

CONFERENCE
40 YEARS OF THE CAMBRIDGE JOURNAL OF
ECONOMICS

McGrath Centre, St. Catherine's College
Cambridge, 12 and 13 July, 2016

**The ECB monetary strategy: from theory to facts ... and
beyond?**

Carlos J. Rodríguez-Fuentes (*)
David Padrón-Marrero

ABSTRACT: This paper aims at offering a critical assessment of the performance of the ECB monetary policy strategy, as well as of the substantial “de facto” changes it has experienced from 2010 onwards, as a consequence of the unforeseen challenges that the Eurozone’s crisis has brought in its implicit conventional monetary model of the “two pillars”. The paper also explores the issue regarding why, despite the important challenges that the Eurozone crisis has brought about for the conduction of the ECB monetary policy, the ECB has not explicitly put forward the need to agree a formal (“de iure”) change in its official monetary strategy, and has preferred instead to amend its non-working original structure by simply introducing the “unconventional” word in its communication policy; the final question this paper aims to raise is whether this “opposition to change” can be interpreted as an example of what John Maynard Keynes already said in the Preface of his *General Theory*: “The difficulties lies, not in the new ideas, but in escaping from the old ones, which ramify ... into every corner of our minds” (Keynes 1936: xxiii).

Address for correspondence:
Departamento de Economía Aplicada y Métodos Cuantitativos
Facultad de Economía, Empresa y Turismo
Universidad de La Laguna (ULL)
Campus de Guajara, 38071
La Laguna (S/C de Tenerife) - España

(*) Corresponding author: cjrodrig@ull.edu.es

1. INTRODUCTION

On 1st June 2016, the European Central Bank (ECB) celebrated its 18 years, and the Eurozone should do that in January 2017. The Eurozone started with eleven countries, in January 1999, and today has almost doubled its members, with 19 European Union (EU) member states taking part.

When the ECB reached its ten years, in 2008, the event was celebrated with the publication of a special edition of its *Monthly Bulletin* (ECB 2008), and also with a formal ceremony to mark the occasion, which took place on 2 June 2008 in Frankfurt am Main (Germany). In that formal ceremony, the President of the ECB, Jean-Claude Trichet, summed up the first ten years of the ECB by simply pointing out that “yearly inflation since 1 January 1999 has been 2,1% on average”, as the strongest evidence one should ever refer to show that the ECB had successfully attained its mandate of preserving price stability. On that occasion, President Trichet also pointed out that “the institutional construction [of the Eurozone] is solid and has proved to be remarkably effective in attaining its goals” (Trichet 2008: 1-2). Eventually, in the celebration of the 18th birthday of the ECB, in June 2018, the President of the ECB will for sure find more difficulties to write his speech along these lines, since in April 2016 inflation in the Eurozone not only hit again the 0,0% bound,¹ but has been continuously below its reference value (the 2%) since February 2013, and below 1% since October 2013.² It is clear, then, that in its 18 birthday, the ECB had very little to celebrate regarding price stability, unless things change dramatically, and soon, since times flies.³

But in his formal speech in 2008, former President Jean-Claude Trichet also dared to point out the major challenges that the ECB and the Eurosystem should have to cope with in the near future, which by that time he summed up as follows:

“As one of the major central banks in the industrialised world, we, like the others, have three challenges to cope with in our monetary policy-making: rapid technological progress, globalisation in all its dimensions, including the transformation of global finance, and population ageing. On top of those three major challenges, the ECB and the Eurosystem have to cope with two other important, self-assigned challenges. The first is the deepening of economic and financial integration at continental level ... The second is enlargement” (Trichet 2008: 3)

¹ The first time this occurred was in April 2015.

² It is also worth noting that the inflation rate was negative from December 2014 to March 2015; and that it fell again into the negative area in September 2015 and February 2016.

³ Presumably, it is only a matter of time that the ECB succeeds in restoring price stability in the Eurozone, for its current President has recently declared that “as inflation is ultimately a monetary phenomenon, a committed central bank can always fulfil its mandate. And that is true independently of the stance of other macroeconomic policies” (Draghi 2006). It is worth remembering that in May 2014, more than two years ago, Mario Draghi asserted this: “we are not resigned to allowing inflation to remain too low for too long”. For sure, President Draghi is right when pointing out that, in the long run, there is a strong correlation between money and nominal income. But he might well be wrong when interpreting correlation as causation, and attributing a determinant (and technical) role to the ECB in achieving the merit for this result. As Dow has suggested, this is typical of the mainstream closed-system approach, which encourages a view of theory and policy as being purely technical matters (Dow 2016: 8).

It is evident that the challenges the ECB faces today have very little to do with those foreseen, eight years ago, by Trichet and many others. Actually, it is remarkable that one of the most controversial issues in the current discussion on the (lack of) performance of the Eurozone, which refers to its incomplete character, was not among those listed by Trichet.

Apart from the surprising, and sustained deviation from the price stability target, the ongoing debate over the performance of the Eurozone refers to the lack of integration in the European banking sector, the conduction of the monetary policy at the zero low bound interest rate, and the conventional debate over the non-optimal character of the Eurozone, which normally concludes by pointing out the need to complete the monetary union with a fiscal pillar, the introduction of further structural reforms and higher standards of fiscal consolidation.

Nevertheless, apart from those issues, it is also evident that the theoretical framework which inspired the institutional design of the Eurozone, which implicitly assumed that once the accession countries had met the convergence criteria set in the Maastricht Treaty, the proper functioning of the Eurozone would almost automatically warrant that nominal stability forever, has proved to be of little help, if not false at all. However, the ongoing current debate over the performance of the Eurozone overlooks this relevant theoretical issue, and instead claims that the Eurozone failure has to be found in its “institutional design”, which does not meet the criteria pointed out by the optimum currency literature. However, we think this view does not permit addressing the relevant issue, for it overlooks the fact that the conditions set by the optimum currency areas literature are mostly appropriate for dispelling the decision regarding the choice of the exchange rate regime (flexible vs fixed exchange rate). However, it is evident that the Eurozone means a lot more than establishing a fixed exchange rate regime; apart from establishing a fixed and irrevocable exchange rate, the Eurozone had also implied the introduction of a monetary policy strategy which is unequivocally rooted in the convention that inflation is a monetary phenomenon, and the setting of an institutional framework that impedes its central bank (the ECB) to have all the powers that any central bank normally has in most developed economies (Bibow 2015: 46).

This paper aims at widening the ongoing discussion over the performance of the Eurozone and the ECB monetary strategy by including not only those aspects relative to the lack of banking integration in Europe, but also the necessity to conduct a profound debate over the implicit economic model and its corresponding theoretical assumptions that delineate the real functioning of the ECB. Our standpoint is that the institutional changes the Eurozone requires have to be also with the underlying theoretical framework that inspires ECB’s monetary strategy, and not only with those relative to the fulfilment of the assumptions of an optimal currency union. Our paper is motivated, to some extent, by the controversy and contest originated by ECB unconventional monetary policy. With the irruption of the international crisis, as may other central banks did much earlier, the ECB had to make use of its un-conventional monetary policy tools. Despite the favourable assessment made by the ECB⁴, and the evident and

⁴ In 2015, Vítor Constâncio, Vice-President of the ECB, pointed out that the unconventional monetary policy introduced by the ECB from 2014 had contributed to (i) the reduction in the lending

obvious fact that the ECB was simply replicating late, and with little conviction (Bibow 2015: 97) the course of action that (long before) other central banks had already undertaken with success, the ECB recourse to the monetary heterodoxy has been subject to great criticism among the guardians of the monetary orthodoxy in Europe. Although criticism in economic matters should always be welcome, unless one thinks Economics is an “exact” science, in this case criticism on ECB’s unconventional monetary policy has been driven by two misleading assumptions. The first assumption has been that these measures will end by producing an inflation spiral in the near future. The second one was that these measures were illegal. Let’s put aside the first argument, which refers to the inflationary character of the unconventional monetary policy actions taken by the ECB, and concentrate our attention in the second one for its relevance for the argument we put forward in our paper. It is rather disconcerting seeing those who have always considered central bank independence as a sacred principle, a sort of prior and necessary condition for the proper technical conduction of monetary policy and the attainment of price stability, criticizing an independent central bank when it takes action to face economic turmoil. But this criticism is also disconcerting from the very perspective of economic theory, since the critic seems to overlook not only the fact that unconventional monetary measures have been effective⁵, but also that, as common sense and open minded people would suggest, the economic systems is constantly evolving, so it should be rather misleading trying to understand economic change from the very same position; in this case, the telling attributed to Keynes might well apply: “when the facts change, I change my mind. What do you do, ECB?”.

