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Eemeli Mikkola

How the Quantitative Easing Programs of the European Central Bank and the United States Federal Reserve Differ

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The global financial world has seen a decade of quick and enormous amounts of capital injected into different economies around the world. This is known as quantitative easing. This extreme form of monetary policy has been vital for the global economy. The two largest central banks of the free world are the Federal Reserve in the United States and the European Central Bank. This academic paper focuses on the different methods of quantitative easing by the two central banks. The media often portrays them and their respective policies as indistinguishable. The significance of both of these institutions and their policies are vital for the functioning of the current world. Understanding how and why they operate on such policies is important. Most importantly it is crucial to understand how they affect the everyday life of the public. This paper pursues to deepen the understanding on how and why the central banks have such dissimilar implementation of their respective quantitative easing.

This academic paper was concluded by researching existing reports by the financial institutions themselves as well previously recorded reports.

The central banks share some characteristics, but in fact have contrasting policies as well as arguments on how they implement their strategies. There is a significant reasoning why the central banks implement their strategies in differing ways. The historical, socioeconomic, and markets in general are dissimilar in the realm of the European Central Bank and the Federal Reserve in the United States.

Keywords	Central Bank, Quantitative Easing, Economics

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Glossary

European Central Bank Central bank of the European Union, responsible since January 1999 for setting the official short-term INTEREST RATE in countries using the EURO as their domestic currency. In this role, the European Central Bank (ECB) replaced national central banks such as Germany's Bundesbank, which became local branches of the ECB.

Federal Reserve System America's central bank. Set up in 1913, and popularly known as the Fed, the system divides the United States into 12 Federal Reserve districts, each with its own regional Federal Reserve bank. These are overseen by the Federal Reserve Board, consisting of seven governors based in Washington, DC. monetary policy is decided by its Federal Open Market Committee.

1 Introduction

The money markets as well as the financial markets of the world rely on the strength and control of central banks. The two largest central banks currently of the world free world are the European Central Bank (ECB) and the U.S Federal Reserve System (FED), more commonly referred to as the Federal Reserve. Without these institutions trade of any larger capacity would simply not be possible.

Monetary policy is the set of instruments for the central bank which it uses to dictate the supply of money to the financial institutions, such as banks, corporations, and consumers alike. The ideal situation is sustainable economic growth. Monetary policy is most often divided into two categories. Expansionary, where the central bank combats downturns in the economy by lowering the interest rates, thus encouraging the economy to spend more and invest capital while decreasing the attractiveness of saving money. At the same time, the expanded supply of money makes investments as well as consumption more affordable with reasonable debenture. The other option is the contractionary monetary policy which is used to suppress the supply of money as well as cut the inflation rate. It often affects employment rates negatively but is seen as vital to prevent the overheating of the economy and reinforce the price stability (Gros, 2012).

The central bank intervenes in the market by open market operations, buying and selling short-term bonds. These are traded on the open market with the established reserves to focus on the short-term interest rates, federal funds rate in the US and euro short-term rate (€STR) in the Eurozone. The rate is met by trading assets in the market: selling removes and purchasing adds the asset, or money to the market. The banks are then offered higher or lower rates for the incurred debt, the more assets in the market the cheaper the debt. Purchasing a defined quantity of assets is used to inflate the supply of money. This operation is known as monetary policy, and the most extreme form of monetary policy is quantitative easing. In essence monetary policy is the control of

money to accomplish the consolidation of consistent output and inflation. (Dimitris Christelis, 2020)

The two central banks which set the guidelines for respective monetary policies are seen as distant and monumental institutions and have a significant role in the everyday life of the public. Despite the importance of these monetary institutions to the general public, there appears to be a large gap in the comprehension of these vital institutions, even in the community of business students. To be able to efficiently work in any field of business or any industry it is crucial to understand how the supply of money is controlled and by which entity. Often the media compares the European Central Bank and the Federal Reserve almost as exact comparisons of each other; even the slightest research on the topic clearly shows that the truth is anything but what the media tries to portray. The extent of the impact which the two monetary institutions have on the everyday life of the consumer is substantial, yet rather unknown. The world of central banking is somewhat closed, with most information open to the public carefully scrutinized before publication. This is done to minimize the risks to the global financial markets.

The wealth created by the two monetary institutions is essentially debt. As such, economists argue that all debt in the end must be paid back, with interest. In recent years the world has seen all-time highs in prices, from agriculture to energy. At the same time, the stock market has also been soaring, while new ideas such as blockchains and cryptocurrencies are also seeing extremely high yields.

The first round of quantitative easing after the initial shock of the 2008 financial crisis was inevitable to execute to avoid the similar conditions which occurred after the Great Recession in the 1930s (Burkhanov, 2011).

Both economies and their respective consumers have acclimated to low rates and easily available debt. The world is currently seeing a rise in the Federal Funds rate (Board of Governors of the Federal Reserve System (US), 2022) as well as in the 12 months Euribor (Suomen Pankki, 2022). The initial steps have been gradual, but the rates will

likely rise closer to 3 percent. This is a clear indication that the time of readily available debt is coming to an end. The situation has led to serious over-indebtedness and if the debtor is unable to meet the requirements set by the creditor a default will be imminent. The bloated balance sheets of both central banks have created a liquidity trap where cash is hoarded due to its availability and the low interest rates failing to improve the economy. (G.Kirikos, 2020).

2 Decision Making

The Open Market Committee is the decision-making unit of the US Federal Reserve and is relatively similar to its European counterpart. The Federal Open Market Committee has 12 members 7 of which have permanent voting rights. Every third year nine of the FOMC members are able to vote while heads of the Reserve Banks of Cleveland and Chicago can cast their votes every second year. The head of the New York Federal Reserve has a permanent right to vote. The ECB's Governing Council members rotate on a monthly basis (Linta, 2019).

Similarly, the ECB's Executive Board members comprise the Governing Council. The ECB's decision-making lacks transparency when compared to the Federal Reserve's. The FED publishes clear minutes as well as records of how each stakeholder has voted on a certain matter. The European Central Bank has decided not to publish this information due to the strain which the Council Member might bear if there is a conflicting objective between the ECB decisions and the member country's short-term economic objectives. This does not mean that there would be no information. Press releases, open letters between the European Parliament and the European Central Bank, as well as summaries published on topics all discuss monetary policy (Linta, 2019).

