Exclusions from EMU

Yannis, Athena and Foscoulou, Kostos

Athens University of Economics and Business,

2 July 2004

Exclusions from EMU

Athena Yannis and Kostas Foscoulou

Abstract

In contrast to the traditional analysis, we analyze the costs associated not with the inclusion but excluding a country of the European Economic and Monetary Union (EMU) In a three-country model, we show that the monetary policy of the country excluded will be more expansionary and more counter-cyclical than that of the EMU countries, which brings it closer to a strategy of competitive depreciation. The country whose shocks are the most symmetrical to those of the excluded country will be the most affected by this exclusion seeing the variance of its production increase We also examine the various proposals for managing relations between EMU and the non-EMU countries of the EU. Contrary in traditional analysis, we analyze the costs not associated with the inclusion but excluding a country of the European Economic and Monetary Union (EMU). In a three-country model, we show that the monetary policy of the excluded country will be more expansionary and counter-cyclical than that of the EMU countries, bringing it closer to a competitive depreciation strategy. The country whose shocks are most symmetrical to those of the excluded country will be the most affected by this exclusion seeing the variance of its production increase. We also examine the various proposals for managing relations between EMU and non-EMU countries.

THE IMPORTANCE OF EXCLUDED COUNTRIES IN MONETARY INTEGRATION IN EUROPE

In contrast to the traditional analysis, this paper analyzes the costs implied by the exclusion Rather than by the inclusion of a country to the European Monetary Union (EMU). In a three-country model, we expect that monetary policy will be more expansive and more counter-cyclical than the monetary policy of the EMU countries. This is a strategy of competitive depreciation. The country whose shocks are most symmetric to those of the country suffers from this exclusion, through an increase in the variance of its production. We also discuss the proposals to deal with the relationship between EMU and non EMU countries of the EU.

INTRODUCTION

The reflection on monetary integration in Europe has focused on two issues. On the one hand, economists used the theory of optimal currency areas to determine whether the European Union was such a zone. On the other hand, practitioners have focused on determining the modalities of the transition to the European Economic and Monetary Union (EMU). In both cases, these reflections have led to the exclusion, at least temporarily, of a certain number of countries from the process of monetary integration, even though they do not are an integral part of the Single Market. In the first case, the empirical work of Bayoumi and Eichengreen [1993] suggests that only a few countries in the heart of Europe (Germany, Benelux, Austria, Denmark, France) share sufficiently symmetrical shocks for a monetary union between these countries does not generate excessive costs. In the second case, it is the Maastricht convergence criteria, and in particular those linked to inflation and the budgetary situation, which have served to exclude countries

from monetary integration. In both types of analysis, it was the costs of inclusion in EMU that were used to determine which countries should participate in EMU.

Thus, the implicit choice of the exclusion of Italy has been made according to the reflection, mainly of German origin, that Italy inside would imply costs too high because of the situation of its public debt. We realize today, on the occasion of the "competitive" depreciation of the lira, that the exclusion of Italy also implies costs for the countries that have decided to remain in the EMS and, ultimately, to form a monetary union. It seemed as if the formation of a fixed exchange zone or a monetary union in Europe had no impact on the monetary policy of the excluded countries.

In this article, we want to reverse this perspective and to reflect on the implications of the creation of EMU for the monetary policy of the excluded countries and the effect it will have on the countries of the EMU. Contrary to the traditional analysis of the theory of optimal currency areas, our analysis will therefore focus on the costs associated not with the inclusion but with the exclusion of a country from a monetary union similar to that of Kirrane [2003].

The first section presents the theoretical model that we will use. The second and third sections analyze respectively the monetary policies and the effects on the production of the three countries in the different systems of exchange. The last part examines proposals for managing relations between EMU and non-EMU currencies.

