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DIRECTORATE GENERAL FOR INTERNAL POLICIES

POLICY DEPARTMENT A: ECONOMIC AND SCIENTIFIC POLICY

Does QE Have Unpleasant Side Effects?

IN-DEPTH ANALYSIS

Abstract

The ECB has finally introduced a QE programme. Predictably, the programme has had many critics. Two criticisms are that the programme risks unleashing high inflation and that it worsens inequality. This paper argues that the perceived inflation threat from QE programmes largely relies on inaccurate macroeconomic theories about the relationship between the monetary base and inflation. In relation to inequality, criticisms of QE have generally ignored the various ways that lower interest rates benefit borrowers, reduces unemployment and boosts wages at the lower end of the income distribution. The available evidence actually suggests these channels dominates and QE reduces inequality. Claims that QE particularly helps banks or generates large commissions for traders are also false.

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CONTENTS

EXECUTIVE SUMMARY

- The ECB has finally introduced a QE programme. Predictably, the programme has had many critics.
- Two criticisms are that the programme risks unleashing high inflation and that it worsens inequality.
- This paper argues that the perceived inflation threat from QE programmes largely relies on inaccurate macroeconomic theories about the relationship between the monetary base and inflation.
- Contrary to the basic textbook model, expansions of the monetary base do not automatically translate into proportional increases in the money supply. In fact, where QE programmes have been implemented, money multipliers have fallen sharply.
- Contrary to the quantity theory of money, there is very little evidence in modern economies for a direct link between the growth rate of the money supply and either nominal GDP growth or inflation.
- In relation to inequality, QE tends to boost asset prices but it is not clear that it does so in a way that boosts wealth inequality. Evidence from the United States suggests that QE boosted the net wealth position of middle-class households by increasing house prices and that it had very little impact on the overall inequality of wealth.
- Criticisms of QE have also generally ignored the various ways that lower interest rates benefit borrowers, reduces unemployment and boosts wages at the lower end of the income distribution. The available evidence actually suggests these channels dominate and QE reduces inequality.
- Claims that QE particularly helps banks or generates large commissions for traders are also false
- In relation to the idea that QE is boosting inequality, even if this was the case, it is unclear whether the ECB should concern itself with such a development. The ECB has an explicit primary goal of maintain price stability, as defined by meeting its inflation target. Currently, it is failing to meet that target and its QE programme should be viewed as an overdue positive step aimed at restoring the credibility of its commitment to meeting its target
- To the extent that the ECB does decide to concern itself with inequality, Governing Council members should argue that they are helping rather than hurting.
- Those who are genuinely concerned about reducing inequality would be better off focusing on areas that really matter, such as taxation and education policies, rather than on the ECB's monetary policy.

1. INTRODUCTION

The ECB has finally followed the lead taken years ago by most of the world's important central banks in adopting a Quantitative Easing (QE) programme. However, the decision to introduce this programme was controversial, with objections from Governing Council members such as the Bundesbank's Jens Weidmann.

These objections shouldn't be too surprising. Since their introductions, QE programmes have been criticised for many reasons and a paper devoted to all of these criticisms would be far longer than I have space for here. So in this paper I will set aside objections such as the ideas that QE facilitate higher fiscal deficits or somehow "distorts" financial markets. Instead, I will focus on two different types of objections to QE.

First, perhaps the most common objection to QE is that because these programmes produce large increases in the monetary base, they will inevitably lead to a significant rise in inflation. Euro area inflation is currently running well below the ECB's inflation target, so it could be argued that increasing inflation would not be a "side effect" of its QE programme but rather the desired effect.

Nevertheless, the idea that QE programmes will, at some point, unleash a bout of uncontainable high inflation remains popular among the ECB's critics. In part, the belief that QE will trigger significant inflation stems from faith in a standard textbook model of how money affects the economy. In this model, increases in the monetary base translate into increases in the wider money supply via a stable money multiplier. The higher money supply then translates into higher prices via the mechanisms described in the so-called quantity theory of money. In this paper, I will discuss briefly why these two elements of textbook macroeconomics do not describe how modern economies function and thus why QE is unlikely to trigger a serious inflation problem in Europe.

The second set of objections to QE relate to perceptions that these programmes have contributed to increasing inequality. This claim often focuses on the idea that QE benefits the rich by boosting asset prices but a number of other, more specific, claims have been made. For example, in a recent article in the New York Times, William D. Cohan, a former banker, described a series of mechanisms through which QE has raised inequality.[1] These include low returns for people reliant to fixed income investments, that low interest rates have hugely benefitted Wall Street banks and that these banks have benefitted from the trading fees associated with the Fed's bond purchases. Indeed, former Federal Reserve Governor, Kevin Warsh, has described QE programmes as a "reverse Robin Hood" because they benefit the rich and hurt the poor.[2]

In the second part of this paper, I discuss these concerns and argue that they are either incorrect or over-stated. Monetary policy influences the economy in many ways and it is difficult to summarise its effects on inequality with a simple argument or a single piece of evidence. However, the fact that poorer people tended to be harder hit by economic slumps, particularly due to unemployment, makes it likely that any policy aimed at reduced slack in the economy will ultimately reduce inequality.

[1] William D. Cohan: "How Quantitative Easing Contributed to the Nation's Inequality Problem" http://dealbook.nytimes.com/2014/10/22/how-quantitative-easing-contributed-to-the-nations-inequality-problem/

[2] Video of Warsh discussing this issue is available at http://video.cnbc.com/gallery/?video=3000287822

2. PROBLEMS WITH THE TEXTBOOK MODEL OF MONEY

I recently finished grading about 250 exam papers for my undergraduate module "International Money and Banking".[3] One of the questions asked the students to describe how QE affected the economy. Many of them wrote that QE worked by increasing the money supply and this acted to boost the economy and raise the price level. This is an explanation consistent with much of textbook macroeconomics but I do not believe it is an accurate description of how QE works and, alas, these students didn't score too well on this question. This is because this interpretation of QE's impact relies on two flawed macroeconomic ideas.

