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# THE GLOBAL CRISIS AND UNCONVENTIONAL MONETARY POLICY: ECB VERSUS Fed

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## Abstract

In the aftermath of the global economic and financial crisis, which broke-out in 2007, the major central banks started implementing so-called unconventional monetary policy measures. Following a fundamentally qualitative methodology, the aim of this paper is to compare the unconventional measures adopted by the ECB and the Fed, assessing their characteristics and also their impacts on the economy.

**Keywords** monetary policy, unconventional monetary policy, ECB, Fed

**Jel Classification Numbers** E52; E58.

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## INTRODUCTION

The global financial crisis arose in August of 2007, as a result of the burst of the housing bubble in the US, and then spread to the euro area – where it took the form of a sovereign debt crisis after 2010 – and to the rest of the globe. In its aftermath, the major central banks, such as the ECB and the Fed, started implementing the so-called unconventional monetary policy measures, as a response.

The major aim of this paper is to compare the unconventional measures adopted by these two central banks. The unconventional measures referred to will be those that are not part of the conventional monetary policy tools of each bank and that were specifically used to address the global financial crisis and the sovereign debt crisis.

Concerning the specific objectives of this paper, firstly, it aims to assess the formal and conceptual differences between the unconventional measures adopted by both central banks. This includes understanding how the measures themselves differ from bank to bank and what their aims and areas of intervention are. Additionally, the intent of the unconventional measures in simply aiding the transmission of the monetary policy stance, or as a form of further stimulating the economies is also considered. The final aspect of the formal and conceptual comparison includes determining how these measures fit in the concepts of “quantitative easing” and “credit easing”. In connection to those concepts, the paper also intends to compare the impacts of these unconventional measures on the balance sheet of each bank, both in quantitative terms (size) and qualitative terms (composition).

Another goal of the paper is to understand if there is evidence pointing to more effectiveness of the unconventional measures adopted by the ECB or by the Fed, on the economy of the EA and the US, respectively, at the macroeconomic level.

Finally, the paper will explore how the legal and operational frameworks, as well as the financial structure of the ECB and the Fed, influenced the type of unconventional measures adopted and, specifically, if these unconventional measures fit in the legal frameworks of the central banks.

A comparative approach is followed, through the adoption of an essentially qualitative methodology which is based on the analysis of official documents, previous

studies considered pertinent, speeches made by relevant figures and only occasionally some data analysis.

## 1. The operational and legal framework of the ECB and the Fed

### 1.1. The role of the banks in conducting monetary policy

The Governing Council is responsible for defining the monetary policy of the euro area, which includes decisions on key interest rates, the reserve supply in the Euro system and the establishment of guidelines underlying the implementation of this policy (European Central Bank, 2011b). It is also responsible for adopting the guidelines and making the decisions that are necessary to ensure the fulfilment of the tasks of the Euro system (European Central Bank, 2011b).

The body in charge of monetary policy in the Federal Reserve System (Fed) is the Federal Open Market Committee (FOMC) that oversees open market operations, the most important tool used by the Fed to act in monetary policy and to influence credit conditions (Board of Governors of the Federal Reserve System, 2005). It is, however, the Board of Directors of each of the Federal Reserve Banks (FRBs) that sets the discount rate<sup>1</sup>.

The Fed and the European Central Bank (ECB) both conduct a set of important tasks related to monetary policy. Most of the main tasks are common to both central banks. However, there are some differences concerning the conduction of supervision and regulation tasks and also their role as lender of last resort (LOLR).

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<sup>1</sup> The rate that is charged to commercial banks and other depository institutions on loans received through the discount window facility (Board of Governors of the Federal Reserve System 2014c).

### 1.1.1. Supervision and regulation

There seems to be a larger commitment to supervision and regulation by the Fed than by the ECB, in the Euro system<sup>2</sup>. From the creation of the Fed, one of the main concerns that led to the passing of the Federal Reserve Act was a tighter supervision of banking in the US (Board of Governors of the Federal Reserve System, 2005). The Fed supervises and regulates the whole of the US banking system through the Board of Governors, covering a wide range of financial institutions and activities at the national level, but also US banks with branches abroad and foreign banks with branches in the US (Board of Governors of the Federal Reserve System, 2005), which is particularly important in the context of a financial crisis.

On the other hand, during most of the duration of the crisis the ECB was not in charge of any specific supervision or regulatory functions, which was of the responsibility of the National Central Banks (NCB's). However, by the end of 2015 the ECB started to assume a greater role in supervision with the Single Supervisory Mechanism (SSM), a system of financial supervision that includes the ECB and the national competent authorities of the partaking countries (European Central Bank, n.d. b).

### 1.1.2. Lender of last resort task

The role of the central bank as LOLR is related to the supervision task (Pollard, 2003). The Fed through the discount window conducts this role. However, the legal documents that frame the ECB's actions do not predict this type of task. As a matter of fact, the TFUE establishes that the ECB is not allowed to provide loans to EU bodies or to the public sector (Treaty on the Functioning of the European Union, Article 123).

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<sup>2</sup> Includes the ECB and the NCBs of the countries that adopted the euro (European Central Bank, n.d. g).

## 1.2. Central bank independence

According to Gerdesmeier et al (2007) and to Wynne (1999), the ECB is generally considered more independent than the Fed.

There are a great number of provisions that guarantee the independence of the ECB. For example, the TFUE determines that the bodies and persons exercising the tasks conferred upon them by the Treaties shall not take instructions from any other body (Treaty on the Functioning of the European Union, Article 130). Also, the fact that the ECB is not allowed to provide loans to EU bodies or to the public sector (Treaty on the Functioning of the European Union, Article 123) further enforces the ECB's independence. In addition, the ECB disposes of the independent use of its monetary policy instruments (European Central Bank, n.d. b).

