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Monetary policy strategies for the European Central Bank and their implementation

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1 Introduction

According to the Treaty on European Union, the European Monetary Institute (EMI) is responsible for preparing the instruments and procedures required for the implementation of the single monetary policy in Stage Three of EMU. Although the ultimate decisions will be taken by the European Central Bank (ECB) Governing Council, the EMI shall specify the regulatory, organisational and logistical framework necessary for the ESCB to perform its tasks.

The primary objective of the European System of Central Banks (ESCB) shall be to maintain price stability. Without prejudice to the objective of price stability, the ESCB shall support the general economic policies in the Community with a view to contributing to the achievement of the objectives of the Community, e.g. to promote a harmonious and balanced development of economic activities, sustainable and non-inflationary growth.

The ESCB Statute, however, offers no guidance on the strategy the ESCB should follow in attaining the price stability objective and it describes only in very general terms the means and procedures for policy implementation.

The President of the EMI, Alexandre Lamfalussy, has suggested that for Stage Three, the most promising candidates for monetary policy strategy are monetary targeting and direct inflation targeting, see Lamfalussy (1995). The actual choice between these strategies will depend on two factors.

The first factor is empirical evidence regarding the approaches, which will have to take into account, in particular, that since the exchange rate crises of 1992 and 1993, several central banks have adjusted their monetary policy strategies.

The second factor which will determine the choice between monetary targeting and direct inflation targeting is an analytical discussion based on key issues such as credibility, accountability, rules versus discretion and central bank independence. Practical lessons for monetary policy can be drawn from the ongoing academic analysis. One important issue, which is not dealt with explicitly in the Treaty but which has a bearing on the decision on monetary policy strategy, is the monetary policy coordination between the countries participating in the EMU and the other members of the European Union.

This article discusses some of the issues relating to monetary policy strategy and its implementation in Stage Three of EMU. It is structured as follows. Section 2 discusses the incentive problem facing a central bank, in particular the tension between the direct benefits of lower inflation and the benefits of surprise inflation, and various possible solutions to this problem: inflation contracts, inflation targets and intermediate targets. Section 3 examines some problems related to a strategy based on monetary targets or other intermediate targets. Section 4 discusses the problem of coordinating monetary policy between those countries participating in the single curency area and other EU

countries. The final section concludes with some recommendations for the monetary policy strategy of the ESCB in Stage Three.

2 The incentive problem, inflation contracts, inflation targets and intermediate targets

In this section the incentive problem facing a central bank will be discussed. The incentive problem arises if the private sector responds to an anti-inflationary policy by signing contracts that embody a low expected rate of inflation. The central bank might in such cases be tempted to produce higher output through surprise inflation. Rational private agents anticipate, however, what the central bank is tempted to do and in equilibrium inflation will be higher than it needs to be; there is an inflation bias inherent in monetary policy. Actual inflation therefore can be analyzed as being composed of two separate terms, besides any influence from demand and supply shocks: the inflation target and the inflation bias.

In the second part of this section various solutions to the incentive problem put forward in the theoretical literature will be discussed, e.g. the appointment of a central banker, who gives a *higher weight to inflation stabilization* than society as a whole; the introduction of an *inflation contract* between the government and the central banker in which the central banker's remuneration declines in proportion to inflation; the delegation of monetary policy to a central bank with an *inflation target* lower than society's and lastly a contract based on an *intermediate monetary target.*

All strategies aim to anchor monetary policy and, thus, the inflation rate by affecting the cost of inflation for the central bank. They differ with respect to the way in which they reduce the inflation bias and with respect to their consequences for output stabilization.

2.1 The incentive problem

Recent models of central bank independence are based on the inconcistency between the optimal policies that economic policy authorities would announce if their announcements were believed by the public, and the policies the authorities would carry out once the public had acted on the basis of those expectations.[1] Two important motives for an inflationary bias are the fiscal revenue motive and the employment, or short-run Phillips curve, motive.

