

# On the Controversies Behind the Origins of the Federal Economic Statistics

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**O**ur federal economic statistics originated in the economic and political divisions in the United States and the bitter debates over economic policy they engendered at the end of the 19th century and during the world wars and Great Depression. Workers were angry because they believed that they were being exploited by robber barons who were capturing all of the benefits of economic growth, while employers were just as sure that the second industrial revolution had brought workers an unparalleled increase in real wages. Other debates centered on the effects of unrestricted immigration on wages and employment opportunities of native-born Americans, on the effects of tariffs on prices paid by consumers, on the effects of frequent financial panics on employment, and, during the world wars, on the effects of wage and price controls on the living standards of workers. Participants on all sides of these debates believed that nonpolitical and accurate statistics constructed by experts would help to win support for the policies they favored.

In most cases, the development of these statistics was led by individuals, private organizations, and state governments, although the federal government eventually took over the role of producing these statistics on a regular basis. Here I provide brief histories of the origins of US statistics on prices, national income and product, and unemployment to illustrate this story.

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## Price Indexes

The honor of creating the first price index probably belongs to the Italian G. R. Carli, who published an index based on the prices of grain, wine, and oil in 1764 as part of an examination of the effects of precious metals from the New World on the European price level (Mitchell 1938, p. 7). The origins of the US government price indexes can be traced at least to the 1860s. During the Civil War, Secretary of the Treasury Salmon Chase published averages of prices, perhaps with the intention of showing that inflation—prices about doubled in the North during the war—was not as extreme as some critics of the government's financial policies suggested.

For economists, the work of William Stanley Jevons (1863) has long been considered transformative because it marked a sharp break between statisticians as compilers of statistics and economists as producers and users (S. Stigler 1982). Jevons did not weight the individual prices he collected. Credit for weighted indexes belongs, as much as any economic ideas have identifiable inventors, to Etienne Laspeyres and Hermann Paasche (Persky 1998). Jevons computed price relatives (ratios of the price in a given year to the price in the base year) and then took a geometric average. A geometric average avoided distortions resulting from very large increases in individual prices. Jevons, moreover, went on to use the quantity theory of money to explain the inflation. He found that prices had risen about 30 percent between 1848 and 1860 and attributed this to the discoveries of gold in the mid-1800s. He confirmed his explanation by estimating the amount of gold in use, and showing that it had increased by about the same percentage as prices. He then explored the effects of the inflation on various classes such as bondholders, wage earners, and so on. Jevons's choice of the geometric mean motivated the important work of British economist and statistician Francis Y. Edgeworth (1887, 1889). Edgeworth showed that the best mean depended on the distribution of prices, and that the margin of error associated with a particular mean depended on how the actual distribution differed from what was assumed (S. Stigler 1978, p. 297–98).

A crucial step in the path to our modern price statistics was the establishment of the US Bureau of Labor in 1884.<sup>1</sup> Organized labor wanted an organization that would fight for the rights of labor, while employers resisted. The compromise was an agency that would simply collect and distribute statistics about labor. President Chester Arthur chose Carroll D. Wright, who had built a reputation for competence and integrity as head of the Massachusetts Bureau of the Statistics of Labor—the first such agency—and who was acceptable to both labor and capital, to direct the new federal agency.

In the early 1890s, the Bureau of Labor produced indexes of wages and prices at the behest of the Aldrich Committee—named after Senator Nelson Aldrich, a Republican who later played an important role in establishing the Federal Reserve. The underlying motivation for the study, I surmise, was labor's claim that wages

<sup>1</sup>Weiss (1955) provides a concise but informative history of the price indexes produced by the Bureau of Labor Statistics. Duncan and Shelton (1978) provide a chronology of the work of the Bureau to 1976.

had fallen while prices had risen as a result of Republican tariff increases; a claim that some committee members, including Aldrich, believed could be laid to rest with comprehensive statistics of untainted provenance. The Committee's report was based on data collected by a research group directed by Roland Falkner, a professor of statistics at the University of Pennsylvania.<sup>2</sup> The group painstakingly collected 52,393 price observations (Conforti 2016, p. 3)—the era of big data had arrived! With this data in hand, Falkner produced wholesale and retail price indexes stretching from 1860 to 1891. A survey of expenditures by “normal” households—no more than five children, did not own their own home, among other characteristics—served as the basis for weighting the prices. Data on the number of workers by industry provided a basis for weighting the wage series. The report did show, as it turned out, that prices had risen after the controversial McKinley tariff of 1890 had gone into effect, although it also showed that workers had prospered if a longer period was considered. The work for the Aldrich Committee led to further studies of prices by the Bureau of Labor. Beginning in 1902, the Bureau began producing continuing series of wholesale prices and retail food prices. The retail price series used weights from a survey of expenditures by working class families undertaken in 1901 (Weiss 1955, p. 21).

The data produced for the Aldrich Committee was soon put to good use by economists attempting to address the crucial issues of the day. The inflation investigated by Jevons, produced by the discoveries of gold in the 1850s and by the printing of the greenbacks during the Civil War, gave way to deflation as more countries joined the gold standard and massive new supplies of gold could not be found. The deflation, measured by a modern consumer price index, averaged  $-3.5$  percent per year from 1865 to 1879, when the United States returned to the gold standard, and then averaged a milder  $-1.0$  percent per year from 1879 until 1896, when new supplies of gold reversed the trend (Carter et al. 2006, series CC2). The deflation produced a long and bitter political debate. The Populists, eventually led by William Jennings Bryan, claimed that debtors (they were thinking first about farmers) had been hurt. The Populists wanted to switch to a bimetallic monetary regime that would include both gold and silver in the monetary base. The result, they believed, would be an inflation that would reduce the real value of the farm debts that had been made unfairly burdensome by the deflation.

