

AMERICAN UNIVERSITY OF BEIRUT

THE SPECTRE OF EUROZONE DEFLATION

by
FIDAA ANTOUN EL ALAM

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AMERICAN UNIVERSITY OF BEIRUT

THE SPECTRE OF EUROZONE DEFLATION

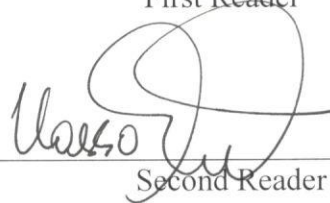
by
FIDAA ANTOUN EL ALAM

Approved by:



[Dr. Simon Neaime, Professor]
[Department of Economics]

First Reader



[Dr. Yassar Nasser, Lecturer]
[Department of Economics]

Second Reader

Date of Project Presentation: [December 4, 2015]

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Student Name: El Alam Fidaa Antoun
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AN ABSTRACT OF THE PROJECT OF

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The Eurozone's reaction to the economic crisis beginning in late 2008 involved both efforts to mitigate the arbitrarily destructive effects of markets and vigorous pursuit of policies aimed at austerity and deflation. In this paper I mention the major aspects of deflation in addition to the causes of the price level drop in the Eurozone and the solution that the ECB has adopted. The purpose of my research is to answer the question whether quantitative easing is the appropriate policy the ECB has undertaken in addition to its ability to induce growth and inflation. Accordingly, it is time for Europe to acknowledge the importance of fiscal policies in a monetary union. Unlike the effect of the quantitative easing on economic variables, consumption, investment and exports have a strong long run relationship with the government spending.

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CHAPTER I

INTRODUCTION

Deflationary episodes through history have been limited and far between. Therefore the concept of deflation sounds perplexing.

According to Buitier (2003), deflation is “*a sustained decline in the general price level of current goods and services, that is, a persistently negative rate of inflation*”. The concept of deflation in this definition can be emphasized in a number of points. First the drop in prices is considered a deflation, only if it occurs for significant periods. Second, deflation occurs if there is a sustained drop in the price level for current goods and not just asset prices. Accordingly, a drop in properties prices is not considered deflation unless it affects other good prices and therefore causes a sustained fall in the overall prices level.

Economists approve that deflation is not just a negative inflation rate. In this approach, Buitier (2003) and Yates (2002) mention many reasons why deflation is not only a negative inflation rate. To start with, deflation could lead to a zero bound to interest rate if it is significant and consequently put restrictions on the conduct of conventional monetary policy. In addition, the burdens of deflation in terms of “Costs to Society” are significant with deflation than with inflation since that the costs from “deflationary-induced redistribution” from debtors to creditors are very much higher than “inflationary-induced redistribution” from creditors to debtors. Consequently, deflation is then seen to be more conducive to bankruptcy and loans default than inflation. In this approach, IMF (2003) says that banks under deflation are more likely to cut or restrain credit channels than under inflation. Moreover, employment and

output are threatened during deflation because it is difficult to induce domestic demand under a deflationary pattern than during an inflationary pattern. This scenario falls under what so called “Sacrifice Ratio”.

Finally, Bernanke (1999) and Buitter (2003) mention the scarcity of deflationary periods in history. Therefore, it is considered risky to compare one situation to another since that monetary and economic variations arise during time. For instance, the Japanese case in the 90s is not comparable to any other deflationary experiences in the world such as the great depression. Deflation is not always bad and its consequences are not always a cause of concern.

Following the basic tenets of economics of price movements, deflation implies either a fall in aggregate demand or a rise in aggregate supply. Therefore in the demand driven deflation, Firms tends to lower prices in order to induce consumption. On the other hand, in a supply driven deflation (technological deflation), a drop in the overall price level occurs as a response to a supply shock. For instance, deflation in US, UK and Germany in the nineteenth century occurred because of a positive aggregate supply shocks such as increase in overall productivity accompanied with rising output and employment in addition to the decrease in the cost of production.

In this paper, i mention the major aspects of deflation in addition to the causes of Price level drop in the Eurozone and the solutions that the ECB has adopted (Quantitative Easing).

The purpose of my research is to answer the question whether Quantitative Easing is the appropriate policy the ECB has undertaken in addition to its ability to induce growth and inflation. This research is divided into three chapters in addition to an introduction and a conclusion. The first chapter talks about the types of deflation and

the causes of each one. It continues with the causes behind the European debt crisis and the background of deflation in the Eurozone in order to be compared to the Japanese case. The last chapter covers the empirical analysis of the Eurozone. The data is used in these tests: Granger Causality, co-integration, unit root, in addition to the least square regression and impulse response function. The conclusion is devoted to discuss beyond QE and deflation.

CHAPTER II

THE ASPECTS OF DEFLATION

A. Liquidity Trap

“Liquidity Trap” exists when zero interest rates fail to stimulate consumption and monetary policy becomes powerless. In this situation, an increase in the money supply could fail to increase spending because interest rates cannot fall further.

“Liquidity trap” occurs when people keep their funds in savings because they believe that interest rates will rise. The common characteristics of a liquidity trap: 1- interest rates are close to zero and 2- fluctuations in the money supply fail to be reflected in the price level. This concept returned to prominence when the Japanese economy faced a long period of stagnation.

A liquidity trap is typically caused and in turn spreads deflation. For instance, when deflation is persistent and is combined with tremendously low nominal interest rates, it creates a vicious cycle of output stagnation and further expectation of deflation. Therefore, when an economy falls into a liquidity trap and stays in a recession for some time, deflation could result. In addition, when deflation becomes more severe, people expect negative inflation to go forward. Accordingly, the real interest rates will be expected to rise (increase in the real cost of borrowing and thereby expands the output gap) while monetary policy is ineffective. Consequently, the Central Banks find themselves obliged to follow unconventional policies such as Quantitative Easing in order to maintain artificially low interest rates while pumping the economy with extra money in order to induce spending that can sometimes lead to inflation.

B. Debt Deflation Theories

Debt deflation is a situation in which the collateral used to secure a loan or another form of debt decreases in value. Fisher.I (1933)

1- Fisher's Debt Deflation

In 1911, Fisher developed a theory of economic crisis that attribute it to over borrowing during the expansion path that preceded the crisis and to the changes in the purchasing power of money then to the collapse in credit and finally to the drop in price level. This idea reached its best exposition in his 1933 article “the debt deflation theory of great depressions”. According to Fisher (1933), the causes of the great depression appear to be “Over-Indebtness” followed by deflation. Fisher attributes the crisis to the bursting of credit bubble which releases a series of effects that have serious negative impacts on the economy:

- Economic agents seek to reduce indebtness by liquidating debt which leads to distress selling, to contraction of deposit currency as bank loans are paid off and to slowing down of velocity of circulation. This repayment in aggregate reduces the quantity of money or deposit currency and then causes a fall in the price level.

2- Minsky: Asset Prices

According to Minsky (1982), distress selling reduces asset prices. Consequently, the resulting losses exacerbate indebtness and may lead to further

distress selling. The asset market and distress selling feed on each other. This represents the first channel.

Regarding the second channel, Minsky (1992) argues that the fall in asset prices reinforces deflation. In other words, losses from the decline of asset values reduce spending through the wealth effect.

3- Ben Bernanke

In 1983 Bernanke developed a theory in which the financial crisis affects the banking system. According to him, a small decline in the price level transfers wealth from debtors to creditors without doing damage to the economy. However, when the economy experiences a severe deflation, falling asset prices along with bankrupts it leads to a decline in the nominal values of assets on banks' balance sheets. Banks will react to constrict their credit conditions which in turn lead to a credit crunch that does serious harm to the economy (lowers investment and consumption that in turn lowers aggregate demand) which additionally contributes to the deflationary spiral.

C. Monetary Policy and Price Level Stability

Price level stability refers to the concept that prices are stable enough so that people do not feel compelled to take inflation into account when making economic decisions.

Monetary policy can be adopted by a government to control prices through interest rates and money supply.

