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Monetary Frameworks: Is There a Preferred Option for the European Central Bank?

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Abstract

This paper discusses how the size of the monetary union in Europe can influence the choice of the monetary framework. The main conjecture is that the European Central Bank ought to target inflation if monetary union is confined to a “core” group of countries. However, the decision on whether to target inflation or monetary aggregates is not an unambiguous one if monetary union is EU-wide; the choice of the framework will depend on the type of shocks that are likely to prevail. The arguments motivating these conjectures essentially concern the trade-offs between the viability and credibility of different monetary frameworks.

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I. INTRODUCTION

Discussions about the appropriate institutional framework for conducting monetary policy are not new. The importance of the “rules” versus “discretion” debate in the seventies and the eighties, for instance, was mainly in providing a rigorous theoretical structure for evaluating the previous arguments over monetary frameworks. More recently, however, with the ERM crisis, and the growing popularity of formal inflation targeting, the discussion about monetary frameworks has taken on a more practical orientation. With a European Central Bank (ECB) in the making, but its operating framework as yet undecided, revisiting this discussion should prove helpful in identifying the criteria for choosing one monetary framework over another.

In discussing monetary options for the ECB, issues of whether it is optimal to conduct monetary policy at the European Union level, or if it is better to start off with a “core” group of countries instead, while both important and valid, are not explicitly taken up for discussion in this paper. The European Monetary Institute (EMI) has already launched preparations for formulating and implementing a common monetary policy for the European Union by the beginning of 1999. However, it has left open the question of whether the ECB should target inflation or money. A useful exercise, in this context, is to examine how recent developments in monetary theory can shed light on the criteria for choosing between different monetary frameworks, given the uncertainty about how large a group will participate in the early years of the single currency.

The conjecture of this paper is that targeting inflation is likely to be a more credible option in a “core” monetary union than it will be in an “encompassing” monetary union; in

contrast, targeting monetary aggregates is likely, under certain circumstances, to be a more credible option in an encompassing monetary union than it will be in a core monetary union.² These propositions, however, pertain mainly to how the relative attractiveness of inflation targeting and the targeting of monetary aggregates is affected by the size of the monetary union. To go from this to providing specific policy recommendations on how the ECB ought to conduct monetary policy under different circumstances is, however, a more complex matter. This paper argues that while the ECB should target inflation explicitly if monetary union is confined to only a core group of countries, the choice between whether to target inflation or a monetary aggregate is not a clear-cut one in the case of an encompassing monetary union. The choice of the monetary framework for an encompassing monetary union will have to be based largely on the assessment of the type of shocks that are likely to predominate.

The intuition motivating this conjecture is not very obvious, and a brief overview of the arguments that are developed for justifying this proposition should prove useful. The starting point for the analysis is that it is imperative for the ECB to establish credibility at the outset in order to be able to conduct monetary policy successfully. Having an intermediate target should help in this context, as it provides the public with a reference point for judging the credibility of the monetary authority's actions. The issue, then, is one of how successful

²The "core" is defined as the group of EU countries which have managed to maintain relatively stable exchange rates against the deutsche mark since at least 1987, and consequently, have synchronized their monetary policy fairly closely with the anchor country. The "core" could, thus, include Austria, Belgium, Denmark, France, Germany, Luxembourg, and the Netherlands. "Encompassing" monetary union refers in this paper to one in which all, or most of the European Union countries, become part of the single currency zone.

past experiences with intermediate targets have been. The paper argues that the historical experience in a number of countries has weakened the case for anchoring monetary policy to an intermediate target, and that targeting inflation directly may be a better option for monetary policy. Central banks that have already established a record of credibility can, and in practice, do target inflation implicitly. However, this may not be a feasible option for a central bank that is in the process of establishing its credibility. In this case explicit inflation targeting is warranted—i.e., monetary actions need to be based on a set of feedback rules that can be communicated in a transparent way to the public. The paper discusses in detail what these feedback rules are, the reasons for emphasizing the importance of transparency, and why explicit inflation targeting is likely to be a credible option for monetary union with a core, but a less credible one when monetary union is more encompassing. The case for why targeting monetary aggregates could be a potential alternative to inflation targeting in an encompassing monetary union is based partly on the assessment that the relationship linking monetary aggregates to economic activity and inflation is likely to be more stable in an encompassing monetary union than it will be in a core union.

