Journal of Economic Dynamics & Control 33 (2009) 1469–1489

Contents lists available at ScienceDirect

Journal of Economic Dynamics & Control

journal homepage: www.elsevier.com/locate/jedc

Optimal monetary policy in economies with dual labor markets

Fabrizio Mattesini [a], Lorenza Rossi [b,*]

[a] Università di Roma "Tor Vergata" Via Columbia 2, 00133 Rome, Italy
[b] University of Pavia, Department of Economics and Quantitative Methods, Via San Felice al Monastero 5, 27100 Pavia, Italy

ARTICLE INFO

Article history:
Received 21 January 2008
Accepted 21 January 2009
Available online 28 February 2009

JEL classification:
E24
E32
E50
J23
J51

Keywords:
Optimal monetary policy
Trade-unions
Real wage rigidity
Taylor rules

ABSTRACT

We present a dynamic stochastic general equilibrium (DSGE) New Keynesian model with indivisible labor and a dual labor market: a Walrasian one where wages are fully flexible and a unionized one characterized by real wage rigidity. We show that the negative effect of a productivity shock on inflation and the positive effect of a cost-push shock are crucially determined by the proportion of firms that belong to the unionized sector. The larger this number, the larger are these effects. Consequently, the larger the union coverage, the larger should be the optimal response of the nominal interest rate to exogenous productivity and cost-push shocks. The optimal inflation and output gap volatility increases as the number of the unionized firms in the economy increases.

1. Introduction

One of the most striking differences among modern industrialized economies is the role trade unions play in determining wages and employment conditions. While in the US only about 15% of workers are covered by collective contract agreements, in the UK this percentage is about 36% and in countries such as France, Italy or Sweden is much higher, rising above 84%.[1] Given the importance of labor markets in determining output, inflation and the response of the economy to aggregate shocks, a very natural question is whether and how central banks, in formulating monetary policy, should take into account the structure of industrial relationships.

In this paper we address this issue by studying optimal monetary policy in a dynamic stochastic general equilibrium New Keynesian (DSGE-NK henceforth) model[2] with a dual labor market. Firms may belong to two different final-goods-producing sectors: one where wages and employment are determined under perfect competition, and the other where wages and employment are the result of a contractual process between unions and firms. As in Hansen (1985) and Rogerson and Wright (1988), labor supply is indivisible and workers face a positive probability to remain unemployed.

* Corresponding author.
E-mail address: lorenza.rossi@eco.unipv.it (L. Rossi).

[1] More precisely, the number of persons covered by collective agreements over total employment was 94.5% in France in 2003, 84.1% in Italy in the year 2000 and 85.1% in Sweden in the year 2000. The data about US and UK refer to the year 2002. For a complete set of data on union coverage on the various countries see Lawrence and Ishikawa (2005).

[2] The only paper that explicitly consider the role of trade unions in a DSGE-NK model is the one by Zanetti (2007) who, however, does not focus on normative aspects and studies separately economies characterized by monopolistic unions and economies characterized by competitive labor markets.

0165-1889/$ - see front matter © 2009 Elsevier B.V. All rights reserved.
doi:10.1016/j.jedc.2009.01.008

Wages in the unionized sector are set according to the popular monopoly-union model developed by Dunlop (1944) and Oswald (1982) which has been recently introduced in a real business cycle (RBC) model by Maffezzoli (2001) and in a DSGE-NK model by Zanetti (2007).

By doing this we depart from the recent literature, that has recently analyzed search and matching frictions à la Mortensen and Pissarides (1994)[3] in DSGE-NK models and we concentrate on the consequences of collective bargaining between unions and firms. Unions, in this model, do not simply maximize the utility of their members, but are institutions that also have "political" objectives in the sense that their objective function takes into account the preferences of workers, the preferences of leaders and market constraints. In this respect we take side on the old and never settled debate initiated by Dunlop (1944) and Ross (1948) over the appropriate maximand for the unions' utility function, and we assume that the unions' objective function is a Stone-Geary utility function as in Dertouzos and Pencavel (1980), Pencavel (1984) and, more recently, in De la Croix et al. (1996), Raurich and Sorolla (2003) and in Chang et al. (2007). This function is extremely flexible and, depending on parameter values, allows for different distribution of power, inside the union, between members and leaders who may have diverging objectives. The divergence between the union's objective and households' utility creates a distortion in the economy and gives rise to real wage rigidity. Interestingly, wage rigidity does not apply only to new hirings, as in the model with search and matching frictions (see for example Thomas, 2008) but also to ongoing relationships.