On the other hand, in the Federal Reserve Act the most evident consideration of the Fed's independence is the fact that its decisions are not subject to the ratification of the government, fact that is counterbalanced by the oversight of the US Congress (Board of Governors of the Federal Reserve System, 2005).

## 1.3. Other aspects that frame monetary policy

When analyzing the monetary policy of both central banks, it must also be taken into account that the US is a federation and that the EA is merely an economic and monetary union. The Fed is the monetary authority of a national state, whereas the ECB is a supranational institution that manages the monetary policy for an economic area composed of sovereign states (Scheller, 2006; Pollard, 2003).

The fact that the EA is composed of different countries also has implications on monetary policy. In the first place, the TFUE does not include any form of joint action to tackle a threat to price stability affecting all countries. Furthermore, since the EMU is not a fiscal union the ECB is bound to a number of provisions of the TFUE meant to ensure fiscal discipline, which pose limits to the conduction of monetary policy (see section 3.3.).

The first provision is related to the fact that the ECB is not allowed to provide loans to EU bodies or to the public sector (Treaty on the Functioning of the European Union, Article 123). The second one establishes that the ECB is prohibited to differentiate private and public institutions when it comes to financing conditions (Treaty on the Functioning of the European Union, Article 124). The third provision is the so-called “no bail-out clause”, which establishes that no member of the euro area can assume each other’s debts (Treaty on the Functioning of the European Union, Article 125). Furthermore, a series of fiscal provisions aiming to avoid excessive government deficits are included in the TFUE (Treaty on the Functioning of the European Union, Article 126).

#### 1.4. Monetary policy goals

The monetary policy goals of the ECB and the Fed have different emphasis. In Treaty on the Functioning of the European Union (2008), in Article 127, the priority is given to price stability and only without prejudice to this goal does the ESCB (European System of Central Banks) contribute to achieve full employment and balanced economic growth, among other EU goals.

Although the TFUE doesn’t give a precise definition of price stability, the ECB’s Governing Council has established a quantitative definition for this concept. It is defined as “a year-on-year increase in the Harmonized Index of Consumer Prices (HICP) for the euro area below 2 %”( European Central Bank, n.d. f), but near 2%, to be maintained over the medium term (European Central Bank, n.d. f).

On what concerns monetary policy goals, the Fed looks to fulfill multiple objectives, according to the Federal Reserve Act, Section 2A. The objectives of the Fed’s monetary policy are enumerated in a non-hierarchical manner. It is believed that stable prices are essential for the achievement of sustainable output growth and maximum employment, in the long run (Board of Governors of the Federal Reserve System, 2005). However, in the short-run tension can arise between these goals, in which case the authorities responsible for monetary policy choose a balanced approach (Board of

Governors of the Federal Reserve System, 2005), especially between inflation and unemployment.

Similarly to the ECB, the definition of price stability is not established in the Fed's legal framework. However, in the Statement on Longer-Run Goals and Monetary Policy Strategy it is stated that “inflation at the rate of 2 percent, as measured by the annual change in the price index for personal consumption expenditures, is most consistent over the longer run with the Federal Reserve's statutory mandate”(Board of Governors of the Federal Reserve System, 2012b).

In addition, this Statement (Board of Governors of the Federal Reserve System, 2012b) also recognizes that the objective of maximum employment should be revised.

### 1.5. Conventional monetary policy instruments

The open market operations are the main instrument used by the Fed in order to contract and expand the reserves available to depository institutions and they consist of buying and selling government securities – such as Treasury bonds, notes or bills –with the aim of influencing the level of balances held by depository institutions at the FRBs (Board of Governors of the Federal Reserve System, 2013b). Usually, these open market operations take the form of repurchase agreements (Board of Governors of the Federal Reserve System, 2005). The open market operations are also conducted by the ECB under the form of main refinancing operations (MROs) or long-term refinancing operations (LTROs), depending on their maturity – one week in the first case, three months in the second case (European Central Bank, n.d. c). Furthermore, in the Euro system the open market operations are coordinated by the ECB but conducted by each of the NCB's, in a more decentralized manner than by the Fed (Pollard, 2003). Differently from the Fed, the ECB does not buy bonds to conduct its open market operations, on a conventional basis.

Both central banks also have their own system of overnight loans to financial institutions. The ECB uses standing facilities – the marginal lending facility and the deposit facility (European Central Bank, n.d. e) – and the Fed uses discount window lending (Federal Reserve Bank of San Francisco, 2004).

## 2. The reaction of the ECB and the Fed to the crisis

### 2.1. Following the burst of the global crisis: 2007-2009

#### 2.1.1. The European Central Bank

Albeit the turmoil and increased volatility in the financial markets the Governing Council of the ECB did not alter its main interest rates until July of 2008. At this point, the instruments used to address the financial market turmoil fit in the conventional monetary policy framework.

Additionally, the ECB introduced the “enhanced credit support” measures (European Central Bank, 2010) and established swap lines with the Fed, in connection with the Term Auction Facility (TAF). Furthermore, after the collapse of the Lehman Brothers in September 2008, unlimited credit to euro area banks at a fixed rate in all refinancing operations was provided; the list of eligible collateral for all Euro system credit operations was expanded and LTROs with extended maturity (six-months and twelve months) were introduced. In May 2009, the Governing Council decided to establish the first Covered Bonds Purchase Program (CBPP), a program of outright purchases directed at the covered bond market, an important market for Europe and for bank financing (European Central Bank, 2010), and supplementary LTRO’s with six-month maturity. The purpose of these measures was to reduce the impact of the dysfunctional money markets on the solvent banks’ liquidity and to promote the recovery of the euro area economy (European Central Bank, 2010).

