ECB MONETARY POLICY AGAINST THE RISK OF DEFLATION

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List of Acronyms

BIS	*Bank for International Settlements*
FED	*Federal Reserve System*
ECB	*European Central Bank*
EONIA	*Euro Overnight Index Average*
EURIBOR	*Euro interbank market*
HICP	*Harmonized Index of Consumer Prices*
LTROs	*Longer term refinancing operations*
MRO	*Main refinancing operations*
OMA	*Open market operations*
QE	*Quantitative Easing*
ROE	*Return on equity*
SRF	*Single Resolution Fund*
SRM	*Single Resolution Mechanism*
SSM	*Single Supervisory Mechanism*
TLTRO	*Targeted Longer-Term Refinancing Operations*
ZLB	*Zero lower bound*

Introduction

The monetary policy is an economic policy instrument that allows central banks to act taking into account the overall situation of the economy and the forecasts of possible future scenarios.

The purpose of this paper is to analyze monetary measures taken by the ECB when the financial crisis started, considering the risk of deflation that now threatens the economy. As a consequence, this work begins by describing and analyzing, in the first section, the conventional monetary policy of the ECB, trying to sort out those basic measures carried out by it.

In Section 2, the main effects and new situations that took place from the global crisis are commented. Despite the extremely expansionary measures and fiscal incentives applied by many economies to cope with the consequences of the crisis, the recovery of the activity remains at very low levels, or even in some cases it has entered in recession, keeping the unemployment rates at excessively high levels.

The ECB has been forced to introduce further measures to increase liquidity and to change interest rates. These measures have been described as unconventional because of their temporary nature and were launched at the beginning of the crisis.

Such measures and the risk of deflation are the subjects of Section 3. These measures are considered as unconventional ones established by the ECB, taking into account the inability to handle official interest rates to stimulate the economy, when they reached levels very close to zero. The aim is to provoke a liquidity expansion to increase demand, thereby reaching a different situation from deflation, that is, at rates close but less than 2%. In that section, such measures are analyzed and features that could involve a situation of deflation are discussed.

Looking for an orderly, related and schematic description of these concepts, Section 4 has been developed. In this Section, using tables and the duality "deflation – monetary policy", the possibilities or options are set, with the appearance of some doubts and inconveniences in the way to the inflation levels pursued by the ECB. Finally, Section 5 summarizes and concludes.

Section 1

Monetary policy. Conventional measures.

1.1 Introduction

Stability is essential for the economic system. Calvo (2014)[1] says that, without that requirement, institutions and markets are deprived of acting effectively, and making long-term decisions turns to be complicated.

To achieve that macroeconomic stability, it is necessary that the economic policy tries to achieve an objective of low inflation. All this is further achieved with the intervention of the corresponding fiscal policy, a well-functioning labor market and a dynamic and competitive financial system.

Therefore, monetary policy must address the relationship between monetary growth and inflation in the medium and long term. For that target, it is considered a wide range of monetary aggregates, mainly M3, which comprises the following levels:

- M1, Including cash and liquid deposits;
- M2, Sum of M1 plus time deposits up to two years and deposits with three months' notice;
- M3 itself, sum of M2, repurchase agreements, shares in money market funds, money market instruments and debt securities up to two years issued by monetary financial institutions.

Monetary policy is understood, from a traditional perspective, as the set of actions corresponding to Central Bank which aims to control the movements of the amount of money, interest rates and exchange rates, thereby seeking to

[1] Identified with flexibility and adaptation, but not with rigidity.

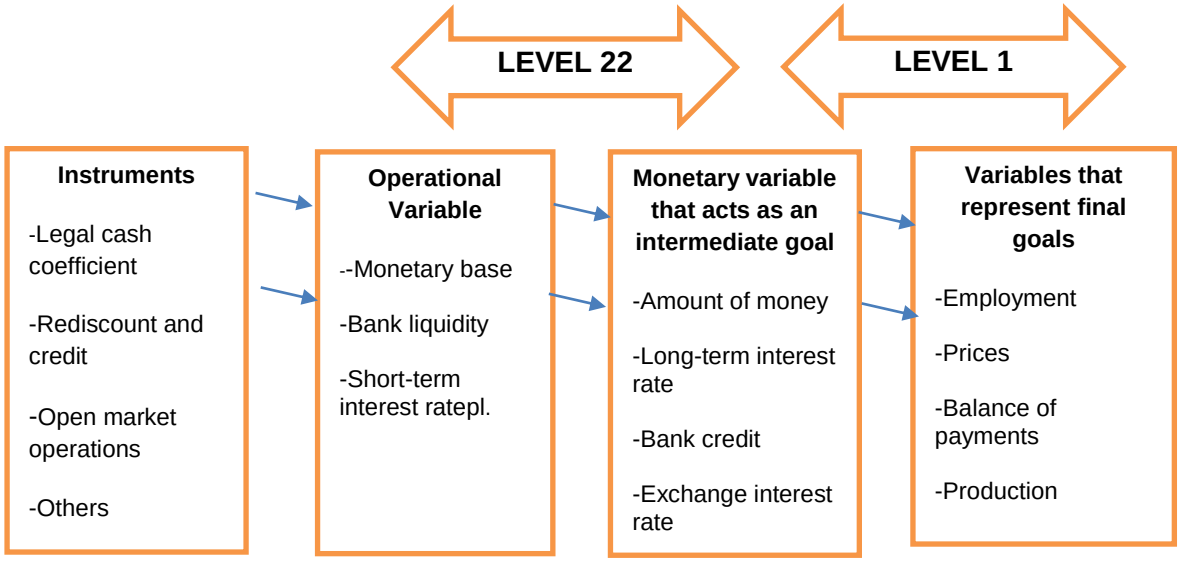
participate in the set of economic policy actions that support control inflation, employment, income growth or actual production, and balance of payments.[2]

Fernández Díaz et al (1999) suggest two levels when relating instruments to the targets, both intermediates and finals. These are:

1. It regulates an intermediate variable as the amount of money (M1, M2, M3 or M4), long term interest rates, etc., acting as intermediate objectives. This is geared towards achieving ultimate objectives such as employment levels, production, prices, balance of payments, etc.
2. An operating variable is chosen to regulate the mentioned intermediate targets. We could speak about the monetary base, bank liquidity, money market interest rates, etc. Moreover, these variables are intended to control the cash reserve ratio, the rediscount, open market operations, etc.

That is described in the following table:

Table 1. Instruments and goals of Monetary Policy



Source: Fernandez Diaz, A. et al (1999, p. 29): Monetary policy: efficiency and alternative approaches. Volume I. Editorial AC.

A very important variable in monetary policy are short-term interest rates, as they play a key role in the transmission of such policy towards its goals. The control of these interest rates has a decisive influence on nominal interest rates and, through

[2] Fernandez Diaz, A. et al (1999, p. 28): Monetary policy: its efficiency and alternative approaches. Volume I. Editorial AC.

various channels, on spending decisions of both companies and households, reaching the price level through its effect.

The ECB sets official interest rates depending on the direction of the policy that thinks it will carry out, trying to obtain the highest possible level in the concept of operational efficiency, which is, the capacity of the operational framework to enable decisions of monetary policy to short-term interest rates of the money market as accurately and quickly as possible. Therefore, operational efficiency ensures signaling and transmission of the monetary policy.[3]

1.2 Interest rates and monetary policy

It is important to consider that the goal that prevails, regarding the implementation of monetary policy, is price stability. To achieve this target, it is essential the existence of a mechanism for proper transmission of monetary policy, because when the mechanism works, changes in the official interest rate affect effectively to the inflation rate and, therefore, to all the economy.

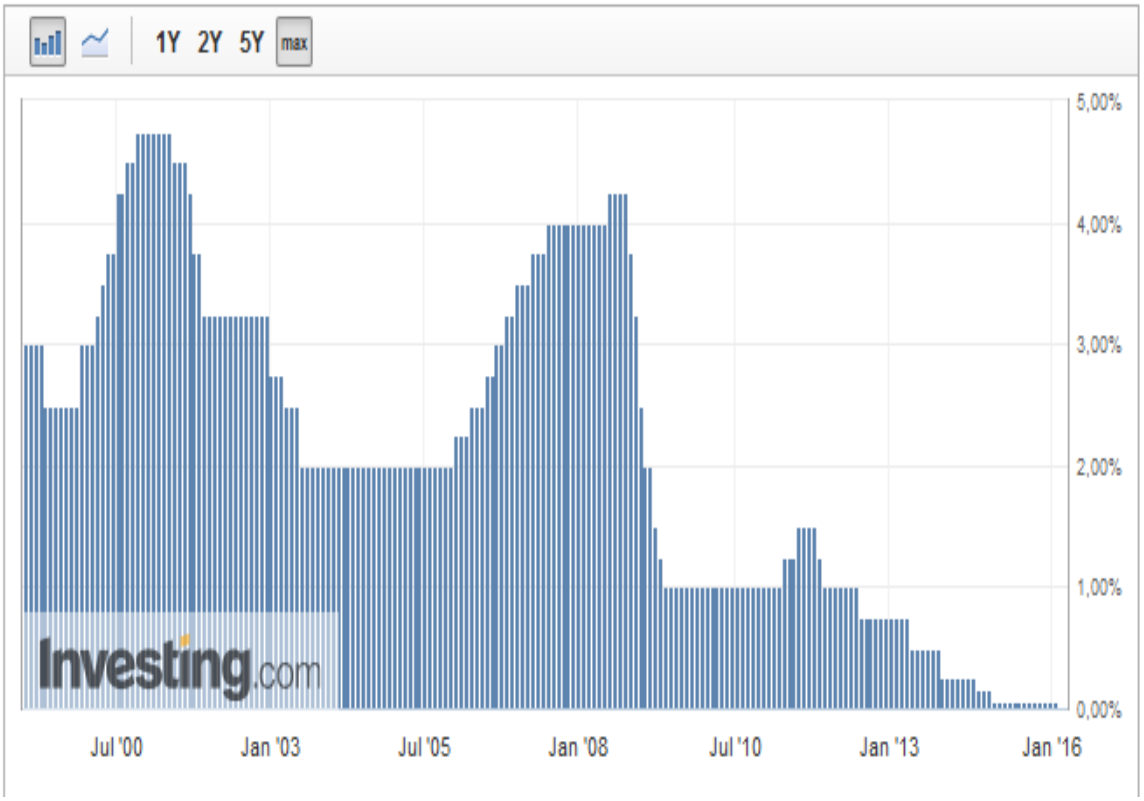
The influence of monetary policy on the economy is pretty obvious. It can be seen that a tightening of monetary policy causes a temporary reduction in its output.

It is also remarkable that changes in interest rates are able to affect economic activity through its effect on cash flows of the companies and the supply of bank credit.

Then, the ECB balance sheet and the official interest rate are collected. In it, its evolution is observed until such crises, as a result of a progressive reduction to levels close to 0%, are produced.

[3] European Central Bank (2011). "ECB´s monetary policy".

Graph 1. ECB official rate and intervention



According to Rico Belda (2014, p. 147), the transmission mechanism of monetary policy is extremely important because it allows us to understand the interaction between the real sector and the monetary sector of the economy. Although the transmission mechanism of monetary policy includes several channels, most economists believe that the interest rate channel is the main mechanism through which monetary policy affects economic activity.

Broadly speaking, it could be said that monetary policy is transmitted to the interest rates of loans and deposits applied by credit institutions to their customers, through the intervention of central banks in money markets, looking for the price stability as the main goal.

From the main characteristics of the transmission of interest rates, we can highlight the followings (ECB Monthly Bulletin August, 2009, pp 100-101..):

- Sometimes it is not considered cost-effective transmission speed.
- The movements are sometimes softened.

- The transmission may depend on whether the loans are made to businesses or families.
- It can also rely on taxation and regulation.
- The transmission is presumably better when there is greater competition from banks and a higher level of financial development, and more efficient financial structures.

It should be considered that in the first ten years of monetary union, it has been a big progress in the financial innovation, such as appearance of securitization, operations with credit risks, and development of complex financial structures. However, although these changes are important if are taken separately, possibly its effects on the transmission mechanism have been compensated with each other. The available aggregated empirical evidence suggests that the dynamics of short to medium-term real output and inflation in response to changes in monetary policy has not been significantly altered (ECB Monthly Bulletin May 2010; p. 93).

Generally speaking, we can mention that there have been four events in the world economy and the Euro area, which may have influenced the transmission of such monetary policy (ECB Monthly Bulletin May 2010; p. 94):

1. The uninterrupted process of structural reforms, especially in labor markets and products.
2. The introduction of the euro, which originated essential changes, especially the elimination of risks associated with fluctuating exchange rates within the Euro area.
3. Fast development of financial innovation and significant changes produced in the regulatory framework of the credit institutions.
4. Serious threat represented by the financial crisis for the proper performance of the transmission mechanism.