In both central banks, the board's vote and determine the monetary policy for the respective currency area. For this, they use different kinds of economic models and theories, one of which is the dynamic stochastic general equilibrium or DSGE model.

This model takes into consideration time, natural phenomena, and the economic model as a whole. The tool is used only in the world of central banking which means that no other parts of the financial world utilize the tool. A major issue with the model is that it rejects the comprehension of the financial sector. Thus, it cannot be used to describe the actual economic situation. (Dizard, 2015) The DSGE model assumes frictionless financial markets, making the interventions by the central bank much more difficult. The model focuses more on qualitative modeling rather than quantitative. (Gertler & Karadi, 2011). This leads to the output of more dubious outcomes by the DSGE model.

The model is vital to be understood to obtain a position in the world of central banking. The DSGE model is despised by the financial world but according to the central banks, it is the most important tool because it sets the rates and levels of security purchases. No new policy tools can or will be implemented due to the current status quo. The stakeholders working in central banks have used most of their professional life to adjust the DSGE model. The model allows for a more preferable outcome for the controllers if the financial controllers implement such figures and the economic output seems to be less desirable; for example, unemployment is higher or fewer exports were conducted as previously forecasted. The model seems to disregard most of the needs of the actual market or markets and is only used for economic theory, which can immediately be invalidated by another economist. Currently, the rates are close to zero or negative which is practically impossible for a capitalist society. The equilibrium real rate is negative in the DSGE model which could lead to unfavorable situations for a capitalist society, where the capital is allocated by the state. (DIZARD, 2015) The members of the boards of the respective central banks are nominated by the head of state in the United States and by the member states in the Eurozone. This raises the question of whether the individual or individuals appointed are the most suitable for the position or whether the decision is made on political grounds.

One of the major shortcomings of the DSGE model is the fact that economists are trying to incorporate money into a model which does not include money. So far it has not been able to successfully incorporate in to the DSGE model itself. The model disregards commercial banks which create a sizable amount of capital to the money markets. The model assumes that only capital in the market is loaned by investors. And at the same time the model assumes inter-temporal tradeoffs, as fundamental for economic decision making in the model, which in fact is absurd. Businesses and do not share these compromises due to the ability to lend capital from banks, which are able to create capital (Rogers, 2019).

The world is full of inequality and the DSGE model tries to incorporate the aspect by using different models to graph the situation. The Two-Agent-New-Keynesian (TANK) or Heterogenous-Agents-New-Keynesian (HANK) DSGE's. Both models express speculative outcomes on how monetary policy affects income discrepancies. The models do contemplate the external shocks regarding disparity, but at the same time the models lack the option to analyze the results in an extended timeframe (Strorm, 2021)

The model assumes that a consumer is short on capital and unable to alter one's consumption as a reaction to fluctuating rates apart from current income. Keynes argued that governmental spending will eventually lead to higher spending by the consumer. Which is in fact a result from the situation previously mentioned. As we know the financial markets have frictions just like the labor market. With these in the scheme, the model can cause endogenous unemployment risk (Strorm, 2021).

There is an issue in the expected dichotomy regarding the demand-determined short-run variations and supply-determined long-run potential development. If such model is implemented the fiscal policy and monetary policy cannot have stable impact on potential growth. The dichotomy is deceitful, studies have shown that sharp declines in demand do lead to permanent impacts on potential growth. The model is supplied with expectations which do not greatly differ from the equilibrium. The economist using the DSGE model argue for "rational expectations" but the real world does not know such fact, it disregard's the known unknowns (Rogers, 2019).

3 Quantitative Easing in History

The internet is full of academically well-founded research papers about the differences in how the two central banks have implemented their respective quantitative easing programs. The idea of quantitative easing was introduced by the Bank of Japan in the early 2000s to ease out their economy after the Asian financial crisis in the mid to late 1990s. (Nakaso, 2001) The program focused on purchasing of private debt and shares; previously the central bank had tried to control the inflation by issuing bonds. The Asian country had seen years of deflation which was a consequence of record low interest rates which had earlier created a housing bubble. (Nakaso, 2001) The Bank of Japan quickly realized the immediate threat and interest rates were raised. This led to debtors defaulting on their loans. The loans in question were backed up by unproven assets. After this Japan went into deflation where the price levels of goods slumped. Consumers in Japan were hesitant to make larger purchases which had a greatly negative effect on aggregate demand. The deflationary spiral was only made more rampant by the stockpiling of cash and unwillingness to spend. The consumers had lost their trust in the economy which in turn led to the situation where the prices were only declining due to the consumers not spending. To combat this situation the Bank of Japan introduced its own quantitative easing program. Central banks across the globe create cash for their respective economies by crediting reserves to the private banks. The reserves are then used to purchase enormous amounts of government-issued bonds. The bonds are not used as liabilities. Essentially, government bonds are supplanted as a responsibility of the public domain by the monetary reserves to fund the purchase of those bonds.

Before the financial crisis of 2008, it was common for the central banks to focus on the short-term interest rates by focusing on the supply of cash supplied to the market. Both the European Central Bank and the Federal Reserve implemented the New-Keynesian money view, meaning that the central bank is unable to control the amount of money. Instead, the central bank manages the interest rate with the control of monetary reserves. The existence of money is driven by the requirements of the real economy.

This meant that both central banks supplied barely enough capital to the local banks at the key interest rate. In both economies, the central banks respectively focused on the short-term market rate using different deposit systems to set the interest rates. The financial sector essentially was short on reserves which made the banks rely on the liquidity of the central banks. At the same time, the liabilities on the central bank’s balance sheet trumped the assets. In the United States, most of the assets included typically governmental securities, whereas in the Eurozone long-term credit or other assets.