A MODEL WITH THREE COUNTRIES

The model we used is very similar to that of Martin [1995] himself derived from the Barro-Gordon model [1983]. It is a three-country model of equal size that we call France (F), Germany (A) and Italy (I). The loss function of the three countries depends on the rate of inflation n and the optimal deviation of log production from the y: 2 level of production y to the socially level l iy, -) 2 * = F, A, I (1)

1. The problems posed by multi-speed integration are analyzed by Alesina and Grilli [1993], Laskar [1995], Pisani-Ferry [1995], Martin [1994b], Eichengreen and Ghironi [1995], Martin [1995], Martin and Ottoviano [1995], Artus [1995] and Kirrane [2003].

2. For the sake of simplification, we will assume that it is identical in Germany and France.

where ß represents the relative weight placed by the monetary authority on the stabilization of production relative to that of inflation. The game being identical each period and excluding the phenomena of reputation, the optimal policies are analyzed for a single period.

The three countries produce the same good, the law of the single price applies and the production function of France is the following:

yF = OF-wF) -jCpa- ^ a) -2 ^ i ~ wi) + e (2)

where w is the wage log, p is the log of the price level and e is a distributed productivity shock N (0, g) and is considered common to all three countries at the moment. According to Mundell's criteria, these three countries are therefore an optimal currency area. The German and Italian production functions are symmetrical. Because of the existence of contracts, the shock is not observed by the employees at the time of the determination of the wages but it is it by the Central Bank when this one chooses its monetary policy. The first term of the equation, the real wage, is the standard part of the Barro-Gordon model. The second and third terms of the equation take into account the strong interdependence that exists within the EU: they can be interpreted by

thinking of a multinational firm that has factories in these three European countries and must decide where to increase or decrease employment and production. Equation (2) implies that this company will choose to increase relatively more production in the country at the lowest real wage. This modeling makes it possible to obtain a positive-slope Phillips curve at the national and vertical level at the European level. This implies that there will be competition between countries to attract production and employment, which is done at the level of real wages. If employees want to minimize variations in their real wages, their optimal strategy is to increase them to the level of expected inflation Kf. The production function of France thus becomes:

VF = (7tF-7uF) -I (jca-7C £) - ^ (TCj-Tlf) + E (3)

OPTIMAL MONETARY POLICIES

Our first objective is to determine monetary policies optimal in the three institutional balances we are interested in: flexible exchange rate, fixed exchange rate in Europe, fixed exchange rate between France and Germany excluding Italy. In our model, EMU is identical to a

1. The example of Hoover relocating its activities from Dijon to Scotland, after the exit of Britain from the EMS in 1992, shows that a mechanism similar to that described here is at work, with the political, if not economic, repercussions that we know.

2. A positive slope could have been chosen at European level without changing the nature of the results. The important assumption is that, because of competition between countries to attract production, the slope is stronger at the European level than at the national level irremediable fixed exchange rate zone. We will therefore interpret our results both for the formation of EMU and to a certain extent for a "hard" SME.

Complete EMU is the easiest balance to determine. In this case, monetary policy and inflation rates are identical in all three countries, eliminating any possibility of arbitrage between inflation and short-term production. The optimal monetary policy, perfectly anticipated by the agents, is therefore not to react to temporary shocks: inflation is zero for all the realizations of the shock e. This is the extreme theoretical representation of a complete monetary union. Now let's take the case of flexible exchange rates. Each country minimizes its loss function by choosing its optimal inflation rate based on the expected national inflation rate and foreign inflation rates. There is therefore, on the part of the National Central Bank, a game both with domestic agents and with foreign central banks. The Nash equilibrium that is determined implies the expected inflation rates and the following effective inflation rates:

nf = ß y ,. ; 7t = SSY (SSE .- i = F, A, I

(4)flexible exchange, and the anticipated average inflation is higher than that fixed adjustment and depends on the deviation between the natural level of output and Thus, the higher the internal distortions associated with this deviation, for example the level of taxes, the higher the average inflation will be. Flexible exchange introduces an inflationary bias because central banks are trying to reach the optimal level of production by reducing the real wage in their country more than in the others in order to attract production and employment The employees fully anticipate this part of the competitive depreciation policy and therefore ask for wage increases In a flexible exchange rate, a low-inflation monetary policy is not credible with respect to national wage earners is not credible vis-à-vis foreign central banks. Inflation is too variable in a flexible exchange rate system because the monetary authorities react to a negative shock by lowering the real wage.