As an illustration of the first motive, a revenue-seeking government may find it attractive to acquire resources from the private sector by a levy in the form of an unanticipated increase in the price level, when goverment debt and government expenditures are nominally denominated, see e.g. Calvo (1978). Since the revenue from monetary expansion can be used to lower distortionary fiscal taxes, the incentive to increase the inflation tax may become very strong. A promise to keep inflation low

[1] An excellent survey of this literature is given in the introduction to Persson and Tabellini (1994).

may therefore not be credible. In a rational world, the private sector will understand the temptations that face the monetary authority. In equilibrium inflation is above its target.

An illustration of the second motive is given by the inflation-bias result in aggregate demand management, due to Kydland and Prescott (1977) and Barro and Gordon (1983). If the employment rate is given by an expectations-augmented Phillips curve and the central bank controls the inflation via aggregate demand, surprise inflation generates unemployment below the natural rate if prices and wages are set before agents observe aggregate demand. Once inflationary expectations have been incorporated in wages and prices, the central bank can expand the economy towards a lower unemployment rate along the short-run Phillips curve, by creating unexpected inflation. The short-run incentives to expand the economy drive up the inflation rate to the point where the cost of higher inflation balances the benefit of lower unemployment. In equilibrium monetary policy is biased towards inflation; inflation is above its target, but there is no long-term gain in unemployment. Thus, in principle, monetary policy can stabilize or destabilize output or employment, but it cannot increase the average level of these variables.

In these two examples, the incentive constraints emanate from the sequential nature of policy-making, particularly from the possibility to deviate from announced policy rules. The tension between the direct benefits of lower inflation and the potential benefits of surprise inflation is fundamental to the analysis.

It is also clear that the importance of the incentive problem and the benefit from a surprise inflation is state-contingent. The benefit from unanticipated monetary expansion increases with the level of the nominal government debt and the political pressure to inflate the economy rises when the natural level of unemployment is high. With persistence in output or unemployment the inflation bias is on average larger than without persistence.

2.2 Delegation of monetary policy

Theoretical considerations and empirical evidence suggest that the incentive problem can be solved or reduced by delegating monetary policy to an independent central bank, which is held accountable for the fulfilment of a statutory objective, defined by the principal, in practice the parliament.

In order to counteract the discretionary inflation bias, due to the incentive problem discussed above, it is motivated to put more weight on inflation stabilization than society does. This is for example accomplished by delegating monetary policy to an independent inflation-averse central bank as suggested by Rogoff (1985). The central banker and society are both assumed to have preferences for the inflation rate and output levels, but the central banker weighs deviations of inflation from target relative to output deviations more heavily than society does. In this model there is a trade-off between the reduction of the average inflation rate and the increase in the variability of output. Therefore the appointment of a conservative central banker reduces the

inflation bias but brings higher than optimal variability in output. This is, however, only the third best equilibrium, according to Rogoff's terminology:

The first-best equilibrium requires elimination of the distortion which is the ultimate cause behind the incentive problem, for example distortions on the labor market or the tax system.

The second best equilibrium refers to an optimal rule under commitment, given the distortion, when the inflation bias is reduced without increasing the variability in the development of economic activities.

The third best equilibrium refers to the example above. Delegation of monetary policy to a central bank which puts more weight on inflation stabilization than society does will reduce the inflation bias at the expense of more variability in output.

2.3 Inflation contracts

However, it is possible to eliminate the incentive problem without increasing output variability by imposing a simple performance contract with a linear penalty for inflation, as suggested by Walsh (1995) and Persson & Tabellini (1993). In their analysis, which applies recent findings in contracts theory, a principal (society) with well-designed goals has to design a contract that will motivate an agent (the central bank) to act in the principal's interests. The optimal contract can be interpreted as a mandate to achieve price stability. The central bank is punished for any percentage point of inflation (or remunerated for attaining low inflation). The key distortion is that, without the contract, the central bank does not internalize the effects of its monetary policy decisions on expected inflation. By punishing the central bank for excessive inflation in relation to the principal's interest, this contract adds the cost of higher expected inflation to the central banks loss function, effectively internalizing the cost of inflation.[2]

