DISCUSSION PAPER SERIES

No. 5101

MONETARY POLICY IN THE EURO AREA: LESSONS FROM FIVE YEARS OF ECB AND IMPLICATIONS FOR TURKEY

Fabio Canova and Carlo A Favero

INTERNATIONAL MACROECONOMICS

Centre for Economic Policy Research

www.cepr.org

MONETARY POLICY IN THE EURO AREA: LESSONS FROM FIVE YEARS OF ECB AND IMPLICATIONS FOR TURKEY

Fabio Canova, IGIER, Università Bocconi, Milano, Universitat Pompeu Fabra, Barcelona and CEPR
Carlo A Favero, IGIER, Università Bocconi and CEPR

This Discussion Paper is issued under the auspices of the Centre's research programme in **INTERNATIONAL MACROECONOMICS**. Any opinions expressed here are those of the author(s) and not those of the Centre for Economic Policy Research. Research disseminated by CEPR may include views on policy, but the Centre itself takes no institutional policy positions.

The Centre for Economic Policy Research was established in 1983 as a private educational charity, to promote independent analysis and public discussion of open economies and the relations among them. It is pluralist and non-partisan, bringing economic research to bear on the analysis of medium- and long-run policy questions. Institutional (core) finance for the Centre has been provided through major grants from the Economic and Social Research Council, under which an ESRC Resource Centre operates within CEPR; the Esmée Fairbairn Charitable Trust; and the Bank of England. These organizations do not give prior review to the Centre's publications, nor do they necessarily endorse the views expressed therein.

These Discussion Papers often represent preliminary or incomplete work, circulated to encourage discussion and comment. Citation and use of such a paper should take account of its provisional character.

ABSTRACT

Monetary Policy in the Euro Area: Lessons from Five Years of ECB and Implications for Turkey*

We examine monetary policy in the euro area from both theoretical and empirical perspectives. We discuss what theory tells us the strategy of Central banks should be and contrasts it with the one employed by the ECB. We review accomplishments (and failures) of monetary policy in the euro area and suggest changes that would increase the correlation between words and actions; streamline the understanding that markets have of the policy process; and anchor expectation formation more strongly. We examine the transmission of monetary policy shocks in the euro area and in some potential member countries and try to infer the likely effects occurring when Turkey joins the EU first and the euro area later. Much of the analysis here warns against having too high expectations of the economic gains that membership to the EU and euro club will produce.

Fabio Canova
IGIER
Università Bocconi
via Salasco 5
20136 Milano
ITALY
Tel: (39 02) 5836 3321
Fax: (39 02) 5836 3302
Email: fabio.canova@uni-bocconi.it

Carlo A Favero
IGIER
Università Bocconi
Via Salasco 5
20136 Milano
ITALY
Tel: (39 02) 5836 3306
Fax: (39 02) 5836 3302
Email: carlo.favero@uni-bocconi.it

For further Discussion Papers by this author see:
www.cepr.org/pubs/new-dps/dplist.asp?authorid=114830

For further Discussion Papers by this author see:
www.cepr.org/pubs/new-dps/dplist.asp?authorid=110142

1 Introduction

The end of 1998 witnessed an experiment of historical importance in monetary policy, challenging, exciting and, at the same time, risky. Launching the European Central Bank (ECB) and establishing it as a credible and respected institution, capable of managing the transition from a number of Central banks to a European one and of dialoguing and interacting with the Central banks of other major developed countries; introducing a new currency and setting solid foundations to maintain its international value; harmonizing banking regulations and the supervision activities, constituted a complex and ambitious agenda whose implementation required effective measures and ingenious actions; the costs of disrupting monetary and credit markets of such a large group of countries were rightly considered to huge. Many, in financial markets and oversees, doubted that accomplishing such a formidable feat was possible. Those who were more optimistic worried about the possibility of successfully achieving the goals within a reasonable time frame. The difficulties encountered in the 1980s and 1990s in managing and maintaining a system of fixed exchange rates; the heterogeneities of member's economies and of policymakers' preferences; the historical differences in laws and regulations were clear stumbling blocks in the minds of academics and market observers and all contributed to make the starting of ECB operations and the related transformations a one-time extraordinary and, in many ways, unpredictable event.

Yet, looking back six years later, one can only be amazed by the number of results such a young institution has managed to achieve in such a short amount of time. We had terrorist attacks and sneaky wars; we had oil prices swinging up and down, as they have not done since the beginning of the 1990s; we had a number of food price crises; we had confusions about the effects and complaints about the way the Euro changeover took place; we had plenty of bickering among politicians to strategically locate their countries in the Euro arena. Still, on average, the inflation rate was at its lowest level in decades; financial markets behaved orderly in responses to shocks which could have had catastrophic consequences, and slowly but surely the ECB is establishing itself as a credible and solid decision maker. Despite the generally poor state of the European economy and the weak growth outlook, much of which is related to the structural imbalances of the Euro area economies, such as low productivity, low participation rate, aging population, language and institutional

barriers to labor movements, the ECB has resisted political pressures from national and EU governments to pursue more expansionary policies and to relax the strict corset imposed by the price stability goal. The short term (and short minded) gains and popular approval that came with it were rightly weighted against the much more problematic long term costs arising from the more inefficient unemployment and inflation trade-off which would have been established as a consequence of such actions. Available publications, speeches by Board members and the President of the ECB have repeatedly tried to explain to the public and the markets what are the targets of monetary policy, what is the strategy and the operational framework that shape policy decisions, what monetary policy can and can not do, so as to enhance the transparency of the policy process. The understanding that expectations formation is crucial to enhance/disrupt the transmission of monetary policy decisions and that the best outcome that monetary policy actions can achieve is anchoring inflation expectations is present in the major public statements of ECB officials.

Clearly, we should be grateful that potentially disruptive shocks pass over our heads with very little effect on our everyday life, bank accounts and welfare. Nevertheless we, as probably other commentators, feel that some of these achievements may have been obtained despite what the ECB has done and that there is ample room for improvements both in the strategy, in communication and also, probably, in the decision making process. We also believe that the experience of other Central Banks taught us important lessons and these experiences can be used as benchmarks to compare words, actions and outcomes in the Euro area. Finally, the recent expansion and the predicted further enlargement to the east of the EU poses important questions and challenges to those who run monetary policy which, although surely present in the mind of ECB officials, are not entirely spelled out in the official publications.

Given this background, this paper addresses three interrelated issues. First, we discuss what modern theory tells us about the monetary policy strategy that should be adopted by Central banks and contrasts it with the one employed by the ECB. In the process we review accomplishments (and failures) of monetary policy in the Euro area over the last five years and suggest some changes which, in our opinion, would help to reduce the tensions created by the low correlation between words and actions; streamline the understanding that markets have of the policy process and, as a consequence, improve its transparency; and more clearly anchor expectation formation. We also briefly touch on the issue of the

Euro changeover and discuss the nature of the gap between actual and perceived inflation. Second, we examine the transmission of monetary policy decisions in the Euro area and in a few potentially new member countries and third, we try to infer on the basis of this analysis the effects which are likely to occur when Turkey joins the EU first and the Euro club afterwards. Much of the analysis here uses the experience of past newcomers to provide a scenario of the probable gains and warns against having too high expectations regarding the economic improvements that membership to the EU/Euro will produce.

The rest of the paper is organized as follows. The next section describes the monetary policy strategy favored by academic economists, confronts it with the one of ECB and of other Central Bankers and makes some suggestions to improve the coherence between words and actions and to improve the framework for policy formation. Section 3 focuses on the transmission of monetary policy shocks in the Euro area and in some Central European countries. Section 4 describes the likely effects that joining the EU first and the Euro later will have on the Turkish economy. Section 5 concludes.

2 Monetary Policy: Theory and Practice

Since the beginning of 1990's, there has been a revolution in the way Central banks see their mandate and communicate with the markets and the public. Up to then, Central banks were secretive institutions, which spent little time clarifying their objectives and their strategies, and often surprised or confused market participants with their setting of policy instruments. A secretive approach was preferred, in part, because it was thought to provide a good shield against political oversight, an important precondition to achieve Central Banks independence (see e.g. Mishkin (2004)). In the last 15 years, Central Banks have dealt with political pressures in a completely different manner. Almost all policymakers, both in the industrialized and the developing world, now recognize that transparency and improved communication with the public are key ingredients to run a successful monetary policy, both in the sense of allowing markets to smoothly predict and to adjust to policy changes and of effectively anchoring inflation expectations. To gain public support and to build confidence, Central banks have now engaged in a capillary information process, and to acquire credibility they have improved both the accountability and the transparency of the policy decision process. As a consequence, a plethora of speeches, documents and

publications, describing the goals and the targets of monetary policy, highlighting what monetary policy can and cannot do, and in general, the philosophy and the strategy behind policy decisions are now available at the official web site of many Central banks.

For academic economists, a good monetary policy is easy to design and the basic ingredients which make policy successful easy to characterize. What turns out to be complicated is how to make the general principles contained in such a prescription operational. As Svensson (2004) puts it "The principles for good monetary policy are simple: perform *flexible inflation targeting* ...... The practice of constructing (inflation) forecasts and of deciding the appropriate instrument rate is quite complicated... and requires collecting and processing of vast amounts of data, thorough analysis, and skillful combination of judgment and model results". Various Central banks have taken this recipe seriously and altered policies to adhere as close as possible to this simple and general principle. Strangely enough, the Fed, the ECB and the Bank of Japan, the central banks of the three major economies of the world, have not followed this lead and have instead continued to be quite opaque in characterizing their policy strategies and/or in explaining their decision making process, even though in public appearances some officials (see e.g. Poole (1999) and (2001)) also appear to favor the principles underlying an inflation targeting strategy.

Why is flexible inflation targeting the favorite choice of academics? Because such a policy directly affects inflation expectation - the key mechanism for transmitting monetary policy decisions - and does this in a transparent and straightforward way. Policy actions, in fact, produce changes to the economy primarily through expectations formed in the financial markets first and in the household and firm sectors later. Central banks set a target rate for their instruments but it is expectations about the level of that target in the future which determine interest rates all along the yield curve. In particular, expectations about how the Central bank responds to likely scenarios in the future determines the expected inflation rate. Assuming that the objectives of the Central Bank are sound, the success of monetary policy critically depends on market expectations and market confidence. When expectations are accurate and confidence high, markets understand what a Central bank does and have no incentive to deviate from the set path of inflation. When expectations turn out to be wrong and/or confidence low, private agents may try to gain from strategically influencing the expected inflation rate with the setting their choice variables.

What makes flexible inflation targeting appealing relative to other strategies? First,

flexible inflation targeting requires the publication of forecasts of inflation and of all the variables needed to produce inflation forecasts, e.g. output and/or unemployment. Publications of these numbers increases Central banks' accountability; gives them the right incentive to generate good forecasts, and as a by-product, enhances credibility if the forecast record is consistently on target over time. Second, given that monetary policy affects the economy with delays which are random in time and magnitude, flexible inflation targeting focuses policy actions on the medium run and therefore reduces the importance of day-to-day responses to inflation variations. Third, since monetary policy works through the expectations of future instrument settings and since expectations of the future level of inflation and output matter for current pricing and production decisions, flexible inflation targeting helps in the management of expectations. Hence, publications of inflation forecasts, increased transparency and improved public understanding of the policy decision process could all help to increase monetary policy effectiveness.

The existence of an operational medium term objective is important to anchor both inflation expectations and the level of nominal variables. Its absence in the 1970s-1980s was one of the reasons why markets paid so much attention to short run policy actions and seemingly routine speeches by policymakers. In comparison, in the 1950s and 1960s Central Bank actions received less attention because the long term policy objective was defined by gold standard arrangements. Hence, the public's estimate of the long term inflation rate was not much affected by speeches or short term policy actions even though, in retrospect, agents should have paid more attention than they did to Central bank choices, since they produced an environment which was inconsistent with the survival of the gold standard.

Why is inflation targeting difficult to implement? A Central bank that follows such a strategy needs to assess the future path of inflation and of other macroeconomic forces and the future path of the instrument rate. Furthermore, it needs to communicate to the markets how it will adjust the instrument rate in response to unexpected events or economic developments that make the future path of inflation deviate from the target. The first of these activities requires considerable staff work and the development of models which are able to predict future (not track past) tendencies in the economy. A variety of models are needed for the task because models are simplified and stylized constructions, hardly capable of capturing the detailed interrelationships present in the real world. Furthermore, lots of ingenuity is needed to judge the outcome of forecasting exercises, for example, when

deciding if a inflation path is unlikely or very likely or when predicting what will be and how long it will take for the policy decision to take effect. Finally, a clear description of the steps to be taken once permanent deviations from the target occur, needs to be made. Clearly all of these activities are subject to errors: it does not take a magician to recognize that the future is largely unforecastable, that information about economic indicators is lumpy and frequently revised, that human judgment, even a prudent one, is bound to make mistakes and models are just that, mathematical constructions, often unable to automatically adjust if the structure of the economy changes. For this reason Central Bank communication is critical in conveying not only the goals of monetary policy and the strategy to achieve them but also the difficulties involved in the decision making process.