The European Central Bank and the Federal Reserve both implemented different methods to fill the shortage of cash. The FED would trade mostly Treasuries in the form of repurchasing agreements. The ECB used main refinancing operations, one-week credit operations where the central bank would surpass the Governing Council's interest rate by variable-rate competitive auctions. This was conducted in a set period to stabilize the short-term market rates. The major difference between the two central banks was the Federal Reserve’s involvement in the market on a daily basis using open market operations. This was mostly due to the FED's inability to change interest rates overnight and a less flexible reserve averaging system. If there was a change in the policy rates in either one of the central banks, they were able to conduct their work without major changes in the rates. Prior to 2008, the interest on the excess reserves of the FED had no lower bound to its corridor (Gros, 2012).

The credit institutions with which the ECB works are much larger when compared to the Federal Reserve. The European Central Bank has over 1500 counterparts whereas the FED has only 24 open market and standing facilities. Before the financial crisis of 2008, the ECB had much broader collateral terms as well as greater eligibility criteria than the Federal Reserve. The FED also had implemented its lender-of-last-resort to discount window, subsequently making it part of the emergency liquidity facility. The ECB's implementation was rather different. It was fixed to the marginal lending facility as well as to emergency liquidity assistance. Some of these aspects fall under the jurisdictions of the banks of the member state's central bank (Gros, 2012)

3.1 What Led to Current Quantitative Easing

The financial world took a significant negative impact in 2008 when the fourth largest investment bank in the world, Lehman Brothers, filed a chapter 11 bankruptcy and went into liquidation. This was the initial stage of the global financial crisis which the financial world is still trying to resolve. (Ramaprasad Bhar, 2021). The United States Federal Reserve quickly initiated different methods to assist the struggling economy. The federal funds rate was set to zero with hopes of the economy gaining momentum. The next step was to open non-traditional methods to reinforce struggling market conditions. The policy to be implemented was quantitative easing. (Blinder, 2010). Quantitative easing includes large purchases of securities, such as Treasury securities as well as mortgage-backed securities; these purchases are made in the billions or trillions of dollars. Some financial advisors state that quantitative easing will quickly skyrocket the inflation rates. History, economic theory as well as empirical evidence however do not support this forecast of rampant inflation rates, if the Federal Reserve is only prepared to and able to execute the override of quantitative easing as the economy gradually and slowly recovers.

(Blinder, 2010) Quantitative easing focuses on long-term financial instruments such as corporate bonds and large securities.

The size of the purchases needs to be large enough so there will be an adequate effect on the interest rate. The demand for a security will increase through the purchase of the security which in turn will raise its price. Yields and treasury securities have an inverse effect. This will lead to increased prices and lowered interest rates. (Blinder, 2010). This in turn makes financial investments more affordable and stimulates the economy.

Quantitative easing must have clear objectives. The current quantitative easing can be questionable at best in the United States and the Eurozone. It seems that the Federal Reserve in the United States has begun to print large amounts of cash to support the economy, while the inflation is rapidly increasing. The European Central Bank seems to have a more conservative approach. The inflation rate in the Eurozone is also increasing but the manner in which the ECB is trying to revive the struggling economy is rather dissimilar to what the FED is implementing. (van Lerven, 2016)

The amounts which are being pumped into the economies of both areas are staggering. They are not counted in the billions but rather in trillions. Using quantitative easing, both central banks made the respective yield rates fall quickly. Thus, the local banks in both markets lost their most important cash flows: the passive margin, transformation margin and credit margin. The Federal Reserves' strategy inflated its balance sheet to approximately 8.900000000000 US dollars from approximately one trillion dollars in 2008. (System, Board of Governors of the Federal Reserve, 2022) And the ECB respectively 8.570000000000 trillion euros. In 2008, the respective amount in the European Central Bank's balance sheet was a little over two trillion euros. (European Central Bank, 2022)

3.2 The argument for Quantitative Easing

The argument for or against quantitative easing is that low or zero key interest rate limits the central bank's ability to control the macroeconomic situation in a normal setting for short-term policy interest rates. Meanwhile, the central bank is able to stimulate the economy by injecting money to correct financial institutions by purchasing assets, such as bonds. The central bank sets the interest rate by purchasing long-term bonds which in turn lower the long-term interest rate when compared to the short-term yields which is set to zero. (Wen, 2014) At the same time, the capital injected into the economy allows for more economic activity, such as the purchase of equity, and higher share prices while both contribute to more investments generated. Similarly, the higher prices of bonds and equity positively affect consumption. When more cash is injected into the economy, inflation rises which makes debt more affordable for investors to obtain. Similarly, foreign currencies strengthen when compared to the weakened local currency. This makes the economy more competitive for domestic exporters. (Wen, 2014)

4 Federal Reserve's Initial Response

The United States Federal Reserve implemented its initial quantitative easing program from March 2009 to March 2010, by purchasing mortgage-backed securities with 1,25 trillion United States dollars and issuing debt of 200 billion USD (Kiley, 2018). The Federal Reserve aimed to thaw the frozen real estate market and win back the trust of the consumers by lowering the interest rates. The market needed liquidity quickly. The FED was able to create cash for the market using term auction facility. This temporary program allowed the market liquidity at short notice, from one to three months. The struggling commercial paper market was supported by the Commercial Paper Funding Facility, similarly to the Term Auction Facility papers: both had to be backed by an asset, but the Commercial Paper Funding Facility was aimed at limited liability companies, with a maturity of up to three months and the owned debt had to be paid back to the debtor. The largest central banks conducted Liquidity Swaps; this was created to boost the U.S dollar's liquidity. The foreign central banks were allowed to denominate loans in U.S dollars in their respective market areas. The Term Asset-Backed Securities Loan Facility allowed the FED to fund larger enterprises and individual consumers with adequate collateral assets. For example, student loans were backed up by the Small Business Administration. In 2010 the short-term measures had matured. The Federal Reserve had to implement new long-term strategies, which were coined quantitative easing. With this operation, the FED was able to shape short-term measures into long-term. This allowed the rate curve to decrease.

