



University of Utrecht

To QE or not to QE

On the decision making process of implementing quantitative easing in the Eurozone in
2015



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Acronyms

APP	Asset Purchase Programme (Also: Extended Asset Purchase Programme or EAPP)	MBS	Mortgage-backed securities
AQRs	Asset Quality Reviews	MMR	Minimum Reserves (also called: required reserves)
BLS	Bank Lending Survey	MPC	Monetary Policy Committee
BoE	Bank of England	MRO	Main Refinancing Operations
BoJ	Bank of Japan	NCB	National Central Bank
BP	Basis point (1 BP = 0.01%)	OMT	Outright Monetary Transactions
CB	Central Bank	PIIGS	Portugal, Ireland, Italy, Greece and Spain
CEPR	Centre for Economic Policy Research	PSPP	Public Sector Purchase Program
CPI	Consumer Price Index	RRR	Required Reserve Ratio
EBA	European Banking Authority	SMB	Small and Medium-Sized Businesses
EC	European Commission	SMP	Securities Market Programme
ECB	European Central Bank	TAPs	Targeted Asset Purchases
EMU	European Monetary Union	TLTRO	Targeted Log-Term Refinancing Operation
EU	European Union	UK	United Kingdom
EZ	Eurozone	USA	United States of America (also: United States or US)
Fed	Federal Reserve System	VLTRO	Very Long-term Refinancing Operation
FOMC	Federal Open Market Committee	ZIRP	Zero interest rate policy
GDP	Gross Domestic Product	ZLB	Zero Lower Bound (Also: zero nominal lower bound or ZNLB)
HICP	Harmonised Index of Consumer Prices	QE	Quantitative Easing (also: monetary easing)
IS curve	Investment and Savings curve		
LB	Lower Bound		
LSAPs	Large-scale asset purchases		
LTRO	Long-term Refinancing Operations		

Definitions

Appreciation/ Revaluation Increase in the value of a currency. This means that goods and services expressed in this currency will become more expensive, which benefits imports but harms exports. The effect of appreciation and revaluation is the same (increase in currency value). But appreciation is caused by market forces, while revaluation is orchestrated by government intervention.

Debt monetizing Situation where a central bank creates new money and buys government bonds with it. The government pays interest over these bonds to the central bank. But the central bank just returns the interest income to the government, thereby effectively financing deficits and paying off government debts.

Deflation Decrease in the price level of goods and services and is caused by falling demand. This means one can buy more goods with the same amount of money. Most economists however think that deflation is undesirable, as (government) debts also become more expensive. Also, deflation discourages private agents to spend their money. This decreases aggregate demand even further, which leads to economic decline.

Depreciation/ Devaluation Decrease in the value of a currency, which means that goods and services expressed in that currency will become cheaper. This benefits exports but harms imports. The effect of depreciation and devaluation is the same (decrease in currency value). But depreciation is caused by market forces, while a devaluation is the result of government intervention.

Fisher Equation $(1+r) = (1 + R) / (1+i)$.

Expresses the relationship between inflation, nominal and real interest rates. The nominal interest rate (R) and the real interest rate (r) move in the same direction: an increase in R results in an increase in r. But the inflation rate (i) and r move in opposite directions: an increase in i results in a decrease in r.

Government bonds Medium or long term debt securities (loans) issued by governments. They usually carry a lower interest rate than corporate bonds, because they are considered safer: governments are less likely to go bankrupt than firms. Government bonds are also called gilts.

Inflation Increase in the price level of goods and services. This means that one can buy less goods with the same amount of money. Moderate inflation is considered good for economic growth, as inflation makes debts cheaper. And when borrowing is cheap, companies are more likely to invest. The inflation target of the ECB is a little below 2% per annum.

Liquidity Trap Situation where an increase in the money supply fails to lower interest rates and therefore also fails to stimulate economic growth. This happens when interest rates are already (close to) zero. Central banks try to lower interest rates by buying bonds with new money, but in a liquidity trap these bonds pay little

interest. This makes them nearly equivalent to cash. QE poses a solution to the liquidity trap, because QE effectively uses future interest rates (which are not yet zero) to stimulate the current state of the economy, wherein that is no longer possible.

Maturity The amount of time after which the nominal (original) value of a debt has to be repaid. There are three categories of maturities:

1. Short term (bills): Maturities between one and five years
2. Medium term (notes): Maturities between six and twelve years
3. Long term (bonds): Maturities longer than twelve years.

Monetary Policy The regulation of money supplied to the private economy, often by a central bank. Monetary policy is usually aimed at achieving price stability and/or full employment.

No Bail-Out Clause Article 125 of the Lisbon Treaty (2007), which states that one euro country may not assume the debts of another. Whenever a euro partner has (unsustainable) debts, it has to tackle this problem on its own.

Nominal Interest Rate Interest rate without adjustment to the inflation rate. It expresses the interest rate in terms of money. The nominal interest rate cannot fall below zero, because that would mean that lenders have to pay their borrowers interest instead of vice versa and then no one would be willing to lend money. See Fisher Equation.

Quantitative Easing Monetary policy instrument whereby a central bank buys assets such as government bonds. Through these purchases, a CB can increase the size of its balance sheet and/or alter the composition thereof. QE is intended to combat deflation and economic recession.

Quantity Theory of Money $PQ = MV$. 'P' refers to price levels (inflation); 'Q' to output (economic growth); 'M' to the money supply and 'V' to the velocity of circulation. The theory explains the relationship between a change in the money supply and the inflation rate. However, since the 1990s the theory has become subject to criticism.

Real Interest Rate Interest rate adjusted to the inflation rate. It expresses the interest rate in terms of purchasing power. See Fisher Equation.

Securities Tradable financial assets. Examples are debt securities (bank notes and government bonds) and equity securities (private company stocks).

Spread The difference between the yields of several bonds, for example corporate and government bonds. Corporate bonds usually carry a higher yield, because firms are more likely to go bust than governments. Investors want to be compensated for that risk, hence they demand higher returns (yields) for corporate compared to government bonds. Spreads can widen or narrow, depending on the perceived risks of the different bonds.

Targeted Asset Purchases Purchases of a central bank that are meant to decrease interest rates for an extended period of time. The central bank can achieve this by first buying short-term debts, then selling them again and using the proceeds to buy long-term government debt.

Velocity The number of times money changes hands, the money circulation. When the economy is performing well, velocity is high. In times of economic crisis, the velocity declines.

Wallace Neutrality Theory which states that altering the composition of a central bank's balance sheet has no effect on the real economy in the long run. This is because the private sector will meet increased demand for certain assets with an increase in supply of equal size. As the ratio between supply and demand therefore remains unaffected, so will price levels and allocation of resources.

Yields The return an investor will receive by buying a bond. Yields depend on the bond's maturity date. If the maturity date is farther away, the yield increases. This is because investors want to be compensated for the fact that they cannot touch their money for a time. If for example they have invested in a bond with a five year maturity, this means that they cannot spend the money invested in the bond for five years. In addition, the price and yield of a bond move in opposite directions: the bond's yield *increases* when the price *decreases*. This is because the overall earnings over a bond depend on both its interest and price. The more you have to pay for a bond, the lower the overall earnings (the yield) are.

Zero Lower Bound Problem Problem that occurs when the short-term interest rates are reaching zero per cent. The nominal interest rate cannot be lowered much further, because it is already close to zero. This means that little room remains for monetary expansion in order to boost the economy.

“Within our mandate, the ECB is ready to do whatever it takes to preserve the euro. Believe me, it will be enough.”

– Mario Draghi, President of the European Central Bank. Speaking at the Global Investment Conference at the British Business Embassy, 26 July 2012.

Introduction

On the 22nd of January 2015 the European Central Bank (ECB) issued a press release that marked a new phase in European monetary policy. The release stated that starting March 9, the ECB would expand its asset purchases to bonds of European central governments and institutions. In other words, the ECB would start to purchase government debts. These purchases together would amount to €60 billion per month and would be carried out until at least September 2016. Hence, the purchases would ultimately amount to €1.14 trillion, or 11% of euro area GDP. 80% of the purchased assets would be public sector bonds. According to ECB boss Mario Draghi (dubbed ‘Super Mario’ after his famous ‘whatever it takes’ speech), the new program was intended to honour the ECBs’ price stability mandate. The ECB is responsible for keeping price levels in the euro zone stable and predictable and in order to achieve this goal, the ECB has set its inflation target at nearly 2% per annum. The aforementioned press release was issued after months of zero and even negative inflation (also called deflation). As of January 2015, the inflation rate stood at -0.2%, plummeting towards a low that had not been reached in 27 years. A forceful monetary response was deemed needed (ECB, press release, 22 January 2015).

The expanded asset purchasing programme (APP) was introduced after conventional methods of achieving the inflation target had failed. For instance, the ECB had tried to improve inflation expectations with promises of higher inflation in the future. Sadly, these promises were not believed by the private sector and the latter therefore did not respond as hoped. Furthermore, precisely because interest rates were so low, the ECB could not stimulate economic growth by lowering them even further. This is because the nominal interest rate, the interest rate not adjusted to inflation, cannot fall below zero. After all, that would mean that lenders have to pay interest to their debtors instead of the other way around and no lender is willing to do that (Woodford, 2012, pp. 2-4). With both the inflation and the interest rates too low for too long a period, little room remained for conventional monetary stimulation. Cue the asset purchasing programme of 2015.

The APP is an example of what is called ‘quantitative easing’ (QE), or monetary easing. A cynic would say that QE is just a fancy word for creating huge amounts of electronic money *ex nihilo* and pumping it into the financial system. QE is meant to make

borrowing cheaper for firms and households, thus spurring investment and consumption. Increases in investment and consumption in turn will lead to a return of inflation rates close to 2%.

Yet QE is not favoured by all Europeans. The Dutch and especially the Germans were not enamoured with the adoption of the new APP. Neither were they happy about the Outright Monetary Transactions (OMT) programme, adopted in 2012 in the context of doing “whatever it takes to preserve the euro”, as Mario Draghi stated it (Warner, 24 January 2015). One reason for this unhappiness is that creating money increases the risk of moral hazard. Buying bonds makes government borrowing effectively cheaper. This may very well kill the incentive for necessary economic reform and set governments on a spending spree. In addition, creditor countries or countries with big pension funds may see their money evaporate by QE (Hausken and Ncube, 2013, pp. 2-5). It is also debatable as to whether the ECB is even allowed to implement QE. It certainly stretches the limits of its mandate.

So why this change of heart about QE and why now? That is what this paper aims to discover. It starts with the hypothesis that the original aversion towards QE is the result of historical events unique to the euro area. For instance, fear of hyperinflation has made Germans wary of any type of loose monetary policy. This fear was transferred into the current structure of the ECB. Furthermore, the European integration project has not yet reached a ‘United States of Europe’. The euro area largely remains an intergovernmental institute, and hence solidarity between member states is limited. This lack of solidarity is shown by the non-existence of ‘Eurobonds’ and in the fact that the ECB is forbidden from supporting insolvent member states. The second hypothesis of this paper is that QE has been adopted in the euro zone because of the financial crisis of 2008. Running out of alternatives to curb the crisis, to Europeans QE became the last viable alternative. This hypothesis fits a well-known historical pattern: desperate times call for desperate measures.

In order to provide more clarification on QE, the research question that guides this thesis is as follows:

To what extent did the 2012 Eurozone sovereign debt crisis lead to implementing quantitative easing in the euro zone in 2015?

In order to answer the research question, several sub questions are each answered in their own chapter. In chapter I, it is explained what QE is and what its (expected) effects are on the financial markets as well as the real economy. Chapter II answers the question why it took so long for the Europeans to implement QE. In order to demonstrate that the Europeans indeed lagged behind, empirical evidence of QE implemented in Japan, the US and the UK is included. Chapter III starts with a brief description of the sovereign debt crisis that swept the EZ since 2012. Thereafter, the effect of that crisis on monetary thinking in Europe is explained. For instance, the necessity of a credible commitment to low short-term interest rates for an extended period of time was recognized. This commitment to keep interest rates low for longer, would finally coax the private sector into spending. After chapter III, a conclusion follows in which all information is summarised and the hypotheses judged (in)valid. Lastly, a discussion is added in order to provide proposals for further research. Such research can for example be directed towards the effects of the APP on non-euro countries like Denmark and Switzerland. These countries faced increased capital inflows after QE was introduced in the Eurozone, which led their currencies to soar against the euro. This made them face potential losses in competitiveness.

Important to note early on, is the fact that this paper does not hold any normative ambitions. It is merely aimed at understanding why Europeans, until 2015 apparently so averse to QE, have since then implemented several programmes that looked suspiciously like it. This paper therefore is meant to add to academic debate and introduce QE to non-economists, and is not intended to support or direct policy making. In addition, as the research question states – the focus of this paper is mainly restricted to the euro area. QE used in Japan and the US is only mentioned briefly in chapter II. The Eurozone has been chosen as focus area because most benefits and disadvantages of QE have come to the front in the ECBs policy making process. The disadvantages of QE can be discovered when one studies why it took Europeans so long to implement it. The advantages of QE can be found in the reasons why Europeans implemented the APP after all. In addition, one can discover under which circumstances QE is deemed desirable. Whilst studying QE implemented in the euro zone, one is also able to discover all aspects of QE itself.

The importance of studying the APP may need some clarification. Put simply: QE has an impact on the real economy and not merely on the financial markets. QE can make lending to the real economy more attractive. This will make it easier for consumers and firms to access credit. And if people start spending that credit, employment rates will rise. It is on the other hand also possible that QE will artificially inflate financial assets prices, creating the exact same asset bubbles that started the financial recession of 2008. QE is a technical issue, which, notwithstanding, may have big consequences. It is therefore relevant to make QE understandable and accessible to lay people, which this paper is aimed towards.

Secondly, neither theory nor practice has as of yet proven QE to be either a good or a bad policy. Earlier experiments with QE have provided mixed conclusions about its effect. Empirical evidence has shown that QE had positive effects on overcoming recession and deflation in Japan. The Japanese stock prices however remained unaffected, while the stock prices in the US went up. The Federal Reserve (Fed) and the Bank of England (BoE) focused mainly on purchasing bonds, which resulted in much lower interest rates than in Japan, which relied on lending to private financial institutions (Hausken and Mthuli, 2013, pp. 2-5).

Moreover, in the words of Ben Bernanke, former president of the Fed: “The problem with QE is that it works in practice but it doesn’t work in theory” (Berkowitz, 16 January 2014). The theory is that it should not matter *what kind of* assets a central bank (CB) adds to its balance sheet, only *how many* (Woodford, 2012 pp. 49-56). Monetary policy cannot impact the real economy in the long run, because the private sector will undo any changes in the composition of a CB’s balance sheet (the Wallace neutrality). Therefore asset prices will remain unaffected (Bossone, 2014, pp. 9-11).

Hence as of yet, sufficient evidence and theory is lacking for determining whether QE is either a good or a bad policy. This is reflected in another, somewhat vague statement of Bernanke: “... While there are differences in views about how effective QE is, the great majority of studies have found that [rounds of QE] are at least somewhat effective” (Saft, 16 January 2014).

Chapter I. Quantitative easing: what it is and what it does

This chapter is devoted to an extensive description of what QE actually is, what it ought to accomplish and which risks are involved. But first we must establish what monetary policy is and which role inflation plays in it. After all, QE is a monetary policy tool intended to increase inflation.

I.1. Monetary and fiscal policy: some theory

I.1.a. The importance of inflation.

In this research, monetary policy refers to the ways in which a monetary authority deploys its resources to regulate the amount of money circulating in the economy. This monetary authority in developed countries is usually a central bank (CB). The money regulation is meant to adjust inflation and interest rates in order to maintain price stability and trust in the currency. Price stability and trust generate economic growth and stability, which in turn reduces unemployment. For the same reasons, monetary policy is also aimed towards keeping exchange rates stable and predictable. The regulation of the money supply can be done in two ways: monetary policy can either be *contractionary* or *expansionary*. Contractionary monetary policy means that the amount of money in the economy is shrinking (or at least increases slower than usual). Contractionary policy is used to curb inflation in order to avoid disturbances or decreases in asset prices. QE however is a form of expansionary policy, which means that the money supply increases (quicker than usual). Expansionary policy is used to offset a recession through a decrease in interest rates (Friedman, 2001, pp. 2-9).

How do decreased interest rates lead to economic recovery? This is probably best explained by means of the *Fisher equation*, named after its inventor Irving Fisher (1867-1947), one of America's most influential economists. This equation is as follows:

$$1 + R = (1 + r) \times (1 + i) \tag{1}$$

$$\text{This can be rewritten as: } 1+r = (1+R) / (1+i) \tag{2}$$

Here r stands for real interest rate, i for inflation rate and R for the nominal interest rate. A CBs' main objective is to influence the real interest rate, which represents the interest rate in terms of purchasing power. The Governing Council of the ECB can do thus by adjusting three so-called nominal 'key interest rates':

1. The interest rate on the **main refinancing operations** (MROs), which usually provide the bulk of liquidity (cash) to the banking system.
2. The rate on the **deposit facility**, which banks may use to make overnight deposits with the Eurosystem. 'Eurosystem' is the overall term for the ECB and the national central banks of the euro members.
3. The rate on the **marginal lending facility**, which offers overnight credit to banks from the Eurosystem (European Central Bank, Monetary policy decisions, 2015).

