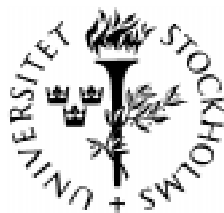


**Seminar Paper No. 659**

**MONETARY UNION  
AND  
PRECAUTIONARY LABOUR-MARKET REFORM**

**by**

**Lars Calmfors**



**INSTITUTE FOR INTERNATIONAL ECONOMIC STUDIES  
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# **Monetary Union and Precautionary Labour-Market Reform**

by Lars Calmfors\*

Institute for International Economic Studies, Stockholm University.

## **Abstract**

The paper demonstrates that policy makers may have a precautionary motive to undertake more labour-market reform – and hence attain lower equilibrium unemployment – inside a monetary union than outside. The reason is a desire to reduce the utility cost of variations in employment when asymmetric shocks can no longer be stabilised through domestic monetary policy.

JEL classification: E58, E 69, F 33, J 29, J 30.

Keywords: monetary union, asymmetric shocks, stabilisation policy, labour-market reform, equilibrium unemployment.

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\* Institute for International Economic Studies, 106 91 Stockholm, Sweden. Telephone: +46-8-16 30 76. Fax: +46-8-16 29 46. E-mail: Lars.Calmfors@iies.su.se.

On the 1<sup>st</sup> of January 1999, eleven European countries will form a monetary union (EMU) with a common currency, the euro. There exists a large literature which analyses the risks of larger output and employment fluctuations when country-specific shocks can no longer be offset through an independent monetary policy. A much less researched issue is whether monetary union might affect the equilibrium rate of unemployment, i.e. the average around which cyclical variations take place. This is the topic here.

## 1. Background

My point of departure is that equilibrium unemployment is determined by labour-market institutions (see Layard *et al.*, 1991). If so, it should be possible to reduce the present high unemployment in Europe through well-designed labour-market reform. This could involve, for example, less generous unemployment insurance, more effective active labour-market policy, lower minimum wages for young people, changes in the legal framework for wage bargaining (e. g. restrictions on the right to strike), and possibly also reductions in employment protection and in taxes (see *e.g.* OECD, 1994; or Elmeskov *et al.*, 1998).

The extent to which labour-market reform to reduce equilibrium unemployment is undertaken is a question of *political economy*. A common argument in policy circles is that EMU will strengthen the incentive for such measures. The idea is that reform will not become politically acceptable until the escape route of depreciating the own currency is definitely closed (Bean, 1998).

The above reasoning is problematic because monetary policy and labour-market reform are not substitutes when it comes to reducing *equilibrium unemployment*: the argument is rather one of why a common currency might increase the incentive for *money-wage flexibility* as a substitute for exchange-rate flexibility (Calmfors, 1998a). But with long-run neutrality of money, there is no reason why easy monetary policy should reduce equilibrium unemployment. Nor should systematic monetary policy be expected to reduce the actual rate of unemployment below the equilibrium one if expectations are rational. So why should giving up a policy instrument that is likely not to work strengthen the

incentive to use other instruments, viz. labour-market reform, that are likely to work?

Instead, a logically consistent framework could lead to the conclusion that the incentive for reform might be stronger outside than inside the EMU. Sibert & Sutherland (1997) and Calmfors (1998b) have developed such an analysis based on the Barro-Gordon (1983) model of an inflation bias under discretionary monetary policy. Their argument builds on the assumption that labour-market reform is decided nationally and not co-ordinated between countries. Then, there is an extra incentive for reform outside the EMU, because a reduction of equilibrium unemployment will also reduce inflation. Inside the EMU, reform in an individual country will have only a small effect on aggregate unemployment in the whole monetary union and hence also a small effect on the common rate of inflation.

## **2. A precautionary motive for reform**

My purpose here is to show how one can develop a logically consistent argument for the proposition that monetary union might strengthen the incentive for labour-market reform to reduce equilibrium unemployment. A possible starting point is to assume that what policy makers are primarily interested in with respect to unemployment is to avoid *very bad* outcomes, so that they attach an extra value to reducing the risks of them. Put differently, policy makers may regard the utility cost of employment variations as higher, the higher the equilibrium rate of unemployment around which these variations take place.