The facts and circumstances commented must have provoked alterations affecting the transmission mechanism. Now, in terms of the transmission of such monetary policy to inflation and product, we can add that, while some tend to increase the

impact of changes in interest rates on output and prices, others tend to reduce these effects.[4]

First, it should be considered what has been the evolution of the transmission process to interest rates applied by credit institutions in the Euro area. Its speed and amplitude depend on structural and cyclical factors. Therefore, they are usually adjusted with a lag to changes in official interest rates and market interest rates.

Given the market power of banks, it will be expected under normal conditions that market interest rates are between interest rates on loans and on deposits applied by credit institutions, which represent loans financing costs and the opportunity costs of deposits, respectively. The main problem is that these rates are not necessarily set with independence of each other, as credit institutions can engage in sales activities and cross-subsidization. In general, it can be expected that the interest rates fixing process by credit institutions will depend on the amount of competence and factors related to the cost of intermediation[5], among other things. (ECB Monthly Bulletin August, 2009.; p. 99)

It could also be said that monetary policy has a significant immediate effect on market interest rates at different maturities. Under normal circumstances, changes in official interest rates will be transmitted to money market rates for short-term transactions without guarantees, such as Eonia and Euribor.

The Eonia (Euro Overnight Index Average) is the one-day effective reference rate, being the weighted average of one-day credit transactions in the interbank market, where the banks that give such information are the same ones which give it to Euribor.[6]

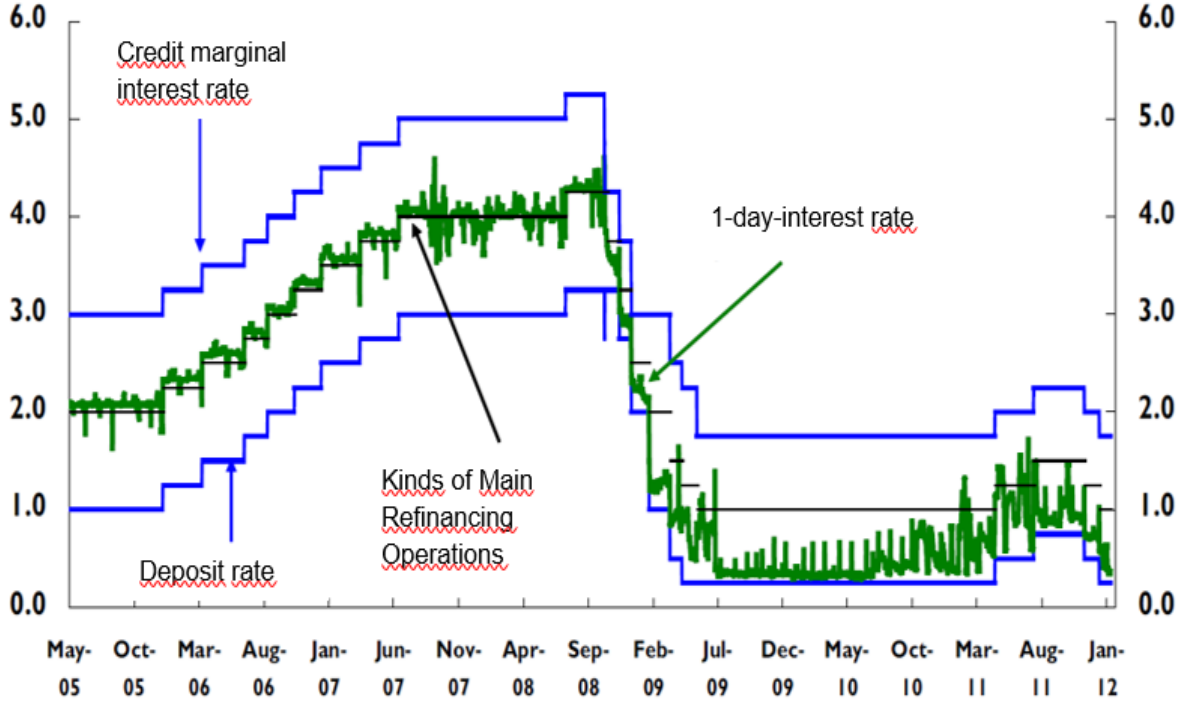
This is complemented by the Eonia Swap, where one of the parts receives a fixed interest rate in return for the payment of a variable interest rate. That one would be the Eonia Swap, which is obtained by the contributions of a panel of banks (Martin, 2009, p. 10).

[4] In order to assess the overall effect can be carried out a macroeconomic analysis of empirical, based on the autoregressive vector analysis or the use of structural models (ECB Monthly Bulletin May 2010; P 100.)
[5] Such as interest rate risk, credit, the degree of risk aversion, etc.
[6] The choice of panel banks serves market criteria such as turnover. The underlying idea is "the best price among the best banks".

Another relevant interest rate is the Eurepo, which is the rate at which a bank may provide financing to another bank if in exchange the first one receives a guarantee.[7]

The evolution of interest rates mentioned in previous pages is displayed. The crisis marks the point of variation in data tendency.

Graph 2. ECB official interest rates and one-day ECB interest rates



Sources: ECB and Reuters. Taken from Gonzalez-Paramo, J. M (2012, p.88): "The Management of the ECB before the crisis. Journal of World Economy, No. 30.

The transmission of official interest rates to bank interest rates through market interest rates can be described by a method of error correction (ECB Monthly Bulletin August 2009;. P. 103).

In addition, to the influence of the monetary policy on all the interest rates of the credit institutions, we should add the expectations of such policy may occur, which has an important effect on long-term market interest rates.

[7] Ver www.eurepo.org

Every operation is influenced by a different origin. Depending on whether it is overnight deposits, savings deposits, short-term deposits, long-term deposits, etc., its origin could be EONIA, 3-month EURIBOR, 6-month EURIBOR, Swap rate, etc.

1.3 Basic instruments of monetary policy

1.3.1. Introduction

In order to achieve its targets, the Eurosystem implements several monetary policy instruments, which compose the operational framework of that activity.

Both the operational framework and the monetary policy strategy have a specific role in the implementation of the monetary policy. Its strategy determines the level of interest rates in the money market that is necessary to maintain medium-term price stability, while the operating framework sets the way to achieve that level with available instruments and procedures of monetary policy (ECB ; 2011)[8].

The ECB goal is to ensure proper performance of the money market by giving banks the necessary liquidity to conduct operations that give stability and growth.

Now, those instruments used by the monetary authority are being related.

1.3.2. Minimum reserves

Minimum reserves are the deposits that counterparties must compulsory maintain in the central banks. Therefore, they become an instrument of monetary policy, affecting the liquidity needs of the market. In the Euro area, the minimum reserves are calculated by applying a coefficient, currently 1%, called reserve ratio or cash ratio, to end-month balances of certain liabilities that belong to credit institutions, generally at lower terms than two years, and which all together, form what is called reserve base. For such reserves, it takes into account the average of the daily

[8] European Central Bank (2011). "ECB´s monetary policy".

balances in their account at the central bank and must be maintained for a period of one month, being remunerated at the rate on the main financing operations of the Euro area.

In the Euro Area, minimum reserves are calculated by using a monthly ratio, currently at 1%, called cash reserve ratio to certain liabilities of credit institutions, usually in a term of less than two years, which together form what it is called reserve base. Specifically, the basis and reserve ratios are those listed below.

A. Liabilities included in the reserve base to which a positive reserve ratio is applied. (1%).

A.1. Deposits.

- Visible.
- Term which won´t exceed two years.
- Available with forewarning no longer than two years.

A.2. Fixed income securities.

- With less than or equal to two years maturity.

A.3. Money market instruments.

- Money market instruments.

B. Liabilities included in the reserve base to which a reserve ratio of 0% applies.

B.1. Deposits.

- Term longer than two years.
- Available with forewarning longer than two years.
- •Temporal assignments.

B.2. Fixed income securities.

- With maturity over two years.

C. Liabilities excluded from the reserve base.

- Against other institutions subject to minimum reserve system of the Eurosystem.

- Against the ECB and national central banks.

1.3.3. Open market operations

Open market operations (OMA) are the instruments through which the central bank provides liquidity to banks in exchange for illiquid assets that those entities may have in their balance, such as public funds. Such operations are carried out by auction and have a fixed duration.[9]

Therefore, the central bank acquires assets giving liquidity in return. This operation shifts that liquidity to the market and also brings more capital to debt markets. Thus, it encourages banks to buy more government debt to support the activity of the government.

Open market operations play a key role in allocating central bank funds to the banking system and thereby to steer short-term interest rates in line with the stance of monetary policy. This note presents some elements of a theory of bidding in central bank tenders in a framework such as the one of the Eurosystem. The ECB has so far used fixed rate tenders and a variant of the variable rate tender, which may be similar to a fixed rate tender depending on market circumstances. In doing so, it faced consecutively an "under-" and an "overbidding" issue. The tools developed in this note to understand the bidding behavior of banks in these operations allow revisiting these phenomena and the more general question of the optimal tender procedure and allotment policy.[10]

For the banking system this business it is very profitable, because they can obtain liquidity at an interest rate below the public debt that they acquire, while the central bank moves liquidity to the government debt market. In addition, it can be carried out a check on the amount of money and therefore, on the evolution of interest rates as well. Its movement is represented as follows:

[9] A week in the case of those made by the ECB.
[10] Bindseil, U. (2002). *"Equilibrium bidding in the Eurosystem´s Open Market Operations."*

Table 2. Kinds of Monetary Policy

Expansionary monetary policy	*Asset buying by ECB*	*Monetary Mass increase*	*Interest rates decrease*
Restrictive monetary policy	*Asset selling by ECB*	*Monetary Mass decrease*	*Interest rates increase*

Source: Compiled by author.

These operations are divided into four categories:

- ***Main refinancing operations (MROs)***

  These are temporary operations that increase liquidity, with weekly frequency and maturity of one week, which carry out the national central banks through standard auction.

  It is the main source of financing of the credit system within the Eurosystem, with a previously established timetable, and fixed or variable rate.[11] In addition, they try to reach the control of interest rates.

- ***Longer term refinancing operations (LTROs)***

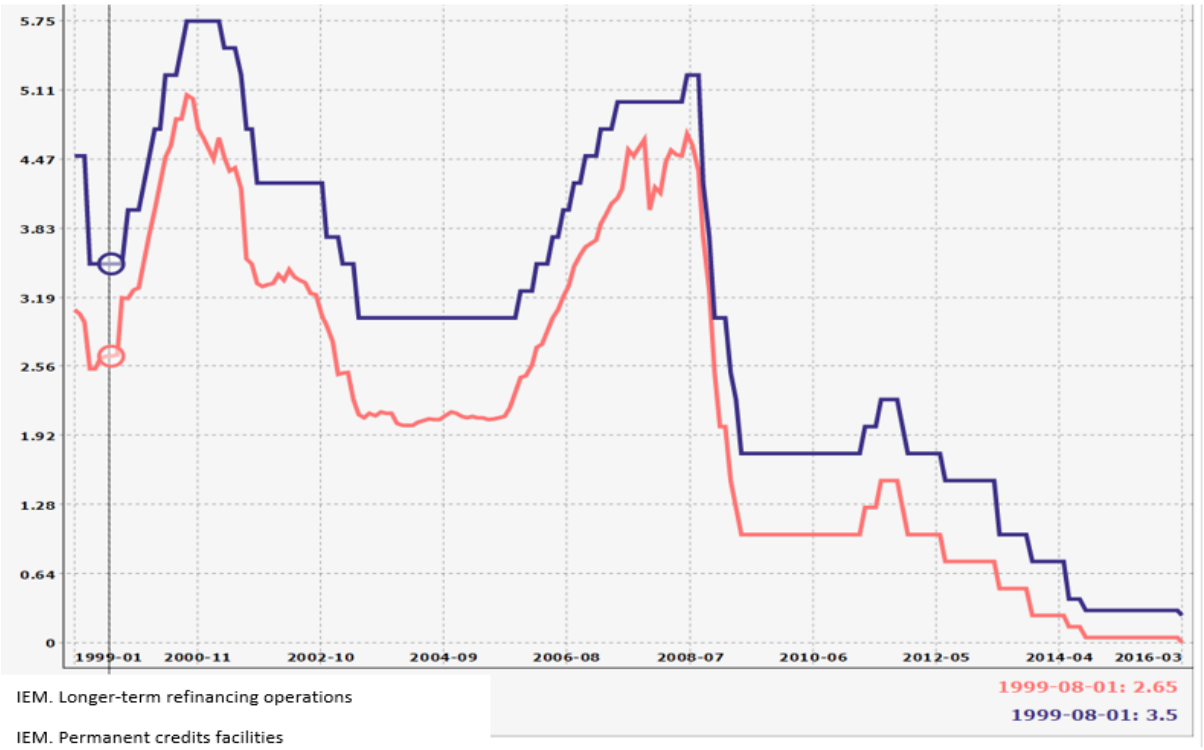
  These are temporary operations that increase liquidity, with monthly frequency and a maturity of three months, which carry out the national central banks through standard auction.