The scale of the quantitative easing created by the United States Federal Reserve was 1400 billion USD in 2008. The numbers rose significantly when the FED announced its later QE1 packages, QE2 and QE3, or the QE-Infinity. The Asset Purchasing program was halted in 2014 when the price of the assets was close to 4.500 billion USD. Naturally, the stakeholders involved in the program began to buy back the sold shares after the markets had healed and the prices of the stocks and real estate increased. (Fuller, 2019)

Critics of QE worry that by greatly increasing the monetary base, severe inflation may occur. Banks currently retain a substantial quantity of financial reserves as well as other capital such as gold. These assets make up the majority of the monetary base in a given area. If banks loaned these reserves, the money supply would effectively increase. If the money supply expands rapidly, the resultant increase in economic activity may lead to inflation which accelerates future inflation expectations. The FED, on the other hand, is certain that its initiatives, which include incentives for banks to keep their reserves, will avoid this. (Feldstein, 2016). In the early stages of 2022, the argument for high inflation rates became evident. The United States witnessed the highest rates of inflation in decades. The U.S Bureau of Labor Statistics stated that the inflation was 7.9%. The highest contributors were the high price of energy and food. (Statistics, 2022) The inflation in the Eurozone at the same time was 5.9% (Eurostat, 2022). What is noteworthy in the case of the Eurozone, all the 19 members states have a different level of inflation. This can greatly differ from one Member State to another. The 50 States in the United States have contrasting economies. Similar disparities in the inflation rate inside the US could be monitored if such numbers were published on a state level. Disputably the inflation rate in the Eurozone is more precise due to the amount of pedantic data. The FED, for example, pays banks interest on reserves held at FED banks. If the interest rate on these reserves is higher than the return on other investments available to banks, reserves will be idle.

5 European Central Bank's Initial Response

The financial crisis which began in 2008 started in the realm of the Federal Reserve. The impact quickly hit Europe as well and the European Central Bank had to begin to resolve issues similar to those in the United States on their own domain. The European Central Bank is managed in a rather contrasting way when compared to its American counterpart. The European Central Bank is financed by its 19 members. These members are the states in the European Union which use the Euro as their currency. Each individual member state allocates capital for the European Central Bank based on the country's population and gross domestic product. (Braun, 2018) This meant that some of the countries in the Eurozone were not initially damaged by the crisis but there were other central banks which were on the brink of bankruptcy. Initially, the ECB lacked adequate tools to combat financial troubles of this magnitude. But the legislators were quick to introduce such legislation which allowed stimulus operations of such magnitude to be implemented.

The financial distress quickly hit Europe, the largest and most momentous being the near bankruptcy of the Hellenic Republic of Greece. The European Central Bank rapidly began to develop resolutions to resolve the issue. The national central banks of the Member States had to step in to secure the dire situation. The banks of the Member States had to incur debt which was used to control the financial instability. The former president of the ECB, Mario Draghi stated, “Within our mandate, the ECB is ready to do whatever it takes to preserve the euro… believe me, it will be enough to save the Euro as we know it". (Fiedler, 2016:77)

The ECB decided to take a drastically different method of stimulating its economy and the economies of the Eurozone. (Parliament, 2020) The ECB does not refer to its quantitative easing program as such but instead as an accommodative monetary policy. (Parliament, 2020)

In early 2015 the European Central Bank instigated the asset purchase programme (APP). The program consists of four different asset purchasing programs. The public sector purchase program (PSPP) focuses on financing the public sector by purchasing bonds issued by the governments, institutions, and agencies of the Euro-area. In late 2015 the Governing council extended the program to include local and regional government bonds (ClaeysÁlvaro, Allison, 2015). The corporate sector purchase programme (CSPP) allows the banks participating in the Eurozone to purchase bonds which are eligible and from eligible counterparts in the secondary and primary markets. Specific conditions are applied to public bonds when purchased from the secondary market. The asset-backed securities purchase programme (ABSPP) for the securitization of bank loans. The third covered bond purchase programme (CBPP3) to purchase covered bank bonds. The ECB's key interest rates have been close to zero or negative since late 2008. (Clayes, 2014)

Because of the nature of how the European Central Bank is managed and its policies implemented, the bank has intervened with independent states' bond markets or asset markets(Gros, 2012). The ECB’s image took a significant negative impact on how the central bank handled the involvement of the Greek private sector. (Fuller, 2019) In the Greek financial crisis, the whole country was on the brink of bankruptcy. Subsequently, it would have been the end of the Euro and the ECB as we know it. The size of the economic crisis which implicated the whole world was enormous and subsequently, the scope of the current monetary institutions had to be broadened. New methods of allocating capital had to be implemented to create enormous amounts of liquidity for the economy which had to be created. The initial responses by both, the Federal Reserve as well as the European Central Bank, were similar when the initial shock of the financial crisis of 2008 impacted both central banks and their economies. Both quickly set their respective key interest rates to zero. However, the subsequent main effect which followed the bankruptcy of Lehman Brothers was the complete loss of confidence and

trust in the interbank credit system. The central banks began to disentangle the issue with massive amounts of capital through lending programs as well as injecting money into the economy. (Feldstein, 2016) The injection of many billions of Euros and dollars later bloated the balance sheets of both central banks, 170% in the case of the European Central Bank (European Central Bank, 2022) while the Federal Reserve expanded its respective balance sheet by 230%. (System, Board of Governors of the Federal Reserve, 2022)

The European Central Bank began its Long-Term Refining Operations. With sovereign debt the bank decided to inject low-rate funding for its member states. The idea was to use the cheap debt to balance the balance sheets of banks using high rates of interest. This lowered the long-term interest rates by increasing bonds issued by governments. In 2019 the European Central Bank renewed the operation for Long-Term Refining Operations. 800 billion euros were injected into the money markets.

6 Different Markets, Different Methods

The implementation of quantitative easing is more difficult in the Eurozone because of the fragmented markets and different economies inside the Eurozone. (Fuller, 2019) Moreover, share ownership is less popular in the old continent and most wealth owned by consumers is held in housing. Investing in shares and bonds is more prominent in the United States. Instead, the European Central Bank has tried to stimulate net exports by lowering the value of the Euro.

The growth of the gross domestic product of the eurozone has been more gradual. A major reason for this is that most trade between Euro members occurs between other Euro using countries. (Braun, 2018) Exports to the United States are conducted in US dollars with floating exchange rates.