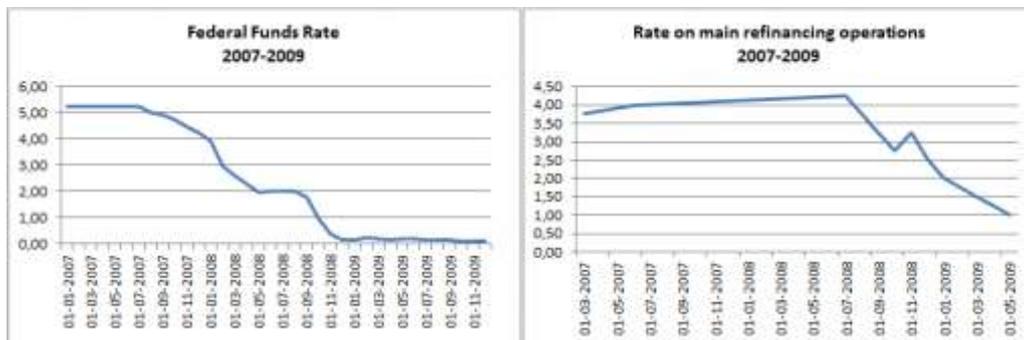
#### 2.1.2. The Federal Reserve

In the summer of 2007, after the breakout of the crisis, the FOMC also made use of its conventional tools. It conducted larger than usual open market operations, adjusted

the discount window borrowing and securities lending and cut the discount rate leaving it at 2.00% on the 30th April. By the end of the year, the Fed also announced the establishment of the temporary TAF to supply short-term funds to sound depository institutions, against collateral (Board of Governors of the Federal Reserve System, 2008). Moreover, the Fed held temporary swap arrangements, namely with the ECB, in order to address pressures in short-term dollar funding markets (Board of Governors of the Federal Reserve System, 2008).

On the 15th September 2008, the Lehman Brothers collapsed in the US. Financial turbulence increased, leading to disruptions and liquidity shortages in many financial market segments. Additionally, the Fed unprecedentedly cut its key interest rates, as did the ECB. By the end of 2008, the federal funds rate (FFR) had reached the zero lower-bound (ZLB) (see Chart 1 for general evolution).

**Chart 1:** The FFR (Fed) and the RMRO (ECB), 2007-2009, in %.



**Source of data:** Federal Reserve Bank of St. Louis (2014) and European Central Bank (2014b).

In this period, the Fed supported another set of critical institutions, namely the American International Group (AIG), to avoid their collapse from having adverse effects on the American economy (Board of Governors of the Federal Reserve System, 2009). Furthermore, the Fed put in place another set of programs that was aimed at providing liquidity to borrowers and investors in key credit-markets.

In December of 2008, with the FFR in the ZLB, the FOMC introduced the Large-Scale Asset Purchases (LSAPs), which consist of purchases of long-term securities issued

by the government (acquired directly in the private market) or by government-sponsored agencies (Board of Governors of the Federal Reserve System, 2014d). The LSAPs lead to the reduction of the yields of various long-term securities (through the reduction of their supply and prices), aiding mortgage markets and helping economic recovery (Board of Governors of the Federal Reserve, 2014d).

## 2.2. Following the sovereign debt crisis: 2010-2013

### 2.2.1. The European Central Bank

In the spring of 2010 the markets became especially concerned about the sustainability of the public finances in some euro area countries (European Central Bank, 2011a). At this point, among the introduction of other measures, the Governing Council announced the Securities Markets Program (SMP), which enabled the Euro system to purchase public and private bonds. The SMP was fully sterilized in order for this program not to affect the monetary policy stance. Any bond purchases conducted under it would be limited to the secondary market and its aim was to support certain sectors of the euro area debt securities market and to aid appropriate monetary policy transmission (European Central Bank, 2011a).

As conditions in some segments of the financial markets worsened and as government bond market tensions spread in the peripheral countries of the EA in the second half of 2011, some of the enhanced credit support measures were continuously prolonged/reintroduced (European Central Bank, 2012a). In this period, the expansion of the list of collateral included the acceptability of market debt instruments issued/ guaranteed by the Greek, Portuguese and Irish governments<sup>3</sup>.

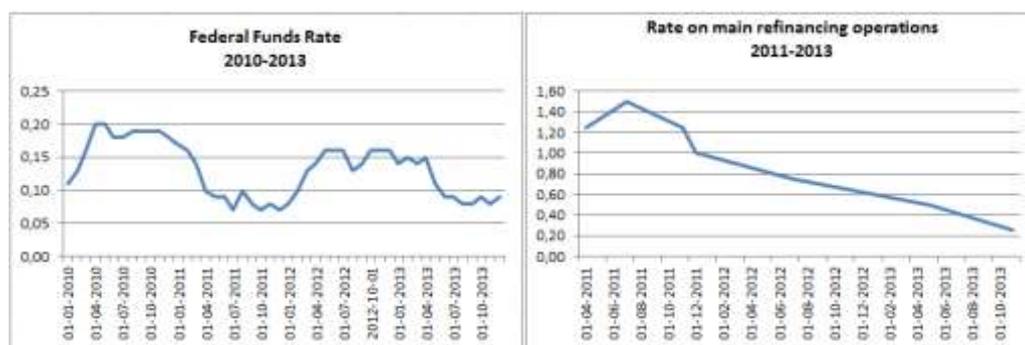
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<sup>3</sup> See *Decision of the European Central Bank of 6 of May 2010 on temporary measures relating to the eligibility of marketable debt instruments issued or guaranteed by the Greek government (2010)*, *Decision of the European Central Bank of 31 March 2011 on temporary measures relating to the eligibility of marketable debt instruments issued or guaranteed by the Irish Government (2011)*, *Decision of the European Central Bank of 7 July 2011 on temporary measures relating to marketable instruments issued or guaranteed by the Portuguese Government (2011)*.