2.4 Inflation targets

The contracting approach, however, while analytically attractive, has not yet been implemented in any country.[3] In contrast, inflation targeting is becoming widely used

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[2] When the benefit from a surprise inflation is state-contingent, due to e.g. unemployment persistence, *a* simple linear inflation contract can eliminate the average inflation bias, but cannot achieve the optimal rule. The inflation bias will be state-dependent and the inflation response to the supply shock will be stronger than the optimal rule. A state-contingent inflation contract can achieve the second best equilibrium, see Lockwood, Miller and Zhang (1995), Svensson (1995). Another possibility to attain the second best is by combining a state-contingent inflation target with a strategy where the central bank is putting more weight on inflation stabilization in relation to output stabilization, see Svensson (1995).

[3] New Zealand's Reserve Bank Act of 1989 makes inflation control the sole objective of the central bank. The Act also requires the Governor of the Reserve Bank to sign an agreement with the government establishing a target rate of inflation and a date on which the target will be achieved. Failure to meet this target can then provide grounds for the government to dismiss the Governor. As part of its central bank reform, the New Zealand government actually considered including a financial incentive in the contract for the head of their central bank that would have resulted in a bonus payment if the bank's inflation target were achieved. As ultimately passed by New Zealand's Parliament the Reserve Bank Act of 1989 did not include such an incentive, see Walsh (1994).

as several countries, including New Zealand, Canada, the UK, Finland and Sweden, have recently introduced explicit inflation targets. When discussing inflation targets it is important to bear in mind that there are two possibilities for a "conservative" central banker to put more weight on inflation stabilization than society does.

The first possibility, discussed above in the section on delegation, is to put more weight on inflation stabilization *in relation* to output stabilization. In a stylized model the decision rule applied by the central bank implies that actual inflation, besides a supply or demand shock component, is composed of two terms: the socially desirable inflation rate and the inflation bias. This inflation bias component is smaller than under discretion but does not disappear unless the central banker puts zero weight on output stabilization. The inflation bias component thus reflects the fact that the central bank still does not totally internalize the effects of its monetary policy on expected inflation.

The second possibility for a central bank to put more weight on inflation stabilization is to adopt a *lower* inflation *target* than society does. Then it is also possible to completely neutralize the inflation bias resulting under discretion, without increasing output variability and without putting zero weight on output stabilization. Actual inflation, besides a demand or supply shock component, in this case is composed of the following two terms: the central bank´s inflation target and the inflation bias. Therefore it is possible to adopt an optimal inflation target which is sufficiently low to offset the inflation bias. The inflation target adopted by the central bank should be chosen so as to equal the socially desirable inflation rate less the inflation bias under discretion. Svensson (1995) suggests that it is better to delegate monetary policy to a central bank with an inflation target lower than society´s than to delegate monetary policy to a central bank with increased weight on inflation stabilization.[4]

The advantage of an appropriately chosen inflation target is that it is easier to implement than an inflation contract, also when it is difficult to identify the principal of the central bank.[5] However, there has to be a legal mandate for price stability in order to make explicit the accountability for fulfilling the inflation target.

If the target is imposed upon the central bank by the principal which also has the power to punish the central bank when inflation is above the target, the distinction between an inflation target and an inflation contract would not be important.

Furthermore, an inflation contract or an inflation target can both be interpreted as a general mandate to achieve price stability. The penalty on the central bank for allowing high inflation would then take the form of a general loss of prestige of the institution.

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[4] When the benefit from a surprise inflation is state-contingent, a constant inflation target can eliminate the average inflation bias, but not the state-contingent inflation bias. A state-contingent inflation target can remove all inflation bias but leaves inflation variability higher than a state-contingent inflation contract, Svensson (1995).

[5] A political problem when adopting an inflation contract would be the possible public debate when the central bank is awarded for imposing a restrictive monetary policy.

2.5 Intermediate monetary targets

As emphasized by Persson & Tabellini (1993), it is also possible to interpret nominal targets, such as intermediate monetary aggregates, as performing a function similar to the inflation contract, by increasing the marginal cost of inflation for the central bank. They show that, in principle, a contract based on an intermediate target is equivalent to a contract based on an inflation target, in the sense that both can be used to implement the optimal monetary policy when the equilibrium inflation rate under discretion is too high compared to the ex ante optimal rate. However, the inflation contract is more direct and simpler to enforce than an intermediate monetary target.