It seems obvious, today, that the international crisis first, and the Eurozone’s crisis afterwards, not only radically changed the economic scenario, but have also questioned the validity of some economic principles that had been taken for granted so far. Some of these principles are related to the functioning of the Eurozone as well as the single monetary policy. These changes made ineffective the conventional monetary tools, so the ECB had no alternative but to explore the unconventional way. Today, the ECB acknowledges that its package of unconventional monetary measures has been useful and effective to cope with the Eurozone’s economic challenges. Why, then, are there still so many claiming that the ECB has gone too far? Why, despite the important challenges that the Eurozone crisis has brought about for the conduction of the single monetary policy, the ECB has not yet explicitly put forward the need for a formal (“de iure”) revision of its monetary policy strategy, and instead prefers to keep calling “unconventional” the monetary means that really work, at the time it keeps its fingers crossed hoping its conventional monetary framework is soon back to work? Why is it taking so long in Europe to accept that, maybe, the conventional monetary model worked once ... in the near past, but things have now changed? John Maynard Keynes warned us about this kind of situations in the Preface of his General Theory, where he wrote this: “The difficulty lies, not in the new ideas, but

rates for loans to private sector, (ii) an improvement in the credit conditions for loans, (iii) and the reversion of the expectations on inflation trends (deflation) in the future (Constâncio 2015).

⁵ Recently, in his speech at the Annual Congress of the European Economic Congress, the Vice-President of the ECB concluded that “our non-standard measures have successfully improved financial and credit conditions in the euro area and contributed to supporting the normalisation of price stability, as well ongoing economic recovery (Constâncio 2015).

in escaping from the old ones, which ramify ... into every corner of our minds". (Keynes 1936: xxiii).⁶

The paper is structured in two main sections, apart from this introduction and the conclusions. The second section concentrates on the review of the components of the ECB monetary policy strategy, including its underlying assumptions, and the performance of the inflation stability target goal since 1999. The third section concentrates on studying the response of the ECB interest rate policy instrument to the main economic principles that delineate its monetary strategy, particularly inflation, economic growth and monetary aggregate developments. Finally, the conclusion section sums up our main findings regarding the performance of the ECB monetary policy strategy and also points out some of the many other new challenges the ECB should be already addressing.

2. A CRITICAL ASSESSMENT OF THE ELEMENTS OF THE ECB MONETARY POLICY STRATEGY

The ECB monetary strategy comprises two⁷ main elements: a concise definition of its target, which is the attainment of price stability, and a rather flexible (or more ambiguous, since there is no reference to any formal model or rule) information-processing framework which, supposedly, the ECB employs to translate relevant information into monetary policy decisions, which is known as the "two pillar framework" of the ECB monetary strategy.

The ECB monetary strategy has been further explained as follows:

"The ECB monetary strategy consists of an "information-processing framework" that includes not only that framework, but also 'the procedures that the central bank uses to translate relevant information into monetary policy decisions' ... and [as such] "cannot be expressed in a simple mathematical function" (Issing *et al.* 2001: 2-5)

The two aforementioned elements of the monetary strategy are complemented with a third one, the central bank independence principle. Although it seems to be completely missing in the public debate, it is worth remembering, for a better understanding of the current functioning of the Eurozone, that the central bank independence issue deserved a great deal of attention before the start of the Eurozone, in 1999. Ever since we were continuously reminded that this was a prerequisite for the ECB to achieve its primary goal (price stability), since only an independent ECB (it was argued) could conduct the single monetary policy without any political interference. This strong conviction explains why the central bank independence principle was also one of the formal requirements established in the convergence criteria for the access to the Eurozone. However, as it will be

⁶ Unless otherwise indicated, the page reference for the Keynes' works mentioned in the paper are from his Collected Writings, published by the Royal Economic Society.

⁷ When the ECB finally published the details [the broader lines had been announced by the ECB Governing Council in a press release in 13 October, 1998] of its monetary strategy, in January 1999, it stated that its strategy consisted of three main elements (ECB 1999: 39). The three elements mentioned by the ECB are equivalent to the two we consider, however, as we have considered the two pillars and one single element, not two.

suggested later on in section 2.2, this sort of sacred principle (at least for its proponents) has been constantly violated in the last years and, which is more paradoxical, the infringement of the principle has been made in the name of monetary policy orthodoxy.

The remaining part of this section concentrates on analysing the performance of these three elements of the ECM monetary policy strategy: the price stability definition, the two pillars and the central bank independence principle.

2.1. Price stability

The Maastricht Treaty not only assigned to the ECB the full responsibility for the single monetary policy, but also stated that its primary objective was the maintenance of price stability. The price stability objective was afterwards given a precise figure at the ECB's Governing Council meeting in 1998, an inflation rate below the 2%, which was later replaced (in year 2003) for "an inflation rate below, but close to, 2%" as a way "to maintain a sufficient safety margin to guard against the risks of deflation" (ECB 2003: 79). Therefore, the official definition for the price stability objective is as follows:

"The primary goal of the European Central Bank (ECB) monetary policy is to maintain price stability, whereby price stability is understood as an inflation rate below, but close⁸ to, 2% over the medium term." (ECB 2003)

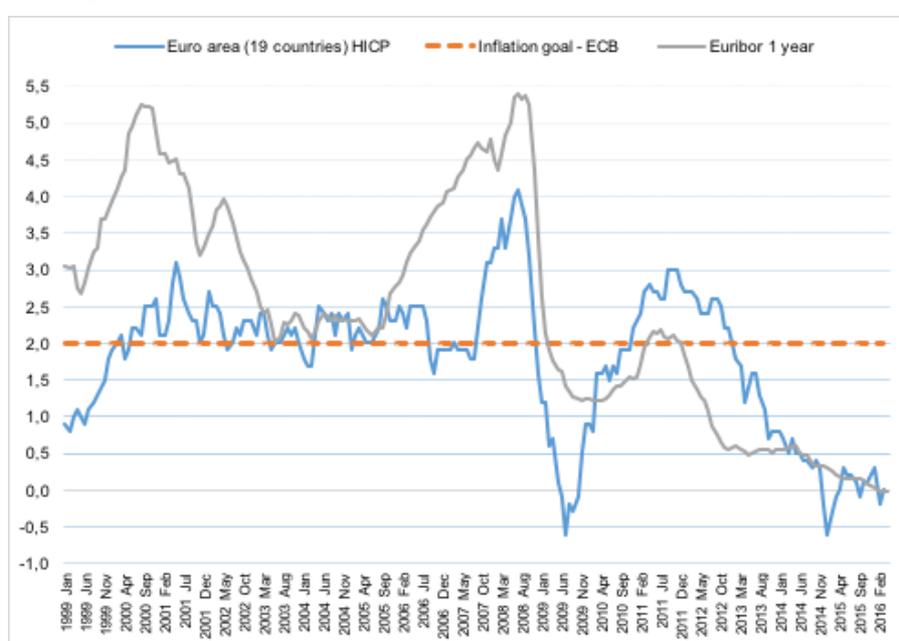
Although the Treaty also declared that "without prejudice to this primary objective [price stability], monetary policy shall support the general economic policies of the Community monetary policy", this statement, which was probably a result of the political correctness that the document must hold, exerted no influence on the ECB monetary policy until quite recently, when the ECB started its unconventional monetary policy programme. For the current discussion on the supposedly heterodox monetary practices of the ECB, it is worth remembering what the Treaty explicitly says: "without prejudice to this primary objective [price stability], monetary policy shall support the general economic policies of the Community monetary policy". However, this mandate has been always dismantled by means of ad hoc academic biased arguments which normally conclude that the best contribution monetary policy can do is to achieve price stability. One example of this kind of practices can be found below (bold is not included in the original quote):

"Without prejudice to this primary objective, monetary policy shall support the general economic policies of the Community. This arrangement is rooted in the principle – supported by **empirical evidence** and **academic research** and underpinned by a broad **public consensus** – that **the maintenance of price stability is the best contribution that monetary policy can make to achieving the economic policy objectives of the Community**, such as a high level of employment and sustainable and non-inflationary growth." (ECB 2008: 24)

⁸ It is interesting to note that this change was initially motivated by the unexpected result (at least for those who predicted a progressive reduction in the differences among the inflation rates of the economies conforming the Eurozone) of persistent inflation differential within the Eurozone.