- The central bank can attempt to control deflation or inflation through open market operations by buying or selling government bonds to change the country's money supply. A change in the money supply affects the general price level in an economy. If the rate prices are increasing the central bank tend to reduce money supply by selling government securities. Thus, interest rates tend to increase as borrowers have to compete for loanable funds. As demand decreases, sellers will produce less and will not increase their prices in order to attempt consumers to increase their consumption.
- A monetary policy is also adopted to stop decreasing prices .Instead of selling government bonds, Central Banks will buy them back so interest rates tend to decrease. As a result, demand increases due to the increased availability of money which will induce sellers to increase their prices and the general price level will stabilize.

D. Asset Prices and Monetary Policy

During the past two decades, economies have experienced large boom bust cycles in the prices of various assets (equities and real estate).

According to Ben Bernanke (1999), the most important connection between asset prices and the real economy operates through “the balance sheet channel”. Research suggests that the effects of asset price changes on the economy are transmitted to a very significant extent through their effects on the balance sheets of households, firms and financial intermediaries. For example, firms and households can use their assets as collaterals in order to have a loan. Under such circumstances, a decline in the asset prices reduces the available collaterals, leads to an unplanned increase in leverage on

the part of borrowers and consequently impedes potential borrowers' access to credit. Deteriorated balance sheets and reduced credit flows operate primarily on spending and aggregate demand in the short run. In addition, they may also affect aggregate supply in the long run by inhibiting capital formation and reducing working capital. First, declining sales and employment imply continue weakening of cash flows and hence causes further declines in spending .Second, there may also be feedback to asset prices as declining spending and income together with forced assets sales, lead to further decrease in asset values.

E. Japan: an International Model

The Japanese economy has witnessed a decade of deflation. The average growth rate from 1993 to 2003 was almost 1%. Since 1998, the inflation rate- measured either by GDP deflator or CPI- has been negative.

1- Bubble and Burst

Some economists consider that the bubble period (1985-1990) is responsible of the Japanese economy stagnation in the 1990's.

During the 70s, Japan extended its domination to the global electronics industry since it manufactured the majority of the world's consumer electronic products. Japan's booming post-war export economy and strict fiscal policies that were meant to encourage household savings resulted in cash surpluses in the country's banking system allowing them to increase their lending. The country's healthy trade surplus and the Plaza accord in 1985 caused the yen appreciation against other currencies, which in turn made foreign investment inexpensive for Japanese economies. The combination of

excess liquidity in the banking system, financial deregulation and the country's export miracle lead to overconfidence and over exuberance in Japan's economy. This overconfidence and the bank of japan loose monetary policy in the mid to late 1980s led to aggressive speculation in domestic stocks and real estate, driving the prices of these stocks to previously unbelievable levels. From 1985 to 1989, Japan's Nikkei stock index tripled to 39000 and accounted for more than one third of the world's stock market capitalization. Real estate prices experienced similar manic action, with prices in Tokyo prime neighborhood rising to levels that made them 350 times more expensive than comparable lands in Manhattan. While asset prices were doubling and tripling in few years, the CPI inflation rate remains low, prompting a difficult choice to the Bank of Japan.

By 1989, Japanese formals became increasingly worried with the country's growing asset bubbles and the BOJ decided to tighten its monetary policy. Soon after, the Nikkei stock bubble burst and plunged by nearly 50% from nearly 39,000 to 20,000 during the year 1990, hitting 15,000 by 1992. The official discount rate rose to 3.75 in October 1989 and to 4.25% in December. Stock prices finally turned down from the first trading day of 1990 and continued to decline and the index lost 60% of the peak level by the summer of 1992. Land prices also decline and the bubble burst. When the asset-bubble collapsed, the overheated economy cooled down quickly and the asset prices dropped. The demand pull inflation turned into deflation. Because of the decrease of the value of assets and housing, many companies became bankrupt. As result of that many banks broke because the loans could not be paid back. Thus, deflation rises. Many researches have published on the cause of the Japanese financial crisis and the consequential deflation.

Takatoshi(2006) in his paper attributes the Japanese Financial Crisis to the failure of Bank of Japan to adjust the assets prices before the crisis. The Bank of Japan should not have cut the discount rate from 3% to 2.5% and it should have been raised in August 1988 when the FED raised interest rates. According to Takatoshi, BOJ should tighten its monetary policy to prevent some of the worst problems that ultimately arose. By May 1989, when the discount rate was finally raised, it was too late.

Ihori(2003), Kawade(2003) and Nakazato(2003) consider that the macroeconomic measures pursued by the ministry of finance were responsible of the prolonged recession and slow recovery. Ihori(2003) considers that the fiscal policy adopted through cutting taxes and increasing government spending fail to stimulate the economy. However, after using VAR to analyse the Japanese fiscal policy, Kuttner(2001) and Posen (2001) conclude that when used, the fiscal policy was effective but the main cause of the Japanese recession is the insufficient use of fiscal measures. Kawamoto (2003) and Nishimura (2003) blame the crisis to the aloof attitude of the large national based-firms. They see Japanese commercial banks as seeking long term relationships not only with larger firms but also with commercial borrowers.

2- The Zero Interest Rate Policy

The zero interest rate policy was first introduced in Japan and has been adopted to fight deflation and to stimulate the economy. The zero interest rate policy has been effective in lowering and stabilizing interest rates to enhance the economy in Japan. In February 2, 1999 BOJ adopted the zero interest rate policy to combat deflationary pressure and to boost the economy. Later the zero interest rate policy was rescinded in August 11, 2000 as the economic situation displayed signs of gradual recovery. The

growth rate grew at 3.3% between 1999 and 2000. However, the situation has not improved greatly. After the worldwide fall in the demand of high-tech products, the economy went into a serious recession. Thus, Bank of Japan introduced the quantitative monetary easing policy in March 2001. Under this policy BOJ made huge purchases of Japanese government bonds as the main instrument to reach its operating target of current account balances held by FI at the BOJ. The quantitative monetary easing policy has consisted of a zero interest rate policy, expansion of the current account balance above level necessary to maintain short term interest rates at zero and use of purchasing operations of long term government bonds and other securities to meet the CAB target. In March 2006, BOJ exited quantitative easing amid signs that the deflation ended and the recession disappeared. On July 2006 the zero interest rate policy ended. However, only few studies have examined the effects of this policy empirically.

Kurihara Y(2003), examines the effects of the zero interest rates policy on the Japanese economy empirically, by using three independent variables: interest rates, daily stock prices and daily exchange rates. After applying the OLS method by regressing those three variables on the dummy that takes the value of 1 on days when the BOJ provided new information about the policy change and zero otherwise, we find that zero interest rate announcement, has influenced long term interest rates. The announcements which appear to have boosted the economy functioned well. They promoted the depreciation of the yen and increase of stock prices. There is a consensus among economists that using fiscal policy to stimulate the economy is not an option because the government's deficit and the outstanding liabilities are already so high. There is also a consensus that Japan is facing a liquidity trap and that conventional monetary policy will not restore Japan's economic health.

According to Goyal (2003) and Mckenion(2003), the only immediate policy instrument available for the Japanese financial institution is to stabilise the yen/dollar exchange rate. They see that the monetary policy is ineffective at a nominal interest rate of zero; accordingly nominal interest rates should increase permitting the Bank of Japan to once again use a monetary policy that re-inflates the economy. For instance, they suggest different channels that include monetising the Japanese government debt. However, Bank of Japan has resisted buying new issues on the grounds that this would lead to the perception of fiscal discipline.

There was nothing unavoidable about the Japanese bubble but the policy instruments available to the BOJ could have prevented it. However, the unusual circumstances in which the bubble has developed, is hardly surprising that Japan acted as it did. Once the bubble collapsed, neither BOJ nor MOF were quick to reverse policy to fight off the recession. Monetary Easing, if followed aggressively might have been successful. However Japan, having lost the opportunity to use monetary policy in the early 1990's, faced the last half of the 1990s as today unable to use conventional tools of stabilising policy to help it to recover.