2.1. The Money Multiplier

For generations, macroeconomists have been teaching introductory students a flawed model of how monetary policy affects the economy. The basis for this flawed model is that central banks influence the economy by controlling the money supply. For example, the IS-LM model teaches students that monetary is set to control a measure of the money supply such as M1 (which includes currency and checking deposits). The introductory macro model teaches that the central bank does this by controlling the monetary base (which equals currency and central bank reserves and is also known as M0) and this automatically translates into an increase in M1 via a simple relationship whereby M1 is a constant multiple of the monetary base.

This "money multiplier" story relies on assumptions about the banking system which are highly inaccurate. The story assumes that after money is deposited with a bank, the bank will automatically loan out almost all of this money, keeping only a small amount as reserves to satisfy minimum reserve requirements. The money loaned out is again re-deposited in the banking system and thus generates further loans. This process thus sees the total amount of money created from an initial increase in the monetary base being a simple multiple of the original increase, where the multiple depends on minimum reserve requirements. Since central banks control both the monetary base and reserve requirements, this model assumes central banks have direct control over measures of the money supply such as M1.

In reality, banks do not operate in the manner described in the money multiplier story. Banks do not automatically loan out a fixed percentage of any new deposit and they do not seek to constantly meet the minimum reserve requirements. Instead, banks make loan decisions based on a wide variety of factors, including their assessments of the credit-worthiness of borrowers, the attractiveness of alternative uses of funds such as purchasing securities and their regulatory capital positions.

In particular, under the Basel regulatory framework, banks have to monitor their risk-weighted assets to ensure their capital ratios do not approach regulatory minimum levels. So, for example, banks that are concerned about raising their capital ratios will seek to reduce risk-weighted assets. This may mean that additional deposits are kept as reserves or are used to purchase assets with low risk weights. (This is easily done in Europe since all euro-denominated government bonds issued by EU member states are unjustifiably classified as having a zero risk weight). This process of reducing risk weighted assets has been evident in Europe in recent years. The European Banking Authority has reported that

[3] Lecture notes for this course are available at http://karlwhelan.com/blog/?p=587

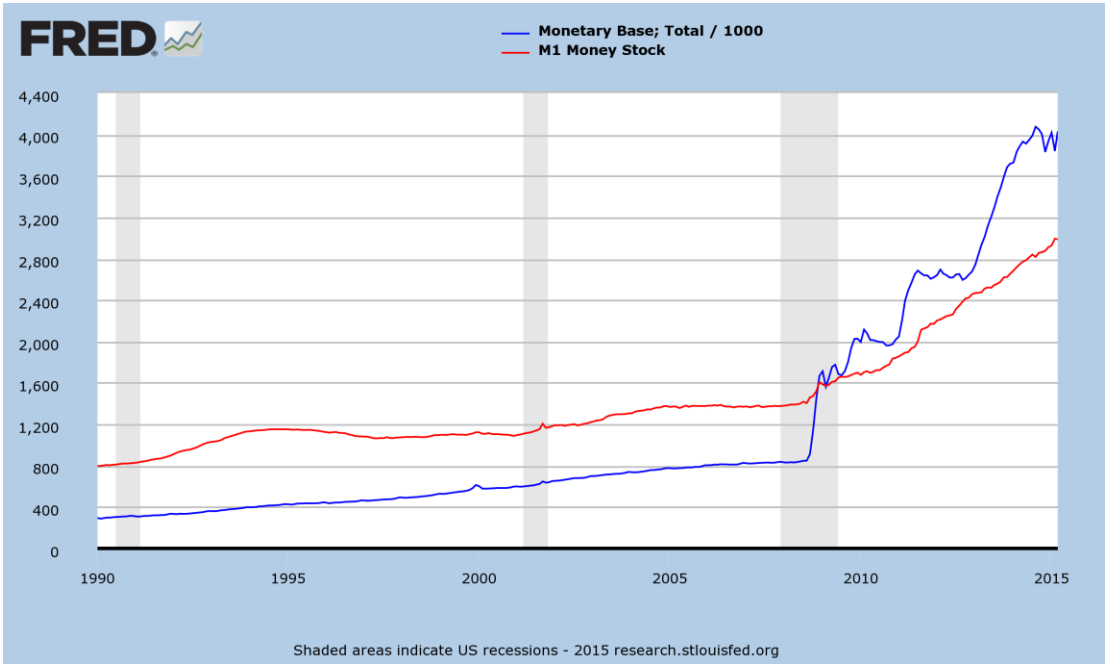
Europe's largest banks reduced their risk-weighted assets by almost 20 percent between June 2011 and June 2014.[4]

For these reasons, the banking system cannot be considered a simple mechanism that directly translates the central bank's changes in the monetary base into broader changes in the money supply. This is one of the reasons that no modern advanced country central bank currently practices money supply targeting. Historical examples of money supply targeting, such as during Paul Volcker's term as Fed chairman in the early 1980s, provided plenty of evidence of the difficulty of predicting money multipliers and finding stable relationships between various measures of the money supply.

For these reasons, despite the warnings of some economists that the QE programme would cause significant inflation, very few professional central bankers expected the Fed's QE programme to produce increases in the broader money supply that would be consistent with historical values of the money multiplier.[5]

Indeed, as Figure 1 shows, the huge increase in the monetary base associated with the Fed's large-scale asset purchases were not matched by proportionate increases in the M1 money stock. Indeed, the monetary base in the U.S. is now larger than M1, meaning the amount of reserves held at the Fed is larger than the total amount of deposits—this is completely at odds with the traditional money multiplier story. As Figure 2 shows, the money multiplier in the United States fell sharply once the QE programme began.