The focus and conclusions of this paper are, thus, somewhat different from the proposals put forward in the recent studies by Persson and Tabellini (1996) and Dewatripont et.al (1995). The starting point for those studies is either the assumption that monetary union will in practice be only confined to the core, or the judgement that it ought to be confined only to the core. Their policy recommendation is for the core to target inflation, and for the “outs” to coordinate monetary policy with the “ins” through a mutual system of inflation targets, instead of fixing their currencies to the euro. The starting point for this paper, in contrast, is

about the assessment of the relative attractiveness of different monetary frameworks *if* monetary union turns out to be more encompassing than has generally been expected. The emphasis of the paper is, thus, on examining the trade offs involved in choosing between inflation targeting and monetary targeting under different institutional settings. Issues relating to the coordination of monetary policy between the “ins” and the “outs” are not taken up for discussion in this paper.

The paper is organized as follows. Section II outlines the instruments and the operational procedures that the ECB will start off with, and their relationship to the choice of the monetary framework. Section III provides an overview of the experience with intermediate targeting, and discusses the reasons for the growing popularity of inflation targeting. Section IV discusses the preconditions for explicit inflation targeting. Section V explains why only a core currency union meets the criteria for explicit inflation targeting, and also discusses the conditional case for targeting monetary aggregates in an encompassing monetary union.

II. THE STRUCTURE OF THE ECB

This section discusses the instruments and operational procedures that will become available to the ECB, and their link to the choice of the monetary framework.³ Sometime in 1998, the decision to appoint the Executive Board of the ECB will be made, and the ECB will stand ready by January 1999 to conduct monetary policy for the single currency area. The countries participating in the single currency zone will have irrevocably fixed the exchange

³The discussion in this section draws on the EMI's Annual Report for 1995, and the EMI's document, "The Single Monetary Policy in Stage Three: Specification of the Operational Framework," January 1997.

rates among their currencies, and against the euro, which will circulate in non-cash form initially. The national currencies and the euro will, thus, effectively become different manifestations of what is economically the same currency. Euro bank notes and coin will be introduced by the year 2002, and the national currencies will be removed from circulation rapidly thereafter. All new tradeable public debt issued by the participating countries will only be in euros from the start of stage 3 of the EMU in 1999. The ECB along with the national central banks (the European System of Central Banks—ESCB) will establish a payments system by the start of stage three to facilitate the unhindered cross-border flow of funds, and create the preconditions for implementing the single monetary policy.

The decision regarding the monetary framework for the ECB—whether to target inflation or money—appears to have been left open for now. The EMI, which has been vested with the task of preparing for the launch of the ECB, has ruled out exchange rate targeting as being a suitable option, since given the potentially large size of the euro area, such an approach could be inconsistent with the goal of price stability. Consequently, the EMI has made attempts to create instruments and operating procedures that are compatible with both inflation targeting and monetary targeting. The main operating instrument for the ECB will be a short-term interest rate, and open market operations are expected to be conducted mainly through repos. The choice of repos rather than direct intervention for implementing monetary policy is expected to provide the ECB with more flexibility regarding the choice of the underlying security in which the open market operations are conducted. The ECB will also have standing facilities—a lending and a deposit rate—for credit institutions to obtain and deposit excess liquidity. These standing facilities, in addition to providing a binding corridor

for the intervention rate, could be used for providing signals about monetary policy intentions—particularly useful when the objective is to increase transparency when targeting inflation. Reserve requirements are also expected to figure among the set of monetary instruments and procedures available to the ECB. The main rationale for having reserve requirements is to enhance the control over monetary aggregates should the ECB decide to choose monetary targeting as the framework for conducting monetary policy.⁴

