

# THE ECB MONETARY STRATEGY: A CRITICAL ASSESSMENT

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Carlos J. Rodríguez Fuentes<sup>1</sup>

David Padrón Marrero

Universidad de La Laguna (ULL)

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## **Abstract**

This paper aims to provide a critical assessment of the performance of the ECB's monetary strategy, as well as of the substantial "de facto" changes this strategy has undergone from 2010 onwards. These changes have occurred as a consequence of the unforeseen challenges that the eurozone crisis posed to its implicit conventional monetary model of "two pillars". The standpoint of the paper is that the institutional changes the eurozone requires cannot be limited to the so-called institutional failures in the architecture of the European monetary union, but should also be extended to reconsider the underlying theoretical framework that inspires the ECB's monetary strategy.

**Keywords:** *ECB's monetary policy strategy; monetary policy and inflation; eurozone monetary reform*

**JEL classifications:** *E52 (Monetary Policy), E58 (Central Banks and Their Policies), F45 (Macroeconomic Issues of Monetary Unions)*

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<sup>1</sup> cjrodrig@ull.edu.es

## INTRODUCTION

In May 2018 and January 2019, respectively, the European Central Bank (ECB) and the eurozone celebrated 20 years of existence. The eurozone started with eleven countries (euro-11) in January 1999, and today has almost doubled its membership, with 19 European Union (EU) member states taking part (euro-19). When the ECB reached 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<sup>nd</sup> June 2008 in Frankfurt am Main (Germany). In this formal ceremony, the President of the ECB, Jean-Claude Trichet, simply summed up the first ten years of the ECB by pointing out that "yearly inflation since 1<sup>st</sup> January 1999 has been 2.1% on average" (Trichet 2008: 1-2). Having reported the complete success of the ECB in terms of attaining its mandate of preserving price stability in the eurozone, Trichet went further and dared to highlight the major challenges that the ECB's monetary policy would have to cope with in the near future, which he (in 2008) summed up as follows:

"As one of the major central banks in the industrialized world, we, like the others, have three challenges to cope with in our monetary policy-making: rapid technological progress, globalization 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)

However, and contrary to the enthusiastic celebrations that took place in 2008 to commemorate the successful first ten years of the ECB's existence, this time, the twenty-year celebration should bring more reflection and less complacency, since over the last ten years, both the ECB and the eurozone have passed through uncharted territory for which their respective institutional architectures (and corresponding underlying economic models) were not prepared.<sup>2</sup>

The above assertion may seem obvious to us at present, but it was certainly not ten years ago. The problems and challenges that the eurozone has faced since 2008 onwards have had nothing to do with the challenges mentioned by Trichet that year. Not even the economists who had ardently argued that the only (and exclusive) role of the ECB should be the fight against inflation could have imagined in 2008 that in the next ten years the real challenge to face would be to avoid deflation. Moreover, a complete arsenal of non-conventional monetary instruments had to be improvised, which, although not popular among orthodox economists, have been the only ones that have been able to guarantee performance in the markets in a context of zero-lower bound interest rates and a complete slump in credit markets.

In this sense, it is worth remembering that since 2008, the eurozone inflation rate was below 1% for a period of 10 consecutive months (between March 2009 and February 2010). Subsequently, it was below again for a period exceeding three years (between October 2013 and November 2016). It is evident that the deflationary trajectory that the eurozone has experienced in the last ten years has caused a great confusion among monetarist economists and ECB managers, since for them, the monetary control that a central bank can exert on the liquidity of the economy constitutes a sufficient guarantee to decisively influence the trajectory of prices. This was explicitly acknowledged by the current ECB president, Mario Draghi, when in 2006, he pointed out that "as inflation is ultimately a monetary phenomenon, a committed central bank can always fulfil its mandate, and that is true regardless of the stance of other macroeconomic policies"

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<sup>2</sup> This has not only been acknowledged after the sovereign debt crisis tested the weaknesses and design failures in the eurozone project (see, among others, Dehesa 2011, Malo de Molina 2011 and De Grauwe 2015), but had also been pointed out long before the eurozone came into existence in 1999 (see, for example, the explicit references to the need to provide a centralized European budget in De Grauwe 1992: 177-79 and Emerson *et al* 1992: 169. There were also claims made by economists like Krugman 1993 and Bayoumi and Eichengreen 1993, among others, regarding the adjustment mechanisms within a currency union and the potential conflicts that European monetary union might eventually cause. The potential spatial conflicts within the European monetary union were also specifically addressed in Emerson *et al.* (1992: 212-234).

(Draghi 2006). However, eight years after, in May 2014, when inflation was close to zero, President Draghi started to show his disagreement with this situation: "we are not resigned to allowing inflation to remain too low for too long". But the trajectory of inflation in the eurozone shows that the ECB's determination has not been effective in reversing the situation. Since 2009, the inflation rate has entered negative territory 13 times, and the average rate for the period 2009-2016 is almost half (1.2%) that recorded for the first nine years (1999-2008) of operation of the eurozone (2.2%).

It is clear, then, that on its 20<sup>th</sup> birthday, the ECB has very little to celebrate regarding price stability, not to mention the many structural flaws affecting the "solid construction of the eurozone" mentioned by Trichet in 2008. It is rather striking that one of the most controversial issues in the current discussion on (the lack of) eurozone performance, which refers to its incomplete character, was not among those listed by Trichet. This can only be explained once you consider the dogmatic and naive vision that underlines the institutional design of the eurozone, which implicitly assumes that once accession countries have met the convergence criteria set in the Maastricht Treaty, the proper functioning of the eurozone would almost automatically guarantee nominal stability forever.<sup>3</sup> This also explains why the ongoing debate over the lack of performance of the eurozone states that its failure resides in its "institutional design", which does not fully meet the criteria highlighted in the current literature on currency unions (Mundel 1961, McKinnon 1973 and Kenen 1969), since it lacks full price flexibility and labour internal mobility, as well as a fiscal pillar. However, this argument overlooks the fact that the eurozone means much more than establishing a fixed (and irrevocable) exchange rate regime between some European Union (EU) economies. The eurozone also implies the introduction of a monetary policy strategy which is unequivocally rooted in the convention that inflation is a monetary phenomenon, and establishing an institutional framework that impedes its central bank (the ECB) from displaying (in case of need) all the potential "powers" and functions that central banks normally have in developed economies to deal with the inherent economic and financial instability that characterizes capitalist economies (Minsky 1982). In this regard, De Grauwe (2013: 3) reminds us that "central banks were originally created to deal with the inherent instability of capitalism", as Goodhart and Illing (2013) show, and that "the concern for price stability only came much later". Regarding the eurozone, Bibow (2015: 2-3) has clearly shown that "the institutional and functional constraints that delineate the ECB's scope for policy action under crisis" are "a consequence of the peculiar vision of central banking that underlies the Maastricht Treaty". However, these legal restrictions have critically narrowed, compared with other central banks, the range of activities that the ECB is able to carry out to act as a truly modern central bank (Bibow 2015: 20).