The presence of a unionized sector has very important consequences for monetary policy. What Blanchard and Galí (2007), define as the "divine coincidence" does not generally hold: for a central bank stabilizing output around the level that would prevail under flexible prices (natural output) is not equivalent to pursuing the efficient level of output and a trade-off arises between output stabilization and inflation stabilization. A first major result of our model is that the trade-off between inflation stabilization and the level of output (and unemployment) depends on the relative weight of the unionized and competitive sectors: the larger is the fraction of firms that are able to set wages in a unionized labor market, the larger is the trade-off they face in response to productivity shocks. This has significant consequences for optimal monetary policy that we derive, as in Woodford (2003), from the maximization by the central bank of a second-order approximation of agents' utility function.

We find that, differently from the standard New Keynesian model where monetary policy must not respond to technology shocks, in our model monetary policy must be procyclical in response to such shocks. Moreover, and this is the second major result of this paper, monetary policy must be progressively more accommodating as the size of the unionized sector increases; in an economy where labor markets are mainly competitive, the nominal interest rate must decrease much less in response to a productivity shock than in an economy where wages are largely set by collective bargaining between unions and firms.

The procyclicality of optimal monetary policy and its dependence on union coverage represent a significant departure from the most recent contributions such as Faia (2008) where optimal monetary policy is procyclical only for some parameters of the matching technology and Blanchard and Galí (2008) where the main friction characterizing labor markets are hiring costs.[4] In our model, if we consider two countries hit by the same shocks and where the central bank behaves optimally, we observe that in the country where the number of "Walrasian" firms is larger, the interest rate will vary much less than in the other country. This, however, is not the consequence of differences in the reaction functions of the two central banks to a unit change in expected inflation; rather it is caused by the fact that the economy where the labor market is more competitive experiences smaller inflationary tensions.

Our model provides also a convenient framework to address important normative issues such as, for example, the optimal behavior of central banks in periods characterized by labor market turmoil and exogenous wage shocks. In the framework we propose here a policy trade-off for the central bank arises also in response to exogenous changes in the unions' reservation wage, that we interpret as cost-push shocks. If the unions' reservation wage is subject to exogenous changes, and these changes tend to be persistent over time, then a welfare maximizing central bank must again face the problem of whether to accommodate these shocks with a easier monetary policy. As in the case of technology shocks, also in this case optimal monetary policy requires only partial accommodation, and the response of the central bank is crucially determined by the fraction of firms that, in the economy, set wages competitively.

We finally calibrate the model and we analyze the differences between an economy where the central bank follows a standard Taylor rule, as the one estimated by Smets and Wouters (2003) for Europe, and an economy where the central bank follows the optimal rule. The calibration of the model under the Taylor rule estimated by Smets and Wouters (2003) for Europe shows that our model is able to qualitatively replicate the dynamics of the main economic variables and that a unionized economy tends to have larger responses to productivity shocks than an economy where competitive labor markets prevail. The difference in the impulse response functions (IRFs) between these two types of economies becomes

[3] Among these papers we find Chéron and Langot (2000), Walsh (2003, 2005), Trigari (2006, 2009), Moyen and Sahuc (2005) and Andres et al. (2006) and, more recently by Christoffel and Linzert (2005) and Blanchard and Galí (2007, 2008).

[4] Faia (2008), in a model with search and matching frictions, shows that optimal monetary policy should be procyclical only when worker's bargaining power is higher than the share of unemployed people in the matching technology. Blanchard and Galí (2008) study instead optimal monetary policy in an environment characterized by hiring costs and real wage rigidity and also show that in countries with more "sclerotic" labor markets monetary policy should be more accommodating than the one that should be pursued in more flexible.