As seen in the Fisher equation, a CB can achieve low real interest rates through either lowering the nominal interest rate and/ or increasing the inflation rate. This is because the real interest rate is effectively an exchange rate between 'current money' and 'future money'. If I have 10 euro's now and the nominal interest rate is 10%, then my current money is worth 11 euro's in terms of future money. So if I wait with spending my money, I will be able to buy more in the future. But over time, money loses its value as price levels increase. This is called inflation, which is measured through the Consumer Price Index (CPI) or the Harmonised Index of Consumer Prices (HICP). Future money therefore gradually becomes less valuable. If for instance the inflation rate is also 10%, I will still have 11 euro's in the future. But I cannot buy any extra goods with it as the prices of goods have increased by the same amount. Thus, in this situation it does not matter if I spend my money now or in the future. My purchasing power will be the same. If the nominal interest rate is low and/or the inflation rate high, spending my money now becomes more lucrative compared to spending it in the future. It is exactly for this reason that CBs wish to decrease the nominal interest rate or raise inflation in times of economic recession. If spending and borrowing now becomes more lucrative, aggregate demand will increase as people spend their money on goods and services. And if the demand for goods and services increases, more employees are needed for the extra production that is to meet this higher demand. Hence, ultimately economic output and the employment rate will increase. Manipulating the interest rates by a CB is referred to as influencing the *price* of money (Friedman, 2001, pp. 2-9).

1.1.b. Fiscal policy: spending your way out of an economic crisis.

Although QE is considered a monetary rather than a fiscal tool, it can influence government spending indirectly through lower borrowing costs. In order to put this process in theoretical context, it is explained below *why* and *when* a government is prone to borrowing. If we know this, we can determine *when* and *why* QE becomes more attractive as a policy.

The short answer is that governments want to boost their economy in times of crisis. The decision to spend a lot of money to boost output is best explained by Keynesian theory. According to Keynes, a government can supplement falling private sector demand (which is just another term for economic crisis) by spending more money itself. Aggregate (overall) demand is comprised of household consumption; business investment; government consumption and investment; and foreign demand. Or expressed in a formula:

$$Y = C + I + G + (E-M) \tag{3}$$

In which 'Y' represents aggregate demand, 'C' household consumption, 'I' private investment and 'G' government spending and consumption. (E-M) represents the balance between exports (E) and imports (M). Should domestic private sector demand (C+I) and/or foreign demand (E) falter, then the government can regain the original level of (Y) by increasing (G).

Sometimes the government has to increase (G) less than (C+I) decreased, due to the so-called 'government spending multiplier' or 'fiscal multiplier'. This multiplier ensures that each euro the government spends, will lead to a more than one euro increase in overall consumption (Y). If for example the multiplier is 5% and the government spends 100 million euro's, (Y) will grow by 105 million. This happens when consumer confidence increases because households see their government spending lavishly. When they see that their government has enough trust in economic outlook to start spending, they may follow suit. On the other hand, there is also the 'crowding out effect'. This means that the government 'steals' goods and services that would otherwise have been demanded by the private sector. In this case there is no or less fall in (C + I) than the government thinks. In times of economic crisis, the crowding out effect means that the government is actually hampering economic recovery because it buys goods which should have been bought by (C) or (I) (Batini, Eyraud, Forni and Weber, 2014, pp. 1-5).

I.2. What is QE?

As said before, a CB regulates the money supply to the financial system by manipulating the price of money through nominal interest rates. But a CB can also manipulate the *quantity* of money that circulates in an economy. By increasing this quantity, a CB can influence interest rates indirectly through an increase in the inflation rate. Mind you, a CB cannot *set* the inflation rate like it can set the nominal interest rate. The inflation rate is solely established through market forces. But by increasing the money supply, market forces can be coaxed into increasing the prices of goods and services (i.e. inflation).

Now we can turn to the policy that was invented to achieve just that: quantitative easing. QE came into prominence in 2001 after a massive financial and economic crash in Japan. It refers to the monetary policy of expanding the balance sheet (the reserves) of a CB through asset purchases. These purchases can be either private or public assets, for instance corporate bonds or government bonds. These assets are bought from commercial banks with newly created electronic cash. As a result, the CB possesses assets and the private banks more cash. This new cash swells the amount of money that circulates in the economy by the quantity of assets purchased – hence the term ‘quantitative easing’ (Economist, 9 March 2015).

Woodford (2012) distinguishes between two types of QE: ‘pure quantitative easing’ and ‘targeted asset purchases’. Pure QE, as was used in Japan in 2001-2006, refers to the policy where a central bank creates money and buys short term bonds (bonds which mature within three years) with it. Therefore the CBs’ reserves increase by the amount of assets (bonds) purchased. Thus in the case of pure QE, the CB alters the *size* of its balance sheet. The composition of the balance sheet however remains unaffected, which means that the liquidity and riskiness of its expanded asset portfolio also remain unchanged. Liquidity refers to how easily an asset can be converted into cash. It depends on the time needed to convert it into cash and on the number of available buyers. Real estate for example is considered illiquid, because it takes a long time to convert a house into cash and potential buyers are not in abundance (Woodford, 2012, pp. 49 - 56).

But QE as it is now often referred to is what Woodford calls ‘targeted asset purchases’, or TAPs for short. With this type of QE, a CB starts with buying short-term bonds,

as is the case with 'pure QE'. But after that, the CB sells the short-term bonds again and uses the proceeds to buy long term bonds (bonds with a maturity date up to thirty years). The size of the central banks' balance sheet therefore remains unaffected, but its *composition* is altered. The CB ends up with less short-term bonds and more long-term bonds (Woodford, 2012, p. 56). Willem Buiter of the London School of Economics has mockingly dubbed this altering of the asset portfolio *qualitative* easing. Qualitative easing is considered more dangerous than pure QE, as the balance sheet of the CB will constitute relatively more risky and less liquid assets. The two types of QE mentioned here are not mutually exclusive: most CBs that so far have implemented QE both increased the size and altered the composition of their balance sheet simultaneously (Buiter, 9 December 2008).

The Wallace Neutrality mentioned in the introduction is applicable to this second type of QE. TAPs do not work in theory because the private sector anticipates government policies. Suppose the Treasury of a government issues short-term debt, which means the government is offering to *borrow* money. At the same time, the CB –which is just another arm of that same government – buys long-term government debt. The result is that the government has more short-term debt and less long-term debt, as the latter is bought back by the CB and hence by itself. In order to pay for this increased current (short-term) debt, the government will raise current taxes. Yet as future (long-term) debt is decreased, future taxes can be lowered.

Alas, the private sector is clever and will anticipate this. As private agents know they have to pay more taxes now than in the future, they will transfer some future money to the present - i.e. they will borrow money or save less. This money transferring is done by selling long-term debt and buying short-term debt – exactly the opposite of what the CB is doing. As a result, the ratio between long-term debt supply and demand stays the same. The central bank increases demand, yet the private sector increases the supply by the same amount. And if the ratio between supply and demand stays the same, price levels and resource allocations will also remain unaffected. QE in the form of TAPs therefore in theory has no influence on the economy in the long run. On the condition that the private sector is perfectly rational and has limitless information about government policies (Woodford, 2012, pp. 49 - 56).

I.3. What is QE expected to achieve?

Now that we have established what QE is and which types exist, we can determine what this monetary policy tool is supposed to achieve. Furthermore, we can identify the potential risks that come with it.

I.3.a. Improve the bank-lending channel.

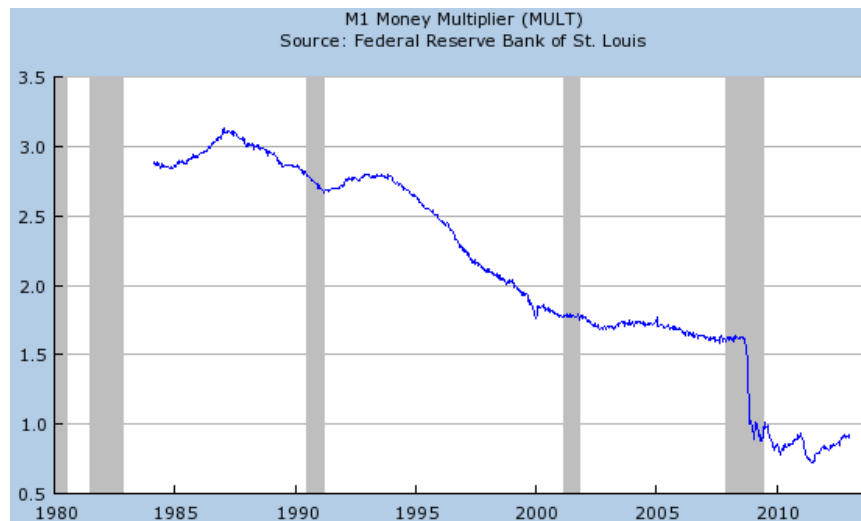
Most of the money in the economy is created by private banks through their loan books. But during the financial crisis of 2008 and its aftermath, banks stopped lending. And therefore they stopped creating new money. Electronic cash injections by a CB (read: QE) can mitigate this shortage of newly created money.

This process of decreased bank-lending is as follows. Firstly, during an economic recession, banks fear that private agents (banks included) will be unable to repay their debts. After all, the risk of default and bankruptcy increases considerably in bad economic times, especially for small and medium-sized businesses (SMB). Apart from the fear of default and bankruptcy, financial institutions may suffer losses themselves during the crisis. During the 2008 financial crisis, many commercial banks lost capital due to subprime debt that defaulted. As a result, banks will start to lend out even less money to consumers, investors and each other. This freeze in credit access for private agents is called a 'credit crunch'.

Secondly, the opportunity costs of holding money decrease. This starts with a decline in interest rates. With interest rates near zero, consumers and companies generate little or no interest income. Therefore people will put their money in the metaphoric old sock. Why bother bringing your money to the bank if it won't get you anything. Worse, if private agents expect deflation in the future (regardless of the promised 2% target), people will hold on to their cash even longer as money will become more valuable in the future. This cash hoarding is referred to as a decrease in the 'opportunity costs of holding money'. As a result, private banks hold fewer reserves (consumer savings) and hence cannot lend these out.

When banks are unwilling to lend and consumers withdraw their money from their accounts, the result is a decrease in the money multiplier effect. This multiplier ensures that banks can create new money by lending out the capital they already have in savings. If those savings (i.e. the bank reserves) decrease, so does the amount of money banks can create. If

no money is created, no new money can be lent out and enter the real economy. Supplementing the decreased money multiplier effect was one of the reasons for the Bank of England (BoE) to engage in QE. In the South Wales



Chamber of Commerce at the Millennium Centre on 23 October 2012, then BoE Governor Mervyn King said: “[A] damaged banking system means that today banks aren’t creating enough money. We have to do it for them” (Bank of England, *Publication*, 23 October 2012).

There is however no guarantee that QE cash will actually do any good with respect to the bank-lending channel. With respect to the supply side, QE will have little impact on the real economy if financial institutions don’t lend out the CB money to private agents. This happens if commercial banks use the CB money to restock and improve their own asset portfolio by either increasing their capital or their number of safe assets like government bonds. As a result, the CB money is not lent out to the private sector or invested in corporate bonds. On the demand side, private agents must be willing to borrow and invest. There has to be adequate demand for bank loans, which is in times of economic crisis usually not the case (Hausken and Ncube, 2013, pp. 5-6).

1.3.b. Increased inflation rate.

As said before, QE was primarily invented to raise the inflation rate. The most direct correlation between QE and inflation is explained by ‘the quantity theory of money’. This theory is mostly identified with 20th-century economists Milton Friedman and Irving Fisher, but was already present in the writings of classical economist like David Hume, David Ricardo and John Stuart Mill. The quantity theory of money in its most basic form is as follows:

$$PQ = MV \tag{4}$$

Which stands for: price level (P) x Output (Q) = Available money stock (M) x velocity of circulation (V). 'Velocity' refers to the number of times cash changes hands. The quantity theory of money caused a heated debate between monetarists and Keynesians from the 1960s till early 1980s. The monetarists claimed that a growth in the money supply (M) leads to an increase in inflation (P). They argued that when the money growth surpasses the growth in economic output (Q), price levels increase - there is much money behind little production. The Keynesians however argued that an increase in the money growth was the result of an increase in demand of goods and services. An increase in the money supply would therefore not lead to higher inflation: the ratio between money and goods/services did not change.

According to William Cline, senior fellow of the Peterson Institute for International Economics, the quantity theory of money has since the 1990s been subject to considerable criticism. This was mainly because in the theory, the velocity of circulation (V) had always been regarded as a constant, which in reality it most definitely is not. Also, it was discovered that a decrease in the money multiplier hampered inflation. But Cline states that the theory is very much alive and well in the euro area, which is reflected in the fear of Europeans (read: Germans) of the inflationary pressure resulting from loose monetary policy (Cline, pp. 1-3). This will be discussed in more detail in Chapter II.

If one adheres to the quantity theory of money, then QE should lead to higher inflation rates in the following way. A central bank increases the money supply through buying assets and paying the private sellers with newly created money. As a result of the increased money supply, the currency loses value, which is reflected in higher inflation rates.

There are some unknowns involved here. For instance, QE may spur too much inflation if too much money is pumped into the economy. This happens when a CB overestimates the amount of easing that is needed. The effects of uncontrollable inflation can be devastating. As early as 1919, John Maynard Keynes wrote in his short essay *Inflation*: "There is no subtler, no surer means of overturning the existing basis of Society than to debauch the currency. The process engages all the hidden forces of economic law on the side of destruction, and does it in a manner which not one man in a million is able to diagnose" (Keynes, 1931, p. 77). His words proved prophetic, as hyperinflation in the

Weimar Republic partly caused the rise of National Socialism. This process will be explained in more detail in the next chapter.

Fortunately, the risk of unexpectedly high inflation as caused by QE can be mitigated. This is possible when, due to the increased money supply, economic output (Q) grows faster than the money supply (M) itself. Because economic growth ensures that the currency becomes more valuable, even though more money is available. But this only occurs when private banks lend out the extra money to private agents such as firms instead of hoarding it (Joyce, Tong, Woods, 2011, pp. 205-208).

1.3.c. Policy signaling effects.

Even when one regards the quantity theory of money as utterly useless, QE can influence the inflation rate in other ways. One such way is through the so-called 'signaling channel'. By purchasing long-term sovereign debt securities, a central bank signals to economic agents that it is committed to low short-term interest rates for a long period of time. 'A long period of time' in this case refers to the time *after* the economy is expected to have recovered, in which interest rates normally ought to increase again. One way in which this commitment signaling works, is as follows. By purchasing long-term debt securities, a CB effectively shortens the duration of the governments' outstanding debt. As explained earlier, through the TAPs a CB uses the proceeds of selling short-term debt to buy long-term debt. As the government now has to pay interest over more short-term debt, the short-term interest rates play a more important role in government expenditures. Should the central bank raise short-term interest rates again sometime in the future, the government will face considerable additional interest costs. This will result in higher taxes that could otherwise have been avoided. Levying additional taxes on the people results in a decline in domestic demand, which results in a decline in output: exactly the opposite of what the CB wishes to achieve. Hence, people expect the CB to remain committed to low short-term interest rates for a longer time than usual.

More generally speaking, announcements on asset purchases contain information about the underlying state of the economy. Economic agents use that information to shape their views on the state of the economy and hence their spending behavior. Another example of policy signaling is the so-called 'forward guidance' policy, which will be explained into more detail in Chapter III (Joyce, Tong, Woods, 2011, pp. 205-208).

1.3.d. Depreciation of the currency.

Another way QE can achieve higher inflation rates, is through the depreciation of the currency. Depreciation means that a currency loses value compared to other currencies. If for instance the original exchange rate between the euro and the dollar is 1 : 1,50 and the dollar depreciates against the euro with 10%, the new exchange rate will be 1 : 1,65. This means that instead of 1,50 now every 1 euro is worth 1,65 dollars. Devaluation of a currency has the same result as depreciation, but the difference is that devaluation is the result of government intervention, while depreciation results from market forces. QE leads to depreciation of a currency in two ways. The first is rather simple: QE results in an increase in the supply of a currency in the currency market. When a certain currency is in much supply, this will decrease its value compared to currencies that are less so in supply. Therefore, the currency that is in much supply will depreciate against the other currencies (Purdy, 2015, pp. 1-2).

The second way is a little more complex. When a government implements a QE program, the intended effect is a reduction in the yields of their own bonds (or in the case of the ECB, the yields of bonds of several countries). The central bank achieves this by buying government debt securities, thereby taking them out of the market. As a result, the bonds are in less supply to the open market, which pushes up their price. Usually, bond prices increase as interest rates decrease, but due to diminished supply, this effect is off-set by the central bank.

Suppose you are a German investor looking to buy bonds from the UK, the latter of which is implementing QE. The yield over British bonds (called gilts) will be low, as the interest rates are low and the bond price (artificially) high. The only remaining way to increase your returns over the gilts is through a depreciation. Suppose you expect a yield of 3% and the QE program has resulted in an increase in bond prices of 10%. The yield over this bond would fall to 2.7%: $3\% - (3 \times 0.1) = 2.7\%$. Now the only way to regain the original level of 3% yield, is when the currency of your own country (euro) appreciates by 10% against the currency in which the bond price is expressed (pound) (Purdy, 2015, pp. 1-2).

Depreciation and inflation both influence each other and tend to move in opposite directions, meaning that an increase in the one leads to a decrease in the other. With respect to QE, it is important to understand when inflation is the cause and when it is the

effect. A decrease in the value of a currency can lead to an increase in the inflation rate in several ways. Firstly, a depreciation results in imported goods (M) becoming more expensive. Put simply, more currency is needed to buy the same amount of goods *not* expressed in that currency. In addition, the increased price levels of imports may in turn lead to so-called 'import inflation'. Producers often need foreign goods in order to produce their own goods. Producers of plastics for instance need oil, which they import from Russia or the Emirates. These imported goods become more expensive after the depreciation of the producer's own currency. The costs of production therefore will increase. Producers may transfer these extra costs to consumers by increasing their own prices, which is called the 'pass through effect'. Hence, an increase in the price levels of foreign products (M) may result in higher domestic prices as well.