Were the Populist claims valid? The deflation had been ongoing for several decades, and once it was anticipated, it would tend to produce, some economists argued, lower nominal interest rates; farmers who had signed mortgages after deflation was anticipated could not fairly claim that they had been wronged by the gold standard. Moreover, rates on new mortgages would reflect higher expected inflation after a switch to a bimetallic standard. Enter Irving Fisher. In “Appreciation

<sup>2</sup>Falkner (1899) explains and defends the methodology of the Aldrich Report. Long (1960) discusses the methodology of the report, and compares it with some of the other early federal studies of wages and prices. Conforti (2016) discusses the role of the Aldrich report in the establishment of the wholesale price index.

and Interest" (1896), one of the most influential papers in the history of economics, Fisher explored the relationship between deflation and the rate of interest. Fisher was not the first to propose that nominal interest rates adjust to reflect expected price changes, but he produced the first thorough theoretical and empirical study. Fisher examined a large body of data, relying in part on Jevons's data for the United Kingdom and the Aldrich Committee's data for the United States. He found that while the rate of interest had fallen during periods of deflation, the adjustment was slow. As a result, some borrowers had indeed been hurt by the deflation. But Fisher also concluded that most loans then outstanding had been contracted during a time when the downward trend in prices was well-understood, and so for most outstanding loans, there was no injustice to be corrected by inflation.

Later, Fisher (1922) explored the best method of computing price indexes. Fisher reviewed the indexes recommended by Jevons, Laspeyres, Paasche, and others and subjected them to a battery of tests. One concern was what to do about the problem that an index using Laspeyres's base-year-weighting normally differed from an index using Paasche's end-year-weighting. Marshall (1887) had suggested the chain-weighted approach that government bureaus have used increasingly in recent years. But when weights are only available at discrete intervals something else must be done. Fisher famously concluded that a geometric average of Laspeyres's index and Paasche's was "ideal."<sup>3</sup>

An important use of the Bureau of Labor's price data in a political controversy came during the anthracite coal strike of 1902. The anthracite fields of Pennsylvania provided coal to America's eastern cities. The strike brought mining to a halt and promised a very cold winter. President Theodore Roosevelt made repeated efforts to mediate. Eventually, he got the two sides to agree to abide by the recommendations of an Anthracite Coal Strike Commission, constructed to balance the interests of the mine owners and the miners. One of the key inputs in the Commission's work was information about food prices in the mining districts collected by the Bureau of Labor. To provide convincing data, Commissioner Wright flooded the mining districts with agents who collected reams of data. He even authorized the hiring of interpreters because many of the miners were foreign-born. In the end, the Strike Commission's recommendations appear to have been an attempt to split the difference between labor and capital, but the compilation of data to decide what a "fair" increase in wages would be was both an obvious move by an administration determined to end the strike and an important precedent.

Federal price indexes again became important in World War I. Wages were controlled soon after the war began to hold down the cost of the vast supply of materiel being purchased by the government, but it was understood that wages would need to be raised with the "cost of living." The retail food price index was pressed into service as a tool for adjusting wages set by government agencies. As early as May 1917, just one month after the United States entered the war, Irving Fisher wrote to

<sup>3</sup>As a professor I know told her students, "Don't Laspeyres; if you study hard, you will Paasche the test."

Assistant Secretary of Labor Louis F. Post suggesting that because food prices by his reckoning rose about twice as fast as prices in general, about one-half of the increase in the food price index would be the appropriate adjustment for wages. Post countered that wages should be raised to the full extent of the increase in the retail food price index (Goldberg and Moye 1985, pp. 102–103).

Clearly, a food price index alone was not a sufficient basis for adjusting wages. The Bureau of Labor Statistics (BLS), as the Bureau of Labor was renamed when it was moved to the newly established Department of Labor in 1913, made its first foray into constructing a more comprehensive index at the request of the Ship Building Labor Adjustment Board, which had the job of setting wages in the shipyards. BLS began by conducting a survey of prices paid by workers in shipbuilding centers. In June 1918, with the National War Labor Board calling for data on the cost of living that covered the entire workforce, and with a substantial emergency grant from President Wilson to finance the effort, the BLS launched a national survey. The resulting report, issued in 1919, was the BLS's first report on the cost of living for the nation as whole. This study provided the weights for the estimates of an index of the "cost of living," which continued to be published after the war (Goldberg and Moye 1985, pp. 102–105).

Interest in the cost of living waned in the prosperous 1920s, and in the 1930s attention focused more on estimates of income and employment. But the return of inflation and wage and price controls in World War II refocused attention on the cost of living index. Labor leaders—George Meany of the AFL was especially vocal—claimed that workers were hurt when the Bureau's index was used to adjust wages because it substantially understated the true increase in the cost of living. Criticism of the index led to the appointment of the President's Committee on the Cost of Living by the War Labor Board. It was a "tripartite committee" with representatives from labor, management, and the public tasked with investigating the index. In January 1944, the labor members issued a stinging indictment of the index. They argued that the true increase in the cost of living between January 1941 and December 1943 was not 23.5 percent as the Cost of Living Index showed, but rather 43.5 percent. What were the errors? The cost of living index, the labor members claimed, failed to take account of the many costs imposed on workers and their families by the war. It did not properly account for the shortage of household workers, the costs of moving to or commuting to jobs in war production centers, higher taxes, quality deterioration, black markets, discontinuance of the production of new consumer durables, rationing, the elimination of sales, and "forced up-trading."