In 2008, Jean Claude Trichet, speaking as President of the ECB on the occasion of the 10th anniversary of its constitution, made these four assertions: (i) that “price stability has been broadly achieved” (ECB 2008: 5); (ii) that the “euro has already brought several gains, including price stability and low interest rates” (ECB 2008:15); (iii) that “the ECB is fulfilling its primary objective to maintain price stability, and (iv) its monetary policy strategy is credible and well understood. (ECB 2008: 11). In 2016, however, of the statements made by Trichet in 2008, current President Mario Draghi could only claim two. The first one would be that the ECB has broadly achieved the price stability goal, since the average annual inflation rate for 1999-2015 was 1,8%, which we could consider to be true if we accepted that 1,8 is close to 2. The second statement that Mario Draghi could make is that the Euro has also brought low interest rates, since the Euribor (1 year) has fallen from the 3,1% in January 1999 to the 0,1% in December 2015, that is, a drop of 3 percentage points.⁹

Figure 1. Inflation and interest rates in the Eurozone since 1999



Source: ECB, Eurostat and own calculations

If we concentrate on the 2% price stability objective, which is represented by the dotted line in figure 1, we can assert that the Eurozone has not suffered from high inflation. The average inflation rate for the period 1999:Q1 to 2015:Q4 is 1,8%, 2,2% for the first period ending extending from 1999: Q1 to 2007: Q3, and 1,3% for the remaining observations. Considering the 68 quarterly observations existing from 1999 till 2015, in 18 occasions the inflation rate was close¹⁰ to the 2%

⁹ The magnitude of the change is better understood when it is compared with the corresponding average Euribor rate for the two-year period 1994-1995, which was 7,0%, or the 5,5% for the longer period 1994-1998. If we take as the reference period 1994-1995, the drop means a 42% reduction on the interest rate level, whereas for the period 1994-1998 the reduction represents more than 50%.

¹⁰ In our analysis we have considered being close to the target when the inflation rate was within the +/- 10% bound around its 2% level.

objective. That is, the ECB has hit its target in around 27% of the occasions. Only 4 times the inflation was above the 3%, but never reached the 4%. It is worth noting that the 50 times the inflation fell outside the goal boundaries, are equally distributed among the higher and lower bound; that is, in 25 occasions inflation was above the 2,2%, and the remainder 25 was below 1,8%. These are the results for the whole period 1999-2015. But when split up the analysis to consider the structural break that seems to be around the third quarter in year 2007, several important differences arise (see Table 1). Let's briefly sum up the more relevant aspects below.

Table 1. Inflation (%) goal performance in the Eurozone. 1999- 2015

	< 1%	< 1,8%	1,8 to 2,2%	2,2 to 3%	>2,2%	> 3%
1999:Q1 2008:Q3	2	6	17	12	16	4
2008:Q4-2015:Q4	13	19	1	9	9	0
1999:Q1-2015:Q4	15	25	18	21	25	4

Source: ECB, Eurostat and own calculations

During the first period, 55% of the occasions when inflation missed the target (12 out of 22) correspond to situations where inflation rate positioned in the immediate upper boundary from target (2,2 to 3%), whereas in the second period the 46% of the occasions when inflation missed its target, the inflation rate hit the lowest bound (< 1%). Another worth mentioning observation is that during the second period, inflation has fallen within the target bounds only once in 28 quarters, whereas this happened 17 times during the first period, which contents 22 quarters.

Considering that the average annual rate of inflation for the last three years¹¹ in the Eurozone has been 0,6%, one understands the ECB's desperation, for this means the institutions has failed to fulfil its mandate in the last three years. Desperation, and not conviction, is what then might explain the ECB turn towards the unconventional monetary policy. This argument, we think, becomes apparent in the following fragment, where a member of the ECB's Executive Board made this statement to a German mass media:

“In this environment, we had to act decisively and provide significant monetary stimulus through a set of measures which were carefully prepared and discussed by the Governing Council. ... We are confident that our measures will bring inflation back on a sustainable path consistent with our objective of price stability” (Coeur  2016)

But the ECB's frustration with current low inflation might has another important reading, with relevant implications for the validity of the implicit model of the ECB monetary strategy: if, presumably, as the ECB's monetary pillar states, inflation is a monetary phenomenon, there should not be room for deflation because the Central Bank could always produce inflation by increasing the “money supply”. If we accepted this assumption, as the ECB does, we were assuming full

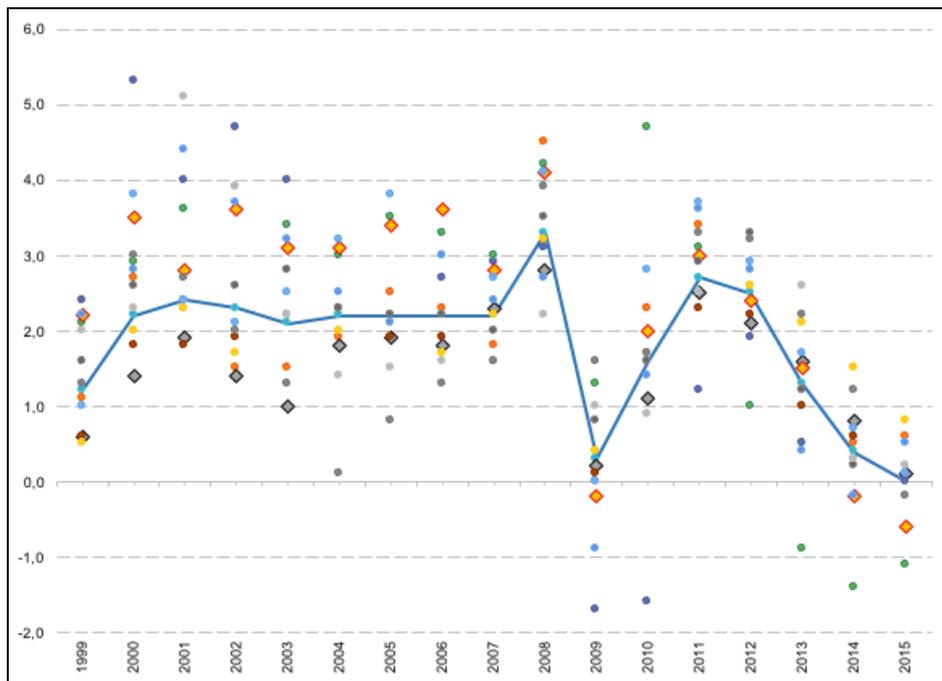
¹¹ The exact figures are 1,3% for year 2013, and 0,4% and 0,0% for 2014 and 2015, respectively.

reversibility in the price level development: no matter whether the task is to raise or lower the price level, since we could solve the problem (attaining price stability) using the same device. The current ECB's frustration could then be explained for the recognition that the bank has been unable to reverse the deflationary trend over the past years, whereas it did performance reasonably well when the problem was the reverse: to bring inflation down to the 2% target. But if inflation and deflation were not the two sides of a same coin, as the monetarist model assumes, what's the point in keeping an eye on the rate of growth of the M3 in the long run (the first pillar)?

Of course, the ECB could always reply that inflation is a monetary phenomenon only in the long run, so it is premature to draw any conclusion from the present crisis. But leaving aside the controversial issue relative to causality, one might argue that, as the "strong positive relation between long-run inflation and the money growth rate" is for some crucial, it is equally relevant that this relationship "for low-inflation countries (on average less than 10% per cent per year over the 30 years) is weak, if not absent", as De Grauwe and Polan (2001 and 2005) concluded in their empirical work on 160 countries in a temporal period of 30 years.

In the next section we will explore further this issue relative to the monetary nature of the inflation in the Eurozone. But before we go on this, let's finish this section by simply showing another (many times forgotten) feature of the Eurozone inflation, which is its variability across the euro area. How should we interpret this variability within a currency union? This is an issue that deserved the attention of the ECB for a time, which even created, in 2003, the Inflation Differential Research Network. Maybe the ECB should dare to create another network to study the Low Inflation in the Eurozone, although it should be far more interesting to reflect on the nature and scope of the implicit model of its monetary strategy, and not only about its lack of empirical performance.