Let us now turn to the most interesting case, that is to say a fixed exchange rate system, or a monetary union, between France and Germany, excluding Italy[2]. France and Germany take into account, when determining their optimal monetary policy, the fact that their inflation rate will be identical to the equilibrium. The Italian Central Bank also takes into account this constraint of the Franco-German monetary policy. The production functions of France (identical to that of Germany) and Italy are now:

yF = ^ Of- ^ f) -2 ^ 1- ^ 1) + e;? I = ('i- ^ f) - (% -rcF) + e (5)

The expected and realized inflation rates of the different countries in Nash equilibrium are therefore: [1]

For Germany and France, this equilibrium implies a lower and less variable average inflation than in flexible exchange [(2 + 3ß) / (4 + 5β) <1]. For Italy, average inflation is the same as when Germany and France were in flexible exchange.

While the average inflation gap between Italy and its partners increases as a result of the creation of a fixed exchange rate zone, Italian inflation becomes less variable even if the Italian monetary policy responds more to shocks. transient than that of its partners [(2 + 3β) / (4 + 5β) <(4 + 3β) / (4 + 5β) in equation (6)]. When France sets its exchange rate with Germany, this implies that it internalises part of the extemality that exists at European level since it no longer tries to export the shock to Germany. Both countries therefore have an interest in reducing their reaction to shock.

Italian monetary policy becomes more active than when there is a fixed exchange rate system between the three countries. This result can also be interpreted in terms of size effect of countries (Martin [1994]). Indeed, Italy now enjoys its relatively small size vis-à-vis the France-Germany bloc. If this block had an unanticipated inflation rate higher than that of Italy, the transfer of production would only come from one country and should be shared between the two countries. For Italy, it's exactly the opposite. We can therefore interpret the exit of Italy from the "hard" SME in this theoretical context: leaving the EMS, Italy not only regains a significant margin of maneuver in terms of stabilization of production but also benefits from the low inflation and the less "active" monetary policy that is still the Franco-German couple. Italy can thus use its monetary policy to stabilize its economy against a negative shock as EMU members have optimally chosen a less counter-cyclical policy. We can therefore interpret the "competitive" depreciation of the lira in this theoretical context of riding-riding. Certainly, monetary and exchange rate policies are, in our model, determined by the Central Bank and not imposed by the markets. It is not certain that there is, at least ex-post, a big difference between a competitive depreciation interpreted as a deliberate strategy or as imposed by the market. Indeed, if market agents have in mind a model similar to that developed here, any policy other than the optimal monetary policy determined here will not be credible to the markets.

PRODUCTION

---

[1] When the economy overheats, the Central Bank will try symmetrically to export the "surplus" of production and thereby reduce the rate of inflation .

2. We do not analyze here the reasons why France and Germany want to exclude Italy. These are studied in this model in Martin [1995].

In a fixed and flexible exchange system where the three countries have the same status, monetary policy has no effect on production and is therefore equal to the shock e. In fixed exchange, it is because the optimal monetary policy is a constant and zero inflation. In flexible exchange rate, it is because monetary policy is same in the three countries. While central banks do manage to reduce the real wage in response to the shock since it is not anticipated by agents when signing contracts, they are unable to influence the level of production since each bank In this equilibrium, central banks adopt the same strategy which is similar to a competitive depreciation. At equilibrium, in recession, the real wage has been reduced in the different countries but without any profit for the production.

On the other hand, when Germany and France are in fixed exchange and Italy in flexible exchange, the respective productions are:

+ 3B T5ß

Production in Germany and France becomes less stable: (4 + 6ß) / (4 + 5β) e> e. That of Italy becomes more stable since now Italy, exploiting the fixed exchange rate system between Germany and France, has a more efficient monetary policy: (4 + 3ß) / (4 + 5ß) e <e. The exclusion of full EU member countries from the process of monetary integration will therefore create conflicts between EMU members and the excluded countries. For all countries, inflation is too high and too variable as a result of Italy's exclusion from the fixed exchange zone. It should be noted, however, that Germany and France still have an interest in forming a fixed, even partial, exchange zone because the increase in the variance of output is more than compensated for in the loss function by the decrease in both the average and of the variance of inflation. Martin [1995] shows that the excluded country may, once invited, have an interest in maintaining this free-rider position.