A central bank contract based on an intermediate monetary target is much more demanding on the principal's information and depends on shocks not known to wage-setters (for example sudden oil price changes) and possible velocity shocks, whereas inflation contracts only depend on easily observable shocks, known to wage-setters (for example the degree of wage indexation). In fact, a monetary target can be seen as a special case of an inflation target when the velocity of money is completely predictable, as noted by King (1995). Generally, it is easier to monitor the outcome – the inflation rate – than a monetary aggregate. An inflation contract or an inflation target minimizes the informational requirement of the principal and thus generally dominates contracts based on intermediate monetary targets.

2.6 Concluding remarks on the incentive problem

We have studied four possible solutions to the incentive problem facing a central bank. When the central bank puts more weight on inflation stabilization *in relation* to output stabilization the inflation bias component is reduced but does not disappear unless the central bank puts a zero weight on output stabilization. The inflation bias is reduced at the expense of more variability in output. When the central bank is punished for excessive inflation in a specific contract, the inflation bias component can be completely neutralized without increasing output variability. A contract based on an intermediate monetary target can perform a similar function, but it is more demanding on information about, for example, velocity shocks.

If the central bank adopts a lower inflation target than society it is also possible to completely neutralize the inflation bias. As the inflation target focuses directly on the ultimate objective of monetary policy, it may provide a clearer and more transparent framework than an intermediate target. A direct inflation target is also easier to implement than an inflation contract.

3 Some problems related to a strategy based on monetary targets or other intermediate targets

The effectiveness of a strategy based on an intermediate target relies on the fulfilment of certain conditions: a reasonably stable and predictable relationship between the final

target and the intermediate variable, and a sufficient degree of controllability of the latter by monetary policy instruments.

There are three groups of reasons which are important to discuss in relation to the possible option of adopting an intermediate monetary target for the ESCB.

The first group of reasons regard the controllability of the money supply, which in some studies are considered to be, most likely, higher at EMU level than it is now for individual countries, see e.g. Riet (1992 and 1993). The evidence available in these studies suggest that EC-wide money demand functions are at least as stable and predictable as the best performing countries.

However, the foundation for using this point as an argument for an intermediate monetary target can be called in question. The implications for these results for the conduct of monetary policy in Stage Three are tenuous because the inception of EMU is relatively far in the future and thus the stability of monetary relationships may be impaired.

A second reservation is that the important change in policy regime entailed by the beginning of Stage Three could itself impair the stability of the monetary relationships, even if at the end of Stage Two they were considered reliable on the basis of empirical evidence.

The effectiveness of a monetary targeting strategy will be negatively influenced by difficulties in forecasting the velocity of money demand and potential GDP at the beginning of Stage Three. Furthermore, the aggregate money stock is a function of *two* components, the monetary base and the money multiplier, which both will be more difficult to control in Stage Three. Even if it was possible for the central bank to control the money supply, this does not imply that the primary objective of price stability is attained if there is an unstable relation between money supply and inflation. A further argument regards the assessment of the relevance of econometric research. If an aggregate ERM money demand function is found to be structurally stable in contrast to money demand equations estimated for individual countries this may simply reflect aggregation bias. Artis, Bladen-Hovell & Zhang (1993), for example, find that the stability of French monetary relationships is a powerful influence on the form and stability of the aggregate European money demand function.

The second group of reasons is related to the transfer of credibility to the future ESCB. It is very important for the ESCB to inherit as much of the existing reputation as possible from the national central banks. Adherence to an existing successful monetary policy concept could reduce the uncertainty for the financial market participants, due to the creation of monetary union. For reasons of continuity, the adoption of an intermediate target for money supply could be advisable since such a target is currently used by several central banks by and large with success, including the Deutsche Bundesbank.