III. ASSESSING MONETARY FRAMEWORKS

Before formal inflation targeting became fashionable in the nineties, anchoring monetary policy to an intermediate target—be it the nominal exchange rate or monetary aggregates—was considered important. The reasons for this are well known: monetary policy impacts on the ultimate objective—be it inflation or activity—with long lags. Having an intermediate target provides the monetary authority with a metric for monitoring and evaluating the impact of its actions meanwhile. An intermediate target also provides the public with a reference point for judging the credibility of the monetary authority. The exchange rate as an intermediate target, of course, constrains discretionary monetary actions much more than having monetary aggregates as intermediate targets do; deviations from the exchange rate target are immediately perceived, can be continuously monitored, and have strong adverse

⁴Reserve requirements enhance the controllability of the monetary aggregate by increasing the interest elasticity of money demand. The degree of controllability will vary according to how the reserve-requirements provisions are defined—whether lagged, contemporaneous, or averaged. See Goodfriend (1987) and Feldstein (1993) for a discussion of these issues. The EMI has also emphasized the need for reserve requirements to stabilize money market rates, and for dealing with structural liquidity shortages.

effects on credibility. However, targeting the nominal exchange rate has recently proved to be more difficult, given the increasing international mobility of capital, and the rapid growth of turnover in the foreign exchange markets.⁵ Moreover, as noted earlier, targeting the nominal exchange rate is of greater relevance in the case of small economies, but is of less relevance in the case of a larger entity such as the European Union.

The use of monetary aggregates as intermediate targets for monetary policy has also become less popular recently. Following the collapse of the Bretton Woods system, a number of industrial countries began to anchor their monetary policy to a monetary aggregate.⁶ The use of monetary targets during the seventies and eighties was in particular buttressed by the theoretical developments of this period—which stressed the importance of “rules” and the advantages, in particular, of using a money rule rather than an interest rate rule due to the perceived difficulties with identifying the precise channels of the transmission mechanism.⁷ The issue that is relevant for evaluating the success of monetary targeting is an empirical one—how good a job did the targeted monetary aggregates do in predicting inflation and

⁵Svensson (1994) and Obstfeld and Rogoff (1995) argue that these developments have increased the probability of self-fulfilling speculative attacks on fixed exchange rates, particularly when the economy is subject to asymmetric real shocks in an environment characterized by nominal rigidities.

⁶In the United States, for instance, targets were set for both broad and narrow money in 1975, but the Federal Reserve Board has focused mainly on the broad monetary aggregate since the late 1980s—see Friedman (1996) and Friedman and Kuttner (1996) for details. Germany started off by targeting “Central Bank Money”—a weighted average of M3 between 1974 and 1987—but then shifted to targeting M3 itself—see, in this context, von Hagen (1994) and Clarida and Gertler (1996). Other industrial countries also had their own versions of monetary targets to serve as focal points for monetary policy following the collapse of the fixed exchange regime in the early seventies.

⁷Meltzer (1995) provides a good overview of the monetarist case for targeting money.

output. The answers, of course, vary between countries, but a common finding (including those of recent studies using new econometric techniques) is that the rapid pace of financial innovation, particularly in the late eighties, has rendered the link between both money and inflation and money and activity more tenuous.⁸ That is, there appears to be less of an empirical basis for anchoring monetary policy to a money target now than may have been the case in an earlier period. Indeed, it has been argued, that in practice, even a country such as Germany has recently tended to use money more as an information variable rather than as an intermediate target.⁹

The success of formal inflation targeting in the nineties has also indirectly weakened the case for monetary targeting. Following the ERM crisis in 1992, countries such as the United Kingdom, Sweden, and Finland that had lost their exchange rate anchor, adopted inflation targeting as the framework for conducting monetary policy, thus joining New Zealand, which was the first to adopt an explicit inflation target in 1990, and Canada, which adopted it in 1991. The success of this framework (at least so far) in these countries, has led to a growing belief that low inflation is best achieved by targeting inflation directly, rather than relying on intermediate targets to do this indirectly. In particular, the advantage with inflation targeting is the flexibility that it confers to the conduct of monetary policy—one has the option of monitoring a variety of financial as well as nonfinancial variables for gauging information on future inflation. This could be particularly useful when the economy is subject

⁸See Friedman (1996) for the evidence on the United States; Clarida and Gertler (1996) for the evidence on Germany; and Breeden and Fisher (1994) for the United Kingdom.