The differences in the quantitative easing can easily be seen in the housing markets of both economies, due to their clear implementation or contrasting lack of it.

A consumer in the United States differs greatly from the consumer in the ECB's area. This can clearly be seen in the way how the two central banks implement their quantitative easing. The European Central Bank has clear market segments which it targets to help whereas the Federal Reserve in the United States seems to focus more on injections of cash quickly to the market as a whole. (Braun, 2018) This can most easily be seen in the housing and real estate market. The market is maybe the largest asset class in the capital markets. In 2008 the Federal Reserve began a mortgage-backed securities program which in 2018 had bloated to 1.7 trillion US Dollars. Simultaneously the European Central Bank purchased similar bonds in Europe for 209 billion US Dollars. Both markets have seen a major turmoil in their respective housing markets, but the North American counterpart has been able to boost its housing market much quicker but relatively inefficiently (Gros, 2012). The world has seen a rapidly increasing gap in the wealth distribution in both economies, the wealth gap is only growing at an alarming rate.

Quantitative easing can add to this by making the market increasingly inaccessible to those consumers without already existing capital, such as a house or an apartment. (Feldstein, 2016)

The US has a macroeconomic model which is based on credit-financed consumption with a highly established housing finance market, which works as a base for the macroeconomic growth model. The Eurozone's economy has a rather different growth model. Some economies are export-driven while other economies rely on domestic demand which has more split housing markets. The European Central Bank did not focus on the housing market in its quantitative easing program mainly due to the fragmented housing market. (Feldstein, 2016) In addition to the stimulation of consumption and housing, which creates friction between export-oriented and service-oriented member states, the European Central Bank and the politicians commanding the institutions have a significant notion to protect the welfare state or states and its economy, whereas the Federal Reserve and its decision-makers seem to have fewer ideas to protect the wellbeing of all stakeholders residing in the United States (Brian Fabo, 2021).

At the end of 2018, the balance sheet of the European Central Bank was inflated to 4.7 trillion Euros while the Federal Reserve's balance sheet was nearing 4.1 trillion U.S dollars. The amount of money injected into the economy in a relatively short period is staggering. It is important to remember that the two monetary institutions faced relatively different financial distresses which required different methods to confront the situation. But it is questionable why the European Central Bank and the United States Federal Reserve decided on contrasting ways to battle the economic downturn. (Brian Fabo, 2021).

The two have different legislations guiding them. The European Central Bank's mandate is narrow, to improve price stability while the Federal Reserve's job is to guard price stability but at the same time to confirm full employment. This legislation was signed by President Jimmy Carter in 1978 and is known as the Humphrey-Hawkins Act. Export-oriented markets have deep concern about inflationary consequences due to the importance of price stability while consumption and credit-led economies are driven by

private domestic consumption. Both central banks operate their monetary policies under these ideas respectively. Because of the nature of the growth model in the United States, the Federal Reserve has made private demand, credit, and consumption key factors. This is because housing is the main driver of the economy in the United States. The market is flexible when it comes to financing as well as standardized, integrated and developed to a high degree. The European housing market lacks these aspects. This is why the monetary policy in the Eurozone is executed differently. The multiple economies all have a different housing market and implementing a single economical strategy is extremely difficult, some argue it is even impossible. (Braun, 2018) There is a large division between southern and northern Europe, the north being export-driven, while the south is consumption-led. This can be explained using history, where the export economies had more modest price changes in housing (Braun, 2018), compared to consumption-led economies. The European Central Bank’s realm has individual economies which all operate differently, they are treated in distant ways from each other. Country A in the Eurozone might subsidize the purchase of an apartment in a completely different way than country B. Collectively the export-driven economies tend to dominate the European Central Bank's politics which in turn is seen as more beneficial for those economies. (Schwartz, 2019)

When the Federal Reserve began its quantitative easing the focus was to create more cash through housing, meanwhile, the European Central Bank was unable to create similar effects due to the difference in the economic system. (Parliament, 2020) The Eurozone members are mostly export-oriented, e.g., Finland or Austria. The same system that the FED implemented through stimulating individuals’ consumption and housing in the United States could not have been implemented in the Eurozone (Schwartz, 2019).This is due to the unstandardized market in the Eurozone. The European Central Bank focuses more on price stability, wage and credit restraint while also having a focus on saving money. (Braun, 2018) This is why the European Central Bank is unable to make as large monetary interventions as its American counterpart. The prices of houses and apartments have been on a steady rise since 2008. This can be explained by the European Central Bank’s monetary policy, while the wealth effect increases private consumption and thus stronger growth. The European Central Bank has decided not to implement the same system as in the United States due to the lack of a market-based financial system, instead relying on a bank based-finance system.

The division between north and south Europe dictates how the European Central Bank is able to contribute to its member states' economies. It has looked away from housing assets and focused on securities in the public sector and refinancing inter-bank borrowing methods. The work regarding bonds concluded by the ECB has not been wasted (Kiley, 2018). They have helped the European Union to build its own capital and financial markets.

One major issue when dealing with the European Central Bank is the fact that all of the Eurozone countries have their own vested interests. The struggling members see the quantitative easing and asset-purchasing programs as a great benefit for their economy while the export-driven North sees them as a redistribution of wealth to the southern states of the Eurozone (Kiley, 2018).

In the realm of the European Central Bank, it is clear that most of the recovery operation has been conducted using monetary policy. This is because all of the member states still hold their own fiscal policies. The most important tool for financial stability has been Government bonds. Long-term credit operations are the most important for banks as well as corporate bond purchases. This led to the negative interest rate set by the European Central Bank. This in turn has bloated the balance sheets of most if not all banks in the Eurozone.

