

ECB Monetary Policy in the Great Recession: A Critical Monetarist Overview

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The critique of Milton Friedman of stop-go monetary policy appears applicable to the monetary policies followed by the world's central banks during and after the Great Recession. All of the major mature economies have experienced a deep recession and a slow recovery. Evidence for a common real shock as opposed to a monetary shock would be disparate monetary policies across countries. However, there was a commonality among central banks in 2008 in their policies. They all reacted similarly to the long, persistent inflation shock that had originally appeared in summer 2004 and lasted through summer 2008. The shock arose from the pass through of the increase in the relative price of food, commodities and especially oil to the price level. Moreover, by summer 2008, it appeared that persistent headline inflation was starting to pass through to core inflation. At the same time, the inflation shock reduced real disposable income and consumer spending. A weakening economy called for a reduction in interest rates. However, the Fed, the Bank of England, and the ECB, remained focused on headline inflation until fall 2008. Resistance to reducing interest rates sufficiently to offset weakness in economic activity turned a moderate recession into a major recession (Hetzel 2012).

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The views in this paper are the author's not the Federal Reserve Bank of Richmond's or the Federal Reserve System's.

Starting in the 1950s and lasting through the 1970s, Milton Friedman criticized the Federal Reserve System both for the actual conduct of monetary policy and for its understanding of that policy. This monetarist criticism appears directly applicable to the conduct of monetary policy since the start of the last recession. At the heart of his critique lay the failure of central banks to understand their role as creators of money and the resulting responsibility to provide a stable monetary framework.

According to Milton Friedman and his frequent coauthor Anna Schwartz, the Fed should control money creation to provide for rough price stability by making the trend growth rate of the nominal (dollar) expenditure of the public correspond to the trend growth rate of real output. That power and concomitant responsibility follow from the monetary character of the price level. That is, the Fed exercises control over nominal variables like nominal expenditure through its control over the nominal quantity of money. Changes in nominal expenditure and the price level emerge as a result of the public's attempts to make the nominal quantity of money correspond to the real quantity desired by the public. Moreover, to avoid destabilizing the economy, the Fed should avoid sharp accelerations and decelerations in the growth rate of nominal expenditure.

1. The monetarist critique applied to the monetary policy of the ECB.

The explanation by the ECB of its monetary policy embodies everything that monetarists dislike. Monetary policy is not an exercise in controlling money creation in a way that stabilizes the growth of nominal expenditure but rather the exercise of influencing financial intermediation in order to alleviate dysfunction in credit markets. A decline in money growth to a low level is not evidence for a monetary shock that causes recession. The solution to recession lies in structural reform of fiscal policy and of labor and product markets. In the Editorial (European Central Bank 2012, 5-6), the ECB wrote:

[I]nflation should decline further in the course of 2012 and be below 2% again in 2013. Consistent with this picture, the underlying pace of monetary expansion remains subdued.... The annual growth rate of M3 stood at 3.2% in June 2012.... Annual growth in M1 increased

further to 3.5% in June, in line with the increased preference of investors for liquid instruments in an environment of low interest rates and high uncertainty.... To sum up, the economic analysis indicates that price developments should remain in line with price stability over the medium term. A cross-check with the signals from the monetary analysis confirms this picture.

[S]tructural reforms are as essential as fiscal consolidation efforts and the measures to repair the financial sector.... [F]urther reform measures need to be implemented swiftly and decisively. Product market reforms to foster competitiveness and the creation of efficient and flexible labour markets are preconditions for the unwinding of existing imbalances and the achievement of robust, sustainable growth.

2. The identification of shocks: or, is the business cycle a dance of the dollar?

Macroeconomists differ over two major issues: the nature of the shocks that drive cyclical fluctuations and the ability of the price system to prevent those shocks from creating gaps between actual and potential output. The basic intuition of the monetarist identification of shocks as monetary derives from the assumption that markets work well in the absence of price fixing.