The last item, although unfamiliar today, was an important problem that the Office of Price Administration, the agency that set prices for consumer goods, confronted but never resolved. Manufacturers of products as diverse as underwear and steel normally produced several lines of merchandise: low-quality lines on which the profit margin per unit was low but that the manufacturer could sell in large quantities, and higher-priced lines of higher quality goods sold in smaller quantities but with higher margins per unit. With prices controlled and demand

strong, manufacturers could discontinue their lower-priced line, forcing consumers to “trade up” to the higher-priced line while still claiming that they had not raised their prices. The Office of Price Administration tried various methods for dealing with the problem. For example, it issued regulations that required clothing manufacturers to keep a weighted average of prices of all lines below a maximum, but forced up-trading remained a headache (Rockoff 1984, pp. 151–54).

The claim that the true increase in the cost of living was nearly twice as much as shown by the Bureau of Labor Statistics index led to the appointment of a nonpartisan committee of experts, chaired by Wesley Mitchell of the National Bureau of Economic Research (NBER) and including Simon Kuznets, then at the War Production Board, and Margaret Reid from the Budget Bureau’s Office of Statistical Standards. The committee exonerated the index. It found that the index in December 1943 was understated by about 3 or 4 percent because of unmeasured quality deterioration and by another 0.5 percent because smaller cities were not represented. The committee agreed with labor that the war had imposed many new costs on workers, but doubted that these special war-related costs could be accurately measured, and thought that even if they could be, they should not be included in the cost of living index. The committee did endorse a change in name of the index from “cost of living” to “consumer price,” the name we know it by today (Mitchell 1944; Rockoff 1984, pp. 167–71).

The accuracy of the index receded as a political issue when price and wage controls were removed soon after World War II, but resurfaced when the index began to be used in escalation clauses in contracts. The United Auto Workers, for example, negotiated long-term contracts with wages that escalated with the Consumer Price Index. Labor contended, as it had in the war, that the index understated inflation. For example, the index still did not include taxes. Management, on the other hand, argued that the index failed to take quality improvements fully into account. Although the accuracy of the index was not as pressing an issue as it had been during the war because only part of the labor force was affected; lots of money was at stake. Again, the beleaguered Bureau of Labor Statistics appointed a group of outside experts to investigate the Index and make recommendations. The Price Statistics Commission, popularly known as the Stigler Commission after its chair, economist George Stigler, delivered its report in 1961 (National Bureau of Economic Research, Price Statistics Review Committee 1961).

The Commission was unsympathetic to most of the criticisms that implied the index understated inflation. Taxes are an example. The case for including taxes was straightforward: taxes are the prices paid for services provided by government and should be included just as prices paid for, say, private legal services. Indeed, George Stigler’s famous price theory textbook said exactly that (Stigler 1966, 75 fn. 18). But the Commission for a variety of reasons recommended that taxes be excluded. The Commission was more sympathetic to the notion that the index overstated inflation because it did not take quality improvements fully into account. One of the staff papers written for the Commission was the well-known study by Zvi Griliches (1961) of automobile prices. Griliches, using hedonic methods, estimated the part of the upward

trend in automobile prices that was due to the incorporation of gradual improvements. He concluded that the hedonic method was promising as a research tool, although not yet ready for adoption. The problem of unmeasured quality change due to technological improvement did not end, of course, in the 1960s; it returned with a vengeance with the development of the personal computer and information technology. The Commission's recommendations included establishing a regular schedule of revisions for the weights, introducing new products more promptly, and establishing a research division to develop methods for coping with quality changes.

## National Income and Product

There is a long history of attempts to measure national income, dating back at least to the 1665 estimates made by William Petty (Coyle 2014, p. 8).<sup>4</sup> In the United States, the early estimates made by George Tucker (1843) and Ezra Seaman (1846) have earned high praise from modern students of national income accounting (Gallman 1961). Both relied mainly on census data to produce estimates of population and income, and both sets of estimates were created to address important political issues.

During the depression that followed the Panics of 1837 and 1839, a number of states defaulted on their debts. Tucker (1843, 210–11) argued that this was unnecessary: his state-level estimates of income demonstrated that the states had ample means to repay their debts. Both Tucker and Seaman, moreover, produced revised estimates after the release of the 1850 census. Both also addressed the relative economic strengths of the North and the South, obviously a comparison of crucial importance as the crisis over slavery gathered momentum.

The decisive push for regular publication of estimates of national income came from intense debates over the distribution of income at the turn of the 19th century. Shortly before the United States entered World War I, Scott Nearing (1915) and Wilford Isbel King (1915) published quantitative studies of the distribution of income and wealth. Both studies highlighted the high degree of inequality prevailing in the United States. Nearing's book was not well-received by mainstream economists, who thought it was not done carefully and was influenced too heavily by Nearing's leftist political views. However, King's book was praised—for example by Allyn Young (1916)—and proved to be of enduring influence.

King (1915, pp. 50–1) explained his purpose clearly: "Some of these writers ... contend that the past half century has been an era in which all gains have been absorbed by a few plutocrats while the great masses of the population have become poorer and poorer. Such arguments can only be verified or disproved by a direct study of the facts ..." For data, King relied on the census, as had Tucker and Seaman. But he also utilized death duties from Massachusetts and Wisconsin to construct

<sup>4</sup>Kendrick (1970) provides an international history of attempts to measure national income and product.



Lorenz curves of wealth. These showed that although wealth inequality was great in the United States, it was less than in several industrialized European countries.

Like Nearing (1915), King (1915) estimated the shares of national income going to the factors of production. King found a relatively stable share of rent, refuting the claim that landowners were grabbing a larger and larger share of the national income. The share of rent, moreover, was barely able to cover the expenses of government in 1910, which implied that a single tax on land as proposed by Henry George was infeasible. King (1915, p. 160) did find a sharp decline in the share of wages and salaries from 53.5 percent in 1890 to 46.9 percent in 1910. These numbers might seem to confirm labor's claim that exploitation of labor by capital had increased. But King (p. 163) argued that the decline in labor's share was due to the disappearance of free land in the West and the influx of immigrants of "low efficiency."