Figure 2. Inflation and inflation differentials in the Eurozone¹²



Source: ECB, Eurostat and own calculations

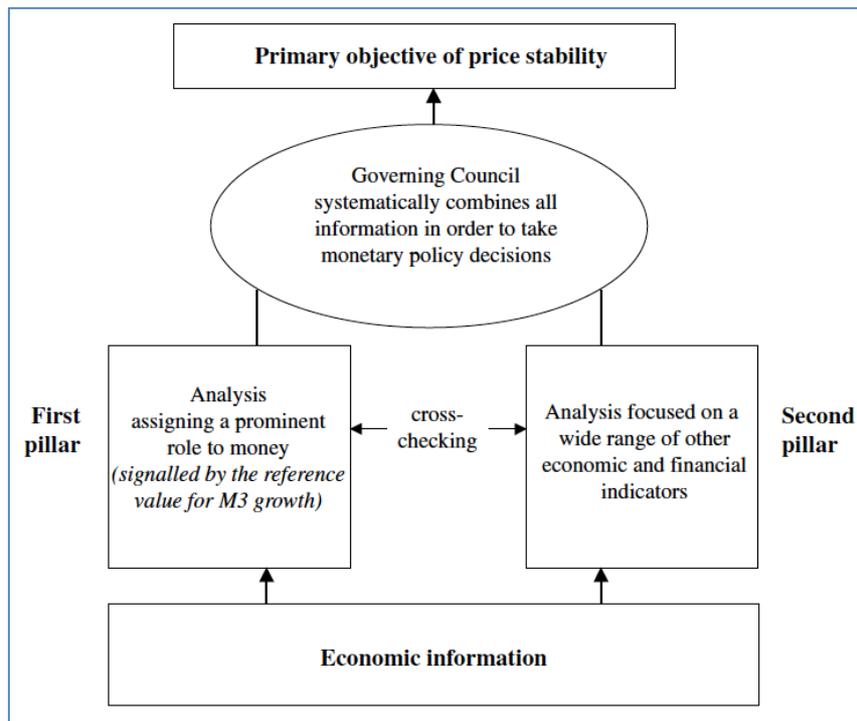
2.2. The two pillars

According to the own ECB's definition of its stability-oriented monetary strategy, the two pillars¹³ [of the monetary strategy] represent the elements that guarantee the achievement of its primary goal: the attainment of price stability.

¹² The line represents the inflation rate (HCPI) for the whole Eurozone (19 countries) whereas the dots are the inflation rate for Belgium, Germany, Ireland, Greece, Spain, France, Italy, Luxembourg, Netherlands, Austria, Portugal and Finland.

¹³ Issing (2006: 2) provides an interesting description of the temporal sequence through which the term "two pillar approach" finally became an official element of the monetary strategy published in January 1999 (ECB 1999).

Figure 3. The “two pillars” of the ECB’s monetary policy strategy



Source: as shown in ECB (2000: 39)

Although the ECB monetary strategy does not include either monetary nor inflation targeting, and the ECB explicitly says that its strategy “eschews mechanistic” monetary policy responses to deviations from a specific target or developments in a specific indicator variable (ECB 1999: 50), it was through the precise definition given to its primary objective¹⁴, and the assignment of a prominent role to money¹⁵ in the first pillar, that these two elements became an intrinsic (but not explicit) part not only of its monetary strategy, but also of its implicit economic model.¹⁶ We think it is very relevant to reflect on the following. In the official (from the legal point of view) design of the strategy, it is clear the dominant role that the monetarist belief plays in it; in this regard, it is very clarifying the following quote by Wim Duisenberg in October 1998, which we have taken from Issing (2006: 2):

¹⁴ An inflation rate below, but close to, 2%.

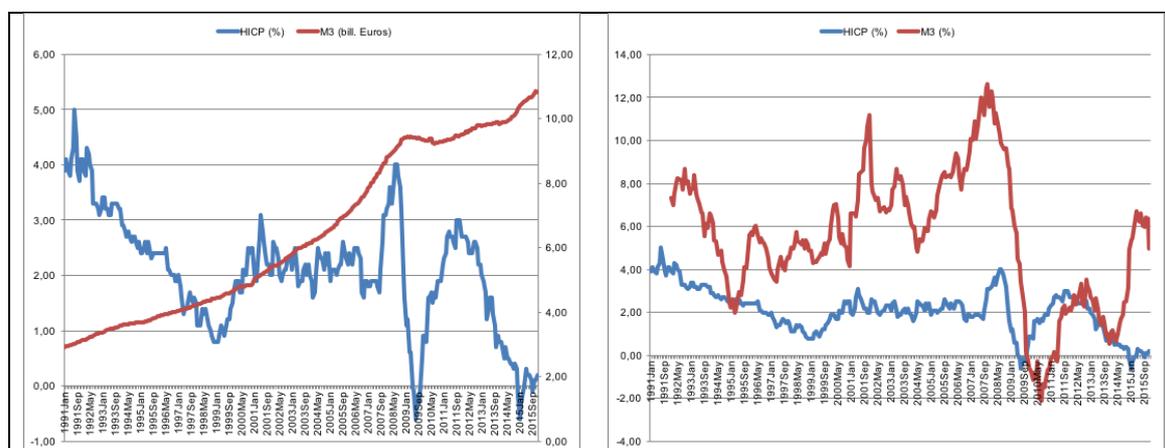
¹⁵ The prominent role for money, which has been always justified by the “belief” always was secured by the the establishment of a benchmark (4,5%) for the growth of the M3 aggregate.

¹⁶ After reading Otmar Issing’s interesting personal account¹⁶ on the choice of the ECB’s monetary strategy, which took place during the period between the establishment of the ECB, in June 1998, and the beginning of the Stage Three of the European Economic and Monetary Union, in January 1999, we would dare to assert that the final wording of the ECB monetary strategy can be interpreted as the result of a deliberate (and very clever) attempt to avoid giving the impression that the ECB would follow a monetary and an inflation targeting.

“It is not a coincidence that I have used the words that money will play a prominent role. So if you call it the two pillars, one pillar is thicker than the other is, or stronger than the other, but how much I couldn’t tell you”¹⁷

The importance attributed to the monetary pillar by the time the ECB monetary strategy was being decided, in year 1998, is not only far from being something on which today the economists would proclaim a consensus, but also something which has proof to be of very little help in acting as a “lighthouse signalling inflation dangers ahead”, as suggested by Issing (2006: 8). In this regard it is worth having a look at figure 4, which shows the inflation rate and the monetary aggregate M3 on the left hand side, and the inflation rate and the rate of growth of the M3 aggregate on the right hand side. We don’t see, really, that the M3 has provided any light on the inflation dynamics. We are aware that the “lighthouse” only works in the long distance; what we don’t know is whether a sailor would accept being guided by a lighthouse which is pointing so far away of the in the distance, overlooking the many risks that are closer to the ship.

Figure 4. Inflation and M3 growth in the Eurozone. 1999:1 – 2015:12



Source: ECB, Eurostat and own calculations

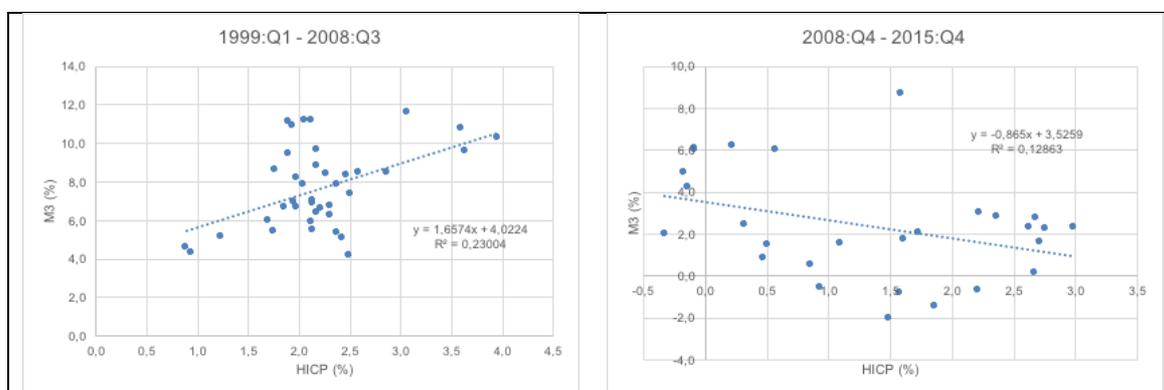
It is also interesting to note that it has been acknowledged that the design of the ECB monetary strategy was influenced not only by the experience of the “Great Inflation of the 1970”, but also for the “academic work on macroeconomic and monetary policy” (Issing *et al.* 2001: 3). Of course there isn’t anything wrong with these two influences, at all. The only mistake is to consider both Economic History and Economic Thought as something static and definitive, that is, not subject to change or evolution as times passes. It is very also very disappointing to see that, we, the economists, tend to only pay attention to those parts of the History that fits well into our own way of thinking. It is also very disappointing that we, the economists, simply transform beliefs into theories, so the theory becomes a sort of dogma or social convention which can never be open to questioning. This happens constantly within the monetary analysis. There is the extended belief that the monetary policy is a technical matter, which falls within the positive, not the

