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Should the ECB target employment?

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Should the ECB target employment?

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Abstract:

Several european politicians have complained that the ECB does not pay enough attention to job creation in the euro area. In this paper, we examine the behavior of the ECB during its first ten years of existence. We review the ECB's legal mandate, and study, using both informal evidence and regression methods, how the ECB reacts to economic conditions in the euro area. We find that despite its legal mandate, which assigns the ECB a primary objective of keeping inflation below 2 percent, the ECB has missed this target most of the time, and reacts to real activity indicators (the output gap and the unemployment rate) when setting the policy rate. Therefore, it is difficult to conclude that the ECB has been hawkish on inflation in its first ten years of existence. Finally, we study what is the optimal monetary policy rule in a model with labor and product market rigidities, and conclude that given these, the ECB should have a dual mandate of price stability and maximum sustainable employment.

JEL Codes: E30, E52

Keywords: Inflation, Unemployment, Monetary Policy

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TABLE OF CONTENTS

1. Introduction	5
2. Comparing mandates: The ECB and the Federal Reserve	7
2.1. The European Central Bank	7
2.2. The Federal Reserve	7
2.3. Are the ECB and the Fed mandates that different?	9
3. Reviewing the record: Is the ECB that hawkish on inflation?	11
4. Estimating Taylor rules for the ECB	16
5. How “optimal” is the behavior of the ECB?	18
6. Concluding remarks	23
References	24
Resum executiu	26
Resumen ejecutivo	28

1. Introduction

During most of 2008, the European Central Bank held interest rates at 4 percent, while the European economy was entering into a downturn and the financial crisis was spreading. Critics to the stance of monetary policy in the euro zone complained that high interest rates with respect to the United States led to an excessive strength of the euro. This loss of competitiveness could hurt European exports, thereby depressing real GDP growth and job creation. Hence, at least in part, policy makers in Frankfurt would be to blame for the high unemployment rates in the Euro area. For instance, following the July 3, 2008 meeting, when the European Central Bank (ECB) announced an interest rate hike of 25 basis points, the French president Nicolas Sarkozy declared that *“I have the right as president of the French republic to wonder if it is reasonable to raise the European rates to 4.25 percent while the Americans have rates of 2.0 percent¹.”*

Actually, most ECB critics have suggested that the main problem is the ECB’s mandate and its focus on inflation. One may reasonably wonder, for instance, whether the ECB should have a *dual mandate* of maintaining price stability while trying to achieve maximum employment, like the Federal Reserve in the United States. The French president started the political debate by declaring that *“We should be able to propose to the European people a Europe where monetary policy has growth and employment, and not just inflation, as objectives².”* However, these comments do not appear to be very popular among other top officials of the euro zone. For instance, the German chancellor Angela Merkel has always supported the ECB’s mandate, and has refrained from making public statements regarding ECB decisions.

In this paper, we review the ECB’s legal mandate and we study the behavior of the ECB in its almost ten years of existence. Then, we quantify the inflation-unemployment trade-off in the euro area using a general equilibrium model with labor and product market rigidities, and derive policy recommendations. Hence, the aim of this paper is to study what the ECB says it does, what the ECB actually does, and what it should be doing, given the rigidities in place in the European economy.

After discussing the legal mandate of the ECB in Section 2, we show that during its ten years of existence, the ECB has already put an important weight in stabilizing unemployment and/or the business cycle in the euro area in Section 3. Our first piece of evidence is that the ECB has missed its target of inflation about 70 percent of the time. In addition, using well established yardsticks for the stance of monetary policy (Taylor, 1993), we also show that it is difficult to conclude the ECB’s stance of monetary policy has been particularly tight since 2003. A tighter monetary policy that kept inflation “close to, but below 2 percent” would have most surely reduced real GDP growth and increased unemployment, but this is not the outcome that the ECB chose to deliver.

Then, in Section 4 we conduct a more formal analysis and estimate the reaction function (i.e. the Taylor rule) of the ECB, and compare it to the behavior of monetary policy in (pre-ECB) Europe in the 1990’s. The reaction function tells us how are reference rates set as a function

1. Source: France 24. July 5, 2008. <http://www.france24.com/en/20080705-france-sarkozy-ecb-interest-rates-europe-banking>.

2. Source: Reuters UK. Feb 21, 2007. <http://uk.reuters.com/article/worldNews/idUKL2154802020070221>.

of main macroeconomic indicators, typically inflation and an indicator of real activity. We find that during the last nine years, the ECB has put more weight on real activity indicators than on inflation, while in the 1990's monetary policy in Europe was more concerned about targeting inflation. Therefore, it appears that, *de facto*, the ECB already has a great deal of concern for the behavior of real activity in the euro area. Nevertheless, looking forward, the ECB should take steps towards unifying what it does and what it says it does. Otherwise, it risks losing credibility, as the Survey of Professional Forecasters of inflation conducted by the ECB seems to suggest.

To understand the effects of monetary policy as well as the policy trade-offs faced by the ECB, in Section 5 we use a model of the business cycle that allows to study the role of monetary policy when nominal and labor market rigidities are present. To that extent we use the Blanchard and Galí (2008) model. The main implication is that with rigid labor markets of the European type, a dual mandate where the central bank stabilizes inflation and the unemployment rate is preferable to a strict inflation targeting approach. It would seem, therefore, that European politicians complicated the task of the ECB by giving it a primary objective of price stability, without addressing labor market rigidities in the euro area first. We also show that the monetary policy rule that was followed by the national central banks of the euro area in the 1990's is preferable to the one that the ECB has been implementing since its creation in 1999. The main difference between the two rules is that the national central banks during the 1990's placed more weight in stabilizing inflation than the ECB currently does, and the former delivers greater macroeconomic stability.

In Section 6, we conclude by offering two policy recommendations. First, the ECB should realign its target of inflation with a midpoint within a range, as is the case in most central banks with an explicit inflation targeting regime³. This way the ECB would better align its mandate with what it is actually doing, and would be able to better deliver on the inflation goal, reducing the credibility problem. Second, the ECB should acknowledge that it is *de facto* running monetary policy with a dual mandate like the Federal Reserve does, and that real activity indicators are closely monitored and play an important role in setting monetary policy in the euro area⁴.

3. The ECB does not agree to classify its monetary policy regime as an inflation targeting regime, despite sharing many similarities with countries that explicitly acknowledge that they do. See IMF (2006).

4. A similar conclusion appears in Galí *et al.* (2004).

2. Comparing mandates: The ECB and the Federal Reserve

2.1. The European Central Bank

ECB (2004) provides details on the objectives of the European System of Central Banks (ESCB) as follows⁵:

- *“The primary objective of the ESCB shall be to maintain price stability.”*
- And: *“without prejudice to the objective of price stability, the ESCB shall support the general economic policies in the Community with a view to contributing to the achievement of the objectives of the Community as laid down in Article 2.”* (Treaty article 105.1).

The objectives of the European Union (Article 2 of the Treaty) include a high level of employment, and sustainable and non-inflationary growth. ECB (2004) also states that:

“By focusing the monetary policy of the ECB on this primary objective, the Treaty makes it clear that ensuring price stability is the most important contribution that monetary policy can make to achieving a favourable economic environment and a high level of employment.”

Hence, the philosophy behind the ECB’s ranking of objectives is that the best contribution that monetary policy can do to foster maximum employment is to focus on keeping inflation low, rather than targeting the employment (or unemployment) rate directly. This appears to follow from the well known Barro-Gordon (1983) result: if the central bank targets an unemployment rate that is lower than the “equilibrium” or “natural” rate, it will end up with a higher inflation rate and the same unemployment rate.

