

## Are Depression-Era Employment Swings Overstated?

By Jonathon Lecznar, Jessie Romero, and Pierre-Daniel G. Sarte

The rapid fall in unemployment after the Great Depression suggests that there is nothing inherently persistent in a high unemployment rate. But a closer examination of the data indicates that changes in the unemployment rate might not have been as pronounced as generally believed.

The period of economic contraction from December 2007 through June 2009 has come to be known as the “Great Recession,” a reference to the last time the United States had such a severe slowdown, particularly with respect to employment.<sup>1</sup> The unemployment rate remained greater than 8 percent from February 2009 until August 2012, and is still elevated. More than 40 percent of those who are out of work have been looking for a job for longer than six months.

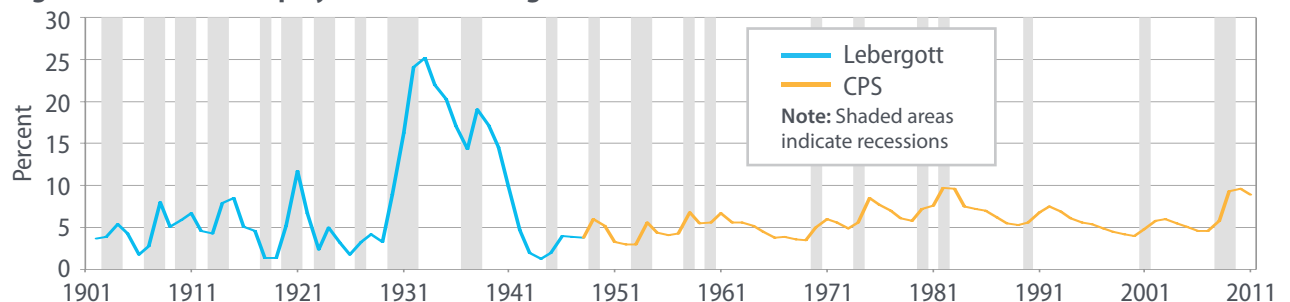
Still, the Great Recession pales in comparison to the Great Depression, when the unemployment rate rose from 3.3 percent to 25.2 percent between 1929 and 1933. Once labor market conditions improved, however, they did so very quickly—the unemployment rate fell from 17.2 percent to 1.9 percent between 1939 and 1943. This rapid decline would seem to be prima facie evidence that there is nothing inherently persistent about a high unemployment rate, and that unemployment can improve rapidly under the

right circumstances. Because the Great Depression is often cited as a historical analog to current economic conditions, it is useful to examine the accuracy of the data on unemployment during that period, which preceded the development of the modern Current Population Survey (CPS) by the Bureau of Labor Statistics (BLS) in 1940.<sup>2</sup> Comparing depression-era data to later CPS data suggests that the swings in the unemployment rate might not have been quite as pronounced as generally believed.

### Historical Estimates

Unemployment data prior to the start of the CPS in 1940 are based on a collection of relatively sparse census data, industry records, and state reports. Those data were meticulously pieced together by the late Stanley Lebergott, a government economist and professor at Wesleyan University, in his 1964 book *Manpower in Economic Growth: The American Record since 1800*. As shown in Figure 1, Lebergott’s data are much

Figure 1: Civilian Unemployment Rate: Lebergott and CPS



more volatile than the CPS data, even excluding the Great Depression era.<sup>3</sup>

Lebergott's methods are detailed in a 1986 paper by Christina Romer, an economist at the University of California at Berkeley and a former chair of the White House Council of Economic Advisers.<sup>4</sup> Romer concentrates on the years 1900–1930 because Lebergott's methods were most consistent during that period. Lebergott estimated the unemployment rate by constructing data series for the size of the labor force and employment levels and then subtracting the latter from the former to arrive at unemployment levels. To create the labor force series, he calculated labor force participation rates for various demographic groups during census years, and linearly interpolated between those observations for intercensal years. (Linear interpolation is a method of filling in missing data by effectively drawing a straight line between two points for which there are data.) He then multiplied the obtained participation rates by the annual population—itsself a number obtained via interpolation procedures—to obtain annual estimates of the labor force. The smoothness of his labor force series prior to 1940 likely reflects these linear interpolation methods.

Calculating employment was more complicated. According to Romer, Lebergott summed several component series on employment in various sectors and classes of workers; the component series were built from basic data on employment in each sector in whichever base years were available. Because data were not available for each year, Lebergott created annual estimates using interpolation methods to relate employment to an annual variable indicative of the business cycle, often sectoral output. In other words, Lebergott assumed that changes in output were systematically related to changes in employment, and thus used changes in output to infer changes in employment. But output is more procyclical than employment, as Romer notes, so a procedure that assumes a one-for-one relationship between deviations from trend in employment and deviations from trend in output likely overstates the cyclical movements in employment.