King (1915) went on to calculate the real wage per employee. He found a gratifying increase from 1870 to 1900, but then a decrease of about 2.5 percent between 1900 and 1910 (pp. 175–176). He was clear about the cause: not robber barons, but immigrants. King (p. 179) concluded: "The evidence, then, indicates that all the entrenchments of organized labor, all the legislation in favor the working class, all of our new inventions have failed to prevent the invaders from forcing down the commodity wages of American labor." I have dwelled on King, a forgotten figure, not to draw attention to the beliefs and prejudices of an earlier generation of economists, but rather to emphasize that national income accounting grew out of highly charged political controversies over the distribution of income—controversies remarkably similar to those that roil us today.

In 1918, Irving Fisher delivered his presidential address to the American Economic Association. Fisher described the dire condition of the working class, backing up his description with statistics from King and one of his own students. He then argued for tougher inheritance laws and greater participation of the state in the financing and running of industry to reduce inequality. The expansion of the federal government in World War I proved that the government had the capacity to run the economy more efficiently and more equitably than private business. Although Fisher (1919, p. 10) favored a degree of socialism—"we are all socialists now"—he also warned about the danger of supporting extremists who favored class warfare. Fisher's embrace of socialism was not unusual. Republican Warren Harding would easily win the 1920 Presidential election with his call for a return to normalcy, but Socialist Eugene V. Debs would win nearly a million votes—even though he was in jail at the time for urging opposition to the draft.

In the same address, Fisher (1919) suggested an endowment to finance economic research that lay beyond the resources of any one professor. The idea for such an endowment was in the air. For example, a short-lived Bureau of Economic Research had been started in 1899, directed by John R. Commons and financed by George H. Shibley, a wealthy New York lawyer (Bureau of Economic Research 1900). It published a number of quantitative studies, including the first comprehensive index of US stock prices (Bishop 1965). But Shibley was mainly interested in documenting deflation to support his case for bimetallism. Indeed, he wrote a



number of Populist tracts including a 700+ page tome called *The Money Question* (1897). When the price level began to rise at the turn of the 19th century, Shibley lost interest and stopped financing the Bureau.

But Fisher got his wish for a research institution when the National Bureau of Economic Research (NBER) was established. The necessary entrepreneurship had come from a business economist Malcolm C. Rorty and liberal economist Nahum I. Stone, then at the US Tariff Commission. Rorty was impressed by Stone's devotion to objective facts and by Stone's criticism of Nearing's work on the distribution of income (Fabricant 1984). Rorty then assembled a team of economists and business leaders who in June 1917 formed the "Committee on the Distribution of Income," which can be considered the first name of the NBER. World War I delayed further action, but the groundwork had been laid.

The National Bureau of Economic Research was chartered in January 1920. Wesley Clair Mitchell was appointed its first leader, and Mitchell directed its first project: an estimate of national income and its distribution. Mitchell assembled a team that included King, Frederick R. Macaulay, and Oswald W. Knauth. The result was a detailed set of estimates of national income and product that led directly to the modern estimates produced by the federal government. *Income in the United States, Its Amount and Distribution, 1909–1919* was published in two volumes (National Bureau of Economic Research, 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 payments-for-final-products side, and Knauth with estimating it from the payments-for-productive-services side. The two estimates turned out to be reassuringly close. The study identified and tried to deal with many of the problems inherent in estimating national income that continue to be sources of debate and criticism. For example, it noted that its estimate of the national income in 1918 of \$61 billion did not include the monetary value of unpaid work in the household, which probably amounted to "several billions" (National Bureau of Economic Research, Mitchell et al. 1921, p. 143).

Inequality was discussed in the penultimate chapter of the summary volume. This chapter reviewed estimates of the distribution of income by factor of production, 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 of the NBER, does not end with rabble-rousing or policy recommendations. Instead, it ends with a chart and an explanation of a 1918 Lorenz curve.

Although the report itself was just-the-facts, many economists at the time thought that better data could contribute to the design of better legislation. Indeed, Mitchell thought that economic data could do even more. Armed with good data on the state of the economy, including perhaps “leading indicators,” businesses could make wiser decisions about investment and employment. In other words, the business cycle could be tamed with more and better data. The NBER’s estimates of national income and product continued in the 1920s. But they only appeared with a lag and so were of limited value in meeting the fast-changing economic circumstances of an economic depression, as would shortly become clear.

In 1930, Simon Kuznets, a student of Mitchell, took over the Bureau’s project on national income. Kuznets did not invent the concept of national income or national product, nor was he the first to measure them, but he greatly advanced the field. Even a partial list of his achievements must include his creativity in showing how data from a wide array of sources could be combined to build persuasive estimates of national income and product; his investigations of the economic and philosophical issues that bedevil the estimates; his demonstration that many important questions about economic development can be addressed with these estimates (the basis of his Nobel prize); and the role he played as a model scholar-teacher for a generation of economists (Fogel, Fogel, Guglielmo, and Grotte 2013).

The economic catastrophe from 1929 to 1932 produced a US Senate resolution, introduced by Senator Robert La Follette Jr, the Wisconsin Progressive, calling on the Department of Commerce to provide estimates of national income (Dorfman 1959, p. 669). The political point, clearly, was to justify sweeping governmental economic initiatives. Kuznets was seconded to the Department of Commerce to work on an official set of estimates. His first report, submitted in January 1934, showed that national income 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).

During World War II, Kuznets joined the War Production Board where he used national income accounting to challenge the spending plans of the War and Navy Departments. Kuznets and Robert Nathan (Kuznets’s student) argued that the spending plans needed to be scaled back, both to prevent competition over supplies from slowing production and to prevent an unacceptable decline in the flow of final goods to consumers. Ultimately, the economists won the “feasibility debate” and forced a cutback in the demands of the Army and Navy. Counterfactual spending plans are hard to evaluate, but two careful students of the feasibility debate have credited the economists with a crucial contribution to the ultimate success of the US munitions program (Edelstein 2011; Lacey 2011).