The definition of price stability for the ECB can also be found in ECB (2004): *“The ECB has defined price stability as a year-on-year increase in the Harmonised Index of Consumer Prices (HICP) for the euro area of below 2 percent. In the pursuit of price stability, the ECB aims at maintaining inflation rates below, but close to, 2 percent over the medium term.”* The sentence “below, but close to” was introduced after the evaluation of the monetary policy strategy of the ECB in 2003, and has been interpreted by market commentators and ECB watchers to mean that the implicit inflation target of the ECB is between 1 and 2 percent. The reference value for M3 growth that the ECB uses, 4.5 percent, is consistent with an inflation target of 1.5 percent⁶. The term “over the medium term” is less clear, as the ECB does not provide a definition of the time horizon for inflation to reach the target.

2.2. The Federal Reserve

On the other hand, as Cecchetti and O’Sullivan (2003) point out, the objectives of the Federal Reserve are less clear. The objectives of monetary policy in the Federal Reserve Act (Section 2a) are as follows⁷:

5. The Treaty on European Union refers to the European System of Central Banks (ESCB) which comprises all the National Central Banks of the European Union and the European Central Bank. The Eurosystem consists of the ECB and the National Central Banks of those countries that have adopted the euro. The Treaty assigns the responsibility of carrying out the task to the ESCB because it envisions that eventually all countries will adopt the euro as their currency, and hence the Eurosystem and the ESCB will be the same entity.

6. See Galí *et al.* (2004).

7. See <http://www.federalreserve.gov/aboutthefed/section2a.htm>.

- “The Board of Governors of the Federal Reserve System and the Federal Open Market Committee shall maintain long run growth of the monetary and credit aggregates commensurate with the economy’s long run potential to increase production, so as to promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates.”

Therefore, there are important differences with respect to the ECB. First, the Fed’s mandate does not rank objectives in terms of a primary objective and other objectives generally accepted as maximizing welfare. Second, it does not attach any numerical target to any of the above-mentioned objectives⁸.

The way the Board of Governors of the Federal Reserve interpret this mandate is as follows (Mishkin, 2007a). First, for practical purposes, the Fed has a *dual mandate* of stable prices and maximum employment, because moderate long-term interest rates can only be achieved in an environment of macroeconomic stability and low inflation. Second, the “comfort zone” for inflation lies between 1 and 2 percent, based on Fed’s officials wording and public speeches⁹. Third, the combination of “stable prices” and “maximum employment” delivers the goal of maximum *sustainable* employment: rather than taking “maximum employment” literally (i.e. targeting an employment rate of 100 percent), the Fed acknowledges that, in market economies, some frictional unemployment will always exist. As in the European case, Mishkin (2007a) points out that the best business conditions for job creation are achieved under low inflation. Conversely, if the central bank tries to push unemployment below what is considered its “natural” level, signs of tightness in the labor market will appear. This will translate into higher wage pressures, putting upward pressure on production costs, and hence on the prices of final goods, threatening price stability.

As discussed by Mishkin (2007a) and Alesina *et al.* (2001), the determinants of the natural rate of unemployment are beyond reach of monetary policy. The natural rate is the level the economy reaches in the absence of various temporary frictions, consistent with the economy producing at the “long run” level. Institutional factors in the labor market (such as wage bargaining, firing costs and unemployment insurance), technologies available and citizens’ preferences determine the “natural rate”, and not monetary policy. In addition, the natural rate is very difficult to measure from an econometric point of view, and can change due to institutional reforms or the economic structure of a country. Therefore, the central bank should not have a target for the unemployment rate, as it could lead to credibility problems (Barro and Gordon, 1983) and/or big policy mistakes (Orphanides, 2001). As a result, the Federal Reserve does not have a numerical target for the unemployment rate, although it monitors a range of indicators from the labor market to assess the position of the economy with respect to the trend level.

8. In fact, several Federal Reserve officials have suggested that the FOMC should adopt an official definition of what stable prices actually means. See, for instance, Bernanke (2003).

9. See Mishkin (2007b). When some measures of inflation reached 1 percent at the end of 2003, the Federal Reserve showed public concern about such a low value. The FOMC statement of October 28, 2003, included the following: “The Committee perceives that the upside and downside risks to the attainment of sustainable growth for the next few quarters are roughly equal. In contrast, the probability, though minor, of an unwelcome fall in inflation exceeds that of a rise in inflation from its already low level. The Committee judges that, on balance, the risk of inflation becoming undesirably low remains the predominant concern for the foreseeable future.”

2.3. Are the ECB and the Fed mandates that different?

Hence, while the ECB and the Fed have different legal mandates, there is wide agreement between economists that the objectives of maximum sustainable employment and stable prices are complementary in the long run¹⁰. Therefore, are there any situations where the different mandates of the ECB and the Fed would lead them to take different actions? The differences are mostly of a short-run nature and arise when economic conditions are such that there is a conflict between targeting the two indicators.

For instance, let's take the case of the recent increase of energy and foods prices. When such a shock hits the economy, headline inflation increases. There are two approaches to deal with this shock: one would be a "strict inflation targeting approach", and the other a "flexible inflation targeting approach"¹¹. In the first case, a central bank that is concerned only about inflation would raise interest rates immediately to slow down the demand of all other goods such that their prices decline, and in the aggregate the inflation rate is kept constant. But such a policy would surely increase unemployment temporarily, as firms producing goods other than energy would see demand fall, and hence would need to cut down employment. Over time, as the effect of the energy price shock dies, the central bank could lower interest rates, stimulating the rest of the economy and bringing inflation and employment back to their target and natural levels, respectively.

On the other hand, a central bank that is concerned about employment as well as inflation would not act as aggressively: after the inflationary shock hits the economy, such a central bank would tolerate higher inflation temporarily, and would not move interest rates by as much in order to not hurt job creation in the rest of the economy. If the energy price shock is temporary, then its effects will fade away, and the economy will go back to its long-run trend, with less cumulative output and employment loss than in the "strict inflation targeting" case.

By following a "strict inflation targeting" approach, the central bank will induce more volatility in the real economy and employment under adverse shocks, but will keep inflation and inflation expectations under control, which are key to maintaining low long-term interest rates. By following a "flexible inflation targeting" approach, if the shock is temporary, then the output and employment losses will be lower than otherwise, but the risk is that higher inflation expectations become entrenched. If agents perceive the inflation shock to be highly persistent, they will ask for higher wages. This will increase production costs and translate into higher prices, a phenomenon that in central bank jargon is known as "second round effects" or a "price-wage spiral". The problem with the flexible approach is that if the central bank is not aggressive in the early stages and inflation takes off, it might have to be aggressive later on, to engineer a disinflation that may be even more costly in terms of unemployment or lost output.

It is worth noting at this point that in a "strict inflation targeting" regime where the central bank's only objective is inflation, the central bank can react to other variables if this helps in controlling inflation. For instance, let's assume that the euro exchange rate depreciates.

10. See Mishkin (2007a).

11. See Bernanke (2003).

A central bank that wants to keep inflation under 2 percent will surely react to this development by rising interest rates and counter the effect of more expensive imports. This means that to prevent future inflationary pressures, the central bank will appear to react to exchange rate fluctuations, even if there is no target for the exchange rate of the euro. Similarly, if the unemployment rate is perceived as too low, the central bank will raise rates because tight conditions in the labor market will tend to deliver higher wages, and hence higher production costs and increased prices down the road. That reaction does not mean that the central bank targets employment, but rather that it uses information from labor market conditions to anticipate future movements of the inflation rate. However, we want to stress that there is a difference between having a target for a particular macroeconomic indicator (inflation, the exchange rate, real GDP growth rates, or unemployment, just to mention some examples) and monitoring this indicator for its ability as a predictor of inflation.

Therefore, by looking at its mandate at face value, the ECB should behave as a central bank mostly concerned about keeping inflation “close to, but below 2 percent” and letting the unemployment rate rise in order to disinflate the economy if necessary. On the other hand, many ECB critics would rather have a monetary policy regime that takes into account employment losses under adverse inflationary shocks. In the next subsection, we investigate if the ECB follows as a strict inflation targeting central bank, or if it takes a more flexible approach to managing monetary policy¹².

12. In practice, Bernanke (2003) notes that no central bank, despite its rhetoric or the mandate given by law, follows a “strict inflation targeting” approach.