¹⁷ Issing (2006: 2) attributes this quote to Wim Duisenberg when replying to a question raised by a journalist at the press conference where the President was announcing the broad lines of the ECB monetary strategy, in October 1998.

normative side of the Economics. Our discussion in this section suggests that monetary policy is Political Economy, not just Economic Policy; and in the case of the ECB monetary strategy, its Political Economy has a proper name: monetarism. But by monetarism we do not mean something which “attributes a prominent role to money”. Instead, by monetarism we understand a view which, by interpreting correlation as causation, assigns monetary policy one single role: price stability. This way is neither good, nor bad; it is only one particular “School of Thought” within a certain “Mode of Thought”; but Economics, fortunately, offers a much wider range of both modes and schools of thought for us to choose (Dow 1996); the only wrong thing about monetarism is that some still pretend attributing this particular model a superior rank ... which is not subject to discussion at all. And as Chick (1986 and 1988) has suggested, as long as economies develop and reach higher levels of economic and financial development, the way the banking system and the monetary policy work evolve. It is time for the ECB, as the Bank of England has apparently¹⁸ done, to evolve and accept that maybe it is time to rethink the theoretical framework frames its monetary strategy.

In this regard we want to finish this section by looking at the charts included in figure 5, which show the inflation rate and the M3 growth rate for the expansion and recession period. Whereas the monetarist view suggests the existence of a positive relationship, in the long run, the graphs show this positive correlation only for the expansion whereas, for the recessionary period, the correlation turns negative. Does this mean anything?

Figure 5. Inflation and M3 growth in the Eurozone.
Cross section analysis 1999:1 – 2015:12



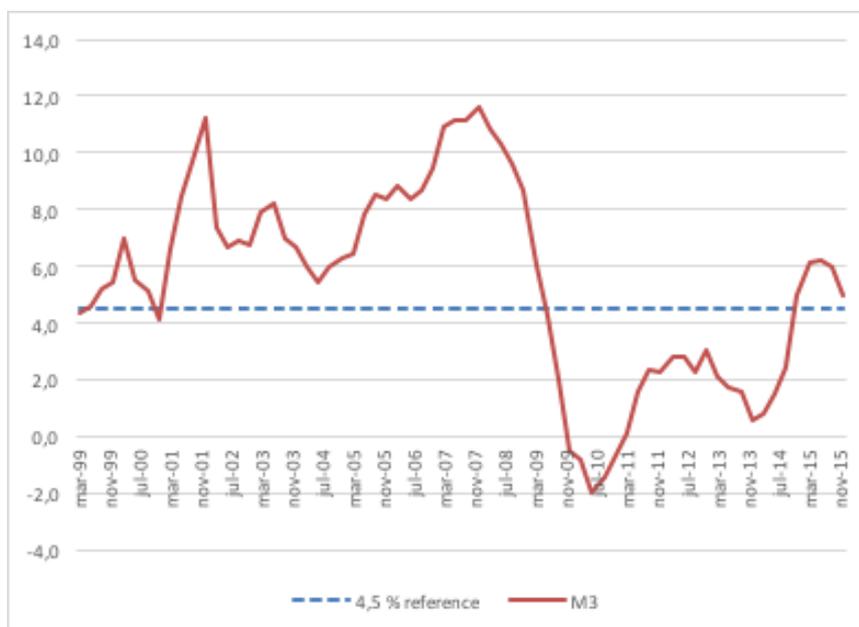
Source: ECB, Eurostat and own calculations

Figure 6 shows the performance of “the thicker of the two pillars”, to use Wim Duisenberg’s expression. A quick look at the chart reveals the persistent deviation

¹⁸ In a working paper published by the Bank in 2015, their authors asserted that “the deposit multiplier model of banking is ... fundamentally mistaken” (Jakab and Kumhof 2015: 9). It is needless to say that the multiplier is one of the principles of the mainstream monetary theory, not the Bank of England could appeal to the convention that “any views expressed [in the working paper series] are solely those of the author(s) and so cannot be taken to represent those of the Bank of England or to state Bank of England policy” (that explains why we have written “apparently”).

of M3 with respect to its benchmark. Hence, for the expansionary period (1999:Q1 - 2008:Q3), the M3 was situated between the 4 and 5% only three times (in a total of 29 quarterly observations), and in 29 occasions was above 6% (around 74% of total observations during this period). During the recessionary period (2008:Q4 - 2015:Q4) M3 was also three times between 4 and 5%, and 12 times below 2%.

Figure 6. The monetary pillar of the ECB monetary strategy



Source: ECB, Eurostat and own calculations

2.3. The ECB independence

The independence of the ECB is laid down both in the Treaty on the European Union (art. 107) and the Protocol on the Statutes of the European System of Central Banks and the European Central Bank (art. 7). These two articles define the ECB Independence as follows:

“When exercising the powers and carrying out the tasks and duties conferred upon them, neither the ECB nor the NCBs, nor any member of their decision-making bodies, are allowed to seek or take instructions from EU institutions or bodies, from any government of a Member State or from any other body” (ECB 2011: 15)

The ECB’s independence was always considered as a crucial element to guarantee the attainment of price stability, since the time the European Union was debating over the conditions to establish a monetary union, there was a large body of empirical literature that supported the contribution of central bank independence to maintaining price stability (Berger *et al.* 2001), although this literature has never been free from controversy at all.¹⁹

¹⁹ In his survey of the literature on Central Bank Independence (CBI), which attributes to the CBI principle the virtue of attaining price stability, Hayo and Hefeker (2002) not only concluded that

However, in recent years, with the occasion of the still ongoing debate over the legality of the ECB unconventional monetary policy measures, this sacred principle (at least for the monetary orthodoxy) have not only been ignored, but also, paradoxically, its infringement has been made in the name of price stability.

It is quite revealing to see the monetary orthodoxy warning the ECB about the prohibition of monetary financing of public authorities, which is a precept included in the central bank independence principle²⁰, at the same time they completely ignore that the central bank independence principle also prohibits the exertion of political influence on ECB's tasks or duties, as clearly establishes the art. 107 of the Treaty of the European Union (the emphasis is not in the original):

“Furthermore, under this article, the EU institutions and bodies and the governments of the EU **Member States must** also respect the principle of independence and **not seek to influence the members of the decision-making bodies of the ECB** or the NCBs **in the performance of their tasks**” (ECB 2011: 15)

There is no easy way to test, we think, whether the ECB has acted, or not, with complete freedom when conducting its duties; but thanks to the the mass media, it is far easier to find examples of the exertion of political influence on the ECB; here goes one sample, extracted from the edition of the Financial Times (April 10, 2016), but for sure many more can be easily found.

“German political leaders are blaming the European Central Bank's easy money policies for the rise of the rightwing Alternative for Germany party, in a dramatic escalation of tensions between Berlin and Frankfurt.”

“In remarks reported by Dow Jones, Mr Schäuble told an audience: “I said to Mario Draghi . . . be very proud: you can attribute 50 per cent of the results of a party that seems to be new and successful in Germany to the design of this policy.”

“ECB officials have hit back at the German criticisms. At a Frankfurt economic conference last week, chief economist Peter Praet said that the sniping from Germany was “sometimes hard to swallow.”

Source: Financial Times, April 10, 2016

3. ASSESSING THE ECB MONETARY POLICY RESPONSE

We have already shown, in the former section, that the ECB explicitly denies its monetary strategy “eschews mechanistic” monetary policy responses to

the empirical evidence in this regard is weak and far from being convincing (for correlation has no necessarily implication for causality), but also that the CBI principle might just be one instrument among many for achieving that objective (Hayo and Hefeker 2002: 669).