We are convinced that markets already have a deep understanding of how monetary policy works and of the difficulties existing in formulating policy in face of uncertainty. Often, when new information accrues, Central banks and the markets are in close agreement about the action required to keep the economy on a steady course. Nevertheless, the better markets understand how and why a Central bank reaches its decisions, the better they will be able to respond to new information and the closer their reactions will be to the one of the Central bank. When this occurs a smoother and more efficient transmission of policy changes to the economy's product, labor and capital markets will take place.

It is important to stress that the actual value for the inflation target is not nearly as important as is the decision to choose a target and to create a benchmark for making policy transparent and accountable. Furthermore, while setting an inflation target helps to run monetary policy smoothly, it is by no means a necessary precondition to achieve a low and steady inflation rate. For example, in the US no inflation target has ever been announced. Still, the path of US inflation in the last 15 years does not significantly deviate from the path experienced by the best inflation targeters.

2.1   The Monetary Policy Strategy of the ECB

The original monetary policy strategy of the ECB, announced by the Governing Council in October 1998, included three defining features: a strict focus on price stability, meaning that other objectives, such as output or employment stability, were given little or no consideration; a target range for inflation ("below 2 percent"), which was tougher than the one adopted by inflation targeters Central banks such as the Bank of England, and a "two

pillars" framework for the conduct of monetary policy, which assigned a prominent role to monetary aggregates (first pillar), imposed the announcement of a quantitative reference value for M3 growth, and clustered into the second pillar a wide range of economic and financial indicators providing a broad outlook for price stability.

All three defining features of such a strategy have been criticized. For example, Begg, et al. (2002) found the strict focus on price stability an unnecessary straightjacket in light of the development following the events of 2001 and the threat of deflation that loomed as a consequence, while Gali, et al. (2004) consider a serious strategic mistake, even from an ex-ante point of view, the tough anti-inflationary stance adopted by the Governing Council. Finally, a list of articles too long to be referenced here criticized the two pillars strategy using terms ranging from controversial to patently wrong and ill-conceived. In particular, what attracted the attention of commentators was the artificial separation of information into two pillars, the emphasis on monetary aggregates, and the reliance on a quantitative reference value for M3 growth which, even with various definitional adjustments, was repeatedly surpassed in many months since the ECB started its operations.

In a key press release issued in May 2003 and in the Monthly Bulletin of June 2003, the ECB announced it had evaluated the soundness of its monetary policy strategy in light of the economic outcomes obtained in the first three and half years of operations. Such an evaluation led to a series of clarifications, qualifications and changes that could alter the way Governing Council decisions will be taken in the future. The reaction to this update in the strategy has been mixed. Several observers have noted the extraordinary continuity between the 1998 and the new guidelines and regarded the changes as little more than cosmetic, especially in relationship with the current situation in the Euro area characterized by meager output and the employment prospects, the dissolution of the Growth and Stability Pact and an inflation rate , which although relatively low, has often and persistently exceeded the upper bound set by policy. Others have underlined that the updated strategy is simply an attempt to convince the public that everything is under control and that there is nothing to worry about (see Gali et. al (2004)). Finally, more benign observers noted that the new strategy takes a step in the right direction of making the rhetoric square better with the facts but considered the step an insufficient one.

There are three cornerstones to the new strategy. First, the issue of price stability is refocused into the medium term, the risks of deflation explicitly examined and the presence

of inflation differentials in the Euro area given consideration. Second, the target range for inflation is qualified as being "below but close to two percent". Third, the labels and the importance of the two pillars are reshuffled while the control of monetary/credit aggregates has acquired the role of an "escape clause" to prevent discretionary traps and self-fulfilling expectations and to guarantee a more robust approach to inflation stabilization.
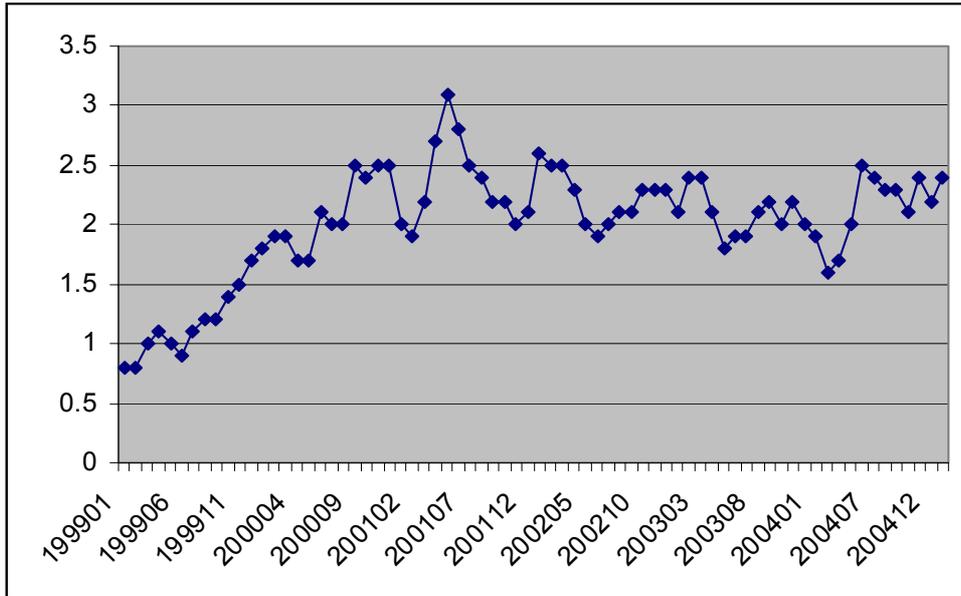

Figure 1: HICP inflation

How is one to interpret these alterations? Figure 1 plots the record of HICP inflation in the Euro area since 1999. Clearly, relative to the goal ("Below two percent inflation"), the outcome is nothing to cheer about. Even looking only for persistent and sizable deviations from the target, a similar conclusion needs to be drawn: the ECB failed to meet its objectives. Given this observation, the new focus on medium term dynamics and the qualification "close to" could then be interpreted in at least four different ways. It could be an attempt to make objectives and statements more consistent with the outcomes; it could be a tacit recognition that the ECB, as a new Central bank, does not have yet the ability to fully control inflation and definitively not in the short run; it could also be an indirect way to allow revisions of the target rate of inflation in the near future (the two percent threshold should not be considered an upper bound but the mid-range of the target inflation rate)

9

and for justifying persistent deviations from the target; or it could simply be a cover up for expansionary policies designed to limit the risks of deflation and the coexistence within the Euro area of regions facing deflationary and inflationary processes. Lacking more information on the exact motivations, it is hard to take a stand on which option is more likely to be true. In our opinion, all arguments have some bite and could explain the readjustment in the rhetoric of ECB statements. In practice, the explic explnation of the medium term focus and the qualification of below-but-close-to-two-percent may change very little in the way the policy discussion proceeds and the Governing Council takes decisions.

The negative assessment contained in figure 1 must however be put in an historical perspective. Over the last 5 years the rate of inflation has been remarkably stable and low when compared to the previous 30 years. Failure to meet the (overly optimistic) objectives should therefore not deter from the fact that inflation fears were almost absent from public perceptions (except for the Euro changeover period, see later on); that in many countries unions agreed to nominal wage increases for medium term contracts roughly in line with the target level inflation; and that a stable environment was largely maintained. In other words, differences between the target and the actual rate inflation did not trigger important nominal wage adjustments nor did they produce large welfare costs. Perhaps this is not surprising. The Bundesbank has also repeatedly failed to meet its objectives, in both the 1980s and the 1990s. Still, German inflation was always under control and there were never any doubts about the credibility of the Bundesbank as tough inflation fighter (see Siklos and Bohn (2003)). Hence, despite the inability to meet the goals and communication problems noted below, the ECB has been overall successful in keeping the actual rate of inflation close to the target rate.

2.2   Inflation expectations

One of the most remarkable achievements of the first five years of life of the ECB has been the ability to control inflation expectations. Given past experiences this is not a small feat and the ECB often stressed in public statements that, despite the difficult environment, there were hardly any indications in the last five years that inflationary expectations were getting out of control. Gali, et al (2004) are less enthusiastic about the outcome and indicate that, over the last couple of years, inflation expectations are slowly but surely creeping up. While this could be due to the qualifications contained in the strategy revision of

2003, in particular regarding the target rate of inflation and the relative importance of unexpected inflation and deflation episodes, it could also indicate that the public are not so upbeat about the current state of inflation and that the ECB could lose control of inflation expectations in the years to come.
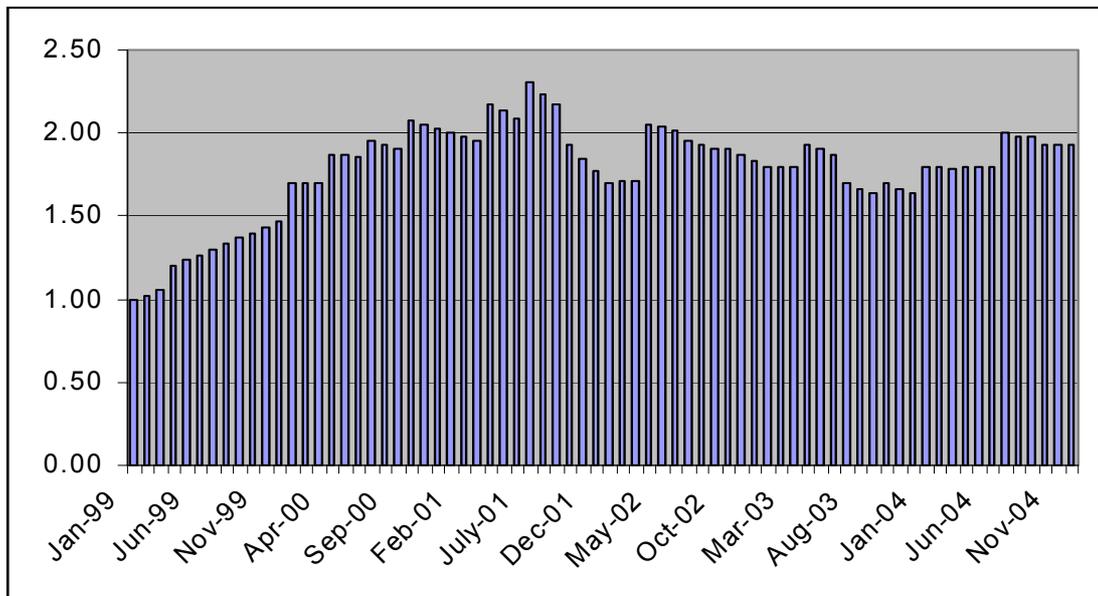

Figure 2: Inflation expectations

Figure 2 presents evidence supporting both claims: it reports the weighted average of inflation expectations constructed by the Economics Poll of Forecasters. Clearly, inflation expectations by professional forecasters have been below two percent for almost the entire time period. Therefore, the ECB is right to rejoice about this achievement. However, as Gali et al. have pointed out, inflation expectations in the last two years are somewhat higher than they previously were.

While suggestive, poll data is subject to a large amount of measurement error. In particular, there is a tendency to report numbers which are close to the mean outcome to avoid being singled out as inaccurate when the actual outcome deviates from the expectation and this is true even when deviations are not systematic. A better way to check inflation expectations is to directly look at the term structure of interest rates and extract the

11

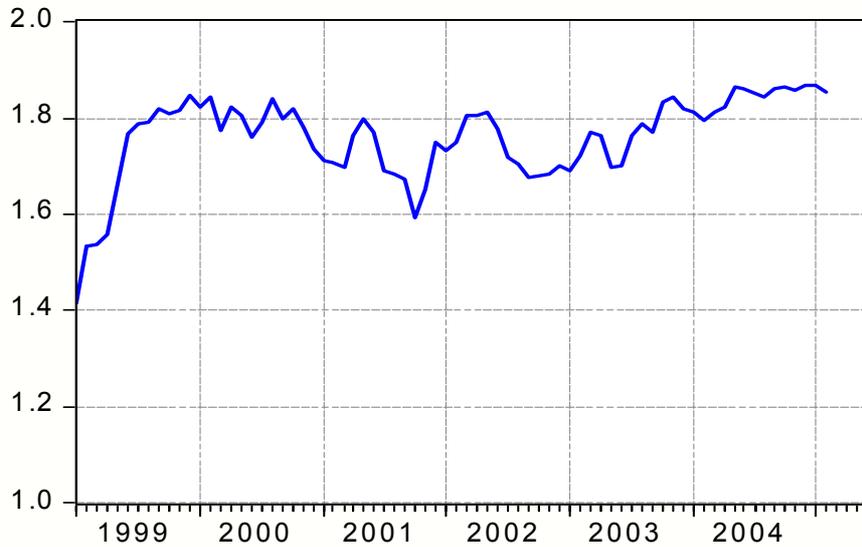information which is contained in the actual financial market data.