  Its purpose is to provide additional longer term financing to counterparties.

  In that process, it has produced a decrease in the interest rates of these operations, as reflected in the chart below.

[11] From October 2008, such auctions being conducted at fixed interest rates in response to the lack of liquidity of banks.

Graph 3. Interest rates. Statistical comparison graph of EMU. Longer term refinancing operations and permanent credit facilities



Source: http://capitales.es/

- ***Fine-tuning operations***

They are carried out on an "ad hoc" way to manage the liquidity situation in the market and soften the effects that cause unexpected liquidity fluctuations on interest rates.

Usually, the national central banks are the ones which perform these operations through quick auctions or bilateral procedures.

- ***Structural operations***

These operations are performed by the ECB to adjust the structural liquidity position of the Eurosystem against the financial sector, which is the amount of liquidity available in the market on a longer term (with or without periodicity).

They are materialized through the issuance of debt certificates, temporary transactions or simple operations. They can increase or decrease liquidity.

To execute the open market operations, the Eurosystem has the following instruments:

A.- Simple operations

These operations consist in the purchase (liquidity increase) or sale (liquidity decrease) of assets, and they are carried out independently by the National Central Banks of the countries, unless the ECB decides something else and execute them itself, according to its Governing Council. This instrument is carried out in structural and fine-tuning operations through a bilateral procedure.

B.- Temporary transactions

These are liquidity increasing and decreasing operations, in which the ECB buys and sells assets through temporary transfers. These operations can be carried out through secured loans or temporary concessions (ECB., 1998: 98).

C.- Foreign exchange swaps

Foreign exchange swaps are instruments used to control both interest rates and liquidity in the market. Therefore, they are mechanisms that increase liquidity, but also they decrease liquidity without periodicity or predetermined maturity, becoming purchase / sales operations that can be done in cash or futures. The Eurosystem buys or sells money at the currency market, and it automatically restarts the operation with specific repurchase date. In addition, frequently operating currencies with the Eurosystem are used.

They are also executed by the National Central Banks on a decentralized way, unless something else would be determined by the ECB, being held in the fine-tuning operations.

D.- ECB debt certificates emissions

It consists of the issuance at debt securities discount in order to decrease liquidity from the market to adapt the structural position of the Eurosystem against the

financial sector. National Central Banks are responsible for carrying out these operations through standard auction.

E. Fixed-term catchment deposits

It consists in liquidity decreasing in order to adjust the market. For this, the ECB proposes to counterparties to create fixed-term deposits in the respective National Central Banks, according to their nationality. Such deposits are carried out through a fixed interest rate, with no maturity or periodicity preset.

Table 3. Open Market Operations

OPEN MARKET OPERATIONS	
OPEN MARKET OPERATIONS	**INSTRUMENTS FOR ITS EXECUTION**
Main refinancing operations	*Simple operations* *Temporary operations* *Foreign exchange swaps* *ECB debt certificates emissions* *Fixed-term catchment deposits*
Longer term refinancing operations	
Fine-tuning Operations	
Structural operations	

Source: Compiled by author.

1.3.4. Permanent facilities

Its aim is to provide and absorb liquidity, controlling overnight-market interest rates taking into account counterparties´ transactions.

Within the Eurosystem, two kinds of permanent facilities are considered:

- ***The marginal credit facility***

  It allows banks obtain overnight liquidity from central banks against solvent assets, not giving limits or restrictions for its concession, with the exception of the previously commented solidity.

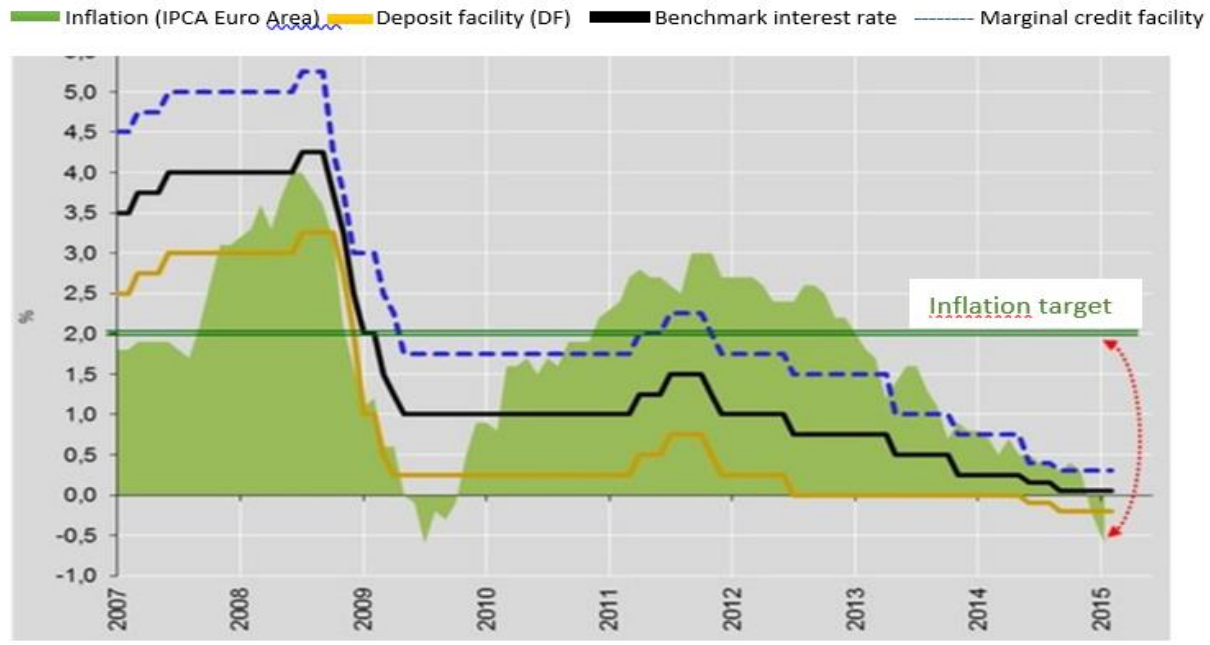
  The interest rate on the marginal credit facility is usually the upper limit for determining the overnight-market interest rate.

- ***The marginal deposit facility***

  It allows banks make overnight deposits in national central banks. For such deposits there are usually no limits or other restrictions, taking usually the interest rate applied as a lower limit to the overnight-market interest rate.

  As seen in the chart below, the use of standing facilities as a tool of monetary policy has become much stronger from 2008, minimizing the marginal rate of loans to provide liquidity to commercial banks, while the deposit facility, whose rates have also gone to a minimum, have discouraged the banks to make deposits at the ECB. All this aims to guide bank liquidity to the real economy.

Graph 4. Permanent Facilities



Source: ECB and Eurostat. Monthly series at end of period, except HICP (annual change in %). From: Diario.es (07/02/2015).

Therefore, the process leads to financial institutions in the Euro area get the liquidity they need through the European System of Central Banks, which carries out both “Main refinancing operations” (MROs) and “Longer-term refinancing operations” (LTROs), being the Credit marginal facility the last recourse for banks with liquidity problems.

The following Table lists the most important characteristics of Open market operations and Standing facilities.

Table 4. Monetary policy operations of the Eurosystem

MONETARY POLICY OPERATIONS	KIND OF OPERATIONS LIQUIDITY INCREASE	LIQUIDITY ABSORTION	MATURITY	PERIODICITY
Open market operations				
Main refinancing operations	Temporary operations	____	One week	Weekly
Longer term refinancing operations	Temporary operations	____	Three months[12]	Monthly
Fine-tuning operations	-Temporary operations -Currency swaps	-Temporary operations -Fixed-term deposits -Currency swaps	-Unstandardized	Not regular
Structural operations	-Temporary operations -Simple purchases	BCE debt certificates emissions -Simple soles	Standardized/ Unstandardized	-Regular/ not regular -Not regular
Permanent facilities				
Marginal credit facility	-temporary operations	____	One day	-Access to counterparties
Deposit facility	____	-Deposits	One day	-Access to counterparties
Source: ECB				

[12] After that, maturities of Longer Term Refinancing Operations have reached 48 months.

Section 2

The financial crisis and monetary policy

2.1 Introduction

González-Páramo (2012) states the crisis that began in 2007 has two characteristic features: a) the crisis of sub-prime mortgages accentuated by the fall of Lehman Brothers, and b) the subsequent crisis suffered by the sovereign debt. In more detail, this author states the following:

"These two episodes share some causes. The "great moderation", which is as many have called the pre-crisis period was a period characterized by a steady growth, low inflation, and greater fragmentation and risk sharing, which had supposedly improved efficiency and strength of the financial markets. As was later proven, what actually took place was a widespread underestimation of risk which, incidentally, the ECB and other institutions such as the BIS[13], warned markedly and repeatedly before the crisis. The risk of sub-prime mortgages and financial products created around them was seriously underestimated. The same happened with the sovereign debt markets, since no significant differences in risk premiums were observed in the euro area, despite the markedly divergent evolution of debt, deficit and competitiveness in the different member countries. "(González-Páramo, 2012).[14]

Monetary policies before the crisis were predictable and systematic, such as the decline in official interest rates through buying on the open market of short-term government bonds, which is the corresponding transmission mechanism understood by various economic agents. In this sense, changes in interest rates set by the Central Bank act on bank interest rates and market interest rates,

[13] Bank for International Settlements. (International Payments Bank).
[14] Speech by José Manuel González-Páramo. Member of the Executive Board of the ECB. "From sub-prime crisis to the sovereign debt crisis: the role of the ECB". Financial meeting Bankia-El País. March, 2012.

moving the corresponding effect on the remuneration of deposits and the cost of credit.

However, according to the International Monetary Fund (2013)[15], the crisis challenged this model for several reasons:

i) The financial turmoil weakened arbitrage conditions, preventing the proper functioning of the transmission mechanism of monetary policy and affecting the yield curve and credit spreads;
ii) Fear affected to liquidity and the growing sense of vulnerability froze some financial markets;
iii) The severity of the recession placed the nominal rate of optimal policy in unknown terrain, the zero lower bound (ZLB).[16]"

As a result of this, "the money markets stopped functioning, and economic activity worldwide suffered a sudden brake, with a sharp decline in international trade and a sharp drop in prices of raw materials. This reduced inflation risks while increasing the risks of financial destabilization. In fact, the slowdown in activity and inflation was so abrupt that caused a non-zero probability of deflation. In Europe, the ECB cut its intervention rate by 325 basis points to 1.0% "(Novales, 2010).

Because of this measure, and others taken by that bank, it is deserved the recognition of being the fastest to respond with immediate and massive increase of liquidity to the sudden increase in risk aversion and the indiscriminate extension of mistrust among financial intermediaries that led to the bankruptcy of Lehman Brothers, which were followed by other central banks and had a palliative effect, sufficient to prevent the wave of paralysis in interbank transactions fell into widespread financial collapse. Emergency measures in providing liquidity allowed the ECB to replace the practical disappearance of the interbank market, placing itself as the main actor in the money market, so that a large part of the operations previously done directly between financial intermediaries were integrated into the balance of the ECB itself. To sum up, the surplus entities liquidity preferred to

[15] ICO Foundation. Euro Yearbook 2013. The common monetary policy. P. 135.

[16] Oroyfinanzas.com (07.05.2015). The Zero Lower Bound (ZLB) or Zero Nominal Lower Bound (ZNLB) is a macro-economic problem when nominal interest rates in the short term are close to zero or at zero, creating a liquidity trap by limiting the ability of the central bank to stimulate the economy with more rate cuts. This problem has been relevant during the economic crisis in Japan in the 90s and the subprime crisis.