Are France and Germany in different positions vis-à-vis the choice of exclusion whose costs we have just analyzed in terms of the variance of production? So far, these two countries are identical and the effects of the exclusion of Italy on these two countries are also so. Suppose now that these three countries are affected by different stochastic shocks, eA, £ p, £ i. We want to show that even if the variance of these shocks is identical, the variance of production in each country depends on the correlation of shocks with those of the excluded country. Thus, if Germany and France create a fixed exchange zone excluding Italy, the optimal inflation rates are:

It can be easily shown that when the variance of shocks is equal in the three countries at o, the difference of the variance of the production in France and in Germany is the following one:

var (yF) - var (yA) = | £ | î [p (F, I) - p (A, I)] (9)

1 To calculate these optimal strategies, we make the standard assumption that a European central banker minimizes the sum of the loss functions of Germany and France where p (F, I) and p (A, I) are respectively the correlation coefficients of French and Italian shocks on the one hand and German and Italian shocks on the other hand. Thus, if the French shocks are more correlated with those of Italy than are the German shocks, as suggested by the work of the CEPR [1991] and Bayoumi and Eichengreen [1993], that is to say that p (F, I)> p (A, I), France will suffer more from the consequences of the monetary policy of an excluded Italy. Indeed, during a strong recession in both Italy and France, but less in Germany, Italy will conduct a depreciation policy to import production from the Franco-German zone. Due to the difference in correlation of shocks, the loss of production is experienced in France at the time of the recession, while in

Germany it is in another phase of the cycle. As a result, the variance in production will be stronger in France than in Germany. Another consequence of this result is that the exclusion of a country from the process of monetary integration will generate conflicts of interest between countries that are part of EMU. In this case, indeed, the optimal response of the European Central Bank to the monetary policy of the excluded countries will not be the same for the different members of the EMU as in Kirrane [2003]..

According to these results, the criteria for choosing to include or exclude countries from a monetary union are close to those set out in Mundell's theory of optimal currency areas [1961]. However, the reason why a country with shocks symmetrical to those of the zone should include in it is not due to the low cost implied by this inclusion, as at Mundell, but rather by the cost involved in its exclusion.

MANAGING THE RELATIONS BETWEEN EMU AND NON-EMU CURRENCIES

What does our model predict about the convergence between EMU and non-EMU countries in terms of inflation, which is one of the conditions for entry into EMU? According to equation (6), such a convergence can never take place "naturally" even if Italy converges in real terms, that is to say that yj reaches the level yF as long as it remains in outside the fixed exchange zone already formed. The creation of a fixed exchange zone between Germany and France changes the inflation expectations of German and French agents, but not of Italian agents. If Italian monetary policy is decided freely, Italian inflation will therefore remain higher, on average, than that of its partners. The exclusion of Italy from the fixed exchange zone thus worsens the differential of credibility and inflation that is at the origin and which maintains the will of exclusion of its partners.

If the monetary convergence between Italy and the EU countries can not take place in a "natural" way, an exchange agreement between EMU and Italy could help it. Alexandre Lamfalussy, President of the EMI, has proposed to "create a similar arrangement to the European exchange rate mechanism fixed but adjustable exchange rates ..." to stabilize the exchange rate between the European currency and non-EMU currencies of the EU. This can be interpreted as balances as describing the situation where France and Germany form a EMU and Italy sets its exchange rate passively in relation to the Franco-German currency. The interest in Germany and France is obvious: such an arrangement allows them to benefit from gains linked to an implicit fixed exchange rate zone without having to share responsibility for monetary policy with a country with a difficult budgetary situation. What would be the effect of the imposition of an SME-type relationship between Italy and the EMU countries? It all depends on its impact on the credibility of Italian monetary policy. If the agents believe in the announcement of the Italian monetary authority that it will reduce inflation at the level of its partners (or what amounts to the same in our model that the lira will not be depreciated), a system type EMS EMU will thus make it possible to replicate the credibility gains of a fixed exchange rate system for Italy. However, recent experience does not militate in favor of such a scenario and one can fear phenomena of multiple equilibria where the agents focus on the balance where Italy deviates. Indeed, if the announcement of a fixed exchange rate between Italy and the EMU countries is not credible, that is to say that the agents use for their nominal contracts expectations of high inflation the decrease in the rate of inflation in other European countries would then be very expensive in terms of production.