⁹See von Hagen(1994), Clarida and Gertler (1996), and Bernanke and Mihov (1996).

to large structural changes that render past relationships between economic variables unstable. For instance, if financial innovation renders the relationship between broad money and inflation unstable, it is possible under inflation targeting to shift the focus to monitoring narrow money, or some other variable that does a better job of forecasting inflation. Such changes in the focus of the variables being monitored should not adversely affect credibility provided that the rules for the inflation targeting framework are well defined.¹⁰

IV. EXPLICIT INFLATION TARGETING

In light of this discussion about monetary frameworks, what accounts for the conjecture that the ECB ought to target inflation just for the core, and why is there an ambiguity about the appropriateness of inflation targeting for a more encompassing monetary union? As indicated earlier, the ECB has to establish its credibility soon after it becomes operational.¹¹ In the absence of intermediate targets to anchor monetary policy, this requires an explicit inflation targeting framework. A core group is likely to satisfy the criteria for explicit inflation targeting, but an encompassing monetary union is less likely to do so. Each of these arguments is developed in detail below.¹²

¹⁰See Baumgartner and Ramaswamy (1996) for a discussion of how the inflation targeting framework can combine flexibility with the features of a rule.

¹¹Berg (1996) provides a useful review of the “credibility literature” in the context of the ECB.

¹²In practice, the distinctions among explicit inflation targeting, implicit inflation targeting, and monetary targeting are likely to be of a less stark form than is implied by the analytical discussion in the paper. Nevertheless, the conceptual distinction made between the different monetary frameworks serves the useful purpose of providing a sharp focus on the criteria for

(continued...)

The need for explicit inflation targeting is best understood by contrasting it with the implicit inflation targeting carried out in practice by some central banks. With monetary targets proving to be unreliable in recent years, both the Federal Reserve and the Bundesbank have, as noted earlier, been targeting inflation implicitly for sometime now.¹³ They do this by monitoring a variety of indicators for their assessments of inflationary potential, and use discretionary judgement in deciding what the policy stance ought to be. Neither of these central banks feels compelled to provide a detailed justification to the public of how and why they arrived at particular decisions.¹⁴ These central banks manage to get by with discretionary actions because they have already established a track record of credibility.

Such an option is not open to central banks which lack the same level of credibility. The main reason is that policy slippages or violations of the framework are much harder to detect under inflation targeting than is the case with rule-based frameworks such as monetary or exchange rate targeting. The appropriateness of the current monetary stance in relation to the inflation target can only be discovered as events unravel in the future. Even then, it is not always easy to distinguish whether the failure to meet the target was on account of an

¹²(...continued)

choosing one particular framework over another, and the implications of that particular choice.

¹³Implicit inflation targeting is not incompatible with the central bank also having output as an argument of its objective function. In fact, if demand shocks predominate, targeting inflation should not be very different from targeting nominal income. With supply shocks, however, there could be a conflict between targeting inflation and targeting nominal income. See Baumgartner and Ramaswamy (1996) for a review of this discussion.

¹⁴It should, however, be noted in this context that the Bundesbank at times provides justifications for overriding monetary targets.

inappropriate monetary stance due to a genuine forecast error, or due to a deliberate violation of the framework itself in search of short-term gains. Making the decision making process more transparent minimizes the danger of transforming genuine forecasting errors into problems of the credibility of the framework itself. This is particularly important when the monetary authority is in the process of establishing credibility, and accounts for why central banks in countries such as Sweden and the United Kingdom place so much emphasis on publishing inflation reports that explain why a particular decision was taken, or why the assessment of the required monetary stance may have changed from one period to another. It is in this context that explicit inflation targeting provides the framework for establishing credibility by constraining the possibilities for arbitrary decision making.

