The (ir)relevance of real wage rigidity in the New Keynesian model with search frictions[☆]

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Abstract

We develop a New Keynesian model with search and matching frictions in the labor market. We show that the model generates counterfactual labor market dynamics. In particular, it fails to generate the negative correlation between vacancies and unemployment in the data, i.e., the Beveridge curve. Introducing real wage rigidity leads to a negative correlation, and increases the magnitude of labor market flows to more realistic values. However, inflation dynamics are only weakly affected by real wage rigidity. The reason is that labor market frictions give rise to long-run employment relationships. The measure of real marginal costs that is relevant for inflation in the Phillips curve contains a present value component that varies independently of the real wage.
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1. Introduction

It is widely recognized that the New Keynesian business cycle model cannot explain the dynamics of inflation and persistent effects of monetary shocks unless a sufficient degree of real marginal cost rigidity is present.[1] A potential source are rigid real wages. When firms set prices as a markup over marginal costs, the cyclicality of the real wage affects the dynamics of inflation. However, the standard New Keynesian model features a neoclassical labor market, which implies that the real wage is in fact strongly procyclical unless an implausibly high degree of individual labor supply elasticity is imposed. This suggests an important role of labor market imperfections in explaining the behavior of inflation. Of these, search and matching frictions along the lines of Mortensen and Pissarides (1994) figure prominently in current research.[2] This type of friction makes the search of workers and firms for a suitable match time consuming, which can serve as an internal propagation mechanism for business cycle shocks.

In this paper, we develop a New Keynesian model with sticky prices and employment adjustment in a frictional labor market with endogenous job destruction. We find that search and matching frictions per se do not improve the ability of the model to explain persistent effects of monetary shocks. Neither does the addition of a monetary side help explain labor market dynamics, such as the high volatility and the negative correlation of vacancies and unemployment. Fig. 1 shows the behavior of these variables in the U.S. over the period from 1951 to 2003.[3] The inverse relationship between vacancies and unemployment is referred to as the Beveridge curve. Moreover, both variables are several times more volatile than GDP (see Table 2). So is labor market tightness, as measured by the vacancy-unemployment ratio. It is these patterns that the baseline model fails to replicate.

Introducing real wage rigidity improves the behavior of the labor market, as the volatility of vacancies and unemployment is amplified and the Beveridge curve can be replicated. This confirms for the sticky price model the point made by Hall (2005) and Shimer (2005) in the context of real labor market models. However, we also show that real wage rigidity does not reduce the cyclicality of real marginal costs, and therefore cannot generally help explain persistent effects of monetary shocks. Real wage rigidity barely affects the dynamics of inflation, neither qualitatively nor quantitatively.

The explanation for this seemingly counterintuitive finding lies in the effect of real wage rigidity on the volatility of the costs of hiring and creating jobs. In the standard search and matching model, wages are perfectly flexible as they are set according to the Nash bargaining solution. Worker and firm share the surplus from their match; wages thus depend monotonically on the ratio of vacancies to unemployment. An increase in labor market tightness reduces the incentives for firms to post new vacancies because one component of costs, wages, rises. This keeps the overall response of vacancies and

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[1]See, for example, Jeanne (1998), Galí and Gertler (1999) and Chari et al. (2000). The persistent effects of monetary shocks are documented in, amongst others, Rotemberg and Woodford (1997), Estrella and Fuhrer (2002), and Christiano et al. (2005).

[2]For early examples of real models including labor market frictions, see Merz (1995), Andolfatto (1996), and den Haan et al. (2000). An important aspect of the search and matching framework is that it gives rise to equilibrium unemployment, which is absent in the standard New Keynesian model.

[3]Unemployment and vacancy data are available from the website of the U.S. Bureau of Labor Statistics. Vacancies are constructed from the BLS index of help-wanted advertisements.