Figure 3: Break-even inflation from 10-Year French OAT

Fluctuations in yield to maturity of long-term bonds can be very useful to measure expectations on long-term inflation expectations by market participants. However, measuring expected inflation from yield to maturity on long-term bonds requires the solution of a signal extraction problem. In fact, nominal yields to maturity on long-term bonds reflect both real long-term interest rates and inflation expectations, two variables that are not observable. To solve the signal extraction problem and understand what financial markets tell us about inflation expectations we take two different approaches. First, we examine the break-even inflation implied by index-linked French OAT 10-year bonds. The difference between the yield to maturity of a nominal French Bond and an index-linked bond with the same characteristics is a direct measure of expected inflation over the residual life of the two bonds. The break even inflation implied by ten-year bonds index OAT (OAT - I FRANCE 1998 3% 25/07/09 INDXLK) and nominal 10-year French OAT(OAT FRANCE 1998 5.25% 25/04/08) is reported in Figure 3.

The trend of the series confirms Gali et al. (2004) observation on the tendency of inflation expectations over the last two years and the pattern of figure 3 replicates quite

12

closely the one present in figure 2 since 2001. Break-even inflation, however, is not a perfect measure of expected inflation as the characteristics of the two bonds used to compute this quantity are never the same. To complement this measure, we therefore examined the pattern of long-term expected inflation implicit in yield to maturity of long-term bonds of Germany and US at the 10-year maturity. As figure 4 clearly shows, there has been a clear tendency of US and German bonds to comove from 1990 onwards.
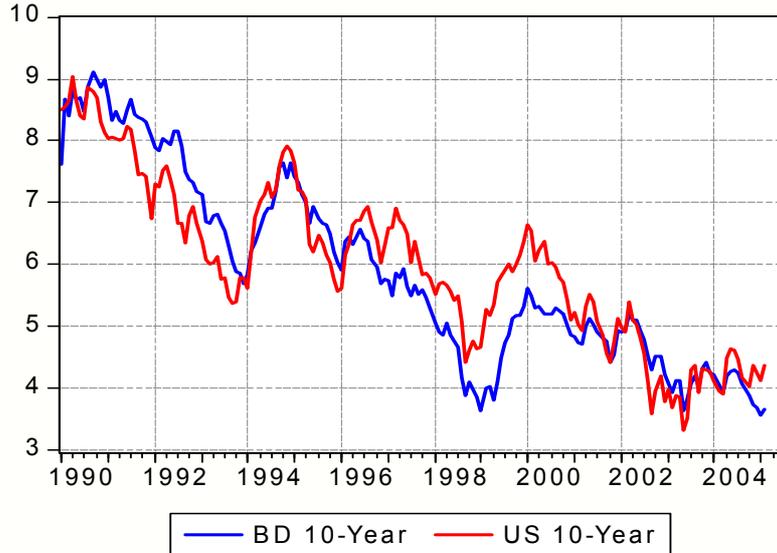

Figure 4: 10-year US and German bonds

Favero and Tristani (2005) consider several explanations for the high and stable contemporaneous correlation between US and German long-term interest rates. First, the expectations model suggests that the level of the term structure depends on the average of all future monetary policy rates. Therefore, a high correlation of long term rates is compatible with any contemporaneous correlations of policy rates, provided that the correlation between the average of future expected policy rates is high. Second, if term premia are important and if there is a world factor in the "appetite for risk", then it is possible that long term rates are more strongly correlated across countries because they are heavily affected by risk premia. Third, if the Fed is the dominant monetary policy authority, the monetary policy of the Fed is responsible for the common pattern in long-term interest rates across

13

the ocean. Given that Favero and Tristani conclude that the strong comovements between US and German long-term rates is primarily due to the common path of expected monetary policy (mostly driven by common fluctuations in US and German inflation and output-gap), it is interesting to assess the performance in simulation over the sample when the ECB has been operational, of a model where the relation between US and German long-term rates is estimated over the sample where the Bundesbank was operational. We have estimated from 1990:1 to 1998:12 an ECM relationship between US and German long-term rates and then stochastically simulated the model from 1999:1 onwards using the actual path of US long-term rates in the simulation. The results of our exercise are reported in figure 5: we plot the actual German 10-year rates along with the simulated ones and their associated ninety five percent confidence interval.
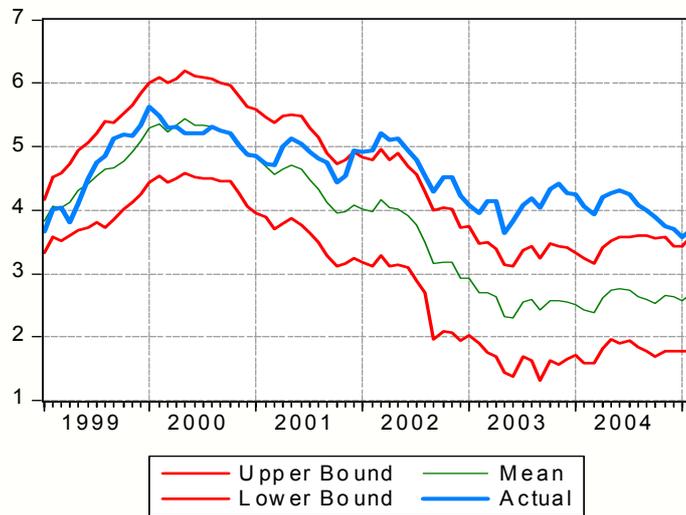
Figure 5:Actual and simulated German 10-year rates.

Figure 5 is consistent with the idea that inflation expectations are slightly increasing in the last few years. In fact, simulated long-term interest rates are very close to actual ones over the first two years of ECB existence but tend to drift upwards, getting closer first and eventually slightly outside of the upper bound of the confidence interval, over the last few years.

In summary, the ECB appears to have managed to anchor inflation expectations, prob-

ably more because of the good faith that the markets and the public had in the institution than because of the consistency between deeds and the inflation record produced over its first five years of life. Refocusing the strategy and qualifying the targets can therefore have beneficial effects. In particular, much clearer statements, explicitly stating what the medium run is, which policies should be used in case persistent deviations from the target emerge and what the target (and its range) is, would probably make monetary policy actions more transparent and predictable.

2.3 Communication

There appears to be a substantial difference in the tone and the content of speeches and statements posted at the ECB site and those found at, e.g., regional Fed sites or in other smaller but more receptive Central banks, such as the Riksbank or the Federal Reserve Bank of New Zealand. ECB statements and speeches are often opaque; the rationale given for policy choices is at times contorted and its theoretical justification somewhat weak; explanations given for certain strategic decisions are improbable and, at times, more obvious reasons are given no consideration. Those of the others are crisper, the message is clearer, to a point that a first year undergraduate student in economics would be able to correctly understand their meaning, and transparency is maximized (compare e.g. Trichet speech (27-11-2003), Poole speech (30-11-2001) and Sherwin speech (1-7-1999)).

Perhaps, this is not surprising. Since the Euro area is a new entity, the transmission of policy shocks to the region is still somewhat uncertain; the consequences of ECB choices not yet fully understood and, in general, learning is under way. Opaqueness may therefore reflect difficulties in the learning process. However, letting the public know that there are considerable uncertainties in the current decision making process and that the ECB and market participants are trying to mutually understand how their decisions interact, is preferable to presenting a smoky viewpoint. It should also be clear that the publication of information which is hard to understand and the repetition of concepts which sound foreigner to the public will not make communication easier or more fruitful. In this respect, one can not overlook the fact that high ranked officials in several Central banks around the world have been in academics before they took policy jobs while, currently, this is hardly the case at the ECB. Not only is an academic background is important to keep in touch with the development of new and the refinement of old theories. It is important because it forces

officials to strip down issues to its basic components, leaving aside peripheral arguments, and this process is the same when communicating to the markets, when explaining a concept in a classroom or arguing a view point in a professional conference. As Poole (2001) puts it " The easiest way to be sure you understand an issue is to explain it to the others, in a class, a journal article, a lecture, or in meeting minutes. Transparency is a great spur to developing coherent views, and surely is beneficial to policymakers to be coherent in their own thinking.". Communication and transparency will surely improve in the future as the details of the Euro area economy become better known. Better communication and transparency may ameliorate the effectiveness of policy, enhance accountability and reduce informational noise in the markets. Recognizing the limits to policymaking, given the available information, is an honest way to achieve this goal.

There are indications that financial markets initially did not have a good understanding of the ECB strategy and of the reasons behind some policy actions (see Sims and Wessel (2000) or Issing (2001)). The situation does not seem to have improved in later years: for example the survey reported in De Haan, et. al. (2004) indicates that professional economists did not rank the ECB as a highly transparent Central bank. But, apart from surveys, what does the available empirical evidence tell us about the communication (and the implied credibility) of the ECB? A recent article of Jan-Jansen and De Haan (2004) addresses exactly this issue by examining to what extent statements of various European Central bankers have been different or contradictory and how has ECB communication improved over time. They found that there is considerable noise in public statements and several sources of noise are highlighted. First, national Central bank presidents have made at least as many statements as members of the ECB Executive Board and there is no evidence that this trend has been reversed over the years. When information emanates from different sources it may generate confusing messages and make the public think that there are different and separate decision making units. Second, statements on interest rates, inflation and output growth have been contradictory. While confusion on the stance of interest rates has diminished over time and statements have become more correlated, disagreements about the current and perspective levels of inflation and growth have increased over the years. Third, different groups of Central banks have followed different communication strategies around ECB Governing Council meetings. In particular, while the ECB executive Board has observed radio silence, national Central bank officials tended to communicate more

(rather than less) before these meetings. Interestingly, some of these features appear to have been engendered by Bundesbank officials. In fact, Siklos and Bohn (2003) found that the Bundesbank has suffered similar problems in communicating with the public over the years.

Wilhelmsen and Zaghini (2005) address the related issue of monetary policy predictability in the Euro area in comparison to 13 other countries with different monetary policy strategies and regimes. Their result are interesting but somewhat mixed: the volatility of one month interest rates on the days of the policy change is larger in the Euro area than in inflation targeting countries, such as Sweden, Australia or the UK. On the other hand, there is little difference in the predictability of interest rate movements in the US, the Euro area and Switzerland and in inflation targeters. Furthermore, in both sets of countries, policy changes are quickly incorporated in the term structure of interest rates.

2.4 Pillars

The other major adjustment in the ECB monetary policy strategy was the requalification of the two-pillar strategy. The first pillar, now termed economic analysis, is used to identify short to medium term risks to price stability; the second, now termed monetary analysis, is used to assess the medium/long term trends of inflation and to cross check the results obtained from the economic analysis.

Several observations about the reshuffling of the labels and the reweighting of the two pillars can be made. First, it appears that the role of monetary factors has been rightly deemphasized, that the reference value for M3 growth (at 4.5 percent) is no longer an alternative policy target - probably because the target was consistently and consecutively exceeded over the first 4 years of operations (see figure 6) - and that the control of monetary aggregates now involves monitoring a large range of monetary and credit statistics, not simply the growth rate of M3.