The European Central Bank has historically been more hesitant and conservative in implementing quantitative easing which is clearly stated in many different academic papers and discussions. The information can easily be found when comparing previously published academic papers. Finding an academic paper which clearly studies and separates the methods of how the two implement their monetary policies is more difficult. The European Union is said to follow the path of the United States, especially how the federal system is implemented in the United States governmental system. The study of the topic in question clearly shows that the largest monetary institutions of both parties are remarkably different in their decisions and decision-making process. These decisions are dictated by internal and external conditions. Most of which require major political decision-making and large studies of conscious consumer behavior. Both the European Central Bank and the Federal Reserve seem to be running out of concepts on how to implement their respective quantitative easing strategies. At the same time, the markets

in both economies are not completely stable. Some argue that the central banks have intervened for too long and made too large decisions, which cannot be withdrawn, and the economies cannot operate without the intervention of the central bank because of the everlasting economic stimulation of the market or markets. Many economists argue that the central banks are trying to avoid or rather push back a new recession. (Braun, 2018)

Any research regarding quantitative easing or any other economic topic regarding central banks seems to argue that the operations which the banks are executing are only trying to set back a much greater economic downturn by flooding the market with cheap debt, which most likely is not even intended to be paid back at any stage to the debtor. Instead of paying back existing debt or loans, the central banks are creating more debt which is used to pay off the previous loans. This has a significant negative impact on the balance sheet of each central bank. In early 2022 Deutsche Bank argued that the United States is heading to a new recession in 2023. This is a direct result of the easily available cash, as well as the FED's decision to lift the federal funds rate. At the same time, the central bank will reduce its balance by 2 trillion dollars by the end of 2023 (Miller, 2022).

7 Monetary Policy and Rates

There are many different ways of combating financial instability. As history has shown there is usually more than just one school of economic ideas. Some economists see high rates of inflation as an escape while others argue that the high rate of interest is the key to financial stability (Schnabl & Sonnenberg, 2020). A major part of monetary policy is the expansion of the supply of money quickly or focusing on the lowering of short-term interest rates. It is used by central banks to create liquidity in the money market. The danger of such implementation includes overheating the economy.

As seen in Finland in the early 1990s, high inflation and the timeframe for such implementation can be long. As mentioned not all expansion of the monetary base create stability there are dangers to expanding it. Investments have expected returns, which the discount rate mirrors. The rate set by the central bank is the policy rate which most if not all investments follow. The local banks always charge for the loans given to stakeholders. Most importantly, the supply of cash is equilibrated by the discount rate (Schnabl & Sonnenberg, 2020).

To achieve equilibrium, organized savings correspond to investments made. When a new innovation is introduced to the market, this is usually followed by a rise in the discount rate. The investment can also make the central bank cut the discount rate if it believes that the innovation will be financed by commercial banks. This will create more liquidity for the local bank through deposits and loans.
Economies are driven by innovations; hence the central banks have a vested interest in innovations. The same input will generate more output and increase salaries in addition to the profitability of businesses. For example, the steam engine allowed for more output with less manpower or the broadband internet wider access to the internet and employment opportunities. This positive output could be used to create more employment. Which in turn will create economic growth.

To meet the expected hike in consumption, which is a direct consequence of the lower interest rates as well as the more easily available debt to the public, production will increase. This can lead to unworkable debt if inadequate forecasting, poor investments, and unsustainable consumer spending are implemented. Unemployment will be reduced due to more investments by businesses, leading to more investments by other businesses. This will eventually lead to labor shortages and accelerate the prices as well as wages. This makes the stock market more and more alluring because of the rising stock prices. With minimal rates for loans readily available the stock market will attract more capital. The demand for shares will rise and with that the price of the share and the stock market itself. This increases wealth among the public.

This is only possible as long as the central bank allows it. By lifting the interest rate the inflation will be kept more sustainable. This will lead to the complete opposite of what has already been achieved. Investments which have a lower interest rate than the lenders will become futile. The price of investments will rise making them unprofitable and leading to deteriorating balance sheets and unwillingness to make investments because of the volatility of the market. (Schnabl & Sonnenberg, 2020)

The central bank can confront the negative impact by reducing the interest rate. This was done by both the Federal Reserve as well as the European Central bank during the initial years of the financial crisis. And in March 2022 the FED has decided to lift the Federal Funds Rate to 0,5%. Because of the widely available debt, many investments which currently are not financially viable were able to gain capital, and are now facing bankruptcy. This frees up labor as well as capital for more viable investment opportunities. Some economists argue that the process of bankruptcy of the low-yield investments is part of the natural business cycle (Schnabl & Sonnenberg, 2020).

The burst of the dot-com bubble in the United States as well as in the Euro area clearly demonstrated the aforementioned. The stock market grew rapidly and similarly, the housing market gained more capital in both markets. The FED and the ECB both cut their interest rates but noteworthy was how differently the policy change affected the different member states of the European Central Bank. Countries with strict fiscal policies were more unaffected by the crisis than those with deficit-financed fiscal policies. (Braun, 2018)

Some economists argue that monetary policy is a great tool for stabilizing the financial markets. According to John Maynard Keynes, the great depression of the 1930s was due to the exaggerated future value of the goods used in production (Braun, 2018).The argument for this is that the increase in income levels affects the declining population growth and the marginal efficiency of investment and consumption. What should be done is the redistribution of wealth to fewer wealthy consumers with a higher propensity to consume, as well as keeping the yield rates as low as possible. This would allow the low rates to drive economic recovery. The central banks should implement such strategies which allow the most volatile consumers to enter the market through credit creation. These can be used to finance the market and the economy, but on the other hand, it can lead to unrealistic economic views and too enthusiastic expectations which eventually will lead to overheating of the market and the economy. Strict monetary and fiscal policies are therefore essential to prevent economic downturns.

During the housing crisis in 2008, the FED and the ECB both cut their interest rates to zero. Later the European Central Bank introduced the negative interest rate for its clients to boost the amount of liquidity in the market. Both central banks implemented their quantitative easing in phases. Now in early 2022, these are seemingly coming to an end, although more rapidly in the USA(Reisenbichler, 2019).

Both the European Central Bank and the Federal Reserve implemented substantial tools to impede the massive growth of credit in the future. Both financial institutions' balance sheets grew on massive scales. The FED implemented its strategies much quicker and in a more defined way. The North American counterpart implemented interest rates deductions quicker as well as the quantitative easing itself while leaving the low-interest rate behind on a shorter timeframe. The European Central Bank has been unable to secure its monetary policy. The ECB decided on negative interest rates while the Federal Reserve decided to pay positive interest on excess reserves. These implementations have had a contrasting recovering factor in the respective financial worlds. Quantitative easing most often has a temporary positive impact. Eventually, the quick injection of large amounts of capita makes the economy seem more stable. This accelerates consumption and investments thus making the situation look more pleasing to the

economic regulators, but only for a short time frame. Additionally, large market stakeholders will benefit the most from de-regulation or the regulation of a certain segment of the market by investing in the less regulated field of business (G.Kirikos, 2020).