The global financial crisis of 2007 not only caused a significant economic recession in the European Union from 2010 onwards, which was later aggravated by the European sovereign debt crisis. It also raised important political concerns about the prospects of the breakdown of the project, and about the validity of the economic principles that inspired its original design. Consequently, this paper aims to contribute to the ongoing discussion over the performance of the eurozone by suggesting the need to conduct a profound debate over the implicit economic theoretical assumptions that delineate the day-to-day functioning of the ECB's monetary strategy. These principles, which according to Issing *et al.* (2001: 3) are sustained by academic work on macroeconomics and monetary policy which show what monetary policy can and cannot do, were strongly inspired "by the [particular historical] experience of the Great Inflation of the 1970s" and the "consensus [that] gradually emerged from this experience". However, it is time the evidence provided by the Great Financial Crisis of 2007, and subsequent European sovereign debt crisis, is taken into account when thinking about the need of implementing structural and institutional reforms in the eurozone. In

<sup>3</sup> Actually, in the context of the ongoing discussion on the institutional reform of the eurozone, some authors explicitly state that, "contrary to the view of the early 2000s" [reflected in the Maastricht Treaty, and that explicitly assumed monetary policy was a strong enough instrument to cope with area-wide shocks] "Fiscal policy is increasingly regarded as a necessary complement to monetary, especially in situations when the latter is constrained by the zero lower bound; and market reactions, or the fear of them, can prevent national fiscal policy from playing its stabilization role when a country is hit by a large shock. Hence, there is a need to reconsider the role of fiscal policy in EMU." (Pisani-Ferry 2018).

particular, it is urgent to consider the monetary strategy of the ECB really needs to contribute not only to the price stability goal, but also to the economic progress of its member economies. It is not an easy task, of course, because as the "architects of the ECB" have acknowledged, the monetary neutrality "is [now] an act of law engraved in an international treaty, and therefore not subject to evaluation over time" (Issing *et al.* 2001: 99).

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

## **A CRITICAL ASSESSMENT OF THE ELEMENTS OF THE ECB'S MONETARY POLICY STRATEGY**

The ECB's monetary strategy comprises two<sup>4</sup> main elements: a concise definition of its target, which is the attainment of price stability, and a non-deterministic (non-mechanical, 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. These elements are known as the "two-pillar framework" of the ECB's monetary strategy (Issing *et al.* 2001: 2-5). The two aforementioned elements of the monetary strategy are complemented by a third one, the principle of central bank independence. This was not only one of the formal requirements established in the convergence criteria to access the eurozone, but also a presumption that for the ECB to achieve its primary goal (price stability), it would require full independence to conduct its monetary policy without any political interference.

### **Price stability**

The Maastricht Treaty not only assigned the ECB 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, as an inflation rate below 2%, which five years later was replaced by "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).

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". This part of its mandate, probably included in the official document for political correctness, has always been dismantled by academic arguments that remind us all the time that the best contribution monetary policy can really make is to guarantee price stability. The following quote reveals clearly this argument (emphasis not in original quote):

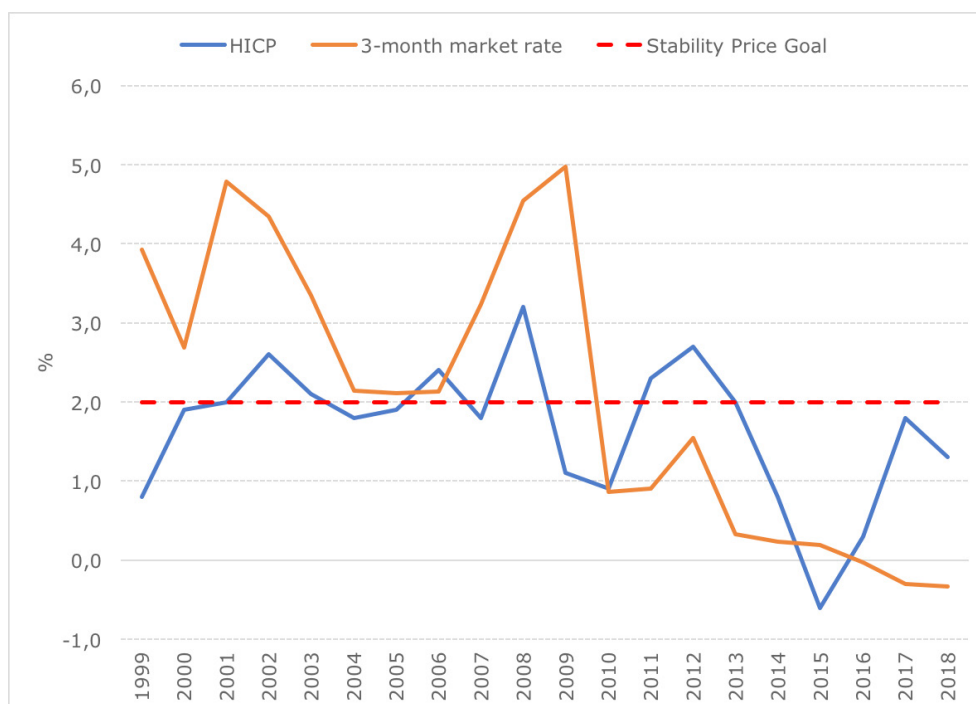
"Without prejudice to this primary objective, monetary policy shall support the general economic policies of the Community. This arrangement is rooted in the principle – supported by *empirical evidence* and *academic research* and underpinned by a broad *public consensus* – that *the maintenance of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

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<sup>4</sup> Although the ECB's Governing Council had announced the broad lines of its monetary strategy in a press release on 13th October, 1998, it published the details later, in January 1999, and stated that its monetary strategy consisted of three main elements (ECB 1999: 39). These three elements mentioned by the ECB are equivalent to the two mentioned here, however, as we have considered the two pillars as one single element, not two.