Figure 1: Monetary Base and M1 in the United States

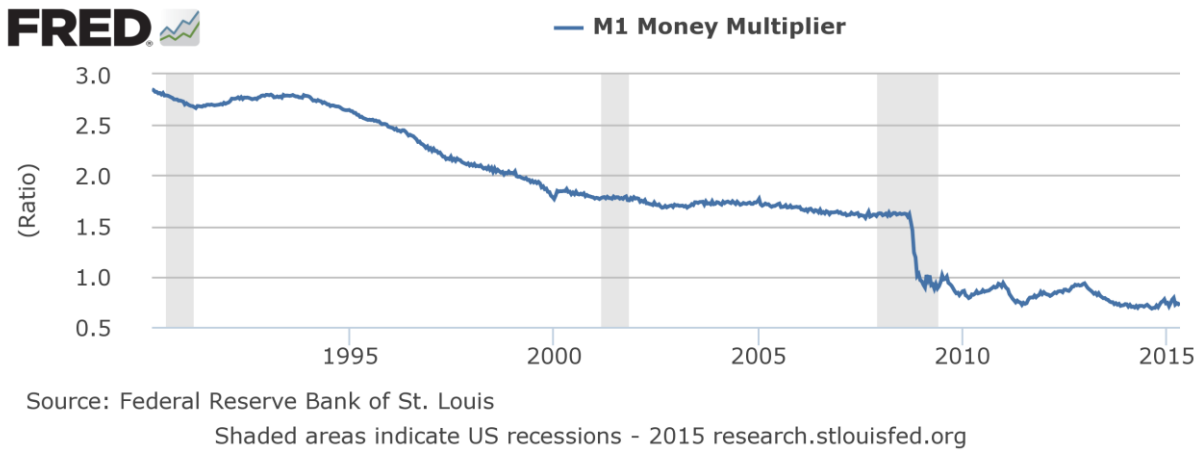


Source: St. Louis Fed FRED Database

[4] This information is available at http://www.eba.europa.eu/documents/10180/950548/CRDIV-CRR+Basel+III+monitoring+Report+-+Results+as+of+June+2014.pdf/92bc3251-f527-4f6f-9dc0-5edd5132f65d

[5] For example, in an open Letter to Ben Bernanke, a number of prominent Republican economists warned that QE "risked currency debasement and inflation". Wall Street Journal, November 15, 2010. http://blogs.wsj.com/economics/2010/11/15/open-letter-to-ben-bernanke/

Figure 2: The M1 Money Multiplier in the United States



For these reasons, there is no reason to expect that the ECB's QE programme to automatically trigger a corresponding proportional increase in broader measures of the money supply via increases in bank lending. That said, there are signs that the European banking sector is recovering. Large European banks have improved their capital ratios via raising new capital and deleveraging. In addition, the ECB's comprehensive assessment has improved transparency for investors across the banking system. As such, it may be the case that credit growth will pick up over the next few years. However, I suspect the ECB's QE programme will play a limited role in this recovery.

2.2. The Quantity Theory

The other element of the traditional textbook model of money is the quantity theory of money, which describes a long-run relationship between money and inflation. Defining the velocity of a stock of money, V, as the ratio of nominal GDP (real GDP, Y, times a price level, P) to that stock, M, then one arrives at the famous expression $MV = PY$.

If velocity is constant, then nominal GDP is strictly proportional to the stock of money. And if money is neutral in the long run (i.e. if real GDP has no relationship with the stock of money in the long run) then the price level will be strictly proportional to the stock of money over this long run. This is the sense in which Milton Friedman (1963) meant his famous statement that "Inflation is always and everywhere a monetary phenomenon."

In practice, of course, velocity is not constant but if changes in velocity were predictable then it would still be the case that changes in the money supply would translate into predictable long-run changes in the price level. Up until the 1980s, velocity in the United States showed a relatively predictable upward trend over time. However, over the past 35 years, the velocities of the various monetary aggregates have been unpredictable. Notably, in recent years the velocity of M1 has almost halved (see Figure 3).

Because of these developments, time series data now show a very weak relationship between the growth rate of the stock of money and nominal GDP: See Figure 4 for the relationship between M1 money growth and nominal GDP growth in the United States. The relationship between money growth and inflation is even weaker: See Figure 5.

These figures rely on U.S. data and on the use of the M1 money supply measure but the points hold for data for other countries and other monetary aggregates. ECB has tended to emphasise the M3 measure of the money supply but, as shown in Figure 6 there is little evidence for a relationship between this measure and price inflation in the euro area.