7.1 The Difficulty of Decision Making

All of the Members States have a vote in the European Central Bank and in the decisions made. If the Member State has the right to vote in the matter which is to be decided. The ECB works on the rotation of voting rights in the Governing Council. The structures of both central banks, the Governing Council in the Eurozone, and the Federal Open Market Committee in the United States operate on a similar basis. The European Union in general is seen as a cumbersome, money-consuming apparatus, which only tries to make the everyday life of the consumer more difficult. The harmonization of rules across the single market establishes the ECB's functioning. The European Central Bank is a separate institution that operates largely by following strict price stability-focused economic ideas. These are embedded in its constitution and the thinking of the Bundesbank representative or the representative from the National Bank of Slovakia on its board(Dimitris Christelis, 2020).

The President von der Leyen stated that the current leaders of the European Union should focus more on building the Union for future generations. (State of the Union Address by President von der Leyen, 2021). The past decade has been strenuous for the European Union. If the Union wants to keep the younger generations full of hope and make them believe in the future, more work needs to be conducted to keep the dream of the European Union alive. Currently, it is difficult because of the economic hardships which are still affecting every citizen of the European Union. Problematic and political decision-making does not add to the transparency in which most in the community believe. Having these supra-national organizations is beneficial but they need to be transparent, so the population understands the reasoning for the decisions made. The covid-19 pandemic has been extremely wearing especially on the younger generations. The European Union has taken massive amounts of additional debt to help out the economies of Europe, but the money loaned needs to be paid back with interest. (Picek,

2022). And at the same time, we need to remember which segment of the market is the most volatile regarding financial issues, even prior to the pandemic (Mette Ranta, 2020).

8 Impact on Rates

The European Central Bank and the Federal Reserve both had the shared intent to keep short-term interest rates under control by absorbing cash (liquidity). These are operations in which the central bank, by using open market operations, decides the correct method of liquidity injection to the market to change the short-term interest rates to the desired level. When the balance sheets of the two central banks are compared, it is noticeable how much larger the non-conventional measures are in the Eurozone. And the US side is dominated by Treasuries. Both central banks share increases in the balance sheet. The Asset part of the balance sheet has shifted from a liquidity deficit to a surplus. At the same time, a drop in the overnight rate is tied to the different methods and tools to achieve the objective. The FED and the ECB both pay a fixed rate on capital which is deposited by a bank. The depositor does not have a reason to lend the capital to the inter-bank market because of the low return on the investment due to the low rate. The Federal Reserve did not initially in 2008 have a tool to combat such a situation but after long discussions, the Federal Reserve implemented the interest rate on excess reserves. (Board of Governors of the Federal Reserve System (US), 2022) (Martin Arnold, 2021)

Because of the amount of capital in the market the short-term rates stay relatively close to the floor. Monetary policy needs to be amended to combat such situations. One of these methods is the deposit facility rate, which dictates excess reserves.

The Eurozone relies on operating with “very short-term interest rates”, and when compared to the Federal Reserve the ECB the extensiveness of the collateral is broader. The ECB has implemented a short new term reference rate, €STR, which will replace the EOINA rate. The weekly refinancing allows for more and better liquidity insurance for the money market of the euro. This adds transparency to the process and more acute injections of money to the correct segments of the market. The Federal Reserve implemented the overnight reverse repo. It works as a backup for NGOs and government-sponsored enterprises. It tries to achieve the same outcome, instead of boosting the reserves, it tries to control interest rates (European Central Bank Euro System, 2020).

9 Fragmentation of the Market and Monetary Policy

Market fragmentation can be defined as a “Decrease in cross-border holdings of a wide range of asset classes, resulting in a divergence of related asset prices” (Fiedler, 201:72).

Country risk is a term used in finance to evaluate the partner's, in this case, a member state’s, ability to pay back borrowed capital.

The countries in the eurozone which have faced the most financial distress in the last decade have contributed negatively to the cohesion of the eurozone. The fragmentation hit an all-time high in 2012. There was a significant difference in the rates of banks which are used to lend money to the consumers. The much wealthier north has lower interest rates than southern Europe. Countries such as Germany had short-term liabilities in the range of 1%. In contrast, in countries such as Spain or Portugal, the same rate was closer to 4%. This was a direct result of the macroeconomic differences in the member states. The ECB implemented a monetary policy to combat the situation, which later leveled the rates. Even if the rates are low in another member state, the member state is liable for the rates in the other member state as well. This could lead to a situation where the local central bank is unwilling to lend capital to consumers and banks alike, because of the dire situation in another member state. Higher rates and less available liquidity are the consequences. The inter-bank system will not be able to operate if the terms and conditions of lending money in the member states differ excessively (Carlo Altavilla, 2017).

The emphasis on long-term monetary policy increases when the market is fragmented. An issue in the Eurozone is that local central banks are liable to bail out their struggling economies. This means that the other member states might have different views on how to implement strategies to revive the economy. This is known as the sovereign-based source of fragmentation. As well as banks being overexposed to the domestic economy through both private sector and government assets, the size and quality of

their exposures can increase counterparty risk and profitability concerns, thereby affecting a bank's ability to raise funds. This is the cause of balance sheet fragmentation or credit risk (Carlo Altavilla, 2017).

The United States lacks this aspect because of the unified monetary policy in its economic area. The governance is more straightforward and less time-consuming. There is no intra-dollar trade between the different branches of the Federal Reserve.