With this assumption, the reasoning is straightforward. If membership in the EMU leads to larger variations in employment, because monetary policy no longer stabilises country-specific shocks, then there is a *precautionary motive* for more reform inside than outside the EMU. The reasoning is analogous to the analysis of precautionary savings (Leland, 1968). Just as increased uncertainty may lead households to save more to reduce the utility costs of variations in consumption, policy makers might choose more labour-market reform to reduce

equilibrium unemployment when macroeconomic instability increases so as to reduce the utility cost of employment variations.

The crucial assumption in the theory of precautionary savings is that the marginal utility of consumption is convex. I shall in a similar way assume that the marginal disutility of deviations from the government's unemployment goal is convex. I make the same assumption for deviations from the government's inflation goal. A simple loss function for the government in a representative country with these properties is:

$$L = \frac{1}{4}(\pi - \hat{\pi})^4 + \frac{\lambda}{4}(u - \hat{u})^4 + \gamma s. \quad (1)$$

The disutility of the government,  $L$ , depends on the deviation of actual inflation,  $\pi$ , from the government's inflation goal,  $\hat{\pi}$ ; on the deviation of actual unemployment,  $u$ , from the government's unemployment goal,  $\hat{u}$ ; and on the amount of labour-market reform,  $s$ . Inflation and unemployment are standard arguments in the government preference function in the monetary policy literature: the difference here is that disutility is assumed to increase much faster when there are deviations from the goals than according to the conventional quadratic formulation. In addition, I assume that the government associates labour-market reform with a political cost, which is linear.<sup>1</sup> I have aggregated all types of reform into one composite measure. One way of viewing reform is as changes in labour-market institutions that reduce the real wage of the political majority of employed insiders.<sup>2</sup> I normalise the measure of reform so that  $s \geq 0$ .

I assume a standard surprise unemployment function for the representative country:

$$u = u^* - \beta(\pi - \pi^e) + \varepsilon, \quad (2)$$

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<sup>1</sup> The linear form is chosen for convenience, but is not important for the argument.

<sup>2</sup> Alternatively, one can think of *specific* changes in labour-market institutions that are valued also in themselves, such as less generous unemployment benefits (which has a cost because less insurance is provided), less employment protection (which increases the exposure of insiders to shocks) or lower taxes and more expenditures on active labour-market policy (which entail resource costs).

where the stochastic shock,  $\varepsilon$ , can be decomposed into two parts: an asymmetric shock,  $v$ , which is specific to the country in question, and a symmetric shock,  $\mu$ , which is common to all the potential members of the monetary union, so that

$$\varepsilon = v + \mu. \quad (3)$$

$v$  and  $\mu$ , are independent, symmetrically distributed and have zero means.

Equilibrium unemployment in a representative country depends negatively on the amount of reform, so that

$$u^* = \tilde{u} - \delta s, \quad (4)$$

where  $\tilde{u}$  = the equilibrium rate of unemployment in the absence of reform ( $s=0$ ).

I assume that  $\tilde{u} > \hat{u}$ .

### 3. Labour-market reform outside the EMU

I study a one-shot game where both labour-market institutions and monetary policy are determined. The government decides on labour-market institutions in the first stage of the game. Monetary policy is delegated to an independent central bank, which determines inflation in the second stage of the game after shocks have been realised. The bank has a loss function of the same form as (1), but its unemployment goal coincides with the equilibrium rate of unemployment,  $u^*$  (the bank realises the limitations on what monetary policy can do and has thus no other ambitions than to stabilise unemployment around the equilibrium rate).

The model is solved through backward induction. Given labour-market institutions (and thus equilibrium unemployment), inflationary expectations and the realised shock, the central bank chooses inflation so as to minimise its loss function subject to (2). The outcome is:

$$\pi = \hat{\pi} + \frac{\sqrt[3]{\beta\lambda}}{1 + \sqrt[3]{\beta^4\lambda}} \varepsilon. \quad (5)$$

The assumption that the central bank's unemployment goal is equal to the equilibrium rate means that there is no inflation bias. Inflation only exceeds the inflation target if there are adverse shocks. The resulting surprise inflation

stabilises employment partially, just as in the standard Barro-Gordon model with a quadratic loss function.