Figure 3: The Velocity of M1 in the United States

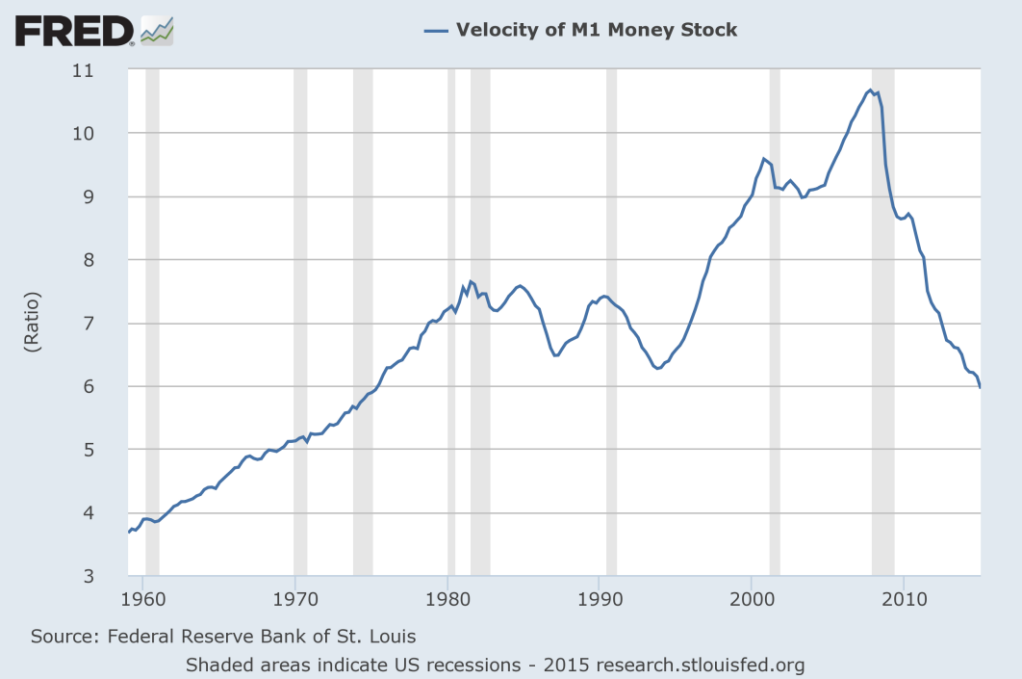


Figure 4: Growth Rates of U.S. M1 Money Stock and Nominal GDP

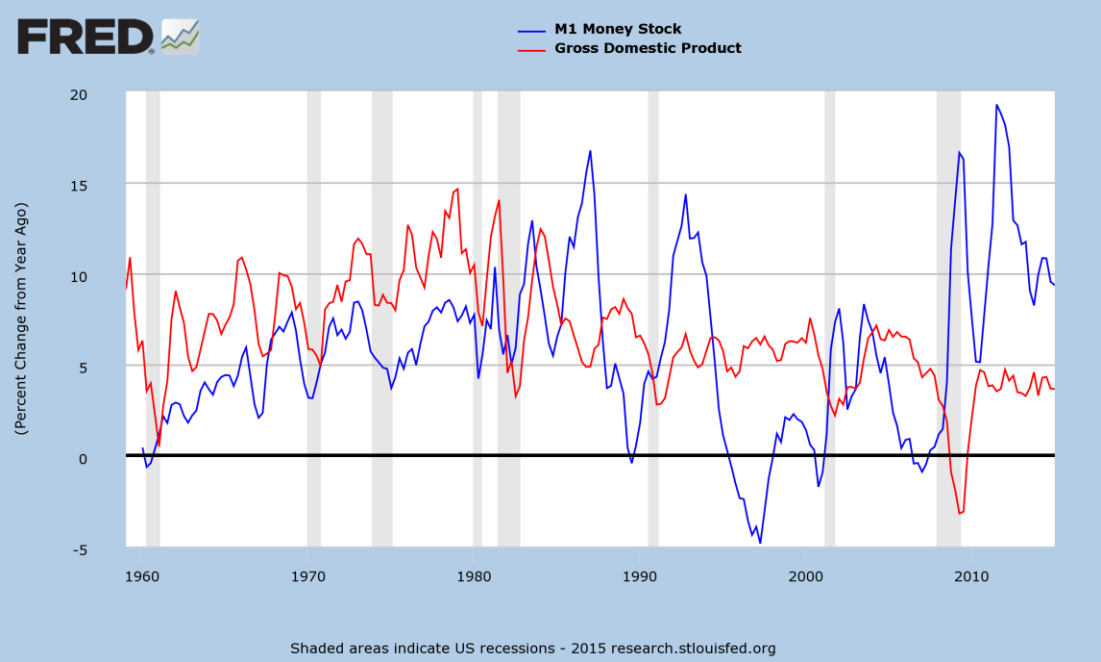


Figure 5: Growth Rates of U.S. M1 Money Stock and Inflation

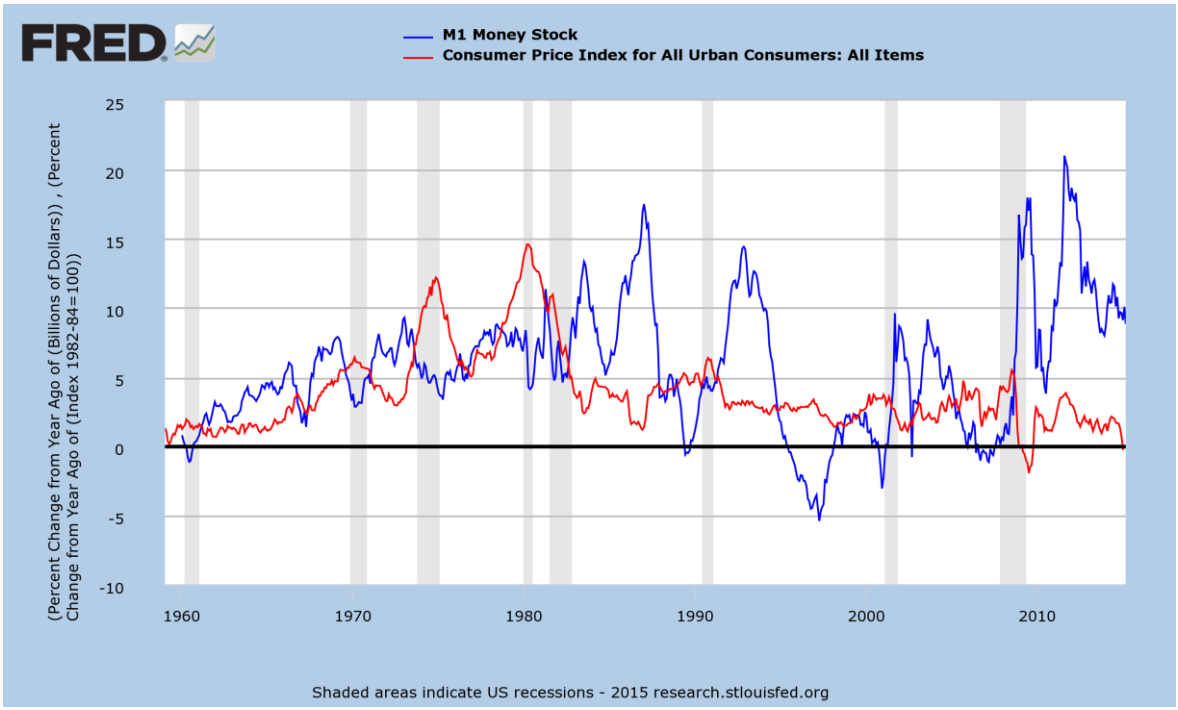
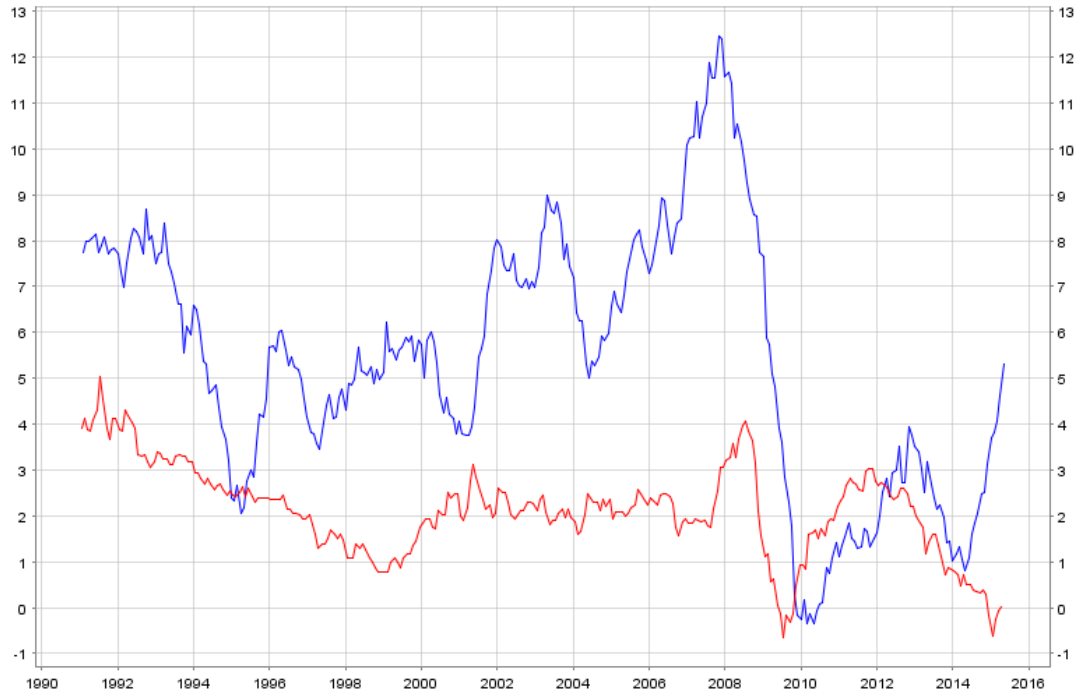


Figure 6: Growth Rates of Euro Area M3 Money Stock and HICP Inflation

(M3 Growth is the Blue Line, Inflation is the Red Line)



Source: ECB Statistical Data Warehouse

2.3. So How Does QE Work?

These considerations imply that there is little reason to expect a QE programme to automatically trigger large increases in bank lending, nominal GDP or inflation. So what are the channels through which QE may have a positive impact on the economy?

In one sense, the answer is simple. QE involves large-scale purchases of various types of long-term bonds. By increasing the demand for these bonds, their prices rise via normal supply-and-demand mechanisms. Higher bond prices imply lower yields on long-term bonds and these lower yields are then passed on via the usual processes of arbitrage in financial markets to a wider range of financial market instruments. The result is lower borrowing rates for governments, firms and households and these lower rates act to boost consumption and investment.

In another sense, however, the explanation is not so simple. For those trained in modern academic finance theory, the idea that Central Banks purchasing large amounts of an asset should change its price is not at all straightforward. Traditional finance theory teaches that assets are priced according to their "fundamental" value so that each asset has the "correct" price based on its expected return and perceived riskiness. According to this theory, there should be no role for "demand" effects as just described. This is what prompted Ben Bernanke to joke - "The problem with QE is it works in practice, but it doesn't work in theory."[6]