3. Reviewing the record: Is the ECB that hawkish on inflation?

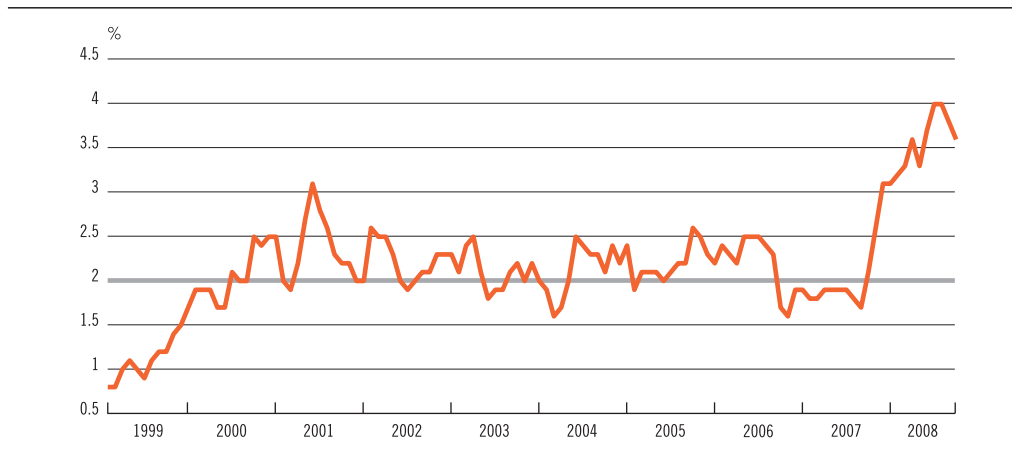
In this section, we examine the track record of the ECB in its almost ten years of existence. We assess to what extent the ECB has been able to achieve its primary objective –price stability– and compare the ECB’s behavior with conventional measures of the stance of monetary policy.

At a hearing before the Committee on Economic and Monetary Affairs of the European Parliament in Brussels on November 23, 2000, former ECB president Duisenberg defined “failure” as follows¹³:

“So at what point would I say that we can talk about a failure? That would be if, over the medium term future, we were to have domestic inflation of our own making, not caused by external factors, but of our own making, which would over time, continue to exceed the definition of, at maximum, 2% inflation. Then we would be justified in speaking of a failure, but this is a hypothetical situation which I do not envisage happening at all.”

In Figure 3.1, we present the year-on-year inflation rate of the HICP between January 1999 and June 2008. The inflation rate in the euro area has been higher than the 2 percent upper target for important periods of time. The average inflation rate has been 2.18 percent in this period, and the inflation rate has been below the 2 percent target only in 42 out of 118 months in our sample period: therefore, the ECB has only been successful in achieving its target about 36 percent of the time.

FIGURE 3.1 HICP inflation rate of the euro area



SOURCE: Eurostat.

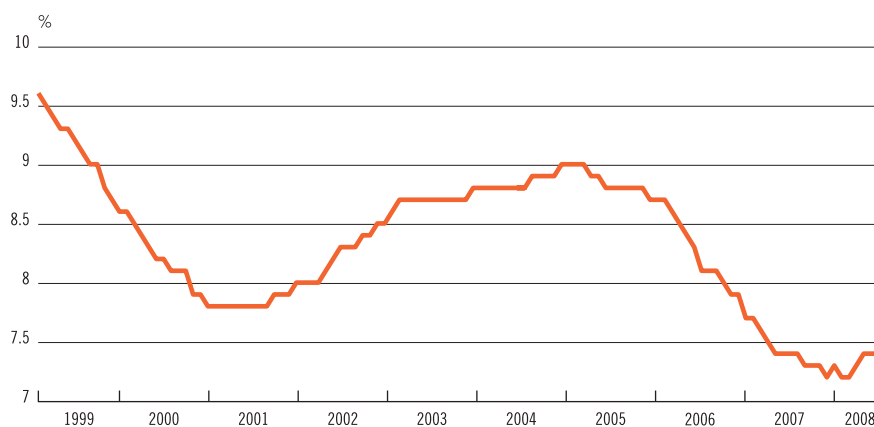
Actually, as Galí *et al.* (2004) suggest, we should not include 1999 in our sample period, since, given the lags in the transmission of monetary policy, in that year inflation was the outcome of the policies conducted by each of the national central banks in 1997-1998 to

13. See http://www.ecb.int/press/key/date/2000/html/sp001123_1.en.html.

fulfill the Maastricht criteria of inflation. If we take the year 1999 out of the sample then we obtain that the average inflation rate in the last eight years and a half has been 2.3 percent and that the ECB has achieved its target about 29 percent of the time¹⁴.

To be fair, however, one can also argue that the ECB has done a good job in turbulent times, keeping inflation under control (even if it has been above its target) and helping the eurozone cope with important shocks that have hit the world economy in the last decade: the dotcom bubble burst, Y2K, the September 11 terrorist attacks in the United States, large increases in energy prices, and the recent financial crisis that started in the summer of 2007. In addition, the unemployment rate has had a favorable trend (Figure 3.2), and despite its increase during the 2003-2005 slowdown period, it is now two percentage points lower than when the euro was launched. Of course, the decline in the unemployment rate is not attributable to monetary policy only: cyclical factors have been important and some countries have undertaken labor market reforms, but it is clear from Figure 3.2 that the ECB is not to blame for unreasonable increases in the unemployment rate to keep inflation low.

FIGURE 3.2 Unemployment rate in the euro area



SOURCE: Eurostat.

Many of the ECB critics, including Galí *et al.* (2004) and De Grauwe (2006) suggest that the ECB created for itself the credibility problem, by setting an upper bound for the inflation rate (instead of a midpoint within a range). Also, the ECB has pursued a tough rhetoric on inflation that has not always been transmitted into a tighter monetary policy. Based on the evidence presented in Figure 3.1, the ECB appears to behave “as if” its inflation target was in the 1-3 percent range. Such behavior is in accord with best international practices: the UK, Sweden, Canada, Australia and New Zealand, just to mention a few inflation-targeting central banks, have a similar range for their inflation rate targets¹⁵. Therefore, if the target for the euro zone were to be realigned to the 1-3

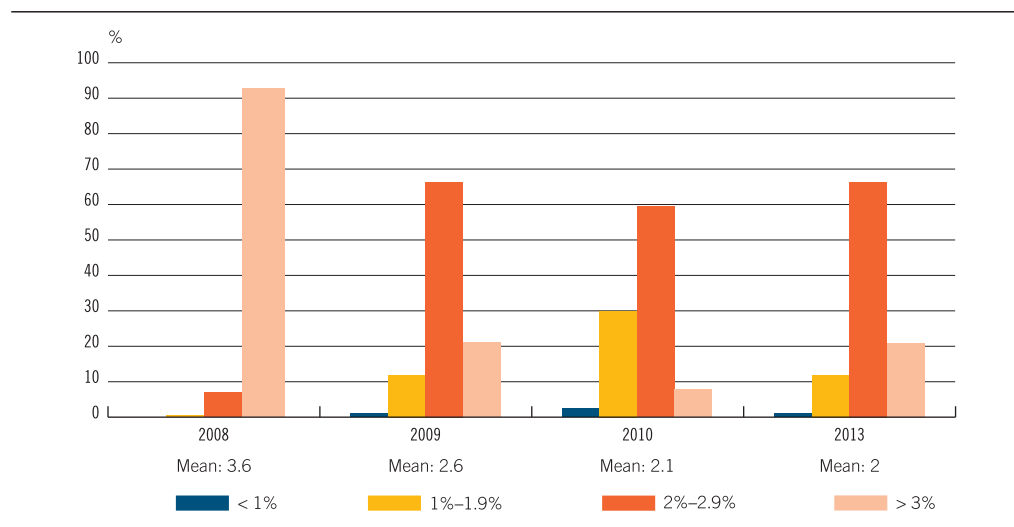
14. Actually, the ECB, the Survey of Professional Forecasters and the survey conducted by Consensus Forecasts expect inflation to be above target for 2008 and early 2009. If these materialize, the track record of the ECB could look much worse by the end of 2009.