However, the transfer of credibility from national central banks to the future ESCB is not straightforward. ESCB will be a new institution with no track record. Therefore building a reputation will take time. The Governing Council will comprise members of the Executive Board and the Governors of the national central banks participating in the single currency area. The track records of these national central banks are different and it is not evident that the Bundesbank's impressive track record reflects its use of monetary targets. Therefore it is not clear why the adoption of an intermediate monetary target strategy per se should enchance the credibility of the ESCB.

A third group of reasons influencing the analysis of a monetary targeting strategy is the fact that some central banks recently have adapted their monetary policy strategies to the deregulation of financial markets, the liberalization of international capital flows, and increasing economic and financial integration.

While the monetary policy in Germany has continued to be guided by an intermediate money supply target for M3, the behaviour of other variables – such as wage formation, fiscal policy, exchange rate developments and cyclical positions – are also monitored to ensure that the message coming from monetary aggregates is not misleading for inflation prospects. Thus in 1993 and in the first half of 1994, interest rates were reduced notwithstanding the fact that the monetary aggregate was growing at rates significantly in excess of the target range.[6] Other countries within the ERM are giving less emphasis to monetary targeting.[7]

Some central banks in countries outside the ERM, e.g. the Bank of England, Sveriges Riksbank and Suomen Pankki, have adopted the mechanism of inflation targeting. The money stock is here used as an indicator variable, among several others.[8]

In conclusion, these changes in the way central banks are using monetary aggregates indicate that the effectiveness of a strategy based on an intermediate monetary target has been reduced in many European countries. The European Monetary Union will be a change in regime that can be expected to have important implications on the stability of all monetary relationships. However, if and when a stable relation between monetary aggregates and prices can be identified within EMU as a new structure is established, monetary targeting may be considered more important.

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[6] M3 was referred to as a key benchmark variable when Bundesbank announced its monetary policy target for 1996.

[7] From 1994 the Banque de France placed its M3 target in a medium-term context and supplemented it with total domestic debt as an important indicator of financial conditions. Central banks in Denmark, the Netherlands and Portugal chose to abandon their respective intermediate targets for monetary expansion in 1993. Spain has introduced an inflation target, without giving up its exchange rate target within the ERM.

[8] Against the background of unstable M2 growth, the Banca d'Italia has announced a central reference target for M2 and decided to use a variety of indicators of future inflationary pressures. Following the gradual liberalization of capital movements in Greece, the exchange rate target was given more weight by the Bank of Greece, while less emphasis was placed on the monetary target.

4 Monetary policy coordination between the ECB and the other EU Central Banks

The Treaty offers little guidance on the policy coordination between those countries which join the single currency area and the other member states of the EU. Externalities – competetive devaluations and cross-border transmissions of financial crises – may arise between the two groups of countries.

The liberalization of capital movements has made intermediate exchange rate arrangements like the narrow-band EMS more difficult to sustain as self-fulfilling speculative attacks might be induced on those countries which will not take part in the monetary union from the start of stage III.[9] Governments in countries outside the EMU may not be able (or willing, giving the contractionary effects on the domestic economy) to increase interest rates enough to defend fixed parities if overall macroeconomic balance is not attained.

On the other hand, if outside countries adhere to some form of floating exchange rates, persistent movements in the exchange rates away from equilibrium may trigger protectionist pressures that undermine the cohesiveness of the Single Market. The more integrated the European economies become, the more pronounced are the distributional consequences of intra-EU currency swings. With the perfection of the Single Market, EU countries that depreciate their currencies may be accused of boosting exports to other member states. Resistance to accepting those imports will grow as integration proceeds. A situation where some member states remain outside the single currency area for a longer period may aggravate strains between the insiders, as trade flows between countries differ, as well as between insiders and outsiders.

This potential problem, between countries joining the single currency area from the start of Stage Three and countries with a derogation or an exercised opt-out, calls for a coordinating device which will not give currency markets incentives to speculative attacks.

