



## ERM crisis in retrospect: What if a European central bank had been in existence before 1992?<sup>☆</sup>

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### ARTICLE INFO

#### Article history:

Accepted 5 February 2011

#### JEL classification:

C70  
F33  
F42  
F47

#### Keywords:

Counterfactual analysis  
European Monetary System  
Currency crisis

### ABSTRACT

This paper explores whether policy coordination or a single monetary policy implemented earlier would have kept the U.K. in the process of European monetary integration. On the basis of the pre-ERM crisis empirics by Douven and Plasmans (1996), a counterfactual game simulation approach is used, and five scenarios are established for comparison with the actual historical records. The final answer is negative.

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### 1. Introduction

Every crisis has its context (Eichengreen, 2000). But history shows that governments usually reconsider their views on international macroeconomic cooperation in the aftermath of a crisis. The year of the subprime crisis (2007) marks the 10th anniversary of the Asian financial crisis of 1997–98, and politicians are still looking for international policy coordination in the G20 summit in the face of the world financial crisis.<sup>1</sup> Though it may go unnoticed, 2007 is also the 15th anniversary of the European Exchange Rate Mechanism (ERM) crisis back in 1992–93. Is there any similarity between the current and the past financial chaos? Can we still learn anything from the coordination failure of 15 years ago?

The collapse of the Bretton Woods System in 1971–3 and the resulting volatility in financial markets heightened the urgency of efforts to create a zone of monetary stability. The success of the European Monetary System (EMS), a multilateral parity with the ERM and European Currency Unit (ECU), surprised even the optimists.

However, the Single Market Agreement that came in 1986 removed the controls on cross-border capital flows. With such, realigning became problematic over the subsequent five years. Where there had been 11 realignments between the birth of the EMS and January 1987, there were none from that point to the crisis in September 1992.<sup>2</sup> Three causes triggered the crisis. The first was the German unification in 1991 and the ensuing large financing needs of the German authorities. Then came the recession that hit Europe at almost the same time. These shocks led to major conflicts about the stance of monetary policy to be pursued in the system. Finally, the lack of credibility of the Maastricht convergence criteria with the collapse of the EMS had resurrected in Europe the specter of monetary instability and beggar-my-neighbor devaluations (De Grauwe, 1994).

The academia has made two responses to the crisis. The first is the well-known second-generation model (e.g., Obstfeld, 1996). It points out that speculative attacks precipitate the change in policies, which validates the expectations of the exhaustion of reserves.

The second emphasizes the role of policy coordination failure from the political (e.g., Sevilla, 1995) or economic perspectives. In fact, the same warning had been presented in the Delors Report. Regardless of the complex problem of sovereignty, the relationship between policy coordination and welfare-improving is presumed to be the case in the absence of information asymmetries and strategic behavior (Wyplosz, 2006). For instance, Buiter et al. (1998) argue that a system of

<sup>☆</sup> We would like to thank the participants at the 8th conference of European Historical Economic Society (EHES) for valuable comments, and the Social Science Research Center (SSRC), National Science Council of Taiwan for financial support.

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<sup>1</sup> Garten (2008) proposes that the establishment of a Global Monetary Authority can fill financial vacuum that cannot be overcome by any country and international organization. However, Mundell (2000) have already asked to be back to the proposals made by J.M. Keynes and H.D White in 1944 to establish a world currency.

<sup>2</sup> Eichengreen and Wyplosz (1993) and Eichengreen et al. (1995) provide historical reviews of the ERM crisis.

collective pegs, cooperatively managed, should be more stable than a unilateral peg, and that Europe's tragedy arose because it squandered its opportunity to cooperate. The failure to cooperate was what transformed market pressures into a crisis; had cooperative policies been pursued, adjustment would have been smoother and the threat to the EMS would have been less. Wyplosz (2004) argues that in theory the EMS provided automatic and unlimited support of bilateral pegs. The lira and sterling were forced to withdraw from the ERM because the Bundesbank declined to provide unlimited support to Italy and the U.K. De Grauwe (1997) indicates that it is useful to ask the question what would have happened if a European central bank had been in existence during the recession of 1992–93. He believes that a more expansionary monetary policy would have been implemented in Europe than the one that was applied in the EMS.

Another issue is the implication of the ERM crisis to the prospects of monetary coordinative mechanisms in the rest of the world. In the aftermath of the Asian financial crises in 1997–98, there have been a number of initiatives to enhance monetary cooperation in the region including options for a common exchange rate system. Wilson (2006) argues that the ERM might be politically the most appealing for East Asia if the arrangements are flexible enough to leave countries initially with sufficient independence in macroeconomic policy. However, Giavazzi and Giovannini (1988), Eichengreen (2000), Wyplosz (2004) reject the possibility of the ERM being copied outside Europe. Giavazzi and Giovannini (1988) argue that the EMS has de facto worked as a Deutsche mark zone, which indicates that the fixed exchange rate arrangements per se cannot induce international monetary cooperation. Wyplosz (2004) argues that the Chiang Mai Initiative (CMI) is similar to the EMS, but the amounts to be swapped within the CMI are limited, and hence unlikely to be commensurate with the amounts that markets can mobilize.

