



Phillips Relations in a Nutshell

In 1958, A.W. Phillips argued that high inflation tended to be associated with low unemployment, and vice versa, and the *Phillips curve* was born. Since that time, this correlation has played a central—if controversial—role in macroeconomics. Today, echoes of Phillips' original arguments can be heard when economists express concerns about tight labor markets leading to higher inflation. The Phillips curve did fall on hard times in the 1970s and 1980s, when the U.S. and other industrialized countries experienced rising inflation coupled with rising unemployment. Yet, some researchers have made the case that the correlations identified by Phillips are, in fact, a robust feature of the U.S. data.

A modern relative of the Phillips relation is shown in the chart, a version of evidence presented by Robert King and Mark Watson.¹ In the chart, the raw data are the quarterly level of the civilian unemployment rate and the annualized, quarterly CPI inflation rate during the postwar era. To extend the data set somewhat, the most recent quarterly Blue Chip consensus forecast has been used in lieu of actual data for the years 1999 and 2000. A trend, calculated as a 21-quarter centered moving average, has been subtracted from the original data, so that a reading above zero means "above trend" and a reading below zero means "below trend." In addition, the remaining deviations from trend have been smoothed using a seven-quarter centered moving average. This process approximates King and Watson's attempt to remove the long-run trends, as well as the short-run noise, from the data. The remaining "business cycle components" show a clear, negative relationship: When unemployment is above trend, inflation tends to be below trend, and vice versa, which is a version of Phillips' original correlation.

One way to interpret this analysis is to think of the trend components of inflation as controlled by the Federal Reserve, and to think of the cyclical compo-

nents pictured in the chart as Phillips curve effects, where the state of the economy is temporarily pushing inflation above or below its underlying trend. According to the chart, then, any effects of the current low level of unemployment possibly putting upward pressure on inflation might be expected to be relatively small: Both inflation and unemployment are running close to trend (though this conclusion depends in part on use of the current forecasts).

While an analysis like King and Watson's rescues a Phillips correlation, it does so by positing shifts in trends that account for much of the postwar movement in inflation and unemployment. In 1982 for instance, the U.S. unemployment rate peaked at 10.7 percent, and yet only about 1.5 percentage points of that was a deviation from trend, according to the chart. This is sometimes called a shifting or unstable natural rate of unemployment, or a shifting Phillips curve. This raises a question: To what extent should economists concentrate on cyclical factors like the Phillips relation if the movements in underlying trends are so large?

—James Bullard

¹ See Robert King and Mark Watson, "The postwar U.S. Phillips curve: a revisionist econometric history," *Carnegie-Rochester Conference Series on Public Policy*, Vol. 41 (1994), pp. 157-219.

