Income in the United States, its amount and distribution, 1909-1919*. King discussed the distribution of income when he extended the Bureau's estimates through the 1920s. And as I noted above, Kuznets published a number of important studies of the distribution of income and its impact on the economy which culminated in his famous presidential address to the American Economic Association (1955).

How well have the early estimates created by the Bureau and the Commerce Department with the Bureau's help stood up? The motivation for the creation of Commerce Department estimates was to document the

¹¹ Geoffrey Mills and I (1987) also attempted to improve on the measured deflator for the war years, but all such attempts are, inevitably, subject to a large margin of error.

severity of the Great Contraction and reinforce Progressive calls for action to address the crisis. So let's look first at the Great Depression. Table I compares the estimates made under Kuznets's direction with later estimates, and shows the level of the estimates in 1929, 1932, and 1939, as well as the percentage change between 1929 and 1932 and between 1929 and 1939. The numbers differ from one set of estimates to another, but the broad-brush picture of the Depression painted by each is similar. Consider the estimates of net national product in current dollar. The decline ranges from Kuznets's 1937 estimate of -74.4 percent down to the recent National Income and Product Account estimate of -61.1 percent. The declines between 1929 and 1932 in real Net National Product range from -54.1 percent in Kuznets (1937) down to -33.0 percent in the most recent National Income and Product Account estimates. Each series documents an unparalleled collapse between 1929 and 1932 and then a slow recovery during the 1930s so that by the end of the decade real income was only a few percentage points above the level in 1929; a lost decade. Scholars have had time to ponder the early estimates. And the Commerce Department has switched to chain-weighted volume indexes. But the picture of the Depression developed by Kuznets's team is very similar to recent estimates.

Figure 1 takes a longer view and shows four measures of real NNP for 1929 through 1955. The modern chained index declines a bit less during the Great Contraction than the earlier fixed-weight estimates. The explanation may be that as incomes fell people spent a larger fraction of their remaining income on lower-priced necessities and a smaller share on higher priced luxuries; more on bread and less on cars. This change in spending patterns would have been picked up by chaining in the form of a

lower price index. Clearly, however, all of these series tell similar stories for the Depression decade as might be expected from Table 1.

But the estimates diverge during the war and follow somewhat different patterns through the first part of the 1950s. The modern chained index in particular grows more rapidly during the war and afterwards. The decline in Kuznets's measure during the war reflects the conceptual difference with the other measures. Kuznets excluded a large part of military spending on the grounds that it was not part of the flow of goods to consumers. The chained index, which grows more rapidly during the war and afterwards is probably working as intended, responding quickly to changes in the way the private sector and the government spent their income. Sectors experiencing rapid technological change may have been the recipient of more spending and experienced lower inflation. Continually giving these sectors more weight produced lower measured inflation and thus a higher rate of growth of real income.

7. Conclusion

The Bureau was a product of the bitter controversies over the distribution of income that roiled the United States at the turn of the nineteenth century. Indeed, the Bureau began life as “the Committee on the Distribution of Income.” Progressives claimed that the distribution of income was increasingly distorted by the predation of the Robber Barons; while others blamed immigration for adverse trends or denied that such trends existed. But what were the facts? Independent scholars, Scott Nearing and Willford I. King, had produced estimates of national income and its distribution. One is reminded of Piketty (2014). But how could the public be sure that these were unbiased estimates? Two economists, Malcolm Rorty and Nahum

Stone, won financial support from the newly established Rockefeller foundation for an organization with the mission of producing reliable estimates and, hopefully, sufficient resources to accomplish the task.

Chartered in 1920, the Bureau's first study, directed by Wesley Clair Mitchell, *Income in the United States, Its Amount and Distribution* – nearly 600 pages in two volumes -- won widespread praise for the care, thoroughness and sophistication that were deployed in determining the level and distribution of income. The Bureau's estimates of national Income were extended through the 1920s by Willford Isbell King.

The Great Contraction, 1929-1933 produced new calls for reliable economic data. Progressives wanted rigorous estimates produced by the Federal government that would prove the severity of the contraction. Simon Kuznets was seconded from the Bureau to the Department of Commerce where he led a team that produced the first federal estimates of national income and established the administrative organization for producing regular updates. Kuznets did not invent GDP, but he had enormous influence as a philosopher of national income accounting, and as a skilled practitioner and teacher. Subsequently, some scholars have criticized aspects of the early estimates, but the picture they painted of the Great Depression has held up well. In summary, the Bureau's efforts to produce accurate measures of national income, and to disseminate them along with detailed explanations of the underlying philosophy and methods used to construct them was a response to intense political controversies and produced an enduring legacy.