These measures were further extended in 2012 as financial markets and financial conditions were still compromised by the sovereign debt crisis (European Central Bank, 2013). The list of eligible collateral assets was also enlarged, enabling banks to refinance a bigger part of their balance sheets with liquidity from the ECB. Additionally, so as to encourage the effective transmission of monetary policy and to support price stability, on the 2<sup>nd</sup> of August of 2012 the Governing Council announced the Outright Monetary Transactions (OMT) in the secondary markets, with regard to sovereign bonds in the euro area (European Central Bank, 2012b). With this announcement, the end of the SMP was established. The OMT is conditioned to being attached to a European Financial Stability Facility/European Stability Mechanism (EFSF/ESM) program and, additionally, to the country-specific conditionality designed by the International Monetary Fund (IMF), which will also monitor the OMTs. The size of the OMTs is not pre-determined and the liquidity created by them will be sterilized (European Central Bank, 2012b).

In 2012, the ECB reduced its key interest rates twice, reaching 0, 25% (see Chart 2 for general evolution).

**Chart 2:** The FFR (Fed) and the RMRO (ECB), 20010-20013, in %.



**Source of data:** Federal Reserve Bank of St. Louis (2014) and European central Bank (2014b).

The Governing Council of the ECB also decided to provide forward guidance in its meeting on the 4<sup>th</sup> of July of 2013 (European Central Bank, 2014a).

## 2.2.2. The Federal Reserve

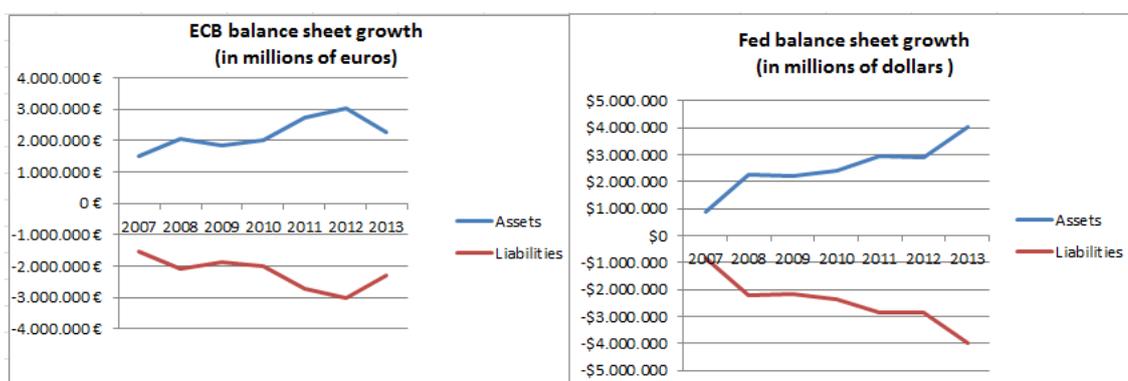
The improvement of the conditions in the markets led the Fed to close the liquidity facilities that it had put in place to support markets, during 2007 and 2008, by June of 2010 (Board of Governors of the Federal Reserve System, 2011). However, the fiscal tensions in the EA and the uncertainty they generated was felt in the financial markets. As such, to contribute to the liquidity conditions in the global money markets and to reduce the risk that outside tensions could influence the US, the FOMC maintained the temporary currency liquidity swaps with various central banks (Board of Governors of the Federal Reserve System, 2011). Also worth mentioning is the forward guidance strategy which was extensively used by the FOMC from August 2011.

## 3. The reaction of the ECB and the Fed to the crisis

### 3.1. The impact of the unconventional measures on the balance sheet

The non-conventional measures adopted by these central banks had a very evident impact on the increase of the size of the balance sheet and on its composition.

**Chart 3:** Size of the Fed and the ECB's balance sheet (2007-2013).

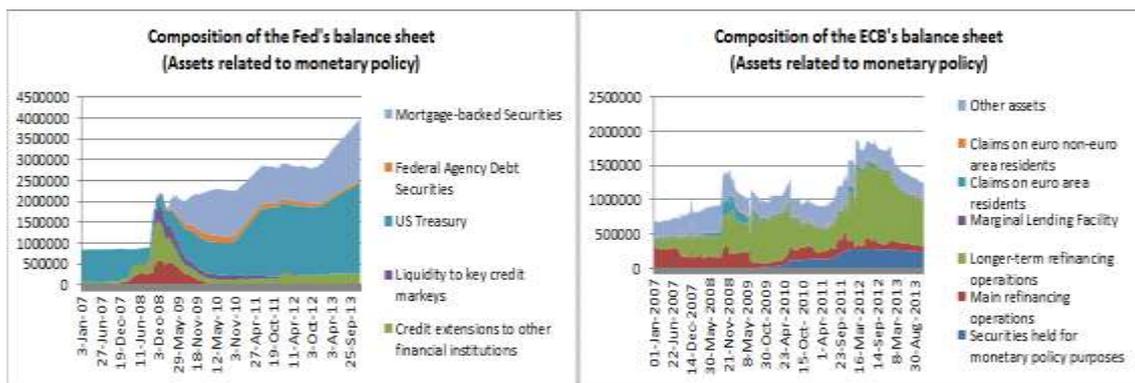


**Source of data:** European Central Bank (2014b) and Federal Reserve Bank of St. Louis (2014).

**Note:** The values used in the construction of these charts correspond to the last available value of each year, since the available data on assets and liabilities is cumulative.

Observing chart 3, in both cases, a general tendency for growth is observable at least until 2012, with the widening of the gap between the assets and liabilities. However, after 2012 the ECB's balance sheet declines until 2013 as the Fed's balance sheet continues to grow. In its growth period, between 2007 and 2013, the ECB's balance sheet approximately tripled in size. During the same period, the Fed's balance sheet also tripled in size but continued to grow, registering four times its initial size by the end of 2013. This suggests that the Fed stimulated the economy further through the unconventional measures.