But, of course, there are plenty of other theories. One reason there are demand effects for bonds is that investors differ in their preferences and assessments of risk. Consider the case of a bond that was yielding 3% and whose yield then dropped to 2% (In other words, the bond's price goes up). Some investors that may have been comfortable with the risk-return trade-off associated with the bond when it yielded 3% but now view it as too risky to be worth holding at a 2% yield. Alternatively, some types of investors (such as pension funds, mutual funds or hedge funds) may have target rates of return and will be forced to sell the bond to chase higher returns on other assets. Through these channels, the demand for a bond would fall.

This line of reasoning appears to explain why QE lowers bond yields. If there is a fixed supply of the bond and demand is larger the lower the price is (the higher the yield) then the equilibrium bond price is the one that equates supply and demand. If the central bank decides to purchase a specific quantity of a specific type of bond, then the demand curve for this bond will shift out: This will raise the price of the bond and reduce the yield.

Alternatively, you could argue that the "private sector demand curve" is unchanged but the "private sector supply curve" shifts in when central banks purchase some of the bonds, thus raising prices. In practice, bond yields are not set by two curves intersecting. They are set on a second-by-second basis by brokers who are matching up those wishing to sell and those wishing to buy. But the basic principle still applies: When there is heavy demand to buy the bonds, the broker raises the price to induce people to sell and this lowers the yield.