If we concentrate on the 2% price stability objective, which is represented by the dotted red line in Figure 1, we can observe that the eurozone has never suffered from high inflation. In fact, the average inflation rate for the whole period 1999:Q1 to 2018:Q3 is 1.7%. This may be considered close to the official definition of price stability of an inflation rate below, but close to 2%. It was during the period extending from 1999 to 2008 that inflation was well above its target, with an average inflation rate of 2.2%, but this reverted from 2009 onwards, when the average inflation rate went down to 1.2%.

**FIGURE 1**  
**INFLATION AND INTEREST RATES IN THE EUROZONE: 1999:01 - 2018:09**



Source: ECB, Eurostat and own calculations

Considering the 78 quarterly observations ranging from the first quarter in 1999 to the second one in 2018 (see Table 1), only 19 times was the inflation rate close to the 2% objective; that is, the ECB only managed to fulfill its stability price objective for around 24% of the 78 quarters.<sup>5</sup> It is also worth noting that in the 59 quarters when the inflation rate fell outside the goal boundaries, 33 times it was below 1.8%, and 18 times below 1%; only 3 times did it exceed the 3% barrier in the first three quarters of 2008, although inflation never exceeded the 4% barrier (the highest rate was 3.8% in the third quarter of 2008). These are the results for the whole period 1999-2018. But when we split up the analysis to consider the structural break that occurred in the fourth quarter in 2008, several important differences arise. Let us briefly sum up the more relevant aspects below.

<sup>5</sup> In our analysis, we have considered being close to the target when the inflation rate is within the +/- 10% boundary around its 2% level.

**TABLE 1**  
**INFLATION TARGET PERFORMANCE IN THE EUROZONE. 1999 - 2018**

Time Period	Below target			Within target	Above target		
	<0.5%	< 1%	< 1.8%	1.8 to 2.2%	>2.2%	>3%	>4%
1999:Q1-2008:Q4	0	1	5	17	18	3	0
2009:Q1-2018:Q2	12	17	28	2	8	0	0
1999:Q1-2018:Q2	12	18	33	19	26	3	0

Source: ECB, Eurostat and own calculations

During the first period, 65% of the occasions (15 out of 23) when the inflation rate missed the target correspond to situations where inflation was in the immediate upper boundary from target (2.2 to 3%). By contrast, in the second period, in 47% of the occasions (17 out of 36) when inflation missed its target, the inflation rate hit the lowest boundary (< 1%). Another observation worth mentioning is that during the second period, inflation fell within the target bounds only twice, whereas this happened 17 times during the first period.

Considering that the ECB has provided significant monetary stimulus over recent years in the conviction that these measures would bring inflation back to its objective of price stability (Coeuré 2016), one understands the ECB's desperation (and frustration) for the persistent ultra-low inflation in the eurozone, since this shows that the institution has often failed to fulfill its mandate. But the ECB's frustration with current low inflation has another important reading, with relevant implications for the validity of the implicit model of the ECB's monetary strategy, insofar as it puts into question the conviction expressed by Mario Draghi several years ago: "a committed central bank can always fulfill its mandate ... regardless of the stance of other macroeconomic policies" (Draghi 2006). Other reputed economists have even suggested that "the aberration" of too low and falling inflation is producing great theoretical discomfort, since it has broken "the traditional causal link between money supply and prices (Roubini 2016). So, the "problem" of low inflation in the eurozone is not only that it shows that the ECB has been unable to reverse the deflationary trend over the past years, but it has also broken the money-inflation link assumed in the economic model which sustains the ECB's monetary strategy. This model seemed to work when the problem was to bring inflation down to the 2% target; but not during the "abnormal" scenario of "too low and falling inflation".

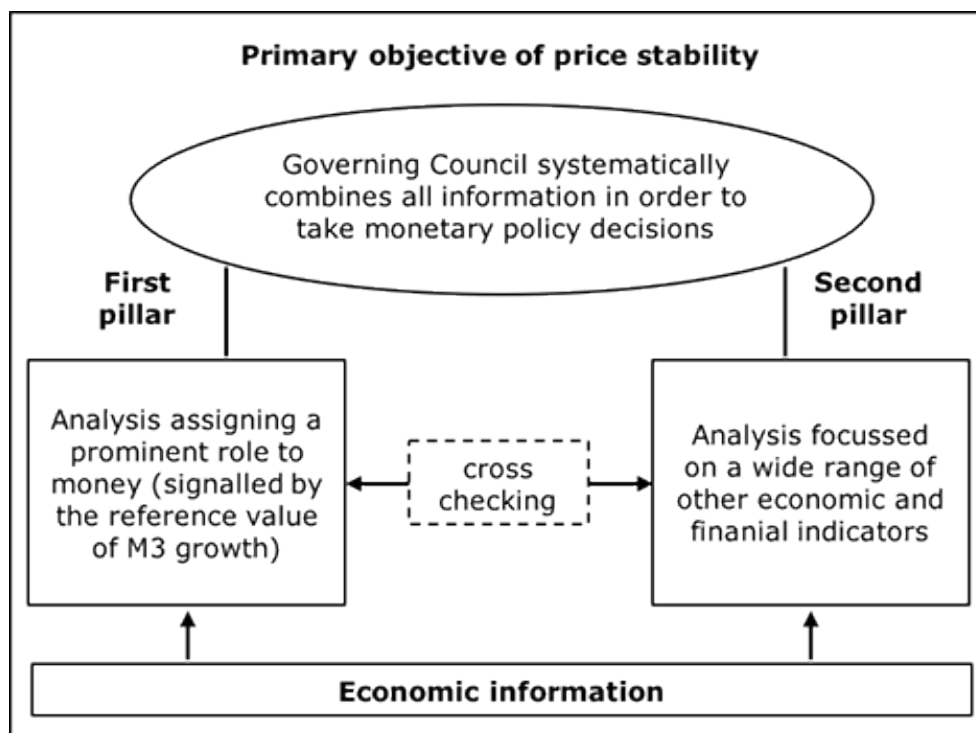
Of course, the ECB could always argue that inflation is a long-run monetary phenomenon, so it is premature to draw any conclusion from the last ten years of experience. But putting aside the controversy regarding what "long-run" really means, it should not be overlooked that "long-run" empirical evidence is not unequivocal either; for example, De Grauwe and Poland (2005) found (in their empirical work on 160 countries in a temporal period of 30 years) a "strong positive relation between long-run inflation and the money growth rate" for some countries, but they also concluded that this relationship turned out to be weak, if not absent, "for low-inflation countries".