As said before, the process can also be reversed: higher inflation leads to a depreciation of the currency. Suppose the price levels in the US increase by 40%, while the price levels in Germany remain stable. Then German goods will suddenly look very attractive to the Americans, who will purchase more of the relatively cheap German goods (M). As Americans now import more from Germany than they export (E) to Germany, German output increases, while American output decreases. Since the American GDP has declined, the US dollar will depreciate against the euro as a result (Purdy, 2015, pp. 4-6).

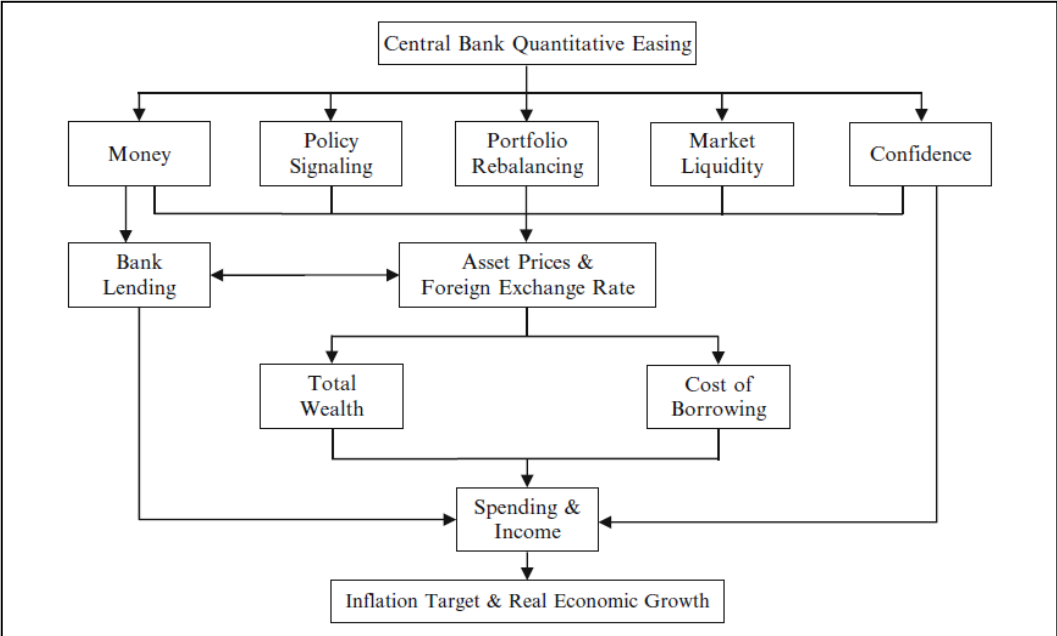
1.3.e. Portfolio rebalancing.

As said before, through QE central banks buy and sell assets, yet not *all* types of assets in the case of TAPs. In this way, the central bank tries to coax investors into buying assets that are most beneficial to the real economy. The process is as follows. Suppose a central bank buys sovereign debt securities, as was the case in most countries where QE was implemented. If a central bank buys government bonds, these are effectively taken out of the financial markets. The CB just adds the bonds to its reserves and keeps them there. Consequently, less government bonds are available on the market. If we again apply the rule of supply and demand, we see that government bonds become more expensive: the central bank has decreased the supply. If the price of an asset increases, then its yield (return) decreases. A decreased yield makes an asset less attractive, because one earns less money over it (Jones, 18 October 2013).

There is however one other thing that has to be taken into account when assessing the returns on assets: their riskiness. Every asset carries a degree of risk, which depends on for example its price volatility, credit quality and the probability of repayment. Some assets are considered 'safe', which include cash and most types of government bonds. Other assets are considered much riskier, such as mortgage-backed securities (MBS) and equities (stocks). Yet risky assets of course yield potentially high returns. The higher the risk, the more money can be made. From 2003 to 2007, investor appetite for risky assets was insatiable. Rampant investor demand had driven up prices of most above-average risky assets like MBS. The global recession of 2008 triggered a massive aversion to risky assets, which had constituted the asset bubbles that caused the recession. Capital literally fled to the safest possible assets like government bonds. But these safe assets don't do much for the economy: stocks and real estate have a much more direct impact on employment, the housing market and the like. These things need support during times of economic recession. So central banks are currently trying to make risky assets attractive again, so investors will be more inclined to invest in them. This is done by making the safe assets –government bonds- more expensive and hence *less* attractive.

Yet concerns have been voiced as to whether this policy of making risky assets more attractive has been such a good one. It is very possible that QE has not just supported, but also distorted asset prices, creating bubbles that started the Great Recession¹ in the first place. Ultra-loose

monetary policy may very well fuel over-optimism in financial markets again, resulting in rampant demand and hence artificially high prices. As of yet however, not



¹ Not to be confused with the 'Great Depression', which refers to the economic crisis that started after the *Wall Street Crash* of 1929

much evidence suggest the development of new asset bubbles. In 2013, still fewer transaction were carried out in the housing market than before the crisis. The trading volume of the stock market remained below pre-crisis levels as well (Jones, 18 October 2013).

I.4. Potential downsides to quantitative easing.

Apart from these (mostly) positive effects, quantitative easing also comes with some potential risks. Together with uncontrollable inflation and inflated asset prices, income inequality and debt monetizing are the downsides of QE that are most present in the literature and in policy debates.

I.4.a. Income inequality.

Higher asset prices have been cause for a raging debate as to whether QE has resulted in increased income inequality. It is not hard to imagine that this is indeed the case. The fact is that the very rich own assets, the less rich own cash savings and poor people nothing. According to Fed data, the top 5% in the US own 60% of the nation's individually held financial assets. They own 82% of the individually held stocks and more than 90% of the individually held bonds. One of the main objectives of QE was to increase asset prices. Hence, QE has made assets more valuable, which mostly benefits the rich segment of society and *not* the middle and low income segments. American business magnate Donald Trump commented on QE in an interview with CNBC: "People like me will benefit from this" (Frank, 14 September 2012). A report issued by the Bank of England (BoE) mentioned that its QE program had boosted the value of stocks and bonds by 26% or over 970 billion dollars. 40% of those gains went to the richest 5% of British households (Bank of England, 2012, pp. 1-3).

French economist Thomas Piketty, writer of the very influential *Capital in the Twenty-First Century* (2013) and expert on wealth distribution, stated that the Fed's massive easing program was disproportionately helping the wealthy. In an interview with *CNBC* in June 2014, Piketty said: 'Those who are gaining from all this printing of money are not the people that you'd like to gain'. However, he also admitted in that same interview: 'It was better to do what they (Central Banks) did than to do nothing at all' (Belvedere, 2 June 2014).

Piketty concluded that the Western world has been asking too much from monetary policy and central banks. Rather than trying to solve every problem through a CB, Piketty advocated supplementing monetary policy with a more active fiscal policy. Fiscal policy might be much more complicated than monetary policy, but it provides better insights in where the money goes and who benefits (Belvedere, 2 June 2014).

Theoretically, QE can widen the income gap also in other ways than an increase in financial asset values. For instance, low interest rates are bad for people with savings - the whole point of low interest rates is to discourage saving. You could imagine that the richest income groups also have the largest amounts of cash savings, but this is untrue in relative terms. According to Spectrem Group, the wealthy have about 13% of their assets in cash and about 85% in financial assets. For the middle income segment, this percentage of cash savings is much higher and so relatively speaking they will suffer more income loss. This must however be put in perspective: interest rates had already been historically low before QE was implemented. So little interest income can be lost if there was little of it to begin with. In addition, people with debts have to spend less of their income on repayments. For example, mortgage rates in the US have decreased because the Fed included the purchase of MBS in its QE programs (Bank of England, 2012, pp. 1-3).

But low interest rates are certainly bad for pension funds, which poses a problem for countries such as the Netherlands. Pension funds rely on interest rates to determine how much money they have to keep in the till and how much of it they can invest (Bank of England, 2012, pp. 1-3). If for example a certain pension fund has to pay 2000 euros in pension benefits in five years' time, it does not need to have 2000 euros *now*. Suppose the interest rate is 10%. Then the amount of money the pension fund has to keep in cash now is approximately 1241 euros – $1241 \times 1.1^5 = 2000$. Suppose the interest rate were to fall to 5%. Then the amount of cash the pension fund has to have in cash now is about 1567 euros – $1567 \times 1.05^5 = 2000$. Should the interest rate fall with 5 percent, then the pension fund would suddenly have to keep over 300 euros extra as cash instead of investing it in order to be able to pay for all the pension benefits. If it is unable to do so, pension benefits will no longer be indexed (adjusted to inflation). In the worst case scenario, pension benefits will have to be cut. This results in less income for pensioners .

1.4.b. Debt monetizing.

QE has been much criticized by central bankers and financial analysts because it cannot be distinguished from other, more dangerous policies. Some opponents have even declared that the term QE was invented only to hide that developed nations are turning into banana republics (Cline, 2015, pp. 2-3). The cause for this criticism is that QE can be cunningly used to indirectly finance government deficits or to pay off government debts. This practice is also known as 'debt monetizing'. It is a very simple process. Suppose a central bank creates new cash and purchases government securities with it directly from the government. The government would then have to pay interest over these securities to the central bank. But, as the central bank is part of the government, it could just return this interest income to the government. Thus the central bank would effectively be financing deficit spending with its newly created cash. For this reason central banks in most developed countries – and especially the ECB - are prohibited from buying government debts directly from the government. They must instead buy government bonds from the secondary market (from private institutions). But QE makes it possible to finance government debts and borrowing indirectly. First, a government sells bonds to private entities such as commercial banks. These private entities in turn sell the bonds to the central bank, who pays for it with newly created cash.

Therefore only the intentions of the CB can distinguish QE from actual debt monetizing. If the central bank creates money with the intent to raise the inflation rate and stimulate the economy, this policy can be called QE. And if not, it is financing government spending. This intention becomes clear in for instance statements about reversing the QE by selling the government bonds back to the secondary market after the economy has recovered. Thus an effective way of determining whether a central bank has monetized debt is to compare its performance with its declared objectives. Suppose the central bank declared that QE was intended to achieve the inflation target. Then it is very likely that the central bank is monetizing debt when it continues to buy government bonds *after* said target has been reached (Flanders, 18 February 2009).

In sum, QE can take two forms. Firstly, a CB can buy assets with electronically created cash: this releases a massive amount of (new) cash into the financial system. Secondly, a CB engage in targeted asset purchases. In this case, it uses the proceeds of selling short-term bonds to buy long-term bonds: this reduces the long-term interest rates.

QE can lead to positive results, like an increase in asset values, depreciation of the currency and enhanced liquidity in the financial system. Yet QE can also lead to negative consequences like increased income inequality and uncontrollable inflation. The latter is one of the reasons why Europeans are averse to QE, which is discussed in the next chapter.

Chapter II. Why Europeans lagged behind regarding QE

In this chapter, we determine why Europeans have waited until 2015 with the implementation of QE. As said before, Japan had already started with QE plans more than a decade earlier. But first we must prove that the EZ indeed has been lagging behind compared to other developed nations. Only then we can turn to the question as to why.

II.1. QE in Japan, the US and the UK

II.1.a. Japan.

Japan has been fighting rolling recession and permanent deflation for more than two decades, ever since the implosion of stock market and real estate bubbles of the 1980s. Up until now, many critics pointed out that often lengthy periods of growth had been choked off by premature monetary tightening. This happened in the mid 1990s and early 2000s (Elliott, 12 August 2013). In order to avoid the same mistake again, Japan implemented a QE program in 2001-2006, so economic growth would finally kick off and price levels rise. But even that program failed to rid the world's third largest economy of its never-ending deflation. In April 2013, the Bank of Japan (BoJ) implemented another round of QE, when BoJ president Haruhiko Kuroda vowed to pump \$1.4 trillion into the Japanese economy. This amount was to be reached through buying 7 trillion yen (¥) of government bonds each month using electronically created cash. This massive expansion of the monetary base was part of the policy known as *Abenomics*, named after Japanese Prime Minister Shinzo Abe (Allen, 22 January 2015). *Abenomics* consists of three strands. The \$1.4 trillion cash flow into the economy belonged to the first strand, which entailed a more 'activist' monetary policy of the BoJ. Second, fiscal policy had to be expanded by increased spending on public works (infrastructure). Thirdly, structural reform was to be implemented in order to make the Japanese economy more productive (Elliott, 12 August 2013).

The problem was that the Japanese government also suffered from a government debt to GDP ratio of over 200%. In an attempt to battle this by an increase in taxes, the Japanese government raised the consumption tax. This caused the economy to shrink by 1.7% in the second quarter of 2014, which was reflected in consumer and corporate demand plummeting even further down. This had a deflationary effect, thus curbing the BoJ's

attempts to increase inflation through QE. With price levels spiralling into disaster and private spending floundering, the BoJ went even further half a year later, in October 2013. The Japanese central bank promised to increase the money supply to the financial system from ¥60-70tn to ¥80tn per annum. This was to be achieved mainly through the purchase of government bonds. Echoing the sentiment of his European counterpart Mario Draghi, Kuroda declared: “Whatever we can do, we will” (*Economist*, 31 October 2014). This declaration had some effect: the Nikkei stock index rose to its highest level in seven years. The yen depreciated further, which off-set deflation through increased import prices (*Economist*, 31 October 2014).

II.1.b. The United States of America.

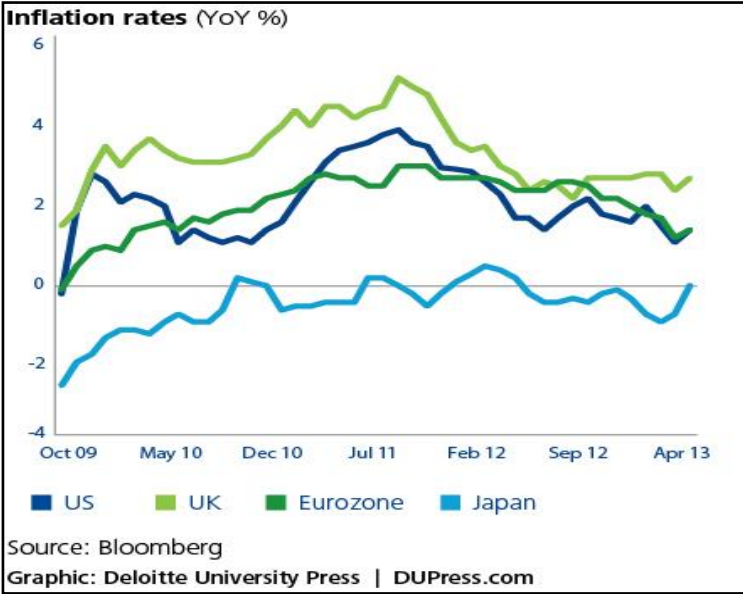
In November 2008, the US followed suit and introduced its own first QE program in an attempt to steer the world’s largest economy through the depths of the Great Recession. The American QE programmes were called ‘large-scale asset purchases’, or LSAPs. Through the LSAPs, the Fed purchased longer-term securities issued by the American government and government-sponsored agencies such as Fannie Mae. The securities were purchased in the private markets, as the Fed is forbidden to buy securities directly from the Treasury. Faced with the accusation that it was enhancing income inequality, the Fed directed later rounds of QE towards mortgage-backed securities (MBS) in order to reduce the mortgage rates. The Fed also tried to coax private investors into buying risky assets, which would promote economic recovery. This was done by buying up low-risk bonds, thereby making them scarcer on the market and thus pushing up their price (Federal Reserve, 16 January 2015).

The LSAPs were introduced by former Fed-president Ben Bernanke, dubbed ‘Helicopter Ben’ for his desire to flood money from the sky. QE had a more profound effect on the American economy than it had on the Japanese. QE, coupled with low interest rates, freed up capital and encouraged investor’s appetite for risky assets. This helped to steadily increase US shares prices since 2009. In addition, the LSAPs were successful in reducing the interest rates over government bonds, over MBS and corporate bonds.

This success on the financial markets was extended to the real economy. The American unemployment rate fell sharply and the IMF predicted economic growth to be around 3.6% in 2015. Early 2015, consumer confidence in economic outlook reached the

highest level in eleven years. The MBS purchasing programme resulted in reduced mortgages rates by about 85 basis points (BP) following its announcement, and contributed an additional 50 basis points towards lowering risk premiums once the programme had begun (Claeys, 2014, pp. 11-12). Inflation however remained low, amounting to 0.8% as measured on the CPI in December 2014. This was largely the result of a large drop in the price of gasoline. The CPI however does not measure food and energy price levels, which may distort the inflation picture. For instance, US food prices rose throughout 2014, as well as prices of shelter and medical care commodities.

Because of the four QE rounds, the Fed’s balance sheet swelled enormously. From early 2009 to March 2014, the Fed purchased around \$1.9 trillion of US long-term Treasury bonds, or 11.9% of US GDP. At the same time, the Fed also bought \$1.6 trillion of mortgage-backed securities (MBS), or 9.6% of GDP (Claeys, 2014, p. 10). Through this vast bond-buying, the balance sheet grew from \$870 billion in August 2007 to \$4.5 trillion in October 2014. By then, new Fed President Janet Yellen confirmed the Fed would gradually reverse the six years of loose monetary policy. The Fed had already been steadily reducing its bond-buying from \$85 billion to \$15 billion a month. Despite ending its asset purchasing programmes, the Fed remains committed to loose monetary policy



due to the continuing low inflation rate. The interest rate for instance is for the foreseeable future to remain at a record low of between 0 and 0.25% (Monaghan, 29 October 2014).