Kuznets was deeply concerned with the limitations of net national product and related concepts as measures of welfare. He recognized, for example, that improvements in education and healthcare were not measured adequately because they were measured by costs, and he provided some speculative estimates of how the

growth of the net national product was affected by these biases. Ultimately, however, he opted for excluding these speculations from his final estimates.

Military spending presented another problem. In one of his last discussions of national income and product before US entry in World War II, Kuznets (1941, pp. 19–20) explained that his estimates included “dreadnoughts, bombing planes, poison gas, and patent medicines because they are rated economic goods in our country today,” even though they “might well be considered worthless and even harmful” in a society organized differently. In a footnote, Kuznets (p. 31, fn. 5) used an analogy with private spending to buttress his case for including military expenditures: “If the activities of the private police used by many large corporations are productive, why not those of the municipal police? And if of the domestic police, why not of the international police, i.e., the armed forces of the nation?” During World War II, however, Kuznets (1945) modified his thinking. He argued that military spending should be counted in national product during a time of total war, but it should be excluded during peacetime because military spending was then an intermediary good for producing a flow of consumption to consumers. Other economists, including decisively those at the Department of Commerce, thought otherwise (Gilbert, Staehle, Woytinsky, and Kuznets 1944).

A number of economists, however, have found Kuznets’s concept of a Peacetime National Income to be attractive. Higgs (1992), for example, argued that the then-current interpretation of the impact of World War II on the American economy, that it created unprecedented prosperity, was reversed when one used Kuznets’s peacetime concept rather than the conventional measure. Higgs even took exception to Kuznets’s decision to include some military durables such as aircraft in investment because Kuznets thought that they could later be turned to peacetime purposes.

In retrospect, a number of concerns weighed against adopting Kuznets’s concept of peacetime national product. One reason, as Coyle (2014, p. 20) suggests, was the rise of Keynesian economics. In principle, one could use Kuznets’s peacetime version of national product to analyze the macroeconomy, but the conventional measure fit more smoothly into the simple Keynesian model taught to a generation of economics students in Samuelson and other textbooks. Perhaps the most important reason for rejecting Kuznets’s concept, however, was the Cold War. In his famous study of productivity, Kendrick (1961, p. 25) chose to include all defense spending in his estimates of national product partly on the grounds that “national security is *at all times* [Kendrick’s italics] a prime objective of economic organization.” In political terms, excluding national defense from national product would create the appearance that the government’s statistical agency was siding with the critics of America’s defense budget. Of course, no one was required, as Kuznets had pointed out, to use only one measure of aggregate product. To the contrary, Kuznets thought that it would be best to produce a series of measures, some specialized for one purpose and some for another. But as we have learned, public attention does tend to focus on a single measure of national product, so the decision to ignore Kuznets’s peacetime concept may have had important consequences.

## Unemployment

The federal unemployment statistics have in common with the price and income statistics that they were born and lived in political controversy. Unlike the price and income statistics, however, the contribution of economists to the thinking about the measurement of unemployment was modest. Their major contribution was mainly in suggesting methods for designing questionnaires and sampling procedures. As Card (2011) put it, the unemployment statistics are more of a case of “Measurement without Theory.”

The first systematic collection of unemployment statistics in the United States seems to have been a survey conducted by the Massachusetts Bureau of the Statistics of Labor in 1878 (Keyssar 1986, pp. 1–5). The head of the Bureau, as noted above, was Carroll D. Wright. Unemployment was running high as a result of the depression that followed the Panic of 1873. Some estimates circulating at the time put the number of unemployed in Massachusetts at 250,000. Wright surveyed local officials who were asked to report on the number of men without work, but to report only those “who really want work,” a definition of unemployment, obviously, that would make for a smaller number than one that included discouraged workers. Wright seems to have been pleased with the results of his survey, which showed at most about 30,000 unemployed workers. This survey appears to be the beginning of an emphasis on people actively seeking work. Close to a century and a half later, the question of whether discouraged workers should be counted as unemployed in the headline estimates of unemployment remains a highly charged political issue.

Questions about unemployment were included in each federal census from 1880 to 1910. The lack of more frequent data was obviously a problem and was felt acutely in 1914 when the outbreak of World War I sparked a financial panic and economic contraction in the United States. The newly renamed Bureau of Labor Statistics (BLS) attempted to estimate the level of unemployment. In 1916, working with agencies in New York, it produced “Unemployment in New York City.” Working with Metropolitan Life Insurance Company (which surveyed its industrial policyholders), it produced “Unemployment in the United States.” The latter study reported a high level of unemployment, which it attributed to several factors including the policy of employers of keeping “40 men in line outside the gates for every job that might open” and the immigrants pouring into the country (Goldberg and Moyer 1985, p. 97). In addition, the Bureau of Labor Statistics began tracking and reporting levels of employment in several industries.

Questions about unemployment were dropped from the 1920 census. The timing was unfortunate because the United States suffered a severe “V-shaped” economic contraction in 1920–21. In response, President Harding arranged a conference on unemployment (Hoover 1921). One key question, of course, was the level of unemployment. The conference received contrasting estimates from the Bureau of Labor Statistics and the US Employment Service.