Second, it appears that policymakers believe that when analyzing price developments, it is important to have an explicit time series perspective, separating high frequency movements and its more persistent trends. They also appear to believe that factors driving short term, high frequency movements are distinct from those driving long term fluctuations. Third, implicit in the formulation of the new policy framework is the idea that monetary factors predict, in an unconditional sense, inflation dynamics in the medium-long run better

than any other variable. Finally, cross checking the information coming from economic and monetary analyses, appears to be important in the eyes of ECB officials to ascertain the soundness of the course of policy. In particular, it is thought to avoid problems connected with myopic overactivism (see Issing (2002)) - if inflation is not a unit root process, inflationary/deflation pressures will eventually subside with no need for any policy intervention - to eliminate instabilities associated with multiple equilibria produced by standard Taylor rules (see e.g. Christiano and Rostagno (2001)), and to allow a more robust inflation stabilization approach. To someone like ourselves who earn part of our living analyzing the relationship between prices, money and real activity, the general principles which constitute the foundations of such an approach appear not only to be based on an old fashion idea of the macroeconomic interdependencies, questioned or discredited in many academic papers, but also in contrast with the empirical evidence available in the Euro area.
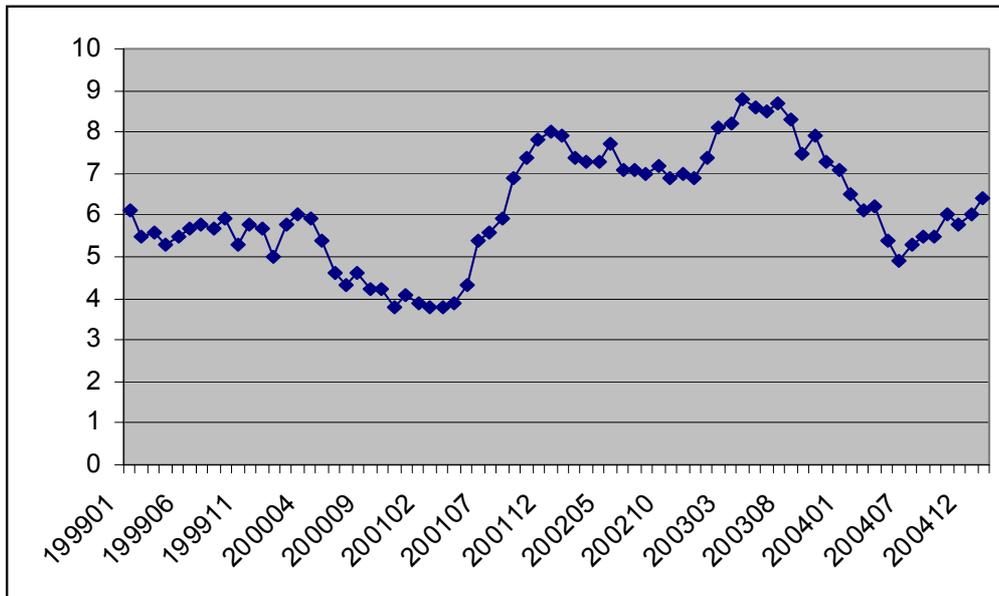

Figure 6: M3 growth

Macroeconomic time series typically display high frequency, random movements and more persistent, longer terms fluctuations. One characteristic of inflation, noted in many academic papers (see e.g. Roberts (1997)), and now also well understood in policy circles,

18

is its tenacious and persistent nature, at least since the 1970s. The recent ECB conference on Inflation persistence in the Euro area, held in Frankfurt in December 2004 indicates that such a concern is also present in the agenda of some ECB policymakers. Persistence means that periods of relatively high inflation tend to be followed by periods of similarly relatively high inflation and that the duration of the fluctuations on either side of the target tends to be relatively long. It is important to stress that this was not necessarily the case in the 19th century and in early parts of the 20th century up to WWII. Price deflation occurred almost as often as price inflation and inflation movements were mean reverting in nature, that is, high and low periods of inflation alternated almost randomly (see e.g. Friedman and Schwartz (1960), (1963) and more recently Cooley and Ohanian (1991)).

While the ECB has systematically failed to precisely state what short, medium and long term mean, one can think of short fluctuations as those occurring and dissipating within a year or so; medium term fluctuations as those lasting from 18 to 60 months, and long term fluctuations as those producing inflation movements with periodicity exceeding 60 months. While the cut-off points are arbitrary and the division can be refined to make the arguments below more precise, it is should be obvious that there is little that economic or monetary analyses can do to predict the amplitude and the nature of short term movements of inflation except, perhaps, through ex-post introspection. The indicators monitored in the economic analysis (GDP and its components, fiscal policy, labor market conditions, balance sheet positions, etc.) are not typically available on a very short run basis and when they are, they are subject to substantial amount measurement or revision error. Moreover, the relationship between monetary and credit aggregates and short term inflation movements is recognized to be tenuous and, in general, unreliable for predicting inflation fluctuations. Hence, short term inflation fluctuations are broadly unpredictable, and only detailed micro information (e.g. the impact of weather on non-processed food production or the pass-through of oil price increases to gas pumps) could help us to improve our understanding and our forecasts of the dynamics of short term price changes.

The rest of this subsection provides evidence on four related and, in our opinion, important issues: a) there is little information in the inflation data which would help us to pin down and predict fluctuations which last longer than 60 months, b) given the persistence of the inflation process, it is impossible to further distinguish fluctuations with periodicity ranging from 18 to 60 months - these are persistent, medium term fluctuations - and even

if this distinction was possible it would not help to understand the nature of inflation dynamics, c) as a consequence of b), shocks which are temporary in nature may take a long time to dissipate, d) monetary aggregates have little predictive power for medium term inflation fluctuations whenever past inflation is used in prediction, both in the Euro area as a whole and in the major member countries. On the contrary, an index constructed using information coming from a variety of disaggregated international data helps to track and forecast movements in Euro area inflation reasonably well since 1990.

Table 1: Dynamics of HICP inflation (year to year rates)

	1970-2004	1990-2004	1999-2004
Volatility	0.38	0.26	0.11
Faction of variance			
due to medium cycles	0.90	0.82	0.77
Persistence	0.76	0.50	-0.25

Table 1 presents statistics summarizing the dynamics of headline (HICP) inflation for the Euro area. It reports, first a measure of volatility of the series; second, the fraction of the variance of inflation due to medium term fluctuations and, third, a measure of persistence for the samples 1970-2004, 1990-2004 and 1999-2004. The share of the inflation variance due to medium term frequencies is obtained extracting the relevant information from the spectrum of the series with a band pass filter, while a measure of persistence is obtained summing up the estimated AR coefficients of the inflation process. The spectrum is a useful device for our purposes since it allows us to split inflation movements into orthogonal short, medium and long term fluctuations, much in the same fashion as a prism allows us to divide a light beam into its constituent components - from the infrared (low frequency) to the ultraviolet (high frequency) waves.

Four features of table 1 are worth commenting upon. First, the bulk of the inflation fluctuation in the Euro area are of medium term nature - both high and low frequency variations are minor. Second, the volatility of inflation at all frequencies is smaller in the second and third samples. This conforms to the idea that inflation has become less volatile over the last 15 years thanks, in part, to the larger credibility that Central banks of member countries acquired since the early 1990s. Third, the overall bulk of the fluctuations since 1999 is also of a medium term nature. Fourth, there is also a decline in the estimated inflation persistence in the latter two samples, consistent e.g. with the analyses of Cogley

and Sargent (2003), Canova and Gambetti (2004) for the US and Benati (2002) for the UK. Nevertheless, while the estimated persistence for the 1999-2004 sample is significantly different from the estimated persistence obtained in the other samples, standard tests fail to detect any statistical difference in the persistence measures in the first two subsamples. In sum, table 1 overwhelmingly indicates that inflation in the Euro area is a persistent process and that the majority of the fluctuations are of a medium term nature.
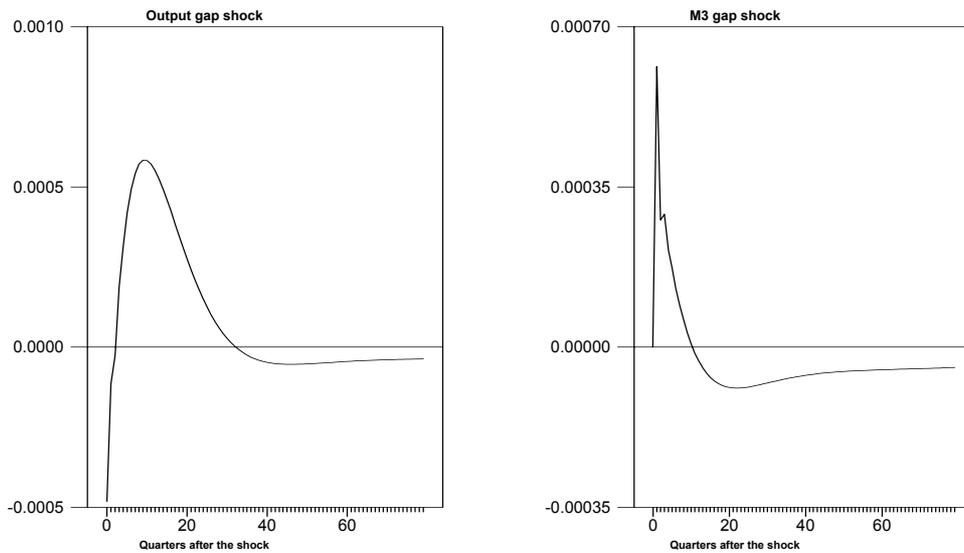

Figure 7: Inflation responses

Is it possible to decompose medium term fluctuations further, say, into short-medium (18-36 months) or medium-long (36-60)? It turns out that such a division is artificial for two reasons. First, the magnitude of the fluctuations is roughly the same over two frequency ranges. Second, a shock that significantly moves inflation for at least 18 months will also move inflation for more than 36 months. To demonstrate this point, figure 7 presents the response of inflation to a typical output gap shock. It is clear that inflation is persistently displaced from its long run path, and that output gap disturbances can induce longer inflation fluctuations than those the first pillar of the new ECB strategy is supposed

to capture - a typical shock is not completely dissipated even after 10 years. Figure 7 also shows how strident the notion is that, in the medium run, monetary variations are tightly linked to inflation developments. In fact, unexpected increases of M3 growth from target produce inflation dynamics which are smaller in size and more short lived than those produced by output gap disturbances and roughly insignificant after about two and half years. To put this observation in another way, over the medium term, the percentage of inflation variance explained by output gap shocks (25 percent) is larger than the one explained by M3 gap shocks (only 11 percent). It is important to stress that this result is independent of the sample. For example, had we excluded the last 5 years from our analysis, a period where M3 growth was persistently above its target probably because of negative return obtained on many financial assets, the same outcome would have been obtained.

While suggestive of the lack of a tight link between medium term movements of inflation and money growth, this evidence may be still regarded as inconclusive by staunch monetarist believers. Further evidence on this issue is obtained analyzing the predictive power of various forecasting models for inflation. Canova (2002) examined this issue in detail for the G-7 countries. Two of his results are particularly important here. First, a simple univariate AR model is as good as a model which, in addition to past inflation, uses M3 growth rates to forecast inflation at one or two year horizons for Germany, Italy and France in the five years leading to the creation of the ECB. Second, a model which uses an index, combining the information contained in a number of lagged G-7 variables, not only outperforms a model which uses M3 growth, but also substantially reduces the mean square forecast error of a simple univariate AR model. Taken, together, these results suggest that there is information in the cross section of the G-7 countries helpful to predict domestic inflation in the medium run and that M3 growth, while useful for in-sample fit, has no use in out-of-sample prediction exercises.