### The two pillars

According to the ECB's own definition of its stability-oriented monetary strategy, the two pillars<sup>6</sup> [of the monetary strategy] represent the elements that guarantee the achievement of its primary goal: the attainment of price stability.

<sup>6</sup> 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 2**  
**THE "TWO PILLARS" OF THE ECB'S MONETARY POLICY STRATEGY**



Source: as shown in ECB (2000: 39)

It is claimed the ECB's monetary strategy does not represent a mechanical or deterministic *modus operandi*, so the ECB "eschews mechanistic" monetary policy responses to deviations from a specific target or developments in a specific indicator variable (ECB1 1999: 50). However, it was through the precise definition given to price stability<sup>7</sup> and the assignment of a concrete benchmark for money<sup>8</sup> in the first pillar, that these two elements determine not only the ECB monetary policy actions, but also its implicit economic model.<sup>9</sup> In this regard, it clarifies the following assertion made by Wim Duisenberg in October 1998, in response to a journalist when presenting the monetary strategy to the media, when he acknowledged the prominent role of money in the monetary strategy (Issing 2006: 2):

"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"<sup>10</sup>

The importance attributed to money in the ECB's monetary strategy was the result of the strong influence exerted by those who believe that money serves as a "lighthouse signaling inflation dangers ahead" (Issing 2006: 8), but this argument finds very little support in the empirical evidence in the

<sup>7</sup> An inflation rate below but close to 2%.

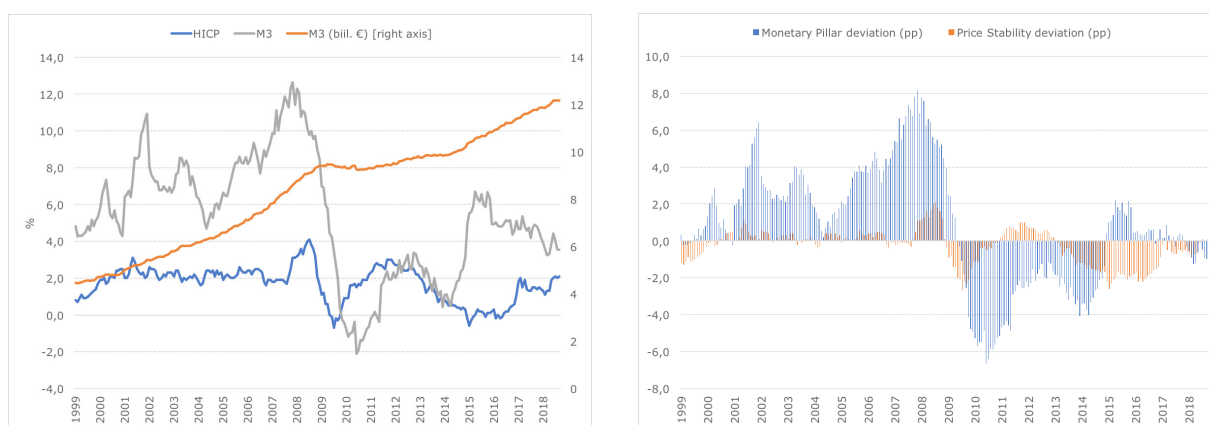
<sup>8</sup> The prominent role for money, which has been always justified by the "belief" that inflation is always and everywhere a monetary phenomenon, was secured by the establishment of a benchmark (4.5%) for the growth of the M3 aggregate.

<sup>9</sup> After reading Otmar Issing's interesting personal account on the delimitation of the ECB's monetary strategy (Issing 2006), which took place during the period between the establishment of the ECB, in June 1998, and the beginning of Stage Three of the European Economic and Monetary Union, in January 1999, one 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 formally practise inflation targeting and pay close attention to monetary aggregate. However, it is out of question that both elements can be integral to the ECB's monetary strategy.

<sup>10</sup> 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's monetary strategy in October 1998.

eurozone. Figure 3 shows, on the left-hand side panel, the inflation rate and the monetary aggregate M3, and on the right-hand side, the deviations (in percentage points) of inflation and M3 from their corresponding reference values (2% for inflation and 4.5% for M3). The correlation coefficient between inflation and the M3 (measured both in € and in yearly % change) is negative (-0.35), whereas it turns positive (0.34) when inflation and M3 are measured in terms of deviations with respect to their targets. However, when we concentrate on the period starting in 2009, not only is the correlation coefficient between inflation and M3 lower (-0.19), but also the correlation coefficient for the deviations now turns negative (-0.40). What is the point, then, in being guided by a "lighthouse" that helps so little to anticipate deviations from the price stability goal?

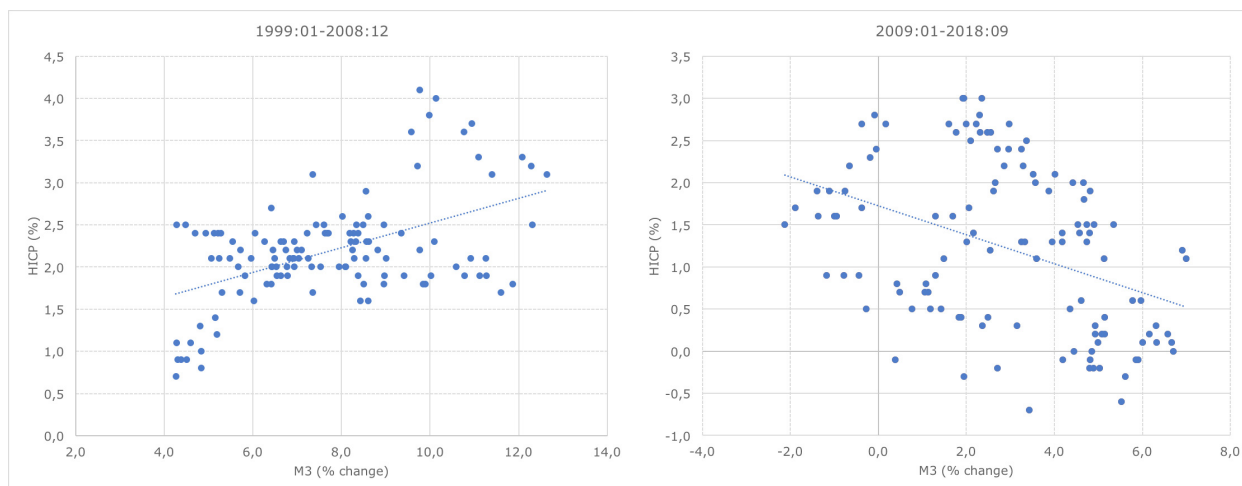
**FIGURE 3**  
**INFLATION AND M3 GROWTH IN THE EUROZONE. 1999:01 – 2018:09**