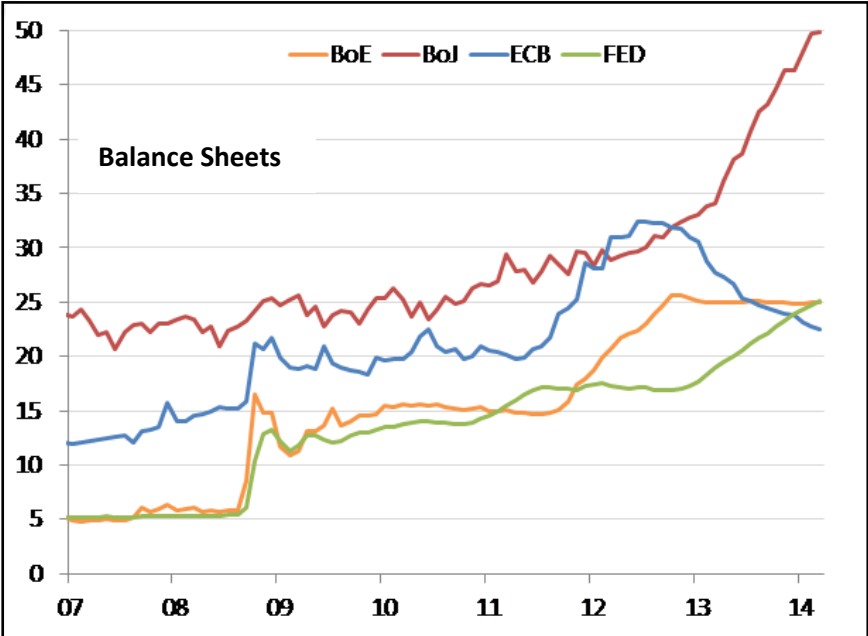
II.1.c. The United Kingdom.

One year after the Americans, the Bank of England (BoE) launched its own QE programme in 2009. Between January 2009 and November 2012, the BoE bought £375 billion, which amounts to 20% of UK GDP, in mainly medium and long-term government bonds (Claeys, 2014, p. 10). The BoEs’ initial target in 2009 was to inject the British economy with £75 billion

over three months, while at the same time reducing the interest rates to 0.5%, again a record low. Until January 2010 the BoE bought assets amounting to a value of £200 billion, which was equivalent to 14% of UK GDP. The large asset-buying was meant to reduce stress levels in the financial markets due to the credit crunch that had developed in the aftermath of the 2008 crisis. Unfortunately, many member states of the European Union, the UK included, were faced with a double-dip recession in 2011. Thus in October 2011, the BoE vowed to pump another £75 billion into the British financial system, increasing the budget for QE to £275 billion. The BoE later on increased the budget to a total of £375 billion. The QE rounds had positive impact: economic growth has slowed in recent months, but British GDP growth was the highest of the G7 rich nations in 2014. As well as in Japan and the US, the inflation rate however remains low, stabilizing at around 0.5%, which is well below the BoEs 2% target.

As well as the Fed, the BoE faced the charge that QE had exacerbated wealth inequality. The BoE was accused of supporting banks by handing them huge amounts of cash while doing little to aid small firms or households. According to its own reports, the BoE admitted that wealthy families had been the biggest beneficiaries of QE because it increased the value of financial assets (Allen, 2015). But the BoE also argued that, had it not started to implement QE, most British

people would have been worse off due to the trickle-down effect of QE (Frank, 14 September 2012). According to the bank's Monetary Policy Committee (MPC), QE had added about 3% or £50 billion to the overall level of GDP. The BoE was also accused of doing too little to improve the real



economy, because the bank had purchased government rather than corporate bonds. According to several business groups, the BoE therefore did not achieve better credit access for small and medium sized companies (Allen, 22 January 2015).

II.2. Feet-dragging in the Eurozone

Japan, the US and the UK started with QE in 2001, 2008 and 2009 respectively. Almost six years later, the ECB announced its own asset purchasing programme (APP) on January 22nd 2015. The expanded APP would consist of three strands:

- Third covered bond purchase programme (CBPP3)
- Asset-backed securities purchase programme (ABSPP)
- Public sector purchase programme (PSPP) (ECB, Monetary Policy)

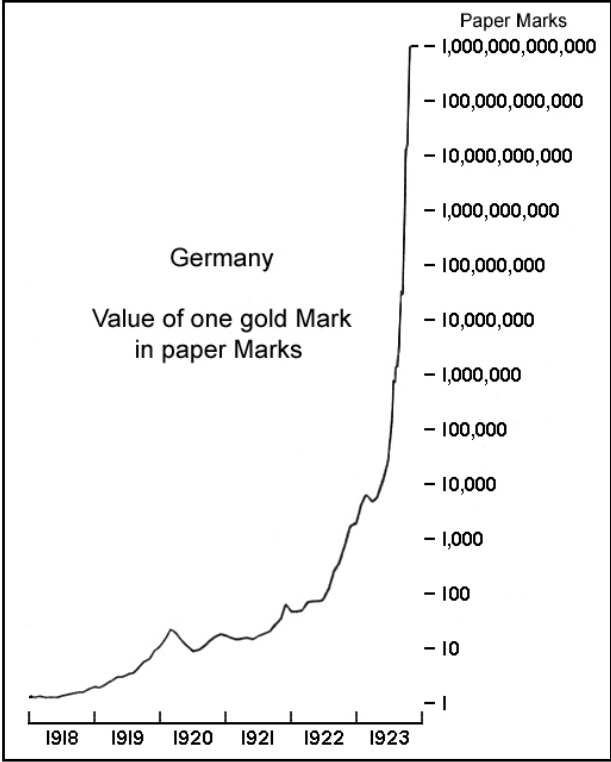
Aside from the delay, QE was to be implemented under strict conditions. Merely 20% of the additional asset purchases were subject to risk-sharing, meaning possible losses are borne by all euro countries. The other 80% of potential losses were to be borne by national banks (ECB press release, 22 January 2015). Why was euro-style QE so late and so little?

There are several explanations to this question, all tracing back to post-1945 developments that shaped the unique structure of the European Union. Firstly, post-war European policymakers started an on-going integration process, meant to shield the Europeans from experiencing a world war again. An example of this integration is the Maastricht Treaty of 1992, in which the adoption of a common currency was established. But this integration process has not yet reached the ultimate supranational stage of a 'United Nations of Europe' - a federation. Many decisions at EU-level are still made through intergovernmental bargaining. Secondly, Germany has - fortunately - been determined to avoid starting a world war again. In order to achieve this goal, the causes of World War II are to be avoided at all costs. One of these causes was a period of hyperinflation in the 1920s in the fragile Republic of Weimar. The impact of the current stage in European integration and of the Weimar hyperinflation on the European stance towards QE is explained below.

II.2.a. Das Inflationsgespenst.

Once upon a time in 1923, there lived a man in Berlin. He went out to buy groceries and brought with him a wheelbarrow containing huge piles of Marks in banknotes. On his way to the grocery store, the man was robbed. The thief took his wheelbarrow, but left the piles of money behind. There is some truth in this famous German legend: after World War I inflation ran rampant in the young Republic of Weimar. From 1913-121, the prices of rye

bread had risen by thirteen times and the price of beef by seventeen times. Other commodities fared even worse: price levels of sugar, milk and potatoes increased 23 to 28 times. In that fateful year of 1923, average prices levels increased by 75 billion %. This was partly the result of a general strike. Workers refused to produce goods in protest against the objectives of the Versailles Treaty (1919). This treaty stated that many German goods (mainly coal and iron) were to be given to France as pay-back for the devastation Germany had brought upon French and Belgian territory during World War I. The



Weimar government, rather pleased with the worker’s defiance, decided to keep paying the workers’ salaries even though they were on strike. This resulted in a situation wherein less goods were produced, while the amount of money circulating in the economy remained unchanged. Thus the same amount of money chased after a lower amount of goods, which pushed up the price of the latter enormously (Fergusson, 1975, pp. 61-80).

But it is not just this period of runaway inflation that has permanently scarred the Germans. The trauma is rather caused by its aftermath: World War II. It is the consensus among economists and historians that hyperinflation partly caused the rise of National Socialism in the early 1930s. One explanation is that the German people saw their savings and wages evaporate in mere days, leading them to despair and starvation. As a result, they thought only Adolf Hitler and his National Socialist Party could bring back order and stability. Another hypothesis, underwritten by German novelist and philosopher Thomas Mann, argues that the madness and irrationality of the inflation rate in 1913-1923 left a deep impact on the minds of the German people. Infected by the monetary frenzy that surrounded them, the German people grew hungry for irrational revenge for the unfair burden bestowed upon them by the Versailles Treaty and for adventures beyond the codes of civilized society. The callous disregard for ‘civil society’ and human decency that was part

of Nazi ideology, therefore fitted the mental state of the German people at the time (Widdig, 2001, pp. 3-33).

Regardless of which explanation is true, the fact is that ever since World War II the Germans have been terrified of *Das Inflationsgespenst* ('the spook of inflation'). It is deeply embedded in German culture and identity. After the War, the *Bundesbank* was to keep in check the value of the new German currency, the *Deutschmark*. Even at the cost of employment rates or economic growth. The stable, predictable D-mark became a symbol for the rebirth of Germany after years of horror and insecurity. When it was decided in 1999 that Germany was to adopt the euro, many Germans mourned. "The D-mark has always been more than just a currency", proclaimed former *Bundesbank* president Karl Otto Pöhl. "It was an emotional thing, a symbol of renewal after the destruction of World War II. To the man in the street, it was a symbol of German power" (Andrews and Erlanger, 30 August 2001).

There are several explanations as to why Germany chose to give up its formidable D-mark in favour of an uncertain new currency that was to be shared with countries such as France and Greece, who were notorious for their high propensity to inflation. (Neo-)realists like Andrew Moravcsik (2013) argue that it was part of a trade-off between France and Germany. Germany got the reunification of East- and West-Germany, France got the euro. The constructivist approach argues that Germany favoured European integration, a project to which Germany is so committed that it is written down in the German constitution, over its national currency. This theory is underwritten by historians such as Paul Pierson (1996).

Regardless, the D-Mark was not to be given up lightly. The new 'central bank of Europe' had to be modelled after the *Bundesbank*: price stability had to be its absolute priority. Germany got what it desired: the ECB's independence surpasses even that of the German bank. In addition, the pursuance of a "stability-oriented" course was guaranteed. To make the policy of inflation-aversion watertight, the ECB was to be protected from fiscal policy by a "Stability Pact". This Pact would shoo finance ministers firmly away from the printing press (Bibow, 2005, pp. 1-4). Until late 2014, Germany voted against every proposal in the Governing Council to increase the inflation rate by unconventional means - QE included. *Bundesbank* boss and member of the Governing Council Jens Weidmann is widely regarded as the most hawkish opponent to any type of loose monetary policy. According to him, there was "a whole row of economic reasons against QE" (Jones, 16 December 2014).

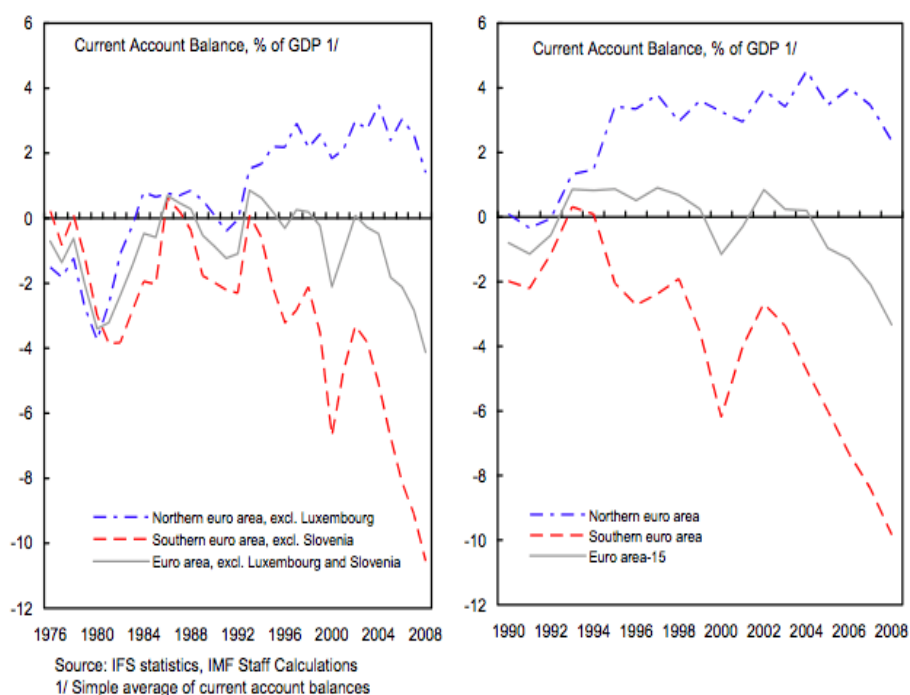
II.2.b. Limited solidarity among euro members.

Apart from fear of uncontrollable inflation, euro-style QE has also been criticized on legal grounds. These issues about the legitimacy of QE partly stem from a lack of (fiscal) solidarity between member states, due to the fact that the Eurozone – and the EU - are not a federation (yet). Before we explore the causes of anti-QE sentiment in the Eurozone that refer to legal conundrums, we will first establish *why* a lack of solidarity still exists between euro partners.

Fiscal solidarity is taken for granted in federations such as the US and Germany. If a shock occurs in output, which means a decline in production, in one of the fifty American states, fiscal transfers from the rest of the US will help cushion the blow. Suppose there is a decline in output in Texas due to a fall in oil prices. The federal government would then mitigate income losses by reducing federal tax rates for Texans. Texans could also apply for welfare benefits provided by the federal government. As a result, for every Texan dollar lost

in output, the Texans would only suffer 60-65 cents in income losses (Roubini, 5 January 2015).

But the point is that in the US, this risk pooling and automatic assistance is based on the premise that the situation will someday be reversed. The prices of oil will rise again, leading Texans to pay for a decline in output in



New York, through increased federal income taxes in Texas. It is a two-way process. In the Eurozone, this is much less so the case. Northern Eurozone states such as Germany and The Netherlands fear that a fiscal union would pledge their citizens to support peripheral economies and banks that are continuously on the brink of collapse. Risk-sharing will become risk-shifting as the Southern states are forever in need of assistance from the Northerners, and never the other way around. Fiscal unions only work if shocks occur randomly around the union, and not in one or two places (or countries) only. This fear of the

Northerners is not entirely unfounded. Ever since the inception of the euro in 1992, the PIIGS countries have consistently - yet not always - performed worse compared to the Northern states with respect to growth, unemployment rate and deficits. The term 'PIIGS' refers to the five 'underperforming' euro countries: Portugal, Italy, Ireland and Spain (Roubini, 5 January 2015).

However this is not entirely the PIIGS' fault. For instance, the adoption of the euro has made Northern export products much cheaper, as their currencies did not appreciate anymore. The EZ mainly trades with itself, which means that the additional exports from the North became extra imports for the South. This resulted in a huge surplus on the current account of the Northern euro countries, and a deficit of roughly the same size in the South (see figure on page 36). Furthermore, the debt-to-GDP ratios of Spain and Italy were actually declining before the 2008 crisis. To say that only the Southern states are to blame because they overspent is too narrow a view (Hinrichsen, 10 December 2011). But the fact remains that it is unlikely that Germany will need financial assistance from Greece in the near future, which will result in a continuing lack of (fiscal) solidarity.

II.2.b. Risk-shifting due to the absence of Eurobonds.