15. See IMF (2006).

percent range, the ECB would be able to fulfill its mandate, and avoid having to explain why it keeps missing its target most of the time.

The credibility problem is already evident in the Survey of Professional Forecasters that the ECB conducts every quarter¹⁶. Its latest release shows that due to the effect of high energy prices, most forecasters expect inflation to be above the 2 percent target in 2008 and 2009 (Figure 3.3). Even more interestingly, from a medium-term perspective, market participants expect the ECB to behave “as if” the mid-point, and not the upper bound of the inflation target was 2 percent. In fact, by 2013, 57 percent of market participants who answered the survey expect inflation to be above the 2 percent target. Out of these, 20 percent expect inflation to be above 2.5 percent. By contrast, in the 2001 Q4 survey, 39 percent of market participants expected inflation to be above 2 percent 5 years later. Despite the tough rhetoric, the ECB has not been able to establish a strong reputation as an inflation targeter. The market appears to have learnt from the ECB’s actions (and the inflation outcome) what the implicit target is.

FIGURE 3.3 Survey of Professional Forecasters, Q3 2008



SOURCE: ECB.

So far, we have presented some evidence on the behavior of inflation, inflation expectations and unemployment. In order to study what has been the stance of monetary policy since the launch of the euro, we study the behavior of the ECB vis-à-vis well known yardsticks in monetary policy circles. Since the work of Taylor (1993), it has become quite common to set a benchmark for the policy nominal interest rate for an economy as follows:

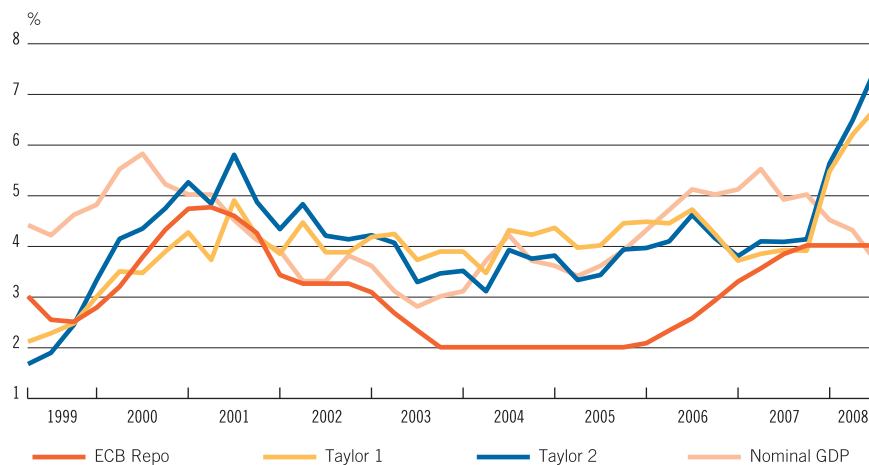
$$r_t = \bar{r} + \bar{\pi} + \phi_1(\pi_t - \bar{\pi}) + \phi_2(y_t - y_t^n) \quad (1)$$

16. <http://www.ecb.eu/stats/prices/indic/forecast/html/index.en.html>.

The previous expression is what is typically referred to as the “Taylor rule”. It states that the nominal interest rate (r_t) should be set as a function of the steady-state real interest rate of the economy (\bar{r}), the target inflation rate ($\bar{\pi}$), the deviation of actual inflation from its target ($\pi_t - \bar{\pi}$), and the percent deviation of actual (log) real GDP (y_t) with respect to its (log) potential value (y_t^p). Hence, the expression ($y_t - y_t^p$) is what is commonly known as the output gap. Taylor showed that this rule explains the behavior of the Federal Funds rate in the United States for the 1987-1992 period, using the following parameter values: the real interest rate and the inflation target are 2 percent, the coefficients are $\phi_1 = 1.5$ and $\phi_2 = 0.5$, and the potential growth rate of the economy is 2.2 percent¹⁷.

In Figure 3.4 we plot the ECB repo rate, together with two versions of the Taylor rule, where we set $\bar{r} = 2.5$ percent and $\bar{\pi} = 2$ percent. First, we assume that the ECB only reacts to HICP inflation and sets $\phi_1 = 1.5$, and $\phi_2 = 0$ (“Taylor 1”). We can distinguish two clear periods: In the 1999-2001 period, the ECB followed the prescriptions of a Taylor rule that only reacted to inflation. Since 2002, the Taylor rule has been giving prescriptions for the level of the repo rate of around 4 percent, while the ECB kept the rate at much lower values, specially between mid-2003 and mid-2005, when it kept the repo rate at 2 percent. At the beginning of 2007 there was some convergence between the Taylor rule and the repo rate, as inflation was declining and the ECB started to slowly bring the repo rate to a value close to neutral (4.5 percent). However, with the current pick-up of inflation due to energy prices, and the financial crisis that started in the summer of 2007, the gap between the Taylor rule prescriptions and the repo rate has increased again.

FIGURE 3.4 ECB repo rate, Taylor rules, and nominal GDP growth



SOURCE: Eurostat and author's calculations.

17. Clarida, Galí and Gertler (1998, 2000) estimated these rules for the United States and other advanced economies, starting a long literature on this issue.

The conclusions are quite similar when we include the output gap in the Taylor rule¹⁸. In this case, we keep the value of $\phi_1 = 1.5$, and in addition set $\phi_2 = 0.5$ (“Taylor 2”). Taking into account the output gap suggests that the target rate should have been lower in the 2003-2005 period by as much as 50 basis points, bringing it closer to the actual policy rate of the ECB. Hence, it appears that in that period, the ECB was attaching some weight to the output gap, which was below potential. If we allowed for a Taylor rule to react asymmetrically to the output gap (i.e. when it is negative only), and with a larger weight than 0.5 in the reaction function, we would be able to better explain the behavior of the ECB during the cyclical downturn of 2003-2005¹⁹.

The last reference indicator that we use is to compare nominal GDP growth and the repo rate. In steady-state, the two indicators should be similar if the real rate of interest is roughly equal to the real GDP growth rate. In this light, nominal interest rates below nominal GDP growth are typically associated with loose monetary policy, and conversely, a nominal interest rate is higher than nominal GDP growth can be associated with tight monetary policy. As we can see, the repo rate has been below the nominal GDP growth rate between 1999-2000 and 2002-2007. Interestingly, this last criterion would suggest that currently, the stance of monetary policy can be seen as neutral. But it is important to keep in mind that the ECB targets HICP inflation, which is running at a much higher rate than GDP deflator inflation currently.

Regarding the recent pick up of inflation, which peaked at 4 percent in July 2008 and started declining afterwards, it is convenient to remember that the magnitude of the oil price shocks has been quite large. Oil prices have increased about fivefold in the last six years, and energy products make up about 9 percent of the HICP. This has led to an average inflation rate in the energy component of about 9 percent since 2005, which makes a contribution of 1.8 percent to HICP inflation. Therefore, in order to achieve the inflation target, the ECB would have to engineer close-to-zero rates of inflation in the rest of the economy to counter the effect of higher energy prices. Not reacting to inflationary shocks that are perceived to be temporary, while inflation expectations are well anchored, is not a bad strategy in itself. But this strategy does conflict with the ECB’s stated mandate if inflation remains above target for a long time. In addition, as the Taylor rule with an output gap shows, it appears that real activity indicators have been taken into account in the ECB’s interest rate decisions, specially in economic downturns.

The conclusion of this section is that the monetary policy stance of the ECB cannot be considered as tight or hawkish over the last ten years. The ECB has missed its stated target of inflation right below 2 percent most of the time and it is likely to keep doing so, which appears to have undermined its credibility in the long run. Given available benchmarks for the level of nominal interest rates in the euro area, the ECB has kept its policy rate on the low side. A more hawkish central bank would have kept the nominal interest rates higher and closer to the prescriptions of the Taylor rule, in order to bring the inflation rate to the “below 2 percent” range. But this is not what the track record of the ECB shows during its first ten years of existence.