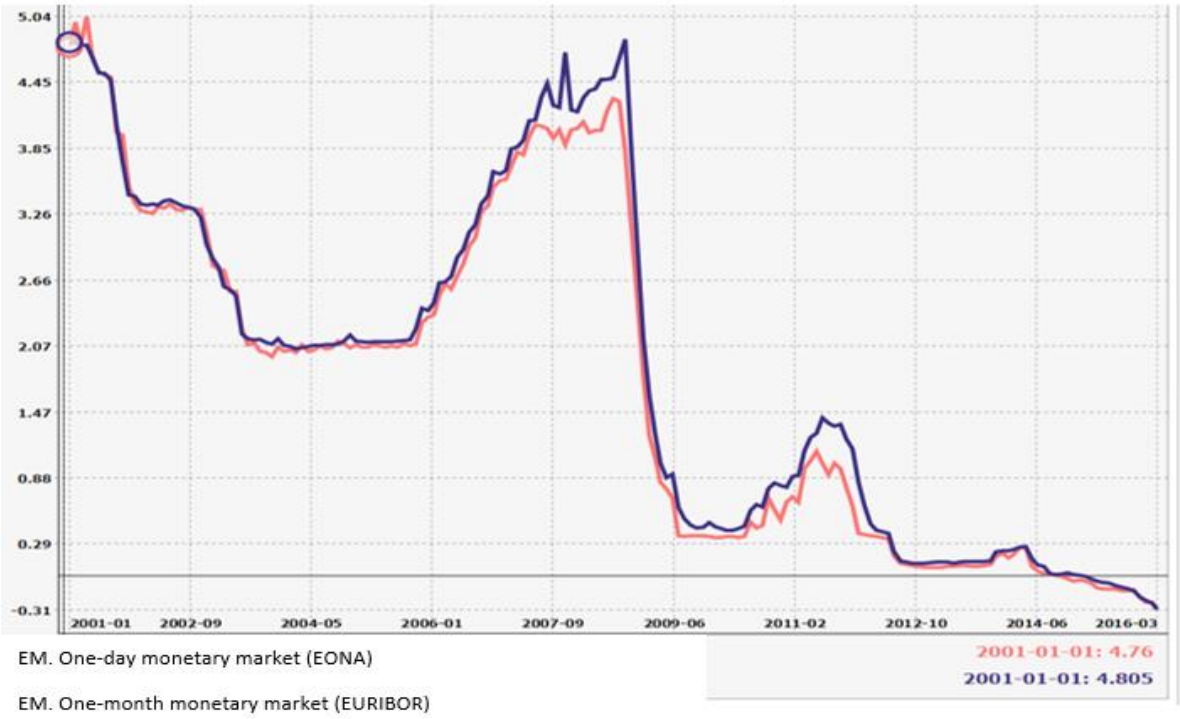
deposit it at the ECB to take risks with other counterparties and, at the same time, the ECB left as virtually the only supplier of liquidity to deficit entities (Malo de Molina, 2013; p. 117).

2.2 Effect of the crisis on the transmission of interest rates

Now for the period of crisis, we should analyze the impact of the transmission of changes in official interest rates to interest rates applied by credit institutions to their customers. In situations of financial instability, uncertainty existed between banks regarding the creditworthiness of counterparties became widespread. When it was the possibility of the financial system bankruptcy in 2008, high levels were historically reached in major financial markets spreads. (ECB Monthly Bulletin May 2010; page 101).

Still, we can see that during the current financial crisis, the transmission to bank interest rates has occurred correctly in terms of their response to changes in the rate of supply in the euro interbank market (EURIBOR) and of long-term market interest rates. However, this transmission occurred in a less appropriate way in terms of its response to the evolution of the index average of the euro overnight (EONIA), which is the market rate that is closest to official interest rates in normal times.

Graph 5. Monetary one day (EONIA) market and monetary one month (EURIBOR) market



Source: http://capitales.es/

However, there were disturbances in the performance of the money market in the Euro area, reflected in a sharp and continuous widening of spreads between EURIBOR and 1-day swap interest rates.

If we want to assess the impact of the financial crisis on short-term interest rates in the of the monetary financial institutions, we must consider that the most noticeable immediate effect of turbulence on the transmission to bank interest rates, has been observed in short-term interest rates. This is due to the fact that the relationship between 1-day money market rates and the overnight money market rate futures broke from the middle of 2007. This disturbance affects the transmission of changes in official rates to retail banking short-term interest rates, considering that the last ones can be determined with respect to EURIBOR rates without guarantees. After the start of the turmoil in financial markets, banks continued to closely monitor the EURIBOR rates to set their short-term interest rates. (ECB Monthly Bulletin August 2009, p. 106).

The adjustment of interest rates applied by credit institutions to their customers due to changes in official interest rates, encompassed within the process of

transmission of interest rates, may have continued to be made throughout the financial turmoil.

On the other hand, while the average difference between the observed interest rates level of short-term loans and the forecasting based on overnight swap interest rates has slightly declined since autumn 2008, the spread between countries has been substantially expanded. This may be due to the position of bank balance sheets and that the outlook for credit risk in these countries is less satisfactory. This would force banks to operate with larger spreads over market rates (ECB Monthly Bulletin August 2009, p.109).

Interest rates on bank short-term loans that are generally affected by movements in the three-month EURIBOR rate, were reduced by 341 basis points in the period between September 2008 and February 2010, while three-month EURIBOR rate decreased by around 436 basis points over the same period. Meanwhile, interest rates on bank long-term loans fell 151 basis points during the period, at the same time that the performance of 7-years public debt fell 121 basis points.

It is too early to assess to what extent the transmission mechanism may be affected more durably by the consequences of the crisis. It could be argued that the broad attempts to establish a broader and more stringent regulatory framework has contributed to banks to play a more stable role in the transmission of monetary policy for several reasons: (ECB Monthly Bulletin May, 2010.; p. 106).

- Some requirements like making stricter capital could strengthen bank capital channel of transmission of monetary policy.
- The introduction of higher capital requirements in relation to securitization should lead to more limited financing opportunities.
- A more prudent capital and liquidity management by credit institutions could change the most prone to risk-taking with the scales along the cycle, and thus also the importance of channel behavior risk-taking could also be mitigated to some extent.
- The introduction of more stringent requirements regarding liquidity management of banks may lead banks to make transactions in the future with higher liquidity reserves.

2.3 The crisis and sovereign risk

The economic and financial crisis already commented, which happened in 2008 with the subprime and fall of Lehman Brothers, meant severe liquidity problems for banks and damaged the capital market.

The instability situation of the sovereign debt was basically produced by three main aspects (González-Páramo, 2012). Namely:

a) The crisis in sub-prime mortgages, as weakened bank balance sheets.
b) The fiscal support to the banking systems and the materialization of various spending programs, as deficit and public debt increased.
c) Bankruptcy of Lehman Brothers, which carried a general loss of confidence.

In 2010 and 2011, some important differentials occurred in the public debt of some European countries, with the fundamental origin of the distrust about the sustainability of public finances[17]. This situation is due to the economic crisis, which has led to a significant decrease in tax revenues and a parallel increase on the side of public expenditures.[18]

Carrascosa (2012, p.51) indicates that the sovereign debt crisis can be triggered for reasons such as:

a) Downgrades debt rating.
b) Increases in spreads.
c) Lack of trust of investors, which hindered refinancing debt.

In addition, contagion from other markets could be an important factor in worsening sovereign risk. The dependence between public debt markets increases during periods of financial stress, and contagion can explain that sovereign spreads increase, without existing relevant changes in the fiscal position of the various countries.

[17] In response, the ECB made massive purchases of public debt on the secondary market, rescued countries or requested financial assistance from the European rescue mechanisms EFSF and ESM (ESM), through the OMT (Outright Monetary Transactions).
[18] Adding to this the rescue of financial institutions that has been made in certain countries.

The same author relates how the changes affect the sovereign risk on bank risk. This is:

- They would affect banks in quantity and price, so that in the event of a worsening sovereign risk by reducing the credibility of public security, a decreasing in the cost of bank financing in wholesale[19] markets would be generated, producing a liquidity risk.
- The value of public debt held by banks would be reduced when the interest rates of such debt by a worsening sovereign risk increases.
- For the reasons discussed in the previous section, the increase in sovereign risk will cause an increase in consumption of own resources in banks.
- Increasing instability in public debt may lead to increasing volatility.
- Finally, the aforementioned increase in interest rates on public debt will also cause an increase in long-term rates, thereby disadvantaging investment and consumption and affecting, of course, on the results of banking.

Cantero-Saiz, M. et al. (2015; p. 37) states that "in Europe the crisis was initially considered a purely banking problem, so the governments of each country put substantial financial resources available to the banks in order to restore confidence to the banking sector and boost credit to the economy. The most notable case of financial support to banks was Ireland. However, other countries such as Spain and Greece have also recently had to use public funds to pay for the bailout of its banks. Financial aid to banks had, generally speaking, a serious impact on the public deficit countries ".

In March 2016, the situation has radically changed thanks to the policy of the ECB, since interest rates on sovereign bonds are shown in the table below, where have been accompanied to compare interest rates in other reference countries.

[19] Alienation in a standardized way, usually between institutional investors and existence of a secondary market.

Table 5. Interest rates of Sovereign Bonds

14/03/2016	2 years	3 years	4 years	5 years	6 years	7 years	8 years	9 years	10 years
Japan	-0,2	-0,2	-0,2	-0,2	-0,2	-0,2	-0,1	-0,1	0,0
Germany	-0,5	-0,5	-0,4	-0,3	-0,2	-0,1	0,0	0,1	0,3
Netherland	-0,4	-0,4	-0,4	-0,3	-0,2	-0,1	0,1	0,2	0,4
France	-0,4	-0,3	-0,3	-0,2	0,0	0,1	0,3	0,4	0,6
Austria	-0,4	-0,3	-0,3	-0,3	-0,1	0,0	0,2	0,3	0,5
Belgium	-0,4	-0,4	-0,3	-0,2	-0,1	0,0	0,3	0,5	0,7
Ireland	-0,3	-0,2	-0,1	0,0	0,2	0,4	0,6	0,8	0,9
Denmark	-0,2	-0,2	-	0,1	0,3	-	0,3	-	0,6
Finland	-0,4	-0,3	-	-0,2	0,0	0,1	-	-	0,6
Spain	0,0	0,1	0,2	0,4	0,7	1,0	1,3	1,4	1,5
Italy	-0,1	0,0	0,1	0,3	0,6	0,7	0,9	1,2	1,3
Portugal	0,7	1,2	1,6	1,9	1,7	2,2	2,6	2,7	2,9
United K.	0,56	0,75	0,91	1,00	1,20	1,35	1,48	-	1,58
USA	0,95	1,15	-	1,48	-	1,78	-	-	1,97

Source: Sanchez Quinones: When the ECB to stop buying ". Expansión.com

Interest rates displayed in the table are obviously not the result of the forces of supply and demand but ECB intervention, thus marking a situation that should be defined as extraordinary.

2.4 Single Supervisory Mechanism

In June 2012, the Heads of State and Government of the European Union (EU) decided to promote the creation of a single banking supervisor with the aim of improving the quality of supervision in the Euro area, stimulating market integration and breaking the negative link that had been established between confidence in banks and doubts about the sustainability of public debt.

The Single Supervisory Mechanism (SSM) for banks is the first pillar of the Banking Union, and comprises the European Central Bank (ECB) and the national supervisory authorities of the participating countries. The Single Supervisory Mechanism Regulation (SSM Regulation) was adopted in November 2013 and confers tasks on the ECB for prudential supervisory purposes within a single supervisory mechanism (SSM). The framework for cooperation between the ECB and national competent authorities under the SSM is set out in the SSM

Framework Regulation of April 2014, which establishes and lays the basis for the work of the SSM. (“Better regulation”, 2016).

As a result, the ECB has taken on a new task, that is, the only banking supervision in the Euro area or single monitoring mechanism, which is oriented towards the following analysis:[20]

a) Internal governance and risk management.
b) Analysis of the business model.
c) Capital.
d) Liquidity.

Taking into account the first one, it carried out an assessment of the organizational structure of the entity seeking, apart from other goals, the international best practices. It considers that corporate governance models are not similar in all Euro area countries.

In terms of the business model, an assessment of the capacity of results obtaining during 12 months is made, to verify the viability. It is made during 3 years as well, with the goal of analyzing its sustainability.

It should be important to consider that the results of banks find negative factors as a result of:

- Low levels of economic growth.
- Low interest rates.
- In some cases, non-performing assets.
- Current regulatory requirements regarding capital, liquidity and leverage.
- Effects of digital transformation.[21]

The last two sections subject to supervision by the MUS, capital and liquidity, try to assess, among other things, the financing risk and the credit or market[22] risk. This is performed in normal situations and stress ones.

[20] Using the methodology SREP (Supervisory Review and Evaluation Process). Through this process the systems, strategies, processes and applied by credit institutions mechanisms are reviewed and assessed risks.