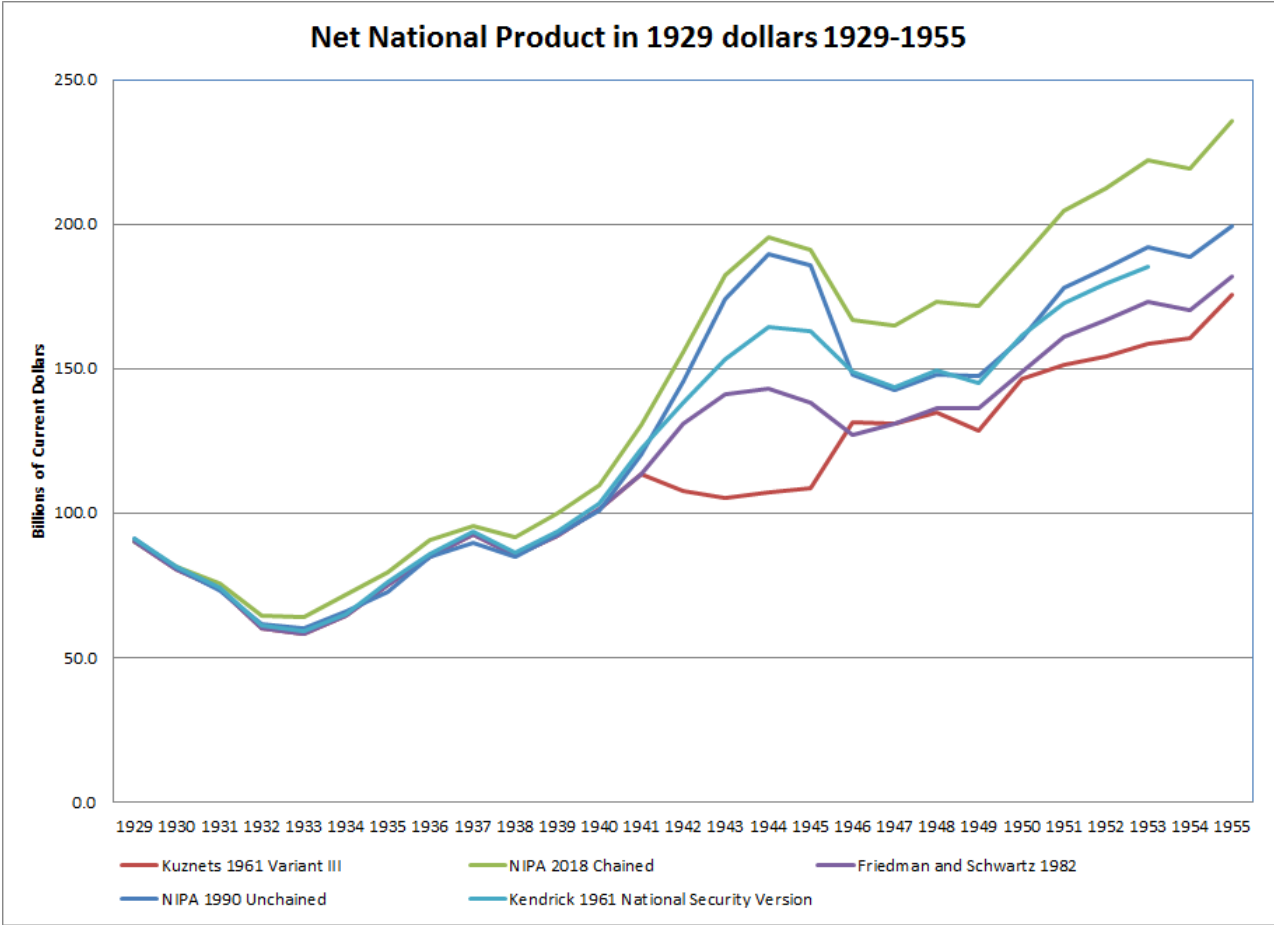
Table 1. Estimates of National Income

| | Variable | Source | 1929 | 1932 | % Change From 1929 | 1939 | % Change From 1929 |
|------------------------------------|---------------------------------|---|-------------|-------------|---------------------------------------|-------------|---------------------------------------|
| Billions of Current Dollars | | | | | | | |
| 1 | NNP | Kuznets 1937, 8 | 83.4 | 39.6 | -74.4 | NA | NA |
| 2 | NNP Variant II | Kuznets 1961, 486, Variant II | 93.7 | 47.3 | -68.4 | 76.8 | -19.9 |
| 3 | NNP, Variant III | Kuznets 1961, 486 | 90.3 | 44.8 | -70.1 | 73.8 | -20.2 |
| 4 | NNP | NIPA 2018 | 94.9 | 51.5 | -61.1 | 83.7 | -12.6 |
| 5 | National Income | <i>Historical Statistics, Millennial Edition, series Ca4</i> | 86.8 | 43.9 | -68.2 | 72.9 | -17.5 |
| 6 | GNP | Kuznets and King 1937, 1 | 93.6 | 47.2 | -68.5 | NA | NA |
| 7 | GNP, Variant III | Kuznets 1961, 486 | 101.5 | 53.4 | -64.2 | 85.1 | -17.6 |
| 8 | GNP | NIPA 1990 | 103.9 | 58.5 | -57.4 | 91.3 | -12.9 |
| Billions of 1929 Dollars | | | | | | | |
| 9 | NNP | Kuznets 1937, 8 | 83.4 | 48.6 | -54.1 | NA | NA |
| 10 | NNP | Kendrick 1961 | 90.5 | 60.4 | - 40.3 | 103.7 | 38.4 |

| | | | | | | | |
|----|--|---|-------|------|--------|-------|------|
| 11 | NNP – National Security Version | Kendrick 1961, 290 | 91.1 | 61.0 | -40.1 | 104.5 | 13.7 |
| 12 | NNP | Friedman and Schwartz 1982, 124-125 | 90.3 | 60.3 | -40.4 | 85.4 | -5.6 |
| 13 | NNP Chained Price Index | NIPA 2018 | 90.2 | 64.7 | - 33.2 | 100.0 | 10.3 |
| 14 | GNP – National Security Version | Kendrick 1961, 290 | 102.1 | 71.2 | -36.0 | 104.5 | 2.3 |
| 15 | GNP 1982 Prices | NIPA 1990 | 103.9 | 74.6 | -33.1 | 104.9 | 1.0 |
| 16 | GDP, Chained Prices | NIPA 2018 | 91.2 | 61.6 | -39.2 | 92.6 | 1.5 |
| 17 | GDP | <i>Historical Statistics, Millennial Edition, Series Ca9</i> | 103.7 | 77.2 | -29.5 | 113.9 | 9.4 |