**Chart 4:** Composition of the Fed and the ECB's balance sheets (2007-2013).

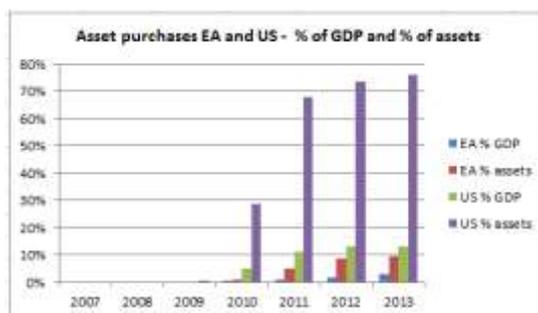


**Source of data:** Federal Reserve Bank of Cleveland (2014) and European Central Bank (2014b).

**Note:** The values are in millions of dollars (Fed)/ millions of euros (ECB).

Observing chart 4, it is clear that the LSAPs (the purchase of US Treasuries, agency debt and mortgaged-backed securities) have the biggest impact on the Fed's balance sheet from between all the monetary policy-easing tools that were adopted.

**Chart 5:** Asset purchases of the EA and US in % of GDP and in % of assets (2007-2013).

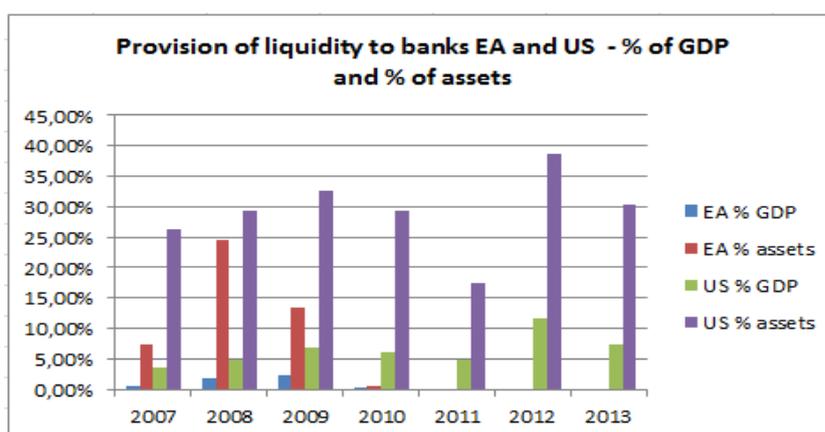


**Source of data:** Federal Reserve Bank of St. Louis (2014), Federal Reserve Bank of Cleveland (2014), The World Bank (2014), European Central Bank (2014b), European Commission (2014).

**Note:** The “assets” used for calculations and “asset purchases” are average values.

Observing chart 5 and table 6, it is also evident that these asset purchases had a bigger impact on the Fed’s balance sheet and US GDP than the asset purchases conducted by the ECB through the SMP and the CBPP (under the category of “securities held for monetary purposes” in chart 5) on the ECB’s balance sheet and GDP.

**Chart 6:** Provision of liquidity to banks in the EA and the US in % of GDP and % of assets (2007-2013).



**Source of data:** Federal Reserve Bank of St. Louis (2014), Federal Reserve Bank of Cleveland (2014), The World Bank (2014), European Central Bank (2014b), European Commission (2014).

**Note:** The “assets” used for the calculations and the “liquidity provision” are average values.

On the other hand, as seen in chart 4, the ECB's balance sheet receives the greatest contribution from the LTROs. The average provision of liquidity to banks conducted by the ECB represents approximately a maximum of 2% of the economy's GDP (in 2009) and of 25% of average assets (in 2008), whereas for the Fed the corresponding values are 11% and 39%, respectively (in 2009).

## 3.2. Characteristics of the unconventional measures

### 3.2.1. Credit easing vs. quantitative easing

Lenza et al (2010) provide a clarified definition of these concepts. On one hand, credit easing (or “qualitative easing”/“credit policy”) implies the change in the composition of the asset side of the balance sheet, but not its expansion. On the other hand, “quantitative easing” usually occurs when the size of the balance sheet, and hence the monetary base, is increased, but there is no interference with the composition of the conventional asset holdings of the balance sheet.

Frequently, the unconventional measures adopted by the ECB and the Fed are fit into “credit easing” (or “qualitative easing”/“credit policy”) or “quantitative easing” according to different perspectives. For example, Trichet (2010) announced that the SMP introduced by the ECB was not to be considered quantitative easing since it was not aimed at printing money; Gros et al (2012) interpret the Fed's monetary policy as “quantitative easing” and the ECB's as “credit easing”; Joyce et al (2012), on the other hand, state that the purchase of MBS by the Fed are generally considered “credit easing” but, all in all, these purchases also imply an increase in the balance sheet, which implies “quantitative easing”. These differences in categorization often occur due to different points of view regarding the aims of the unconventional measures of each bank. This is evident with the comparison between the asset purchases conducted by the ECB and the Fed. On one hand, the official goal of the ECB's asset purchases is to assess the liquidity problems in the banking sector, without the aim of expanding the asset side of the balance sheet since these measures are accompanied of sterilization operations. On the other hand, it can be said that the asset purchase conducted by the Fed aim at increasing the prices of assets,

leading to a reduction in yields, which implies further stimulation of the economy. With these characteristics, the asset purchases conducted by the ECB would be a good fit for the “credit easing”, since they do not formally aim at injecting liquidity, whereas those conducted by the Fed would be considered “quantitative easing”. However, Thompson (2012), for example, argues that the fact that the main asset purchases program introduced by the ECB (SMP) was implemented in the wake of the concerns surrounding the Greek insolvency was a way of intervening in the sovereign debt markets of the periphery countries of the EA intending on reducing the yields of assets and on stimulating the economy.