The mechanics of setting up a system of explicit inflation targeting essentially consists of establishing a set of feedback rules for monetary policy that can be communicated in a transparent way to the public. A feedback rule assigns weights to the mapping from a set of commonly used leading indicators—such as for instance, bond yields, the yield curve, exchange rates, stock prices, monetary aggregates, and the output gap—to the policy action. A simple feedback rule, for example, would assign weights to the indicators on the basis of their forecasting power—i.e., monetary policy should react more to the information on inflation provided by an indicator with a relatively better past record of forecasting. A more complex feedback rule may assign weights based on both forecasting power and the structural relationship of that indicator to inflation. For instance, suppose that the output gap and the yield curve have in the past been equally good at forecasting inflation, but are currently giving conflicting signals. Then, policy may want to give more weight to the signals provided by the

output gap, if we can articulate more clearly the channels through which the output gap affects inflation than is possible to do in the case of the yield curve.¹⁵ The Taylor rule, according to which the stance of monetary policy is solely a function of current inflation and the output gap, is an example of a feedback rule that assigns a significant weight to the output gap on account of structural considerations.¹⁶ Whatever is the feedback rule chosen, explicit inflation targeting requires the monetary authority to communicate the reasons for particular actions broadly on the basis of the pre-assigned rules, so that the public has some metric by which to judge the credibility of the monetary authority.

V. THE CHOICE OF MONETARY FRAMEWORK

Let us now examine how the ECB is likely to measure up to the preconditions for explicit inflation targeting under the two different scenarios: (a) core participation in the single currency; and (b) a more encompassing participation in the single currency.

Let us first consider the issue of constructing feedback rules for the ECB with financial indicators. A single currency removes the exchange rate risk between the participating countries, and the only source of variations between the euro-bond yields issued by the

¹⁵These issues are discussed at greater length in Baumgartner, Ramaswamy and Zettergren (1997).

¹⁶More precisely, the Taylor rule is a policy rule in which the monetary authority increases its operational interest rate either when current inflation is above the target rate, or output is above potential. This feedback rule assigns equal weights to the deviation of inflation from target, and the deviation of output from potential. The Taylor rule appears to fit the actual policy performance of the Federal Reserve Board fairly well. See Taylor (1993). In this context, monetary targeting can be perceived as a special case of inflation targeting in which the monetary aggregate is assigned a weight of unity.

different countries would be primarily on account of credit and liquidity premia. The variations in these premia for the bonds issued by the core countries are unlikely to be of any significant magnitude, so that for practical purposes one can visualize the existence of a generic euro-bond for a core currency union. That is, in implementing monetary policy for a core currency union, the ECB can in principle construct a set of transparent feedback rules with financial indicators such as bond yields, the yield curve and variations in other asset prices. With a more encompassing monetary union, the variations in credit and liquidity premia between the euro-bonds issued by the different countries are likely to be more sizeable; moreover, the variations in asset prices between the participating countries are also likely to be significant.¹⁷ Consequently, the task of constructing feedback rules based on the signals about inflation provided by these multiple financial indicators becomes much more difficult in an encompassing monetary union. While there is nothing in principle to preclude the construction of a complex feedback rule which defines a mapping from the entire set of financial indicators to the policy action of the ECB, communicating such a rule to the public, and acting on its basis, is unlikely to have the same degree of credibility in an encompassing monetary union as it will in a core monetary union.

¹⁷Measured credit premia is currently only in the range of 30 to 40 basis points even in the highly indebted countries of the European Union. However, it is quite likely that the euro-bond yields issued by the different countries in an encompassing monetary union will vary to a greater extent than is indicated by current measures of credit-premia. The reasons often cited in support of this conjecture are that the removal of the currency premia makes credit risk the focal point, and that measured currency premia in practice incorporates some credit risk. Consequently, measured credit risk is likely to be higher in a monetary union than is suggested by current estimates of it.

