

# Employment and Capacity Utilization Over the Business Cycle

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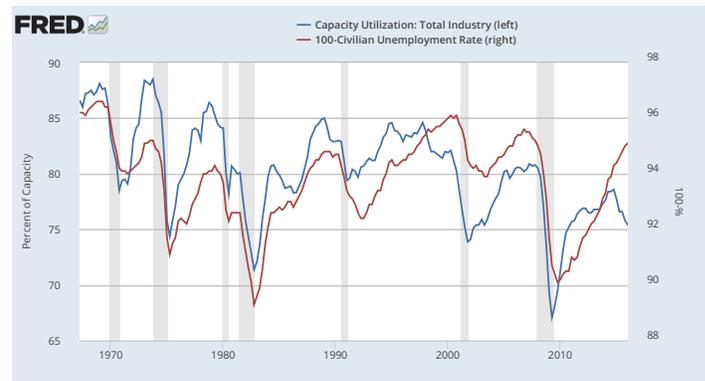
The fraction of the labor force that is currently employed is often interpreted as a measure of the utilization rate of an economy's labor force. There is a corresponding concept that tries to measure the utilization rate of an economy's capital stock—the capacity utilization rate.<sup>1</sup> The capacity utilization rate is constructed as the percentage of resources (i.e., labor and capital) used by corporations and factories to produce enough finished goods to meet demand.

The figure plots U.S. capacity utilization at a quarterly frequency from 1967:Q1–2016:Q1. In normal times, factories tend to use around 80 percent of their available productive capacity (as the capacity utilization average in the figure suggests). Because demand fluctuates, factories may not want to use 100 percent of their installed capacity to avoid production bottlenecks so they can meet consumer demand. Thus, they may permit the utilization rate to fluctuate with demand.

Capacity and employment are affected by cyclical factors, but employment must also adjust to structural factors.

During economic expansions, capacity utilization increases above 80 percent. During these episodes, demand is high and firms use more of their labor and capital to meet the higher demand. During recessions (indicated by the gray bars in the figure), capacity utilization drops below 80 percent, reflecting the slack in economic activity in the industrial sector. Indeed, during the most recent recession, U.S. capacity utilization dropped below 67 percent, the lowest point since the late 1960s.

An alternative measure of a country's economic activity is the fraction of the labor force that is currently employed, measured as 100 percent minus the unemployment rate. The figure plots this measure for the United States at a quarterly frequency from 1967:Q1–2016:Q1. As shown in the figure, employment as a fraction of the labor force



NOTE: The gray bars indicate recessions as determined by the National Bureau of Economic Research.

SOURCE: FRED®, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/graph/?g=6TA4>; August 2016.

increases during expansions and decreases during recessions.

In principle, capacity utilization and employment should comove closely, which was the case in the United States during the period 1967:Q1–1990:Q1. The correlation during this time was 0.90. Both measures tend to drop simultaneously during recessions and to increase during expansions and are almost perfectly synchronized.

However, during the crisis of the early 1990s and again during the dot-com bubble of the early 2000s, the correlation between the two variables became less pronounced. During both episodes, capacity utilization dropped before employment did and began recovering earlier. That is, industrial activity was booming while employment was still low. This phenomenon is known as a jobless recovery.<sup>2</sup>

During the financial crisis that started in 2007, both measures of economic activity dropped simultaneously. However, while employment has been recovering fast since 2009, capacity utilization recovered initially but has started decreasing again in the latest quarters since 2015. That is, during this time, both variables have been moving in opposite directions.

Why did these measures stop comoving during these periods? In the recessions followed by jobless recoveries in the early 1990s and early 2000s, several potential reasons could explain why unemployment took longer to recover than capacity utilization. Firms may have postponed hiring to be sure the recovery was strong. Thus, uncertainty in the strength of the recovery could be one reason employment adjusted more slowly. Furthermore, during these episodes, firms replaced workers with equipment and machinery rather than hiring new workers. In addition, structural changes requiring workers to switch from industries such as housing or finance could be another factor in a jobless recovery. If it takes time to match workers with specific skills to different types of jobs, employment could recover more slowly; this is important in comparing capacity utilization and employment as measures of economic activity. Capacity seems to be mainly affected by cyclical factors. Employment, however, is also affected by a structural factor that makes it adjust more slowly than industrial capacity adjusts to recessions and recoveries.

The opposite movement of these variables in recent years may have been caused by two factors. First, the unemployment rate may have initially decreased after the recovery from the latest financial crisis because some displaced workers became discouraged and dropped out of the labor force. Thus, structural factors again may have affected the labor market and caused the variables to deviate. More recently, however, unemployment has dropped because new jobs have been created and the United States is closer to full employment.<sup>3</sup> Slow productivity may explain why capacity utilization is low while employment is recovering quickly.<sup>4</sup>

Capacity utilization and employment tend to comove along the business cycle. However, they may drift apart when labor markets are less flexible or there are structural changes in the economy. ■

## Notes

<sup>1</sup> See Kolesnikova, Natalia and Liu, Yang. "Jobless Recoveries: Causes and Consequences." Federal Reserve Bank of St. Louis *The Regional Economist*, April 2011, pp. 151-67; [https://www.stlouisfed.org/~media/Files/PDFs/publications/pub\\_assets/pdf/re/2011/b/jobless.pdf](https://www.stlouisfed.org/~media/Files/PDFs/publications/pub_assets/pdf/re/2011/b/jobless.pdf).

<sup>2</sup> See Corrado, Carol and Matthey, Joe. "Capacity Utilization." *Journal of Economic Perspectives*, Winter 1997, 11(1), pp. 151-67.

<sup>3</sup> See Bullard, James. "President Bullard Discusses U.S. Monetary Policy, Labor Markets, GDP." *CNBC Asia* video, 4:50. May 25, 2016; <https://www.stlouisfed.org/from-the-president/video-appearances/2016/president-bullard-discusses-us-monetary-policy-labor-markets-gdp-on-cnbc-asia>.

<sup>4</sup> See Fleming, Sam and Giles, Chris. "U.S. Productivity Slips for the First Time in Three Decades: Prospect of Wage Stagnation Boosts Fear of Populist Backlash." *Financial Times*, May 25, 2016; <https://www.ft.com/content/925d8e6c-226f-11e6-9d4d-c11776a5124d>.