As such, it becomes evident that these unconventional monetary policy measures cannot be linearly integrated into this typology also due to the fact that both the ECB and the Fed incur in “credit easing”, especially in the initial stages of the financial turmoil, and “quantitative easing”, from the collapse of the Lehmann Brother’s onwards (Lenza et al, 2010).

### 3.2.2. Using unconventional measures as a complement or as a substitute to the interest rate

The nature of the unconventional measures adopted by the central banks and the timing at which they were introduced implies that they diverge regarding replacing or complementing the signaling of the monetary policy stance through the key interest rate (Cour-Thimann & Winkler, 2013). The ECB has abided by a “separation principle” (Constâncio, 2011), meaning that conventional and unconventional instruments are regarded as having different purposes. As such, the unconventional measures adopted by the ECB are seen as a complement to the use of the interest rate in signaling the monetary policy stance (Cour-Thimann & Winkler, 2013). This means that formally their aim is not to provide further stimulation to the economy but, instead, to reestablish the functioning of the monetary policy transmission mechanism, so that signaling monetary policy through the key interest rates is still possible in unconventional circumstances. On the other hand, the Fed’s use of unconventional measures substitutes the use of the interest rate to signal monetary policy, considering that they were introduced with the FFR at the ZLB (end of 2008) (Cour-Thimann & Winkler, 2013) – the ECB’s RMRO only reached

the ZLB by the end of 2013 – meaning these measures were needed when the monetary policy stance could no longer be signaled via the FFR.

### 3.2.3. Similar goals but different financial structures and conventional monetary policy framework

As can be read in section 2.3., there are some similarities in the unconventional measures adopted by the ECB and the Fed, which include similar general goals. Nevertheless, the implementation of these measures reflects different financial structures (Lenza et al, 2010; Cecioni et al, 2011; Cour-Thimann & Winkler, 2013) and different conventional operational frameworks (Lenza et al, 2010; Cecioni et al, 2011). The ECB has a bank-based financial structure which implied that the ECB tackled the crisis through the expansion and amelioration of the facilities that provided funding to the banking system, focusing on its regular counterparts (Lenza et al, 2010). In fact, liquidity provision to banks had a very significant impact on the balance sheet of the ECB (section 3.1.). On the other hand, the Fed has an essentially market based financial structure and its unconventional measures reflected this. Considering the impairment of the banking system, especially after the demise of the Lehman Brothers, the Fed had to introduce specific facilities directed at it.

Hence, authors such as Cecioni et al (2011) and Lenza et al (2010) argue that more original and encompassing measures were adopted by the Fed, translating into a greater adaptation of its conventional monetary policy framework in comparison to that of the ECB, hence implying that the operational framework of the ECB is originally more flexible and more modern than that of the Fed. As a matter of fact, as noted in chapter 2, the Fed implemented a greater number of new programs to tackle the crisis in comparison to the ECB, which resourced greatly to the expansion existing conventional tools. However, this is counterbalanced by the greater challenges the ECB faced in the legal domain where it encountered greater limitations to monetary policy (section 3.3.).

### 3.3. The unconventional measures in the scope of the central banks' legal framework

The legal framework of the ECB poses greater constraints on its action through unconventional measures in an exceptional situation than that of the Fed. Some of the unconventional measures adopted by the ECB expand the conventional role of this central bank and go against some of the articles in its statutes.

To start with, a set of actions suggest that the ECB acted as a LOLR for the sovereigns in the periphery of the EA, which goes against the Treaty of the Functioning of the European Union, Article 123. Firstly, the introduction of the SMP is regarded as a way of the ECB acting as a LOLR for sovereigns through the purchase of periphery sovereign debt (Buiter & Rahbari, 2012; De Grauwe, 2011). Secondly, the three-year LTROs have also been considered as a form of lending to Spanish and Italian governments through facilitating the purchase of their debts in the primary markets (Buiter & Rahbari, 2012). Thirdly, two other mechanisms fulfill the LOLR function of the ECB: lending indirectly to the periphery sovereigns through the Troika programs and the ESM (Buiter & Rahbari, 2012). Additionally, these two mechanisms also breach the Treaty of the Functioning of the European Union, Article 125. More recently, the OMTs have also caused controversy by breaching the Treaty of the Functioning of the European Union, Article 123, according to the judges of the Federal Constitutional Court of Germany (Bundesverfassungsgericht, 2014), but also by breaching the EU law being considered an “independent act of economic policy” (Bundesverfassungsgericht, 2014) that may “gain effects of a fiscal redistribution” (Bundesverfassungsgericht, 2014), which are competences of the member states.

On the other hand, the expansion of the list of collateral conducted from 2010 included the acceptability of market debt instruments issued/ guaranteed by the Greek, Portuguese and Irish governments<sup>4</sup>, has also been criticized due to violating the Treaty of

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<sup>4</sup> See *Decision of the European Central Bank of 6 of May 2010 on temporary measures relating to the eligibility of marketable debt instruments issued or guaranteed by the Greek government (2010)*, *Decision of the European Central Bank of 31 March 2011 on temporary measures relating to the eligibility of marketable debt instruments issued or guaranteed by the Irish Government (2011)*, *Decision of the*

the Functioning of the European Union, Article 124, and due to causing discrimination towards other euro area countries and unfair competition (EurActiv, 2011, citing Kerber, n.d.).

In the case of the Fed, the more extreme measures fit in the provisions of The Federal Reserve Act, Section 13 (3). Furthermore, the monetary policy/legal framework of the Fed does not include any impediments to the Fed purchasing unlimited amounts of its sovereign bonds.