CHAPTER III

THE ECONOMIC CRISIS IN EUROPE

A. Debt Crisis in Europe

Europe's debt crisis was initially generated by the events in the American financial crisis. When the crisis occurred in the American subprime mortgage market in 2007 with the slowdown in the US economy, banks all over the world with investments linked to those mortgages started losing money.

America's fourth largest investment bank, Lehman brothers, collapsed under the weight of its bad investments, scaring other banks and investors with which it did business. The fear that more banks could bankrupt pushes investors and banks to take extreme precautions. Banks stopped lending to each other, pushing those reliant on such loans close to the edge.

European banks that had invested heavily in the American mortgage market were hit hard. In an attempt to stop some banks from failing, governments came to the rescue in many EU countries like Germany, France, the UK, Ireland, Denmark, the Netherlands and Belgium. Ireland almost bankrupted until the fellow EU countries stepped in with financial assistance.

As Europe fell into recession in 2009, governments began to be affected as markets worried that some countries could not afford to rescue banks in trouble.

The risk of bank failures meant that the health of government finances became more important than ever. Governments that had accumulated huge debts suddenly found markets less willing to keep lending to them.

The high cost of bank rescues led financial markets to question whether governments could really afford to support the banking sector. Moreover, as recession spread across Europe, the euro area had been borrowing heavily to finance their budgets. Part of the reason some governments had become dependent on debt was that their economies had been losing competitiveness for a long time, as they failed to keep up with economic reforms in other countries.

In some countries, property bubbles had developed and other unhealthy economic imbalances emerged. In other countries, governments had ignored the rules designed to make the euro work and had not done more to coordinate their economic policies since agreeing to share a common currency with a single monetary policy. In an increasing number of countries the financial instability stifled economic growth, which in turn lowered tax revenues and increased governments' debts. Higher debts then increased the cost of borrowing for governments, feeding financial instability. The crisis exposed several shortcomings in the EU's system of economic governance:

- **Too much focus on deficits:** monitoring of countries' public finances had focused on annual budget deficits and not sufficiently on the level of government debt. Yet a number of countries that had kept to EU rules by running low annual deficits or even surpluses nevertheless found themselves in financial difficulties during the global financial crisis because of high levels of debt. Therefore, stricter monitoring of this indicator was needed.

- **Lack of surveillance of competitiveness and macroeconomic imbalances:** surveillance of EU economies failed to pay enough attention to unsustainable developments in competitiveness and credit growth leading to accumulated private sector debt, weakened financial institutions, and inflated housing markets.
- **Weak enforcement:** for euro area countries that did not play by the rules, enforcement was not strong enough; a firmer, more credible mechanism of sanctions was needed.
- **Slow decision-making capacity:** too often, institutional weaknesses meant that tough decisions on worrying macroeconomic developments were postponed. This also meant that insufficient account was taken of the economic situation from the perspective of the euro area as a whole.
- **Emergency financing:** when the crisis struck there was no mechanism to provide financial support to euro area countries that suddenly found themselves in financial difficulties. Financial support was needed not only to address country-specific problems but also to provide a ‘firewall’ to prevent problems spreading to other countries that were at risk.

As a result, Greece, and subsequently Ireland, Portugal, Spain and Cyprus, were unable to borrow on financial markets at reasonable interest rates. To prevent a complete collapse of the banking system, European governments try to save their banks with urgent support of an unprecedented scale. 1.6 trillion euros, the equivalent of 13 % of the EU’s annual GDP were committed between 2008 and 2011. The EU also launched a Europe-wide recovery program to maintain jobs and social protection levels and to support economic investment. In this way, bank runs were avoided and European

savings were protected. The economic and financial crisis has demonstrated that the EU's banking system is vulnerable to shocks. A problem at one bank can spread quickly to others, affecting depositors, investment and the overall economy. In response, the EU and its member countries have been strengthening financial sector supervision.

As part of the reforms, three European supervisory bodies were set up to help coordinate the work of national regulators and ensure EU-level rules are applied consistently.

- The European Banking Authority (EBA), which deals with bank supervision, including the supervision of the recapitalization of banks
- The European Securities and Markets Authority (ESMA), which deals with the supervision of capital markets and carries out direct supervision with regard to credit rating agencies and trade repositories
- The European Insurance and Occupational Pensions Authority (EIOPA), which deals with insurance supervision

European financial supervision is being stepped up to ensure that banks are better capitalized, behave responsibly and are able to lend money to households and businesses. This paves the way for Banking Union to make sure that people's deposits are protected and taxpayers are not forced to pay for the failure of banks.

The Banking Union is a natural complement to the Economic and Monetary Union. It addresses the weaknesses that were revealed by the crisis. Soon banks in every country that uses the euro will report to a common supervisor, the European Central Bank.

Depositors across Europe will also be better protected. Through these measures nearly 30 more, the EU is working to build a more effective financial sector based on stronger, more resilient banks and sounder regulation and supervision.

As the euro area's independent monetary policy authority, the European Central Bank (ECB) played an important role in containing the crisis with innovative policies. The institution's decision to lend banks as much as they need at low rates and for as long as three years, helped to calm markets by ensuring that banks would be able to cover their short term needs.

When financial markets became so dysfunctional that they were demanding unreasonably high returns for lending to governments, the ECB devised the Outright Monetary Transactions (OMT) program, under which it promised to buy the bonds of struggling government to ensure a reasonable rate, provided that they also commit to a program of economic reforms with the euro area's assistance fund, the European Stability Mechanism. Although no country has ever requested the OMT program to be used, its mere fact of its existence helped to calm financial markets. From late 2009 and early 2010, certain euro area countries were beginning to have problems financing their debts. Market uncertainty led to normal government borrowing operations becoming costly and eventually impossible.

At the time, EU countries reacted quickly by putting in place so-called 'firewall' confidence-building measures to help finance the debts of countries facing temporary difficulties in borrowing money from financial markets. In parallel, the EU also set to work on resolving the root causes of its weaknesses. A twin track approach was followed. Temporary assistance mechanisms were established to cope with the

immediate crisis, and long-term measures to create permanent support facilities and to help prevent a reoccurrence of future crises were set in motion.

European countries have worked together to create the world's biggest financial assistance funds. By working together, the European Commission, the International Monetary Fund and the European Central Bank, help governments in need such as Greece and Spain to stabilize their fragile economies and address deep-rooted economic problems.

Greece

When international investors stopped lending the Greek government the money on which it had grown dependent, euro area finance ministries and the International Monetary Fund (IMF) joined forces. In 2 May 2010, EUR 110 billion was set aside to support the Greek government in implementing austerity measures that would restore its economy. The money, of which EUR 80 billion came from Greece's euro area partners, was disbursed by the European Commission in tranches between May 2010 and June 2013, following Greece's successful implementation of promised reforms. On 14 March 2012, euro area finance ministries and the IMF agreed on a second round of economic assistance for Greece, worth EUR 164.5 billion. This time, Greece's fellow euro area countries stepped in with EUR 144.7 billion through the European Financial Stability Facility, a rescue fund that was launched in August 2010. A deal with financial investors to reduce Greece's crushing debt burden by almost EUR 200 billion was also arranged. Payment of money was divided into tranches to be paid out between March 2012 and December 2014, in parallel with the completion of reforms that are crucial to the revival of Greece's economy. In November 2012, euro area finance ministries and

the IMF agreed to further help Greece by lowering the cost of their loans and giving the country more time to repay them

Spain

A burst property bubble left the Spanish banking sector holding billions of euros worth of loans that borrowers could no longer repay. Euro area countries used their financial assistance funds, the European Financial Stability Facility and the European Stability Mechanism to help Spain repair its struggling banking sector by setting aside EUR100 billion in loans, that were paid out between July 2012 and December 2013. European help, and advice from the International Monetary Fund, enabled Spain to ensure its viable banks got enough money to start lending again and to safely close banks with no future.

Portugal

When financial investors started demanding ever-higher returns for lending to governments, Portugal found itself unable to pay. On 17 May 2011, European finance ministries and the International Monetary Fund agreed to lend Portugal EUR 78 billion to finance its budget deficit, reduce the government's debts, repair its banking sector, and finance reforms to stimulate economic growth and create jobs. Portugal has already received more than EUR 71 billion, with the rest expected to come by mid-2014. Despite its challenging situation, Portugal's reforms have significantly improved the country's finances and its economy. Portugal's government achieved a budget surplus last year and the economy is set to start growing again this year.