Before looking at the different estimates, a short digression on the Employment Service is warranted, because its history displays the political and economic

forces at work. The idea of publicly funded employment offices to match people seeking work with employers who needed workers had a long history in Europe. An employment service was established in Ohio in 1890, and the idea soon was adopted in other states. The “Ohio idea” moved to the federal level with the establishment of the Division of Information in the Bureau of Immigration and Naturalization in 1907. Net immigration had reached a high of 767,000 in 1907, an addition of nearly 0.9 percent to the population (Carter et al. 2006, series Aa7 and Ad22). Many workers and labor leaders complained that the flow of immigrants was providing strikebreakers and depressing wages. One idea behind the Division of Information was to take the pressure off urban labor markets on the east coast by finding jobs for immigrants in agricultural areas. The Division set up the first federal employment office on Ellis Island in 1907 (Guzda 1983). World War I created an enormous demand for labor. The Division of Information received a large infusion of funds so that it could aid in the placement of war workers; and in recognition of its expanded role, its name was changed to the US Employment Service.

The Hoover Commission received two estimates of unemployment. The Bureau of Labor Statistics estimated the “shrinkage of employment” to be 5.5 million (Goldberg and Moye 1985, p. 126). The BLS emphasized that because it was surveying employers, all it could measure was whether employment had risen or fallen. It didn’t know, for example, how many people were actively seeking work as opposed to how many had decided to leave the labor force. The US Employment Service provided an alternative estimate for September 1921 of 2.3 million for a restricted set of cities based on a survey of state and municipal employment services, employers’ and employees’ organizations, and other sources. The Commission’s Committee on Unemployment Statistics, which included several prominent economists, thought that the Employment Service’s estimate was better, and after extrapolating it to reflect the country as a whole, concluded that the number of unemployed workers was certainly no more and probably less than 3.5 million. The retrospective estimate developed by David Weir (1992), perhaps the best recent estimate, however, is 4.8 million in 1921, much closer to the BLS figure (Carter et al. 2006, series Ba474).

The Committee on Unemployment Statistics made several recommendations for improving the unemployment statistics. For one thing, it was especially skeptical about “reporting over the telephone” (Hoover 1921, p. 40). Interest in the rate of unemployment declined in the prosperous 1920s and funding for the Employment Service dried up.<sup>5</sup> But another controversy over the level of unemployment erupted soon after the stock market collapse in October 1929. On January 21, 1930, President Hoover announced that information supplied to him by the Department

<sup>5</sup>When Frances Perkins became Secretary of Labor in 1933, the feeling in the administration was that the Employment Service had become merely a letterhead. Consequently, the First US Employment Service was formally abolished in 1933 and a second one created. Later, its programs were absorbed by the Education and Training Administration of the Department of Labor. The employment service still receives funding, but the offices are located with the Department of Labor’s American Job Centers.

of Labor showed that employment was rising (*New York Times*, January 22, 1930). Frances Perkins, New York State's Industrial Commissioner, publicly disagreed: her data from surveys of employers in New York State showed that employment had continued to decline (*New York Times*, January 23, 1930; Perkins 2011, pp. 91–93).

About six weeks later, Hoover reiterated his claim (*New York Times*, March 8, 1930): “The low point of business and employment was the latter part of December and early January. Since that time employment has been slowly increasing, and the situation is much better today than at that time.” To support this claim, Hoover's press release included a memorandum by Robert P. Lamont, the Secretary of Commerce, and James J. Davis, the Secretary of Labor. It included a weekly employment index, which apparently began in mid-December. This index reached a trough of 86.0 on December 30 and then began a steady rise.<sup>6</sup>

Hoover's optimism again received a rebuke from Perkins (*New York Times*, March 11, 1930), who complained that Hoover's weekly figures were not publicly available and guessed that they covered a limited set of firms capable of reporting employment at a weekly frequency, and so were unrepresentative. The publicly available monthly statistics from the Bureau of Labor Statistics and her statistics for New York State showed that the labor market continued to deteriorate. Events soon confirmed Perkins's pessimism. Her willingness to challenge Hoover on this and subsequent occasions impressed Franklin Roosevelt, then governor of New York, which helped to launch Perkins upon the path to becoming the first woman to serve in a President's cabinet.

Questions about unemployment were asked in the 1930 census. The initial findings, published in June 1930, indicated a rate of unemployment of about 6.6 percent. But by the time the data was published, this seemed much too low, and the Census Bureau was asked to do a follow up. This study, conducted in 21 cities, showed unemployment rising from 9.7 percent at the time the 1930 census was conducted to 22.2 percent in January 1931. Other special surveys were conducted during the 1930s, but it had become obvious that something frequent and continuous was needed.

Today we take it for granted that unemployment rates should be estimated monthly by asking a random sample of people questions about whether they are working, and if not, whether they are seeking work, along with additional questions to learn about discouraged workers, part-time work, and related topics. But it was not until 1940 that the Works Projects Administration began a regular monthly survey of employment. The main purpose of the Works Projects Administration was to create jobs, but many of its projects, such as interviewing Americans born into slavery,

<sup>6</sup> I have not located a source for the weekly statistics. However, an NBER monthly index of automobile production shows increases from the previous month in January, February, March, and April 1930. Also, an NBER monthly index of transportation workers shows an increase from December 1929 to January 1930 (NBER series retrieved from FRED). Thus, it seems possible that Department of Labor might have found some data to support its claims.



turned out to be of enduring value. The unemployment survey is another example. When the Works Projects Administration was terminated in 1942, the unemployment survey was turned over to the Census Bureau. In 1959, responsibility for the survey was transferred to the Bureau of Labor Statistics (Goldberg and Moye 1985, p. 166).

Long after the Depression, economic historians would debate the “true” rate of unemployment during the Great Depression. For some years, the standard estimates were those constructed by Stanley Lebergott (1964). Lebergott’s estimates were challenged in a well-known paper by Michael Darby (1976), who maintained that Lebergott’s decision to count people working for government relief programs produced an overstatement of the true amount of unemployment and understated the rate of recovery in the mid-1930s. In 1936, the year when the two series differ the most, Lebergott’s shows an unemployment rate of 17 percent while Darby’s shows an unemployment rate of 10 percent. Lebergott’s figures were updated by Weir (1992) to take account of Darby’s critique and make other refinements. Margo (1993) provides an overview of this controversy as well as an overview of a number of related issues raised by the unique labor market experience of the 1930s.