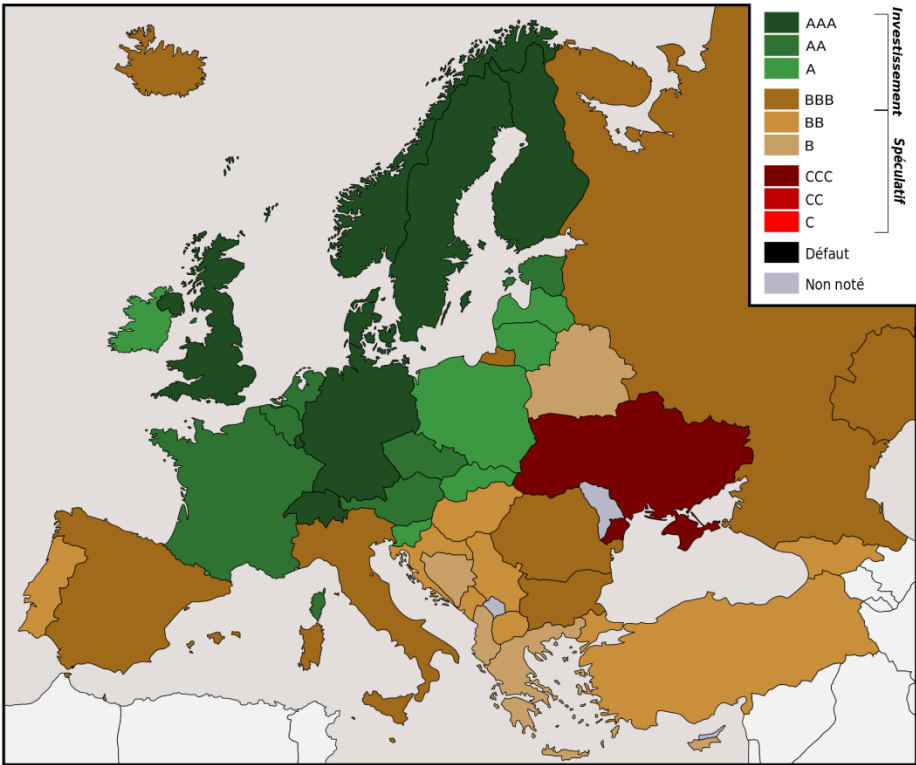
The relationship between a lack of solidarity and QE has to do with the legal structure of the Eurozone. The first legal issue is about the non-existence of 'federal Eurobonds'. As said before, most CBs are prohibited from engaging in fiscal policy. This is because executing fiscal policy would endanger the independence of CBs, which they need in order to perform their monetary and regulatory tasks. Fiscal policy is too closely related to (national) politics, and therefore the CB' fiscal stance would alter with every new government. As buying bonds from governments directly is a fiscal rather than a monetary policy, CBs are not allowed to do it. In the case of the ECB, Article 123 of the Treaty on the functioning of the European Union (TFEU) states:

"Overdraft facilities or any other type of credit facility with the European Central Bank or with the central banks of the Member States (hereinafter referred to as 'national central banks') in favour of Union institutions, bodies, offices or agencies, central governments, regional, local or other public authorities, other bodies governed by public law, or public

undertakings of Member States shall be prohibited, as shall the purchase directly from them by the European Central Bank or national central banks of debt instruments.” (Lisbon Treaty, 2007)

Yet the ECB and other CBs can buy sovereign bonds from private institutions on the secondary market. But the problem for the ECB is that no ‘federal Eurobond’ exists. Should the ECB wish to expand the monetary base through bond purchases, it is therefore forced to buy bonds from individual governments. This would not pose a problem if the ECB would buy bonds from countries with the highest credit rating, such as Germany, The Netherlands or Finland. Yet those countries are not in need of monetary stimulus. It is the debt-ridden countries like Greece and Italy that need actual support and sadly those are also the countries with the lowest credit rating. These countries are more likely than their Northern counterparts to default on their loans or even go bankrupt. Should the ECB choose to buy their junk bonds anyway, this will increase the risk of possible losses. This increased credit risk has to be borne by all nineteen euro countries, as all euro states contribute to the ECB’s budget. Each individual share depends on GDP and population size. The losses the ECB suffers, will have to be recouped through (increased) taxes in all euro partners. Enter the

problem with Eurozone-style QE. For QE in the euro area to be effective, it must be directed towards the countries that are most in need of it. But if bonds are bought from these governments, a substantial transfer of credit risk is the result. This would not be such a problem for the Finnish, as Finland



Standard & Poor's
 Notation financière à long terme des États européens

06/06/2014
 Source : S&P (<http://www.standardandpoors.com/home/en/eu>)

contributes only 1.8% to the ECB's budget. But for Germany, which contributes almost *one third* (27,1%) to this budget, the increased credit risk means serious business (Danhong, 12 January 2015).

It is for this reason that several German politicians and economists took the Outright Monetary Transactions (OMT) project to the German Federal Constitutional Court. Under the OMT, the ECB would buy risky bonds from institutional investors like pension funds or insurance funds on secondary bond markets. The plaintiffs argued that the ECB was not entitled to purchase bonds that no one else was willing to buy on such a large scale. They argued that the ECB would foist liabilities on its shareholders, i.e. German taxpayers. Because of the OMT programme, the ECB would pose such a high risk on German taxpayers that it would violate German national budget legislation (Danhong, 12 January 2015). Credit risk redistribution was also an issue in the US. Fed president Ben Bernanke was eager to buy bonds from the American federal government. But when asked to buy bonds from American states with low credit rating such as Illinois or California, he firmly refused. He knew it would mean subjecting American taxpayers to higher credit risks and therefore possible fiscal transfers (Blackstone, 7 October 2014).

II.2.d. The difference between illiquidity and insolvency.

Another legal issue with regard to lack of solidarity is the fact that the ECB is allowed to provide liquidity assistance to governments, but is prohibited from bailing them out. This is stated in the *No bailout clause*, Article 125 of the TFEU:

"The Union shall not be liable for or assume the commitments of central governments, regional, local or other public authorities, other bodies governed by public law, or public undertakings of any Member State".

Hence, eligibility for ECB funding is dependent on whether a government (or bank) is illiquid or insolvent. Governments may become illiquid when, for instance, adverse market conditions prevent them from refinancing upcoming debt maturities. In this case the ECB may serve as lender of last resort. The ECB however is *not* allowed to support (i.e. bail out)

insolvent governments – governments that are highly unlikely ever to generate sufficient tax revenues to service their existing debt in full and on time.

But it is difficult to distinguish between governments that are merely illiquid and those that are insolvent. Banks post collateral with the ECB to demonstrate their solvency, but it is much less practical for governments to do so. The ECB's track record shows that it is not well equipped for determining the status of a governments' finances. For example, to market participants it became clear that Greece was insolvent rather than merely illiquid. Yet the ECB continued to buy Greek debt and as part of the Securities Market Program (SMP) (Tempelman, 15 August 2012). It is also possible that the ECB knew all too well that Greece was insolvent, but decided to phrase its financial status as 'illiquid' in order to avoid violation of the EU constitution.

The fact that the ECB has difficulty with determining the financial state of euro members, has a retardant effect on the implementation of quantitative easing. Before actual bond purchases take place, it must be determined which bonds are eligible for purchasing and which are not. But if the ECB is not capable of determining the state of governments, then neither can it determine the state of their debt securities. Hence, it took time for the ECB to implement the Public Sector Purchase Program (PSPP).

II.2.e. Moral hazard.

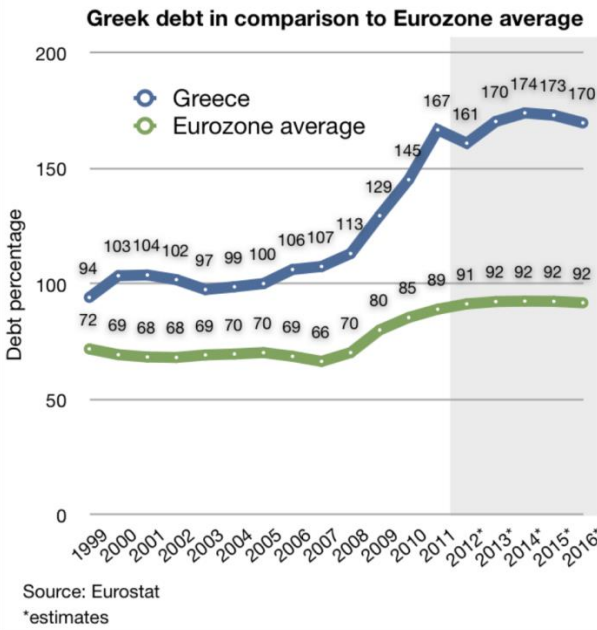
Finally, a limit in solidarity between euro states is demonstrated in the ethical dilemma of moral hazard. QE can remove the incentive for sustainable (fiscal) reforms because government borrowing becomes cheaper. Structural reforms may be needed in the labour market, as is the case in France. There, labour flexibility has to be increased through reforming laws on employee dismissal and wages. Structural reforms may also involve increasing government revenues. This is done for instance in Greece, which has started a program to attack rampant tax evasion. But when governments can increase their expenditures without (much) additional interest payments due to QE, such reforms can be put on hold. Governments are often inclined to stall reforms because they: (a) lead to falling private demand as income levels drop and (b) are very unpopular amongst subjects – see (a). This will therefore endanger re-election. The risk of moral hazard through QE is also referred to as the 'free-rider problem': the more the ECB tries to improve the Eurozone economies by

loose monetary policy, the less individual governments are inclined to implement much needed structural reforms.

QE decreases borrowing costs in two ways. As said before, (long-term) interest rates decrease through targeted asset purchases. Usually, bond prices decrease as a result. This is because the yield of a bond is determined by both the interest rate and its price. If the interest generated over a bond is low, investors will demand a lower price to compensate for the loss of interest returns. But as the ECB is buying up sovereign bonds, the price of bonds is pushed up again because of a decrease in supply. Both low interest rates and high bond prices are beneficial to governments that have considerable debts or intend to borrow.

It is imaginable that the governments of the euro countries will not increase their expenditures, despite the borrowing benefits of QE. Yet data from Eurostat show that most if not all euro countries have chosen the

‘Keynesian path’. As said in Chapter I, Keynesian theory states that governments can supplement decreasing private demand (C+I) by increasing government spending (G). This is exactly what happened: since the onset of the economic crisis, euro countries have increased their public debts substantially. In the next chapter, this will be explained into more detail. As seen in the figure, Greek government debts increased from 107% in 2007 to a staggering 173% of GDP in 2015



(which admittedly must also be attributed to a spectacular decline in GDP). The Eurozone average debt to GDP ratio rose from 66% in 2007 to 92% in 2015. It is therefore plausible that the euro countries will choose to continue their excessive spending when tempted with the benefits of QE.

II.2.e. A fragile banking system.

The fragility of the European banking system is another factor that is related to European integration. This cause for the APP delay however is linked to the integration process itself,

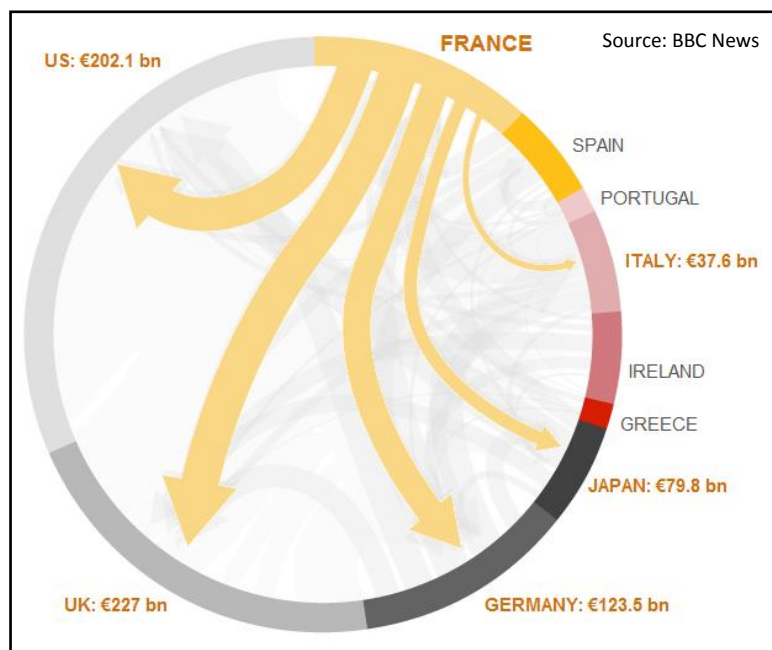
rather than the *lack* of it. Since the adoption of the euro in 1992, the EZ banking system has been intensely linked across national borders. That in itself may not pose such a problem, had it not been for the fact that Europeans depend heavily on banks for credit access.

Private sector lending in the EZ is much more dependent on the banking system than in the US. In theory, QE should help businesses by lowering borrowing costs. After all, QE ensures a decline in interest rates. Furthermore, TAPs by the CB make government paper (bonds) less attractive, encouraging lenders to lend their money elsewhere. But the trouble for businesses in the EZ is that they are heavily reliant on the banks' willingness to lend. For every 10 euro's borrowed by EZ companies, about 8 are provided by banks and only two from capital markets. In the US, it is actually the other way around. In order for QE to be effective in the Eurozone, it is therefore much more important that EZ banks lend out their money than their US counterparts. But while credit conditions –due to ECB liquidity assistance- have improved, at the beginning of 2015 lending was still flat in the EZ and continued to fall in the Southern states. (Giugliano, 20 January 2015).

It is of yet difficult to coax EZ banks back into lending more and to the right people – business owners and consumers. This problem started in 2008 with the rise of so-called 'zombie banks' – banks that are solvent in name only but are kept alive to avoid collapse of the financial system. Zombie banks are usually born of panic attacks in the financial markets, when loans go bad, capital flees and asset values plummet. It is difficult to deal with zombie banks: shutting them down could cause more panic, but nursing them back to health may cost mountains of money. Leaving them alone is also dangerous, as they can cripple the economy for years. This is because zombie banks don't lend out their money to healthy businesses. As a result, their loans do not help spur economic growth. As long as these banks are weighed down by bad loans, the EZ will not experience significant economic growth.

Why are so many near-dead banks kept alive in the EZ? This is due to the intense financial integration in the EZ. During an economic recession, tax revenues and GDP levels decline, which increases a countries' risk of default. When a certain country can no longer handle its debts, overseas banks and other foreign financial institutions that lent money to it are exposed to losses. These external financial institutions in turn have borrowed money from other financial institutions, which become also at risk of considerable losses (*BBC News Business*, 18 November 2011). Due to the common currency it is relatively easy for financial

institutions of euro countries to lend each other and euro governments money. This made the Eurozone, in the words of Harvard economist Kenneth Rogoff, the “ultimate contagion machine” (Fraser, 20 November 2010). The figure on the next page shows to what extent France, second biggest economy of the Eurozone, has outstanding



debt with foreign institutions (*BBC News Business*, 18 November 2011). In order to avoid implosion of the whole EU financial system, and by extension the Eurozone itself, several governments (and the ECB) had to assist or bail out zombie banks and other insolvent institutions. (Fraser, 20 November 2010).

Apart from the fact that QE will not work as long as a significant number of EZ banks remains insolvent, QE can actually worsen the situation. As mentioned in chapter I, QE pushes up the prices of risky financial assets. This is done through decreasing the yields over government paper, thereby encouraging investors to seek higher returns elsewhere. But the artificial increase in the price of risky assets (i.e. the existence of bubbles) was what caused the zombie banks to emerge in the first place. Therefore the APP could ensure a vicious cycle of asset bubbles, zombie banks, stagnant economic growth, QE, and back to bubbles (Onaran, 26 October 2014). The importance of a healthy banking system with respect to QE policy decisions will be discussed further in the next chapter.

In sum, the Eurozone was indeed relatively late with its QE program when it started in March 2015 with asset purchases. Japan had started with QE rounds as early in 2001. The USA followed suit in 2008 and in 2009 the UK joined the group of QE countries. While the QE programs in these countries had some positive results, like an increase in asset values, inflation rates remain alarmingly low in all of them.

There are several reasons for this delay with respect to the APP. Firstly, due to its *Bundesbank*-like structure, the ECB is inherently adverse to any type of loose monetary

policy. Secondly, a lack of solidarity between euro states has hampered the creation of Eurobonds. Consequently, the ECB is forced to buy debt securities from individual member states. The problem is that the ECB has to buy these from debt-ridden countries in order for QE to be effective. This may cause a risk shifting from the South to the North, which the Northerners are not happy with. Thirdly, the ECB is not well equipped for determining whether governments are illiquid or insolvent. This poses a problem for deciding which bonds are eligible for the APP - those issued by illiquid governments- and which are not - those issued by insolvent governments. Fourthly, loose monetary policy like QE increases the risk of governments stalling (fiscal) reforms, which are needed in several euro states for sustainable economic recovery. Finally, the existence of insolvent banks and the interlinked financial system in the EZ, may hamper the effect of QE. It is also possible that in this situation, QE might make matters even worse due to its upwards pressure on asset prices. In the next chapter, we will determine why quantitative easing was implemented in the Eurozone after all.

Chapter III. Why QE entered the Eurozone after all

In chapter II, we established that history has shaped the original aversion against euro-style QE. Especially the Germans were afraid of hyperinflation. When they sacrificed their D-mark, they demanded in return that the new European Central Bank would be equally wary of inflationary evils. The European integration project has gone as far as a common currency, yet not far enough to establish the solidarity necessary for supporting economically and financially ailing member states. In this chapter, we will determine what caused the ECB to finally implement the APP. As mentioned in the introduction, it is the hypothesis of the author that the sovereign debt crisis of 2012 called for non-standard measures. All conventional monetary policies had failed miserably to spur consumption and consequently economic growth. In order to (dis)prove this hypothesis, we must first establish that conventional monetary instruments indeed were futile in curbing the crisis. In the second part of this chapter, we will determine whether QE truly was implemented because it was the best remaining alternative.

1. The Eurozone sovereign debt crisis

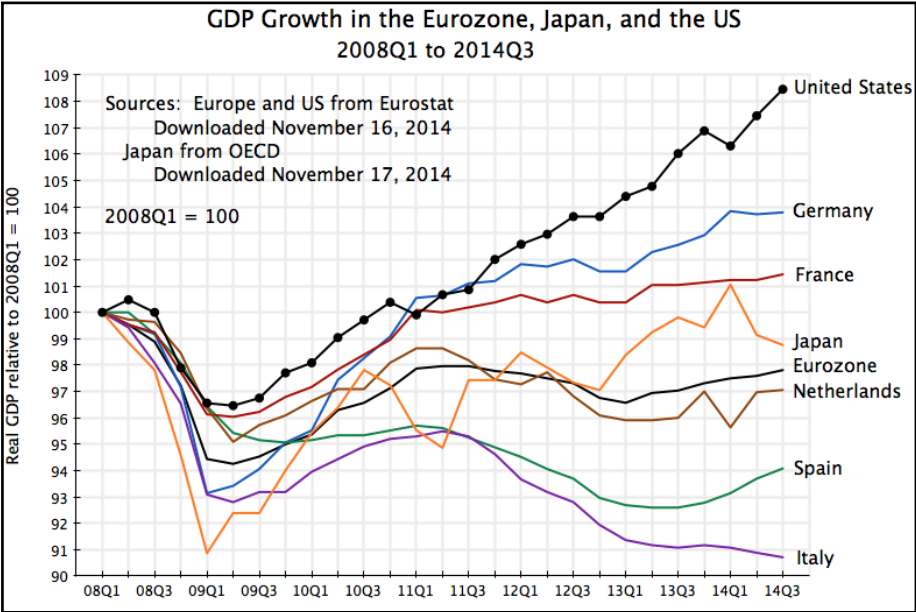
Before we go into monetary policies, we must first discover *why* these were deemed necessary. They were an attempt to curb the so-called 'Eurozone sovereign debt crisis', or 'Eurozone crisis' for short. Europeans are not suffering from the Great Recession any longer, which ended in 2012, but from the Eurozone crisis. This crisis refers to the inability of several euro countries to re-finance or repay their government debt without the assistance of third parties (like the Troika). These debt-ridden countries are referred to as the PIIGS-countries: Portugal, Ireland, Italy, Greece and Spain. The Eurozone debt crisis resulted from several complex factors, such as the globalization of finance; easy credit conditions during 2002-2008 that spurred high-risk lending and borrowing; the 2007-2012 global financial crisis; international trade imbalances; popped real estate bubbles; the lack of coordinated fiscal policy; and attempts by states to bail out troubled banks and private bondholders, thereby assuming private debts or socialising losses. As mentioned in Chapter II, many euro countries accumulated large amounts of debt during the Great Recession. Greece and Portugal had started excessive spending even before that period. This debt accumulation was done in

order to boost economic growth, ease the impact of retracting economies on income levels, and save the fragile and very interconnected financial system of the European Union.