18. To estimate the output gap we assume that potential output grows with a linear trend of 2 percent annual rate.

19. See Rabanal (2004), Davig and Leeper (2007), and Dolado, Maria-Dolores, and Ruge-Murcia (2004) for evidence on asymmetric Taylor rules in the United States.

4. Estimating Taylor rules for the ECB

The Taylor rule is a rough guide to monetary policy, that fits a particular period of time of U.S. monetary policy history²⁰. Having examined the ECB's track record in its first ten years of existence, this section focuses on which variables have influenced the ECB's decisions. To that end, we estimate the coefficients of the Taylor rules like the ones we presented in the previous section, with two modifications. First, following the long literature started by Clarida, Galí and Gertler (1998, 2000), we estimate the Taylor rule including one lag of the nominal interest rate, to account for the degree of "interest rate inertia" found in the data. Second, we estimate the Taylor rules with two different proxy variables of real activity: either the output gap or the unemployment rate. Hence, we estimate the following equation:

$$r_t = \rho r_{t-1} + (1 - \rho)(c + \phi_1 \pi_{t-1} + \phi_2 x_{t-1}) \quad (2)$$

where π_t is the year-on-year HICP inflation rate, x_t can be either the output gap or the unemployment rate in the euro area, and ϕ_1 and ϕ_2 denote the central bank's long-run response to movements in π_t and x_t . ρ measures the degree of "monetary policy inertia", that can be explained because the central bank prefers to avoid sharp movements in the policy rate. We use quarterly data. Note that in order to avoid endogeneity issues, we assume that the current interest rate reacts to lagged inflation and real activity indicators, and hence the Taylor rule can be estimated using Ordinary Least Squares (OLS). For the pre-1999 period, we estimate the Taylor rule using the synthetic dataset constructed by the ECB, known as the Area Wide Model (AWM) data set²¹. Then we compare the estimates for the pre-1999 and post-1999 periods.

Table 4.1 Estimates of the Taylor rule

	$x_t = \text{OUTPUT GAP}$		$x_t = \text{UNEMPLOYMENT}$	
	1990-1998	1999-2008	1990-1998	1999-2008
ϕ_1	1.31* (3.31)	-0.19 (-0.95)	1.67* (3.52)	-1.26 (-1.34)
ϕ_2	0.92* (3.68)	0.85* (7.99)	-1.14* (-2.43)	-1.80* (-2.28)
c	3.01* (2.73)	3.35* (7.64)	13.34* (2.31)	21.11* (2.56)
ρ	0.73* (10.75)	0.56* (4.86)	0.75* (8.72)	0.85* (11.44)

T-statistics in parenthesis. * denotes significance at 5 percent.

SOURCE: Autor's calculations.

First, we comment on the results when we use the output gap as an indicator of real activity. Table 4.1 shows that the main difference across samples is the large drop in the

20. In a well-known speech that called for a "risk management" approach to monetary policy, former Fed Chairman Greenspan (2003) suggested that linear models are only useful during "normal" times. Hence, a linear rule like the Taylor rule has its limitations when the economy faces large shocks or is threatened by "low probability-large loss" events, like a financial meltdown.

21. See Fagan, Henry, and Mestre (2001).

inflation coefficient. In the 1990's, and up to the creation of the ECB, monetary policy in Europe reacted to inflation fluctuations with a coefficient larger than one: the estimated ϕ_1 coefficient is 1.31. This suggests that, in those years, nominal interest rates would increase by more than one-to-one with inflation, a policy typically labelled as “leaning against the wind” as it implies a procyclical real interest rate that naturally stabilizes the business cycle²². That is, when inflation increases, the real interest rate increases, slowing down aggregate demand, and thereby reducing price pressures. Monetary policy in the countries that would eventually belong to the euro area also paid attention to the output gap: the estimated ϕ_2 coefficient is 0.92. Policy was conducted with a high degree of interest rate inertia: the lagged coefficient enters the equation with an estimated value for ρ of 0.73. These results are similar to the monetary policy rule that Clarida, Galí and Gertler (1998) estimated for the Bundesbank for the 1979-1993 period.

What becomes striking is that the coefficient on the reaction of the repo rate to the inflation rate turns negative (the point estimate is -0.19) and is non-significantly different from zero since the ECB took over monetary policy in the euro area. One possible explanation for this change is that the ECB has a very strong reputation as being hawkish on inflation, and hence need not react to inflation fluctuations if these are perceived as short-lived and quantitatively not important enough to warrant a change in the policy rate. As long as inflation expectations remain well anchored, there is no need to react to inflationary shocks with low persistence. On the other hand, in the 1990's, European countries were trying to disinflate and kept interest rates well above inflation rates, explaining an estimated coefficient larger than one.

The same qualitative results are obtained when we introduce the unemployment rate instead of the output gap in the Taylor rule. Under this specification, in the 1990's monetary policy in the euro area reacted to inflation with a coefficient of 1.67. The coefficient on the unemployment rate is negative and significant as expected: an increase of the unemployment rate leads to a decline in nominal interest rates, stabilizing the business cycle. As in the previous estimation, the coefficient measuring the reaction on inflation becomes negative (but non-significant), and the coefficient on the reaction to the unemployment rate actually becomes larger in absolute value, from -1.14 to -1.80 , for the post-1999 sample. Therefore, these results suggest that the ECB does take into account real activity indicators and the unemployment rate more than it appears to react to inflation fluctuations.

Up to this point, the evidence suggests that the ECB does not strictly follow its mandate. Rather than keeping inflation in the “below 2 percent” range, it has allowed inflation to remain above 2 percent most of the time, even in periods when oil and food prices were not an issue. Also, the ECB reacts less to inflation than its national central bank predecessors of the euro area in the 1990's, while keeping the same focus on real activity/unemployment indicators²³. If the public perceives that the target inflation rate of the central bank is higher than 2 percent, as it appears to be the case from the Survey of Professional Forecasters of the ECB, a tougher anti-inflationary stance in the future will be necessary.

22. See Clarida, Galí, and Gertler (1999).

23. The same conclusion is reached by Galí *et al.* (2004) who suggest that the ECB reacts to an index of economic sentiment of the euro area. See also Gerlach (2007).

5. How “optimal” is the behavior of the ECB?

In this section, we examine the behavior of the ECB using a macroeconomic model that incorporates product and labor market rigidities like the ones European economies have in place, and hence allows to study the interaction between inflation, unemployment, and monetary policy. We use the recent model developed in Blanchard and Galí (2008), which has three main ingredients:

- Labor markets are characterized by search frictions that give rise to equilibrium unemployment. Firms need to pay a hiring cost, which is increasing with tightness in the labor market, whenever they need to increase the number of workers²⁴.
- Prices are set in a staggered fashion, which allows to study inflation dynamics and the role for monetary policy.
- Real wages are rigid and they do not fully adjust to productivity fluctuations. This creates a trade off between stabilizing inflation and unemployment, and also provides an amplification mechanism of productivity shocks in the model.

As Blanchard and Galí (2008) show, the full set of equilibrium conditions of the model can be reduced to two equations, one describing the inflation-unemployment trade-off and the other describing the monetary policy rule. We refer the interested reader to the original paper for a full derivation of the model, while here we simply explain the main mechanisms. Combining the pricing equations and the hiring decisions of firms, the wage-setting conditions, and the labor supply decisions by households delivers the following relationship between unemployment (u_t) and inflation π_t , in deviations from their steady-state values:

$$\pi_t = \beta E_t \pi_{t+1} + \kappa_0 u_t + \kappa_L u_{t-1} + \kappa_F E_t u_{t+1} - \kappa_a a_t \quad (3)$$

where $\kappa_0 < 0$, $\kappa_L < 0$, $\kappa_F > 0$, and $\kappa_a > 0$, E_t denotes the rational expectations operator with information available up to time t , and a_t denotes the level of labor productivity. $\beta < 1$ is the discount factor. We refer to this equation as the New Keynesian Phillips Curve with unemployment (NKPC-U).