The monthly rate of unemployment became a much-watched statistic soon after World War II ended. Many of the criticisms that have dogged the estimates of unemployment in recent years had already surfaced by the late 1950s, such as complaints by the AFL-CIO and others that discouraged workers were not counted as unemployed in the headline number on which the media focused. Taking a longer view, we are still debating who should be counted as unemployed, an issue that influenced the construction of that first unemployment survey conducted by Carroll D. Wright in 1878.

## **Conclusions**

The major federal statistical series are one of the great achievements of economics. True, the federal statistics have not fulfilled the highest hopes that economists had for them such as providing an early warning system for financial panics and economic contractions, as we learned in 2008. Economists have some ideas about where the fault-lines lie: for example, they know that there have been more panics in the United States than in Canada, and they suspect that this will hold in the future (Bordo, Redish, and Rockoff 2015). But economists, like seismologists, cannot yet predict when and where the next earthquake will occur despite the vast amount of data they have collected and studied. Indeed, the regular production of these statistics has not resolved the divisive political debates—such as the debates over the impact of monopolies and immigration on the distribution of income—that called them into being.

A case could be made, I believe, that the federal economic statistics contributed to the development of the macroeconomic policies that were deployed with some success after the last financial panic. We engaged in deficit spending and

monetary expansion based partly on statistics-heavy research by economists. It also seems likely that the federal statistical series have been of considerable value to the private sector. Most private business plans depend in some measure on ideas about where the economy is headed. A manufacturing firm deciding whether to expand production, a financial firm deciding whether to invest in real estate, or a service provider deciding whether to hire more workers, all must make some allowance for the general economic weather. Trends can change unexpectedly, but trends projected from accurate data are more likely to be right than trends based on intuition or the prognostications of uninformed pundits.

Although the role that economic statistics have played in improving the functioning of the economy has been less than was hoped, it seems to me that the development of federal economic statistics has made for less strident and more reasoned debates. Extreme claims about the state of economy can be rejected by pointing to economic statistics produced by the federal government that are widely regarded as sound, if imperfect, and that contribution is clearly important.

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## References

- Bishop, George W.** 1965. "A Note on the Origin of the Averaging and Indexing of Stock Prices." *Business History Review* 39(3): 403–05.
- Bordo, Michael D., Angela Redish, and Hugh Rockoff.** 2015. "Why Didn't Canada Have a Banking Crisis in 2008 (or in 1930, or 1907, or ...)?" *Economic History Review* 68(1): 218–43.
- Bureau of Economic Research.** 1900. *Quarterly Bulletin of the Bureau of Economic Research*. Bureau of Economic Research.
- Card, David.** 2011. "Origins of the Unemployment Rate: The Lasting Legacy of Measurement without Theory." *American Economic Review* 101(3): 552–57.
- Carter, Susan, Scott Gartner, Michael R. Haines, Alan L. Olmstead, Richard Sutch, and Gavin Wright, eds.** 2006. *Historical Statistics of the United States: Millennial Edition*. Cambridge University Press.
- Conforti, Lana.** 2016. "The First 50 Years of the Producer Price Index: Setting Inflation Expectations for Today." *Monthly Labor Review*, June.
- Coyle, Diane.** 2014. *GDP: A Brief but Affectionate History*, Revised and Expanded Edition. Princeton University Press.
- Darby, Michael R.** 1976. "Three-and-a-Half Million U.S. Employees Have Been Misled: Or, an Explanation of Unemployment, 1934–1941." *Journal of Political Economy* 84(1): 1–16.
- Dorfman, Joseph.** 1959. *The Economic Mind in American Civilization: 1606–1933*, 5 vols. New York: Viking Press.
- Duncan, Joseph W., and William C. Shelton.** 1978. *Revolution in United States Government Statistics, 1926–1976*. Washington DC: US Department of Commerce.
- 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,

vol. 20, 47–97. Amsterdam; New York and London.

**Edgeworth, Francis Y.** 1925 [1887, 1889] “Measurement of Change in Value of Money.” In *Papers Relating to Political Economy*, vol. 1., pp. 195–297. London: Macmillan and Co.

**Fabricant, Solomon.** 1984. “Toward a Firmer Basis of Economic Policy.” National Bureau of Economic Research.

**Falkner, Roland P.** 1899. “Wage Statistics in Theory and Practice.” *Publications of the American Statistical Association* 6(46): 275–89.

**Fisher, Irving.** 1896. “Appreciation and Interest.” *Publications of the American Economic Association* 11(4): 1–98.

**Fisher, Irving.** 1919. “Economists in Public Service: Annual Address of the President.” *American Economic Review* 9(1): 5–21.

**Fisher, Irving.** 1922. *The Making of Index Numbers; A Study of their Varieties, Tests, and Reliability*. Houghton Mifflin Company.

**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.

**Gallman, Robert E.** 1961. “Estimates of American National Product Made before the Civil War.” *Economic Development and Cultural Change* 9(3): 397–412.

**Gilbert, Milton, Hans Staehle, W. S. Woytinsky, and Simon Kuznets.** 1944. “National Product, War and Prewar: Some Comments on Professor Kuznets’ Study and a Reply by Professor Kuznets.” *Review of Economics and Statistics* 26(3): 109–135.

**Goldberg, Joseph P., and William T. Moyer.** 1985. *The First Hundred Years of the Bureau of Labor Statistics*. Bulletin of the United States Bureau of Labor Statistics, 2235. Washington, DC: US Department of Labor.

**Griliches, Zvi.** 1961. “Hedonic Price Indexes for Automobiles: An Econometric Analysis of Quality Change.” In *Price Review Committee, the Price Statistics of the Federal Government*, 173–196. National Bureau of Economic Research.