But the problem with debt accumulation is that it cannot go on forever. For instance, bond yields of many governments increased dramatically. Investors saw governments accumulating debts, thereby increasing the risk of default. This led investors to demand higher interest rates

over sovereign bonds.

This resulted in the fact that governments, already debt-ridden, had even more difficulty with paying back their loans. This is why a lot of euro countries have – sometimes under force-implemented so-called ‘austerity measures’.



The meaning of this term varies, but in this article it is referred to as ‘fiscal policy to reduce deficits’. Mind you, it does *not* mean the abandoning of deficit spending by governments altogether. Governments can attempt to reduce their deficits by a decline in expenditure and/or an increase in tax revenues, both of which lead to a decline in aggregate demand. This is why, according to many economists, including Nobel prize winner Paul Krugman, the austerity measures have led to a deepening and prolongation of the recession in most euro countries. Employment rates plummeted, economic growth slackened, lending to private agents came to a standstill and consumer confidence reached a new low. At the end of 2014, the average unemployment rate still stood at 11.5% and the inflation rate as low as 0.4% (Hannon, 30 September 2014). As said before, inflation even dived into negative territory at the beginning of 2015. Two of the biggest European economies, France and Italy, still could not keep their budget deficits below 3% of GDP and asked for loosening of budgetary discipline (Tost, 2 March 2015). As seen in the figure above, average EZ GDP growth has of yet not reached pre-2008 levels, while states like the US have experienced relatively high

GDP growth since 2009. The Great Recession may be over, but the Eurozone crisis lingers on. In the next part, we shall determine what policies have been implemented to get the EZ back on its economic feet and to what extent these policies have succeeded.

2. Failing monetary policies

The ECB has implemented several conventional monetary policies, aimed at either increasing liquidity in the financial system or reducing bond spreads of several euro countries over the yields of German bonds or increase private spending directly.

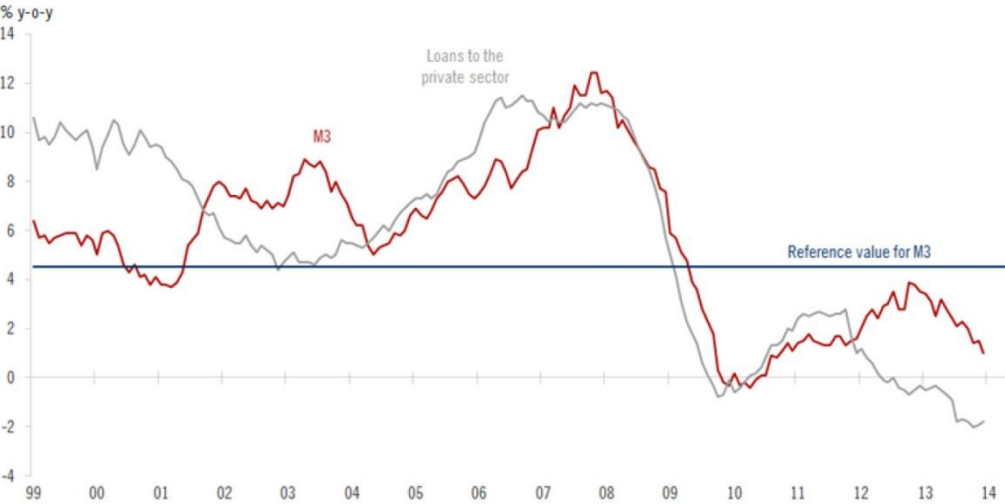
2.a. Liquidity assistance.

During the first years of the financial crisis, the ECB responded mainly by providing liquidity to the banking sector in order to save the financial system. Gregory Claeys, (2014, p. 1) calls this 'modifications of conventional policies'. Increased liquidity assistance made sense at the time: the interbank market and other sources of short-term liquidity funding were almost frozen. As said before, many private banks had to restock their balance sheets with capital to regain what they had lost during the crisis. In addition, it was determined through the 'Basel III Accords' (2011) that private banks had to meet stricter capital requirements. Because of this, private institutions were unwilling to lend each other money, which led to a credit crunch. As a result, the ECB reallocated liquidity through both Main Refinancing Operations (MRO) and Long-Term Refinancing Operations (LTRO) at a fixed interest rate and full-allotment basis. This effectively meant that banks had unlimited access to central bank liquidity, provided they could back up their loans with adequate collateral. The term 'adequate' was redefined multiple times, as collateral requirements were loosened. On top of it all, the Very Long-Term Financing Operations (VLTRO) were introduced, which lengthened the maturity of LTROs to three years (which means banks have three years to pay back their loans). The use of the (V)LTRO facility has skewed towards certain euro countries. Banks in Portugal, Italy, Greece, Ireland and Spain (PIIGS) were accountable for 70% to 80% of total borrowing since 2010. These countries were most in need of liquidity assistance, as capital had fled to 'safe banks' in the North during the financial crisis. As a result of this capital inflow, banks in the North reduced their reliance on the ECB operations

to minimum levels. The LTROs were useful in improving monetary conditions during the liquidity crisis of 2011-2012.

Yet these operations did little to trigger additional lending to the private sector and by extension consumption and investment. Banks either deposited most of the cheap

Euro area: Growth in M3 and loans to private sector



ECB funding with that same ECB for rainy days, or purchased safe debt securities (Claeys, 2014, pp. 6-8). The figure above indicates this. One can see a steady increase in the available money (the M3 curve) since 2010. But the private sector loans curve is actually declining in the same period. Late 2014, the situation became so dire that the ECB actually had to cut down its own deposit rate to -0.2% in order to counter this insatiable desire to park money with the ECB. This policy will be discussed later on in this chapter (Khan, 2 September 2015).

2.b. Reduce bond spreads.

Apart from the liquidity assistance programmes, the ECB also initiated the Securities Market Programme (SMP) in 2010 and the aforementioned Outright Monetary Transactions (OMT) in 2012. Under the SMP, the ECB bought 220 billion euro’s worth of government bonds from all PIIGs-countries. This intervention was justified in light of extreme tensions in several market segments, which was hampering



monetary policy. The effect of the SMP had a positive impact on reducing the level as well as

the volatility of the PIIGS' bond yields. Its effect was however also short-lived, as it was abandoned in 2012 in favour of the OMT. The announcement on OMT had a remarkable effect on bond yields, despite the fact that it had never been used (and never has been used after the announcement either). Interest rates over Spanish and Italian bond yields plummeted down from around 7% to 3% immediately after the ECB announced the OMT, which reduced the spread of their bonds over those of Germany significantly, which shows in the figure (Claeys, 2014, pp. 6-8).

2.c. Forward guidance.

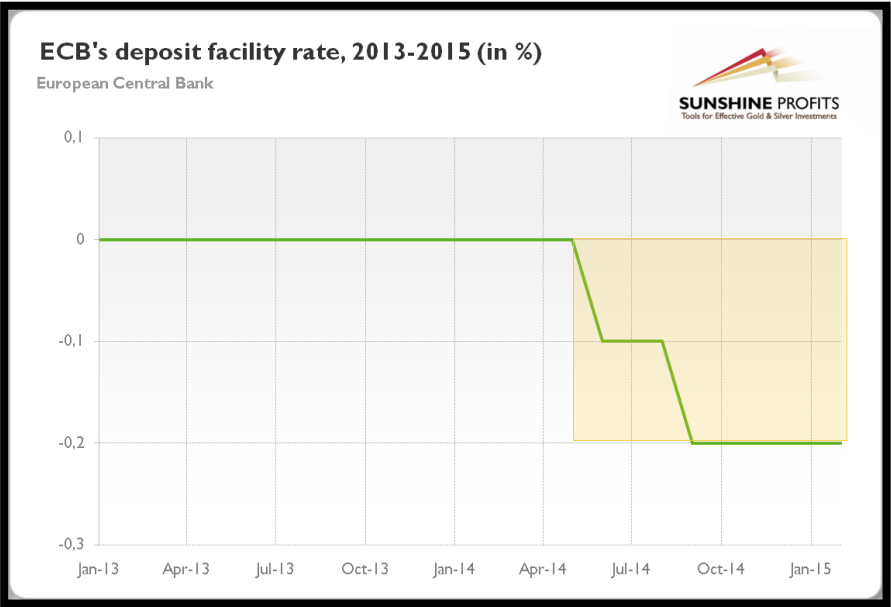
Inspired by the power a promise could have, the ECB implemented a new policy in 2013: 'forward guidance'. As mentioned in Chapter I, forward guidance is one of the policies that belong to the signalling channel. Forward guidance was introduced by Paul Krugman in 1998, when he analysed the on-going deflation and liquidity trap in 1990s Japan. According to Krugman, CBs could still boost the economy at the zero lower bound if they managed to convince the private sector that they would pursue a more inflationary policy *after* economic recovery. In the words of Krugman, the CB had to make a "credible promise to be irresponsible" (Atkins, 14 August 2013). Forward guidance would, theoretically, result in low short-term interest rates for a lengthy period of time and an increase in inflation expectations. Both results would ensure that real long-term interest rates would decline, which leads to more current investment and consumption.

Yet unfortunately, the policy of forward guidance has one great flaw: *time inconsistency*. There exists a period of time between a promise and the actual execution of the promised plans, in which a lot can happen. Suppose a CB has promised to keep short-term interest low for at least three years to boost inflation, which had stood at negative rates for months on end. But then, after just one year, inflation returns to or even above the 2% target. Private agents will then expect the CB to renege on its one-year old promise of low nominal interest rates for three years, because CBs usually raise interest rates to off-set the impact of high inflation on real interest rates. As a result, after one year private agents will not respond to the forward guidance policy anymore. They will instead respond to their conviction that the CB will raise the interest rates, regardless of the CBs' promise to stall the increase in interest rates for at least two more years. Hence, forward guidance commitments of a CB have to be *very* credible to be effective. Especially when it comes to promising low

interest rates after economic growth (read: inflation) has returned, because price stability is universally regarded as a CBs' prime objective.

The ECBs forward guidance policy failed precisely because it was not credible enough. In July 2013, Mario Draghi announced that “the Governing Council expects the key ECB interest rates to remain at present or lower levels for an extended period of time” (Atkins, 14 August 2013). But the ECB quickly killed most positive impact on the economy when it announced that it promised neither ‘irresponsibility’ nor even a temporal suspension of its normal strategy of increasing interest rates after economic recovery. The ECB merely introduced forward guidance in order to better communicate its monetary strategy. This

would better anchor expectations about future policy on interest rates, but it would *not* be a commitment to keep interest rates low for longer than necessary (Claeys, 2014, pp. 6-8). The effectiveness of the ECBs' forward guidance policy was also hampered by a



sharp decline in ECB liquidity that circulated within the financial system. This was the result of banks paying back their cheap loans to the ECB, issued under the LTRO facility. The decline in liquidity resulted in an upward pressure on interest rates, thus contradicting the ECBs promise of low interest rates for an extended period of time (Atkins, 14 August 2013).

2.d. Cut the deposit facility rate.

Contrary to the usual process of copying the policies of the Fed and the BoE, the ECB was actually the first central bank to implement another policy tool in 2014: a negative deposit facility rate. This policy instrument has two alleged results: (1) it will weaken the euro and (2) it will induce private banks to lend money from their excess reserves to the real economy. These are exactly the same objectives for implementing QE.

Deposit rates refer to the interest rates over the reserves that private banks park with a CB. A deposit with a CB works like a low-yield savings account for commercial banks. The ECB, as many other central banks, requires private banks within the EZ to hold deposits on accounts with their national bank. These are called 'minimum' or 'required' reserves (MMR) and are usually a percentage of the total of the private banks' holdings. Since 2012, the required reserve ratio (RRR) has been set by the ECB at 1% (European Central Bank, Monetary Policy Instruments, 2015). These deposits with national banks are meant as readily available liquidity in case of emergency.

But private banks can also hold deposits with the ECB, although they are not obligated to do so. They usually do this when they feel the need to put their money in 'safe' assets, i.e. when risk appetite is low during an economic crisis. The ECB is probably the safest place to park your money as it will never go bankrupt, which in turn results in relatively low interest rates. In times of economic recession, the ECB is not pleased with additional deposits. Because every euro that is parked at the ECB, will no longer circulate in the economy. It will not be lend out to the real economy, and hence inflation and economic growth will not increase. In order to discourage credit institutions from parking their money at the ECB, the ECB can cut the deposit facility rate below zero. As a result, these institutions actually have to pay interest over their savings account instead of generating it. The ECB first cut the deposit facility rate from 0% to -0.1% in June 2014 and cut it again to -0.2% in September 2014 (Jones, 18 November 2015). On December 3rd 2015, the ECB announced a third cut of 10 basis points to -0.3% (Koranyi and O'Donnell, 3 December 2015).

But cutting the deposit facility rate as of yet has not achieved the desired results. Theoretically, negative rates reduce borrowing costs for the private sector, which results in a higher demand for loans. However, private banks can try to transfer their additional costs to consumers by decreasing their own rates as well. Consumers will not like this loss of interest income, so they will keep their money in cash at home. This results in a shortage of loanable funds, which pushes up the interest rates in the long run: exactly what CBs do *not* want during an economic recession. Private banks may also choose to absorb the costs of negative deposit rates themselves, but this squeezes the profit margin between their lending and deposit rates. This decreased profit margin might make them even *less* willing to lend.

The ECB however succeeded in weakening the euro through cutting the deposit facility rates. The euro has been falling steadily by nearly 20% against the dollar since the introduction of negative deposit rates, although a big portion of that is attributed to the APP rather than a cut in deposit rates. The devaluation of the euro raised the price of imports, leading to import inflation. Consequently, the Danish central bank began to zealously pursue negative rates as well – its sole objective was to maintain the fixed exchange rate with the plunging euro. Practices like this might indicate a potentially dangerous situation: a currency war of competitive devaluations, as investors move their money to where it earns the most (*The Economist*, 18 February 2015). The effect of the devaluation of the euro due to QE and negative deposit rates, is explained further in the Discussion.

3. QE: the best alternative left?

From the information above, we can conclude that the EZ has not yet (fully) recovered from the sovereign debt crisis. Several monetary policies have been tried, which resulted in a lowering of bond yields and a depreciation of the euro. However substantial economic improvement, such as an increase in inflation rates and inflation expectation, have of yet not been achieved. The first clue that QE was implemented because the ECB was running out of (good) options to curb the Eurozone crisis, is the fact that the ECB has classified its QE programme, called expanded Asset Purchase Programme (APP), under ‘unconventional monetary policy’. In the literature, non-standard monetary policy usually refers to policy tools that are meant to circumvent the lower bound problem.

On the 25th of August 2015, ECB Vice-President Vítor Constâncio remarked in his speech at the Annual Congress of the



European Economic Association at the University of Mannheim: “Together with a

programme of targeted liquidity provision and a programme of private sector asset purchases, the PSPP (part of the APP) marked a new phase of the ECB's unconventional monetary policy" (European Central Bank, 25 August 2015). Constâncio further stated that the new PSPP programme would be a step-up from previously implemented unconventional policies, meaning the negative deposit facility rates and forward guidance (ecb.europa.eu, 25 August 2015). From earlier information in this research, we can assume that this 'step-up' was needed because three factors still hamper economic recovery in the Eurozone:

1. Low inflation and low inflation expectations
2. Debt burdens for countries like the PIIGS
3. Bank-lending is not performing as it should

Quantitative easing happens to have a positive effect on all these three aspects of economic recovery (at least in theory), which suggests QE as the best answer to the current crisis. Let us study the three aspects into more detail.

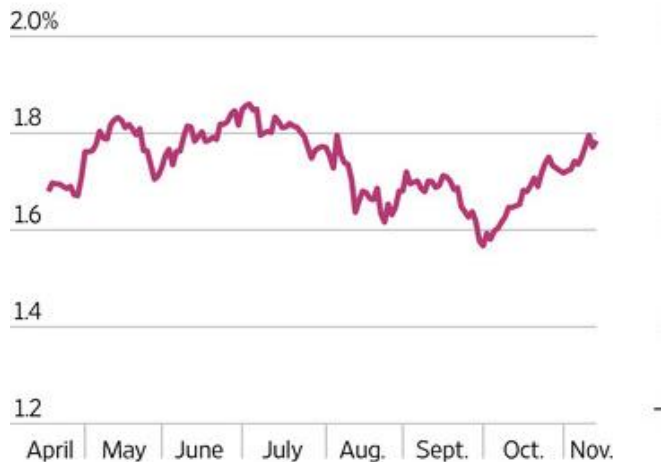
3.a. Increase the inflation rate through credible commitments.