Source: ECB, Eurostat and own calculations

A similar conclusion could be drawn when studying the relationship between money and inflation at different stages of the business cycle, as depicted in Figure 4, which shows the inflation rate and the M3 growth rate for expansion and recession periods, respectively. Whereas the monetarist view suggests the existence of a positive relationship, in the long-run, the graphs show this positive correlation only exists for the expansion (left panel), whereas for the recessionary period (right panel) the correlation turns negative.

**FIGURE 4**  
**INFLATION AND M3 GROWTH IN THE EUROZONE.**  
**CROSS SECTION ANALYSIS 1999:1 – 2018:09**



Source: ECB, Eurostat and own calculations



## ASSESSING THE ECB'S MONETARY POLICY RESPONSE

We suggested, in the above section, that the ECB claims its monetary strategy "eschews mechanistic" monetary policy responses to deviations from a specific target or developments in certain variables (ECB 1999: 50), so it "cannot be expressed by a simple mathematical function" (Issing *et al.* 2001: 2-5). However, a large collection of empirical studies exists 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, and 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 also be found in the papers by Alesina *et al.* (2001), von Hagen and Brückner (2002), Breuss (2002), Galí (2003), and Bletzinger and Wieland (2016), among many others.

These empirical results are not surprising, since Taylor's rule assumes that central banks set their official interest rates according to the deviation of both inflation and output from their targets, and it is known that the primary objective of most central banks is the attainment of price stability and the avoidance of business cycles.

In order to try to analyse the influence exerted by inflation and GDP growth on the ECB's decisions on monetary policy, we proceeded to calculate the interest rate that would result from applying, for the whole of the eurozone, a conventional Taylor type rule. In addition, two variants of this rule were analysed that seek to capture the influence exerted by the two pillars that are contemplated in the ECB's monetary policy strategy and the trajectory of the monetary aggregate M3 as well as other variables that can anticipate inflationary risks. The results of our calculations are shown in Figure 5, which depicts the official ECB's Main Refinancing Operation (MRO) interest rate, as well as the benchmark interest rates resulting from the application of a conventional Taylor-type rule (Taylor) and several alternatives to this standard rule (ECB-1, ECB-2, OW, and Taylor-OW). The ECB-1 rule includes, apart from the deviations of inflation and output from their targets, the deviation of the monetary aggregate M3 from its reference value, whereas ECB-2 also contains the growth rate of nominal Unit Labour Cost (ULC) per employee. The inclusion of the M3 is aimed at considering explicitly the monetary pillar in the ECB's monetary strategy, whereas the inclusion of the ULC per employee is aimed at considering the influence of labour costs on inflation dynamics.

The three rules follow the standard specification proposed by Taylor (1993), and therefore include a constant term that takes value 4, and which results from considering a natural interest rate of 2% and the inflation target contemplated by the ECB (2%). Likewise, the contemplated monetary rules include two parameters that reflect, respectively, the response of the ECB to inflation deviations regarding its target, which takes value 1.5, and GDP deviations with respect to its potential growth, which takes a value of 0.5. The two proposed extensions of the monetary rule (ECB-1 and ECB-2) have other parameters that, respectively, include the responses of the ECB to the deviations of the M3 from its 4.5% objective, and an excessive growth of Unit Labour Costs (considering excessive behaviour growth above 1%). In this case, we have assumed that the parameters take values of 0.5 and 1, respectively. Finally, it should be mentioned that we have assumed a growth rate of 1.5% for potential GDP. The following expression sums up the three rules described above:

$$i = 4 + \alpha * HICP + \beta * GDP + \gamma * M3 + \delta * ULC$$

where HICP, GDP, M3 and ULC are expressed as differences in terms of their annual rates regarding their respective targets.

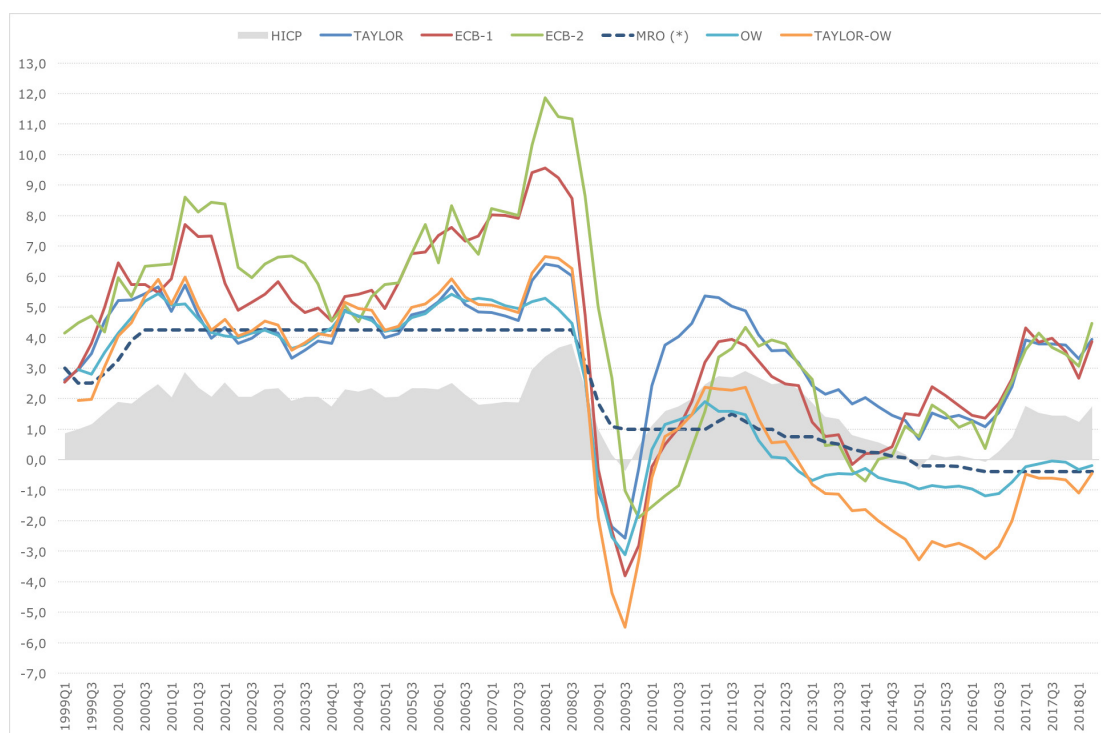
We have also computed a fourth interest rate rule, which is inspired in the work by Orphanides and Wieland (2013), that has been applied to the eurozone by Bletzinger and Wieland (2017), whose expression is as follows:

$$i_t = i_{(t-1)} + \alpha * HICP + \beta * GDP$$

We have computed two alternatives of the above rule. The first one (labelled as OW in Figure 5) used the original parameters considered by Bletzinger and Wieland (2017), that is  $\alpha = \beta = 0.5$ , whereas the second specification (Taylor-OW) assumes that parameters  $\alpha$  and  $\beta$  take the original values considered in Taylor (1.5 and 0.5, respectively).

Figure 5 shows that, up to 2007, inflation was close to the ECB's price stability objective, although as of 2009, after a brief hiatus (between the third quarter of 2007 and 2008), where there was a sustained increase, average inflation in the euro area was not only well below the price stability target, but also remained below 1% for many quarters. As for the official interest rate, it remained practically unchanged at around 4% until the end of 2008, and always well below the level indicated by the Taylor, ECB-1 and ECB-2 rules. This has been interpreted as a sign of the excessive laxity in the monetary policy practised by the ECB during this period. However, this laxity is not observed when using the OW and Taylor-OW rules, since in these cases, the deviation of the official rate from those proposed by both rules is much lower. This is explained by the omission, in these two specifications, of the constant term that appears in the other three rules considered. The same is observed for the period starting from 2009, where once again the Taylor, ECB-1 and ECB-2 rules reveal an excessive laxity in the monetary policy practiced by the ECB during these years. However, in this second period, inflation, GDP, monetary aggregate M3, and Unit Labour Costs registered a markedly lower variation than that recorded in the previous period. Therefore, it is evident that the monetary laxity indicated by the conventional rules are the result of the express consideration of a "natural" interest rate of 2%, whose justification only has a basis in orthodox monetarist thinking.

**FIGURE 5**  
**INFLATION AND INTEREST RATES IN THE EUROZONE. 1999:Q1 – 2018:Q2**



Source: ECB, Eurostat and own calculations

Apart from calculating the benchmark rate performed by these monetary rules, we have also estimated the following interest rate reaction function, which includes the variables of the monetary rules mentioned above and the lagged value of the official interest rate (MRO).

$$MRO_t = \alpha_1 MRO_{t-1} + \alpha_2 GDP_t + \alpha_3 HIP_t + \alpha_4 M3_t + \alpha_5 ULC_t + \mu_t$$

The estimation was conducted in first differences by Ordinary Least Squares (OLS), both for the whole period, as well as for the two following sub-samples: 1999:Q1 to 2008:Q2 and 2008:Q3 to 2018:Q2. The results are indicated in Table 2.

**TABLE 2**  
**ESTIMATION RESULTS OF THE MONETARY POLICY RULES FOR THE EUROZONE**

	Taylor		ECB-1		ECB-2	
	Parameter	t-statistic	Parameter	t-statistic	Parameter	t-statistic
Full sample: 1999:Q1 to 2018:Q2 (76 observations)						
MRO(-1)	0.503	6.49	0.469	5.96	0.468	5.75
Constant	-0.017	-0.91	-0.018	-1.01	-0.018	-0.99
GDP	0.089	3.77	0.091	3.91	0.091	2.75
HICP	0.151	3.26	0.150	3.18	0.150	3.10
M3			0.031	1.82	0.031	1.78
ULC					0.001	0.02
Schwarz criterion	-51.95		-51.07		-46.75	
R <sup>2</sup> adjusted	0.61		0.62		0.61	
Sub-sample 1: 1999:Q1 to 2008:Q2 (36 observations)						
MRO(-1)	0.599	5.68	0.604	5.57	0.606	5.47
Constant	0.028	1.55	0.027	1.44	0.027	1.40
GDP	0.097	2.67	0.098	2.65	0.093	2.07
HICP	0.037	0.74	0.040	0.77	0.042	0.78
M3			0.005	0.29	0.004	0.22
ULC					-0.006	-0.20
Schwarz criterion	-49.74		-46.26		-42.72	
R <sup>2</sup> adjusted	0.49		0.47		0.45	
Sub-sample 2: 2008:Q3 to 2018:Q2 (40 observations)						
MRO(-1)	0.356	3.18	0.260	2.23	0.244	1.97
Constant	-0.065	-2.08	-0.068	-2.28	-0.070	-2.29
GDP	0.072	2.18	0.083	2.58	0.100	2.01
HICP	0.245	3.18	0.223	3.00	0.221	2.93
M3			0.062	2.07	0.062	20.29
ULC					0.025	0.04
Schwarz criterion	-12.42		-13.35		-9.89	
R <sup>2</sup> adjusted	0.63		0.66		0.65	

The results for the full sample period (1999:Q1 to 2015:Q2) show that the deviations of inflation and output from their targets are always significant and, not surprisingly, inflation always has a higher impact on MRO. The monetary pillar (M3) is also significant (model ECB-1) but not the Labour Cost parameter (model ECB-2). The lagged value of MRO is always significant and according to the value of the estimate parameter exerts a high influence on the evolution of MRO.

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:Q2) all variables but GDP and the lagged interest rate are not significant. The much lower goodness of fit of the model is also significant for this sample period:

the R-squared for this first period goes down to 0.36, whereas for the full sample it was always above 0.61. For the second period, all variables but Labour Cost are again significant, and the results reveal a much higher R-squared compared to the first sub-sample. The results seem to indicate that the period of expansion between 1999 and 2008 constitutes an anomaly in terms of what any observer would expect when explaining the trajectory of the official ECB rates according to the variables included in their monetary strategy, and not what has happened since 2009 onwards.