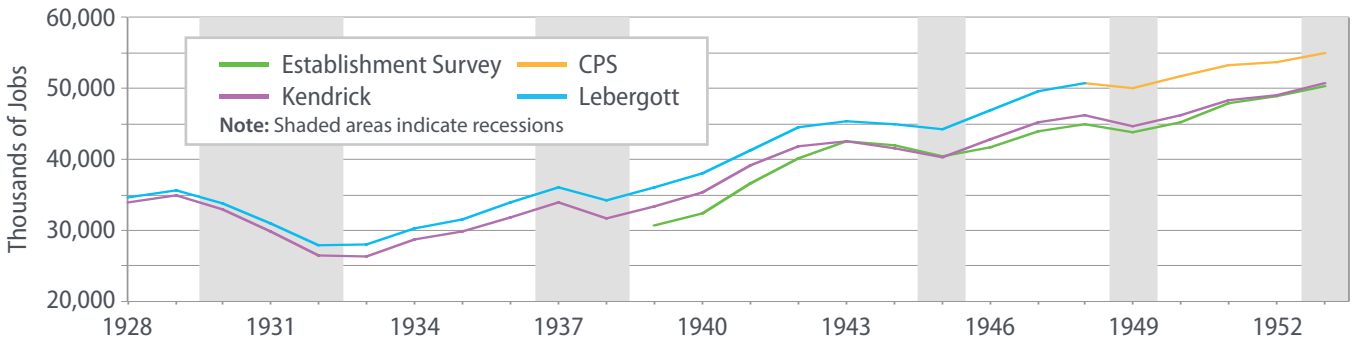
Because Lebergott calculated the unemployment rate by subtracting his employment series from his labor force series, which was relatively smooth, the volatility of employment accounts for much of the volatility in the unemployment rate. In addition, nearly all of the volatility in employment comes from the non-farm sector. Although agricultural employment was about one-third of employment in 1929, it declined very smoothly relative to the non-farm sector throughout the 20th century.

The other main source of historical employment data is the 1961 book *Productivity Trends in the United States* by the late John Kendrick, an economist at George Washington University who pioneered productivity and growth accounting measurements. Kendrick based his employment estimates on reports from industrial censuses, trade association surveys, and other establishment reports.

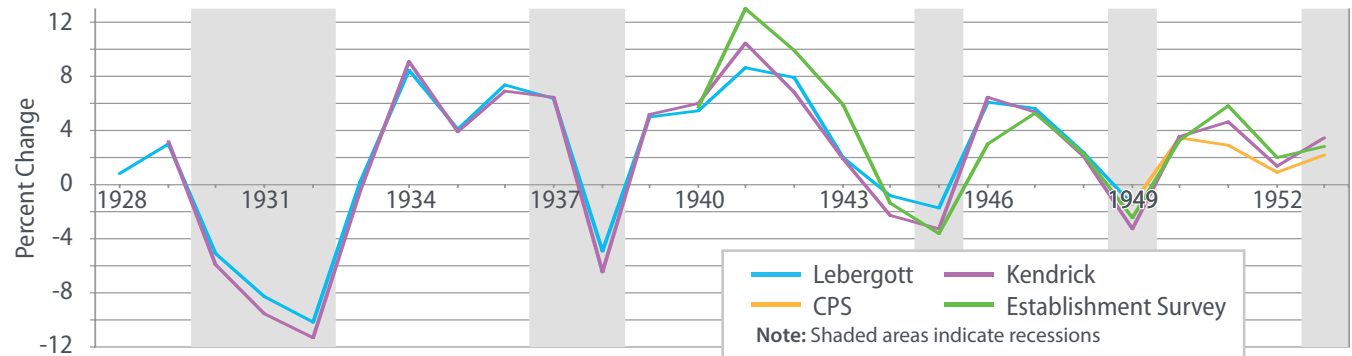
Kendrick's data differ from Lebergott's in several key ways. First, Kendrick counted all workers employed in a given time period, including part-time workers primarily employed at another business or workers who changed jobs. This might have resulted in some double-counting since the same worker could have been counted at more than one employer. In addition, Kendrick's data omit self-employed people and farm employees, making his series similar in spirit to the BLS's modern establishment survey. The establishment survey is known as the Current Employment Statistics (CES) survey and began in 1939.<sup>5</sup>

Comparing Kendrick's, Lebergott's, and the CES data, the primary difference is a level shift between Lebergott and Kendrick. (See Figure 2.) Although Kendrick's measure possibly double-counted some workers, Lebergott included self-employed workers, more than offsetting the potential double-counting and making his estimates higher. When the farm sector is included, however, Kendrick's estimates of employment are higher than Lebergott's, perhaps because of the large number of migrant workers who might have been counted multiple times via Kendrick's methodology. Despite the differences in technique, however, the methods all illustrate the same swings