The first and foremost reason for implementing QE in the Eurozone, was of course an increase in the inflation rate. The 2% annual inflation target is of yet nowhere in sight. As explained in Chapter I, QE can raise the inflation rate through an increase in the money supply, although the quantity theory of money has been criticized since the 1990s. The ECB can however resort to other, more solid channels through which the inflation rate is manipulated indirectly. There are two such channels: a credible commitment and the subsequent improved inflation expectations, which are both sub-channels of the signalling channel. It is clear that Mario Draghi had these two channels in mind when he announced 'his' bond-buying programme in January 2015: "Expectations only work if there is a certain credibility" (Blitz and Crum, 21 October 2015). As said before, the ECBs' forward guidance tactics had failed because they were not supported by credible commitments. The ECB was therefore unable to convince the public of its commitment to low key interest rates for a long time.

Further along in 2015, ECB policy makers reconfirmed that QE had been implemented to achieve credibility and higher inflation expectations. Vítor Constâncio mentioned in his speech the various channels through which QE was expected to stimulate aggregate demand. The first channel he mentioned was the signalling channel. The ECB signalled its

commitment to maintain an “accommodative monetary policy stance” through the expansion of its balance sheet. As said before, with such an extended portfolio, the ECB would expose governments to unwanted tax increases if it were to raise the interest rates again. As a result of this strong signal regarding low interest rates, Constâncio argued that the PSPP would have a direct impact on medium-term inflation expectations. He said: ‘It is expected that when forming expectations about future inflation, market players factor in the effect of this non-standard policy measure’ (European Central Bank, 25 August 2015).

Market expectations for eurozone inflation in the medium term*



*Based on the five-year-five-year swaps prices; through Thursday
Sources: Thomson Reuters (inflation expectations); Tradeweb (bond yields)

Peter Praet, Member of the ECB Executive Board, mentioned in a speech at the Eurofi conference (Luxembourg, 9 September 2015) that the ECB had achieved its QE objective to raise inflation expectations. “The ECB’s expanded asset purchase programme has met with our initial expectations. First of all, it has strongly signalled the ECB’s commitment to deliver its medium-term price stability objective, which has in turn been reflected in an upward shift in inflation expectations at all horizons” (European Central Bank, 9 September 2015). Praet also stated that the deflationary effect of the steep fall in oil prices had been mitigated by the ECB’s QE program. Lastly, the signalling effect of the APP had been visible in solidifying business and consumer confidence, underpinning a broadening economic recovery (European Central Bank, 9 September 2015).

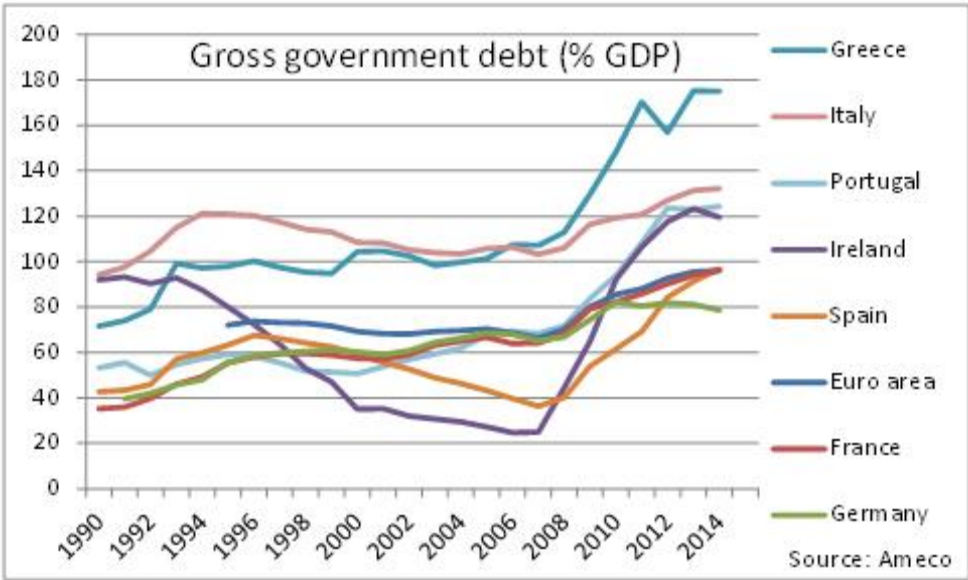
3.b. Relieve the debt burden.

Secondly, the ECB can provide temporary relief for debt-ridden euro members (i.e. the PIIGS: the figure below shows that of the PIIGS, only Spain had a debt to GDP ratio below euro zone average). Peter Praet, Member of the ECBs’ Executive Board, commented in June 2015: “I see two risks in particular to a stronger, structural recovery. [...] The second is the persistence of a debt overhang in parts of the euro area which acts as a major drag on firm and household spending” (European Central Bank, 30 June 2015).

QE can be used as tool for debt-reduction. The first, obvious method for this would be through debt monetizing. As explained in Chapter I, a central bank can use QE money to buy sovereign debt securities. Governments pay interest over these bonds, but the CB will just return these profits at the end of the year. On the bonds held by the CB, a government is paying interest to itself, which is the same as not paying any. Debt monetizing happens more in developed countries than you might think. For instance, the US government debt to GDP ratio is not really 105%, but merely 89% (Duncan, 28 August 2015).

However, data on ECB asset-buying and the eligibility criteria for euro denominated debt securities suggest that the ECB did *not* intend to implement QE as a tool for cancelling out sovereign debts. For instance, Greek securities were excluded from the PSPP because its collateral waiver was not yet in place. Since the onset of the PSPP, the ECB has bought 92,279 million worth of German debt securities (bonds). Yet it has bought *none* of their Greek counterparts. Furthermore, Cypriot securities were also not eligible for the PSPP at its on-set, because they were undergoing a review period (European Central Bank, Asset Purchase Programmes, 2015). The ECB knew its constraints with respect to PSPP in advance and therefore it is unlikely that its QE programme was implemented in order to relieve the PIIGS of their considerable debts. Or any euro country for that matter, since ECB purchases were not allowed to exceed one third of a country’s debt issuance, or 25% of any given issue (Delivorias, 2015, p. 4). This must be a relief to many Northern Europeans and neoclassical economists. It seems that the ECB is not turning the Eurozone into Zimbabwe after all.

Yet QE can relieve the PIIGS countries of their debt burdens in another way, by off-setting the deflationary pressure of wage cuts. As part of either the self- or



Troika-imposed austerity measures, all five PIIGS introduced nominal wage moderation. The reason for this is well explained in a Staff Discussion Note issued by the IMF in November 2015. When a country is hit by a decline in foreign as well as domestic demand (i.e. an economic crisis), the usual policy is to lower interest rates and depreciation of the currency. But for countries in a currency union, like the PIIGS, the depreciation tool is not available. After all, they have no autonomy with respect to their currency. Neither is the policy tool of lowering interest rates available, since the lower bound had already been reached. The remaining option is the implementation of a so-called 'internal devaluation' to regain competitiveness. An internal devaluation consists of wage moderation to suppress price levels relative to other countries. This boosts exports, which decreases the sizeable trade deficits of all PIIGS countries. Since trade deficits account for a considerable part of current account deficits, a decrease in trade deficits by extension results in a decrease in government debts.

The problem was that all five PIIGS implemented the wage cuts simultaneously. Should a single EZ crisis-hit state undertake wage moderation, the net effect on output is positive for that economy as well as for the whole EZ. For instance, wage cuts ensure that labour becomes cheaper relative to capital, which may convince companies to invest in workers rather than machinery. But because the internal devaluation was introduced in all PIIGS at the same time, a lot of workers in the EZ suddenly had less money to spend. This led to negative spill-overs to other non-crisis countries, as countries that exported to the PIIGS suddenly found that demand in the PIIGS had plummeted (who together account for 30% of Eurozone GDP). As a result of this decrease in demand, output in the non-crisis EZ countries was also affected negatively. As was explained in Chapter I, a rapid decline in aggregate demand increases the risk of deflation. Deflation is considered bad for the sustainability of government debt because it increases borrowing costs. After all, deflation ensures that money is worth more in the future. Hence, debts also become 'more valuable' (i.e. more expensive). Luckily for the euro countries and the PIIGS especially, QE can mitigate this deflationary pressure (Decressin, Espinoza, Halikias, Leigh, D., Loungani, P., Medas, Mursula, Schindler, Spilimbergo, Xu, 2015, pp. 4-9).

However, the literature used for this research does not mention that mitigating the deflationary effect of wage moderation was actually one of the original reasons for

implementing the APP. It is for instance not mentioned in any speech used as a source here. Yet the APP as a tool for off-setting wage cuts and henceforth debt overhang, would follow logically from the information used in this research. For instance, the ECB knows that the APP can mitigate deflation – that was the whole point of the programme. It, as a member of the Troika, also knew that the PIIGS had implemented wage moderation. In addition, the ECB knows that wage moderation leads to deflation and it knows that deflation makes debts more expensive. Ergo, the ECB knew that the APP could mitigate debt burdens of the PIIGS. And as said before, the ECB regards debt overhang as one of the most hampering factors in economic recovery in the EZ. It is therefore plausible that the ECB intended the APP to relieve the debt burden of the PIIGS, rather than that this being a mere unexpected yet pleasant side-effect of the programme. Additional in-depth research can provide more substance to this assumption.

3.c. Improve bank-lending.

A lack of lending has been dubbed by the *Financial Times* as “one of the most pressing problems of the euro area” (Jones, 20 October 2015). As said before, the reason why bank-lending is so important in the EZ, is because the private sector relies so heavily on banks for credit access. Data from the European Commission (EC), show that compared with the US, European SMEs receive five times less funding from capital markets. The EC is currently even contemplating a Capital Markets Union, in order to make credit from capital markets more accessible. According to estimates by the EC, 90 billion euro of funds would have been available for financing companies between 2008 and 2013 if Europe’s markets for venture capital were as deep as markets in the US (European Commission, 30 September 2015, p. 4).

Hence, it is not hard to believe that the APP was implemented to improve credit standards and conditions in the European banking system. We find evidence for this in a speech by Peter Praet, Member of the Executive Board: “What ultimately matters from a monetary policy perspective, however, is not how well we achieve our operational targets but how much our interventions are reflected in a reduced cost of borrowing for firms and households. Here we see a positive impact from the APP on both the bank and market finance.” Praet also said that the APP was contributing to an easing of credit constraints in the euro countries (European Central Bank, 30 June 2015).

He based this statements on the 3rd quarterly Bank Lending Survey (BLS) of 2015, in which the APP played a prominent role. The BLS is conducted by the ECB and is a quarterly poll of the euro area's 141 most important banks. The BLS of October 2015 stated that, regarding the impact of the ECB's expanded asset purchase programme (APP), banks had reported that the additional liquidity from the APP was being used for granting loans. Furthermore, the APP had a net easing impact on credit standards and particularly on credit terms and conditions. The easing impact was greatest for loans to enterprises, which improved with 29%. The BLS however found that banks had toughened their requirements for loans to households compared to the previous six months (European Central Bank, October 2015, pp. 23-27). The BLS also suggested that the APP had had a positive impact on the 'financial fragmentation' in the EZ. This refers to the divergence in credit conditions in the stronger (the North) and the weaker (the South) regions of the currency area. The BLS based its suggestion on the fact that credit standards in Italy, which had previously been affected severely by the lending drought, had by far improved most of all (European Central Bank, October 2015, pp. 13-18).

4. QE: not the best alternative left after all?

The ECBs quantitative easing programme seemed the ideal answer to the three most important factors that keep hampering economic recovery in the euro zone: low inflation, high sovereign debts and little bank lending. But there are also two arguments that undermine the thesis that QE was the best answer to the Eurozone crisis. Firstly, the APP was implemented right after publication of test results about the EZ banking system. This indicates that the QE programme was implemented after the banking system had recovered sufficiently, instead of being the tool that had to *accomplish* this recovery. Secondly, policy makers are nowadays contemplating moving the interest rates of commercial banks into negative territory. This policy tool is, to many, much more of a means of last resort than QE as it implies the (gradual) abolishment of physical cash.

4.a. Wait for the banking system to regain confidence and stability.

The European QE programme was implemented barely three months after extensive bank stress-testing. As mentioned in Chapter II, the onset of the 2008 crisis led to the emergence

of insolvent banks. These banks had to be kept alive in order to save the intensely integrated financial system from implosion, which partly led to the emergence of the 2012 European sovereign debt crisis. As QE would not work while zombie banks existed or could even lead to a new generation of such banks, it stands to reason that a QE programme would not be implemented before big commercial banks had restored their health. And, more precisely, were confident enough about their health to start lending again. This is all the more important since Europeans are so dependent on banks for access to credit.

A number of speeches by Mario Draghi suggests that the ECB president wanted to wait with QE until the 'Asset Quality Reviews' (AQRs) were finished. AQRs are conducted by the ECB and are comprehensive audits of the value of the assets constituting the balance sheets of EZ banks. As the largest asset pile of most (EZ) banks consists of their loan books, the value of the collateral put up for their loans are also assessed. The European Banking Authority (EBA) had already conducted 'stress tests' in 2011 and 2014 to determine the risk of bankruptcy and the requirement of a taxpayer-funded bailout. These tests however proved not entirely reliable, as several banks that were declared fit by the test results toppled mere months after (Hirst, 23 January 2015).

The AQRs were an addition to the 2014 stress-test and were applied to 123 big banks in the EZ. They were effectively a much more rigorous health check of the European banking system. This check had to reassure investors of the health of the banks and force banks with weak balances to raise additional capital. The 2014 AQRs showed that out of 130 banks, 25 of the biggest banks failed the health check. Of these, 12 had already raised the required capital to cover the shortfall, but the rest was required to raise an additional 9.5 billion euro's. The AQRs lead to a better understanding of the solvency of banks, which ensured that potentially 'zombifying' banks could be spotted early. This would decrease the risk of bad loans to these banks and endangering them further, thereby stabilizing the financial system. Secondly, because of the AQRs, commercial banks had better insights in their own solvency and riskiness of their assets. After they had passed the most rigorous financial check ever conducted, banks felt more confident that they could lend out money without adding risks to themselves they could not bear. Hence, they should start to lend out more money and therefore QE would be more effective. The timing of QE is in line with this

explanation. The results of the AQRs were published late October 2014, and barely three months later the ECB announced that it would start with its APP (Hirst, 23 January 2015).

4.b. Abolish the lower bound constraint for interest rates.

Throughout this research, we have been determining whether the APP was the best alternative for lifting the Eurozone finally out of the crisis that has been going on since 2012. Yet the term 'alternative' implies that there are multiple options to choose from. So in order to establish that quantitative easing was indeed the best option left, we must (a) establish that it was not the *only* option left and (b) that other options were less desirable and/or operable.

The first part is quite easily proven, as the 'abandonment of zero lower bounds' (ZLB) has recently come to the front in policy debates as a possibility for curbing the Eurozone crisis. Theoretically, abandoning the ZLB for all key interest rates acts as an incentive for commercial banks to cut their own interest rates below zero as well. An example of this would be a negative interest rate over savings accounts. The idea of removing lower bound constraints, re-emerged after it was established that cutting the deposit facility rate by the ECB had had no apparent adverse effects. As explained before, negative deposit rates could have decreased the willingness of banks to lend, but this did not happen². There was also other evidence that cutting key interest rates below zero did not have negative results. For instance, the Swiss money markets apparently did not become impaired after the Swiss National Bank had set its deposit rate at -0.75% (Armstrong, Caselli, Chadha, Den Haan, 2 August 2015).

The second part – the option of abandoning the lower bound constraint is less desirable/operable than QE – is also not difficult to demonstrate. This is because this policy comes with one very big problem: there remains the possibility of money holding. As long as physical cash exists, economic agents can withdraw their money from their bank account. Hence, the most renowned method of getting the interest rates below zero is decreasing the importance of physical cash. As early as 1916, German economist Silvio Gesell introduced the idea of levying taxes on physical cash transactions. Cash had to be taxed on payment in

² Though neither did this policy *improve* bank-lending.

order to generate a negative return. Another idea was to withdraw large bills and replace them with electronic money, which can pay a negative interest rate (Armstrong, Caselli, Chadha, Den Haan, 2 August 2015).

The conference on the ZLB that was organized by Imperial College London, the Swiss National Bank and the Center for Economic Research and Policy (CEPR) in May 2015, demonstrates the considerable attention that the ZLB is currently attracting. Benoît Coeuré, Member of the ECB Executive Board, held a speech during this conference, which is a good summary of the pros and cons of removing the ZLB constraint. According to Coeuré, removing the ZLB can be done through either taxing currency holding or abolishing cash altogether. Aside from pushing the nominal interest rates deeper into negative territory, this policy has other advantages. For instance, a tax on cash can act as a tax on criminal activities and can increase transparency. Furthermore, people could economise on the costs of storing and using their money.