[21] González-Páramo, J.M. (P. 136): "The ECB and the banking union: towards a more integrated and strong Europe." Economic Information Notebooks, 250. January-February, 2016.

2.5 Single Resolution Mechanism

MUR is a mechanism whose main target is to ensure that bankruptcies that could happen in the future in the banking union are managed efficiently. The extent of MUR is identical to MUS, although in practice the tasks between MUR and national authorities will be distributed. When a bank will be bankrupt or facing bankruptcy should begin an intervention. This process may result in a restructuring or a liquidation. Until now, each country had its own settlement system. With MUR, standards and processes to intervene a bank will be homogenized, and a fund of 55,000 million will be created.

“Better regulation” (2016) says that: “The Single Resolution Mechanism for banks (SRM) is the second pillar of the Banking Union and aims to ensure the efficient resolution of failing banks and became operational on 1 January 2016. This establishes a European process for determining that a bank (that is part of the SSM) has run into trouble and the steps to resolve its problems. The SRM has a central decision-making board, the Single Resolution Board (SRB) and a Single Resolution Fund (SRF) and ensures that resolution decisions across participating member states will be taken in a coordinated and effective manner, minimizing negative impacts on financial stability and reducing the dependence of banks on the creditworthiness of sovereign countries”.

[22] The self-assessment to be made by financial institutions to determine the level of both risks, called ICAAP (Internal Capital Adequacy Assessment Process) and ILAAP (Internal Liquidity Adequacy Assessment Process).

Section 3

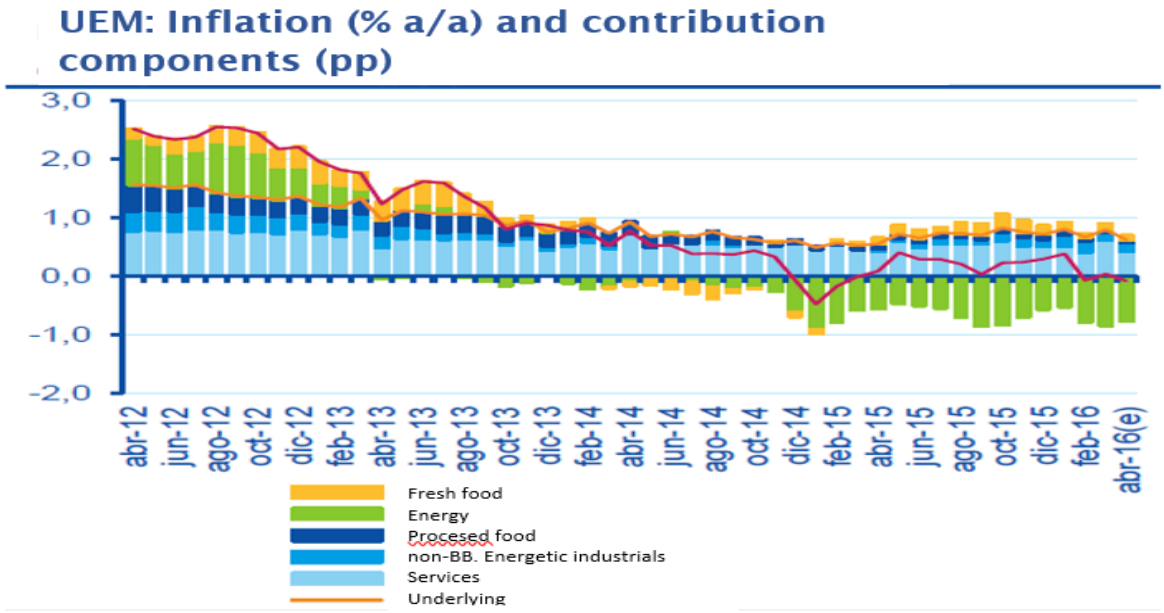
ECB and unconventional monetary policies.

3.1. Inflation in Euro area.

Inflation forecasts for 2016 have been revised downwards by analysts polled by the ECB, estimating a rise of 0.3% instead of 0.7% estimated in January of that year. In addition, they have also trimmed forecasts GDP growth by two tenths and left it at 1.5%. It is also likely that during 2016 and 2017, when it decreases the effect of lower oil prices, those would also keep inflation rebound strongly.

The following graph shows the rate of change of inflation shown in the Euro area. In it negative values are observed, even though the target of the authorities of the Euro area inflation is close to but below 2%, which has been failing in recent years systematically.

Graph 6. Inflation Components



Source: Bloomberg and BBVA Research

Either way, it should be performed additional analysis where that part of the inflationary process caused by energy prices, mainly identified. As shown in the graph, the overall index is considerably below the corresponding underlying inflation. This could benefit the competitiveness of the Euro area, but also entail, if the downward trend continues, a prolonged stagnation, rising unemployment, etc. The risk of deflation could influence consumption expectations, resulting in a predisposition to delay private consumption.

3.2. Unconventional monetary policy measures

3.2.1. Introduction

The aforementioned crisis led to the generation of large liquidity increases, in order to avoid the collapse of the financial system. In this regard, reference should be made to expand the number and demand to receivers of liquidity, taking as an example the case of U.S., where it was included as receivers some non-banking entities such as securities companies and investment funds financial institutions.

All this was due to the significant loss of confidence in financial institutions and, therefore, in the interbank market, which was significantly contracted. Let us not forget that the debt crisis had to be added to the risk of rupture of the euro and deflation.

Millaruelo and Del Rio (2013, p. 90) indicates that "it was not until October 2008, after the bankruptcy of Lehman Brothers, when the lock of money markets, the general withdrawal of liquidity in international capital markets and drastic revision of the macroeconomic outlook forced a shift in the response of the monetary authorities globally. On the one hand, the entry into a severe recession and rising risk of deflation needed a drastic cut in official interest rates, which, in the case of the Euro area amounted to 325 basis points (bps) between October 2008 and May 2009, bringing them to 1%. But in addition, the ECB, like other monetary authorities, abounded in the ordinary framework of providing liquidity and introduced measures to repair other important segments of the financial markets for the transmission of monetary policy.

Restoy (2015, p. 3) comments that "the central banks of the major developed economies had to take extraordinary measures to combat this blockade. The ECB pioneered its response to these dysfunctions and many of his initiatives were then followed by other monetary authorities. His performance materialized, at first, massive injections of liquidity, considering, from October 2008, in full, the demand for funds of institutions in their regular operations, extending the term of loans to cover horizons progressively longer (it was extended to 1 year in the summer of 2009), and facilitating access to the Eurosystem lending by relaxing the requirements of collateral required ".

To maneuver within the complicated situation created, there have appeared two important instruments, among others. On the one hand, the so-called "troika", that is, the IMF (International Monetary Fund), the ECB and the European Commission, which gave credibility to the process and, secondly, the European Stability Mechanism.

In addition, to facilitate system liquidity, funds were lent to certain markets not included in the public debt, such as the use of repo[23] operations to commercial paper and asset-backed securities (Asset-Backed Securities), expanding maturities and amounts that were going to be lent, as the three-year LTRO (Long Term full-allotment Refinancing Operations) in the Euro area[24].

The main target of the ECB non-standard measures is precisely to safeguard and repair the performance of the transmission mechanism, in order to protect the effectiveness of the conventional monetary policy. (González-Páramo, 2012)[25]

Below, there are the most relevant unconventional measures[26]:

[23] A repo operation consists in a temporal assess cession. In this sense, a repo would be in an assess transaction contract with a repurchase agreement.
[24] And *Term Auction Facility (TAF)* in United States.
[25] Speech by José Manuel González-Páramo, Member of the Executive Board of the ECB. "From sub-prime crisis to the sovereign debt crisis: the role of the ECB". Financial meeting Bankia-El País. March, 2012.
[26] Oroyfinanzas.com (20.11.2015). “What are unconventional monetary measures of the central banks?”

Table 6. List of Financial Assets

1	Forward Guidance *Expectations orientation and future direction of central bank*
2	Quantitative Easing (QE) *Quantitative expansion*
3	Qualitative Easing *Qualitative expansion of central banks*
4	Unlimited liquidity increasing operations *LTRO and TLTRO*
5	*Targeted Longer-Term Refinancing Operations II* *TLTRO II*

Source: Compiled by author

3.2.2. Forward Guidance

Its aim is to influence the expectations of financial markets, through communications from the various central banks, indicating in advance the orientation of monetary policy decisions.

This operation based on expectations can be carried out on two levels, namely, oriented to:

a) Macroeconomic forecasts which a central bank works with.

b) Participant variables in the policy performance of the central bank.[27]

From the economic crisis, the "forward guidance" has been commonly used due to the situation close to zero of the official interest rates, thinking in the long-term rates influence and the necessary economic impulse situation. Meanwhile, Lopez and Del Rio (2013) indicate the existence, according to some authors, of two trends when considering this process. Those are:

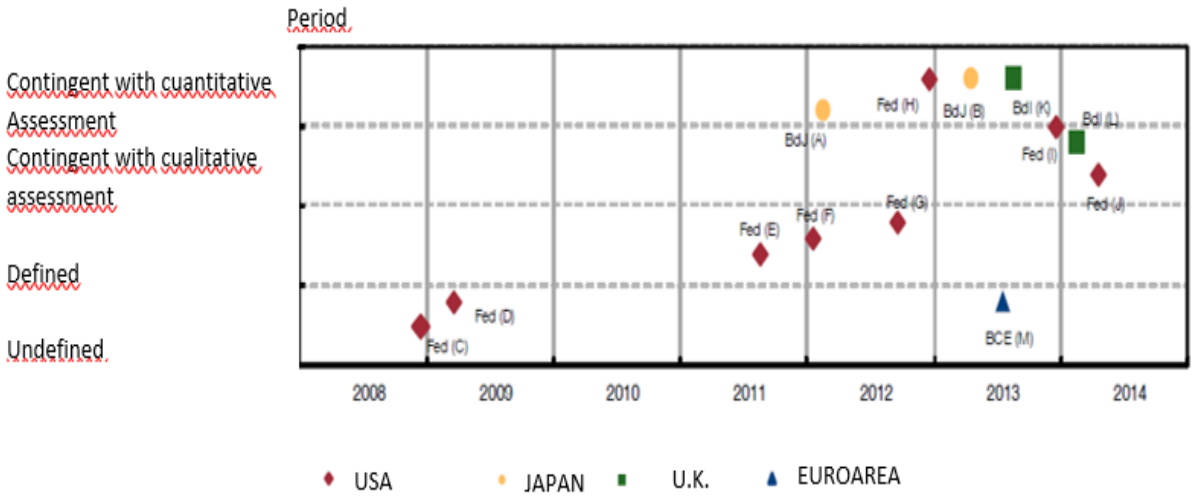
a) Forward Guidance "Delphic": Oriented to shift the economic prospects of the central bank with the main aim of providing transparency to monetary policy decisions.
b) Forward Guidance "Odyssean": Its aim is to establish a line of action to serve as a future commitment of the central bank.

Also, in this line of possibilities to carry out the "forward guidance", it can be found the correlation of the announced policies, with certain numerical values attached to them (contingent), determining a date or not to maintain such policies (defined) and, finally, a more qualitative or quantitative orientation of the information provided by the central bank (undefined).

These pictures represent decisions made by the US Federal Reserve, the Japanese Bank, the British Bank and the ECB. However, we will limit the comments to the FED and the ECB. In the case of FED, in late 2008 it performs an undefined "Forward guidance" by saying that the goal consisted in very low interest rates and, therefore, such informative projection (expectations) would have an extended period. From 2011, there were carried out series of measures announcements but, in this case, already defined or determined (August 2011, with deadline in mid-2013. January 2012, with deadline in the end of 2014, and September 2012, with deadline in mid-2015). Finally, in late 2012 information policy depended on a number of preset values, as shown in the following table:

[27] Already used since the mid-nineties in countries like Norway, Sweden and New Zealand. Storch, M. (2014): "Foward guidance: that dark monetary policy tool." Sintetia. com

Table 7. Temporary Distribution of Forward Guidance



Source: Banco de España, from Central Data.

The European Central Bank has carried out policies of this type with favorable results. As for the effectiveness of "Forward guidance" of the ECB, preliminary analyzes carried out so far conclude that the effects on the markets have been positive, reducing the volatility of interest rates in the money market, uncertainty about the future tone of the monetary policy and the sensitivity of markets outside the Euro area (Coeuré, 2013)[28] news.

In 2013, the ECB renewed a defined "Forward guidance", initiated in 2008, through the auction procedure of fixed interest rates and full allotment[29]. Such an operation has been continuously renewed every time its term expired.

