"Summary of article by David G. Blanchflower and Andrew J. Oswald: An Introduction to the Wage Curve"

What is the relationship between unemployment and wages? A simple model of supply and demand in a competitive labor market - and some not so simple models built on the same foundation - suggest a positive relationship: higher wages reduce the demand for labor and lead to higher unemployment. However, there is massive empirical evidence for a negative relationship: all else being equal, higher unemployment is associated with lower wages, not higher. This pathbreaking study discusses the components of the negatively sloped "wage curve,"[1] other empirical research, and the implications of these findings for theories about the labor market.

UNCOVERING THE WAGE CURVE

Empirical support for the wage curve - the negative relationship between the level of unemployment and the level of wages - comes from analysis of random samples of data on individual workers in many countries. In some cases the samples were extremely large, including more than a million workers in both the United States and South Korea and more than 80,000 in both Britain and Canada. For each worker, the data set includes annual earnings, occupation, the unemployment rate in the worker's state or region, and personal characteristics such as age, gender, race, years of schooling, etc. An estimate of the wage curve is obtained from the regression of wages on regional unemployment, personal characteristics, and other effects (such as controls for regions or industries).

The estimated equation typically follows the pattern

$\ln w = -0.1 \ln U$ +other terms

where ln means logarithm, w is the wage, and U is the unemployment rate in the worker's area. Since the equation is logarithmic, the coefficient measures proportional change, or elasticity, and represents the unemployment-elasticity of wages. The estimated elasticity is surprisingly close to -0.1 in almost all of the countries studied. It falls between -0.08 and -0.13 in eight of the twelve countries studied and is often found in the same range in similar work by other researchers. No explanation has been offered for this international near-constancy of the effect of unemployment on wages. An elasticity of -0.1 means that, all else being equal, a doubling of the regional unemployment rate should cause a ten percent drop in regional wages; the wage curve is negatively sloped, but fairly flat.

Corrections have been made for several technical statistical problems that might arise; none of these corrections have altered the substantive findings of the research. It might be objected that real wages in different regions should be measured with regional consumer price index; it was found, however, that controlling for regional prices in Britain, where the data are available, leaves the wage curve intact.

EXPLANATIONS AND INTERPRETATIONS

Could a conventional supply-and-demand analysis explain the wage curve? At first glance, perhaps not. In the neoclassical model, unemployment results when the wage exceeds the market-clearing level. The higher the wage, the greater the resulting unemployment should be - contrary to the empirically estimated wage curve.

A different story could be told about supply and demand, by reinterpreting higher unemployment as meaning lower employment. The wage curve then would say that lower employment is associated with lower wages, and higher employment with higher wages. In other words, it would look like a familiar labor supply curve. However, on this interpretation, unemployment is entirely voluntary, which runs counter to official definitions of unemployment and to common sense. Moreover, it suggests that measures of employment should do even better as a predictor of wages than does the unemployment rate. Empirically, this is not the case.

Standard models in regional economics, based on the assumption of competitive labor markets, also make predictions that are disproved by the wage curve. That is, they predict that high-unemployment regions should be high-wage regions, whereas in fact high unemployment is associated with lower wages. Some of the ideas and techniques developed in these models may still be useful, but they should be used in a different framework.

NONCOMPETITIVE LABOR MARKET EXPLANATIONS

If the competitive model has failed, there are several possible noncompetitive accounts of the labor market to consider. In a bargaining model, high rates of local unemployment might frighten workers, perhaps because it is harder to change jobs if it becomes necessary, leading them to demand or obtain a smaller share of available surplus. Likewise, assume that a union responds to both its employed members' desire for higher remuneration and its unemployed members' desire for employment. When more people are out of work, the union will tilt toward the concerns of the unemployed; lower wages are more likely to expand the number of jobs.

In nonunion regions, including most of the U.S. economy, such interpretations may not apply. Instead, efficiency wage theory provides an explanation of the wage curve for nonunionized workers. In the efficiency wage theory, workers choose how hard to work, weighing the disutility of labor against the costs of job loss if they are found to be shirking. When unemployment is high, employees are frightened of losing their jobs, and so work hard even if pay is comparatively low. This means that profit-maximizing firms can reduce pay slightly while still maintaining a motivated workforce. Unemployment thus serves to discipline workers.

2

Other variants on these theories are possible. The wage curve can be explained in a "labor contract" model, in which efficient contracts are reached that maximize the joint welfare of employers and employees. The higher the wage rate, the more desirable it is, from this joint welfare perspective, to have more people working and fewer drawing unemployment benefits. Thus, some labor contract models predict a positive correlation between wages and employment, or a negative correlation between wages and unemployment.

Alternatively, if there are enough random demand shocks so that labor demand fluctuates widely, a risk-averse firm will want wages to rise in good times, attracting more workers, and to fall in bad times, leading to lower employment. Again, there is a basis for finding that pay and unemployment are negatively related. However, this explanation, like the labor contract model, is really about employment rather than unemployment; such explanations have the problems noted above in connection with the competitive supply and demand model.

A new generation of macroeconomic models has begun to appear in which an aggregate wage curve is assumed, much like the one discussed here. The new models make conventional assumptions about labor demand, but address labor supply via a wage-fixing function based on a fairly flat, but negatively sloped relationship between the level of pay and the level of unemployment; this is consistent with the empirical wage curve.

The wage curve is not the same as the Phillips curve, although the two are easily confused. The Phillips curve links aggregate unemployment to the rate of change of pay, while the wage curve links regional unemployment to the level of pay. The Phillips curve is a disequilibrium dynamic model estimated on time series macroeconomic data, while the wage curve is an equilibrium model estimated on cross-section microeconomic data. Nevertheless, the wage curve is part of the tradition that Phillips began of trying to understand the macroeconomic influence of joblessness on wage setting.

In conclusion, there is strong empirical support for the existence of the wage curve. Those who work in areas of high unemployment earn less, other things constant, than those in areas of low unemployment. The curve is almost identical in numerous countries where it has been studied, with estimated unemployment elasticity of wages approximately equal to -0.1. It is difficult to see how the wage curve can be compatible with the textbook competitive model of the labor market or with theories of regional economics based on that model. In contrast, bargaining and efficiency wage theories make predictions that are consistent with the observed wage curve pattern.

Notes

1. Blanchflower and Oswald, *The Wage Curve* (Cambridge: MIT Press, 1994)