In order to understand more about the reasons that may have influenced the ECB when announcing variations in its interest rates, we have conducted a simple exercise whose results are shown in Table 3. In Table 3, we have tried to characterize the context in which there has been a change in interest rates, either upwards or downwards, in accordance with the values of inflation and GDP growth. Our data set, which runs from 1999:Q1 to 2018:Q2, has 78 quarterly observations and, according to our calculations, 13 changes in the MRO and 77 in Eonia.<sup>11</sup> Only 2 out of these 13 changes correspond to a rise in the rate, and both occurred in 2011. Most interest rate lowering took place from the fourth quarter 2011 onwards.<sup>12</sup>

**TABLE 3**  
**INFLATION, ECONOMIC GROWTH AND CHANGES IN MRO INTEREST RATES (AND EONIA)**  
**IN THE EUROZONE. 1999: Q1 TO 2018: Q2**

		HICP			
		>2.2%	2.2 - 1.8%	<1.8%	Total
<b>GDP</b>	<b>&gt; 2%</b>	<b>10</b> ⇔ / 8 ↑ 2 ↓	<b>10</b> ⇔ / 10 ↑	<b>10</b> 1 ↓ / 6 ↑ 9 ↓	<b>10</b> 1 ↓ / 24 ↑ 11 ↓
	<b>1 - 2%</b>	<b>7</b> 2 ↑ / 3 ↑ 4 ↓	<b>5</b> ⇔ / 1 ↑ 4 ↓	<b>10</b> 4 ↓ / 3 ↑ 7 ↓	<b>22</b> 1 ↓ / 24 ↑ 11 ↓
	<b>&gt; 1%</b>	<b>9</b> 2 ↓ / 1 ↑ 8 ↓	<b>4</b> ⇔ / 1 ↑ 3 ↓	<b>7</b> 4 ↓ / 4 ↑ 3 ↓	<b>20</b> 6 ↓ / 6 ↑ 14 ↓
	<b>Total</b>	<b>26</b> 2 ↑ 2 ↓ / 12 ↑ 14 ↓	<b>19</b> ⇔ / 12 ↑ 7 ↓	<b>33</b> 9 ↓ / 13 ↑ 19 ↓	<b>78</b> 2 ↑ 11 ↓ / 37 ↑ 40 ↓

Source: ECB, Eurostat and own calculations

As shown in Table 3, 10 out of the 78 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 on these occasions, but it did not, as indicated in the table (although Eonia went up 8 times during these episodes). The two rate cuts during the nine occasions when inflation was well above 2.2% and the economy growing below 1% might be a little surprising for a central bank determined to achieve price stability. To the contrary, that is, when output growth was weak (< 1%) and inflation below its target (< 1.8%), one would expect the ECB to reduce rates; this scenario occurred on seven occasions, and the ECB cut the MRO rate 4 times. This time the ECB seemed to have responded as expected to its orthodox monetary strategy.

Let us now explore further what the "macroeconomic context" was when the ECB raised (twice) or reduced (eleven times) the MRO rate. The ECB raised the MRO rate twice in 2011 (second and third quarters). In these cases, 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 had also stagnated, for its growth rate was just 0.6% (for the previous 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 Unit

<sup>11</sup> Since the variables in our data set were quarterly, we grouped the changes occurred in the MRO into quarters.

<sup>12</sup> Only three rate cuts fell outside this period and took place in last quarter of 1999 and in the first half of 2009.

Labour Costs also exhibited a rather low rate of growth for the same seven quarters period (0.4%). So, neither inflation nor M3 nor Unit Labour Costs seemed to justify a raise in MRO.

Let us now look at the eleven times when the ECB reduced the MRO rate. The nine rate cuts took place in three different periods. The first one was in the last quarter of the eurozone's first year, 1999. On that occasion, the Eonia had been decreasing for the previous quarters and inflation was at a very low level (1% average growth for the first three quarters). The M3 was experiencing moderate, but increasing growth (in the third quarter, it reached 5.2% growth, above its 4.5% reference value). The GDP and Unit Labour Costs were growing at 2.5 and 2.3%, 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 the first half of 2009, with inflation in a downward trend (from 3.8% in 2008:Q3 to below 1% in 2009:Q1) and with GDP reporting a fall of 2% in 2008:Q4. Eonia was also in a descending trend. However, Unit Labour Cost and M3 were experiencing an average growth of 3.7 and 8% in the previous year (2.5 and 10% for the last two years), the ECB could not find support for lowering its policy rate on these the variables. In this case, the reduction in MRO could only be explained by the inflation, GDP growth and Eonia rate descending trends.

The third period when the ECB reduced the MRO rate (six times, consecutively) starts in the last quarter of 2011, with a 50 basis point cut in rates (from 1.5 to 1.0%), which reduced MRO to 0% in 2016:Q2. This period was characterized by a low (and decreasing) growth in all relevant variables: Euribor, GDP, Unit Labour Costs and M3. However, it is worth noting that from 2015 onwards the GDP and the M3 exhibited strong growth (2.2 and 5.0%, respectively), which was accompanied by a relatively low development in prices (0.7% and ULC (7.3%).

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

The first point we could mention is that the influence that inflation, GDP, M3 and Labour Costs have, apparently, exerted on the MRO is rather ambiguous, depending on whether we conduct the analysis for the whole period 1999-2018 or if we instead differentiate between the sub-periods that appear from the third quarter of 2008. For the full sample period, the empirical results show that deviations of inflation, GDP and M3 from their targets exerted an important influence on the MRO changes, however, these results do not hold for the period 1999:Q1 to 2008:Q2, which should represent the "golden age" of eurozone" for mainstream economists who see deflation and recession as "abnormal" times.

We have no doubt the ECB takes full account of the eurozone's macroeconomic prospects when adopting its monetary policy decisions. However, evidence shows the aggregate monetary M3 has never pointed in the same direction as the ECB's decisions when they were finally taken, not that the M3 seems to be statistically significant in the interest rate rule for the period 1999-2008. We think those who constantly refer to the prominent role that the M3 plays in the ECB monetary strategy should take note of this. Empirical observations also show that the ECB did not raise its policy rate during the occasions when both inflation and output were well above their corresponding targets. Equally surprising (for a monetarist economist) should be the two rate cuts when inflation was well above 2.2%, as well as the two rises in 2001, despite inflation, M3 or Unit Labour Costs not experiencing any rise. It is far from being straightforward how the ECB behaves, in practice; but evidence suggests it does not behave the way its monetary strategy (implicitly monetarist) would suggest.