| 18 | GDP | www.Measuringworth.com | 107.6 | 77.2 | -29.3 | 113.9 | 9.7 |

Note: Percent changes are the difference in natural logarithms multiplied by 100.

Figure 1. Four Estimates of Real Net National Product



REFERENCES

- Bowley, Arthur L.** 1923. *Income in the United States*. *The Quarterly Journal of Economics*, 37(3): 510-517.
- Brissenden, Paul Frederick.** 1932. "Review, *the National Income and its Purchasing Power*." *Weltwirtschaftliches Archiv*, vol. 35: 54–60.
- Bureau of Economic Research.** 1900. *Quarterly Bulletin of the Bureau of Economic Research*. Bureau of Economic Research.
- Coyle, Diane.** 2014. *GDP: A Brief but Affectionate History, Revised and Expanded Edition*. Princeton: Princeton University Press.
- Dorfman, Joseph.** 1959. *The Economic Mind in American Civilization: 1606–1933*, 5 vols. New York: Viking Press.
- Durr, Kenneth D.** 2013. *The Best Made Plans: Robert R. Nathan and 20th Century Liberalism*. Rockville, MD: Montrose Press.
- Edelstein, Michael.** 2001. "The Size of the U.S. Armed Forces during World War II: Feasibility and War Planning." In *Research in Economic History*, edited by A. J. Field, G. Clark, and W. A. Sundstrom, v Amsterdam; New York and London 20: 47–97.
- Fabricant, Solomon.** 1984. "Toward a Firmer Basis of Economic Policy." National Bureau of Economic Research.
- Fisher, Irving.** 1919. "Economists in Public Service: Annual Address of the President." *American Economic Review* 9(1): 5–21.
- Fogel, Robert William, Enid M. Fogel, Mark Guglielmo, and Nathaniel Grotte.** 2013. *Political Arithmetic: Simon Kuznets and the Empirical Tradition in Economics*. University of Chicago Press.
- Friedman, Milton, and Simon Kuznets.** 1945. *Income from Independent Professional Practice*. New York, National Bureau of Economic Research.

Friedman, Milton, and Anna J. Schwartz. 1963. *A Monetary History of the United States, 1867-1960*. Studies in Business Cycles; No. 12. Princeton: Princeton University Press.