Prior to the launch of QE programmes by the Fed and the Bank of England, there was only limited empirical evidence as to how these programmes might work in practice. However, the evidence from carefully-designed studies by researchers at these institutions (including Gagnon et al, 2010, D'Amico et al, 2012 and Joyce et al, 2011) all point to QE as having impacted interest rates on the targeted bonds.

For example, D'Amico et al (2012) state their results as follows, using the terminology Large-Scale Asset Purchase (LSAP) program rather than QE:

[6] See "US quantitative measures worked in defiance of theory" http://www.ft.com/intl/cms/s/0/3b164d2e-4f03-11e4-9c88-00144feab7de.html

> *"For longer-term Treasury securities, the first LSAP program (undertaken in 2009) consisted of $300 billion of Federal Reserve purchases, while the second program (in late 2010 tomid-2011) consisted of $600 billion of purchases. Our preferred estimates suggest that, taking scarcity and duration together, the first program of LSAPs reduced longer-term Treasury yields by about 35 basis points; the second program, larger in dollar amount but smaller in its impact on duration, reduced longer-term Treasury yields by about 45 basis points."*

So while QE programmes do work to reduce long-term interest rates, the evidence for existing programmes suggests the effects are modest enough. This means that QE programmes are a poor substitute for the ability to cut short-term interest rates by another couple of percentage points.

This illustrates one of the downsides of operating in a low inflation environment. When the target inflation rate is as low as 2 percent, average nominal interest rates will also tend to be quite low. This makes it far more likely that interest rates will reach the zero bound in a situation where the central bank would like to have more monetary stimulus. Indeed, since international central banks converged during the 1990s on the idea of an inflation target of about 2 percent, zero bound restrictions have become a regular feature of monetary policy during recessions.

3. QE AND INEQUALITY

In this section, I discuss two different aspects of the recent debate about the impact of QE on inequality. The first aspect relates to its impact on the general distribution of income and wealth. The second aspect is the idea that QE specifically benefits a small group of people associated with the financial sector.

3.1 Inequality amongst Households

Economic studies of inequality have tended to focus mainly on income inequality, with measures like Gini coefficients used to estimate how unequal the distribution of income is. This focus on income inequality is partly due to the fact that income data tends to be widely available from sources such as microeconomic surveys or from tax-related datasets. In more recent years, thanks partly to the work of Tony Atkinson, Thomas Piketty and others, there has been increased attention paid to inequality in wealth.

QE programmes can potentially affect both types of inequality. Here I discuss wealth inequality first and then income inequality.

Wealth Inequality

The most common explanation of how QE raises inequality is that lower interest rates boost asset prices and this tends to benefit the wealthier classes that hold most of the assets. Whether this effect actually makes the distribution of wealth more unequal, however, requires consideration of a number of other factors. In a recent paper, Bivens (2015), considers how QE affected the prices of various types of assets and then considers the impact on wealth of different types of households. He estimates that the Fed's "LSAPs" boosted long-term bond prices by 9 to 14 percent, equity prices by 5 percent and house prices by 7 percent.

He notes that the overall impact on wealth inequality is limited, summarising his results as follows:

> *While stock price increases stemming from LSAPs accrue disproportionately to the top 1 percent, home price appreciation disproportionately benefits the bottom 90 percent. In fact, the symmetry of the respective holdings of stocks and home equity is striking: the top 1 percent owns just 9.8 percent of total housing wealth while the bottom 90 percent owns just 9.1 percent of total stock and mutual fund wealth. Given this pattern, there would have to be a very large difference in the effect of LSAPs on the prices of stocks versus the prices of homes to really gain distributional traction. Not only is there no particularly large difference in the effects of LSAPs on these prices, but the impact on home prices (the more democratically held asset) seems in our estimate to be larger.*

The situation in Europe appears to be quite similar. The ECB's 2013 report on its Eurosystem Household Finance and Consumption Survey (HFCS) shows that median household net wealth in the euro area is €109,200. Median holdings of financial assets, however, are only €11,400 with housing equity providing the vast majority of the rest of the net wealth of average households. An study using HFCS data to calculate the impact on wealth inequality of the ECB QE programme would be a worthwhile exercise. It seems, likely, however that the impact on wealth inequality of this programme will be small.

Income Inequality: Financial Income

In relation to income inequality, the reduction in interest rates associated with QE programmes almost certainly reduces inequality.

While a fall in yields on long-term bonds boosts the value of various types of assets, the usual mechanism by which this works is that asset prices rise to a point where future returns on assets have fallen in line with the decline in yields on long-term bonds. So, for example, someone who owned a long-term German government bond issued ten years ago will have seen the price of this bond increase. However, the schedule of coupon and principal payments associated with this bond will not have changed. Over the longer term, this person will not be better off: The short-term capital gain associated with the reduction in bond yields will ultimately be exactly offset by lower future yields so that the final value of payments from the bond has not changed.

Lower interest rates also have a redistributive income effect because they benefit borrowers and hurt those who hold assets. Microeconomic survey data such as the HFCN generally show borrowers to be younger and less well-off on average than those with large positive asset holdings.

Moreover, the available evidence suggests that wealth in the euro area is more concentrated among households that are older and have higher incomes. Table 1 on the next page reproduces a table from the ECB's 2013 report on its Eurosystem Household Finance and Consumption Survey (HFCS).[7] This shows that average net wealth for households with a reference person aged between 55 and 64 are almost twice those of households with a reference person aged between 35 and 44. Average net assets of those in the top income quintile are over ten times the average net assets for those in the bottom quintile.