López and Del Rio (2013; p.60) comment that “Forward guidance” policies can be transmitted to the economy through three main channels:

a) Interest rate curve: The announcement of the expected official rates will influence long-term interest rates, which are more relevant to the financing conditions of the agents. The effectiveness of this channel is based on the fact that, according to the theory of the temporal structure of interest rates,

[28] Bank of Spain. "The use of the orientation expectations or forward guidance". Economic Bulletin, December 2013.
[29] Extended till 2017.

long-term rates reflect the expectations of the path of short-term interest rates. In addition, the most general financial conditions, as the discount factor, also depend on interest rates in the short and in the long term.

b) Reduction of uncertainty: As far as the forward guidance reduces uncertainty about monetary policy decisions in the future, it can reduce the term premium, volatility and risk premiums.

c) Reduction of real interest rates at around zero limit in official rates: the announcement of a comfortable situation for an extended period can increase the monetary impulse when official interest rates are at the zero limit, by reducing the real interest rates at the present time (via lower nominal interest rates and higher inflation expectations).

3.2.3. Quantitative Easing

The Quantitative Easing is an increase of the balance of a central bank to buy various financial assets without changing the quality of the composition of the assets on its balance sheet.

It consists in printing money by the central bank to buy assets in the hands of the government or the private sector. However, opposite to what happens in conventional monetary policy, in this case the central bank does not provide money directly for such assets, but simply recognizes a deposit in favor of the corresponding entity.

The final goal of a quantitative easing program does not differ from that pursued when the central bank reduces the benchmark interest rate. Both actions aim to stimulate aggregate demand by reducing the interest rate that supports families and businesses to encourage them to consume and invest, and then encourage economic activity and inflation. The difference lies in the transmission channels to the real economy. While in the first case long-term interest rates are meant to be reduced by reducing the short-term ones, QE wants to affect directly long-term interest rates. Specifically, when the central bank buys large proportions of a certain type of asset, its profitability decreases. That encourages investors to

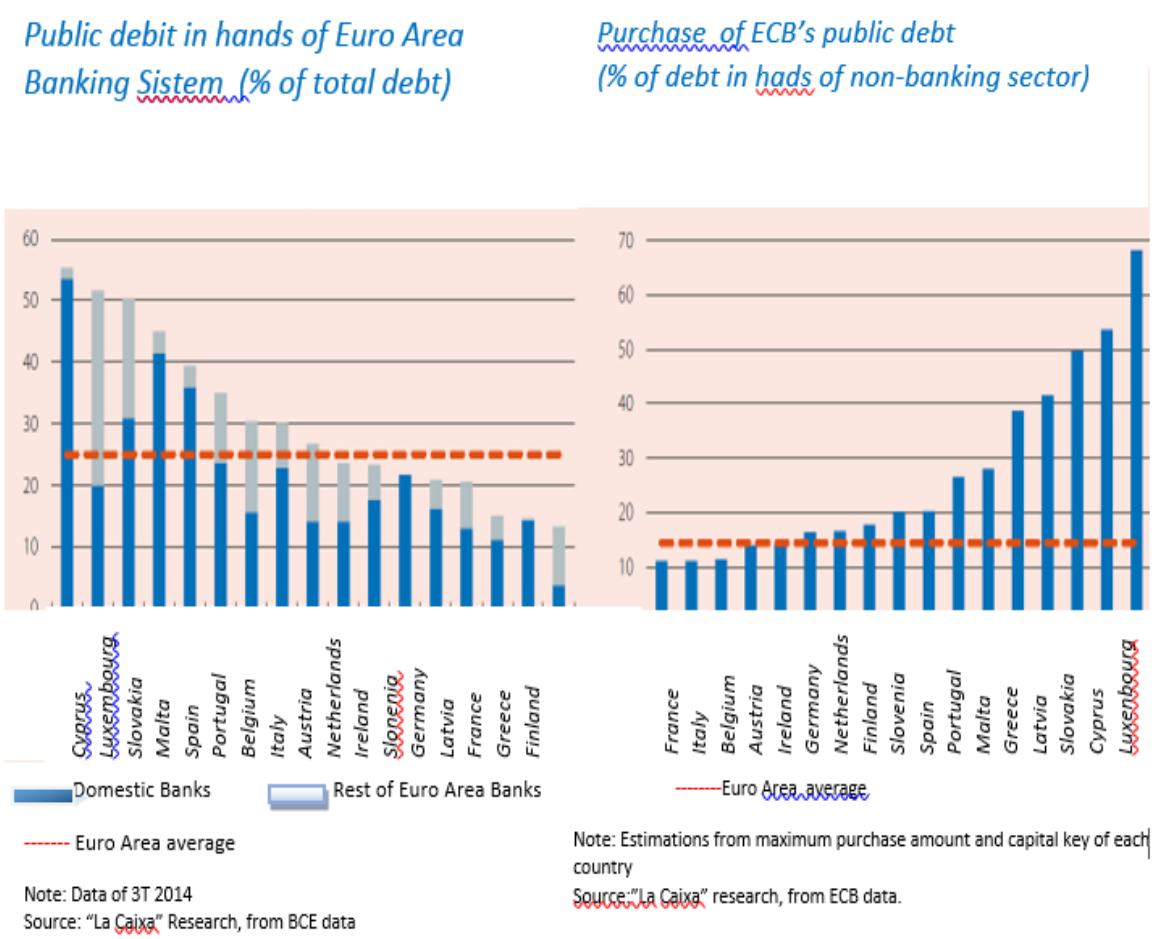
rebuild its portfolio with other assets that offer more attractive returns, so that the decrease in the interest rate moves to riskier assets. (Montoriol-Garriga, J,; 2015, p. 32)

Such measure involves a series of clear effects, such as greater ease of funding by governments, by reducing interest rates on sovereign debt, and a liquidity increase in the system, which involves an investment and consumption increase.

Jodar-Rosell and Vidal (2015), consider that it is essential the function of banks in the transmission mechanism of any decision of monetary policy. The reason is that the supply of finance of the Euro area is highly concentrated in banking institutions because the alternative channels such as corporate debt market, are underdeveloped and are only accessible to large companies. Thus, the success of pursuing policies that generate economic growth by stimulating aggregate demand and credit is subject to the creditworthiness of these institutions. In the particular case of QE, also banks will have an additional role by the size of the public debt portfolio on their balance sheets. As the main holders of sovereign bonds in the Euro area, the impact of QE in the price of these assets will depend not only on the volume that the ECB wants to buy, but also on the willingness of banks to sell them. Both reasons suggest that the success of QE will lie largely in the following two conditions:

a) Reduction of the public debt weight on their balance sheets.
b) Replacement of the public debt weight by loans in the private sector.

Graph 7. Purchase of public debt operations by ECB and Banks



Source: Jodar-Rosell, S. and Vidal Martinez, A. (2015): "The banks before the QE: between desire and reality" DOSSIER: The ECB QE: CAUSES AND EFFECTS. La Caixa.

Regarding the first one, since the outbreak of the financial crisis, banks have decided to keep a larger proportion of their assets as liquid assets and low-risk assets, including government bonds in a larger proportion. This decision has been taken mainly by two factors. On the one hand, these titles have offered an attractive and very secure profitability, in a context in which the alternative of credit has been too risky and expensive in terms of regulatory capital. Furthermore, regulators have introduced new liquidity requirements to face an eventual closure of the wholesale funding markets, which require entities to have a minimum of high solvency liquid assets. As the QE reduces the profitability of public debt and the risk profile of credit applicants goes better, thanks to a more favorable

macroeconomic environment, the first one of the conditions will begin to be fulfilled and entities will reduce gradually the weight of sovereign bonds in balance. However, the creditworthiness finally released will depend on how large will be the excess of this portfolio once satisfied the aforementioned requirements of liquidity.

The second of the conditions for the success of QE is the released creditworthiness that is put, effectively, to the granting of credit. In this sense, the new ECB program comes at a good time to shore up the incipient growth in demand for financing, especially in those countries where economic activity is growing strongly and the process of deleveraging is more advanced. The beneficial effects of QE on credit demand will be felt in three different ways, mainly.

a) First, it is expected that more monetary laxity keeps the euro depreciated, which will strengthen the economic recovery through increasing export activity, gradually reflected in the employment figures.
b) Second, the flattening of the interest rate curve will encourage risk-taking by investors, in which increasing demand for risky assets, (such as stocks or private debt), will push the price upwards.
   This increase in asset prices will lead to an improvement in the risk profile of the future credit applicants, since the value of assets that can provide as collateral for the loan will cover a bigger part of this.
c) Finally, if the QE manages to keep expectations about higher inflation and growth in the medium term, the investment projects which are now paralyzed by uncertain prospects, could be reactivated and, with them, the need for funding[30].

In terms of the weight of the public debt in the balance sheets of the banks, Aznar (2015) provides another economic effect of this operation "through its relationship with the public debt and the cost of it. In a situation of high levels of public debt, traders may be anticipating that in the future there will be tax increases for paying the debt. If the expansion of the central bank is done through the acquisition of fixed- income public fixed, this decreases interest rates and therefore the real

[30] Jodar-Rosell, S. and Vidal Martinez, A. (2015): "The banks before the QE: between desire and reality" DOSSIER: The ECB QE: CAUSES AND EFFECTS. LaCaixa.

value of that debt, so that is a relief in the future tax increase, generating a larger available income for economic agents. The strong falls in the risk premium, for example in Spain, after the announcement of the Quantitative Easing by the ECB, would be an example of how this monetary policy influences the deficit and public debt. "

This author concludes that, "in essence, Quantitative Easing implies, through the purchase of assets by the central bank, increasing money into the economy through a number of channels, such as granting that the banks should contribute to an increasing level of nominal spending in the economy, stimulating economic growth and inflation to ward off the risk of deflation.

"In this sense, in March 10, 2016, Mario Draghi announced the" super-quantitative easing ", composed by government bonds and corporate bonds of large industrial enterprises, including insurance companies. Such purchases would have a minimum maturity of 6 months and a maximum maturity of 30 years, and would be carried out in the primary and secondary markets, which are initial issues and debt securities already in the market, although those made in the primary wouldn´t be materialized in elements of debt issued by entities which are public companies, to prevent public financing.

This means a big impulse for large European companies, which may issue new securities and sell them directly to the ECB, obtaining a credit of that bank. Also, such companies would be able to buy these securities at the current yield rate[31], moving them back to the market at a higher price, because in that case, the interest rate would be lower.

3.2.4. Qualitative Easing

The Qualitative Easing is an instrument through which a central bank reduces the quality of the assets on its balance sheet that supports its monetary base, adding low-quality assets and without changing the amount of that balance.

[31] Buyback operation.

The Qualitative Easing, therefore, is a change in the composition of financial assets on the balance sheet of a central bank to less liquid assets and more risk, while maintaining the total volume of the balance. The type of assets that can acquire a central bank in a program of qualitative easing purchase can be shares, public debt or debt guaranteed by sovereign governments, for example.

Because qualitative easing is conducted by the central bank, it is often classified as a monetary policy. However, Qualitative Easing is better thought of as a fiscal or quasi-fiscal policy. This distinction is important because, in order to be effective, Qualitative Easing necessarily redistributes resources from one group of agents to another one.[32]

The FED has conducted quantitative and qualitative easing programs. The Bank of England has used both moderately unconventional monetary policy instruments. The ECB has done, comparatively with the Bank of England or the Fed, less quantitative expansion, but it has carried out a program of qualitative expansion by accepting as collateral in repos and permanent credit facility, the use of low-quality assets without buying them directly to their balance.

3.2.5. Longer-Term Refinancing Operations

The so-called LTRO (Longer-Term Refinancing Operations) have consisted in the temporary replacement of the interbank market for long-term loans to banks at a very low interest rate[33]. This kind of operations (LTRO) has been used mostly in 2011 and 2012, being its term increased from three months to three years, considering the extent and persistence of the needs to be covered. In 2014, with maturity of 2018[34], LTRO loans are incorporated. They are oriented to the private sector of the economy, with the exception of mortgage loans.

[32] Roger Farmer (2012). "Qualitative easing: How it works and why it matters."
[33] LTROs have allowed banking southern Europe the carry trade, that is, borrow at very low rates and simultaneously buy government debt at higher interest.
[34] If the credit granted does not evolve better than the benchmark or reference preset by the ECB, the entities concerned should reinstate in 2016.

3.2.6. Targeted Longer-Term Refinancing Operations

The necessary complement to the previous operations have been the TLTRO (Longer-Term Targeted Refinancing Operations), whose aim focuses on direct credit to the real economy, which is the non-financial private sector in the Euro area.