To verify the above arguments, a counterfactual analysis should be useful to answer the question posed by Buiter et al. (1998), De Grauwe (1997) and Wyplosz (2004, 2006). Such approach is popular not only in history (e.g., Ferguson, 1997) but also in the process of European monetary integration. For instance, Barrell et al. (1996) view German Monetary Union as a sequence of large asymmetric shocks to the European economies. They perform historical counterfactual analysis by removing relevant events that we could not have anticipated, starting with the collapse of the centrally planned economies and the deterioration in the German fiscal position. Pesaran et al. (2005) use a global VAR approach to analyze the counterfactual scenarios of the U.K. in the Euro area. Dubois et al. (2007) simulate the costs and benefits of EMU membership if the euro had never been launched. They find that small members in the euro area like Finland, the Netherlands and Spain, seem to have benefitted from the pre-euro convergence and from the single currency regime.

In this paper, we perform a counterfactual analysis to explore what would have happened if a European central bank (in this paper we call it "ecb" to distinguish it from the European Central Bank, the ECB) had been in existence before 1992, combining the settings proposed by Masson (2007), historical data and ECM estimation, and a simple four-player (Germany, France, U.K. and "ecb") Nash game.<sup>3</sup> Previous studies have used the historical descriptive method or global VAR to analyze the counterfactual scenarios of the U.K. in the Euro area. This study uses a game simulation to explore whether earlier implementation of policy coordination or a single monetary policy would have kept the U.K. in the process of European monetary integration. That is, our model can clearly infer possible welfare and policy responses of

the countries involved. Whereas, this could not have been achieved by previous works.

The rest of the article is structured as follows. Section 2 explains the modeling. Section 3 presents how to derive the different scenarios of policy coordination. Section 4 simulates the counterfactual scenarios with and without the "ecb". Section 5 concludes.

## 2. The modeling

Assume that the E3 (Germany, France and the U.K.) control their policy instruments (real government expenditure  $G$  and short-term nominal interest rate  $RS$ ) so as to minimize the following quadratic loss function (1). The exchange rates are excluded from the main instruments, since they are not a fully controlled variable in the ERM.

$$\text{Min}_{G_i, RS_i} J = \text{Min}_{G_i, RS_i} \frac{1}{2} \sum_{t=0}^5 \rho^t \left\{ \zeta_i (\Delta P_i^C(t))^2 + \chi_i (Y_i(t) - \bar{Y}_i)^2 \right\}, i = ge, fr, uk, \quad (1)$$

where  $\Delta P^C$  denotes consumer price inflation,  $Y$  is the real aggregate demand (equal to supply, measured by gross domestic product), and  $\bar{Y}$  is the trend volume of real gross domestic product.  $\zeta$  and  $\chi$  represent preference weights that are attached to the stabilization of inflation and output, respectively. The time period is from zero to five indicating the process of the pre-euro economic convergence from 1993 to 1998. A constant factor  $\rho = 1.2$  is assumed, which reflects that the priority for inflation convergence and output stability increases by 20% for each successive year of the country.

The economic structure is a modified Mundell–Fleming model. The advantage of this framework is that it is linear and that direct linkages are already in the model. Moreover, it can represent the long-term relationship using an error correction mechanism (ECM). The model refers to one (home) country. The equations for the second (foreign) country are similar. The two-country model can be extended to more countries using the principal trading pattern of each individual country. The details can be found in Douven and Plasman (1996).

$$Y = \alpha_1 Q - \alpha_2 (RL - P^{Ye}) + \alpha_3 Y^* + \alpha_4 G - \alpha_5 T, \quad (2)$$

$$Q = E + P^{Y^*} - P^Y \quad (3)$$

$$RL = \beta_1 RL^* + \beta_2 RS + \beta_3 \Delta(G - T) + \beta_4 \Delta P^C \quad (4)$$

$$P^Y = \gamma_1 W + \gamma_2 (E + P^{Y^*}) + \gamma_3 (Y - \bar{Y}), \quad (5)$$

$$P^C = \delta_1 P^Y + \delta_2 (E + P^{Y^*}), \quad (6)$$

$$N = -\eta_1 (W - P^Y) + \eta_2 Y + \eta_3 Q, \quad (7)$$

$$W = \nu_1 P^C - \nu_2 (U - U_{-1}) + \nu_3 (Y - N) - \nu_4 (P^C - P^Y) \quad (8)$$

$$U = L - N \quad (9)$$

where  $Q$  is the bilateral real exchange rate,  $T$  denotes real taxes,  $RL$  is the nominal long-term interest rate,  $E$  is the exchange rate defined as the nominal price in domestic currency of a unit of foreign currency,  $P^{Ye}$  is the expected price level of aggregate demand ( $P^Y$ ),  $W$  denotes nominal wage per employee in the private sector,  $L$  denotes labor force (labor supply),  $N$  and  $U$  are the employment and unemployment rate, respectively. Asterisks indicate foreign country variables and  $\Delta$  denotes first differences. All variables, except  $RS$ ,  $RL$  and  $U$  which are rates, are in logarithmic form.

In the theoretical model, it is assumed that each country produces one (type of) good(s), which is an imperfect substitute for the other country's (type of) good(s). Both (types of) goods are tradable. Eq. (2)

<sup>3</sup> Boivin et al. (2008) find that the euro has changed the transmission mechanism across countries explained by the combination of a change in a more aggressive response to inflation and output and the elimination of an exchange-rate risk. But Smith (2009) indicates that the ECM and VAR models appear to forecast very well and EMU does not appear to have induced structural change, indicating that the Lucas critique does not seem to be important in this case.

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