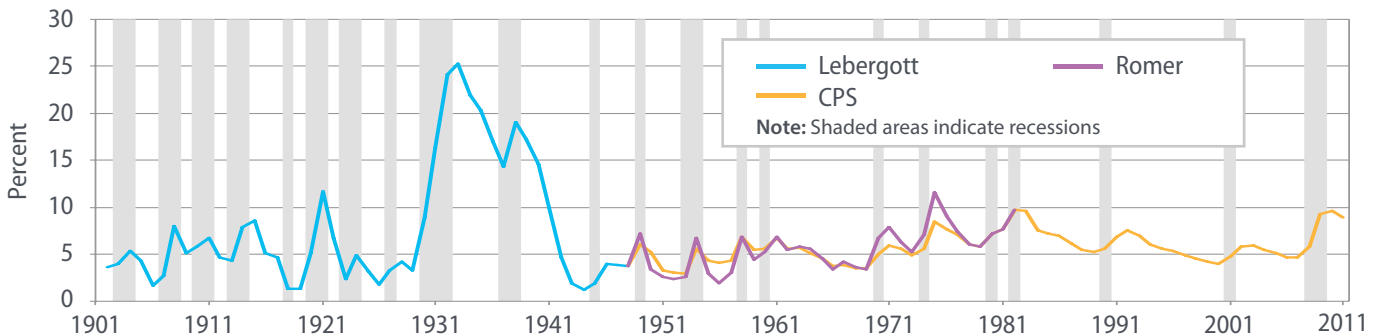
**Figure 2: Non-Farm Employment: Establishment Survey and Kendrick vs. CPS and Lebergott**



**Figure 3: Non-Farm Employment Percent Changes: Establishment Survey and Kendrick vs. CPS and Lebergott**



**Figure 4: Civilian Unemployment Rate: Lebergott, Romer, and CPS**



in employment when expressed as percent changes. (See Figure 3.)

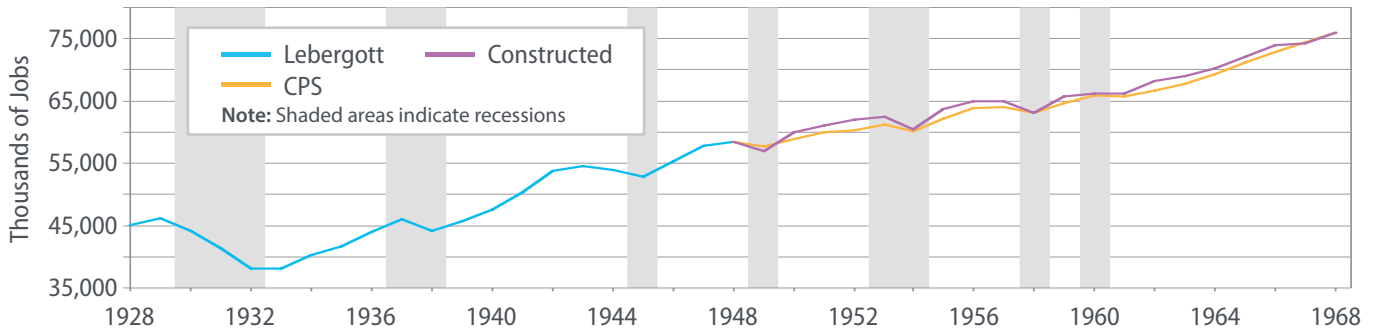
**Alternative Estimates**

The data shown in Figure 1 suggest that the unemployment rate stabilized after 1948. But Romer’s 1986 paper concludes that this stabilization is spurious, and instead reflects improvements in data-collection procedures. To make a valid comparison between the pre- and post-1948 periods, Romer creates data series for the post-1948 era using the same methods that Lebergott used for the earlier era, thus creating post-war data that are as “bad” as the pre-war data. Figure

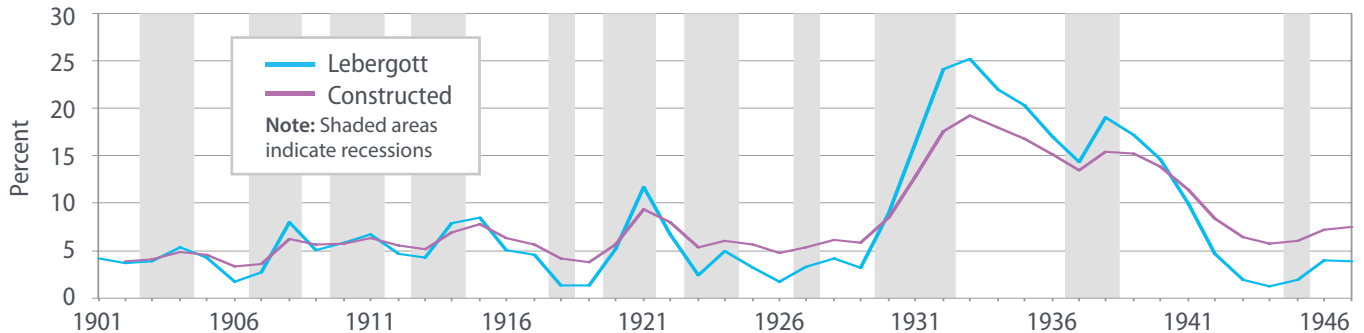
4 shows the unemployment rate as constructed by Romer. It is immediately apparent that when Lebergott’s methods are used, the unemployment rate after the war does not seem to stabilize; the cyclical swings, measured either by standard deviation or by amplitude, are equally severe in both periods.