Friedman, Milton, and Anna J. Schwartz. 1970. *Monetary Statistics of the United States: Estimates, Sources, Methods*. Studies in Business Cycles ; No. 20. New York: National Bureau of Economic Research.

Friedman, Milton, Anna J. Schwartz. 1982. *Monetary Trends in the United States and the United Kingdom, Their Relation to Income, Prices, and Interest Rates, 1867-1975*. A National Bureau of Economic Research Monograph. Chicago: University of Chicago Press.

Johnston, Louis, Williamson, Samuel H. 2019. "What Was the U.S. GDP Then?" MeasuringWorth.

Kendrick, John W. 1961. *Productivity Trends in the United States*. Princeton: Princeton University Press.

King, Willford Isbell, and Lillian Epstein. 1930. *The National Income and Its Purchasing Power*. General Series (National Bureau of Economic Research); No. 15. New York: National Bureau of Economic Research.

Kuznets, Simon. 1926. *Cyclical Fluctuations; Retail and Wholesale Trade, United States, 1919-1925*. New York: Adelphi.

_____. 1937. *National Income and Capital Formation, 1919-1935*, a Preliminary Report. National Bureau of Economic Research,.

_____. 1945. *National Product in Wartime*. New York: National Bureau of Economic Research.

_____. 1947. "Measurement: Measurement of Economic Growth." *The Journal of Economic History* 7: 10-34.

_____. 1950. "Shares of upper income groups in income and savings." New York: National Bureau of Economic Research, Occasional paper 35.

_____. 1955. "Economic Growth and Income Inequality." *The American Economic Review* 45, no. 1: 1-28.

_____. 1956. "Quantitative Aspects of the Economic Growth of Nations: I. Levels and Variability of Rates of Growth." *Economic Development and Cultural Change* 5, no. 1: 1-94.

_____. 1961. *Capital in the American Economy; Its Formation and Financing*. Princeton University Press.

_____, **Lillian Epstein, and Elizabeth Jenks**. 1946 *National Product since 1869*. General Series (National Bureau of Economic Research) ; No. 46. New York: National Bureau of Economic Research.

Lacey, Jim. 2011. *Keep from All Thoughtful Men: How U.S. Economists Won World War II*. Annapolis, MD: Naval Institute Press.

Leonhardt, David. 2019. "Why You Shouldn't Believe Those G.D.P. Numbers." *The New York Times*, Dec. 15.

Mills, Geoffrey and Hugh Rockoff. 1987. "Compliance with Price Controls in the United States and the United Kingdom During World War II," *Journal of Economic History* 47, March, 197-213.

Mitchell, W., King, W., Macaulay, F., & Knauth, O. 1921. *Income in the United States, its amount and distribution, 1909-1919* (General series (National Bureau of Economic Research) ; no. 1-2). New York: National Bureau of Economic Research incorporated.

Nathan, Robert R. 1994. *Journal of Evolutionary Economics*, v. 4, issue. 1: 1-16.

Nearing, Scott. 1915. *Income; an Examination of the Returns for Services Rendered and from Property Owned in the United States*. New York, Macmillan.

Paton, W. A. 1923. Review. "Income in the United States: Its Amount and Distribution, 1909-1919." *Journal of the American Statistical Association*, vol. 18, no. 142: 804-808.

Piketty, Thomas. 2014. *Capital in the Twenty-First Century*. Cambridge and London: Cambridge Massachusetts: Belknap Press of Harvard University Press.

Roosevelt, Franklin. 1936. "Roosevelt's Defense of His Use of Billions for Recovery." *New York Times* (1923-Current file), Oct 02.

Rockoff, Hugh. 2019. "On the Controversies behind the Origins of the Federal Economic Statistics," *Journal of Economic Perspectives*, volume 33, Number 1, winter: 147-164.

Roosevelt, Franklin D. 1936. "Roosevelt's Defense of His Use of Billions for Recovery" *New York Times*, October 2, p. 2.

Smith, Adam. (1976 [1776]) *An Inquiry into the Nature and Causes of the Wealth of Nations*. R.H. Campbell and A.S. Skinner (eds), Oxford: Clarendon Press. Reprinted, Indianapolis: Liberty Classics.

United States. Office of Business Economics, Bureau of Foreign and Domestic Commerce. 1932. *National income, 1929-32*. Washington: Govt. Print. Off.

Weyl, E. Glen. 2012. "Introduction, Simon Kuznets: Cautious Empiricist of the Eastern European Jewish Diaspora." In *Jewish Economies: Development and Migration in America and Beyond*, by Simon Kuznets, edited by Stephanie Lo and E. Glen Weyl, vol. 1, 1-58.