The κ parameters are a function of the structural parameters of the model, which in turn measure:

- The probability of finding and losing a job in a given period,
- the level of unemployment,
- the properties of the cost hiring function,
- the pricing power of firms,
- and the degree of real wage rigidity.

24. By tightness we mean the probability that an unemployed worker becomes employed. An increase in tightness means that there are less unemployed workers, the probability to find a job for the unemployed is higher, and the pool of unemployed workers from which to choose by firms is smaller.

Several comments are in order. First, this equation is a generalization of the “expectations-augmented Phillips Curve” of macroeconomic models of the 1970’s, which related expected changes of inflation with the deviation of unemployment from the natural rate (i.e. by setting $\beta = 1$, and $\kappa_L = \kappa_F = \kappa_a = 0$)²⁵. The reason why past and expected unemployment enter the NKPC-U is because with search frictions in the labor market, firms’ hiring decisions take in intertemporal dimension, since when hiring a new worker they need to anticipate their future labor input needs. Therefore, the labor demand equation, the wage rate, and production costs, which are the main determinant of inflation, also incorporate an intertemporal element. Second, the parameter κ_a is non-zero as long as there is some real wage rigidity in the economy. If real wages are fully flexible, then $\kappa_a = 0$, and the central bank faces no trade-off between stabilizing inflation and unemployment, a situation that Blanchard and Galí (2008) label “Divine Coincidence.” More generally, the variable a_t can be interpreted as a cost-push shock to the economy: for instance, an increase of energy prices can be captured via fluctuations of a_t .

The second equation comes from the central bank solving a standard problem. It seeks to minimize the sum of squared deviations of inflation and unemployment from their steady state values:

$$L_t = \sum_{t=0}^{\infty} \beta^t [(1 - \alpha_u)\pi_t^2 + \alpha_u u_t^2] \quad (4)$$

Note that the parameter α_u , the weight of the quadratic deviations of unemployment from target in the loss function, encompasses all possible regimes of monetary policy. If $\alpha_u = 0$, then the central bank will run a “strict inflation targeting regime” and will seek to stabilize inflation around its target. If $\alpha_u = 1$, then the central bank seeks to stabilize unemployment around its natural level. Finally, any value for α_u between zero and one is compatible with a dual mandate or a “flexible inflation targeting regime”²⁶.

In what follows, we perform two exercises. First, we derive the policy frontier (the optimal combinations of the variance of π_t and u_t) when the α_u parameter changes. This will allow us to understand to what extent can the ECB stabilize the business cycle given labor market rigidities in the euro area. Second, we look at the responses of inflation and unemployment to a cost-push shock that rises inflation. In order to focus on the role of labor market rigidities in shaping the inflation-unemployment trade-off, we compare the characteristics of the European and U.S. economies. We start with the same calibration than Blanchard and Galí (2008) for all the parameters of the model. Then, we focus on changing the steady-state unemployment rate and the probability of losing a job, to reflect the differences between the EMU and the U.S. economies. The first calibration, which tries to reflect labor market conditions in the EMU, consists in setting the unemployment rate at 8 percent and

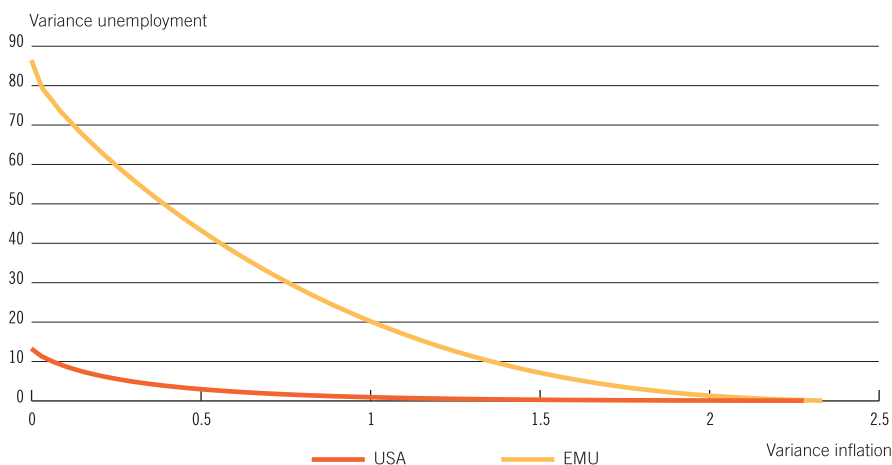
25. However, the mechanisms underlying the NKPC-U and the “expectations-augmented” Phillips Curve are different. For a collection of models using the latter, based on the research of Nobel prize laureates Edmund Phelps and Robert Lucas, see Romer (1996).

26. Note that this formulation for optimal monetary policy abstracts from the credibility problems studied by Barro and Gordon (1983). The central bank understands that it cannot target unemployment below its natural level, and seeks to stabilize fluctuations of either inflation, unemployment, or both, around their steady-state values.

the probability of losing a job in a given quarter of 4 percent²⁷. This calibration reflects a “sclerotic” labor market, in the terminology of Blanchard and Galí (2008). On the other hand, the situation of the labor market in the United States is characterized by a lower unemployment rate of 5 percent, and a probability of losing a job on a given quarter of 12 percent. This last number implies that in the U.S. the labor market is more dynamic, since both the probabilities of entering and exiting unemployment are higher than in the European case.

In Figure 5.1 we derive the policy frontier. First of all, we can see that a more rigid labor market results in a worsening of the trade-off between stabilizing inflation and unemployment: the US policy frontier is always to the left and below the European one. The only place where they coincide is when both countries follow a “strict unemployment targeting rule” ($\alpha_u = 1$). This is the case because by setting $u_t = 0$ at all times, equation (3) implies that inflation depends on the level of the cost-push shock a_t , and the parameters β and κ_a , which remain unchanged across countries because they do not depend on the labor market parameters. Note that as α_u becomes smaller (more focus on stabilizing inflation), the volatility of unemployment increases much more in the European case than in the American one. If both countries were to run a “strict inflation targeting” regime, the variance of unemployment would be about 6.6 times larger in the EMU than in the United States. Therefore, given labor market rigidities, if one country were to adopt a strict inflation targeting regime, that country should be the United States, not the EMU.

FIGURE 5.1 Policy frontiers



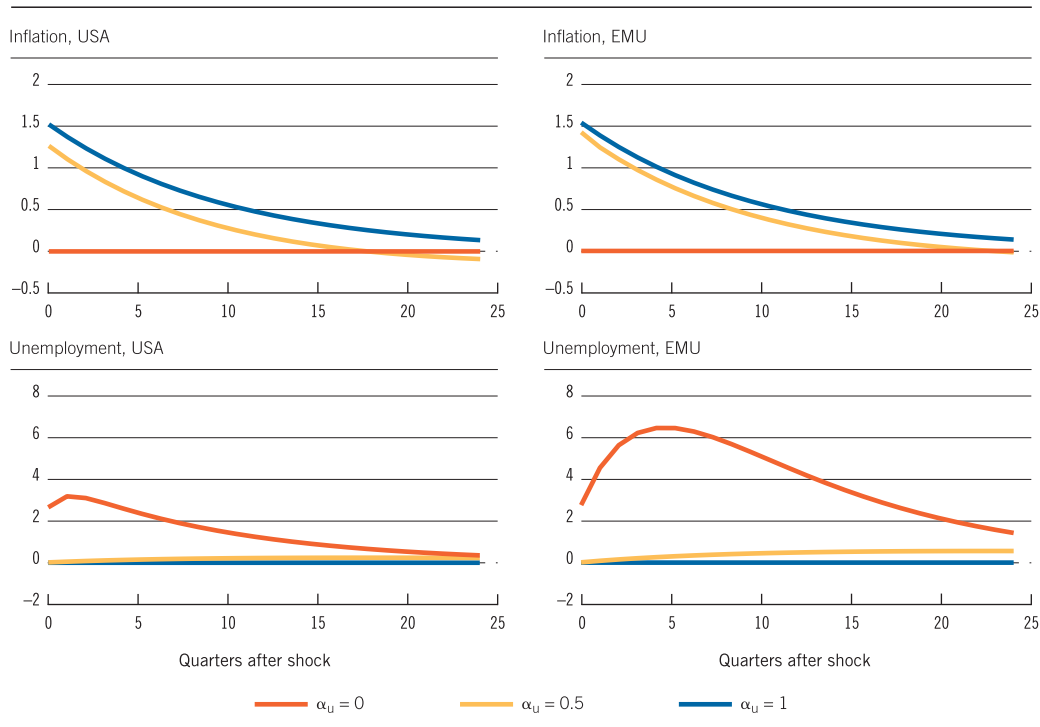
SOURCE: Author's calculations.