A logical extension of this work—and perhaps its most useful application—is to use the constructed post-war data to obtain better estimates for the pre-war era. Romer does so by developing a model of the relationship between her constructed data and the CPS’s published post-1948 data and applying this

**Figure 5: Civilian Employment: Lebergott, CPS, and Constructed**



**Figure 6: Unemployment Rate: Lebergott vs. Constructed**



model to Lebergott's data for the years 1890 through 1930. (Romer does not estimate data for the years between 1930 and 1948 because she only replicated Lebergott's methods for the years 1900–1930.) She finds that the unemployment rate series thus constructed is considerably smoother than the one reported in Lebergott.

Although Romer does not create new “good” data for the depression and recovery years, two of the authors of this *Economic Brief*, Jonathon Leczna and Pierre-Daniel Sarte, draw upon her models, parameters, and provided data to construct a series for those years.<sup>6</sup> Because Romer does not report in her paper data for the size of the labor force or employment after 1948, Leczna and Sarte begin by calculating their own estimates of the size of the labor force after 1948 using simple linear interpolation methods between census years at the aggregate level. They then use Romer's estimates of the counterfactual post-war unemployment rate to calculate estimates of post-war employment. As expected, the authors' counterfactual employment series is more volatile than the actual CPS data. (See Figure 5.)

The authors then apply the coefficients calculated by Romer to create a “good” unemployment series for the pre-war era. As is clear from Figure 6, the constructed unemployment rate is significantly less volatile than Lebergott's; the amplitude of the movements in the “good” unemployment rate declines by about half. Between 1929 and 1933, the unemployment rate rises from 5.9 percent to 19.2 percent, versus 3.2 percent to 25.2 percent in Lebergott. Between 1939 and 1943, the rate declines from 15.2 percent to 6.4 percent, compared to 17.2 percent to 1.9 percent. Abstracting from the Great Depression period and World War II, Leczna and Sarte's counterfactual historical unemployment rate appears more consistent with post-war CPS data with respect to volatility or amplitude. Movements in employment also are more subdued than in Lebergott. The employment series implied by the constructed pre-war employment rate suggests that Lebergott's series overstates the decline in employment between 1929 and 1933 by about 4.3 million workers, and overstates the increase in employment between 1934 and 1943 by about 4.6 million workers.

These results by no means imply that the Great Depression was not a severe economic contraction and a time of tremendous hardship for millions of Americans. But the severity of the Great Depression also makes it a vital period for economic study, especially as the United States continues to feel the effects of the Great Recession. This exercise thus helps recalibrate an understanding of the extent of the changes in, and the flexibility of, the unemployment rate during a critical period of U.S. history. ■

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## Endnotes

- <sup>1</sup> Although the peak unemployment rate during the 1981–82 recession, 10.8 percent, was higher than the peak of 10.1 percent during the 2007–09 recession, long-term unemployment in 1981–82 only reached 26 percent as a share of all unemployed workers, and the unemployment rate fell to pre-recession levels within 18 months of the recession’s end.
- <sup>2</sup> The CPS is based on a monthly survey of households conducted by the Bureau of Census for the Bureau of Labor Statistics. It gathers data on the labor force, employment, unemployment, and other demographic and labor force characteristics.
- <sup>3</sup> Data from the CPS are not available until 1948, so the years 1940–1948 in the chart reflect Lebergott’s calculations.
- <sup>4</sup> Christina Romer, “Spurious Volatility in Historical Unemployment Data,” *Journal of Political Economy*, February 1986, vol. 94, no. 1, pp. 1–37.
- <sup>5</sup> The CES is based on a survey of approximately 140,000 businesses and government agencies representing approximately 410,000 worksites throughout the United States. The primary statistics derived from the survey are monthly estimates of employment, hours, and earnings for major metropolitan areas, states, and the nation as a whole.
- <sup>6</sup> Jonathon Lecznar and Pierre-Daniel G. Sarte, “Unemployment during and after the Great Depression,” Manuscript, Federal Reserve Bank of Richmond, September 2012.

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