If the task of constructing a feedback rule based on financial indicators is difficult for an encompassing monetary union, why not rely on a simple feedback rule such as the Taylor rule for the purposes of targeting inflation? First, an exclusive reliance on such a feedback rule ignores other information that could be of operational relevance for monetary policy.

Moreover, while constructing an unambiguous Taylor rule ought to be relatively easy for the core, it is unlikely to be so in the case of an encompassing monetary union. For the core, given that monetary policy has been synchronized over a relatively longer period—partly on account of the history of relatively greater exchange rate stability among them—the output gaps between these countries are likely to be similar, and can reasonably be expected to move broadly together. This is much less likely to be the case with an encompassing monetary union, and consequently, it will be more difficult to construct an “euro-output gap” that can form the basis of a transparent feedback rule, at least during the initial stages of the monetary union.

There is, of course, nothing in theory that prevents the construction of a composite Taylor rule for the encompassing monetary union. The ECB can pre-assign a particular weighting scheme for the output gaps of the participating countries, communicate this rule to the public, and target inflation on the basis of such a pre-assigned feedback rule. But conducting monetary policy in practice on this basis may neither be feasible nor advisable. For instance, given the diversity of the policy makers in the ECB, decisions on whether to: (a) use a simple average of the output gaps of the participating countries, or (b) output gaps weighted by GDP, or (c) give special attention to the outliers in the output gap distribution in implementing monetary policy, can easily get mired in controversy. Even if the ECB can arrive

at an internal consensus on adopting one or the other of these feedback rules, communicating this decision in a politically acceptable manner to the public, and abiding by such a policy rule when there is a significant variability in the cyclical positions of the different countries, may prove to be difficult in practice.

Implicit inflation targeting—i.e., monitoring a variety of indicators and using discretionary judgement, without having to justify the basis of every action to the public—is likely to be even less of a feasible option for an encompassing monetary union than it is for a core currency union. If establishing credibility is important for the ECB when there is a core currency union, it will be even more so when there is an encompassing monetary union. That is, we are faced with a paradox where the need for explicit inflation targeting increases as the currency union becomes more encompassing, but the capacity to be able to do it successfully decreases with the size of the currency union.

If explicit inflation targeting may not be a fully credible option in an encompassing monetary union, to what extent will targeting money be a better alternative? Targeting money is of course in principle an easy way of establishing credibility—it gives the public a visible metric for judging the ECB's actions. But what about the traditional problems associated with targeting money that were discussed earlier? The crucial policy issue in this context is how the costs associated with having monetary targets can be traded off against the gains in credibility to be had from having an intermediate target. In other words, for monetary targeting to be a feasible option, the costs involved from the existence of a potentially unstable demand for money should not swamp the gains in credibility that accrue from having an intermediate target.

We shall argue that there are reasons to believe that monetary targeting can in principle be a more feasible option in an encompassing monetary union than it will be under a narrow monetary union. A number of recent studies indicate that the relationship linking monetary aggregates to economic activity and inflation is likely to be more stable and predictable when money supplies are aggregated across a number of European countries than when taken individually.¹⁸ An important factor that accounts for the relatively greater stability of the demand for money, when aggregated across a number of European countries, appears to be related to the phenomenon of increasing currency substitution as part of the process of deepening European integration. That is, shocks to the demand for money for individual countries related to shifts in the currency composition of money balances are internalized by a wider European monetary aggregate. The more encompassing is the monetary union, the more likely it is to internalize these money demand shocks. Similarly, shocks to individual money demand from cross-border holding of deposits may also be internalized to some extent by a European monetary aggregate.¹⁹

¹⁸Cassard, Lane and Masson (1997) provide evidence for the existence of a stable demand for broad money for a “core” group of European countries—Germany, France, the Netherlands, Belgium, Denmark, and Luxembourg. The study by Artis, Bladen-Hovell, and Zhang (1993) also indicates a more stable demand for the monetary aggregates of a group of seven European Union countries (Germany, France, Italy, the Netherlands, Belgium, Denmark and Ireland) than is the case with the individual money demand functions. In a comprehensive analysis of EU-wide money demand functions, Monticelli and Papi (1996) present evidence that money demand for the EU area as a whole is stable and predictable for a wide variety of specifications.

