



# The role of labor markets for euro area monetary policy

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## ABSTRACT

In this paper, we explore the role of labor markets for monetary policy in the euro area in a New Keynesian model in which labor markets are characterized by search and matching frictions. We first investigate to which extent a more flexible labor market would alter the business cycle behavior and the transmission of monetary policy. We find that while a lower degree of wage rigidity makes monetary policy more effective, i.e. a monetary policy shock transmits faster onto inflation, the importance of other labor market rigidities for the transmission of shocks is rather limited. Second, having estimated the model by Bayesian techniques we analyze to which extent labor market shocks, such as disturbances in the vacancy posting process, shocks to the separation rate and variations in bargaining power are important determinants of business cycle fluctuations. Our results point primarily towards disturbances in the bargaining process as a significant contributor to inflation and output fluctuations. In sum, the paper supports current central bank practice which appears to put considerable effort into monitoring euro area wage dynamics and which appears to treat some of the other labor market information as less important for monetary policy.

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## 1. Introduction

Euro area labor markets are characterized by a long duration of individual unemployment spells and inflexible wages. The relationships between rigid labor markets and labor market outcomes, such as, for example, unemployment durations, have received great attention in both the academic literature and the political debate.<sup>1</sup> In contrast, little work is available on the link between structural features of the labor market and inflation, and particularly on the relevance of these features for monetary policy. This is the more astonishing as central bank practice puts considerable emphasis on monitoring the labor market, justified on two grounds: first, the structure of labor markets affects the transmission of shocks to marginal costs and inflation, and it affects the transmission of monetary policy to the economy; second, the labor market is itself an important source of business cycle fluctuations, and thereby has a significant impact on real activity and inflation.

The contribution of this paper is to examine the role of rigid labor markets for monetary policy in the euro area along these two dimensions. We first analyze to what extent the business cycle and monetary policy transmission are affected by changes in the underlying institutions governing the labor market. We specifically look at labor market structures that differ from the baseline setting with respect to the replacement rate, the bargaining power of workers, the costs of posting

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<sup>1</sup> The political efforts for making the EU more dynamic and competitive as established by the Lisbon Agenda set out by the European Council in March 2000 bear witness to that debate. In light of this, assessing the role that changes in labor markets have for monetary policy will become increasingly important as the Lisbon Agenda is being implemented in the member states.

vacancies and the degree of wage rigidity. For the model simulations, we employ a genuine euro area calibration. Second, we analyze whether, given the current state of labor market institutions, the labor market itself is an important source of business cycle shocks. Toward this aim, we estimate the model on euro area data, investigating specifically the impact of three labor market shocks (shocks to bargaining power, shocks to job destruction and shocks to hiring impediments) on business cycle fluctuations.

We build a New Keynesian model with a non-Walrasian labor market along the lines of Trigari (2006). Calibrating this model to the euro area, we quantitatively assess how the specific institutional aspects of the labor market affect the transmission of business cycle shocks and, most prominently, the transmission of a monetary policy shock. Rigidities and frictions in the labor market may affect inflation dynamics—and hence are of relevance for the transmission of monetary policy—in various ways. First, sluggishness in wages directly affects firms' marginal costs and their price setting and hence ultimately feeds through to the dynamics in inflation, particularly its persistence. Second, rigidities in the labor market may affect the fluctuations in hours worked which may affect inflation dynamics via their effect on firm's marginal costs through changes in the marginal product of labor. The institutional features that we consider in this paper will affect inflation through one or a combination of these two channels.

We find that a labor market characterized by a lower degree of wage rigidity significantly changes the transmission of shocks in our model economy. For example, monetary policy becomes more effective, i.e., a monetary policy shock transmits faster to inflation, and inflation becomes less persistent. In contrast, altering other labor market characteristics, such as lowering firms' overhead labor costs, reducing the net replacement rate of unemployment insurance or reducing the costs of posting a vacancy, without altering wage rigidity at the same time, would have an effect on the steady state of the economy but would have little effect on the fluctuations around the steady state beyond the transition phase. Estimating the same model using Bayesian techniques and allowing labor market shocks to affect the economy (in the analysis these are shocks to the costs of posting a vacancy, to the rate of separation, and to the bargaining power of workers), we find that shocks to the costs of posting a vacancy and to the separation rate seem to be less important for euro area business cycle fluctuations. In contrast, shocks to the bargaining power of workers explain a considerable share of the fluctuations in inflation and output. Therefore, while monetary policy may not need to react to the former shocks, closely monitoring the wage process and wage-bargaining disturbances appears to provide valuable information for monetary stabilization policy.

We use a New Keynesian dynamic stochastic general equilibrium (DSGE) model with Mortensen and Pissarides (1994) type search and matching frictions. Key to our model is the channel from wages to inflation, which crucially hinges on Trigari's (2006) right-to-manage (RTM) framework. Under RTM workers and firms bargain only about the hourly wage rate and the firm chooses employment along the intensive (i.e., the hours worked) margin in a second step. One can show that in this case a direct channel from wages to inflation exists, so that the level of hourly wages and their stickiness play a direct role for inflation dynamics; see, e.g., Trigari (2006) and Christoffel and Linzert (2005). Allowing for the existence of such a wage channel is in line with much of the New Keynesian modeling tradition, e.g. Christiano et al. (2005) and Smets and Wouters (2003).<sup>2</sup>

We complement Trigari's (2006) right-to-manage model with Calvo type wage rigidities. These shift the labor market adjustment from prices to quantities and affect the degree of inflation persistence in our model.<sup>3</sup> Moreover, we follow Christoffel and Kuester (2008) and account for fixed costs associated with maintaining a job. These fixed costs allow calibrating the model so as to endogenously account for the size of unemployment fluctuations over the cycle. We use the model to assess the importance of various forms of labor market rigidities for business cycle fluctuations, and their relevance for monetary policy. Unlike Trigari, we explicitly first calibrate and then estimate the model using euro area data. Given the limited coverage of the euro area in the previous literature, we devote considerable effort to calibrate the model in a reasonable way, particularly in terms of the replacement rate, the job filling rate and the separation rate.

A growing literature incorporates more complex and more realistic labor markets into monetary business cycle models. Walsh (2005) focuses on the real effects of monetary policy shocks. Krause and Lubik (2007) analyze the role of wage rigidities in a model with efficient Nash bargaining. Zanetti (2007) is concerned with the business cycle when the labor market itself is frictionless but atomistic unions set the wage above the market-clearing level. Zanetti calibrates his model to the euro area. Employment is the only labor market variable in his model. In our paper, instead, we focus on search and matching frictions rather than unionization, which necessitates a much wider set of labor market parameters to be calibrated for the euro area.

The remainder of the paper is structured as follows. We present a New Keynesian model with equilibrium unemployment in Section 2. We calibrate the model to the euro area in Section 3. Section 4 shows how different labor market settings affect the business cycle and, in particular, monetary policy transmission. Section 5 estimates the model by Bayesian techniques, thereby identifying the labor market shocks. We subsequently analyze whether these shocks are important determinants of business cycle fluctuations of output and inflation. A final section concludes. The Appendix

<sup>2</sup> This direct channel would be missing when applying the efficient bargaining assumption, which is the work-horse in the literature; see Krause and Lubik (2007). Under both bargaining regimes, however, there is also an indirect channel from wages to inflation via employment, hours worked and their impact on marginal costs.

<sup>3</sup> We are not the first to introduce staggered wage setting into models with matching frictions. Our motivation follows Gertler and Trigari (2009), who combine staggered wage setting with Nash efficient bargaining in a real business cycle framework.

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