On the other hand, removing the lower bound comes with psychological as well as operational problems. In peoples' minds, cash ought to be a zero return asset, while the nominal interest rates on deposits has to be non-negative. Hence, savers perceive a negative interest rate on deposits as an unfair wealth tax. People feel like they are being punished for their prudent money management. Extending a negative interest rate to cash would deepen this feeling of unfair treatment. People could of course invest their money in risky types of assets such as equities, rather than holding it. But this would raise issues with respect to inclusion, since not all people are accustomed to using computers or smartphones. In his speech, Coeuré mentioned that he is not opposed to abolishing physical cash. But he views this should be the natural result of changing technologies and social perceptions, rather than policy prescriptions (European Central Bank, 19 May 2015). Coeuré also mentions three operational arguments against removing the lower bound:

1. It will not solve all problems related to monetary policy. It is no guarantee that lowering key ECB rates deeper below zero will ensure a faster return to growth in the EZ. For instance, a freeze in the interbank market hampers a smooth transmission of the policy interest rate throughout the banking sector and financial markets in general. In other words: low ECB rates will not lead to low commercial bank rates. Moreover, the policy measures already implemented have resulted in real interest

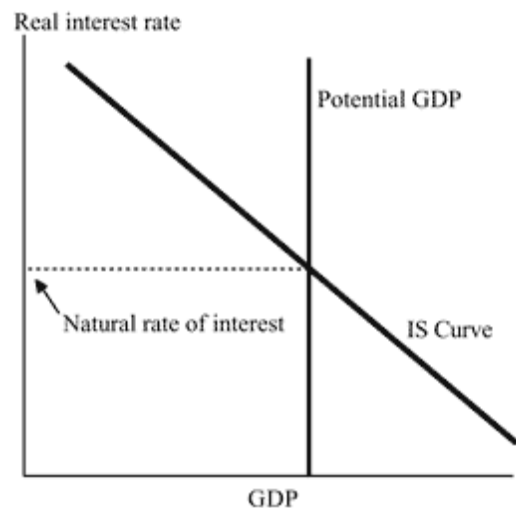
rates well below the long-term growth rate. This already creates sufficiently powerful price incentives to borrow and invest.

2. Persistently low interest rates can lead to financial instability. While real interest rates remain below the long-term growth rate, people are tempted to borrow to purchase risky and scarce assets, such as real estate. This may result in artificially high prices, resulting in bubbles and excessive leverage. The abolishment of the lower bound can increase these risks.

3. It could be that economic or demographic reasons caused the lower bound rate. The 'natural' real rate may have fallen very low or even reached negative territory. The

natural real interest rate is also called the equilibrium interest rate. It depends on potential GDP and the IS (= Investment and Savings) curve. In other words, the natural real interest rate is a 'fictional' rate, set in a situation where GDP is growing according to its trend and inflation is stable. The natural real interest rate can fall below zero due to low productivity low or a decline in population growth. Both phenomena are currently present in the Eurozone (European Central Bank, 19 May 2015).

Figure 1: Determination of the Natural Rate of Interest



Other economists have mentioned the distributional consequences of a negative lower bound, which are similar to those of QE. As explained in chapter I, the poor and middle segments of society rely disproportionately on cash, be it either physical or electronic. Levying taxes on physical cash will therefore affect them more than rich people. Furthermore, the financial system may be exposed to considerable losses because many pension benefits and guarantees are based on nominal return contracts. Finally, abolishing physical cash has a political component, as, for instance, electronic transactions are traceable. Abolishing physical cash may therefore lead to an erosion of privacy (Armstrong, Caselli, Chadha, Den Haan, 2 August 2015).

In sum, non-standard measures were needed to respond to the sovereign debt crisis that has swept the Eurozone since 2012. Conventional monetary policies were insufficient to spur inflation and consequent economic growth. The ECBs' liquidity assistance helped commercial banks with recapitalizing their balance sheets (thus saving the financial system from collapse), but it did little to improve bank lending. The SMP and the OMT were successful in reducing bond spreads, but were terminated prematurely. The ECBs' forward guidance policy was doomed because its commitments were not credible enough. Finally, the ECB decided to cut its deposit facility rate. This resulted in a depreciation of the euro, but did not trigger substantial additional bank lending.

As a result, the Eurozone was faced with three problems regarding economic recovery in early 2015: low inflation; barely sustainable sovereign debts and near-frozen bank lending. At first glance, quantitative easing seems the ideal answer to all of the three problems. It is therefore plausible that policy makers thought QE would be the best alternative left to battle the ongoing problems. We find evidence for this in speeches of several important ECB policy makers such as Mario Draghi, Peter Praet and Vítor Constâncio. According to those speeches, the APP was meant to spur inflation through the signalling channel, by giving credibility to the ECBs' commitment to low short-term interest rates for a long period of time. This would result in higher inflation expectations, which in turn would lead to increasing inflation rates. Secondly, the ECB could have relieved the euro countries of their debts through debt monetizing, but data and eligibility criteria suggest that this was not its original intention. But the APP could have been intended for debt relief via an off-set in the deflationary impact of wage moderation in the PIIGS countries. Lastly, the APP is mentioned to have had a positive impact on credit standards and conditions. This suggests that the APP was meant to improve bank lending.

There are two arguments against the notion that the APP was implemented because it was the best answer to the ongoing problems in the Eurozone. Firstly, the APP was introduced very soon after the results of the Asset Quality Reviews were published. The AQRs pointed out the insolvent banks within the financial system. Therefore, measures to restore them to health could be taken. Moreover, banks that actually passed the tests, felt more confident about their own health. This could result in them increasing their number of

loans. Both the measures for insolvent banks and the increased confidence of healthy ones, lead to recovery of the banking system. As quantitative easing does not work well if the banking system is unhealthy or may even worsen the situation, it stands to reason that the ECB had waited with the APP after the banking system had recovered sufficiently. In this case, the APP was therefore a *result* of economic recovery, rather than the cause.

Secondly, there exists one other option for battling the Eurozone crisis: abolishing the lower bound constraint for all key interest rates. This monetary policy tool could have been regarded as a better option than the APP. The fact the idea has recently come to the front in policy discussions, proves that policy makers are at least thinking about implementing it. However, removing these constraints implies a decrease in the importance of physical cash. This comes with considerable psychological and operable issues. For instance, there is no guarantee that negative ECB key interest rates result in negative commercial bank interest rates. Furthermore, abolishing cash disproportionately affects the lower and middle segments of society. To many, including Peter Praet, the world is not yet ready for the abolishment of physical cash. Thus, the possibility of removing lower bound constraints actually gives credence to the original thesis, rather than undermining it. It proves that the APP was indeed an alternative, rather than the sole remaining policy option. More importantly, it suggests that of the two options, the APP was the most desirable.

Conclusion

This research paper started out with one question and two hypotheses. The question was as follows:

To what extent did the 2012 Eurozone sovereign debt crisis lead to implementing quantitative easing in the Eurozone in 2015?

First, we had to establish what quantitative easing was, what it is supposed to achieve and what its potential downsides are. In its purest form, QE refers to an increase in money supplied to the financial system. A Central Bank releases a massive amount of liquidity into the market by buying up short-term government bonds. When more money is available, the idea is that private banks will lend out the additional money to each other and to consumers. This results in increased private sector spending and investing.

The form of QE that was implemented in the EZ, is called 'targeted asset purchases'. Pure QE refers to increasing the *size* of a CB balance sheet, while TAPs refer to a change in *composition* of a CBs asset portfolio. TAPs are considered more dangerous than pure QE, as a CB sells short-term bonds and uses the proceeds to buy long-term bonds. Holding large amounts of long-term bonds increases the riskiness and illiquidity of a CBs' asset portfolio.

The most important reason for implementing QE in general, was an increase in the inflation rate. Western CBs were nowhere near their annual target of almost 2% inflation. The reason why this inflation target is much desired, is because higher inflation leads to lower real interest rates. And in times of economic recession, low real interest rates may coax banks and consumers alike to save less and borrow more. This will lead to an increase in aggregate demand and henceforth real economic growth. Other intended effects of QE entail better inflation expectations through policy signalling effects; depreciation of the currency and higher prices of safe assets. Policy signalling effects and currency depreciation both supposedly lead to higher inflation rates. Increasing the price of safe assets makes them less attractive in comparison to risky assets. The intention is that investors will buy risky assets, which have a more profound effect on the real economy than safe assets like government bonds.

But QE is not called controversial for nothing. Aside from these positive effects, this monetary policy instrument can have less desirable consequences. The inflation rate may spiral out of control, asset bubbles may pop up, the income inequality gap may be widened and CBs may engage in debt monetizing.

Now we have arrived at the first hypothesis: the history and structure of the EZ is such that it is not well suited to QE. This hypothesis has proven valid throughout this paper. Firstly, the German fear of uncontrollable inflation has been transferred to the Governing Council of the ECB. The ECB is modelled after the German *Bundesbank*, as a way of appeasing the Germans after they were forced to give up the D-Mark and because the *Bundesbank* proved such a success story. As the *Bundesbank* was a symbol of independence from politics and of rigid price stability, so has the ECB been modelled on these values. As such, the ECB is in structure relatively averse to any type of loose monetary policy and therefore to QE as well.

Secondly, solidarity with the weaker member states is limited in the Eurozone. The EZ is not a federation like the United States or Germany. One reason for this, is that since the inception of the EZ, the North has mostly been supporting the South. As solidarity is supposed to be a two-way street, it is not surprising that the Northern Europeans remain unwilling to commit to risk-sharing. They fear that this risk-sharing will turn out to be risk-shifting.

With respect to QE, the lack of solidarity that is typical for the EZ is visible in several ways. Firstly, the EZ does not issue its own 'Eurobonds': only individual member states can issue their own debt securities. Even though the ECB is permitted to buy debt securities in the secondary market, this may invoke fierce criticism. The reason for this is simple: the countries that are most in need of QE are also the ones with the highest risk of defaulting. And as all member states contribute to the ECBs budget, the risk of financial losses is transferred to all euro countries. Many (Northern) euro states are not happy with this prospect. On top of that, the Northern countries may enhance moral hazard by bailing out the Southern countries like Greece. As the ECB buys up Greek government bonds against low interest rates and long-term maturity, this makes borrowing very attractive to the Greek government. Especially in times of economic crisis, when it is considered sensible by Keynesian theory to increase government spending. The governments that need fiscal reforms the most, may postpone those reforms because the ECB is financing them for the

time being. Limited solidarity has also resulted in the No Bail-Out Clause: the ECB is not allowed to support insolvent governments. But the ECB is not well equipped for distinguishinh between illiquid and insolvent governments. This hampers the process of determining which debt securities are eligible for the PSPP and which are not.

Thirdly, there exists a large number of insolvent commercial banks in the Eurozone. This in itself may not pose such a problem, had it not been for two complicating factors. First, due to the existence of a common currency, the financial system in the Eurozone is intensely interconnected. Should one bank topple, this may have a snowball effect with the implosion of the whole system as a result. Secondly, corporate and consumer financing in the Eurozone is much more dependent on banks than on capital markets. It is therefore to European extremely important that bank lending is functioning well. Quantitative easing can have a distorting effect on asset prices, which leads to asset bubbles. And asset bubbles led the zombie banks to emerge. Hence, QE can set in motion a vicious cycle of asset bubbles, zombie banks, credit draught, quantitative easing and asset bubbles again.

Now we can turn to the second hypothesis: the ECB implemented QE because it was the best tool left in its monetary policy armoury. The Great Recession and the consequent Eurozone debt crisis could not be tackled by conventional monetary policies. In the first years, the ECB implemented several policies directed towards increasing the liquidity in the financial system, done through the MROs, the LTROs and the VLTROs. This additional liquidity however mostly did not reach the real economy. Private banks either just restocked their own balance sheet with government bonds or deposited the cheap ECB money with that same ECB.

The ECB also tried to reduce the spreads between bonds of the PIIGS and Germany by buying up bonds of the former through the SMP programme. Reducing the spreads between the bonds of those countries and Germany meant that the PIIGS did not have to pay sky high interest rates over their loans. The SMP worked but was short-lived, as it was soon replaced by the OMT. The OMT might have worked as well, had it not been killed prematurely by furious Germans who claimed that the risk attached to the OMT violated their laws on budget discipline.

The OMT did however spur another monetary policy: forward guidance. The announcement of the OMT alone had such a great effect on bond spreads, that the power of

a promise was recognized. Forward guidance refers to signalling to private agents the monetary strategy for the coming years. Forward guidance may however prove ineffective due to its time inconsistency, which is what happened in the EZ. The ECB did not make a credible enough commitment. Finally, the ECB tried to force commercial banks into lending by cutting the deposit facility rates to negative digits. This however proved also ineffective, as bank-lending remained well below pre-crisis levels.

Thus, three issues remained to be tackled in order for the EZ economy to recover: the low inflation rate, the barely sustainable debts of several euro countries (mainly the PIIGS) and the continuous slack in bank lending. Quantitative easing in the form of the APP happens to have, at least in theory, a positive effect on all of those three issues. This made it the ideal answer to the lingering Euro crisis.

The quantity theory of money has been subject to fierce criticism since the 1990s and the ECB knows this. Therefore it is unlikely that the ECB intended to increase the inflation rate through an increase in the money supply. This is consistent with the literature, which suggests that the APP was implemented to increase the inflation rate via the signalling channel and the subsequent increase in inflation expectations. With respect to debt relief for the euro countries, it is unlikely that the ECB intended to achieve this through debt monetizing. The eligibility criteria and the sheer scope of the PSPP are simply too limiting for that to happen. The ECB can however offer relief to the debt-ridden euro countries by offsetting the deflationary pressure of nominal wage moderation. Deflation ensures that debt becomes more expensive. Hence, QE can mitigate debt overhang through its positive effect on the inflation rate. Lastly, QE can provide support to the banking system by increasing the liquidity of commercial bank asset portfolios. This ensures that banks have more credit to lend out and can relax their credit terms and conditions.

However, two factors suggest that QE was not implemented in the Eurozone because policy makers thought it the best remaining option for economic recovery. Firstly, the APP was implemented barely three months after the results of the Asset Quality Reviews (AQRs) were published. The AQRs constituted the most rigorous stress-tests ever conducted for commercial banks in the Eurozone. The results were relatively positive. This had two consequences. First, the insolvent banks were spotted and therefore could be dealt with in

an appropriate manner. Secondly, banks who had passed the AQRs felt more confident with respect to the healthiness of their asset portfolio. These two aspects could result in the fact that the financial system was out of danger of zombie banks and had enough confidence to start lending again. It could be that it was not until *this situation*, that QE was seen as a viable option for the Eurozone. After all, QE does not work through the bank lending channel if banks are too scared to lend. It could make matters even worse as long as insolvent banks remain prominent in the financial system. So in this case, QE is a result rather than the cause of (perceived) economic recovery.

Secondly, abolishing the lower bound constraint for all key interest rates is a competitor with the APP for best policy tool for pulling the EZ out of recession. After all, this policy also ought to have a positive effect on inflation and bank lending. Evidence for this is the previous decrease in the ECBs' deposit facility rate, which supposedly had the same effects. However, removing the lower bound constraint comes with changes the world is not yet ready for: levying taxes on physical cash transactions or abandoning them altogether. This however leads to a whole new group of problems, such as privacy issues and an increase in income inequality. Moreover, lowering key interest rates into negative territory is no guarantee that commercial banks will actually follow suit. Hence, removing lower bound constraints is (currently) regarded as less desirable than the APP. As a result, the existence of the former policy is effectively proof that the latter was indeed the best alternative to tackle the ongoing problems with economic recovery in the Eurozone.

Discussion

This research paper was directed towards discovering why policy makers in the EZ took so long to implement quantitative easing and why they did so after all. However, it does not cover all aspects of QE in the euro zone. Below are some suggestions for further research.

First and foremost, this paper only lightly touches upon the economic results of QE in the euro zone. The effects of QE in Japan, the UK and the US have been mentioned more extensively, but the consequences of QE in Europe were mostly outside the scope of this research. It was expected before the implementation of QE that it would have much less effect in the EZ than in the US or the UK. One reason for this is the fact that these countries used the 'shock-and-awe' approach with respect to QE. The financial markets were unfamiliar with this monetary policy, which led to a sharp decline in bond yields. But in Europe, bond yields were already low when QE was adopted there. Another reason for a diminished QE effect in the EZ, is the fact that the sheer scope of asset purchases in Europe was much smaller than in the US and the UK. This is why the general consensus among economists was that QE would have the biggest effect in the EZ through the currency depreciation channel and the signalling channel. An article in the *Economist* (2015) titled 'Quantitative Easing in the euro zone. Better late than never', provides a detailed overview of the expected results of QE in the EZ.

Secondly, the impact of the ECB being the monetary manager of not one, but *nineteen* countries, on the decisions about QE, was not part of this research. Yet the fact that representatives of nineteen countries have had a voice in the decision making process, is bound to have had a complicating, if not a retardant effect on the implementation of the APP. As not every euro state is experiencing the same economic conditions at the same time, ideal monetary responses differ for each of them. For instance, an overheating German economy requires an increase in interest rates. If at the same time Italy is experiencing a fall in aggregate demand, this would require a decrease in interest rates. Finding a compromise which satisfies all representatives of the euro states, who each fight for what is best for their own country, is bound to be a long, difficult process. Especially when it comes to the

implementation of untried and unconventional policies like quantitative easing. The reason why this aspect of the decision making process with respect to QE was not mentioned here, is because it is applicable to *all* policy decisions of the ECB. This research paper focussed on delaying factors (mostly) exclusively related to QE and not on factors that hamper decision making in general.

Thirdly, QE has had major consequences for European states outside the EZ due to the depreciation of the euro. Switzerland, Sweden and Denmark suffered great problems because of this depreciation, even though only the Danish krone is (currently) pegged to the euro. Sweden is in close proximity to the EZ and is economically very healthy, which makes it an attractive destination for capital inflows when the EZ suffers economic crises. During the sovereign debt crisis in 2012, the value of the krona soared against the euro. This appreciation of the Swedish currency was even exacerbated by the decision to raise interest rates in 2011 – a monetary move described by Paul Krugman as “an act of sado-monetarism” (Krugman, 8 April 2013). Denmark and Switzerland had had to deal with similar problems. Denmark was forced to restrict the issuance of Danish sovereign bonds in order to keep investors from buying up too much assets expressed in krone. The Danish bond market has of yet not recovered from this intervention. The Swiss National Bank de-pegged the frank from the euro one week before Draghi’s QE announcement. The Swish currency promptly appreciated by 8.4%, which led to a deflationary spiral that Switzerland is still battling (*Stratfor*, 9 October 2015).

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