Intratemporally (across space), the price system works well to determine prices that clear markets. Sufficient competition exists that prices do a good job of measuring relative scarcity. As conjectured by Hayek (1945), they aggregate the dispersed information that producers need to make decisions. Heuristically, shoppers find the store shelves filled with the goods they desire hardly noticing excess supplies or shortages. The major exceptions derive from government price fixing, which creates persistent surpluses and shortages.

Intertemporally (across time), recessions appear to reflect a persistent excess supply of labor or lack of demand for goods. In traditional Keynesian and real bills views of the world, there is a fatal flaw in the price system. The Keynesian and real bills challenges to the operation of the price system come from the assumption that the herd behavior of investors represents a market power that undercuts the ability of the price system to aggregate dispersed information about the future in an unbiased manner. Speculative manias or animal spirits cause sudden, irrational shifts from unwarranted optimism to unwarranted pessimism on the part of investors about the future. Those shifts overwhelm the stabilizing properties of the price system.

In contrast, monetarists believe that the price system works well to clear markets as long as the government does not engage in price fixing with respect to the real interest rate. For monetary policy, the counterpart to allowing the price system to operate is the requirement that the central bank allow the price system to determine real variables like the real interest rate and the unemployment rate. The special twist with respect to monetary policy is that when the central bank sets its interest rate target in a way that interferes with the operation of the price system the resulting surpluses and shortages in the credit market require monetization and demonetization, respectively. The accompanying monetary emissions and absorptions force the price level to evolve in an unpredictable way. Firms that set dollar prices for multiple periods lack a common expectation about the future price level that can coordinate the setting of dollar prices in a way that separates the determination of the price level from the determination of relative prices.

Providing a stable environment in which the price system can operate requires the conduct of monetary policy by a rule. Fiat money possesses value in exchange today only because individuals believe it will possess value in exchange tomorrow. The central bank must follow a rule that provides for a stable nominal anchor. Moreover, a rule that allows the price system to work will provide the confidence that shocks today that depress output will be transitory. Confidence in future prospects will stabilize consumption and investment today. In sum, the central bank must follow a rule that provides for a stable nominal anchor and that allows the price system to work by allowing market forces to determine real variables.¹

Friedman of course is associated with a rule for low, stable money growth. In the pre-1981 environment before the deregulation of interest rates, real money demand was both predictable and relatively interest insensitive. Moreover, the trend rate of growth of output per worker was

¹ For a summary of quantity theory ideas, see Hetzel (Federal Reserve Bank of Richmond *Economic Quarterly*, forthcoming).

reasonably predictable. In that environment, Friedman's rule would have produced fairly steady growth of aggregate nominal expenditure.² The following section summarizes the monetarist critique of discretionary monetary policy as the source of the shocks that cause recessions.

3. The monetarist critique of discretionary monetary policy

Until the 1980s, the monetarist vs. Keynesian debate was synonymous with the rules vs. discretion debate. While Friedman represented the former, Walter Heller, President Kennedy's chairman of the Council of Economic Advisers and author of the phrase "fine tuning," represented the latter. As expressed in their 1969 debate, the fundamental issue was whether to provide for economic stability by relying on the price system or by superseding the working of the price system with discretionary monetary and fiscal policy (Friedman and Heller, 1969, 28-29 and 78). Heller rejected Friedman's proposed rule calling for the money stock to increase at a constant rate:

[L]et's not lock the steering gear into place, knowing full well of the twists and turns in the road ahead. That's an invitation to chaos.... With the controls thus on automatic pilot [through a money rule] ... one can imagine what would happen when the economy encountered the turbulence of recession.

Friedman replied:

The reason why that [the rule for steady money growth] doesn't rigidly lock you in ... is that ... the automatic pilot is the price system.... If you look at what happened to this country when we adjusted to post-World War II, to the enormous decline in our expenditures, and the shift in the direction of resources, you have to say that we did an extraordinarily effective job of adjusting, and that this is because there is an automatic pilot. But if an automatic pilot is going to work, if you're going to have the market system work, it has to have some basic, stable framework.