B. The Causes Deflation Problems in the Eurozone

There are several reasons behind the deflation trend in Europe. First of all, there is the problem of unemployment. Unemployment rates increase to over 12 percent since the beginning of the crisis in Europe. High rates of unemployment push wages downward, as unemployed people are willing to accept lower wages. Lower wages tend to decrease consumers' goods prices as wages are considered a main component of costs. Therefore, high rates of unemployment shift the demand downward, just like Japan, which lead to deflation.

Secondly, there is the problem of internal devaluation. Since all countries in the Eurozone adopt Euro as a currency, they are unable to devalue their currency to regain their competitiveness. Thus, the only action they could take to regain their competitiveness is to implement internal devaluation by lowering their costs of production and therefore prices. By doing so, these countries' exports become more competitive. However, due to the weak external demand and high competitiveness from the Northern countries, Southern countries find it difficult to regain their competitiveness.

Thirdly, similar to Japan, there is the problem of increase in real interest rates. With inflation falling, real interest rates are increasing. Despite that ECB cut off interest rates by 25 Basis points, this cut is still smaller than inflation. Thus, effective real interest rates increase which discourage investment and spending further, creating a negative downward spiral. In addition to that, effective banks rates in some countries were higher than the ECB Base rate so some companies find it difficult and expensive to get credits. Moreover, another reason behind deflation is due to the strong value of euro vis a vis other currencies. Since the ECB adopts an aggressive monetary policy to

combat the risk of inflation, the euro is strengthening compared to the dollar or the pound sterling. This means that the foreign demand for the European products is low, because of their relative expensive currency. This approach is in contrast with the one of US and Japan that tends to increase the money supply in order to weaken the currency.

Fifthly there is the problem of financial austerity. Because the members of the European Union have to comply and abide with the budgetary rules of the European Union, there is no real space for individual countries to directly solve their disinflationary/deflationary problems in their own country. Individual monetary easing is not possible, nor is the lowering of taxes to increase consumer spending if they want to abide by the rules of the EU. Countries can lower taxes in order to induce spending, but then there can be the risk that those countries will not have their budget in order, and that those budgets would exceed the 3 percent deficit rule. In order to maintain the budget deficit in the range of 3 percent of GDP, austerity measures are called upon to actually accomplish that. In addition, due to the fact that even less money is available for consumers, money they do hold stays tight in their pockets. Consequently, prices decrease even more. Hence, this will lead to an increase in the value of money, which makes it even less likely to be spent, because saving in this case is more profitable than spending. All in all, this leads a deflationary spiral which causes economic distress.

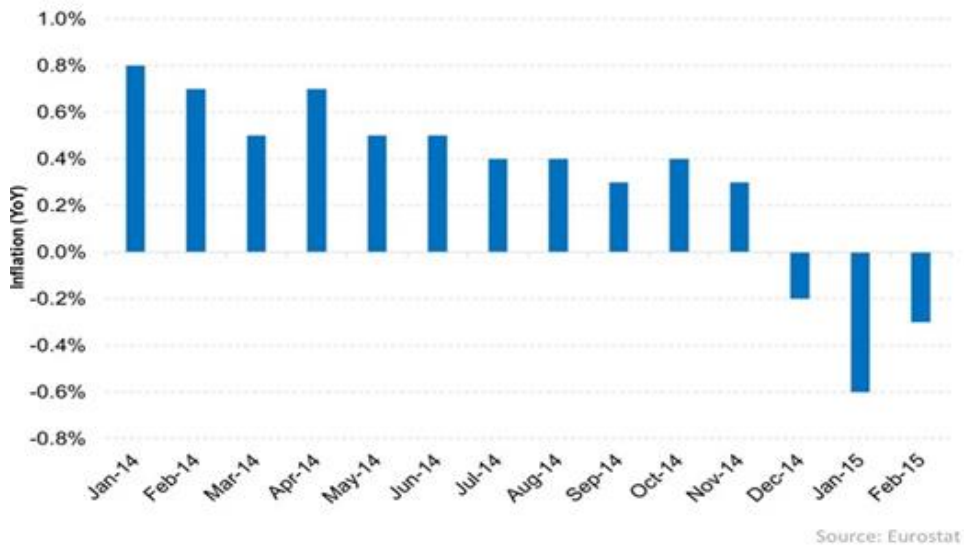
CHAPTER IV

EMPIRICAL ANALYSIS

Since the Recent global financial crisis and the debt crisis in the Eurozone, international financial markets and economies face price volatility driven by concerns about slowing global economic recovery and growth. The Eurozone seems to be the most affected area since Europe has entered the deflationary pattern at the end of 2014 accompanied by a negative to a very low GDP growth which is considered a threat to the economy especially after the decrease in oil prices which pushed prices further down. This deflation can hurt the economy and can push Europe into a “Liquidity Trap” characterized by low demand, high debt stock and low economic growth if the problem is not managed in the appropriate way.

The European Central Bank launched a program of Quantitative Easing (QE) starting in March 2015 until September 2016 in order to fight the deflationary pressures that the Eurozone faces especially that in December 2014 alone, CPI fell by 0.2% in all European countries that use the common currency.

Figure1- Inflation Rate in Europe (Jan 2014-Feb 2015)



The QE program is designed as follow: ECB will be buying 20% of sovereign bonds and asset backed securities ranging from 2 to 30 years, whereas the rest will be purchased by the national central banks according to their contribution to the ECB capital (capital keys) and which will consequently reflect the size of the economy of the countries. (ECB,2015)

In this chapter, I mention the goal behind Quantitative Easing in addition to a small literature review about the effectiveness of this strategy to address inflation to its European target to end with my empirical study using the actual data of the Eurozone.

A. “Quantitative Easing”, Risk of Failure

Odendahl (2015) states that there are two ways to deal with the European case. The first way is through Quantitative Easing. This approach is conducted by buying long term assets like governments bonds and Asset backed securities from banks and

other financial institutions in order to drive up their prices and bring down their yield. Buying these bonds will force up the price of other long term assets like equities, properties and corporate bonds and consequently lower long term interest rate. The wealth of household and the value of firms increase by the increase in equity prices and the cost of borrowing decreases by the decrease in interest rates. Accordingly, when interest rate falls, the incentive to save decreases therefore firms and households invest and consume more -pushing demand up- so the growth rate would be positive. In this way the Central Bank reaches the inflation target.

On the other hand, the second view of monetary policy considers that buying bonds or setting interest rate are tools to keep households and firms expectations on a stable path-economy close to full employment and inflation around the target. This “Expectation View” according to Odendahl (2015) is necessary to make QE tools effective. Therefore without managing the expectations of households and firms Quantitative easing would fail.

In the case of Europe, both views – “Tools View” and “Expectations View”- must be studied to estimate whether Quantitative Easing can revive the economy and hence restore inflation to the target.

- Tools View

Quantitative Easing lowers long term interest rate since the monetary base (MB) expands. The European central Bank (ECB) and national central banks of each country create money by buying bonds and asset backed securities (ABS) from local banks with money that does not exist before. Consequently, the money supply increases so does the availability of loanable funds in the assets of local banks. In this approach, QE encourages banks to make loans at low

cost and thus stimulates the Economy by boosting firms' investments and households' consumption.

- Expectations View

QE is not effective and the Tools View would not make a difference if households' and firms' expectations do not change for better. In the Eurozone, Expectations View seems to counteract QE because ECB has not convinced the market that they work to lift the economy from recession. Economic agents appear frustrated from the unemployment level and the debt stocks in many European countries. In addition, Odendahl (2015) states that ECB has used unconventional tools at the time where unemployment rate surges and economic growth is minimal. They just cut short term interest rate and local governments adopted austerity measures instead of stimulating the economic growth. Consequently, the European market will not adjust its behavior since households and firms consider QE as a temporary measure.