²⁰ See Art. 104 of the Treaty on the European Union.

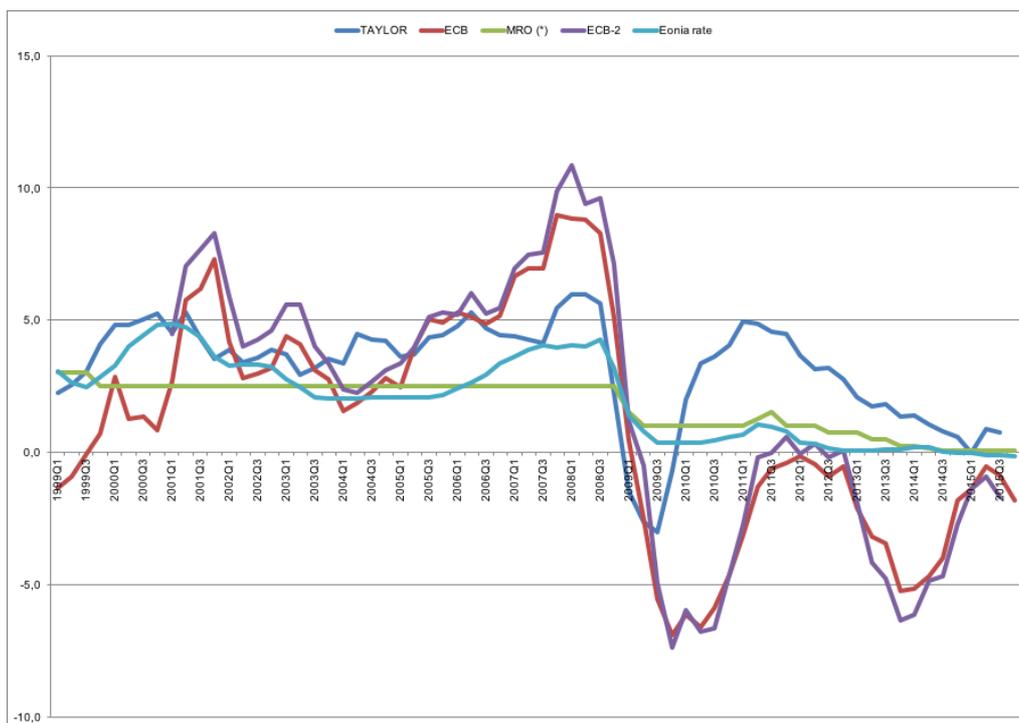
deviations from a specific target or developments in certain variables (ECB 1999: 50), so it “cannot be expressed in a simple mathematical function” (Issing *et al.* 2001: 2-5).

However, there exists a large collection of empirical studies showing that simple monetary rules, such as the one proposed by Taylor (1993), are capable of reproducing central banks’ monetary policy decisions on interest rates. This also applies to the ECB. For example, Taylor (1999) concluded that “the simple benchmark rule, such as the one I proposed in 1992, with some adjustment in the response coefficients, would be worth considering as a guideline for the ECB”. Gerlach and Schnabel (1999) also found that “average interest rates for the EMU countries in 1990–98, with the exception of the exchange market turmoil in 1992–93, moved very closely with the average output gap and inflation as suggested by the Taylor rule”. More evidence in this regard can be also found in the papers by Alesina *et al.* (2001), von Hagen and Brückner (2002), Breuss (2002) and Galí (2003), among many others.

These empirical results are not surprising since the Taylor’s rule assumes that central banks set the official interest rate according to the deviation of both inflation and output from their targets, and it is known that the primary objective of most central banks are the attainment of price stability and the avoidance of business cycles. Figure 7 shows the ECB’s Main Refinancing Operation (MRO) rate and the Eonia interest rate, as well as the benchmark interest rates resulting from the application of a Taylor-type rule and two versions of what we have named the ECB rule.²¹

²¹ Our “ECB rule” is a Taylor-type rule which, apart from the deviations of inflation and output from their targets, it also includes a reference to the monetary (the deviation of the monetary aggregate M3 from its 4,5% reference value) and economic pillars (the rate of growth of the Unit Labour Cost, for its potential influence on inflation dynamics). The ECB-1 only includes the M3 reference whereas ECB-2 also incorporates the labour cost variable.

Figure 7. The MRO, Eonia and Taylor-type rule benchmark interest rates for the Eurozone (%)



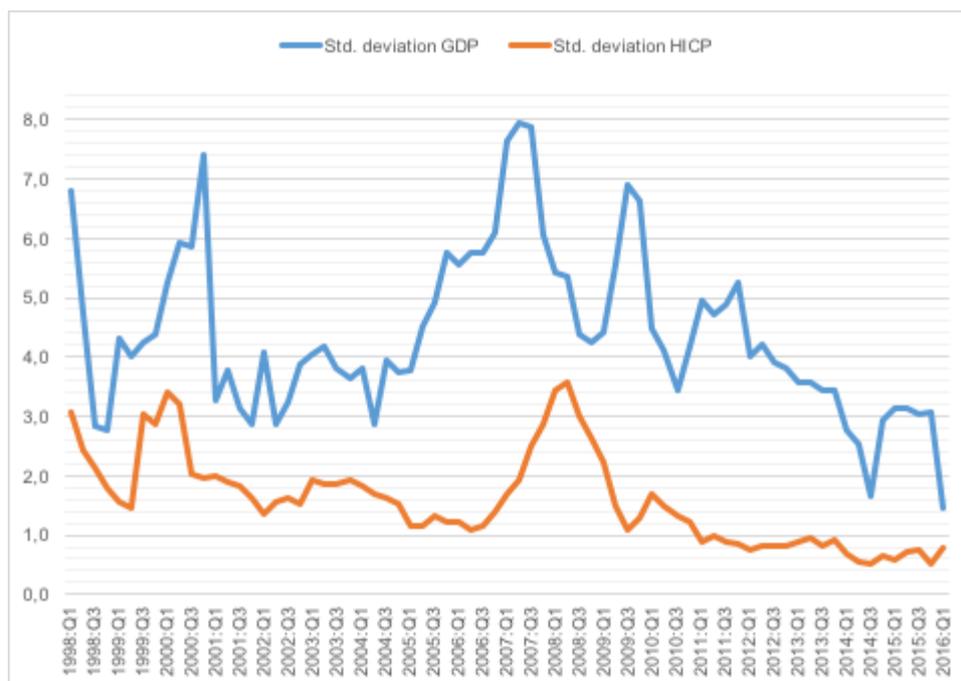
Source: ECB, Eurostat and own calculations

The information depicted in Figure 7 shows that the MRO rate exhibits a high correlation with the Eonia rate, whereas its correlation with both the Taylor and ECB rules is much lower.²² The resulting rates from applying both rules (Taylor and ECB) follow a similar trend, although both ECB rules tends to perform higher rates for the expansionary period (up to 2008:Q3) and lower rates for the recessionary period (from 2008:Q3 onwards).

It is frequently argued that the central banks act to minimize the variability of inflation and output fluctuations. Figure 8 shows the evolution of the standard deviations for the rate of growth of the HICP and the GDP in the euro area. Although the variability in both inflation and economic growth shows a decreasing trend, it is worth mentioning that this decreasing pattern did not happen during the first ten years of the Eurozone (1999-2009), since the variability of the GDP increased and remained stable for inflation.

²² The correlation coefficient between the MRO and Eonia is 87%, and 61% and 74% for the Taylor and ECB rate benchmarks, respectively.

Figure 8. The variability of inflation and economic growth in the euro area



Source: ECB, Eurostat and own calculations

Apart from calculating the benchmark rate performed by the Taylor and ECB rules, we have also estimated the following expression, where the official rate (MRO) depends on its lagged value²³ and an expression which contains the conventional Taylor rule variables (inflation deviation from its 2% target and the output gap) as well as the deviation of the monetary aggregate M3 from its 4,5% reference value, and a measure of labour costs (cost per employee). All the variables are expressed in growth rates and the sample refers to the period 1999:Q1 to 2015:Q3.

$$MRO_t = \alpha_0 MRO_{t-1} + (1 - \alpha_0)[\alpha_1 + \alpha_2 GDP_t + \alpha_3 HICP_t + \alpha_4 M3_t + \alpha_5 CPE_t] + \mu_t$$

We estimated three different models (Taylor, ECB-1 and ECB-2) for the whole period, as well as for the two following sub-samples: 1999:Q1 to 2008:Q3 and 2008:Q4 to 2015:Q3. The results are indicated in Table 2.