One solution is to create a new exchange rate arrangement with the single currency at the centre and the other currencies fluctuating within bands vis-à-vis the single currency. Such an arrangement would also allow for different national solutions within a common institutional framework. As restrictions on the movement of capital are ruled out by the single market, narrow bands around the single currency would be hard to maintain. If automatic intervention will be considered by the ECB as a risk to its commitment to price stability, the new arrangement would be similar to a unilateral peg against the common currency. In that case there would still be a risk for speculative attacks on outside currencies. Countries outside the single currency area would risk bearing all of the real economic costs of such currency speculation, see Persson & Tabellini (1995).

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[9] This is emphasized by Eichengreen and Ghironi (1995).

One more symmetric coordination mechanism would be the adoption of (common) inflation targets in both groups of countries. Inflation targets would reinforce the commitment to low inflation and it can prevent the use of monetary policy for pursuing competitive devaluations. Inflation targets would also reduce the volatility of nominal exchange rates and long term swings in real exchange rates would be significantly dampened.[10] The adoption of inflation targets in all EU states would also imply a more symmetric risk-sharing of real economic costs of currency speculation between countries participating in Monetary Union and other members of the European Union, see Persson and Tabellini (1995).

The inflation target for a country that does not participate in the single currency area could be announced by the NCB/Government independently or by the NCB/Government in consultation with the ECB. Monitoring of the individual targets should be delegated to the ESCB, making it clear that even for Member States outside the single currency area the commitment to the inflation target is a duty owed not just to the domestic public and national legislature, but also to the EU. Opting out of the inflation target could be considered as not being in accordance with the Treaty as suggested by Dewatripont et al (1995).

5 Conclusions

The ECB will formulate and implement a monetary policy whose primary objective is to maintain price stability. It is to support the general economic policies of the Community, but without prejudice to the final target of price stability.

Various solutions to the incentive problem facing a central bank with an explicit objective to maintain price stability have been discussed. A strategy based on inflation targeting can eliminate the inflation bias emanating from the sequential nature of monetary policy-making. Inflation contracts or nominal monetary targets can also be interpreted as performing a function similar to an inflation target. By increasing the marginal cost of inflation for the central bank they can be used to secure the implementation of the optimal monetary policy. However, inflation targets are more direct and may be easier to implement than inflation contracts or intermediate targets. An inflation target focuses directly on the ultimate objective of monetary policy and may provide a more transparent framework than an intermediate target.

It should be added, however, that the two strategies based on, respectively, inflation targets and monetary targets, are not mutually exclusive. Countries that use an intermediate target have not done so mechanically, as they also take into account other inflation indicators when assessing monetary conditions. Similarly, the money supply can serve as an important source of information in a country that uses an inflation

[10] This is pointed out by Dewatripont et al (1995). They also underline that one of the advantages of the ERM is that it dampened the fluctuations in Germany's competetiveness between 1979 and 1992. In contrast, Germany's competetiveness during the 1970s was negatively affected by the fact that the European currencies did not follow the DM in its large appreciation against the dollar, after the collapse of the Bretton Woods.

target. In fact, a monetary target can be seen as a special case of an inflation target when the velocity of money is completely predictable.

An evaluation of empirical and conceptual factors lead us also to conlude that a stable relationship between the final inflation target and an intermediate monetary aggregate may not exist at the start of Stage Three. This would complicate the use of a monetary targeting strategy. If the ECB launches monetary targeting as its policy approach and it turns out that the relations are not stable, the ECB´s credibility may be jeopardized. However, monetary aggregates can be used as important indicators for the conduct of monetary policy. Furthermore, if and when a stable relation between monetary aggregates and prices can be identified within EMU as a new structure is established, monetary targeting may be considered more important.

Arrangements will also have to be made to coordinate the conduct of monetary policy and etablish appropriate foreign exchange relations between the countries participating in the EMU and the other members of the European Union. Inflation targets would facilitate the coordination of monetary policy between the two groups in EU as it can prevent the use of monetary policy for pursuing competetive devaluations. Inflation targets would also dampen speculative movements of capital and reduce exchange rate volatility. Finally, the adoption of an inflation targeting strategy would increase the accountability of the ECB and the central banks in Member States with a derogation or an exercised opt-out.

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