1- Market Based Finance Versus Bank Based Finance

The US market is characterized by being market based finance where the capital and equity markets play a vital role in firms' investments and households' wealth. However the European financial markets are dominant by banks. This fact is obvious since the aggregate bank assets of some European countries surpass the size of GDP in the banks' home country. For example, the banks' assets in Germany are 196% higher than GDP, 335% in France and 894% in Ireland. (International Monetary Fund, 2010)

Contrarily to the United States where the purchase of financial assets by the federal reserves in the secondary markets increases liquidity and raises prices and accordingly stimulates spending and investments by increasing real wealth (rise in equity prices in the securities markets) and lowering borrowing costs (decrease of interest rate), this mechanism seems to be less influential in the Eurozone.

Therefore the response of the economy to monetary policies in bank based markets like Europe will be different than in US market since in Europe the banking system has more influence on real economy (boost demand and supply) than in US.

The role of banks in any economy is reflected in the money/credit creation mechanism through loans where banks take money from depositors and through the lending channel supply funds for households and firms in shortage in order to execute their productive investments or to increase their consumption. Consequently, loans are important in Economic growth since it stimulates consumption and investments (Demand and Supply). (Mishkin, 2010)

As mentioned earlier, the size of the securities markets in Europe is smaller relative to the banking system; therefore the effect of QE on wealth in the Eurozone is smaller too. In addition, the European banks have become more risk averse after the recent crisis since they faced high loans losses, and low revenues and capital levels so banks narrowed their lending channel. Consequently, QE will not stimulate the bank lending and thus investment and consumption will not be stimulated. AS a result, QE will not have a direct impact on GDP Growth. (Subacchi, 2015)

Similarly, Koesterich (2015) and Odalis (2015) evoke the difference in the financial infrastructure in both the United States and Europe. US economy is designed

to transform stimulus into growth. However it is not the case in Europe because the ineffectiveness of QE is initiated from the financial infrastructure in Europe.

In US, QE drives down interest rates and consequently drive down the borrowing cost through the corporate bond market. This fact increase profits and decrease unemployment and increase consumer spending accordingly. At the same time, when mortgage rates decrease as a result of QE, real estate prices increase creating equity for homeowners. Therefore, home spending increases and stimulates economic growth.

Contrarily, the mechanism is different in Europe and may generate opposite results because corporations and households do not access the debt market similarly. At the same time, any increase in real estate prices does not increase consumer spending especially that in different regions in Europe, home ownership level is low whereas rent rate is very much higher.

2- Consumer and Firm Confidence

The “Expectation View” mentioned earlier is considered to be a strong background for consumer and firm confidence. For that reason economists like Odendahl (2015) and Koesterich (2015) evoke the successful case of Japan. In this approach, the Bank of Japan (BoJ) announced to the public that they are following QE mechanism and lowering interest rates until the inflation rate reach the target of 2%. This approach has driven firms and households to change their expectations about demand, income and future inflation. In overall, the Japanese market changed its expectations about the economy so they increased their consumption and investment levels.

However, consumer and firm confidence are very low in Europe and seem not to change so far which affects the European economic growth. The debt crisis affected the behavior of businesses and consumers so the markets are characterized now by low demand and low economic output. In addition, the consumer confidence level stays low because the European banks were weak after the recent crisis and the supply of loanable funds has been restrained in addition to the Greek debt crisis and the threat of Greece to leave the Eurozone. Therefore Europe must engage in structural and Pro-growth stimulus reforms especially in the labor market to restore business and consumer confidence and consequently boost demand and supply to positively affect economic growth, otherwise QE will be just an economic stabilizer instead of being a solution for the European slow growth and the deflationary pattern. For instance, consumption makes up about 57% of the European GDP. Therefore, if consumer confidence is not restored, consumption would stay low so does the economic growth and the deflationary pressures would stay a threat. (Koesterich, 2015)

In addition to consumer confidence, demand has not been stimulated because of poor wage growth and high unemployment. Therefore, the labor market needs to be reformed alongside with the financial sector.

3- Exchange rate Channel

The only way QE may have impact on the real economy in Europe is by the exchange rate channel (weak Euro against USD). Euro depreciation stimulates export to other regions since European products become cheaper relative to other goods. This

mechanism will raise the corporate earnings and firms' profits and consequently boost investments, hence GDP growth. At the same time, a weaker Euro can restore inflation since that weak Euro makes imports more expensive leading to higher inflation rates. (Subacchi, 2015)

In this approach, the Japanese experience in 2012 can reflect the exchange rate channel. The Japanese monetary base (MB) has increased from 155.3 Trillion Yen to 285.7 Trillion Yen. Consequently Yen depreciated by 31% boosting Japanese Export, increasing GDP growth and restoring low inflation to the inflation target of 2%.

Quantitative Easing would make effect in the Eurozone only in the exchange rate channel especially that the share of exports in GDP is high. Other opinions rise to say that the effect on the currency is doubtful since the currency is generally driven by short term rate differentials (this fact will be tested later in my analysis).

4- Debtor/Creditor Dynamic

Deflation is not considered a real problem in economies denominated by creditors, whereas it is in economies denominated by debtors. For instance, the United States has run current account deficit for more than 30 years. They paid for their external deficit by issuing bonds. In this approach, Gros (2014) states that a reduction of bond yield by 1% generates a net income gain of 0.5% GDP in US. On the other hand, countries like Germany, the Netherlands and Norway that have external account surpluses for long time and have accumulated large external assets would hence lose in terms of interest income once the Central Bank lowers the long term interest rate. Countries in southern Europe that have external account deficits would benefit because

they can finance their expenditures at low costs. For this reason, Germany has opposed to Quantitative Easing.

In addition to the Debtor/creditor dynamic mentioned above, Quantitative Easing is productive in economies where the long run interest rate has an impact on the private sector since the latter is the key in any Economic growth. In Europe, where the banking system plays the key role in the market finance, most corporate investments are financed by banks' loans with maturities not more than 5 years. As for the long term banking loans, they are settled based on floating rates. As a result lowering the long run interest rate (10 years or more) does not have a strong effect on the corporate sector. (Gros, 2014)

B. Data Description

The study is conducted in two parts. The first part studies the goal of the ECB to raise inflation to its target level. The second part focuses on the critics raised against the QE strategy to reach the ECB goal since that without a positive growth rate and fundamental reforms, QE would fail especially that the Eurozone is a monetary union and not a fiscal union.

The analysis is based on yearly data between 2000 and 2014 of the Eurozone (source of the data: Eurostat, ECB, World Bank and IMF). The choice of the dates covers equally the economic situation of the Eurozone before and after the financial crisis. The number of observations is 15 where the year 2007 is the base year before and after the crisis.

The goal of QE is to escape the deflationary pattern and raise inflation to the desired target. The relationship between inflation and QE is studied using the following

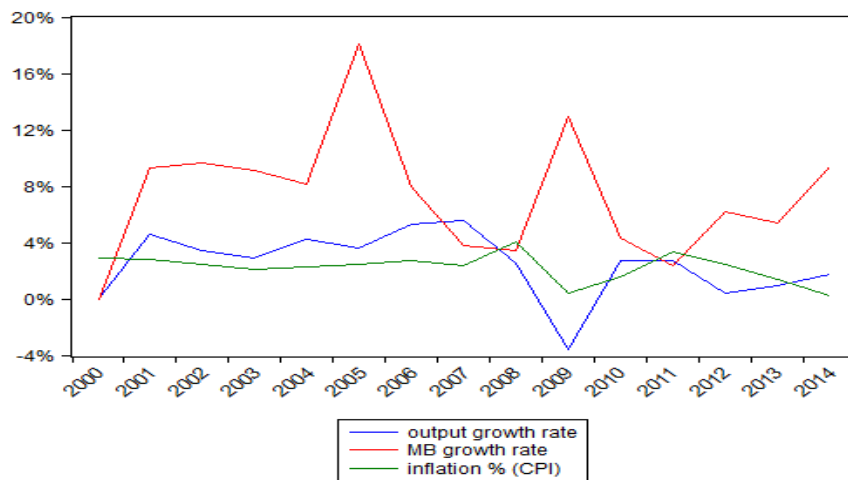
variables: 1- Inflation Rate, 2- Ln MB, 3- Ln GDP, 4- Ln Consumption, 5- Ln Investment, 6- Ln Loans, 7- Bond Yield (10years), 8- Ln Exports and 9- Ln Imports.