10 Decision Making in History

The European Central Bank bases its policies on extensive research in the field of central banking. It focuses on credibility, transparency, and communication when expectations regarding inflation was considered. What distinguishes the ECB from other central banks is how the price stability is reaffirmed. The central bank analyzes economic and monetary conditions which are used to maintain the price stability. The European Central Bank focuses on risk mitigation with the extensive study of the markets. The Federal Reserve on the other hand has focused more on, currently available data. Which in turn has been used to review its monetary policy on a significant scale (Issing, 2010)

The behavior of both central banks has been significantly different. Which can clearly be seen in how the central banks implement their monetary policies and the timeframe. The FED has most often been more rapid to implement changes while the ECB has followed with its own results. The research by the European Central Bank is more extensive which requires time, hence the slower implementation of new strategies(Gerdesmeier, 2007).

11 Exit Strategy

Eventually, the quantitative easing must be forsaken. The European Central Bank does not control the fiscal policy of its member states. The different tax rates in the United States are set by the legislative and executive branches of the government. The balance sheet of the ECB is distributed proportionally among the eurozone states. This means that if the European Central Bank were to take considerable losses, the member states would be held accountable. Currently, there is no legislation regarding the rebuilding of the central bank if such circumstances would occur. Because of the absence of clear support via fiscal policy, currently, the wealthiest member states are carrying most of the debt of the ECB by purchasing the most amount of bonds. Without an adequate fiscal policy, it most likely will be difficult for the European Central Bank to exit the quantitative easing. In the United States, fiscal policy is the pivotal legislation which supports the monetary policy. Thus, making the exit strategy more uncomplicated. (Caporaso, 2016)

In the early stages of 2022, the world has seen the Federal Reserve raising its rates at a quick pace. (Timiraos, 2022) This is a clear indication that the FED has decided to begin to move on from the time of quantitative easing after over a decade of implementing the strategy. It is arguable if the strategy has been beneficial in the long run. The European Central Bank has also noted its intention to scale back the asset purchasing programs which were implemented due to the financial distress caused by the Covid-19 Pandemic, raising its interest rates in early 2023. (Marin Arnold, 2021) It seems that the European Central Bank is closely monitoring the situation in the United States, and how the implementation of the Federal Reserve's exit strategy will play out.

Both central banks are trying to reduce the amount on their respective balance sheets. Arguably the best option to exit the quantitative easing is to cover much of the reserves with other liabilities, raise interest on reserves which are idle and implement reverse repos. But at the same time, the financial health of the central bank will be negatively affected, which is vital for the economy. (Tanaka, 2019) Seemingly the central bank must

take part of the collateral damage when exiting the quantitative easing strategy. But neither one of the central banks seems to have currently adequate ability to bear such collateral damage. The Federal Reserve is seemingly trying to slowly dispose of its quantitative easing, but the outcome seems unstable. One reason for this could be the trust of the consumers in the government, which in the United States is relatively low. (Center, 2021) The consumer in the European Union shares the same issues as their American counterparts. The European Central Bank is associated with issues in the financial sector by the consumers. Similarly, the bank is seen as a cumbersome institution which is unable to solve any financial difficulties. Both of these reasons are a direct result of the financial crisis of 2008. There is a clear lack of understanding of how the ECB operates which creates a lack of confidence. (Dimitris Christelis, 2020). The amounts of debt currently held by the consumers and rising interest rates are anything but a desirable combination. This has allowed many of the market players to invest in real estate with enormous debentures. Any kind of higher rise in the lending rates in the United States will most likely have a rather negative aftermath which the Eurozone will follow.

The long-lasting injections of money into the economy have introduced enormous amounts of debt. It will take decades until the debt is paid back with interest. While the rates have been low, there has been almost no incentive to pay the debts back. This has been destructive for the bond market as well as retirement funds. And at the same time, questionable methods of trading have emerged. From short selling of meme stocks to selling funny images of apes, NFT or non-fungible tokens. Currently, the US financial market seems to be unprepared for rises in rates, but the FED is determined to implement them. (Masters, 2022)

There currently seem to be no real studies on how to exit quantitative easing. This is due to the fact that the quantitative easing models are challenging to implement in macroeconomic surroundings. Furthermore, when the models are tried to be understood and implemented the Dynamic Stochastic General Equilibrium model will most likely be used, with dubious outcomes.

12 Conclusion

The quantitative easing of the Federal Reserve in the United States and the European Central Bank in the Eurozone have clearly completely different quantitative easing methods and targets, which are made for the respective area. Furthermore, the expansionary methods of both central banks have been broad. However, the issues seem to lie in the exit strategy. Both the European Central Bank and the Federal Reserve have become too vested in their respective financial and money markets. Currently, the markets would most likely crash because of the need for quick and easy capital in the market. The markets are unable to operate without the intervention of the central bank, because of the extensiveness of the quantitative easing. Currently, there seems to be only unsatisfactory options to resolve the issue of continuous of quantitative easing. It is rather clear that the measures taken by the European Central Bank and the Federal Reserve have been implemented endlessly. It seems that the FED is about to change its course and begin to implement the contractionary policy. Most likely the ECB will follow but with different implementation.

Comparing the two central banks and their methods to revive the struggling economy or economies there are distinguishably different methods of implementing such strategies. The ECB's method focuses more on debt availability, due to its incapability to have a direct effect on fiscal policy.

The European Central Bank and the FED both seem to have only desperate options. The current status-quo has barred the financial institutions from new opportunities. This has opened more liquidity to the corporate world, which has used the opportunity to issue share buyback programs as well as buy-outs of current shareholders. The major reasoning for the different methods of quantitative easing is the comparative economic standpoints of the eurozone and the United States; specifically, the fragmented financial market of the Eurozone as well as the disparate economies themselves. The lack of fiscal policy restricts the options of the eurozone to implement exit strategies or monetary policy which should be supported by fiscal policy. The countries in the European Union, not just the sovereign states in the eurozone, must recognize the relevance of the Union

itself as a contender as the largest single market in the world. This will not materialize if the member states are arguing about the pettiest, most insignificant concepts. The United States have been able to accomplish this in their respective history, which led the country to become the largest economy in the world. It is indisputable if either one of the economic areas face a recession the other will quickly follow and with it the whole global economy. The recession which began in 2008 still affects both economies and quantitative easing is becoming ineffective. The current world situation has shown it is possible for the European Union to work as a united front if the threat is shared by all member states.

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