One could even think that the creation of an EMU between Germany and France will make even less credible for Italy an SME-type arrangement. Suppose the agents in the foreign exchange

markets use the expected inflation differential between currencies to calculate their anticipation of devaluation in the event of Italy leaving the EMS. This is perfectly in line with the model since the PPA holds. In the case of an EMS without a Franco-German EMU, this implies that the anticipated devaluation of the lira in the event of a crisis in the EMS is: - (a) - If a Franco-German EMU exists, the devaluation to read it in the event of a crisis of the EMS is stronger: ß (yj - 0.5 vA) since in this case the fixed Franco-German exchange is perfectly credible implying a lower rate of inflation in France and Germany in case of break-up of fixed exchange with Italy. If these exchange rate expectations are reflected in the interest rate differential via the interest-parity condition, this implies that an SME-type arrangement will be even more expensive for Italy, and therefore less credible, in the event of a change in the interest rate differential. In Franco-German EMU. In addition, if the agents take into account the gain in terms of production stabilization for the countries leaving the EMS to calculate the probability of an EMS crisis, this will be stronger in the presence of a Franco-German EMU. In fact, without a Franco-German EMU, the break-up of the EMS does not change the level of production since the fixed or flexible exchange output is e. On the other hand, in the presence of a German EMU, the crisis of an SME-type agreement with Italy implies the transition to the level of production given by equation (7), that is to say a higher level stable for Italy. The potential gain from an exit from the EMS in terms of output stability for Italy is therefore higher with EMU than without EMU. From this other point of view, the credibility of an SME-type agreement is diminished by the creation of a Franco-German EMU.

Some, particularly in France, have gone further and proposed that EMU members could react to competitive depreciations by either reducing the amounts paid through regional policies to countries perceived to be manipulating their monetary policy and their exchange rate, even by imposing tariffs on the exports of these countries.

The use of instruments giving rise to distortions as serious as tariffs (both for the country imposing them and for the country undergoing them), apart from calling into question the Single Market, we seems at least dangerous. In the same way that there is an optimal Nash equilibrium arbitrage between stabilization of inflation and stabilization of production, there will be, in such a game, an optimal arbitrage between tariffs and stabilization of production for all countries concerned. The resulting uncooperative equilibrium will therefore be very suboptimal of the present point as well as the essential European view for it is also completing the single market to defend the EMU while offering to undermine by the imposition of tariffs.

The use of the funds allocated within the framework of regional policies at least the advantage, at first glance, of not using distortionary instruments, but poses a number of problems: first, suppose that this proposal leads to a linear reduction in transfers to the country excluded from the EMU according to the equilibrium depreciation rate of the currency, ie the inflation differential in our model. This would amount to adding in the loss function of Italy a term such as that: y (Jij - 7CA) It can easily be shown in this case that the average inflation of both Italy and the EMU countries will decrease, so the anticipated inflation differential will decrease, but since this reduction is perfectly anticipated, it does not will have no impact on production levels. Indeed, monetary policy will always be counter-cyclical since "punishment" is not a function of the state of the economy. In fact, this proposal is exactly the same as that recently made by Persson and Tabellini [1993] and Walsh [1995]. in a national framework, which propose that the Central Bank's contract be a linear decreasing function of the inflation rate. These authors show that such a contract makes it possible to reduce the inflationary bias without affecting the optimal reaction