The analysis aims to show the impacts of QE (here yearly percentage change of Monetary Base) on the inflation rate and hence on consumption, investment, domestic demand, exports and consequently on growth rate.

The following graph shows a very weak correlation between the annual inflation rate and the annual Monetary Base (MB) growth rate. It also shows a weak correlation between the annual output growth rate and the annual MB growth rate. This quick analysis suggests that there is no evidence for a long run relationship between these three variables. It can be attributed to the fact that fiscal policies adopted by local governments outweigh the effect of monetary policies adopted by the ECB since that the Eurozone is a monetary union and not a fiscal union.

In addition, these three variables are non-stationary over time based on the results of ADF and Phillips Perron tests at 5% significance level (the results are reported in table 1). Moreover, the Johansen co-integration test shows the absence of long run relationship between GDP growth and QE (here MB growth) leading us to conclude that they don't move together in the long run. At the same time, the same test shows a very weak long run relationship between QE and inflation rate (CPI growth).

Figure2- Inflation rate and Annual growth rate of Output and MB



Odendahl (2015) says that QE is adopted to drive up the price of long term assets like governments bonds and asset backed securities and bring down their yield. Buying these bonds will force up the price of other long term assets like equities and properties and consequently lower long term interest rate. Consequently, the wealth of households and firms increase and the cost of borrowing decreases. Therefore households consume and invest more pushing inflation rate up and inducing GDP growth. In this approach, we run a granger causality test (results are reported in table 1) to check the direction of causality in the short run between QE and GDP growth and between QE and inflation rate. The results indicate that only QE granger cause GDP growth in the short run but it also indicate that QE does not granger cause inflation rate in the short run. Hence we conclude that QE may have effect on the GDP growth in the short run because the new money funneled into the economy would allow households to make more purchases and firms to do more investments by borrowing money from banks.

The following table summarizes the results at 5% significance level for ADF, Phillips Perron, Co-integration and Granger Causality tests.

Table1- Unit root, Co-Integration and Granger Causality tests

Test	ADF	Phillips Perron	Johansen co-integration	Granger Causality
Ln GDP	-1.043422 (-3.791172)	-0.832855 (-3.791172)	12.09403 (15.49471)	-
Ln MB	-1.514458 (-3.791172)	-1.273663 (-3.791172)		
Inflation	-3.054263 (-3.875302)	-4.367296 (-4.800080)	15.77735 (15.59471)	-
d(Ln GDP)	-4.209744 (-3.875302)	-3.977812 (-3.828975)	d(Ln GDP) does not granger cause d(Ln MB)	Prob: 0.5646
d(Ln MB)	-5.89416 (-3.933364)	-4.815615 (-3.828975)	d(Ln MB) does not granger cause d(Ln GDP)	Prob: 0.009
			d(Ln MB) does not granger cause d(inflation)	Prob: 0.5855
d(Inflation)	-5.866453 (-4.008157)	-9.467387 (-3.828975)	d(inflation) does not granger cause d(Ln MB)	Prob: 0.6455

Note: the tests are conducted using the EViews 8 software. Values stated into brackets indicate the critical values (5% significance level). Values in bold font indicate the rejection of Null Hypothesis

Koesterich (2015), Odendahl (2015), Odalis (2015) and Subacchi (2015) question about the effect of Quantitative Easing adopted by the ECB on the inflation rate in Europe. They admit that the financial infrastructure in Europe is not similar to

that in the United States. Therefore the QE project will not succeed in the conventional way. However they mentioned the case of Japan and other solutions like the expectations of households and businesses in order to reach the inflation target otherwise the problem would persist and may become worse.

In this approach, we will proceed in our study by checking the effect of QE on the inflation rate while taking into consideration other factors that can affect the inflation rate directly.

The model of the study will be conducted using the data of the Eurozone between 2000-2014 and is as follow.

Inflation= $\beta_0 + \beta_1$ MB Growth (to include the size of Quantitative Easing) + β_2 GDP Growth (to include the economic activity)+ β_3 Consumption Growth (to include the size of household demand) + β_4 Loans growth (to include the supply of money to economic agents-money creation affects the economic activity) + β_5 Export (Euro depreciates as a response to QE so Exports must increase)+ β_6 Investment Growth (to include the size of businesses) + β_7 Imports Growth (when Euro depreciates, imports become more expensive leading to inflation) + error

C. Analysis

The model is used to analyze the response of Inflation to changes in some variables. The equation include variables that must be considered by the ECB in order to help the European economy like consumption and exports since these two variables have big weights in the annual GDP.

Inflation= $\beta_0 + \beta_1$ MB Growth + β_2 GDP Growth + β_3 Consumption Growth + β_4 Loans growth + β_5 Export + β_6 Investment Growth + β_7 Imports Growth + error

We expect these parameters to act in this way.

The increase in the MB must lead to a decrease in the interest rate which pushes households and firms to save less and spend and invest more. Therefore the increase in domestic demand as a result of QE pushes the prices up. Hence, β_1 is expected to be positive. β_2 is expected to be positive because any increase in the annual output means that the production has been increased to meet the increase in demand. Higher production requires more employment. Consequently, the unemployment rate decreases and households spend more freely leading to an increase in prices. β_3 and β_6 are expected to be positive because increase in consumption and investment leads to higher demand and consequently to higher prices. β_4 must be positive since that the increase in the supply of loanable funds to economic agents (households and firms) encourage them to consume and invest more. In addition once loans increase, the money supply increases too leading to higher prices. β_5 is expected to be positive for one reason. In this model, exports reflect the currency because when the currency depreciates, exports become cheaper to the rest of the world. Hence, the foreign demand for the European products increases and output must increase to meet the shortage in supply. As a result, unemployment decreases, employment increases and prices increases. Finally, β_7 must be positive only in one case. If the Euro depreciates, the imported items become expensive to the European market leading to inflation. The results are summarized in table 2.

Table 2- Response of inflation to changes in some variables

Least Square / Dependent : Inflation Rate			
Variable	Parameter	Coefficient	Prob
Constant	β_0	0.021998**	0.0438
MB Growth	β_1	0.035721**	0.0246
GDP Growth	β_2	-0.052545	0.3103
Consumption Growth	β_3	0.391479**	0.0318
Loans Growth	β_4	0.111421*	0.1001
Export Growth	β_5	0.447503**	0.0433
Investment Growth	β_6	0.260627*	0.0946
Import Growth	β_7	-0.583789**	0.0215
R ²		0.977256	
F-statistic		18.41479	
Durbin Watson		2.152581	