Since the index model is available in-house at the ECB, has been shown to have a consistently good forecasting record over the 1990s (see Canova and Ciccarelli (2003), and has demonstrated to be superior to a number of alternative benchmarks also for the first five years of the Euro (see Anzuini et al. (2005), it is a bit surprising that its informational content is systematically neglected in the policy making process and that, in general, international information is ignored in predicting medium term trends of inflation. Since inflation is not only a persistent process, but also highly correlated across countries, informa-

tion concerning the state of inflation from other areas of the world not only helps to better predict its domestic medium term trends, but also provides a more coherent explanation for its causes, both of which make policy decisions, in general, easier.
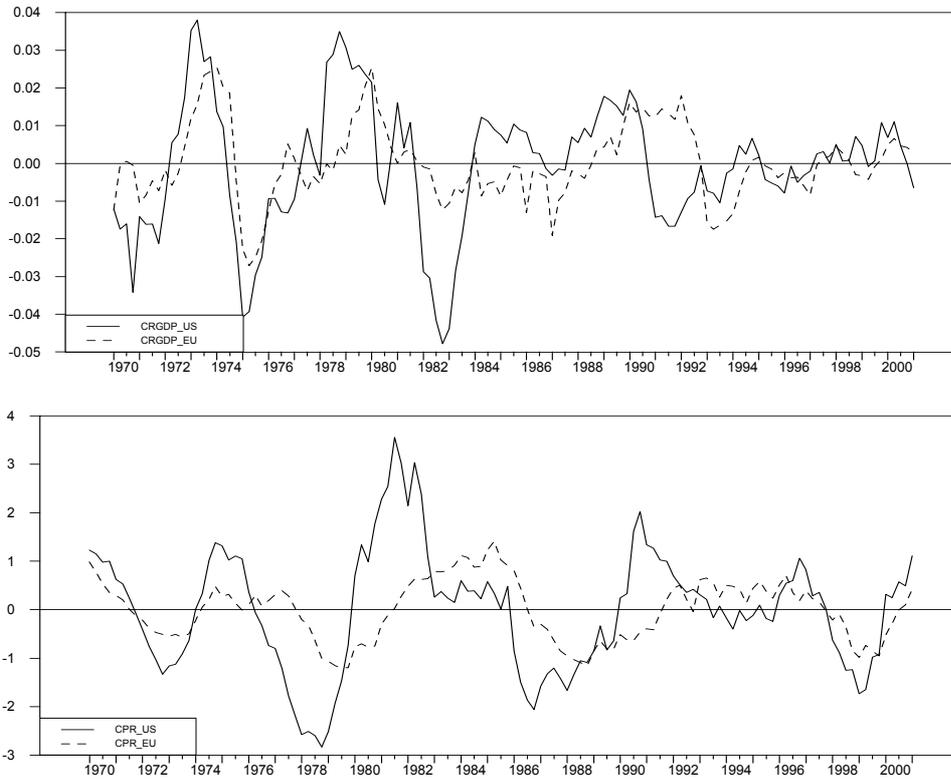
Figure 8: Cyclical component of output and inflation in US and Euro area

All of this should be obvious to a keen observer. Globalization means also that shocks that had an important national component in the past are now swamped by movements which are common in nature. Figure 8 reports the dynamics of cyclical output and inflation in the Euro area and in the US over the last 35 years. It is easy to see that the ups and downs of inflation and output in the US are followed by ups and downs in inflation and output in the Euro area with about 4-5 months delay. Given this evidence, one is left wondering why monetary aggregates and not international variables have such a prominence

in the ECB strategy. Monetary aggregates do not seem to be the major source of inflation fluctuations in the medium run, nor do they help to forecast medium term trends of inflation once obvious information is used. Clearly, this does not mean that monetary (and credit aggregates) should be set aside both in the analysis and in the decision making process. But, in our opinion, even the reduced emphasis that the revised ECB strategy puts on them is unwarranted: monetary and credit aggregates should not be strategically singled out from all other information and given a predominance in the policy discussion.

In conclusion, the artificial split of inflation fluctuations into those explainable with economic analysis and those interpretable with monetary analysis, the lack of appreciation of the tight links between short run shocks and medium term movements in inflation and the failure to entertain a global perspective in evaluating medium term trends of inflation could have been sufficient to seriously endanger the price stability goal. Despite this, inflation has been around the 2 percent level for the last five years and inflation expectations have been anchored. Perhaps, the markets and the public learned to discount "incredible" statements of ECB officials and more pragmatically looked at facts when deciding a course of action to take.

2.5   Where do we leave output concerns?

Central bankers, whether they are inflation targeters or not, are extremely reluctant to discuss concerns about output fluctuations (see e.g. Mishkin (2004)). There are many important reasons which may explain this reluctance. First, announcing that a Central bank has two objectives (price stability and elimination of the output gap) may confuse market participants and make it more likely that the public sees the elimination of short run output fluctuations as the mission of a Central bank. It is well known that such a perception may lead to expectation traps: prices and wages could rise because the public knows that the monetary authority is likely to accommodate these increases pursuing expansionary policies which prevent the output gap from enlarging. Discussing monetary policy objectives in terms of output fluctuations may therefore lead to a loss of inflation-fighting credibility which may worsen the actual inflation-output trade-off. The experience of the 1970s is still very vivid in the mind of macroeconomists and the risks now are probably as large as they were back there. Second, the announcement that a Central bank has also output objectives can lead short sighted politicians, like those running many Euro area countries,

to exacerbate time consistency problems. In particular, they can pressure Central banks to pursue overexpansionary policies in order to yield short term gains by exploiting the unemployment and inflation trade-off. Third, in announcing that output fluctuations are important one needs to take a stand on what potential output is now and how large will it be in the future and needs to operationally measure deviations from it. Both academic economists and central bankers know how difficult is to quantify what potential output is using real time data and the distortions that can be created with imperfect information (see e.g. Orphanides (2001)). Furthermore, statistical output gap measures do not necessarily have a close relationship with theoretical relevant ones. Finally, announcing a second objective requires specifying how inflation and output concerns are weighted in the decision making process, what is the loss function used by policymakers and this creates a number of practical complications to the decision making problem. For example, one has to clearly state what is the relative importance of the two objectives, how and in what situations committee members may decide to change the weights and design ways to extract information from committee members who are not used to thinking in these terms.

Despite the rhetoric and the theoretical reasons for shying away from output gap concerns, Central bankers' actions show that output fluctuations are very much in their mind. As shown in Begg et al. (2002), a rule where the short term nominal interest rate responds only to the output gap fits the time path of interest rates in the 1999-2002 period reasonably well, both in the US and in the Euro area. Furthermore, it appears to be superior to other rules which also make short term interest rates respond to inflation or expected inflation. Extending their exercise up to the end of 2004 changes very little in their conclusions.

From an academic point of view there is nothing wrong with such a reduced form rule and, in fact, it is consistent with the prescriptions of many models that economists like to currently use. However, an interest rate rule of this type underlines once again that the ECB (and the Fed for that matter) lacks transparency and this adds to the already mentioned communication problems, at least to the extent that the words do not match the deeds; and may lead to a medium term erosion of confidence in other elements of Central Bank transparency that are beneficial for the economy. The term "inflation nutters" minted by Mervin King few years ago (King, 1997) is very much present in the mind of market participants and such a perception may lead to a rediscussion of the support for Central bank policies and independence.

One simple way to communicate to the public that output fluctuations are important without reducing the emphasis on the medium term inflation objective is to state, as suggested e.g. by Mishkin (2004), that large shocks may move the actual inflation rate far away from the target, in which case sticking to the inflation objective may cause unacceptably high output looses. Such shocks do occur in the real world and a policy that recognizes their presence helps markets to behave orderly, makes it clear when and how medium run objectives can be temporarily set aside and, at the same time, sets up ways to gradually return to the inflation objective. Clauses of this type are present e.g. in inflation targeting regime countries like the UK. Furthermore, Brazil has successfully implemented a policy of this type when a major exchange rate shock has hit the local economy (see Fraga, et al. (2003)).

Luckily, and despite the events of the last few years, the Euro area economy has been shielded from those large shocks which would have required a temporary suspension of the inflation objective. Nevertheless, one must be aware that, e.g., the facts of September 2001 have dramatically increased the volatility and persistently worsened the perceptions of agents about the future prospects of the world economy. Chronic problems such as the aging population, the low productivity and low participation rate also combine to create an environment where output may be permanently below its potential. Stressing that these are important concerns, that they have to be addressed if the output-inflation trade-off has to be permanently improved; underlying that the ECB can do nothing to solve these problems, except pressure national and EU governments, could be an important way to communicate that the ECB is not an inflation nutter and create the consensus needed to implement those changes which may improve efficiency. Along the same lines, the presence of overexpansionary fiscal policies in many member countries, and the increased heterogeneity one expects to find when the EU newcomers will adopt the Euro poses serious threats to the price stability objective and opens up the possibility that persistent and undesirable inflation differential will result in the Euro area. Warning about these facts, describing the mechanics which transform overexpansionary fiscal policy in an overexpansionary output process and how these pressures represent a threat to medium run price stability can kill two birds with one stone: it may help to establish the link between output gap and inflation process; and to indicate who are responsible for keeping interest rates up, despite the fact that the strong Euro decreases both the share of imported inflation and the importance of

oil price swings.

2.6 The Euro change-over

The introduction of euro banknotes and coins (the cash changeover), which occurred during the early months of 2002, has caused a numbers of complains of consumer's associations in several Euro area countries. The complaints have ranged from losses due to increases in transactional costs to the alleged inflationary effects produced by the change in the unit of account. Goodhart and Pappa (2003) have tried to measure the size of transactional costs using supermarket prices and waiting time at cashier lines in the months surrounding the change. They found that there was a temporary increase in transaction time with a sunk cost roughly equal to yearly opportunity costs incurred by consumers in withdrawing cash from banks.

On the second issue, several observers have reported that consumers' "perceived inflation" (based on qualitative judgements) was systematically larger than actual inflation and in countries such as Italy, Germany, Greece, Spain, the Netherlands there numerous reports about the price increases brought about by the changeover. In Germany the Euro has became known as the Teuro – teuer means expensive! In Italy, such a phenomenon was more marked than in other countries. The Italian media and consumers' associations frequently reported extraordinary price increases. Among those, the ones recorded by restaurants gave rise to heated controversies. According to a survey conducted in an Italian region, one third of citizens blamed restaurants for excessive increases, a percentage second only to the share of respondents who blamed food prices. Gaiotti and Lippi (2005) examine the veridicity of these arguments by looking at a panel of restaurants price setting behavior in the year of the changeover and in the neighboring ones. Their empirical micro-based analysis shows that a sizeable average price increase took place in 2002 (about 9 per cent). This increase however was slightly smaller than that recorded in the previous year (about 10 per cent). Furthermore, it appears that increases were related to rising demand and costs. While the authors suggest caution in attributing the inflationary effect exclusively to the introduction of the euro banknotes, we find the evidence in striking contrast with the hypothesis that the euro changeover led to a "doubling of prices" by Italian restaurants. This widespread perception might be ascribed to the substantial price increase which took place in this sector but over a longer period. In fact, between 1998 and 2003 the average price of a meal rose

by 40 per cent; in the 10 per cent of restaurants recording the largest increases the increase is 75 per cent.

Interestingly, the data is consistent with both the "menu cost" and the "market power" hypotheses. In fact, the evidence shows that much of the aggregate price increases during the changeover were due to a greater number of prices being revised, rather than to "large" individual price increases. Also, market structure affected price dynamics after the changeover. In 2002 and 2003 the increases were largely due to price jumps in the countryside and in the provinces, two locations traditionally characterized by a smaller degree of competitiveness.

What lessons one can learn from this experience, in particular, for countries which are planning to adopt the Euro? First, the change of unit of account will induce substantial time costs. Second, it may lead to a faster convergence of regional price levels than experienced in the past. Third, price increases are going to be more marked in rural areas and therefore more likely to be perceived by the consumers who are used to much more sluggish price changes. All in all, appropriate diffusion of information, capillary education in non-urban areas are crucial to prevent the emergence of the dangerous gap between perceived inflation and actual inflation that has caused considerable discontent toward the Euro in the past few years.

2.7   A tentative conclusion

What conclusions can one draw from the evidence we have presented? It appears to us that the ECB has largely done its job. Over the last five years inflation has been low, expectations have been kept under control and markets have behaved smoothly in response to unexpected and possibly disruptive disturbances. The ECB however deserves a much lower score as far as communication is concerned. In particular, the two pillar strategy employed to achieve a low inflation outcome turns out to be "incredible"; output concerns are present but never spelled out in a way that makes explicit not only their importance but also their connection with excessive fiscal policy and price stability; and markets do not seem to have a clear understanding of how the policy process works nor seem to be very sure of how policy will change when it is excpected to change. So far opacity and misscommunication have not threatened the price stability goal. But they might in the near future unless decisive steps are taken.