So while QE programmes may appear to help the wealthy by boosting asset prices, they also hurt the wealthy by reducing financial income. This point was clearly expressed in a recent blog post by Ben Bernanke, in which he wrote the following about critics of the Fed's low interest rate policy.[8]

> *"Interestingly, some of the same critics who say that the Fed's policies disproportionately help the wealthy also claim that they "hurt savers" by lowering rates of return. Since the wealthy tend to be savers, and the middle class and poor tend to be borrowers, the assertions that Fed policy helps the wealthy and hurts savers cannot generally both be true."*

Bernanke notes that there are clearly exceptions to this general point: There are some poorer people who live off interest from savings accounts. But, overall, the lower return on assets appears to be something that reduces the incomes of the rich more than the poor.

[7] ECB (2013).
[8] This blog post is available at http://www.brookings.edu/blogs/ben-bernanke/posts/2015/06/01-monetary-policy-and-inequality

Table 1: The Distribution of Net Wealth in the Euro Area

Table 4.1 Net wealth by demographic and country characteristics

	Median Net Wealth (€1,000)	Mean Net Wealth (€1,000)	Share of Total Net Wealth (%)	Share of Households (%)
Euro Area	109.2	230.8	100.0	100.0
S.E.	*(1.9)*	*(4.2)*		
Household Size				
1	39.6	134.9	18.5	31.6
2	148.2	279.4	38.9	32.1
3	135.2	246.7	17.7	16.6
4	175.4	285.4	17.5	14.1
5 and More	121.6	307.9	7.5	5.6
Housing Status				
Owner-Outright	241.2	391.3	69.1	40.7
Owner-with Mortgage	171.1	266.6	22.4	19.4
Renter or Other	9.1	49.5	8.6	39.9
Percentile of EA Income				
Less than 20	26.7	89.2	7.7	20.0
20-39	53.2	124.9	10.8	20.0
40-59	104.9	172.5	14.9	20.0
60-79	157.3	226.8	19.7	20.0
80-100	295.3	540.8	46.8	20.0
Percentile of EA Net Wealth				
Less than 20	1.2	-2.8	-0.2	20.1
20-39	27.0	29.4	2.5	19.9
40-59	109.2	111.9	9.7	20.0
60-79	230.6	235.1	20.4	20.0
80-100	506.2	780.7	67.6	20.0
Age of Reference Person				
16-34	16.1	71.3	4.9	15.7
35-44	94.5	191.3	16.2	19.6
45-54	148.3	266.6	22.9	19.9
55-64	186.6	344.4	25.5	17.1
65-74	163.9	283.6	17.8	14.5
75+	126.1	220.9	12.7	13.2

Source: ECB Household Consumption and Finance Network

Income Inequality: Wage Income

Changes in asset prices and financial income are some of the ways that QE programmes can affect inequality but they are not the only ways. To the extent that lower interest rates stimulate the economy, they reduce unemployment. Indeed, Engen, Laubach and Reifschneider (2015) estimate that the Fed's unconventional monetary policies (which they describe as both QE and "increasingly explicit and forward- leaning guidance for the future path of the federal funds rate") have reduced the unemployment rate in United States this year by 1.25 percentage points.

This has an impact on inequality because the most significant income reductions in a recession are experienced by those who lose their job and job loss disproportionately impacts those on lower incomes. Lower unemployment thus directly benefits those at the bottom end of the income distribution more than those at the top end.

Reductions in unemployment also have indirect benefits for those workers at the lower end of the income distribution that have not lost their job. Katz and Krueger (1999) reported that wages for lower-paid workers are more responsive to the overall unemployment rate. This result has been recently updated and verified in the paper by Bivens (2015). Thus, the impact of QE in raising the wages of lower-income workers more than others could be an important channel through which inequality is reduced.

Income Inequality: Effect of Inflation

One of the explicit goals of the ECB's QE programme is to raise inflation. If this is successful, it will have a series of distributional effects. Borrowers will generally benefit unless they are on variable rate contracts that adjust upwards with inflation. In contrast, those who own assets that provide returns that are not linked to inflation (or earn incomes that do not adjust with inflation) will tend to lose out.

A recent paper by Doepke, Schneider and Selezneva (2015) provides a detailed examination of the various channels through inflation affects different classes of households in the United States. They summarise their results as follows:

> *"When the Fed aims for higher inflation, middle-aged, middle-class households, who tend to have big mortgages, benefit at the expense of wealthy retirees, who have a lot of their savings in bank accounts and bonds. Poor and young households are less affected because they are less likely to own homes and their debt burdens are low."*

This is also work that could perhaps be undertaken for euro area countries using the ECB's HFCN dataset. This appears, however, to be another channel through which the ECB's QE policy may reduce inequality.

Income Inequality: The Combined Impact of QE

So there are lots of ways that QE may impact inequality and neither economic theory nor a simple examination of the data are likely to give us a straight answer on the precise effects of monetary policies of this type on inequality.

One way to assess the combined impact of the various channels through which QE affects inequality is to design a study that identifies how inequality is affected by pure shifts in monetary policy (i.e. those shifts that are not related to common cyclical factors that may influence both monetary policy and inequality). One paper that does this using U.S. data is Coibon et al (2012). Their study concludes that monetary easing reduces inequality. They exam microeconomic data from the U.S. Consumer Expenditure Survey that wage income

for workers at the lower end of the distribution rises in response to monetary easing while financial income for those at the high end tends to decline.

This is an area where more research would be welcome but it is my assessment that the evidence currently points to QE as having a small positive effect in reducing income inequality.