(**) indicates 95% significance level. (*) indicates 90% significance level

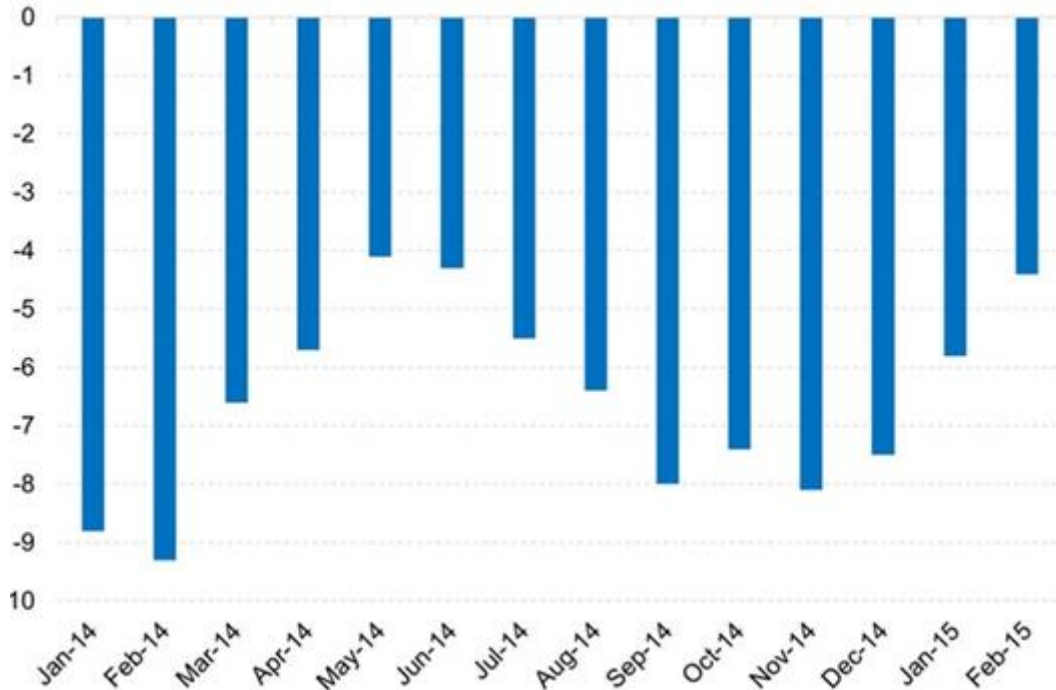
F-statistic is high so this model is significant. In addition, the series are free of autocorrelation problem since the Durbin Watson Stat=2.152581 so very close to 2. Finally R²=0.977256 which is very high and indicates that 97.7% of the variability in the inflation rate is explained in the model. The effect of the QE on inflation seems to be minimal as shown in the table (0.035721). Although it is positive as estimated but it is ineffective since that any yearly increase in the MB by 1% inflation rate increases by 3.5 basis point. Therefore the European economy needs many years to recover and needs to inject a huge amount of money in the economy to induce inflation. The result of huge injection could deteriorate the euro currency, therefore it is not suitable in this case- in other words ineffective. As for the GDP growth, it is not as expected. It may be attributed to the fact that the decrease in the cost of production like oil prices can affect the prices of output even if the supply increases. Consumption and investments are quite good because any increase of 1% in these variables causes inflation to increase by 39.14

and 26.06 basis point respectively. Therefore these two variables are important to induce both inflation and GDP. In addition the parameter of loans is positive as expected and acceptable to raise inflation (11.14 basis point). As for the exports, the parameter records the highest result 44.75 basis point. This result can be linked directly to QE via the exchange rate channel (as mentioned earlier in this chapter). When the ECB injects money in the economy, the currency depreciates against other currencies making the European products cheaper to foreign markets. Therefore the foreign demand increases for European products and European firms produce more. As a result output growth would be positive and the European economy would recover from recession and deflation at the same time. This case was successful in Japan and it seems to be the suitable solution for Europe. Finally the parameter of imports is controversial before getting the results because it must be positive only in one case if the euro is weaker than other currencies. However, Euro was stronger than many other currencies for more than ten years (years included in the study) therefore the imported goods were considered cheap in the European market that is why the result is negative.

Exports, loans, consumption and investments are four variables that must be considered by the ECB and European governments in order to escape recession and deflation. In other words, the European monetary and fiscal policies must stress out on these variables instead of focusing on QE itself especially that the European market is different than the US market. However consumption and investments are threatened in the Eurozone because of the negative result of the consumer confidence index and business confidence index. For this reason the growth of consumption and investments

are too low and the annual GDP growth rate is low especially that consumption weights more than 50% in GDP.

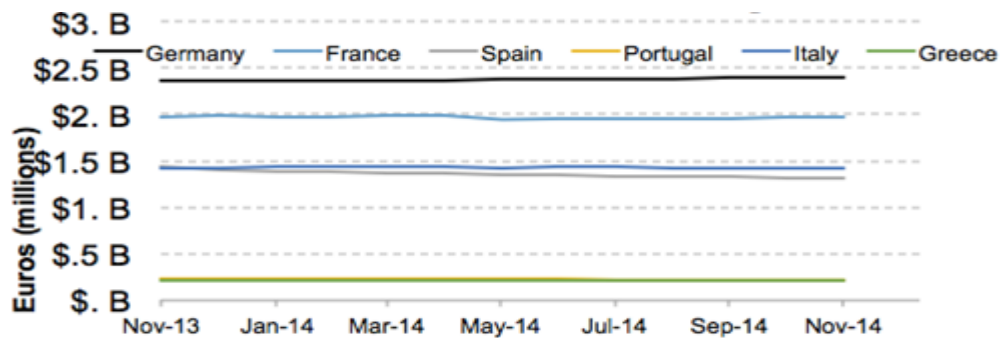
Figure 3- Consumer Confidence Index (by month)



Source: Eurostat

Similarly, the lending rate in different European countries is also flat and does not show any progress because the European banks are still risk averse after the last financial turmoil; therefore they prefer to invest in different financial markets instead of lending out the money to the local economic agents.

Figure 4- Lending Growth in Six European Economies



Source: Eurostat

This part represents the impulse response functions (IRF). Figure 5 below represents the IRF to different shocks at ten years forecast horizon. The shock is one annual percentage. One of the finding is that inflation responds positively to monetary base shock. The response of inflation to MB shock peaks approximately at 0.35% in the third year and then the response goes to zero. These findings support the hypothesis that QE is not the appropriate solution for inflation and requires many years in order to take effect (surpasses the decided years of the QE program) with little effect.

Figure 5- response of inflation to shock in MB

Response to Cholesky One S.D. Innovations \pm 2 S.E.