## 4. The effects of the unconventional measures on the economy

### 4.1. Empirical studies on the macroeconomic impact of the unconventional measures adopted by the ECB and the Fed

The majority of studies on the macroeconomic impact of unconventional monetary policy measures on macroeconomic variables use a form of the autoregressive vector (VAR). One of the first available studies on this matter is that of Baumeister & Benati (2010). Their main conclusions are that the asset purchases conducted by the banks in question had a powerful impact on output growth and inflation and that monetary policy measures helped to avoid deflation and output collapses similar to the Great Depression. In particular, if it weren't for the Fed's LSAPs inflation and output growth in the US would have reached levels below zero in the first quarter of 2009.

The same type of model was used by Lenza et al (2010) to assess the macroeconomic impact of unconventional measures in the EA. Their general conclusion is that the measures adopted after the collapse of the Lehman Brothers were important in stabilizing the real economy, but not sufficient to avoid a fall in economic activity.

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*European Central Bank of 7 July 2011 on temporary measures relating to the eligibility of marketable debt instruments issued or guaranteed by the Portuguese Government (2011).*

In the same line of investigation, Peersman (2010) uses a structural VAR model to draw conclusions on the impact of credit market disturbances. These disturbances are namely influenced by credit shocks from unconventional policy action. The author concludes that this source of credit shock has led to a hump-shaped effect in economic activity (there is a build up to a peak, caused by the credit shock effects, but then this effect declines after several months) and a permanent impact on consumer prices.

The studies dedicated to the macroeconomic impacts of unconventional monetary policy measures in the US focus on the LSAPs and use different models. Chung et al (2011) draw conclusions on the impact of the LSAPs in the economy using a FRB/US model. They find that the Fed's LSAPs were successful in reducing the economic impacts of the ZLB on the economy. Fuhrer & Olivei (2011) combine results from studies based on VAR and FRB/US models with information from the Federal Reserve Bank of Boston and they estimated a raise in real GDP by 60-90 basis points and a decline in the unemployment rate between 30 to 45 basis points after two years.

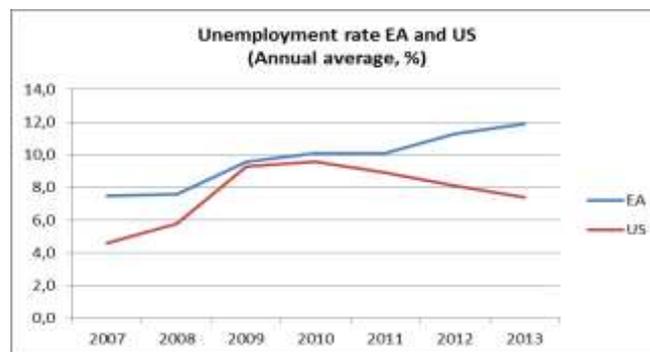
A more recent study on this theme conducted by Wu & Xia (2013) uses a simple analytical representation for bond prices in the SRTSM. Their conclusions suggest that the implementation of unconventional measures by the Fed since July 2009 (with the FFR at the ZLB) left the unemployment rate 0, 23% lower, in May of 2013, than it would have been otherwise.

Another study, by Gambacorta et al (2013), focused on the impacts of unconventional monetary policy measures on price and output levels through their impact on the balance sheet in eight advanced economies, including the US and the EA. From the estimation of a panel VAR with monthly data between 2008 and 2011, the author's findings support the premise that unconventional monetary policy measures adopted in the wake of the financial crisis provided temporary support to the economies. In addition, these authors conclude that there are no significant cross-country differences in terms of the macroeconomic impacts of unconventional monetary policy measures.

## 4.2. Assessing the evolution of macroeconomic indicators in the US and the EA

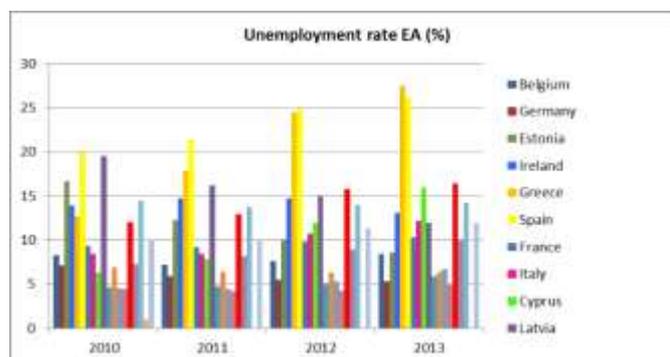
As seen in chart 7, until late 2010, unemployment in both the US and the EA registered a similar evolution, suggesting a similar influence of the global financial crisis. However, from late 2010 onwards, whereas the US unemployment rate started to fall, with the end of the recession, the EA's unemployment rate started to grow. As seen in chart 8, from 2011 the unemployment rates in the countries that suffered more severely from government bond market strains – Greece, Spain and Ireland – increased significantly and became higher in comparison to the other EA countries. As such, the unemployment rate in the EA and the US reflect cyclical factors, as Draghi (2014) also argues.

**Chart 7:** Unemployment rate in the EA and US (annual average, %), 2007-2013.



Source of data: European Commission (2014)

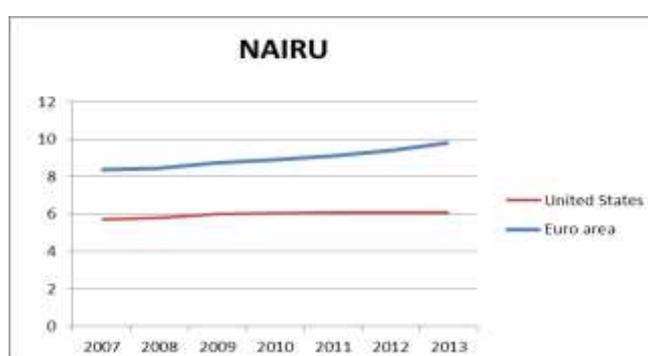
**Chart 8:** Unemployment rate by EA country (%), 2010-2013.