## CONCLUSIONS

In this paper, we have conducted a critical assessment of the performance of the ECB's monetary policy strategy and its implicit two-pillar model with the aim of widening the ongoing discussion over eurozone reform.

We have argued that the current discussion on the reform of the eurozone has been dominated by issues regarding the failures in its original design, which normally end by pointing out the trivial fact that the eurozone lacks an effective fiscal pillar. However, we have suggested in this paper that the discussion should go much further and deeper, to explore the relevance of the underlying theoretical framework that inspires the ECB's monetary strategy (and its corresponding theoretical assumptions), since empirical evidence suggests the ECB is neither following these principles strictly nor attaining its official goal since 2008.

The low and falling inflation that the eurozone has experienced after 2008 radically changed the economic scenario within which the ECB had been conducting its monetary policy since 1999. This has forced the ECB to improvise an arsenal of non-conventional monetary instruments which, although not popular among orthodox economists, have been the only ones that have been able to guarantee performance in the markets in a context of zero-lower bound interest rates and a complete slump in the credit markets.

Indeed, the ultra-low and falling inflation in the eurozone is seen by many as an "aberration", which causes theoretical discomfort, for it reveals the rupture of "the traditional causal link between money supply and prices" (Roubini 2016) and the "disconnection between economic performance and inflation" (Draghi 2014). However, it is worth noting that the discomfort caused by low inflation has never produced the thought that it might be necessary to "revisit the thinking behind the design of European Monetary Union" (Dow 2016: 1), and particularly the implicit monetarist model that inspires the ECB's monetary strategy. The lack of reaction in this regard, we dare to suggest, is deliberate, since addressing this issue might eventually lead to the confirmation of the necessity to conduct a profound revision of the underlying monetarist theoretical framework that delineates the ECB's monetary strategy. The question is how long the European Union can afford to delay this debate. How long can the European Union survive with an "imperfect" monetary union and a "constrained" central bank?

## 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.
- Bayoumi, T. and B. Eichengreen (1993): "Shocking aspects of European monetary integration", in F. Torres and F. Giavazzi (eds): *Adjustment and growth in the European Monetary Union*, London: CEPR, Cambridge University Press.
- 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, pp. 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.
- Bletzinger, T. and Wieland, V. (2016): "Forward guidance and "lower for longer": The case of the ECB", Institute for Monetary and Financial Stability, Working Paper no. 102
- Bletzinger, T. and Wieland, V. (2017): "Lower for longer: The case of the ECB", *Economic Letters*, vol. 159, pp. 123-127.
- Breuss, F. (2002): "Is ECB's monetary policy optimal?", Working Paper no. 173, WIFO (Austrian Institute of Economic Research).
- Cœuré, B. (2016): "People are not only savers", opinion piece from Benoît Cœuré, Member of the Executive Board of the ECB, for the Frankfurter Allgemeine Sonntagszeitung, 1 May.

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*, Luxembourg, Office for Official Publications of the European Communities.

De Grauwe, P. (1992); *The economics of monetary integration*, Oxford, Oxford University Press.

De Grauwe, P. (2013); "Design failures in the eurozone: Can they be fixed", LSE' Europe in Question Discussion Paper Series, No. 57/2013, February 2013.

De Grauwe, P. (2015); "Design failures of the Eurozone", column at VOX CEPR Policy Portal, 7 September 2015. [available at <https://voxeu.org/article/design-failures-eurozone>]

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

Dehesa, G. de la (2011); "Eurozone design and management failures", column at VOX CEPR Policy Portal, 18 May 2011. [available at <https://voxeu.org/article/eurozone-design-and-management-failures>]

Dow, S.C. (2016): "Ontology and Theory for a Redesign of European Monetary Union", *World Economic Review*, vol. 6, pp. 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. (2015): "Monetary policy and structural reforms in the euro area", Speech by Mario Draghi, President of the ECB, at Prometeia40, Bologna, 14 December 2015.

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, pp. 39-50.

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

ECB (2003): "The outcome of the ECB's evaluation of its monetary policy strategy", *Monthly Bulletin, European Central Bank*, June, pp. 79-89.

ECB (2008): "10<sup>th</sup> Anniversary of the ECB", *Monthly Bulletin (Special Edition), European Central Bank*, May.

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

Emerson, M.; Gros, D.; Italianer, A.; Pisani-Ferry, J. and Reichenbach, H. (1992), *One market one money. An evaluation of the potential benefits and costs of forming an Economic and Monetary Union*, Oxford, Oxford University Press.

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, Basle, Bank for International Settlements.

Goodhart, C. and Illing, G. (2002); "Introduction", in C. Goodhart and G. Illing (eds), *Financial Crises, Contagion, and the Lender of Last Resort, a Reader*, Oxford, Oxford University Press.

Hayo, B. and Hefeker, C. (2002): "Reconsidering central bank independence", *European Journal of Political Economy*, vol. 18, pp. 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*, 4<sup>th</sup> 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.

Kenen, P. (1969); "The Theory of Optimum Currency Areas: An Eclectic View" in R. Mundell and A. Swoboda (eds), *Monetary Problems of the International Economy*, Chicago: University of Chicago Press.

Krugman, P. (1993); "Lessons of Massachusetts for EMU", in F. Torres and F. Giavazzi (eds.), *Adjustment and Growth in the European Monetary Union*, London: CEPR, Cambridge University Press.

Malo de Molina J. L. (2011); "La crisis y las insuficiencias de la arquitectura institucional de la moneda única", *Información Comercial Española*, vol. 863, pp. 21-34.

McKinnon, R. (1963); "Optimum Currency Areas", *American Economic Review*, vol. 53, pp. 717-25.

Minsky, H. P. (1982); *Inflation, recession and economic policy*, Brighton: Wheatsheaf.

Mundell, R. (1961); "A Theory of Optimal Currency Areas", *American Economic Review*, vol. 51, no. 4, pp. 657-65.

Pisani-Ferry, J. (2018); "Euro area reform: An anatomy of the debate", VOX CEPR Policy Portal, 2 October 2018. [available at <https://voxeu.org/article/euro-area-reform-anatomy-debate>]

Roubini, N. (2016): "The Global Economy's New Abnormal", column at Project Syndicate, 4 February 2016. [available at <https://www.project-syndicate.org/commentary/market-volatility-in-global-economy-by-nouriel-roubini-2016-02?barrier=accesspaylog>]

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