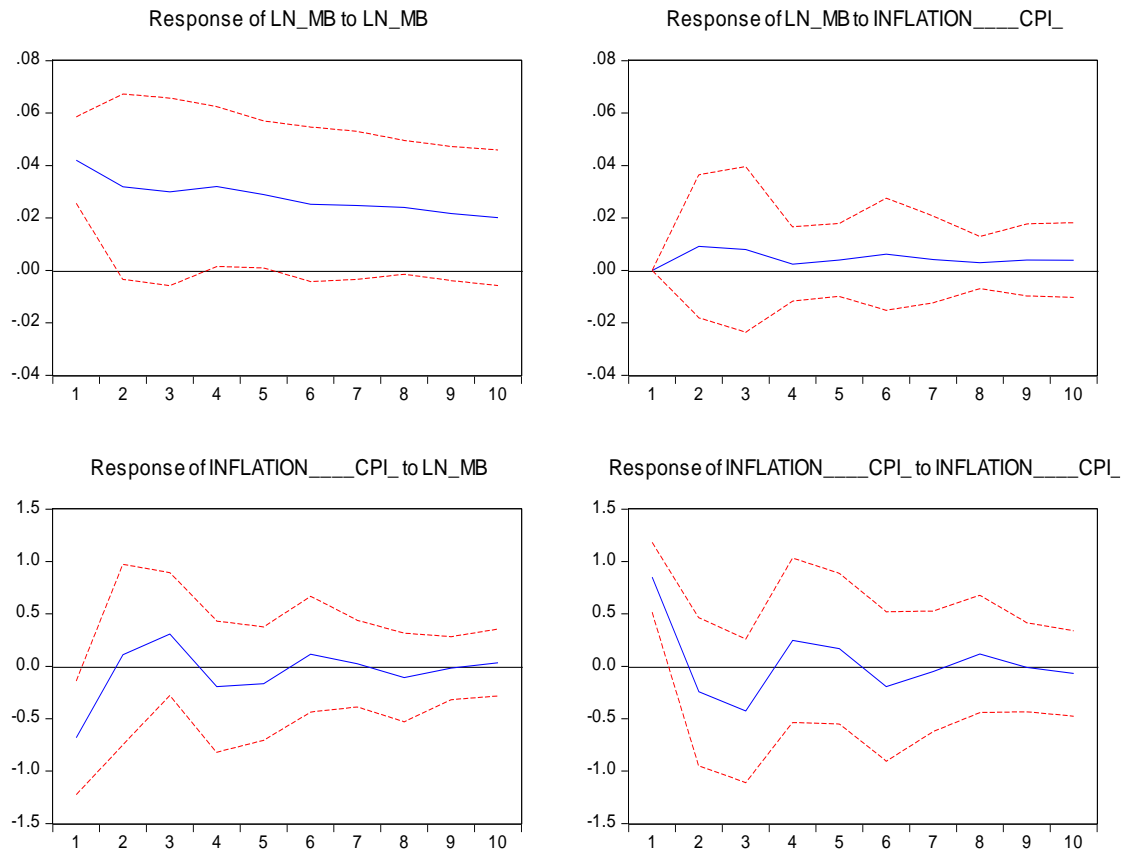
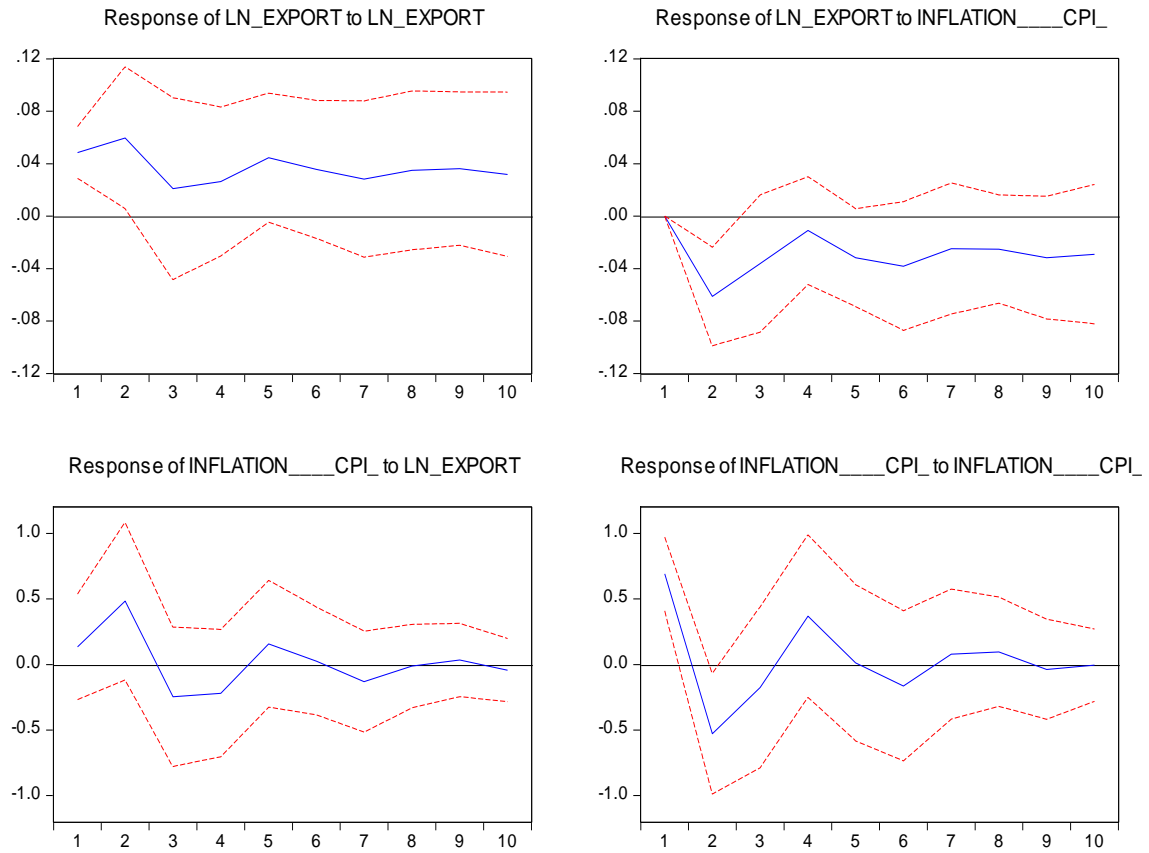


Figure 6 represents the response of inflation to a shock in exports. The findings are coherent with the findings in the OLS regression. Exports can induce inflation in a short period and at low cost to the economy. The response of inflation to exports peaks approximately at 0.5% after 1 year and then the response goes to zero in year 2.

Figure 6- Response of Inflation to Shock in Exports

Response to Cholesky One S.D. Innovations ± 2 S.E.



Finally, the response of inflation to loans is very important, because after one year, a 1% shock in loans generates a response of nearly 1% in inflation.

Figure 7- Response of Inflation to a Shock in Loans

Response to Cholesky One S.D. Innovations



CHAPTER V

CONCLUSION

After the recession of 2008-2009, both US and Europe faced unfavorable economic conditions. In both, unemployment increases by 5%. However in US, it has fallen subsequently by 4% at the time where it remains the same in Europe.

From the beginning of 2015 until now, US enjoys economic growth. However in Europe growth is low accompanied with deflationary pressures and high unemployment rate with low consumer and business confidence. In this approach, one can say that the threat in Europe is both social and economic.

The social threat can be summarized by high unemployment rate that leads to a sort of social unrest and inequality especially that unemployment, stagnation and high concentrations of wealth creates lack of harmony in the society and negatively affects the domestic demand which is important for economic growth. Therefore, the social threat creates economic problems.

As for the economic threat, the prolonged periods of stagnation accompanied with low inflation and even deflation, put pressures on already presented public debts. For instance, inflation mitigates the costs of debt, but deflation increases it. For example, a country like Italy which has a national debt above 100% of GDP, deflation can make interest payments unsustainable. Consequently, this can hinder any potential growth.

In addition, unlike USA, Europe has many inhibitions to growth: Bureaucracy, protectionist laws that prevent the full implementation of the single market and over

restrictive labor laws. At the same time, the imposed austerity measures and the prolonged tightening fiscal policy do not lubricate structural reform. Instead of that, they are impediment to growth in addition to making Europe a big debtor's zone.

The Quantitative Easing program as mentioned earlier consists of buying bonds from the banks in exchange for money in order to increase the credit flows across the Eurozone economy. However, this technique seems to be ineffective since that the European banks are in poor shape after the crisis and they are even slow in raising capital and repairing their balance sheets in order to abide by the international frameworks of capital adequacy. Therefore, the money that the banks receives in exchange of bonds under the QE program will be used to buy low risky assets that requires low capital rather than making loans to economic agents especially that they are all skeptical about the future economic situation. Consequently, QE in this case will not induce growth nor inflation. All what it can do is raising the prices of financial assets without affecting the real economy. This technique would work if the European financial market is similar to that of US market. As mentioned in the previous chapters, the European market is bank-based. Therefore any increase in the asset prices will not raise the wealth of households and businesses and consequently will not boost consumption and investment.

Accordingly, it is time for Europe to acknowledge the importance of fiscal policies in a monetary union. Firstly, when monetary policy is not effective because interest rates hit a zero lower bound in addition to the ineffectiveness of QE program due to the weakness of the banking system, the choice must go to expansionary fiscal policy in order to induce growth, inflation and employment. Unlikely the effect of QE on economic variables, table 3 (appendix) shows that consumption, inflation and

economic Growth have a strong long run relationship with the Government spending (expansionary fiscal policy). Therefore Europe must rely on fiscal policy in order to boost domestic demand and output. Otherwise, their debt will grow unsustainable and the economic condition would go worse than at the present time. Secondly, austerity measures appear to negatively influence consumer and business confidence. Therefore, expectations would stay low, consumption low so does investments and growth.

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APPENDIX

Table 3- Unit Root and Co-integration tests for Government Spending

Test	ADF	Phillips Perron	Johansen co- integration
Consumption	-2.176422 (-4.891172)	-1.765855 (-2.763772)	15.49471 (3.84146)
Government spending	-2.5756458 (-3.641172)	-1.967563 (-2.10372)	
Inflation	-0.256422 (-4.891172)	-1.867855 (-2.724372)	15.47931 (4.85166)
Government spending Growth	-1.3425458 (-3.598772)	-0.458763 (-2.64572)	
Economic Growth	-2.176422 (-4.891172)	-1.093455 (-3.454572)	13.57317 (2.326416)
Government spending Growth	-2.5756458 (-3.641172)	-1.967563 (-2.10372)	