¹⁹Cross-border deposits are those for which there is no coincidence between the holder, the currency of denomination and the residency of the bank. See Angeloni, Cottarelli, and Levy (1991) for a discussion of these issues.

However, the important question that needs to be addressed in this context is whether the observed relative stability of the money demand relationship when aggregated across a number of European countries is likely to hold when an encompassing monetary union actually comes into being in 1999. This obviously involves making an assessment about the plausibility of other types of money demand shocks that are not linked to currency substitution within Europe, particularly about the extent to which existing structural relationships will be modified by the creation of the single currency. If there are likely to be large financial shocks once monetary union takes place, and to the extent that it will not be fully apparent whether these shocks are temporary or permanent, the normative case for targeting money in an encompassing union is weakened.

Thus the policy recommendation on whether the ECB ought to target money or inflation in an encompassing monetary union will have to be predicated largely on the assessment about the costs and benefits of pursuing each of these strategies. Targeting money could be a preferred strategy for an encompassing monetary union if the likelihood of financial shocks are not large, and if the internalization of money demand shocks from currency substitution is not fully offset by other sources of instability in the process of aggregation. The case for targeting money will also be strengthened to the extent that difficulties are envisaged in deriving transparent feedback rules for explicit inflation targeting due to, for instance, large variations in the cyclical position of these economies. Conversely, explicit inflation targeting could be a preferred strategy for an encompassing monetary union if the existing relationships linking money to activity and inflation breakdown completely, and the cyclical positions of the

participating countries become more synchronized on a sustainable basis than they currently are.

From a practical point of view, if a decision to target money in an encompassing monetary union is made, the ECB will have to design procedures that will minimize the damage from financial innovation. There are essentially two sets of issues to contend with in this context. One concerns how the ECB ought to deal with situations in which financial innovation destabilizes existing relationships between monetary aggregates and nominal activity. The second concerns the effective controllability of the monetary aggregates. One possible way of minimizing the adverse effects of shocks stemming from financial innovation when targeting monetary aggregates is for the ECB to operate procedures similar to what has been proposed in the U.S. context by Feldstein and Stock (1994). The rule proposed by them automatically adjusts the composition of the monetary aggregate in a way that makes the resulting measure of money stock a more reliable and stable indicator of the final objective. For instance, the broad monetary aggregate targeted may be redefined to include money market mutual funds in terms of a pre-assigned set of rules, if that new aggregate has a more predictable relationship to the final objective. Such a procedure could provide the monetary authority the flexibility to shift the emphasis from one monetary aggregate to another, or define new monetary aggregates, without necessarily having to lose credibility in the process. Further, the ECB could make full use of the flexibility provided for its operational procedures—such as the provisions regarding reserve requirements—to gain greater control from the supply side over the monetary aggregate targeted.

VI. CONCLUSIONS

This paper has argued that inflation targeting is likely to be a relatively more attractive option in a core monetary union than in an encompassing one. In contrast, a case has been made for why monetary targeting could under certain circumstances be a more feasible option in an encompassing monetary union than in a core union. While these conjectures are shown to support a normative policy recommendation to target inflation if monetary union is confined to a core group of countries, it is more difficult to support an unambiguous policy recommendation on whether an encompassing monetary union should target inflation or money. The choice of monetary framework for an encompassing monetary union is shown to depend crucially on the nature of the shocks that are likely to prevail when the new currency is introduced. A crucial factor driving these results has been the importance assigned to credibility, and the way in which the different monetary frameworks deliver this in a viable way. The framework and benchmarks provided in this paper can also prove useful in making practical judgements about what the ECB ought to do if monetary union is enlarged somewhat beyond the core group, but not fully encompassing all the European Union countries.