Another way to analyze the inflation-unemployment trade-off is to look at the response of both variables under a shock that increases inflation. In Figure 5.2, we plot the responses of both variables in the United States and the euro area under different values of α_u .

27. Blanchard and Galí (2008) calibrate the European unemployment rate to be 10 percent. However, based on the evolution of the unemployment rate in the euro area since 1999 (Figure 3.2) a lower value seems more appropriate.

As α_u moves from one to zero, keeping inflation on target is more costly in the European case: the necessary unemployment increase is much larger than in the United States. Hence, we confirm the previous intuition that, due to labor market rigidities, a strict inflation targeting policy that tries to hit the inflation target at all times is more costly in terms of unemployment in the euro area than in the United States. Therefore, giving the primary mandate of achieving price stability without addressing labor market rigidities first has made the task of the ECB much harder.

FIGURE 5.2 Impulse response to an adverse productivity shock. In percent deviation from steady-state values



SOURCE: Author's calculations.

Finally, we compare the performance of the monetary policy rules that we estimated in a previous section with data from the 1990's, and since the ECB has been in place, with those obtained under solving the optimal monetary policy problem. In Table 5.1 we show the implied variances of unemployment and inflation. The following results stand out. First and foremost, the monetary policy rule followed since the ECB has been in place is inferior to that followed by the national central banks during the 1990's. The volatility of both inflation and unemployment has increased, which suggests that a return to the previous policy, and in particular to implementing a "lean against the wind" policy, would be welfare improving. Second, an optimal monetary policy that assigns a moderate weight to unemployment fluctuations ($\alpha_u = 0.25$) can achieve the same variance of inflation as the 1990's Taylor rule, but reduce the variance of unemployment to less than one half (from 0.042 to 0.016).

Table 5.1 Taylor rule and optimal rules

	INFLATION	UNEMPLOYMENT
Taylor rule 1990's	2.25	0.042
Taylor rule ECB	2.47	0.125
Optimal Policy ($\alpha_u = 0.25$)	2.25	0.016

SOURCE: Author's calculations.

The main lesson from this section, after having used a dynamic general equilibrium model that incorporates labor market and nominal rigidities, is that the inflation-output trade-off is larger in the EMU than in the United States. A policy of strict inflation targeting has negative consequences in terms of unemployment volatility in the euro area. Given labor market rigidities in place, it makes sense for the ECB to respond to conditions in the labor market when setting monetary policy. However, the ECB should also increase its focus on bringing inflation back to target, as it was the case of the national central banks of the EMU during the 1990's, before the euro was launched. A tougher anti-inflationary stance of monetary policy not only will increase the credibility of the ECB and align long-term expectations of inflation with the "below 2 percent" target, but will also bring more macroeconomic stability to the euro area.

6. Concluding remarks

In this paper, we have examined what has been the behavior of the ECB during its first ten years of existence. We have reviewed the ECB's legal mandate, and we have studied, using both informal evidence and regression methods, how the ECB reacts to economic conditions in the euro area. We have found that despite its legal mandate that assigns the ECB a primary objective of keeping inflation below two percent, the ECB has missed this target most of the time, and appears to react to real activity indicators (output gap and the unemployment rate) when setting the policy rate. Therefore, it is difficult to conclude that the ECB has kept a tight stance of monetary policy, *since* a more hawkish policy that kept inflation under the 2 percent threshold most of the time would have most probably reduced growth and increased unemployment in the euro area. Finally, we have also studied what is the optimal monetary policy rule in a model with labor and product market rigidities, and we have concluded that european politicians made the task of the ECB much harder by giving it a "strict inflation targeting mandate" before addressing labor market rigidities first.

The ECB has performed a good job while dealing with large shocks that have hit the euro area and the world economy, in terms of providing macroeconomic stability and avoiding "low probability-large loss" events. Since 1999, the unemployment rate has declined from 9.5 percent to 7.5 percent. While this has not all been due to monetary policy, it is quite obvious that the ECB cannot be blamed for an unreasonably high unemployment rate to keep inflation under control. Even if the ECB has missed its inflation target most of the time, an average inflation rate of 2.25 percent between 2000-2008 is not a bad outcome, taking into account the large increases of energy and food prices in the last five years. Therefore, and following international best practices, the ECB should readjust its definition of price stability to the 1-3 percent range. This adjustment would allow the ECB to better deliver on its primary objective, would better align what the ECB's mandate is with what it actually does, and would also align the ECB's mandate with what the markets expect inflation to be²⁸.

Also, as we have shown from a theoretical perspective, in a country with important labor market rigidities, as is the case of the EMU with respect to the US, it is better to run monetary policy with a dual mandate of stabilizing inflation and unemployment rather than with a single mandate of just focusing on inflation. Given this theoretical result, and the fact that the ECB reacts to real activity indicators in the euro area, it makes sense to redefine the ECB's mandate in terms of price stability with maximum sustainable employment. Moving to such a dual mandate does not necessarily lead to the credibility problems highlighted by Barro and Gordon 25 years ago, and that the architects of the EMU were trying to avoid when defining the primary objective. Instead, the current situation of tough inflation rhetoric without delivery causes more credibility problems than the move we are suggesting. However, while changing the definition of price stability depends upon the ECB only, changing the importance of the objectives in its mandate would require an amendment to the Treaty of the European Union. Since this is not an easy task, it is likely that we see a difference between what the ECB should do *de jure* and what it does *de facto* for quite some time.

28. Of course, expectations are endogenous and are based on the ECB's past actions. 57 percent of market participants expect inflation to be above 2 percent in 2013 because of the track record of the ECB until now.

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Resum executiu

En temps de desacceleració econòmica, els agents socials solen reclamar als bancs centrals que deixin de banda l'objectiu d'inflació i reactivin l'economia mitjançant una reducció dels tipus d'interès. En el cas de la Unió Econòmica i Monetària (UEM) europea, les veus crítiques amb el Banc Central Europeu (BCE) suggereixen que, entre els seus objectius, caldria incloure la maximització del nivell d'ocupació, la qual cosa permetria al BCE abaixar els tipus fins i tot quan la inflació estigués en valors superiors a l'objectiu del 2%. Aquestes crítiques no són desassenyades: la Reserva Federal nord-americana, per exemple, té un mandat d'estabilitat de preus amb la màxima taxa d'ocupació sostenible. Per tant, és raonable preguntar-se si el BCE hauria de tenir un mandat similar, en lloc de centrar-se, exclusivament, en la inflació com ho requereix l'objectiu primari d'estabilitat de preus.

