Missing Wage Inflation? Estimating the Natural Rate of Unemployment in a Nonlinear DSGE Model*

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Abstract

During the recovery from the global financial crisis, advanced economies such as Japan, the euro area, the UK, and the US have all experienced a surprisingly weak response of wage inflation to the decline in unemployment. In this study, we investigate whether downward wage rigidity (DWR) is the source of the flattening wage Phillips curve and the lack of wage inflation in the four advanced economies. Specifically, we apply Markov chain Monte Carlo methods with a particle filter to estimate a nonlinear New Keynesian dynamic stochastic general equilibrium model incorporating asymmetric wage adjustment costs for the four economies. This enables us to jointly estimate the degree of DWR as well as the natural rate of unemployment, that is, the rate of unemployment expected in the absence of (downward) wage rigidity. Our results indicate that wage adjustment costs are highly asymmetric in Japan, the euro area, and the UK, but not in the US. Especially in the case of Japan, an L-shaped wage Phillips curve between wage inflation and the unemployment gap emerges, which indicates that wage inflation has not been responsive to the unemployment gap due to the presence of DWR. As for the US, wage adjustment costs are large but symmetric, which means that wages are inherently quite sticky both in an upward and downward direction. Our results suggest that missing wage inflation in Japan, the euro area, and the UK is largely due to DWR, but not in the US.

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Keywords: downward wage rigidity; natural rate of unemployment; Phillips curve; particle filter

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