²³ The inclusion of the lagged variable aims at taking into account the “practice” of interest rate smoothing by central banks.

Table 2. Estimation results of the monetary policy rules for the Eurozone

	Taylor		ECB-1		ECB-2	
	Parameter	t-statistic	Parameter	t-student	Parameter	t-student
Full Period: 1999: Q1 to 2015: Q3 (66 observations)						
MRO(-1)	0,943	39,83	0,923	30,36	0,926	26,82
Constant	1,867	5,183	2,099	6,768	2,244	2,70
GDP	0,717	2,248	0,514	2,222	0,482*	1,67
HICP	0,758*	1,918	0,582*	1,916	0,609*	1,73
M3			0,100**	1,328	0,119	0,94
CPE					-0,096	-0,19
Schwarz criterion	-51,891		-48,927		-44,780	
R ² corrected	0,975		0,975		0,975	
Sub-period 1: 1999: Q1 to 2008: Q3 (38 observations)						
MRO(-1)	0,625	6,65	0,629	6,42	0,484	4,66
Constant	2,522	74,11	2,524	70,85	2,361	39,89
GDP	-0,025	-0,93	-0,026	-0,92	0,031**	1,34
HICP	-0,072**	-1,36	-0,077**	-1,29	-0,120	-2,93
M3			0,003	0,19	-0,009	-0,80
CPE					0,109	3,18
Schwarz criterion	-86,250		-82,654		-87,039	
R ² corrected	0,640		0,629		0,690	
Sub-period 2: 2008:Q4 to 2015: Q3 (29 observations)						
MRO(-1)	0,878	10,14	0,861	9,228	0,823	6,92
Constant	1,238	2,17	1,520	1,911	0,836	0,72
GDP	0,317	0,81	0,275	0,827	0,400	1,07
HICP	0,459*	1,62	0,457*	1,810	0,364**	1,49
M3			0,055	0,559	-0,039	-0,23
CPE					0,355	0,64
Schwarz criterion	-3,096		-0,061		2,953	
R ² corrected	0,906		0,903		0,900	

* and ** mean significance at the 5% and 10%, respectively.

The results for the full sample period (1999:Q1 to 2015:Q3) show that the deviations of inflation and output from their target are always significant and, not surprisingly, inflation always has a slightly higher impact on MRO. The value of the estimated value for the inflation parameter is some 6,13 some 26% higher than the estimated parameter for output. The labour costs parameter is never significant, and the M3 is significant only once, at the 5%, for the ECB-1 specification.

Some interesting differences show up when we split the analysis into the two mentioned sub-periods. Interestingly, for the first period (1999:Q1 to 2008:Q3) the GDP is not significant but for the ECB-2 model, and the inflation parameter is significant (sometimes only at the 10%) ... but has a “wrong” sign according to the expected by the conventional view. It is significant the much lower goodness of fit of the model (the R² for this period ranges from 63 to 69%). It is also worth noting that the “smoothing parameter” reaches its lowest value during this period, ranging from 0,48 to 0,63.

In the second period neither the M3 nor the CPE are significant. The output parameter is not significant for any of the specifications; only inflation is significant (at the 5 and 10%) for the ECB-1 specification but with a parameter which is always lower when compared with the estimates for the whole period.

In an attempt to characterise the “macroeconomic context” in which the ECB decided to change the MRO rate, we have conducted the following exercise. Our starting point is summarised in Table 3, in which we have simply grouped the changes occurred in the MRO rate according to the inflation and GDP rates of growth. Our data set, which runs from 1999 to 2015, has 68 quarterly observations and, according to our calculations, 11 changes in the MRO.²⁴ Only 2 out of this 11 changes correspond with a raise in the rate, and both occurred in 2011. Most interest rate lowering took place from the fourth quarter 2011 onwards.²⁵

As shown in Table 3, below, 12 out of the 68 observations correspond to a situation where both the inflation and output were well above their corresponding targets. One would expect the ECB to raise the rates in these occasions, but it only did it once, as indicated in the table. It might be found a bit surprising, for a central bank determined to achieve price stability, the two rate cuts when inflation was well above 2,2% and the economy growing below 1%. On the opposite side, that is, when output growth was weak (< 1%) and inflation below its target (< 1,8%), one should expect the ECB to reduce the rates; and the ECB did so six times. This time the ECB seemed to have responded as expected to its orthodox monetary strategy.

Table 3. Inflation, growth and changes in MRO. 1999: Q1 to 2015: Q4

		HICP			Total
		> 2,2 %	2,2 - 1,8 %	< 1,8 %	
GDP	> 2 %	12 (1↑)	9 (⇔)	7 (1↓)	28 (1↑ + 1↓)
	1 - 2 %	5 (1↑)	7 (⇔)	6 (⇔)	18 (1↑)
	< 1 %	8 (2↓)	2 (⇔)	12 (6↓)	22 (8↓)
Total		25 (2↑ + 2↓)	18 (⇔)	25 (7↓)	68 (2↑ + 9↓)

Source: ECB, Eurostat and own calculations

How was the “macroeconomic context” when the ECB decided to raise (twice) or reduce (nine times) the MRO rate?

The ECB raised the MRO rate twice in 2011 (second and third quarters). In that case the Eonia had been going up for a year (the previous four quarters), and the M3 had been decreasing for almost two years (the seven previous quarters); actually, the average rate of growth for the M3 in that period was negative (-0,5%). The GDP was also stagnated, for its growth rate was just 0,65% (for the previous

²⁴ Since the variables in our data set were quarterly, we grouped the changes occurred in the MRO into quarters.

²⁵ Only three rate cuts fell outside this period, and took place in last quarter of 1999 and in the first half of year 2009.

seven quarters). In addition to weak growth, inflation seemed to be under control, since the average inflation rate was only 1,49% (also for the seven previous quarters), and the unit labour costs were growing at a slightly higher rate for the same seven quarters period (1,84%). So, presumably, it can be suggested that the Eonia and the Labour Cost drove the ECB to raise the MRO.

Let us have a look now at the nine times where the ECB reduced the MRO rate. The nine reduction in rates took place in three different periods. The first one was in the last quarter of the Eurozone's first year, 1999. In that occasion the Eonia had been decreasing for the previous quarters and the inflation was at a very low level (1% average growth for the first three quarters). The M3 was experiencing a moderate, but increasing growth (in the third quarter reached the 5,2% growth, above its 4,5 reference value). The GDP and Unit Labour Costs were growing at 2,5% and 2,9%, respectively. The reduction in the MRO can only be explained, apparently, by the inflation and Eonia trends.

The second period when the ECB decided to reduce the MRO rate was in 2009 (first and second quarters), with all variables (but the M3) reporting very low rates of growth. The inflation and the GDP growth was well below 0,5% (for the previous two quarters), the Unit Labour Cost were below 2%, and the Eonia was in a descending trend. The only variable which was experiencing a high growth was the M3 (almost 8% for the last year, and 10% for the two previous years). In this case, the reduction in MRO could only be explained by the Eonia descending trend.

The third period where the ECB reduced the MRO rate (for six times, consecutively) starts in the last quarter of 2011. This period is characterised by a low (and decreasing) growth in all variables considered so far: Euribor, GDP, Unit Labour Costs and M3. However, it is worth noting that the M3 starts to show a strong growth (5,7%) for the last six quarters (see figures 4 and 6 above).

What conclusions can be drawn from the analysis conducted in this section?

One first point we could mention is that the influence that inflation, GDP, M3 and the labour costs have, apparently, exerted on the MRO is rather ambiguous, depending on whether we conduct the analysis for the whole period 1999-2015 or if we instead differentiate in between the sub-periods that appear from the third quarter of 2008. Whereas for the full sample period the empirical results show the inflation, GDP and even the M3 exerted an important influence on the MRO changes, these results change radically when we split the sample. Hence, for the first period (1999:Q1 to 2008:Q3) only inflation and the labour costs are statistically significant, but interestingly the inflation parameter has an un-expected negative sign. How should we interpret this negative influence of inflation on official rates from the perspective of the ECB's "two pillar" monetary framework? This particular result has a difficult explanation within this framework? For the second period (2008:Q3 to 2015:Q3) only inflation is significant, this time with the proper sign; but the estimated value for the parameter is lower than in the whole period. Again, how should we interpret this result? A quick response could be to assume that inflation (and deflation, which is what happens in the Eurozone in this

period) is not always a monetary phenomenon, which is was the “two pillars” model implicitly assumes.