3 The transmission of policy impulses

3.1 The Euro Area

Considerable evidence exists on the transmission of monetary policy shocks in the Euro area (see e.g. Angeloni et al. (2003), Peersman (2004)). While results somewhat depend on the study, the sample, the country and the exact methodology employed to identify disturbances to the policy rule, it is generally agreed that a shock which unexpectedly increases interest rates makes output and inflation decline, even though the magnitude and the timing of the decline are pretty much uncertain. This uncertainty is due to many factors: the magnitude of the policy impulse, the sensitivity of credit and/or investment aggregates to interest rate changes, the expectations of the public and, as a consequence, the reaction of the yield curve. Since most of the evidence for the Euro area as a whole is based on synthetic data reconstructed for the pre-ECB regime, we provide some evidence concerning the effects of policy shocks on industrial output growth, inflation and the dollar-euro rate using monthly data for the period 1999:1-2005:1. Clearly, since the sample is short, estimates are likely to be noisy. Furthermore, the sample we analyze is somewhat special, very rich of other unexpected events, and therefore may not truly represent the "normal" features of the transmission of monetary policy shocks. Nevertheless, our exercise may give us some indications of whether important changes have taken place after the establishment of the ECB.
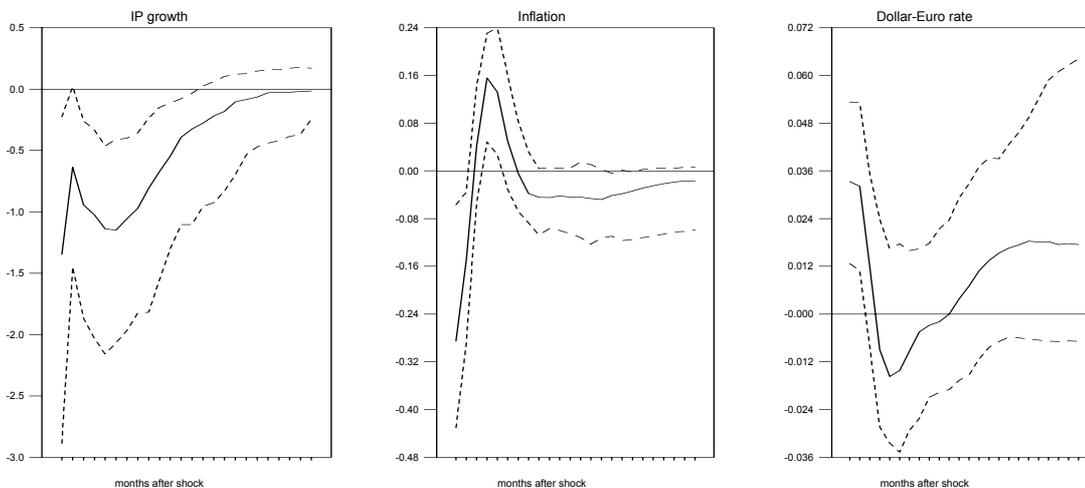
Figure 9: Responses to an interest rate shock

Figure 9 plots the responses of the three variables to a 25 basis points unexpected increase in short term interest rates where the unexpected increase in the short term rate is identified via a liquidity effect (an interest rate increase must decrease narrow monetary aggregates like M1). A few important features of the figure are worth some discussion. First, an increase in the short term interest rate appreciates the Euro and makes industrial production growth decline, while inflation first declines and then increases. This pattern which, to a large extent, reproduces the dynamics present in the pre-ECB era is somewhat standard: higher domestic short term interest rates attract foreign investors seeking higher return opportunities and, at the same time, cool down domestic economic activity. Second, the effect on industrial production growth is of an order of magnitude larger than the one on inflation. This pattern is less standard but easily interpretable. Typically, the output effects of monetary disturbances are small. However, output data is not available at the monthly frequency and industrial production is only a small percentage of output in the Euro area (roughly, 20 percent). Therefore, while the effect on industrial output is large, the effects on the service and the agricultural sector are probably small, making the total output response considerably smaller. Notice also that, once the monthly effect is cumulated at the quarterly

30

frequency, the total response is likely to be negligible.

Third, the largest industrial output growth and exchange rate responses are instantaneous while the largest inflation response is typically observed after about 6 months. While the location of the maximum response is not pinned down with clockmaker's precision, it seems that in the last 5 years, monetary policy disturbances were transmitted to the Euro are¡ economy much quicker than in the past. While many explanations could be found for this change, a quicker transmission is consistent with the idea that the public understands Central banks actions better than it did in the past. Fourth, the effects of a monetary policy disturbance dissipate relatively quickly and after about 9-12 months the responses of all three variables are insignificantly different from zero.

To sum up, it looks as if monetary policy is a powerful lever for industrial output growth in the short run while the effects on inflation are more sluggish - and this is very much consistent with the evidence we have presented in the previous section. We think this is good news. Monetary policy has the ability to alter the short run path of output growth and inflation if it wishes to do so and can do it relatively quickly. However, unexpected changes in short term interest rates are unlikely to have any medium term effect on industrial output growth, inflation or, for that matter, the Dollar-Euro exchange rate. Surprising market participants can not be the medicine to remedy structural imbalances or to ease frictions. Unsurprisingly, market participants quickly learn about the possibility of being surprised.

3.2   The New EU members

There is a growing body of literature showing how monetary policy shocks are transmitted within the 10 new members of the EU and some effort in comparing differences in the responses of these countries with those obtained in the Euro area exists (see e.g. Ganev et al. (2002), Supel (2003), Anzuini and Levy (2004), Jarocinski (2004)). The main conclusion of all these studies is that, despite important differences in the structure of the economies, the transmission of policy shocks in the old and the new members of the EU is similar. That is to say, contractionary domestic monetary policy shocks reduce output growth and inflation and, although with some heterogeneities, tend to appreciate the local currency. While the qualitative pattern is similar, the quantitative effects in the old and the new members of the EU are different. In particular, interest rate responses tend to be more persistent in

31

the new EU countries and price responses stronger in the medium run but less persistent. Many reasons may account for the differences. For example, since these countries are more open than the Euro area, the exchange rate channel becomes stronger. Moreover, the fact that these countries are less financially integrated, that they have somewhat inefficient financial markets and that they have large amounts of trade credit may make them more responsive to monetary policy. Is this good or bad news for the possible adoption of the Euro by these countries? In our opinion, it dramatically depends on the reasons that make transmission different. If the heterogeneities between old and new members are the results of structural differences, premature adoption of the Euro may force adjustments to shocks to take place in relative prices. If these adjust slowly, damages can be done. On the other hand, if the heterogeneities in the transmission are due to lack of Central bank credibility, the adoption of the Euro could make the transmission of policy shocks quicker and the output costs smaller. In our opinion, Central banks in the new EU countries are quickly gaining reputation and credibility. In addition, the fact that many of them follow inflation targeting strategies makes us conjecture that it is probably the first reason, the presence of important structural difference, which is the heart of the problem.

There is much less evidence in the literature on the effects of shocks originating in the Euro area for new EU members and on the relative size of domestic vs. external shocks (one exception is Benczur, et. al. (2004)). Both questions are important. It is often claimed that small open economies are subject to a considerable amount of external (and uncontrollable) shocks. If fluctuations in the periphery of the EU are largely attributable to shocks originating in the Euro area there is scope for coordination activities between policymakers, both to avoid unnecessary shocks and to jointly respond to unforeseen circumstances. Clearly having dominant external shocks is insufficient to justify common policies, the extra condition being that these shocks should have similar effects on the variables of the two areas. Interestingly, Benczur, et. al. report that, while some of the domestic fluctuations in the new EU members are due to external shocks, the vast majority of the fluctuations come from domestically induced disturbances. In other words, while one should worry about shocks generated in the Euro area, there is still ample room to put the house in order before considering the consequences of intensifying external links and eliminating the equilibrating effects of exchange rate movements.
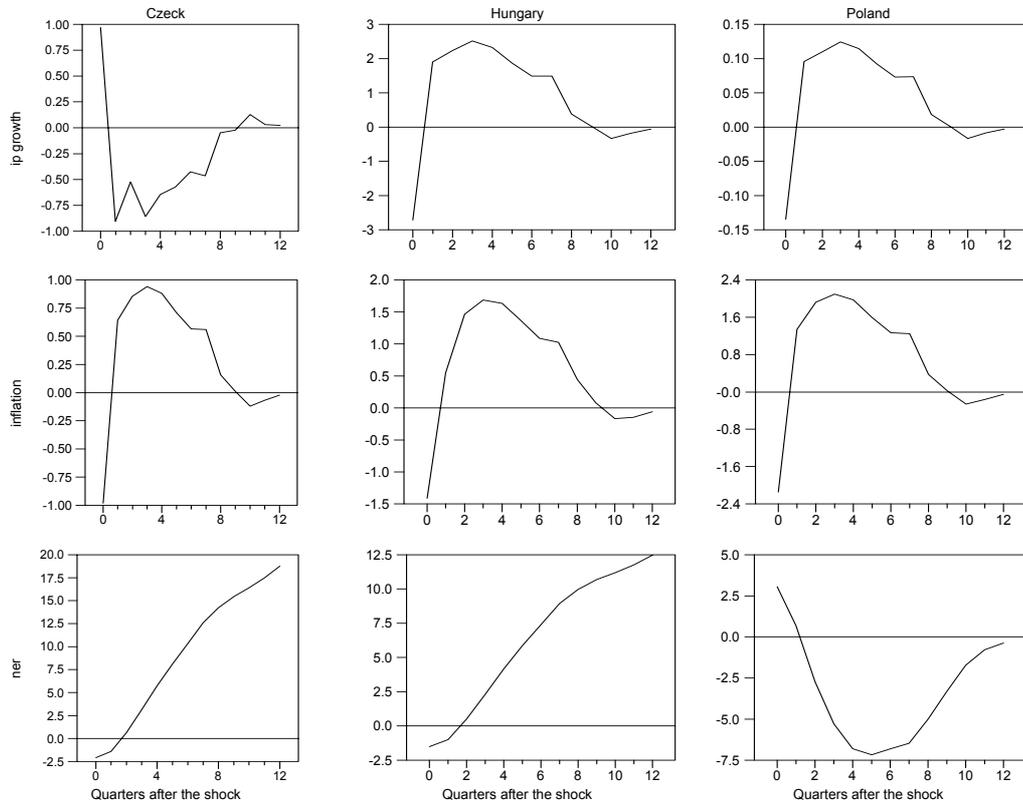
Figure 10: Responses to Euro area monetary policy shocks

Given that external shocks are less important than domestic ones, what is the channel through which Euro area shocks are transmitted to the local economies? Consider a contractionary monetary policy shock in the Euro area. Since, as we have seen, such a shock has a temporary but sizable effect on industrial output, it is conceivable that the demand for goods by Euro area firms will decline. If there are large trade links between the Euro area and the new EU member countries, the demand for locally produced goods will also decline and this will have depressing real effects. The magnitude and the importance of this channel obviously depends on the degree of interdependencies and integration between the two areas. Note that the opposite can also occur as a begger-thy-neighbour policy may reduce output growth in neighboring countries - see e.g. Mackowiak (2005).

The previous section has also shown that the Euro typically appreciates when the ECB increases interest rates, as financial capital flows to take advantage of higher returns. However, depressed local demand conditions may also induce industrial capital to move away from the area, and this is especially true when there are complementaries in production. Therefore a 'capital' channel may act exactly in the opposite direction to the trade channel reinforcing the beggar-thy-neighbour effect, making the final outcome on the new EU countries uncertain. Also in this case, the level of financial integration and the degree of international capital mobility determines the magnitude and the persistence of this effect. Separating the two channels is difficult (see Canova (2005)), but such an exercise may therefore provide useful information to policymakers in order to design the proper reaction to disturbances.

Which channel dominates in the actual data? Do we see industrial output in new EU countries to contract or to increase in response to contractionary monetary policy shocks? Do we see inflation responses which positively or negatively correlate with inflation responses in the Euro area? Given the short sample and the fact that only quarterly data for new EU countries is available, the analysis is very tentative and subject to both large measurement errors and small sample biases. In figure 10 we report responses of industrial output growth, inflation and nominal exchange rate in Poland, Czech Republic and Hungary when a contractionary monetary policy shock hits the Euro area. While there are important similarities with the responses of figure 9, differences are also noticeable. For example, in response to tighter monetary policy in the Euro area, industrial output growth declines in Hungary and Poland but it increases in the Czech republic. That is to say, for the latter country the capital/beggar-thy-neighbour channel seems to be stronger. Inflation is typically temporarily reduced in all three countries, but the effect becomes positive and significantly so after about two quarters. This is similar to what occurs in the Euro area. Furthermore, in the Czech Republic and Hungary, the currency temporarily appreciates and then strongly depreciates so that the observed inflation response could be the result of increased import costs. In Poland the picture is more complicated: in fact, the nominal exchange rate first depreciates as economic activity contracts and then appreciates after about a year, therefore making the interpretation of inflation responses difficult.

In sum, and tentatively speaking, it appears that both channels of transmission are present and that their importance depends on a number of factors. Of the three countries,

the Czech republic appears to be the most integrated with the Euro area economy and the one that seems to benefit most when contractionary policy shocks hit the Euro area economy. Interestingly, inflation responses in all three countries mimic those in the Euro area, suggesting that, perhaps, some implicit coordination between Central banks is already taking place. The heterogeneities present in the transmission of Euro area monetary policy shocks to these three countries will probably be magnified if the sample is extended to consider other new EU members.

These heterogeneities, if confirmed, should be carefully analyzed once the decision to adopt the Euro is considered. Rushing into a single currency may be dangerous: without the exchange rate channel to resolve imbalances, larger heterogeneities in the responses to monetary policy may magnify the pattern of real and inflation differentials already present in Euro regions, therefore making monetary policy more difficult and less effective. With the information present in figure 10, one can predict that shutting down the exchange rate channel this may turn out to be less of a problem for the Czech republic and Hungary. However, there is considerable uncertainty regarding the consequences of such a choice. Therefore, gains from a less volatile environment must be weighted against the costs of having one less channel to absorb domestic and international shocks.