References

- Angeloni, I., C. Cottarelli, and A. Levy, 1991, "Cross-Border Deposits and Monetary Aggregates in the Transition to EMU," IMF Working Paper No. 91/114 (Washington: International Monetary Fund, November).
- Artis, M.J., R.C. Blanden Hovell, and W. Zhang, 1993, "A European Money Demand Function," in *Policy Issues in the Operation of Currency Unions*, ed. by Paul R. Masson and M.P. Taylor (Cambridge, Massachusetts: Cambridge University Press).
- Baumgartner, J., and R. Ramaswamy, 1996, "Inflation Targeting in the United Kingdom: Information Content of Financial and Monetary Variables," IMF Working Paper No. 96/44 (Washington: International Monetary Fund, May).
- Baumgartner, J., R. Ramaswamy, and G. Zettergren, 1997, "Monetary Policy and Leading Indicators of Inflation in Sweden," *Central Bank of Sweden Working Paper No.37* (April).
- Berg, C., 1996, "Monetary Policy Strategies for the European Central Bank," *Sveriges Riksbank Quarterly Review*, 2.
- Bernanke, B., and I. Mihov, 1996, "What Does the Bundesbank Target?" NBER Working Paper, No. 5764 (September).
- Breeden F., and P. Fisher, 1994, "The Determination of M0 and M4," *Bank of England Quarterly Bulletin*, Vol. 34, No. 1 (February) pp. 46-50.
- Cassard, M., T. Lane, and Paul Masson, 1997, "Core-ERM Money Demand and Effects on Inflation," *Manchester School*, Vol. LXV, No. 1 (January).
- Clarida, R., and M. Gertler, 1996, "How the Bundesbank Conducts Monetary Policy," NBER Working Paper 5581 (May).
- Dewatripont, M., et. al, 1995, *Flexible Integration: Towards a More Effective and Democratic Europe*, Centre for Economic Policy Research (London).
- Feldstein, M., and J.H. Stock, 1994, "Measuring Money Growth When Financial Markets are Changing," NBER, Working Paper No. 4888 (October).
- Feldstein, M., 1993, "The Recent Failure of U.S. Monetary Policy," *De Economist*, 141, NR. 1.

Friedman, B.M., 1996, "The Rise and Fall of Money Growth Targets as Guidelines for U.S. Monetary Policy," NBER Working Paper No. 5465 (February).

Friedman, B.M., and K.N. Kuttner, 1996, "A Price Target for U.S. Monetary Policy? Lessons from the Experience With Money Growth Targets," *Brookings Papers on Economic Activity*: 1.

Goodfriend, M., 1987, *Monetary Policy in Action*, Federal Reserve Bank of Richmond.

Meltzer, A.H., 1995, "Monetary, Credit (and Other) Transmission Processes: A Monetarist Perspective," *Journal of Economic Perspectives*, Vol. 9, No. 4 (Fall).

Monticelli, C., and L. Papi, 1996, "European Integration, Monetary Coordination, and the Demand for Money," Clarendon Press, Oxford.

Obstfeld, M., and K. Rogoff, 1995, "The Mirage of Fixed Exchange Rates," *Journal of Economic Perspectives*, Vol. 9, No. 4 (Fall).

Persson, T., and G. Tabellini, 1996, "Monetary Cohabitation in Europe," *American Economic Review*, Vol. 86, No. 2 (May).

Svensson, L.O., 1994, "Fixed Exchange Rates as a Means to Price Stability: What Have we Learned?" *European Economic Review*, No. 38.

Taylor, J.B., 1993, "Discretion Versus Policy Rules in Practice," *Carnegie-Rochester Conference Series on Public Policy*, No. 39.

Von Hagen, J., 1995, "Inflation and Monetary Targeting in Germany," in L. Leiderman and L.O. Svensson, *Inflation Targets* (CEPR, London).