When the government chooses the amount of reform, it takes the central bank's stabilisation rule into account. Minimisation of the expectation of (1) subject to (2), (3), (4) and (5) gives the FOC:

$$\frac{\partial E(L_n)}{\partial s} = \gamma - \delta\lambda(u^* - \hat{u})^3 - 3\delta\lambda k^2(u^* - \hat{u})(\sigma_v^2 + \sigma_\mu^2) = 0, \quad (6)$$

where the  $n$  subscript denotes non-participation in the EMU,  $k = 1 / (1 + \sqrt[3]{\beta^4 \lambda})$  is the fraction of the unemployment shock that remains after stabilisation, and  $\sigma_v^2$  and  $\sigma_\mu^2$  are the variances of the country-specific and common shocks, respectively. The amount of reform is chosen so that the marginal political cost,  $\gamma$ , is exactly balanced by the marginal benefit. The latter is the sum of the gain from lower expected unemployment (the second term in (6)) and the gain that arises because lower equilibrium unemployment reduces the utility cost of variations in unemployment (the third term).

#### 4. Reform inside the EMU

In the EMU, national governments still decide on the amount of labour-market reform in the first stage of the game. In the second stage, the (common) inflation rate across the EMU is determined by the monetary policy of the European Central Bank (ECB). Its preference function contains aggregate variables that refer to the whole monetary union, but is otherwise identical to that of a national central bank. If the monetary union is made up of many identical countries, aggregate union unemployment is:

$$u_u = \frac{1}{n} \sum_{i=1}^n u_i = \sum_{i=1}^n u_i^* - \beta(\pi_u - \pi_u^e) + \mu, \quad (7)$$

where the  $u$  subscript indicates aggregate union variables and the  $i$  subscript (which I write out only when necessary) individual countries. Union unemployment depends only on the common shock,  $\mu$ , because the country-



specific shocks cancel out. Optimisation on the part of ECB, taking (7) into account, gives:

$$\pi_u = \pi = \hat{\pi} + \frac{\sqrt[3]{\beta\lambda}}{1 + \sqrt[3]{\beta^4\lambda}} \mu. \quad (8)$$

Monetary policy in the EMU thus stabilises only common shocks.

When a national government chooses the amount of reform as a member of the EMU, it minimises (1) subject to (2), (3), (4) and (8). This gives:

$$\frac{\partial E(L_p)}{\partial s} = \gamma - \delta\lambda(u^* - \hat{u})^3 - 3\delta\lambda(u^* - \hat{u})\sigma_v^2 - 3\delta\lambda k^2(u^* - \hat{u})\sigma_\mu^2 = 0, \quad (9)$$

where the  $p$  subscript denotes EMU membership. Equation (9) has a similar interpretation as (6). The third term is the marginal gain of reform due to a smaller utility cost of country-specific shocks when equilibrium unemployment is reduced. The fourth term is the corresponding gain from a smaller utility cost of common shocks. As  $0 < k < 1$ , it is clear that the value of  $s$  giving  $\partial E(L_n)/\partial s = 0$  in (6) gives  $\partial E(L_p)/\partial s < 0$  in (9). Hence, since  $\partial^2 E(L_p)/\partial s^2 = 3\delta^2\lambda[(u^* - \hat{u})^2 + \sigma_v^2 + k^2\sigma_\mu^2] > 0$ , more reform is chosen inside than outside the EMU.