In this sense, in mid-2014, the Governing Council of the European Central Bank (ECB) held some financing transactions conducted at longer-term with the aim of improving bank credit to the private non-financial sector of the Euro area, excluding loans for house purchase. Through this financial instrument, the ECB lends money to banks at a very low interest rate of only 0.25%, lowered in 2015 to 0.05%. All the TLTRO will expire in September 2018. That means that its maximum duration will be 4 years.

With these operations, European banks can get money with a loan ceiling equivalent to 7% of the total amount of loans to non-financial private sector in the Euro Area.

These operations differ from the QE, in that the QE is the direct and massive purchase of government and corporate bonds in the secondary market, like the program PSPP (Public Sector Purchase Program) of the ECB. The central bank in a QE directly buys country's debt. Instead, TLTRO are long-term loans to banks at very cheap prices in order to make money and credit reach real economy.

During the period between March 2015 and June 2016, banks have been able to borrow additional amounts in some TLTROs, quarterly made in March, June, September and December 2015, and in March and June 2016. The additional amount will have as its limit, three times the difference between the net financing from April 30, 2014 and the reference value on the date when such amount is requested.

The main criticism to the TLTRO is that many people consider it an insufficient instrument to boost lending to the private sector in the Euro area, and that until 2016 it may be freely used by banks to do “carry trade” between cheap ECB

financing and sovereign bonds buying, as they had previously done with the LTRO.

It has recently been created by the ECB the Targeted Longer-Term Refinancing Operations II, which comes into force in June 2016 and has its maturity in four years, which aim is to raise credit to non-financial sector, demanding several risk requirements by banks to achieve it.[35]

After analyzing the various instruments, Roubini (2016) comments that "as a result of it, unconventional monetary policies - rooted for almost a decade - have finally become conventional. Considering the low growth and the risk of deflation in most advanced economies, monetary policy creators will need to continue its lonely fight with a new set of "unconventional monetary policies within unconventional monetary policies".

[35] "With the LTRO II, banks would pay, in principle, the MRO rate (director, 0%), being able to reduce that rate to -0.40% depending on the increase in loans granted to non-financial private sector.

Section 4

Monetary policy and deflation risk

4.1. Introduction

The ECB defines price stability as an annual increase in the Harmonized Index of Consumer Prices (HICP) in the Euro area, which must be lower than, but close to 2%, and with a medium-term orientation[36]. The definition of that term allows temporary deviations from this goal without losing, therefore, the condition of price stability. In addition, deflation is the result of declining persistently a remarkable variety of prices of different products, which should be accompanied with very high unemployment rates. The IMF (International Monetary Fund) considers that it occurs when the annual inflation rate is negative for two quarters.

The deflation can be mostly negative on the economy because of its impact on the perception of economic agents (investors, consumers or the financial system), by causing a postponement in investment and consumption, by increasing the weight of debts, etc.

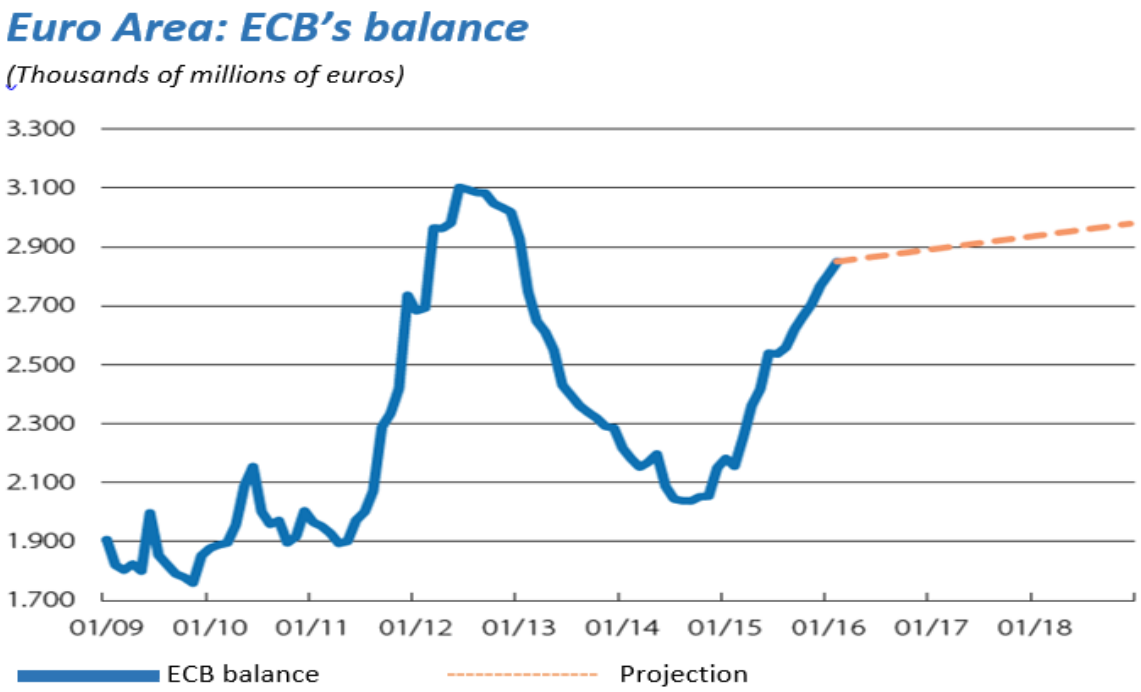
4.2. Deflation and unconventional measures

The continued reduction process of prices in Europe has been caused by factors of supply and demand caused by the economic crisis, recognizing the ECB that inflation expectations and growth had been deteriorated, which meant that the concern that prices tendency moves downwards. Therefore, as it was said before, the necessity to ensure a sufficient level of liquidity by the central bank arises.

[36] Price stability was defined in 1998 by BCE´s Government Council. After that, in 2003, it was said that it should be lower than 2%, but close to it.

As shown in the following graph, the evolution of liquidity and the balance sheet of the ECB have a very important progression. The target of the ECB is that QE money is channeled into the real economy, but part of that liquidity is not reaching businesses and families. As what refers to central bank balance sheet, debt purchase has meant a significant increase.

Graph 8. ECB´s Balance.



*Note: * Assets in ECB's balance.*
Source: Caixa bank research, from Bloomberg data.

Liquidity increases of a central bank are translated into increases in reserves of commercial banks in that central bank. In addition, the performance of the entities can generate movements of such reserves to each other, so that the overall balance remains, generally unchanged. Thus, the expansionary impact expected from the policies of quantitative easing does not depend, in itself, from the final destination of generated reserves within the set of banks belonging to the Eurosystem, but the downwards effect that the increase in reserves has on interest rates of the various assets and the consequent incentive to give and demand new loans (Martinez, 2016; p. 46).[37]

[37] Economic Bulletin of the Bank of Spain. Martínez Pagés, J .: "The quantitative easing measures of the Eurosystem and the financial account". April, 2016.

In this sense, the ECB decided on March 10, 2016, to carry out an ambitious program that was based on the following statements (ECB press of that day):

a) The interest rate applicable to the main financing operations of the Eurosystem will be decreased by 5 basis points to 0.00%, starting from the operation to be settled on March 16, 2016.
b) The interest rate applicable to the marginal lending facility will be reduced by 5 basis points to 0.25%, with effects from 16 March 2016.
c) The exchange rate applicable to the deposit facility will be reduced by 10 basis points to stand at -0.40%, with effects from 16 March 2016.
d) The monthly purchases under the program of asset purchases will increase to 80 million from April.[38]
e) The euro-denominated bonds with investment grade rating issued by entities that are not monetary financial institutions established in the Euro area will be included in the list of eligible assets for regular purchases.[39]
f) From June 2016 a new series of four operations, longer-term financing with specific objective (TLTRO II) will be executed, all of them with a maturity of four years. The minimum interest rate of these operations will be applicable to the deposit facility.

We see a reduction in the general interest rate, down to 0%, five hundredths less than the previous one[40]. It also carries out a reduction in the interest rate on the marginal lending facility, reaching 0.25%. Also, there is a decrease in the interest rate applicable to deposit facilities, it decreases to -0.4%, which means that banks must pay to deposit their liquidity at the ECB; it is intended that the liquidity provided would be oriented towards loans to businesses and families. However, negative interest rates are being applied since 2014 and a considerable portion of bank liquidity is still deposited at the ECB.[41] Another important measure is that monthly asset purchases to 80,000 million are increasing, until March 2017, also admitting corporate bonds purchase and encouraging debt issues by companies.

[38] In April 2016, the monthly limit of 80 mm has been exceeded reaching 85.2 mm. BBVA Observatory. Research.
[39] They will be made by six central banks (NCBs) of the Eurosystem: the Nationale Bank van Belgie / Banque Nationale de Belgique, the Deutsche Bundesbank, the Bank of Spain, the Banque de France, Banca d'Italia and Suomen Pankki / Finlands Bank.
[40] Still it has not reached the reference Japan, whose general rate of interest, on the same date, is at -0.1%.
[41] Central banks of Sweden and Switzerland penalize such operations with 0.85% and 0.75%, respectively.

To this, we must add the four new TLTRO programs with maturity of 2020, which ensures an important temporal horizon with low rates for credits of wholesale type.

So far, as Salvador (April, 2016) points out, "the balance of the results of the unconventional measures has been positive, not only because it has avoided that the recession in the Euro area was higher, but also because it has led to a positive outlook on GDP growth (1.4% for 2016) and the price level (for 2017 and 2018, of 1.3 and 1.6 respectively). In addition, the measures have achieved some others significant effects to stimulate economic growth, as it is the reduction of the cost of credit for businesses and households, and a depreciation of the euro that has increased the competitiveness of exports from the Euro area. "[42]

Maudos (2016) points out that "in principle, the impact of the current context of low interest rates is uncertain. So on the one hand, it affects positively to bank profitability by reducing the default rate (at boosting economic growth), the necessity of provisions, increases the value of the assets (with consequent gains) and reduces the cost of financing. But on the other hand, it negatively affects to the interest margin, especially when you go into the negative territory of interest rates that penalize the excess of bank reserves and deposits at central banks (such as -0.4 % of the marginal deposit facility of the ECB)."

It is also true that the rate of inflation, not considering the price of energy products, is close to 1% level, which is still far from negative rates, except that declines in such energy products moved to other economic variables that can potentially be conditioned. With EUROSTAT and ECB data, the inflation produced in January 2016 has been the 0,4% (annual), being produced a price decrease, particularly in terms of transport, due to the reduction of the combustible and the energy prices. In the rest of the components of the CPI, such reduction is not produced.

Pampillón[43] sees no deflation in the Euro area, estimating to be good news that prices are low. This author says that "the fact that prices are at 2% or even lower than that is not the most important factor in a new situation in which all measures being implemented by the ECB seem not to be having the desired effect on growth

[42] To run the engine of growth, it is considered, as in the analysis of other authors, the importance of fiscal union and structural reforms.
[43] Taken from Molina, C. (04-04-2016): Is 2% a CPI credible target for the Euro area? *Cinco Días*.

factor." Also, he thinks that "monetary policy low the temperature of the sick one and provides cheap financing, but on its own it does nothing. It is also necessary to have a political and fiscal union that serves to respond to the two main challenges of the EU: the age of the population and the loss of competitiveness.