Another potential interesting result is the strong correlation between the official MRO and the Eonia market rate, which may simply reveal the “many interferences” that financial matters may have produced in the conducting of the monetary policy, which we know should be focussed on attaining the price stability but also in supporting the general economic policies of the EU, which incorporates balanced economic growth, job creation and social cohesion, among many other objectives.

We have no doubt the ECB takes full account of the economic developments when adopting its monetary policy decisions; but it is also apparent that the official rates (and other monetary decisions) are also influenced by the “market sentiment”. This is an obvious result; which is not so obvious is to determine which influences most the ECB: the financial market sentiments or the economic fundamentals that are implicit in its two pillar model? In this regard we dare to conclude, from our previous analysis on the characterization of the macroeconomic context in which the ECB decided to change its MRO rate, that the market rate Eonia has always played an important role, and that the aggregate monetary M3 had never pointed to the direction the ECB decisions were finally taken. Those who constantly refer to the prominent role that the M3 plays in the ECB monetary strategy should take note of this.

4. CONCLUSIONS

In this paper we have tried to provide a critical assessment of the performance of the ECB monetary policy strategy and its implicit two pillars model.

We have sustained that the current discussion on the Eurozone has been dominated by the issues regarding to the failures in its original design, which normally ends by pointing out the trivial fact that the Eurozone lacks of an effective fiscal pillar. But the ongoing discussion is also about the new low inflation scenario, which might be also understood as a failure of the original design of the Eurozone, which only considered inflation in its prospects (this is evident for, in year 1998, the price stability was originally defined as a rate of growth of the HICP below 2%. The “aberration” of too low and falling inflation, as Nouriel Roubini has called it recently, is producing great theoretical discomfort, for it has broken “the traditional causal link between the money supply and prices” (Roubini 2016) and also revealed the “disconnect between economic performance and inflation” (Draghi 2014). None of these two disappointing facts have an easy explanation within a framework which implicitly assumes inflation is a monetary phenomenon.

However, it is worth noting that the disenchantment felt by those who show surprise or disconcert for the “real real world not to conform theory”, has not produced the thought that it might be necessary to “revisit the thinking behind the design of European Monetary Union” (Dow 2016: 1). The reaction, we dare to suggest, it is not casual, but deliberate, since addressing that issue might eventually lead to the confirmation of the necessity to conduct a profound revision

of the underlying theoretical framework that delineates the ECB's monetary strategy. The question is how long can we afford to delay this debate for?

REFERENCES

Alesina, A., Blanchard, O., Galí, J., Giavazzi, F. and Uhlig, H. (2001), *Defining a macroeconomic framework for the euro area: Monitoring the European Central Bank*, 3. London: Centre for Economic Policy Research.

Berger, H.; Haan, J. de; and Eijffinger, S. C. W. (2001), Central Bank Independence: an update of theory and evidence, *Journal of Economic Surveys*, vol. 15, no. 1, 3-40.

Bibow, J. (2015), *The euro's savior? Assessing the ECB's crisis management performance and potential for crisis resolution*, IMK Study 42, June.

Breuss, F. (2002), *Is ECB's monetary policy optimal?*, Working Paper no. 173, WIFO (Austrian Institute of Economic Research).

Coeuré, B. (2016), *People are not only savers*. Opinion piece from Benoît Coeuré, Member of the Executive Board of the ECB, for the Frankfurter Allgemeine Sonntagszeitung, 1 May 2016.

Constâncio, V. (2015), *Assessing the new phase of unconventional monetary policy at the ECB*. Panel remarks prepared by Victor Constâncio, Vice-President of the ECB, at the Annual Congress of the European Economic Association, University of Mannheim, 25 august 2015.

Council of the European Communities (1992), *Treaty of European Union*. Office for Official Publications of the European Communities: Luxembourg.

Chick, V. (1986), 'The evolution of the banking system and the theory of saving, investment and interest', *Economies et Sociétés* 20, Monnaie et Production, 3:111–126.

Chick, V. (1988), *The evolution of the banking system and the theory of monetary policy*, paper presented at the Symposium on "Monetary Theory and Monetary policy: New Tracks for the 1990s", Berlin, 1988. [reprinted in S. F. Frowen (ed.) (1993), *Monetary Theory and Monetary Policy: New tracks for the 1990s*, London: Macmillan]

De Grauwe, P. and Polan, M. (2001), *Is inflation always and everywhere a monetary phenomenon*, CEPR, Discussion Paper no. 2841 [published in 2005 in the *Scandinavian Journal of Economics*, vol. 107, no. 2, 239-259].

Dow, S. C. (1996), *The Methodology of Macroeconomic Thought. A conceptual Analysis of Schools of Thought in Economics*. Edward Elgar: Cheltenham.

Dow, S. C. (2016), "Ontology and Theory for a Redesign of European Monetary Union", *World Economic Review*, vol. 6, 1-11.

Draghi, M. (2014), *Monetary policy in a prolonged period of low inflation*, Speech by Mario Draghi, President of the ECB, at the ECB Forum on Central Banking, Sintra, 26 May 2014.

Draghi, M. (2016), *On the importance of policy alignment to fulfil our economic potential*, 5th Annual Tommaso Padoa-Schioppa Lecture by Mario Draghi,

President of the ECB, at the Brussels Economic Forum 2016, Brussels, 9 June 2016.

ECB (1999), The stability oriented monetary policy strategy of the Eurosystem, *Monthly Bulletin*, European Central Bank, January, 39-50.

ECB (2000), The two pillars of the ECB's monetary policy strategy, *Monthly Bulletin*, European Central Bank, November, 37-48.

ECB (2003), The outcome of the ECB's evaluation of its monetary policy strategy, *Monthly Bulletin*, European Central Bank, June, 79-9.

ECB (2008), 10th Anniversary of the ECB, *Monthly Bulletin* (Special Edition), European Central Bank, May.

ECB (2011), *The Monetary Policy of the ECB*. Third Edition. European Central Bank.

Galí, J. (2003), "Monetary policy in the early years of EMU", in M. Buti and A. Sapir (eds.), *EMU and Economic Policy in Europe: The Challenges of the early years*, Cheltenham: Edward Elgar.

Gerlach, S. and Schnabel, G. (1999), *The Taylor rule and interest rates in the EMU area: a note*, Working Paper no. 73, Bank for International Settlements, Basle.

Hayo, B. and Hefeker, C. (2002), Reconsidering central bank independence, *European Journal of Political Economy*, vol. 18, 653-674.

Issing, O. (2006), *The ECB's Monetary Policy Strategy: Why did we choose a two Pillar Approach?*, Paper presented at "The role of money: money and monetary policy in the twenty-first century" 4th ECB Central Banking Conference, held at Frankfurt, 10 November 2006.

Issing, O., Gaspar, V., Angeloni, I. and Oreste, T. (2001), *Monetary Policy in the Euro Area: Strategy and Decision Making at the European Central Bank*, Cambridge: Cambridge University Press.

Jakab, Z. and Kumhof, M. (2015), *Banks are not intermediaries of loanable funds and why this matters*, Bank of England, Working Paper no. 525, May 2015.

Keynes, J. M. (1936), *The General Theory of Employment, Interest and Money*, Cambridge: Macmillan [Collected Writings, vol. VII].

Roubini, N. (2016), *The Global Economy's New Abnormal*, Project Syndicate, February 4, 2016.

Taylor, J. B. (1993), *Discretion versus policy rules in practice*, Carnegie-Rochester Conference Series on Public Policy, vol. 39, 195-214.

Taylor, J. B. (1999), The robustness and efficiency of monetary policy rules as guidelines for interest rate setting by the European Central Bank, *Journal of Monetary Economics*, vol. 43, no. 3, 655-679.

Trichet, J. C. (2008), *Address at the ceremony to mark the 10th anniversary of the European Central Bank and the European System of Central Banks*. Speech delivered by Jean-Claude Trichet, President of the ECB, 2 June 2008, Frankfurt am Main.

von Hagen, J. and Brückner, M. (2002), *Monetary and fiscal policy in the European Monetary Union*, IMES Discussion Paper Series, no. 2002-E-16, Bank of Japan.