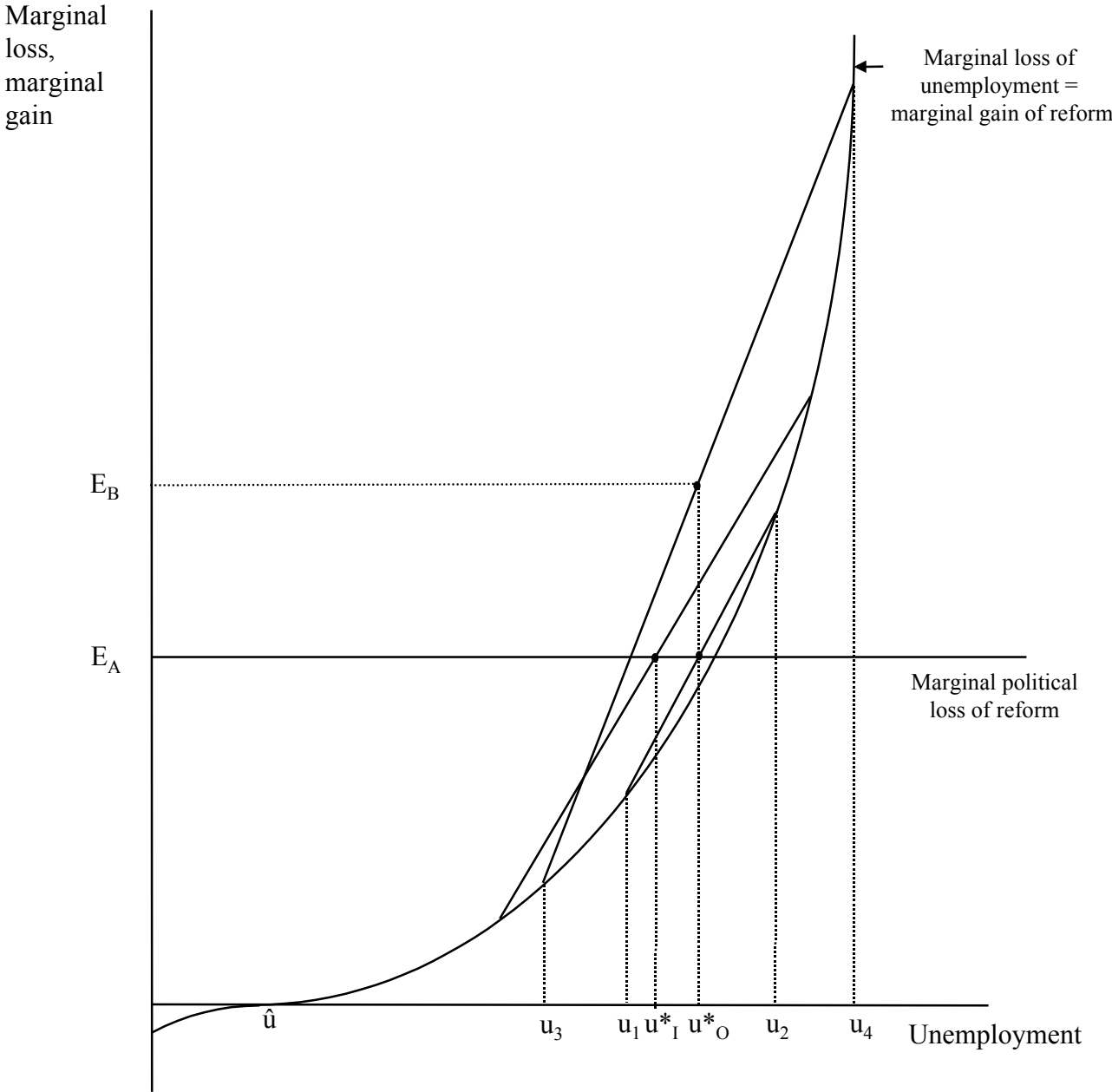
The argument is illustrated in Figure 1, where the marginal disutility of unemployment has been drawn. Assume that a country outside the EMU finds itself at the equilibrium rate of unemployment  $u_0^*$ . Set  $\mu = 0$ , so that there is only an asymmetric shock, which can take on two values, both occurring with probability 0,5. When monetary policy stabilises the asymmetric shocks, actual unemployment is either  $u_1$  or  $u_2$ . Hence the expected marginal disutility of  $u_0^*$  is  $E_A$ .  $E_A$  is also the expected gain of reform that lowers  $u^*$  with one unit.  $u_0^*$  is a political equilibrium because the expected marginal gain  $E_A$  is equal to the (certain) marginal political loss of reducing equilibrium unemployment, which is  $-(\partial L/\partial s)/(\partial u^*/\partial s) = \gamma/\delta$ . EMU membership means that domestic monetary policy is no longer available for stabilisation. This can be illustrated as larger

unemployment variations: between  $u_3$  and  $u_4$  instead of between  $u_1$  and  $u_2$ . Hence, the expected marginal gain of reducing equilibrium unemployment  $u_0^*$  rises to  $E_B$ . To restore equality between the expected marginal gain of reform and the marginal cost, the larger variability of unemployment requires that equilibrium unemployment is reduced to  $u_j^*$ .

#### **4. Discussion**

My conclusion does not hinge on the specific functional form used. All that is required is that the marginal disutility of deviations from the government's unemployment goal is convex, and that cyclical variability rises when monetary policy autonomy is relinquished. Nor does it matter whether labour-market reform is co-ordinated across the EMU member states or is the outcome of uncoordinated national decisions: the optimisation problem can be shown to be exactly the same. Provided that monetary policy is not subject to an inflation bias, there may exist a precautionary motive for more labour-market reform inside a monetary union than outside.

Figure 1. The determination of equilibrium unemployment



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