to shocks. In the European context, such a "contract" between, for example, the Commission and non-EMU countries would therefore reduce the inflationary bias but it will not solve the problem we have identified, ie the variance inflation in non-EMU countries and output variability in EMU countries will be increased by the monetary policy of the excluded country1. For such a mechanism to have an impact on the stability of the monetary policy of the excluded country and therefore on that of the production of the EMU countries, it would have to be a non-linear function of the depreciation rate of the currency no EMU ie it is actually a function of shock. The proposal then comes close to that of the "conservative banker" of Rogoff [1985] in a European framework. In fact, this implies that "punishment" (the reduction of transfers) is greater during a recession than during a boom. One can easily anticipate the complexity and political problems involved in such a mechanism. Another solution is that the reaction instrument itself is procyclical. It is not certain, however, that such an instrument exists.

CONCLUSION

We have analyzed some problems posed by the exclusion of a country from the EU from the process of monetary integration. Exclusion has a cost both for the excluded country and for the EMU countries: the excluded country loses the credibility gains related to fixed exchange rates and the EMU countries, creating a fixed exchange zone, allow the excluded country to exploit the flexible exchange, which increases the production variability of the EMU countries. We have seen that countries with the most symmetrical shocks to the excluded country will be the most affected by the monetary policy of the excluded country. The exclusion of the EMS and, ultimately, the EMU of an EU country thus leads to conflicts between the countries of the fixed exchange zone and between these countries and the excluded country. The episode of the depreciation of the lira can therefore be put in perspective in this theoretical context.

The difficulty of managing the relationship between the EU's EMU and non-EMU currencies has, until recently, been undervalued. We have shown that proposals to punish non-EMU countries that pursue "competitive depreciation" policies are, depending on their nature, dangerous for the Single Market, ineffective or overly complex. The solution of an SME-type arrangement between the excluded countries and the EMU countries would help to avoid some of these problems. The recent EMS experience, however, proves that the credibility problem that has been central to the crises has not been solved. We have also shown that the very formation of a partial EMU will increase the expectation of depreciation of the excluded currency and thus make an SME-type arrangement even less credible.

References

Alesina A., Grilli V. [1994], "On the Feasibility of a One OR Multi-speed European Monetary Union", in Eichengreen B., Frieden J. (eds), The Political Economy of European Monetary Unification, Boulder (Col.) Westview Press, p. 107-128.

Artus P. [1995], "Will monetary union be attractive for countries peripheral? "Working Paper, Caisse des Dépôts et Consignations.

Barro R., Gordon D. [1983], "Rules, Discretion and Reputation in a Model of Monetary Policy," Journal of Monetary Economics, 12, p. 101-122.

Bayoumi T., Eichengreen B. [1993], "Shocking Aspects of European-Monetary Unification", in Francesco Giavazzi (eds), Cambridge, Cambridge University Press, Adjustment and Growth in the European Monetary Union, p. 193-230.

CEPR [1991], European Integration Monitoring, The Making of Monetary Union.

Eichengreen B., Ghironi F. [1995], "European Monetary Unification: The Challenges Ahead", Discussion Paper, No. 1217, CEPR.

Kirrane, C. [2003], "The IMS and the Euro". *European Political Economy Review No. 1 (March 2003), pp. 153-65*

Kirrane, C. [2003], "The Choice of Exchange Rate Regimes for EU Ascension Countries". *European Political Economy Review No. 2 (Autumn 2003), pp. 188-206*

Laskar D. [1995], "Two-Speed Currency Union: An Analysis of the Heart of the Game", Discussion Paper, CEPREMAP.

Persson T. Tabellini G. [1993], "Designing Institutions for Monetary Stability," Carnegie Rochester Conference Series on Public Policy, 39 (0), December, p. 53-84.

Pisani-Ferry J. [1995], "Variable geometry of Europe: an essay on analysis economic", forthcoming in Politique étrangère.

Rogoff K. [1985], "The Optimal Degree of Commitment to an Intermediate Monetary Target," Quarterly Journal of Economics, 100, November, p. 1169-1189.

Walsh C. [1995], "Optimal Contracts for Central Bankers," American Economics Review, 85 (1), p. 150-167. Economic Review - No. 3, May 1996, p. 807-817.