3.2. Financial Institutions

A related, but more specific, criticism of QE is that it particularly helps financial institutions and thus benefits the top 1% of the income distribution by boosting bonuses for bankers. For example, the New York Times article by William D. Cohan (cited above) states

> *"The first beneficiaries are the big Wall Street banks, the so-called group of 22 primary dealers, which can borrow directly from the Fed, essentially free. Because banks are in the business of making money from money, they use the Fed's money to make more money by trading with it, investing it in government debt and pocketing the profit or by lending it out at wide spreads. Thanks to the Fed's low-interest rate policy, the big banks also make a lot of money by taking our deposits, which they also pay us virtually nothing for – my savings account pays me an annual interest rate of 10 basis points, or one-tenth of one percent and lending them out at wide spreads."*

He also describes another possible benefit of QE:

> *"Then there is the gift the Fed has given to Wall Street's traders and investment bankers. The traders benefit because they know – and have known for years, thanks to the Fed's telegraphing of its quantitative easing program – that the Fed will be a continuing buyer of their risky securities at (ever-rising) market prices. Since the onset of Mr. Bernanke and Ms. Yellen's policy, the Fed's balance sheet has grown to $4.5 trillion, from around $800 billion before the crisis. That's a whole lot of securities bought at high, profitable prices and paid directly to Wall Street traders. The Fed might as well have been paying the traders' seven-figure bonuses directly."*

My assessment is that both of these criticisms are, at best, over-statements.

Low Yields and Bank Profits

Traditional conventional wisdom is that bank profits benefit from low short-term interest rates. However, this is because temporary low interest rates during a recession and the early stages of a recovery imply a steepening of the yield curve. Bank assets tend to be longer in duration than bank liabilities, so a steepening of the yield curve reduces costs relative to income and raises net interest margins. A reduction in interest rates tends to see a higher fraction of a bank's liabilities being reset to lower interest rates than its assets (e.g. long-term fixed rate mortgages are not reset) which also boosts profitability.

The low interest rates of more recent years, however, have been different from the scenarios of the past where interest rates were temporarily low during a recession and were expected to rise quickly once the economy had recovered. Due to a combination of economic weakness and a commitment to use QE to maintain low interest rates for a long period, interest rates on many asset categories are now very low right across the yield spectrum. For example, during 2009, in the early days of the ECB's low interest rate policy, the average difference between yields on 10 year AAA-rated euro area government bonds and 1 year AAA-rated bonds (as measured by the ECB's yield curve) was 2.9

percentage points.[9] As of June 1, a few months into the ECB's QE programme, this gap stood at only 0.85 percentage points.[10]

This shows there is no direct link between QE policies and higher bank profits via improved net interest margins.

Profits from Purchase of Risky Securities

Mr. Cohan's point that the Fed's bond purchases have produced a bonanza for Wall Street traders due to large purchases of "risky securities" is also misplaced. The Fed has been purchasing Treasury bonds and agency-issued Mortgage Backed Securities (MBS). It is presumably the latter that Cohan is referring to as risky securities.

In reality, however, statistics from the Securities Industry and Financial Markets Association show that issuance and average daily trading volume of mortgage backed securities have been falling in recent years and are well below the levels seen prior to the global financial crisis.[11] In addition, while these bonds may be purchased from Wall Street traders, the vast majority of the money paid out for these bonds goes back to the banks that originate the mortgages used to back the securities. The idea that the Fed is generating a wave of bonuses on Wall Street via MBS purchases is not accurate.

[9] These data are available at http://sdw.ecb.europa.eu/quickview.do?SERIES_KEY=165.YC.B.U2.EUR.4F.G_N_A.SV_C_YM.SR_1Y and http://sdw.ecb.europa.eu/quickview.do?SERIES_KEY=165.YC.B.U2.EUR.4F.G_N_A.SV_C_YM.SR_10Y

[10] See Genay and Podjasek (2014) for a discussion of the negative effects of a flat yield curve on bank profitability in the US.

[11] These data are available at http://www.sifma.org/research/statistics.aspx

4. CONCLUSIONS

Monetary policy is almost always a controversial area and complaints about the impact of policy on the economy from various interest groups always need to be understood in the context of the vested interests of these groups.

One group that traditionally have a loud voice in debates about monetary policy are those who benefit from low inflation, such as retired people who live on fixed incomes or financial institutions that rely on income from bonds. These groups are currently happy that the ECB is undershooting its inflation target and will likely continue to warn about the inflationary dangers of QE.

However, if the ECB's inflation target is to remain credible to the public, it is important that deviations to the downside are treated as seriously as deviations to the upside. Warnings that QE's expansion of the monetary base will result in rampant inflation rely on a highly flawed view of the role of money in the economy and have been directly contradicted by the evidence from the UK and US. Despite some signs of improvement in the euro area economy, I still believe the more likely risk is that the impact of QE through lower interest rates will be relatively marginal and inflation will remain below target for longer than the ECB Governing Council desires.

In relation to the idea that QE is boosting inequality, even if this was the case, it is unclear whether the ECB should concern itself with such a development. The ECB has an explicit primary goal of maintain price stability, as defined by meeting its inflation target. Currently, it is failing to meet that target and its QE programme should be viewed as an overdue positive step aimed at restoring the credibility of its commitment to meeting its target. Beyond meeting its inflation target, the ECB has a secondary task of supporting the economic policies of the European Union. It seems clear that a policy that focuses on boosting economic growth and lower unemployment fits well with the majority of the Union's economic goals.

In any case, despite vigorous attacks from both left-leaning liberals (people who focus on the idea that QE benefits "the 1%" who work on Wall Street) and right-leaning conservative (people who focus on the idea that QE hurts poor retired savers) the balance of the evidence actually supports the idea that looser monetary policy has a marginal impact in reducing inequality. By reducing unemployment, QE can help the unemployed get jobs and reduce pressure on those at the bottom end of the income distribution.

To the extent that the ECB does decide to concern itself with inequality, Governing Council members should argue that they are helping rather than hurting. And those who are genuinely concerned about reducing inequality would be better off focusing on areas that really matter, such as taxation and education policies.

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