4   Implications for Turkey

4.1   Joining the EU

Among the perspective newcomers to the EU and the Euro, Turkey is the largest and the most densely populated. What are the likely consequences of joining the EU club? Would joining the EU foster a process of income convergence between Turkey and Europe? Would the adoption of the Euro cause major changes in the way Euro area shocks in general, and monetary policy shocks in particular, are transmitted to the Turkish economy? Most of these questions cannot have a direct answer since they involve a change of regime which is unprecedented in the history of Turkey. However, the now relatively long list of countries acceding the EU having comparable stages of development as Turkey, has taught us important lessons which, to a large extent, are applicable to Turkey as well.

Canova and Boldrin (2002) examined in detail a few years before accession took place the economic prospects of Central European countries (CEC) and tried linking their economic

conditions to those of Greece, Spain and Portugal when they joined the EU. Unsurprisingly, they found striking similarities between the two experiences. In fact, although the political and historical circumstances of accession were different, macroeconomic conditions in CEC resembled those of the earlier joiners in terms of cultural characteristics, political past, structural and socio-economic features, GDP per-capita and labor productivity relative to the EU average, share of employment in agriculture and openness of the economy, the last one measured by exports plus imports over GDP. Table 2 reproduces some of their data: for Central European countries 2000 is used as a benchmark, for Spain and Portugal we average conditions existing in 1985 and 1986, while for Greece we average the conditions existing in 1980 and 1981. It is clear that in terms of backwardness (the share of employment in agriculture), relative income per-capita and labor productivity (Spain is the exception here) the two experiences are very similar. One important difference is that CEC were much more open than Spain, Portugal and Greece were twenty years ago, but this could be the result of a general trend toward stronger interdependencies between advanced and less advanced economies. In fact, not only trade interdependencies are stronger, but also capital flows were considerably larger than those of the three early newcomers. Perhaps more importantly for our purposes, between 40 and 70 percent of the trade of CEC in 2000 took place with EU countries and about 70 percent of foreign direct investments came from the EU and Germany, in particular. One more feature makes Central European countries strongly resemble Spain and Portugal in the early-mid 1980s: labor market dynamics. In fact, rapid expulsion of workers from agriculture and from traditional industrial sectors, equally fast increase in unemployment, reduction in the labor force participation rates, creation of a substantial and a long lasting stock of long-term unemployed - at around 40-50 percent of total unemployment - are important common features of both transition processes.

Given these observations, Canova and Boldrin estimated that the costs and the gains that CEC would enjoy joining the EU will be probably comparable to those experienced by the previous three newcomers, a prediction which is so far confirmed by the available data. In particular, their economic and econometric analysis predicted that most of the convergence gains would take place in the years leading to accession and after that the old and the new EU members would experience a roughly similar growth path. That is to say, inequalities between the core and the periphery of the EU existing at the time of accession

36

are unlikely be eliminated and instead expected to persist for a least a few decades.

Table 2
Indeces of similarity

	Openness	Employment in Agriculture	Relative GDP per capita	Relative Labor Productivity
Spain 85-86	0.29	0.15	0.62	0.95
Portugal 85-86	0.56	0.22	0.49	0.44
Greece 80-81	0.42	NA	0.55	0.52
Czech 2000	1.44	0.05	0.59	0.47
Estonia 2000	0.87	0.07	0.41	0.34
Hungary 2000	1.23	0.07	0.53	0.47
Latvia 2000	1.02	0.14	0.3	0.3
Lithuania 2000	1.06	0.19	0.3	0.26
Poland 2000	0.63	0.25	0.41	0.34
Slovak 2000	1.60	0.08	0.49	0.47
Slovenia 2000	1.20	0.10	0.73	0.50
Turkey 2003	0.60	0.35	0.14	0.25

Why is it a good idea to compare Central European countries with Mediterranean ones and not with Ireland, which was as backward as the latters when it joined in 1976 and experienced an extraordinary growth in the late 1990s? There are several reasons that make the comparison inappropriate. The most important one is that Irish growth did not come in a vacuum. If CEC would be willing to adopt the policies that Ireland implemented in the last decade, including aggressive labor market reforms, productivity incentives, tax reductions, financial market deepening, and new legislation to eliminate local market inefficiencies, a much rosier picture would probably result. Accession however, does not come together with good national policies. Since history and social norms matter, Canova and Boldrin conjectured that sweeping changes in labor, financial and capital markets were unlikely to occur and, as far as we can tell, have so far not occurred.

Where does Turkey stand relative to previous EU newcomers? Table 2 suggests that the numbers for Turkey in 2003 are comparable to those of the Mediterranean countries in the mid-1980s. A few differences however are worth stressing. Turkey is relatively more open than old Mediterranean EU joiners; as open as Poland was in 2000 but, in general, less open then the average CEC. Moreover, more than 50 percent of the trade in goods and services is already with EU countries. Therefore, while one should expect this share

to increase as membership is granted, its currently high level suggests that gains from improved trade interdependencies are probably not going to be very large. Second, the share of the population employed in agriculture is still large compared to those of CEC, and approximately of the same size as Rumania and Bulgaria, two other countries knocking at the doors of the EU for membership. This indicates that the job shredding process in traditional sectors, typical of economies in transition, has yet to take place in Turkey, even though the economy is relatively open to trade in goods and services. Hence membership to the EU can bring along substantial transitional labor costs which from an ex-ante point of view is better to incur before than after joining the club (for this issue compare the experiences of East Germany and the most dynamic CEC). Third, income per capita is low relative to the European average and this despite the fact that the contribution of the service sector to GNP is roughly as large as in the EU. Therefore, while adjustments, improvements and elimination of inefficiencies which need to take place for membership to be granted will probably spur a fast process of convergence, the mere size of the differences in income per-capita makes even the 50-percent-of-EU-average threshold an ambitious goal for the years to come. Hence, considerable income transfers will have to take place from the core of the EU to Turkey to avoid large cross regions inequalities. Finally, labor productivity is somewhat low relative to the EU average and, once again, comparable to the one of Bulgaria and Rumania. Given that foreign direct investments are a risible fraction of GDP (less than one percent in 2002, 2003 and 2004), one would expect them to soar as membership is granted but to make little difference in terms of labor productivity growth in the next few years.

There is a sense in which some of the aggregate numbers presented in table 2 are a bit missleading. In fact, as it happens in the majority of the old EU accession countries, cities quickly converge to the EU city average while the countryside and rural provinces lag behind both the local cities and the EU non-city average. Furthermore, as recent estimates put the size of the underground economy to about 40 percent of GNP, income per-capita is likely to be larger than official figures report.

All in all, past experience and current economic conditions suggest that placing too high growth expectations on Turkey joining the EU would be misplaced. Membership will help to reduce income inequalities, but it will not necessarily foster the process of economic convergence. Regional transfers which will take place under the structural and cohesion policies have not become growth engines in Greece, Spain and Portugal; they are

unlikely to do so in CEC and there is no reason to expect the situation to miraculously change for Turkey. To be clear: they will have a positive impact on local income, but they are unlikely to change the long-run growth rate of the beneficiary regions. One way of making structural and cohesion funds more effective in generating real convergence is to condition their reception on the implementation of the structural reforms mentioned below. The availability of such funds could in fact significantly decrease the transitional costs of structural reforms and may represent a unique opportunity for the EU to actively foster projects with the highest rate of social return. As far as we know, such conditionality condition is absent and is not planned to be instituted in the future.

In general, to achieve long run growth at rates higher than the average EU level, an appropriate mix of EU and national policies is needed. This includes fostering trade integration with the EU and setting up the environment for international capital flows, restructuring public spending and containing public debt, creating supply side incentives by proper reforms of fiscal and social insurance policies, setting a competitive level of labor income taxation and, last but not least, free movement of capital and labor. Based on historical experience, two types of policies appear to be particularly relevant. First, public programs for long-term income support, corporate subsidies and other forms of income transfer have negative effects on economic growth. Second, labor and capital mobility are good for growth and economic convergence. The adoption or continuation of various transfer and/or regulation policies aimed at eliminating labor migration, in particular, is misplaced and damaging. Fear of migrations have been magnified by skillful EU politicians: migrations in past enlargements have been small. There is no reason to expect it to be large were Turkey to join the EU.

4.2   Transmission of Euro area shocks to Turkey

Important litrature exists, which examines the transmission of monetary policy shocks within Turkey (see, just to cite a few, Gunduz (2000), Berument (2001), Sahinbeyoglu (2001)). Interestingly, the outcome of these exercises appears to agree with the general conclusions we have reached for both Euro area countries and CEC. For example Berument, who uses the spread between the interbank rate and the depreciation of the local currency as a robust indicator of monetary policy over the last 15 years, found that positive innovations in this variable lead to a fall in prices and output and to an appreciation of the

local currency. Furthermore, he finds that while the fall in output is temporary, prices and nominal exchange rate effects appear to be permanent. On the other hand, Sahinbeyoglu, simulating a small open economy model calibrated to match the high inflation experience of Turkey, finds that in response to a policy contraction, output falls while the inflation rate and the nominal exchange rate first fall and then increase. Relatively speaking, the effects appear to be larger in magnitude and more persistent than those observed in the Euro area and also larger than those experienced in CEC. The broad similarity of the qualitative pattern of transmission could be due to the fact that Turkish financial markets are relatively free of regulation. Therefore, since markets forces are allowed to operate roughly in the same way in Turkey and the EU, the transmission of policy shocks is similar to the one observed in the most advanced countries of the world. Clearly, magnitude difference can be related to the historical experience of Turkey, which over the last 25 years witnessed repeated bursts of hyperinflation, capital flights and political instability. All of these features make the exchange rate channel stronger then in other countries and this may lead to stronger reactions of prices and foreign exchange rates to monetary policy disturbances.

There is very little evidence however on how Euro area monetary policy shocks are transmitted to Turkey. Knowing the features of transmission and the channels through which this occur is crucial if one has to predict how trade integration first, and the adoption of the Euro later will affect the Turkish economy. For example, if trade matters most, the transmission of Euro area shocks will be probably altered as membership is granted but we should not expect significant changes when the Euro is adopted. Once again the analysis is tentative since the sample is short, the Turkish economy has experienced huge local shocks over the last 5 years and it is slowly converging to inflation rates which are more moderate than those experienced in the 1980s and 1990s.

Figure 11, which reports the responses of industrial production growth, the inflation rate, the deposit rate, the real effective exchange rate (reer) and the nominal bilateral exchange rate with the Euro (neer) for the sample 1999-2005 indicates that tightening the stance of monetary policy in the Euro area produces adjustments in the Turkish economy which are of considerable size and have significant persistence. Interestingly, a temporarily higher interest rate in the Euro area is accompanied by a decline in Turkish interest rates and this tends to boosts industrial output growth, inflation and depreciate the local currency. This initial effect is reversed in three or four months after which production growth and

inflation fall, interest rates increase and both the real effective and the nominal exchange rates appreciate. While the domestic pattern of responses is internally consistent, the initial negative effect on deposit rates is somewhat puzzling and requires, at a minimum, further careful investigation.
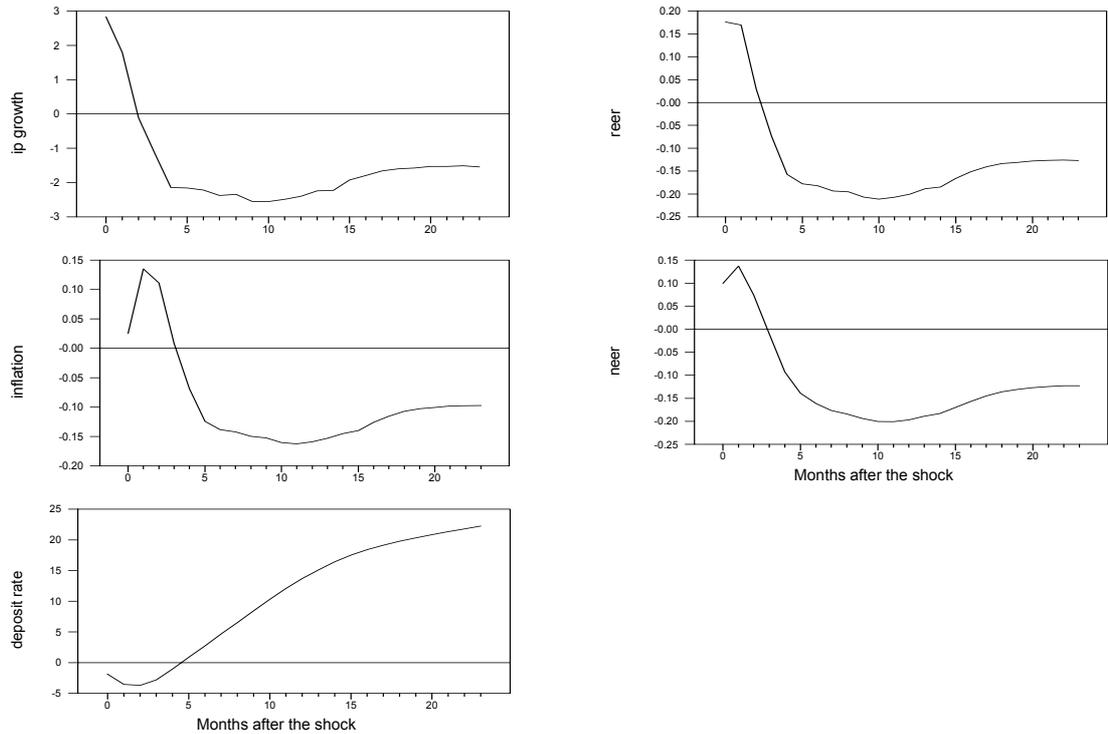

Figure 11: Responses of Turkish variables to a monetary policy shock in the Euro area

One possible reason for the perverse response of the deposit rate is that a contractionary monetary policy shock in the Euro area may turn out to represent a terms of trade shock for Turkey. In fact, as Hakan Berument has pointed out to us the majority of Turkish export is denominated in Euros while the largest portion of imports is denominated in dollars. Therefore, the Euro appreciation following the ECB contractionary policy shock represents a positive wealth effect for Turkey, may produce a switch between saving and consumption, and therefore decrease interest rates and boost domestic demand and inflation. Note that

41

while such a terms of trade effect dominates in the very short run, the standard response of interest rates, inflation and real activity shows up three or four months after the shocks.