Source of data: European Commission (2014).

However, other factors account for divergent tendencies in the unemployment rate. Draghi (2014) states that the evolution in the unemployment rate of the EA and the US also reflects an increase in structural unemployment that appears more significant in the EA. This is evident in chart 9, where this variable is measured by the NAIRU<sup>5</sup>, which points to an increase in structural unemployment in the EA in the considered period as opposed to its stagnation in the US, after 2009.

**Chart 9:** NAIRU EA and US (2007-2013).



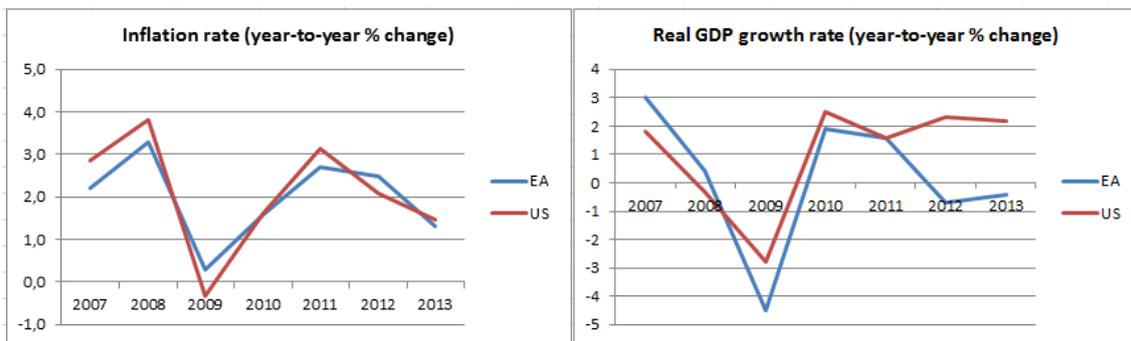
**Source of data:** OECD (2014).

Observing chart 10, there is a similar tendency between both countries with inflation and also with real GDP growth, until 2011. A downward slope in both variables occurred in 2009, suggesting the impact of the intensification of the crisis after the collapse of the Lehmann Brothers. However, from 2011 onwards, the growth of the real GDP rate differed. The cyclical shock of the sovereign debt crisis was felt in the EA, lowering the GDP growth rate to negative levels. This suggests that the financial cycle's evolution is also evident in the evolution of the real GDP growth rate.

As per inflation (chart 10) it began a second downward slope from 2011 in the US and from 2012 in the EA, leaving these economies in deflation. However, this seems related to transitory factors, namely the decline in food and price inflation in the EA (European Central Bank, 2014a) and the fall of non-oil import prices in the US (Board of Governors of the Federal Reserve System, 2014a).

<sup>5</sup> As defined by the OECD (2001) “structural unemployment is the rate of unemployment consistent with constant wage inflation (non-accelerating wage rate of unemployment (NAWRU)), or constant price inflation (non-accelerating inflation rate of unemployment (NAIRU)), given current economic conditions.”

**Chart 10:** Inflation rate and real GDP growth rate (year to year % change) in the EA and US.



**Source of data:** European Commission (2014), Federal Reserve Bank of St. Louis (2014), The World Bank (2014).

## CONCLUSIONS

Firstly, similarities between the sets of unconventional measures adopted by the ECB and the Fed can be found. Both banks reduced key interest rates to the ZLB, expanded existing facilities, provided liquidity to key credit markets and to financial institutions, conducted asset purchases and resourced to forward guidance.

Secondly, both banks had similar aims with the implementation of these measures – improving the functioning of certain markets and at keeping the financial system working – and both address crucial markets and financial institutions. However, it seems that whereas in the case of the ECB they are used as a complement to the interest rate it may be said that the Fed has used them to further stimulate the economy.

Thirdly, the unconventional measures adopted by both banks had a significant impact on their balance sheets, both in terms of size and composition. As such, both sets of unconventional measures have elements of both “quantitative easing” and “credit easing”. However, the size of the Fed’s balance sheet increased more than that of the ECB, indicating that it stimulated the economy further. In terms of the composition of the balance sheet, the measures that weigh the most in the Fed’s balance sheet are the asset purchases, whereas in the ECB’s balance sheet it is the LTROs that have the largest contribution, reflecting the importance of the banking system in the EA economy.

Furthermore, a number of studies on the impact of the unconventional measures on certain macroeconomic variables conclude that, in both economies, the unconventional monetary policy contributed to attenuate the negative impact of the crisis on several macroeconomic indicators. However, the analysis of the evolution of unemployment, inflation and GDP growth point to a weaker recovery of the EA economy. Nonetheless, it must be considered that it underwent more severe constraints than the US after 2010 due to the sovereign debt crisis, and also that its economy is strongly influenced by structural factors and by a lack of cohesion in policy implementation, which are not in the scope of monetary policy. As such, this weaker development may camouflage the positive impacts of the unconventional measures adopted by the ECB on the economy. However, the fact that both the US and the EA will maintain some form of unconventional monetary policy in practice suggests that there is a belief in its contribution to the further improvement of both economies.

Finally, it seems that a great part of the ECB’s unconventional measures were an extension of existing facilities, whereas the Fed had to resource to the creation of more new programs to tackle the crisis. These approaches can be justified by the fact that Fed’s financial structure is market-based, whereas that of the ECB is bank-based. Furthermore, some authors such as Cecioni et al (2011) and Lenza et al (2010) argue that more original and encompassing measures were adopted by the Fed, implying that the operational framework of the ECB is more flexible than the Fed’s, because it did not require the introduction of so many new programs in tackling the crisis. However, the

legal framework of the ECB turns out to be much more restricted to the conduction of monetary policy than the Fed's, implying that some articles of the TFUE may be breached by a number of unconventional measures and by the ESM mechanism and Troika programs.

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