En aquest treball s'examina el comportament del BCE durant els deu primers anys d'existència. L'objectiu és comparar el mandat legal de l'autoritat monetària europea amb el que el BCE fa a la pràctica i amb el que el BCE hauria de fer, ateses les rigideses als mercats de productes i de treball a les quals s'enfronta. Després de revisar el mandat legal del BCE i de comparar-lo amb el de la Reserva Federal a la secció 2, aquest treball avalua l'eficàcia del BCE a l'hora de complir l'objectiu principal de mantenir la inflació «per sota, però a la vora, del 2% a mitjà termini». Utilitzant una perspectiva de deu anys de dades, la secció 3 mostra que la inflació mitjana a la zona de l'euro ha estat del 2,18% i que la inflació s'ha mantingut per sota del 2% només el 30% del temps. A més a més, es compara el tipus de referència del BCE amb diferents versions de la «regla de Taylor», que, en els debats de política monetària, sol ser utilitzada com una aproximació a allò que hauria de fer un banc central. La conclusió que s'obté d'aquests exercicis és la mateixa: el BCE ha mantingut una política monetària relativament expansiva i ha sacri-

ficat l'objectiu d'inflació per incrementar el creixement econòmic i la creació d'ocupació, i no el contrari.

Posteriorment, a la secció 4, es passa a examinar des d'un punt de vista economètric el comportament del BCE durant els deu últims anys. Per això s'estimen els coeficients d'una regla de política monetària que respon a la inflació i a un indicador d'activitat econòmica (la taxa d'atur i la bretxa del producte, o *output gap*) i es comparen els resultats en el període a partir del qual el BCE va començar a controlar la política monetària (des del 1999) amb el comportament dels bancs centrals nacionals de la zona de l'euro durant la dècada dels noranta. Atesa la retòrica oficial del BCE, el resultat obtingut pot semblar sorprenent: durant els deu últims anys, el BCE ha reaccionat a fluctuacions dels indicadors d'activitat, però no a les fluctuacions de la inflació. D'altra banda, els bancs centrals de la zona de l'euro han reaccionat a les dues variables durant els anys noranta. Per tant, no sembla que les crítiques que suggereixen que el BCE no para prou esment als indicadors d'activitat real, i en concret a la taxa d'atur a la zona de l'euro, tinguin una base empírica sòlida.

Per entendre els efectes de la política monetària i les disjuntives a les quals s'enfronta el BCE per estabilitzar la inflació i la taxa d'atur a la zona de l'euro, la secció 5 utilitza un model macroeconòmic de fluctuacions econòmiques basat en l'estudi de Blanchard i Galí (2008), que inclou rigideses als mercats de productes i de treball. La principal conclusió és que, si el banc central s'enfronta a un mercat laboral poc flexible, com és el cas de l'europeu, una política monetària amb un doble mandat d'inflació i ocupació és preferible a un mandat únic d'estabilitat de preus.

Finalment, la secció 6 discuteix dues recomanacions per reformar el mandat del BCE. Una de les propostes consistiria a adoptar un objec-

tiu central d'inflació del 2% amb una banda de fluctuació de l'1%, pràctica habitual en altres països industrialitzats amb objectius d'inflació. Això atorgaria més flexibilitat a l'hora de gestionar la política monetària, en especial en un context d'incrementos de preus de les primeres matèries davant el qual el BCE no pot fer res directament. A més a més, en tractar-se d'un objectiu més fàcil de complir que l'actual, també seria més creïble. El cost d'aquest canvi seria

nul, ja que, de fet, la inflació ja fluctua entre l'1% i el 3% la majoria del temps. En segon lloc, els resultats empírics i teòrics d'aquest treball suggereixen que el BCE podria optar obertament per un doble mandat d'estabilitat de preus amb màxima ocupació sostenible. Les dues recomanacions representarien passos per minimitzar les discrepàncies entre les accions del BCE i el seu mandat, la qual cosa comportaria més credibilitat.

Resumen ejecutivo

En tiempos de desaceleración económica, los agentes sociales suelen reclamar a los bancos centrales que dejen de lado el objetivo de inflación y reactiven la economía mediante una rebaja de los tipos de interés. En el caso de la Unión Económica y Monetaria (UEM) europea, voces críticas con el Banco Central Europeo (BCE) sugieren que entre sus objetivos se debería incluir la maximización del nivel de empleo, lo que permitiría al BCE bajar tipos aun cuando la inflación estuviera en valores superiores al objetivo del 2%. Dichas críticas no son descabelladas: la Reserva Federal estadounidense, por ejemplo, tiene un mandato de estabilidad de precios con la máxima tasa de empleo sostenible. Por tanto, es razonable preguntarse si el BCE debería tener un mandato similar en lugar de centrarse exclusivamente en la inflación como requiere su objetivo primario de estabilidad de precios.

En este trabajo se examina el comportamiento del BCE durante sus primeros diez años de existencia. El objetivo es comparar el mandato legal de la autoridad monetaria europea con lo que el BCE hace en la práctica y con lo que el BCE debería hacer, dadas las rigideces en los mercados de productos y de trabajo a las que se enfrenta. Tras revisar el mandato legal del BCE y compararlo con el de la Reserva Federal en la sección 2, este trabajo evalúa la eficacia del BCE en el cumplimiento de su objetivo principal de mantener la inflación «por debajo, pero cerca, del 2% sobre el medio plazo». Utilizando una perspectiva de diez años de datos, la sección 3 muestra que la inflación media en la zona del euro ha sido del 2,18%, y que la inflación se ha mantenido por debajo del 2% sólo el 30% del tiempo. Además, se compara el tipo de referencia del BCE con distintas versiones de la «regla de Taylor», que se suele utilizar en los debates de política monetaria como una aproximación a lo que un banco central debería hacer. La conclusión que se obtiene de estos ejercicios es la misma: el BCE ha mantenido una política monetaria relativamente expansiva, y ha sacri-

ficado su objetivo de inflación en aras de un mayor crecimiento económico y creación de empleo, y no a la inversa.

Posteriormente, en la sección 4 se pasa a examinar desde un punto de vista econométrico el comportamiento del BCE durante los últimos diez años. Para ello, se estiman los coeficientes de una regla de política monetaria que responde a la inflación y a un indicador de actividad económica (la tasa de desempleo y la brecha del producto, o *output gap*), y se comparan los resultados en el período a partir del cual el BCE tomó las riendas de la política monetaria (a partir de 1999) con el comportamiento de los bancos centrales nacionales de la zona del euro durante la década de los noventa. El resultado que se obtiene puede parecer sorprendente dada la retórica oficial del BCE: durante los últimos diez años, el BCE reacciona a fluctuaciones de los indicadores de actividad, pero no a fluctuaciones de la inflación. Por otro lado, los bancos centrales de la zona del euro reaccionaban a ambas variables durante los años noventa. Por tanto, las críticas que sugieren que el BCE no presta suficiente atención a indicadores de actividad real, y en concreto a la tasa de paro en la zona del euro, no parecen tener una base empírica sólida.

Para entender los efectos de la política monetaria y las disyuntivas a las que se enfrenta el BCE para estabilizar la inflación y la tasa de paro en la zona del euro, la sección 5 utiliza un modelo macroeconómico de fluctuaciones económicas que incluye rigideces en los mercados de productos y de trabajo, basado en el trabajo de Blanchard y Galí (2008). La principal conclusión es que si el banco central se enfrenta a un mercado laboral poco flexible, como es el caso europeo, una política monetaria con un doble mandato de inflación y empleo es preferible a un mandato único de estabilidad de precios.

Por último, la sección 6 discute dos recomendaciones para reformar el mandato del BCE.

Una de las propuestas consistiría en adoptar un objetivo central de inflación del 2% con una banda de fluctuación de un 1%, lo que es práctica habitual en otros países industrializados con objetivos de inflación. Ello otorgaría más flexibilidad a la hora de gestionar la política monetaria, en especial en un contexto de incrementos de precios de las materias primas ante los que el BCE no puede hacer nada directamente. Además, al ser un objetivo más fácil de cumplir que el actual, también sería más

creíble. El coste de este cambio sería nulo, pues la inflación ya fluctúa de hecho entre el 1% y el 3% la mayoría del tiempo. En segundo lugar, los resultados empíricos y teóricos de este trabajo sugieren que el BCE podría optar abiertamente por un doble mandato de estabilidad de precios con máximo empleo sostenible. Las dos recomendaciones representarían pasos para minimizar las discrepancias entre las acciones del BCE y su mandato, lo que redundaría en una mayor credibilidad.

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