

Unemployment and monetary policy with large price setters and free entry

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Abstract

In a WS-PS model with large price and wage setters and free entry of firms in the goods market, the economy may exhibit multiple unemployment equilibria. We show that the effects of monetary policy on unemployment depend on the equilibrium at which the economy is located. In particular, we show that an anti-inflation policy reduces unemployment in the low unemployment equilibrium, but that such a policy leads to a rise in unemployment when the economy is already stuck in the high unemployment equilibrium. © 2007 Elsevier B.V. All rights reserved.

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1. Introduction

A recent literature has focused on the impact of monetary policy for stabilisation purposes on unemployment when agents are non-atomistic (e.g. [Soskice and Iversen, 1998, 2000](#); [Bratsiotis and Martin, 1999](#); [Coricelli et al., 2001](#); [Holden, 2005](#)). However, the effects of monetary policy on equilibrium unemployment remain an open question. Indeed, [Bratsiotis and Martin \(1999\)](#) show that a stricter monetary regime may reduce equilibrium unemployment by disciplining wage setting. The mechanism is the following: if the Central Bank (CB here-after) puts greater weight on stabilising the price level, wage setters realise that high wage demands will be met by a contraction in aggregate demand that will reduce employment and thus moderate their claims. The model of [Bratsiotis and Martin \(1999\)](#) has been extended by [Holden \(2005\)](#) to allow for coordination between wage setters. Holden highlights the fact that the employment costs of uncoordinated high wage demands are greater when the CB places greater weight on stabilising the price level. Since increased coordination between wage setters implies lower unemployment, a more accommodating monetary policy strengthens wage setters' incentives to coordinate, finally leading to lower unemployment.

To deal with this central topic, [Bratsiotis and Martin \(1999\)](#) and [Holden \(2005\)](#) use monopolistic competition models in which non-atomistic price and wage setters take the impact of their individual decisions on the level of aggregate variables into account. Under this assumption, the elasticities of demand in both the product and labour markets, and hence, the level of equilibrium unemployment, depend directly on the objectives of the CB. But since

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these authors adopt the assumptions of decreasing (or constant) returns-to-scale in production and constant price-elasticities of demand, their models exhibit a single unemployment equilibrium.

However, many theoretical works have highlighted the fact that imperfectly competitive economies can otherwise be characterized by the existence of multiple equilibria (see e.g. Manning, 1990; Linnemann, 2001, and Julien and Sanz, 2005). In his paper, Linnemann (2001) shows that if the assumption of non-atomistic price setters is combined with the one of free entry of new firms in the product market, the macroeconomic equilibrium may not be unique. Indeed, under the assumption of free entry, an exogenous event leading to higher output and employment generates in turn higher profits which attract more firms in the market. This makes competition in the product market fiercer and leads to lower mark-ups and prices and thus to higher real wages, which results into an upward sloping price setting curve in the aggregate employment-real wage space. When combined with a standard (i.e. increasing) wage setting curve, the above assumptions open up the possibility of multiple employment equilibria at the macroeconomic level.

The existence of multiple equilibria in such a context is of particular interest because it deeply modifies the conclusions that can be drawn about the right economic policy to be designed to reduce unemployment. Our purpose here is to reconsider the results obtained by Bratsiotis and Martin (1999) and Holden (2005) within a simple model characterized by multiple equilibria. We show that the effects of monetary policy on unemployment depend crucially on the equilibrium at which the economy is located. More precisely, we show that a stricter monetary regime reduces unemployment in the low unemployment equilibrium, whereas such a policy leads to a rise in unemployment when the economy is already stuck in a high unemployment equilibrium. The structure of the article is as follows. Section 2 gives the simple model. Individual price and wage decisions are first studied in details and then the macroeconomic results are presented. Section 3 concludes.

2. The model

We assume that the economy is made up of N identical imperfectly competitive firms, indexed by $i = 1, \dots, N$ and k identical unions. Firms and unions are supposed to be sufficiently large so that they take the impact of their individual decisions on the aggregate price level into account when maximizing profit and utility. Firms produce according to a constant returns-to-scale technology, $Y_i = L_i - f$, where Y_i , L_i and f denote respectively firm i 's production and employment levels and a fixed cost. Firms face the following demand function: $Y_i = (M/P)(P_i/P)^{-\eta}$, where M , P_i and P represent respectively the nominal money supply, firm i 's price and the aggregate price level. The parameter η ($\eta > 1$) indicates the elasticity of demand with respect to the relative price. The aggregate price level is defined as:

$$P = \left(\frac{1}{N} \sum_{i=1}^N P_i^{1-\eta} \right)^{\frac{1}{1-\eta}} \tag{1}$$

The CB sets the nominal money stock according to the following rule:

$$M = \bar{M}P^{-\phi} \tag{2}$$

where \bar{M} is an exogenous component of the money supply and ϕ is the rate of monetary restriction of the CB². According to Eq. (2), an increase in ϕ corresponds to the adoption of a stricter monetary regime by the CB. The sequence of events is as follows. In a first stage, nominal wages are simultaneously set by trade unions. In a second stage, the CB sets the money supply according to the monetary rule (Eq. (2)). Finally, firms choose prices, output and employment.

2.1. Price and employment determination

Under the above assumption, firm i 's optimal price is given by the usual following mark-up pricing rule:

$$P_i = \mu_i W_i \tag{3}$$

² In Holden (2005), the monetary rule of the CB depends on the aggregate wage level. The use of such a rule can be justified as a simplifying assumption since Holden's model is mainly a model of wage setting and wage coordination and thus focuses on the interaction of unions with the CB. In contrast, this paper focuses on prices and the effects of new entry of price setters. We therefore use the more standard monetary rule given by Eq. (2).

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