Do search frictions matter for inflation dynamics?

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ABSTRACT

We assess the empirical relevance for inflation dynamics of accounting for the presence of search frictions in the labor market. The new Keynesian Phillips curve explains inflation as being mainly driven by current and expected future marginal costs. Recent empirical research has emphasized different measures of real marginal costs to be consistent with observed inflation persistence. We argue that, allowing for search frictions in the labor market, real marginal cost should also incorporate the cost of generating and maintaining long-term employment relationships, along with conventional measures, such as real unit labor costs. In order to construct a synthetic measure of real marginal costs, we use newly available labor market data on worker finding and separation rates that reflect hiring and firing costs. We then estimate a new Keynesian Phillips curve by generalized method of moments (GMM) using the imputed marginal cost series as an observable and find that the contribution of labor market frictions in explaining inflation dynamics is small.

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1. Introduction

The new Keynesian Phillips curve (NKPC) is at the heart of modern macroeconomic models that are used in the discussion and formulation of monetary policy. It is theoretically appealing in that it can be derived from first principles in form of an individual, forward-looking firm's

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price setting decision. Yet, at the same time, it preserves some of the flavor of more traditional Phillips-curve modeling. Empirical investigation of the NKPC faces two difficulties, however. First, the assumption of forward-looking expectation formation and the endogeneity of inflation and marginal cost render standard regression techniques problematic. Second, marginal cost as the explanatory variable for inflation dynamics is not readily observable to the econometrician. While marginal costs can be linked to observables, such as output, via the production function, these attempts have not proven to be entirely successful (Fuhrer and Moore, 1995; Roberts, 1995, 1997).

In their seminal paper, Galí and Gertler (1999) address these issues by estimating the structural parameters of the NKPC using methods of moments techniques. With unit labor costs as a proxy for marginal costs they show that these outperform output and other activity measures in explaining inflation. Moreover, they find that any lagged inflation terms that capture persistence are small, yet significant. The key to this result is that marginal costs are sluggish enough to explain the persistence in inflation and exhibit the 'right' degree of comovement. In this single-equation setting, however, the determinants of marginal costs are left unexplained.

In this paper, we assess the empirical relevance for inflation dynamics of accounting for the presence of search frictions in the labor market. To this end, we use a benchmark new Keynesian model with search frictions as in Krause and Lubik (2007a). We obtain an expression for real marginal costs that depends on the labor share and on terms that reflect hiring and firing costs. We then use newly available labor market data on job finding and separation rates, which are directly related to hiring and firing. Calibrating the parameters of the labor market model allows us to generate a synthetic time series for real marginal costs, which we then use to estimate the parameters of the NKPC. We argue that this measure is preferable to the labor share because it explicitly takes labor market conditions into account. It also incorporates forward-looking considerations of firms into their relevant cost measure through the mechanism of vacancy posting. These would be missing from measures that only incorporated wages and/or the unemployment rate.

We find that search frictions do indeed matter for inflation dynamics in that they tend to reduce the role of backward-looking price setting for generating persistence. Moreover, they affect the sensitivity of inflation to real marginal costs. But it turns out that the synthetic measure of real marginal costs is fairly closely related to the labor share. We also assess alternative formulations of the labor market, namely the specifications of Rotemberg (2006) and Blanchard and Galí (2008), who change the timing assumption of the baseline model to avoid considering endogenous separations. While the estimates suggest similar effects on the role of backward- and forward-looking inflation, the sensitivity of inflation to real marginal costs depends on specific calibrations.

The most closely related papers to ours are Ravenna and Walsh (2008) and Krause et al. (2008). The former authors specify a new Keynesian model with search frictions based on Walsh (2005) and Blanchard and Galí (2008). The main modeling difference to our paper is their assumption of exogenous separations. Moreover, they estimate the NKPC with labor market variables entering directly, whereas we calibrate the implied marginal cost series which we then use as a single observable in the regression. Ravenna and Walsh (2008) find that their specification with labor market frictions outperforms the standard hybrid NKPC. Krause et al. (2008) use a similar model as these authors, but estimate the full general equilibrium model using Bayesian methods. They extract the model-consistent, unobservable marginal cost series from the Kalman-filter and find that it is much more persistent and volatile than the imputed series.

In this paper, we proceed as follows. The next section derives the measure of real marginal costs that arises in the presence of search frictions. It is derived within the general framework of a new Keynesian model with search and matching frictions in the labor market. We also discuss two special cases that have recently been advanced in the literature, Rotemberg (2006) and Blanchard and Galí (2008), which make particular assumption on the timing of decisions, the endogeneity of separations, and hiring costs, and demonstrate their observational equivalence. In Section 3 we then construct a time series of real marginal costs, using the flows data on separations, hiring, and vacancies. Section 4 estimates a NKPC using the synthetic measure of real marginal costs. Section 5 concludes.