In summary, contractionary policy shocks in the Euro area are accompanied by responses of interest rates, inflation and the nominal exchange rate which are somewhat different and more persistent than the ones observed in the new EU countries. If these patterns are confirmed in future studies, it appears that transferring monetary policy decisions to the ECB could destabilize the Turkish economy. On the other hand, in the unlikely case that Turkey would adopt the Euro soon, the task of the ECB would become considerably more complicated as regional differences in response to monetary shocks would be greatly magnified. Finally, it appears that both the trade and the financial channels matter for transmitting Euro area shocks to Turkey. Therefore, the trade integration expected from EU membership and the deeper financial and monetary links that will come with a single currency may alter both the intensity and the shape of responses presented in figure 11.

5 Conclusions

This paper has two parts. First, we reviewed the monetary policy strategy currently favored by academics and contrasted it with the one employed by the ECB. In the process highlighted the accomplishments and failures of monetary policy in the Euro area over the last five years and suggested changes that could streamline the understanding that markets have of the policy process and, as a consequence, improve its transparency and more clearly anchor expectation formation. We showed that the good inflation outcome experienced over the last 5 years was obtained despite some flaws in the ECB strategy and policies. We have conjectured that markets participants discounted the noisy signals present in the public statements of the newly established institution and more pragmatically looked at actions and outcomes. This initial honeymoon effect, which rightly took into account the difficulties and the starting costs faced by a new institution, could turn sour if a more coherent and transparent approach to policymaking is not taken. We showed that if the goal of policy is the control of the medium term dynamics of inflation, the ECB is neglecting important information which could sharpen the prediction and control of the medium term inflation dynamics; we argued that the separation between monetary and economic analysis is artificial and that the focus on monetary aggregates as predictors of medium term inflation

trends misplaced. To the extent that improved inflation forecasts are made and the public understands the uncertain environment in which they are produced, better communication can be obtained, credibility will be fostered and a much more appealing monetary policy strategy will emerge. We also argue that hiding output concerns is not only potentially misleading but also makes it is very difficult to rationalize certain decisions taken in the last five years only in terms of inflation concerns.

The second part of the paper examines the transmission of monetary policy shocks in the Euro area, in the new EU countries and tries to offer some indications of whether and how Turkey will benefit from joining the EU first and the Euro later. Our analysis reaches a few important conclusions. First, there are substantial similarities in the qualitative features of the response of industrial output growth, inflation and the nominal exchange rate to contractionary domestic monetary policy shocks in the three areas. However, together with qualitative similarities, magnitude differences should also be emphasized. These differences are easily rationalized once we consider the relative size of the countries, the relative magnitude of the exchange rate channel and the relative credibility of domestic Central banks. Second, monetary policy shocks generated in the Euro area tend to have asymmetric effects on industrial output in the new EU newcomers and while they tend to produce similar effects on inflation and the nominal exchange rate of these countries. Hence the real side of the Euro area economy is still substantially different from those of the EU newcomers. We already know from the experience of Germany since unification that monetary integration (coordination) without a preliminary process of convergence of the real economies may create imbalances which are difficult to resolve once the exchange rate is fixed to unity since regional relative prices tend to be sticky. Fostering real convergence between the current and future periphery of the EU should be one of the major goal of all countries which plan to adopt the Euro. Once real convergence has been obtained, releasing the conduct of monetary policy to the ECB would probably make little difference, as far as transmission of policy shocks are concerned. Third, the real side of the Turkish economy looks today very much as the real side of earlier Mediterranean joiners of the EU. Therefore, while some form of real convergence will surely take place in the period leading to accession, income inequalities and structural heterogeneities are likely to persist for quite some time after membership is granted. While reforms needed to join the EU will probably be beneficial for growth and convergence, one should not expect too much from EU structural and cohesion

funds. Such funds have reduced income inequalities between rich and poor regions and in that sense they have played an important cohesive role. However, they have not typically led higher growth in the funded regions nor have they changed the underlying structural characteristics of poor regions. Therefore, structural changes must take place in Turkey before the admission process is started. The costs of undertaking structural changes are non-negligible but, if properly handled, will turn out to be temporary. The costs of delaying the transformations and waiting for the safety net of EU funds are large and long lasting. Fourth, the transmission of monetary policy shocks in the Euro area constitute a powerful level on the Turkish economy but, at least for the short sample we have available, they produce somewhat perverse effects. Hence, it is probably premature to think of releasing the control of monetary policy to the ECB.

To conclude, the biggest challenge we see for countries wishing to adopt the Euro in the medium run is to make the real side of their economies more dynamic and to find ways to foster growth paths leading to significant real convergence in the years to come. As long as monetary policy keeps its focus on maintaining a relatively stable inflation environment and growth reforms take place, the preconditions for joining the EU and adopting the Euro could be met within a reasonable span of time.

References

Angeloni, I., Kashap, A., Mojon, B, Terlizzese, D. (2003) Monetary policy transmission in the Euro area, Cambridge University Press, Cambridge, Ma.

Anzuini, A. and Levy, A. (2004) Financial Structure and the Transmission of Monetary Policy Shocks: Preliminary evidence from the Czech Republic, Hungary and Poland, Bank of Italy, manuscript

Anzuini, A., Caivano, M., Lamorgese, A. Miani, C. and Venditti, F (2005) A panel BVAR model for the Euro economy and Italy, Bank of Italy, manuscript.

Benati, L. (2002) Evolving Post WWII UK economic performance, Bank of England, working paper.

Benczur, P, Koren, M. Raftai, A. (2004) The transmission of Eurozone shocks to CEEC's, Central European University, manuscript.

Begg, D., Canova, F., Fatas, A., Lane, D. (2002), Monitoring ECB 4, CEPR.

Berument, H. (2001) Measuring Monetary Policy for a small Open economy: Turkey, Bilkent University, working paper

Canova, F. (2002) G-7 Inflation forecast, ECB working paper 151.

Canova, F. (2005) The transmission of US shocks to Latin America, Journal of Applied Econometrics, 20, 229-251.

Canova, F. and Boldrin, M (2002) Regional Policies and EU enlargement, in Pizzauti, L. and Funck, B. (eds.) The EU Enlargement to the East, World Bank.

Canova, F. and Ciccarelli, M. (2003) Panel VAR: Specification, Estimation, Testing and Leading Indicators, CEPR working paper, 3963

Canova, F. and Gambetti. L. (2004) Structural Changes in the US economy: Bad lack or Bad policy?, available at http://www.igier.uni-bocconi.it/ canova

Christiano, L. and Rostagno, M.(2001) Monetary growth monitoring and the Taylor rule, Northwestern University manuscript.

Cogley, T. and Sargent, T. (2003) Drifts and Volatilities: Monetary Policies and Outcomes in the Post WWII US, forthcoming, Review of Economic Dynamics.

Cooley, T. and Ohanian, L. (1991), The cyclical behaviour of prices, Journal of Monetary Economics, 28, 25-60

ECB (2004), The Monetary Policy of the ECB.

ECB Monthly Bulletin (2002), Transparency in the Monetary Policy of the ECB, November.

ECB Monthly Bulletin (2003), The outcome of the ECB's evaluation of its monetary policy strategy, June.

Favero C.A. and Tristani, O. (2005), Understanding Fluctuations in the US and German Term Structure of Interest Rates, mimeo

Fraga, A., Goldfajn, I. and Minella, A. (2003) Inflation Targeting in Emerging market Economies, NBER Macroeconomic Annual.

Friedman, M. and Schwartz, A. (1960), Monetary history of US, Princeton Press, Princeton, NJ.

Friedman, M. and Schwartz, A. (1963), Monetary history of UK, Princeton Press, Princeton, NJ.

Gaiotti E. and Lippi, F. (2005) Pricing Behavior and the Introduction of the Euro: Evidence from a Panel of Restaurants in Italy, Giornale degli Economisti ed Annali di Economia, 63, 491-526

Gali, J., Gerlach, S., Rotemberg, J. Uhlig, H and Woodford, M. (2004) Monitoring ECB 5, CEPR.

Ganev, G, Molnar, K. Rybinki, K. and Wozniak, P. (2002) Transmission Mechanism of Monetary Policy in Central and Easter Europe, CASE report 52.

Goodhart, C. and Pappa, P. (2003) The transition from national currencies to the Euro, Economic Letters.

Gunduz, L. (2000) Monetary Transmission and the Bank Lending Channel, Beykent University, working paper.

De Haan, J., Ejiffinger, S. and Waller, S (2004) The ECB: Communication, Transparency and Credibility, MIT Press, Cambridge, Ma.

Issing, O. (2001), The Euro Area and the single monetary policy, Oesterreichische Nationalbank, working paper 44.

Issing, O. (2002),

Jan Jansen, D. and De Haan, J. (2004) Look who's talking: ECB communication during the first years of EMU, De Nederlandsche Bank, manuscript.

Jarocinski, M. (2004) Responses to Monetary Policy Shocks in Eastern and Western Europe: A Comparison, UPF manuscript.

Mackowiak, B. (2005), What does the bank of Japan do to east Asia?, Humboldt University, manuscript.

Mishkin, F. (2004) Can Central Bank Transparency go too far?, NBER working paper 10829.

Orphanides, A. (2001), Monetary Policy Rules, Macroeconomic Stability, and Inflation: A View from the Trenches, Boards of Governors of the Federal Reserve System Discussion Paper 62.

Peersman, G. (2004) The transmission of Monetary policy in the Euro area. Are the effects different across countries?, Oxford Bullettin of Economics and Statistics, 66, 285-308.

Poole, W. (1999) Communicating the Stance of Monetary Policy, speech available at http://stlouisfed.ord/news/speeches.

Poole, W. (2001) Central Bank Transparency: Why and How, speech available at http://stlouisfed.ord/news/speeches.

Roberts, J. (1997) Is inflation sticky?, Journal of Monetary Economics, 39, 173-196.

Sahinbeyoglu, G. (2001) Monetary Transmission mechanism: A view from a high Inflation environment, Central Bank of Turkey, working paper 2001/1.

Sherwin, M. (1999) Inflation Targeting: 10 years on, speech available at http:// www.rbnz.govt.nz/ speeches.

Siklos, P.L. and Bohl, M. T. (2003) Do words speak louder than actions? The Conduct of Monetary policy at the Bundesbank, manuscript.

Sims, G. and Wessel, D (2000) The ECB can't master communication, Wall Street Journal, April 27.

Suppel, R.(2003) Comparing the economic dynamics in EU and CEE accession countries, ECB working paper 267

Svensson, L. (2004) Challenges for Monetary Policy, available at http://www.princeton.edu/ svensson.

Trichet, J.C. (2003) The ECB's monetary policy strategy after the evaluation and clarification of May 2003, speech available at http://www.ecb.int/press/key/date/2003.

Wilhelmsen, B. and Zaghini, A. (2005) Monetary Policy Predictability in the Euro area: an international Comparison, Bank of Italy, manuscript.