**Guzda, Henry P.** 1983. “The U.S. Employment Service at 50: It Too Had to Wait Its Turn.” *Monthly Labor Review* 106(6): 12–19.

**Higgs, Robert.** 1992. “Wartime Prosperity? A Reassessment of the U.S. Economy in the 1940s.” *Journal of Economic History* 52(1): 41–60.

**Hoover, Herbert.** 1921. *Report of the President’s Conference on Unemployment*. September 26 to October 13, 1921. Government Printing Office.

**Jevons, W. Stanley.** 1863. *A Serious Fall in the Value of Gold Ascertained, and Its Social Effects Set Forth*. London: E. Stanford.

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

**Kendrick, John W.** 1970. “The Historical Development of National-Income Accounts.” *History of Political Economy* 2(2): 284–315.

**Keyssar, Alexander.** 1986. *Out of Work: The First Century of Unemployment in Massachusetts*. Cambridge University Press.

**King, Willford Isbel.** 1915. *The Wealth and Income of the People of the United States*. Macmillan.

**Kuznets, Simon.** 1941. *National Income and Its Composition, 1919–1938*, 2 vols. National Bureau of Economic Research.

**Kuznets, Simon.** 1945. *National Product in Wartime*. 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.

**Lebergott, Stanley.** 1964. *Manpower in Economic Growth: The American Record since 1800*. New York: McGraw Hill.

**Long, Clarence D.** 1960. *Wages and Earnings in the United States, 1860–1890*. Princeton University Press.

**Margo, Robert A.** 1993. “Employment and Unemployment in the 1930s.” *Journal of Economic Perspectives* 7(2): 41–59.

**Marshall, Alfred.** 1887. “Remedies for Fluctuations of General Prices.” *Contemporary Review* 51: 355–75.

**Mitchell, Wesley C.** 1938. *The Making and Using of Index Numbers*. Bulletin of the US Bureau of Labor Statistics no. 656.

**Mitchell, Wesley C.** 1944. *Report of the Technical Committee Appointed by the Chairman of the President’s Committee on the Cost of Living*. June 15. Washington.

**National Bureau of Economic Research.** No date. Index of Factory Employment, Transportation for United States [M08F9BUSM331SNBR], retrieved from FRED, Federal Reserve Bank of St. Louis, June 11, 2018.

**National Bureau of Economic Research.** No date. Automobile Production, Passenger Cars, Factory Production for United States [M0107AUSM543NNBR], retrieved from FRED, Federal Reserve Bank of St. Louis, June 11, 2018.

**National Bureau of Economic Research, Price Statistics Review Committee.** 1961. *The Price Statistics of the Federal Government: Review, Appraisal, and Recommendations; A Report to the Office of Statistical Standards, Bureau of The Budget, Together with Twelve Staff Papers*. National Bureau of Economic Research.

**National Bureau of Economic Research (Staff), Wesley C. Mitchell, Willford I. King, Frederick R. Macaulay, and Oswald W. Knauth.** 1921. *Income in the United States: Its Amount and Distribution, 1909–1919*. Edited by Wesley C. Mitchell. National Bureau of Economic Research.

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

**New York Times.** January 22, 1930. "Employment Turns Upward, Hoover Reports; Changes for First Time since Stock Slump." Special to *The New York Times*, p. 1.

**New York Times.** January 23, 1930. "Disputes Hover on Employment." p. 11.

**New York Times.** March 8, 1930. "More Work, Says Hoover, And Depression is Passing; 36 States Are Now Normal." Special to *The New York Times*, p. 1.

**New York Times.** March 11, 1930. "Employment Drop in State Revealed", p. 2.

**Perkins, Frances.** [1946] 2011. *The Roosevelt I Knew*. New York: Penguin Books.

**Persky, Joseph.** 1998. "Retrospectives: Price Indexes and General Exchange Values." *Journal of Economic Perspectives* 12(1): 197–205.

**Rockoff, Hugh.** 1984. *Drastic Measures: A History of Wage and Price Controls in the United States*. Cambridge University Press.

**Seaman, Ezra C.** 1846. *Essays on the Progress of Nations, in Productive Industry, Civilization, Population, and Wealth*. New York: Baker and Scribner.

**Shibley, George H.** 1897. *The Money Question: The 50% Fall in General Prices, the Evil Effects;*

*The Remedy, Bimetallism at 16 to 1 and Government Control of Paper Money in Order to Secure a Stable Measure of Prices—Stable Money; Monetary History 1850–1896*. Chicago: C.H. Kerr & Company.

**Stigler, George J.** 1966. *The Theory of Price*, 3rd edition. Macmillan.

**Stigler, Stephen M.** 1978. "Francis Ysidro Edgeworth, Statistician." *Journal of the Royal Statistical Society. Series A (General)* 141(3): 287–322.

**Stigler, Stephen M.** 1982. "Jevons as Statistician." *Manchester School* 50(4): 354–65.

**Tucker, George.** 1843. "Progress of the United States in Population and Wealth in Fifty Years, as Exhibited by the Decennial Census." *Hunt's Merchants Magazine* 9: 2–211.

**Weir, David R.** 1992. "A Century of U.S. Unemployment, 1890–1990: Revised Estimates and Evidence for Stabilization." In *Research in Economic History*, vol. 14, edited by Roger Ransom, 301–46. Greenwich, CT: JAI Press.

**Weiss, Samuel.** 1955. "The Development of Index Numbers in the BLS." *Monthly Labor Review* 78(January): 20–5.

**World Inequality Database.** No date. <https://wid.world/>. Accessed June 1, 2018

**Young, Allyn A.** 1916. "Nearing's Income; King's Wealth and Income." *Quarterly Journal of Economics* 30(3): 575–87.