

ECONOMIC SCENE

# Pick one: The jobless rate dropped in August; it didn't; we don't know.

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"ESSENTIALLY unchanged" -- that is how Kathleen Utgoff, commissioner of the Bureau of Labor Statistics, described the unemployment rate in August compared with July. The secretary of labor, Elaine Chao, however, hailed the news, saying, "I'm pleased that the unemployment rate has dropped."

Why the different interpretations? Who is right?

In a sense, both are. The official estimate did fall by a tenth of a point, from 6.18 percent in July to 6.08 percent in August.

But the unemployment rate is just an estimate based on a sample of the population, and like all estimates, there is no guarantee it is exactly right. It could be off because of sampling errors (results differ from sample to sample) and nonsampling errors (respondents may not answer the questions correctly).

Sampling errors alone are enough to lead one to doubt whether unemployment actually fell in August.

If everyone in the country were included in the labor force survey, the unemployment rate would be unaffected by sampling errors. But interviewing everyone every month is not feasible. Instead, the survey is given only to a representative sample of households.

Granted, the number of households is large -- about 60,000 -- but if the same survey were put to a different 60,000 households, the rate would probably come out slightly different.

"Sampling variability" is the name that statisticians give to differences in estimates that arise by chance because of the particular sample surveyed. This variability can be reduced by drawing a larger or more efficient sample, but not eliminated.

Fortunately, the imprecision inherent in statistics because of sampling can be gauged because sampling variability adheres to certain statistical laws.

To distinguish the signal from the noise, the bureau computes the "standard error" of the estimate, a measure of the extent of sampling variability. Under plausible conditions, 68 percent of sample estimates would lie within one standard error of the value that would be obtained from a complete count of the population.

The standard error for the change in the unemployment rate from one month to the next is around 0.12 point.

To see why the Bureau of Labor Statistics considered the rate "essentially unchanged," consider the following: If the "true" unemployment rate had remained unchanged, there was still a 40 percent chance that the household survey would have indicated a movement of at least one-tenth of a point.

Clearly, there is not enough ground to conclude that the rate actually dropped.

By way of analogy, consider a coin-flipping experiment. Suppose you have a nickel that you suspect is a fair coin -- meaning it is just as likely to come up with a head or a tail -- but you are not sure. If you flip the coin 10 times and heads comes up 6 times, you would be reluctant to reject the idea that the coin was fair. If heads came up 9 times, however, you would seriously doubt whether the coin was fair.

In essence, the movement in the estimated unemployment rate from July to August, if the true rate was constant, was no more unlikely than getting 6 heads out of 10 flips of a fair coin.

This approach, known as classical hypothesis testing, is the most widely used method of statistical inference. Like detectives, statisticians gather evidence to see if an initial hypothesis can be rejected. The hypothesis -- in this case, the presumption of no change in the unemployment rate -- is innocent unless proved guilty.

If the hypothesis is unlikely given the evidence, the result is called statistically significant. The change in the unemployment rate in August was not statistically significant because chance could not be dismissed as the explanation for the small drop.

The Bureau of Labor Statistics does not use a hard and fast rule for interpreting trends in the data, but it does rely on statistical significance in part as a guide.

Detecting when the labor market has turned a corner is difficult given the noise in the data.

How can mistakes be avoided? In addition to bearing in mind the imprecision of the data, it also makes sense to average a few months' worth of data to smooth out blips, and to examine multiple indicators of labor market performance.

In addition to the household survey, the bureau conducts a monthly survey of 400,000 business establishments to gauge employment changes.

Because the establishment survey is much larger and is regularly anchored to a complete count of payrolls from tax records, the financial markets have historically reacted more to that measure. When it was announced that employment fell by 96,000 jobs in August according to the establishment survey but grew according to the household survey, interest rates instantly dropped in response to the more dismal account from the establishment survey.

Much has been made recently of the divergent trends displayed by the two surveys. Since the official end of the recession in November 2001, the establishment survey indicates that employment fell by 1.1 million jobs while the household survey indicates that it grew by 1.4 million.

But the picture is not nearly as cloudy as some have made it out to be. First, the household survey shows an artificial jump of more than half a million jobs in January 2003 because of a technical adjustment that ratcheted up the size of the population that month.

Second, the two surveys count jobs differently. The household survey counts people who hold two jobs only once, while the establishment survey excludes self-employed, private household and agricultural workers, for example.

If adjustments are made to the household survey to make it count jobs in a manner comparable to the establishment survey, then instead of an increase of 842,000 jobs since August 2002, the household survey indicates a loss of 425,000 jobs -- almost as large as the 560,000 jobs lost according to the establishment survey.

These adjustments do not account for the entire divergence between the surveys since the end of the recession, but both surveys point to a job-loss recovery.

With luck, the next time an administration official voices pleasure that the labor market has improved, there will be less question as to whether it really did.

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