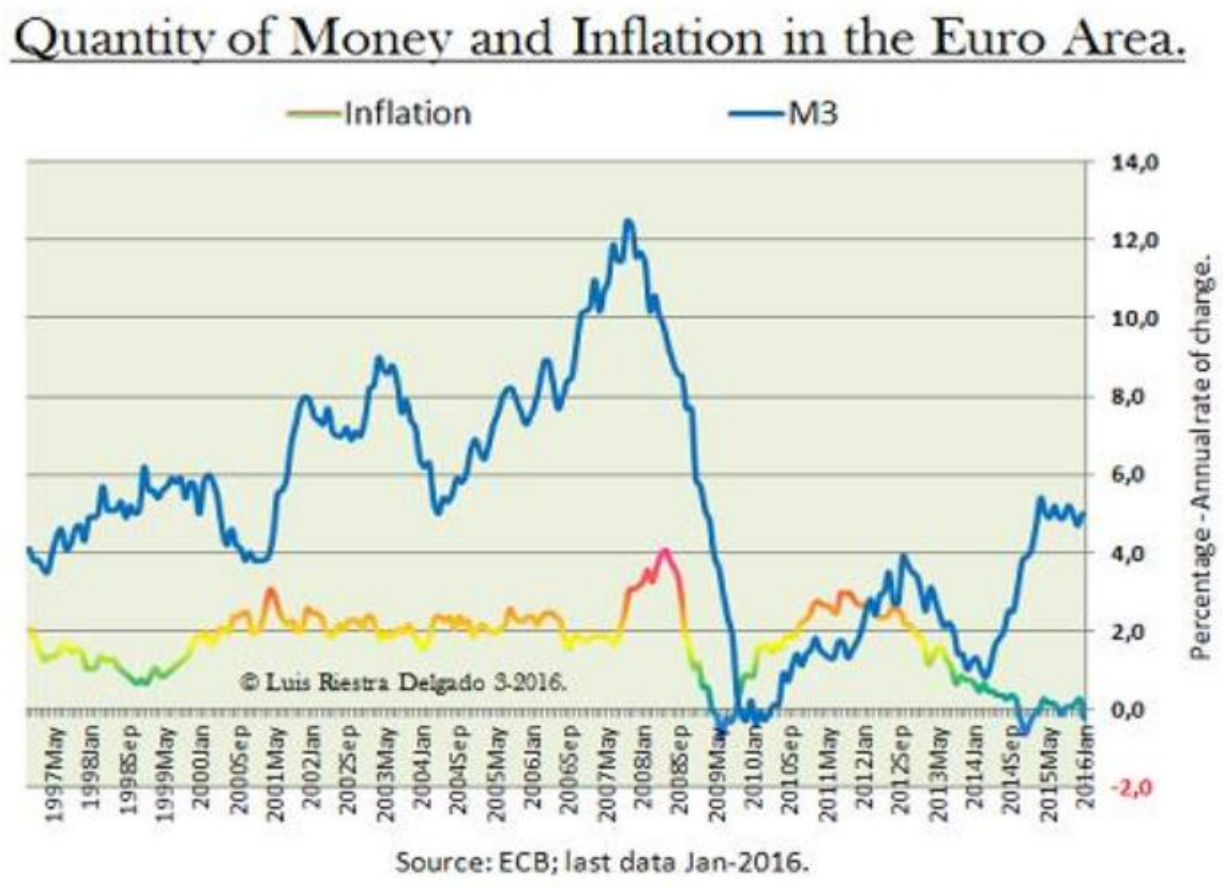
In this way, Coeuré [44], French representative on the Council of the ECB, recommended that all countries should carry out a more growth-friendly tax structures and redirect public spending towards investment, education and research. He said that the ECB's monetary policy provides a favorable context for these reforms.

In any case, the doubts raised by the various authors are realized if the ECB on its own, with its expansive liquidity policies, will ensure that the price indices are in safe places. Such doubts would be largely explained if the various governments act through other policies to achieve an improvement in the economic activity.

It should be confirmed, taking into account the different possibilities, the existing strength in the correlation between the amount of money and the prices, considering that the absence of increasing liquidity would have made a clear situation of deflation. The following chart shows this relationship in the Euro area:

[44] Benoit Coeuré. Central Bank Council.

Graph 9. Correlation between money amount and prices.



Moreover, an element to consider is the speed of money, taking into account that this one should be enough to produce a certain level of inflation when interest rates are lowered. If the speed does not occur, it could be complicated that this mechanism would be produced. The ECB uses, as one of its mechanisms to increase the speed of money, to make the deposit facility be negative, as we discussed earlier.

From there, the possible measures to bring inflation to adequate levels would increase demand, for example by reducing unemployment or lowering taxes, which is difficult in certain situations where debt levels are already excessive. In any case, governments of the various countries must also implement measures that tend to achieve it.

Constancio (2016)[45] discusses the importance of introducing fiscal policies and structural reforms related with the G20 call, but he recognizes the difficulty of implementing such policies, as well as the slowness in the results of some reforms, as in the case of the education, although their results are not directly helping to normalize inflation, as it happens with reforms such as the liberalization of markets when they are translated into decreases in salaries and prices. If these other non-monetary policies "cannot or not want to contribute significantly, then it is not only wrong to start underestimating monetary policy, but it is also really dangerous."[46]

Deflation is an important problem because that could delay purchasing decisions of individual agents and many companies would suffer losses. Also, they would suffer the temporary depreciation of their product stocks and would have to deal with fixed costs at the same time that sales prices are being reduced.

To Laborda (2016), "something does not work properly when we are facing such activism by central banks as governments remain in the shadows. It is true that some governments in Europe are carrying out reforms, as is the case of France at the moment with its labor reform, but overall, a coordinated economic policy strategy in the European Union is missing".

In terms of banks, they have it complicated to generate profitability with general interest rate at 0%, considering also that the economic easing that enables private credit and must have fiscal and infrastructure policies as its origin by Euro area governments, are never started.

In this difficult situation, the European banking system and, specifically, the Spanish one, prepares responses related to cost reduction, considering the digitalization of the various processes, which is unstoppable. Such cost reductions are intended to compensate the weakness in the income, trying to increase their

[45] Statements of Victor Constancio, vice-president of the ECB (11.03.2016). *Expansión*.
[46] Victor Constancio remarks that monetary policies deployed by the ECB have avoided a permanent deflation in the Euro area.

return on equity (ROE) 2.5% in 2016, which would be only exceeded by banks in the UK and Ireland (Crespo, 2016).[47]

4.3. Schematic analysis of the variables involved in the risk of deflation

The analysis made in previous pages, has tried to order variables which are able to affect Euro area prices index, taking as a basic consideration the liquidity increase that ECB gives to the economy through its unconventional monetary policy measures. Logically, a lot of other dependent and independent factors also exist, which are able to influence in price evolution.

Therefore, we have tried to reflect schematically, through the correspondent table, everything that is involved in the studied risk situation. That could affect positively or negatively; in the first case, by giving options or opening some possibilities, while in the second case, by generating disadvantages and establishing doubts. Its goal would be to get to the most favorable situation for the Euro area.

[47] According to a survey by Ernst & Young, the Bank of Spain is preparing a cut of 4.56% in the next twelve months (until May 2017).

Now, we relate the commented variables:

Table 8. Monetary Policy and Inflation/Deflation

MONETARY POLICY AND INFLATION/DEFLATION	
OPTIONS/POSIBILITIES	**DISADVANTAGES/DOUBTS**
If the nominal cost of factors of production (capital and labor), can quickly adapt to the movement of prices, the evolution of economic activity would not be affected.	*Salaries are hardly adjustable downwards and doubts increase in real terms.*
To maintain constant real interest rate, the nominal interest rate has to be reduced when prices are lowered.	*To what extent can the nominal interest rate be reduced?*
The reduction in prices in recent months has been due mainly to the fall in oil prices. If the two most sensitive components are excluded (energy and unprocessed food), the price reduction is not sufficiently widespread.	*Falling prices may reduce expectations of businesses and households, causing delays in investment and consumption.*
The ECB's monetary policy with its unconventional measures, promotes that the various states will carry out tax structures more favorable to growth and orient public spending towards investment, education and research.	*The increase of money from the ECB, regardless of the degree of goals achievement, could lead to an excessive reliance by states, banks and companies. Education and research financing shows positive long-term results.*
The depreciation of the euro may increase export competitiveness.	*Very low prices can mean a temporary depreciation of the stocks of many companies.*
The speed of money must be sufficient to have a certain increase in inflation if the interest rates are reduced. The negative interest rate in the marginal deposit facility helps to increase the speed of money.	*Difficulty of banks to generate profitability with general interest rate at 0%.*
Assuming that the speed of money is constant, in an economy without growth, the inflation rate should be equal to the money growth rate. This means that, if the money supply increases in higher levels than GDP growth, prices should rise[48].	*Such relationship has been low since 2012, since the process of transmission of the ECB measures is slow, because the credit applicants are deleveraging and / or uncertainty that favors savings and causes delay in consumption and investment decisions.*

[48] Based on Milton Friedman´s theory. "Inflation is always and everywhere a monetary phenomenon in the way that it is alone and can be produced by a faster increase in the amount of money than production."

MONETARY POLICY AND INFLATION/DEFLATION	
OPTIONS/POSIBILITIES	**DISADVANTAGES/DOUBTS**
	Basel III has caused an adjustment in banks, adjusting solvency (higher capital ratios) and liquidity, which has led banks to be more prudent in credit lending and to maintain a good level of liquidity to face all kinds of situations, including investments in emerging countries.[49]
	Phillips curve[50] *tells us that, taking into account the underutilization of productive resources of European economies compared to pre-crisis situations, its inflation is still high enough not to reach appropriate levels because of not having given enough pressure on prices and salaries.* *To the effect on prices of the output gap in the Phillips curve, we should add the prices globalization, since the harmonization of these ones is another variable that affects the prices of similar products.*
When output gaps will be gradually reduced, inflation will be closer to the objectives set by the ECB when it carries out its unconventional monetary policies.	*Turbulences in the "high yield" bonds price with much profitability and high risk, linked to commodities such as oil, whose price has fallen by 70% at the beginning of 2016.*
The reduction of interest rates causes a reduction in defaults, in the obligation of provisions and in the cost of financing. The value of assets also increases.	*The interest margin could be reduced.*
In addition to the monetary policy of unconventional measures, a fiscal and political union is necessary.	*Excessive aging population and loss of competitiveness.*
To achieve inflation targets it is important to reduce unemployment or taxes.	*It is difficult to reduce unemployment and taxes, considering the high levels of public debt.*
Reducing banking costs by digitalizing the different processes.	
	Moderate risk of contagion for all the countries by a continued and sustained deflation in countries with high debt levels.
	It would be reached a situation of deflation, if inflation expectations close to 2% are not stabilized, because the situation of inflation rates in the short term is not reversed.

[49] Vidal Martinez, A. (2015) "Inflation: only a monetary phenomenon?" *La Caixa.*

[50] The Phillips curve relates inflation in an economy with output gap, which is the difference between actual and potential output.

MONETARY POLICY AND INFLATION/DEFLATION	
OPTIONS/POSIBILITIES	**DISADVANTAGES/DOUBTS**
The strong increase in liquidity carried out by the ECB depends on the proper performance of the transmission channels of that policy, in which banks are very important.	
	It seems that a deflation process has not appeared in the Euro area yet, but there is a disinflation[51]*, which does not have the same gravity but it is important as well.*
	The fall in oil prices can be translated into a reduction in long-term inflation expectations, moving that fall into prices of the rest of goods, services and salaries.

[51] Inflation rates decrease.

5. Conclusions

The ECB is carrying out its function using measures associated with monetary policy in pursuit of price stability. To do this, it is using all the instruments at its disposal to facilitate the convergence of the inflation to a lower target, but close to 2%. Conventional measures taken are not sufficient to overcome the low growth in the Euro Area. Thus, increasing inflation and running away from a possible deflation, has become a necessary target in the current environment of high debt.

The reduction in oil prices could lead to a reduction in inflation expectations, which would go against ECB goals. However, it seems not to have affected the recovery of the core inflation during 2015. Thus, the fall in oil prices has caused a permanent decline in inflation expectations of consumers and workers.

The aim of the monetary stimulus is to restore the normal performance of the transmission mechanism of the monetary policy and to influence spending decisions of individual economic agents.

However, the effects of the new unconventional measures will be materialized in the long term. ECB´s Forward Guidance implies that the first benchmark interest rate rise is not likely to take place before March 2018, representing a delayed recovery in relation to what was expected before the announcement that the bank did in March 2016.

Theoretically, the effect of QE in public debt´s interest rates should lead to a reduction in the weight of sovereign bonds on the balance sheet of banks and, as a consequence, to the release of the credit to households and businesses. In addition, TLTROs have meant additional amounts for banks oriented to the same goal.

Such monetary measures will have important consequences through corporate debt, and that will bring a change in prices of certain assets, and an important improvement in the confidence of investors.

Speaking now about banks, we should say that they are shortening their margins. The reduction of interest rates in 2014 improved the margin because deposit rates fell faster than assets. Now, as well as the deposit rates are close to zero, net interest income is reduced by the fall in the interest rate on loans. It is also true that the interbank interest rates have a short way down, so unconventional measures find a lot of important difficulties to generate growth and appropriate demand themselves, especially in the short term.

In terms of the necessary structural reforms made by the countries, the rates reduction that can occur in public funding can be an important help itself to carry out the necessary reforms needed to promote growth.

Such reforms, supported by the current policy of the ECB, should be carried out to produce a stimulus to the economic activity, since the problem is whether the ECB itself, with its expansive liquidity policies, will ensure that rates prices are close to the situation aimed. In addition, future prospects lead us to that, in the short term, the ECB will have to stop its expansionist policy, and to avoid negative effects if the policy changes, it will be necessary that the different economies of the Euro Area will go back to a significant growth level, so particular countries will be able to reduce the current high levels of debt.

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