² Hetzel (2008, 2012) argues that the rule that gave overall all consistency to monetary policy in the Volcker post-disinflation period through the Greenspan era was quantity-theoretic in spirit. The rule, termed lean-against-the-wind (LAW) with credibility, entailed an interest rate instrument rather than a monetary aggregate instrument. The rule provided for the market determination of the real interest rate through persistent changes in the funds rate in response to sustained changes in the economies rate of resource utilization provided that financial markets believed those changes would cumulate to an amount necessary to maintain low, stable inflation. Inflation scares prompted more forceful changes. The rule provided for a stable nominal anchor through the maintenance of the expectation of low, stable inflation.

Friedman's critique of discretion became known as the "long-and-variable-lags" argument. The critique took the form of criticism of a reaction function entailing a direct response by the central bank to misses of a target for inflation. The fear that central banks would change the setting of their instrument without regard to the long lags involved caused Friedman (1960) to argue for a policy of steady money growth. Given these lags, Friedman (1960, 87) worried about cumulative mistakes.

In *A Program for Monetary Stability*, Friedman (1960, 87-8) wrote:

The Federal Reserve System does not control the price level. It controls the volume of its own earning assets and, at one remove ... the stock of money.... If the link between the stock of money and the price level were direct and rigid, or if indirect and variable, fully understood, this would be a distinction without a difference.... But the link is not direct and rigid.... While the stock of money is systematically related to the price level *on the average*, there is much variation in the relation over short periods of time.... [M]onetary changes have their effect only after a considerable lag and over a long period and that lag is rather variable.... Under these circumstances, the price level ... could be an effective guide only if it were possible to predict, first, the effects of non-monetary factors on the price level for a considerable period of time in the future, second, the length of time it will take in each particular instance for monetary actions to have their effect....

Friedman (1989, 31) argued for a lag of two years between changes in the thrust of monetary policy (a change to either an expansionary or contractionary monetary policy from a neutral one) to the resulting change in inflation.

[A] change in the rate of monetary growth produces a change in the rate of growth of nominal income about six to nine months later.... The changed rate of growth of nominal income typically shows up first in output and hardly at all in prices.... The effect on prices ... comes some 12 to 18 months later, so that the total delay between a change in monetary growth and a change in the rate of inflation averages something like two years. That is why it is a long row to hoe to stop an inflation that has been allowed to start.

Figure 1, "Inflation and M1 Step Function," reproduces a graph from Hetzel (2008). As an illustration of the lags, note that as indicated by the rise in the M1 step function monetary policy became expansionary in early 1963. Only in early 1966 did inflation begin to increase significantly. The irregular but persistent increase in money growth did not fully appear in inflation until 1973. The reality is that given credibility monetary policy can be expansionary or contractionary for a very long period of time (years) without a significant impact on inflation. The perverse result of a simple

feedback rule based on actual inflation is the alternation between expansionary and contractionary monetary policies.³

Friedman (1960, 23) defended his rule for steady money growth by documenting the monetary contractions associated with recessions and the monetary expansion associated with inflation:

This sketch of our monetary experience has concentrated on the major economic fluctuations—those substantial inflations and severe contractions that have from time to time produced widespread distress.... Every such episode has been accompanied by a significant monetary disturbance.... The monetary disturbances have had a largely independent origin in enough cases to establish a strong presumption that they are contributory causes rather than simply incidental effects of the economic fluctuations.... Governmental intervention in monetary matters, far from providing a stable monetary framework for a free market that is its ultimate justification, has proved a potent source of instability.

The pre-1980s period is a wonderful laboratory for testing monetary theories because of the existence of a monetary aggregate, M1, with a stable real demand (steady upward trend in velocity) and considerable interest insensitivity. Also, central banks were fitfully and erratically moving away from the pre-World War II monetary policies based on real bills ideas (in modern jargon, policies based on macro-prudential supervision of financial markets to prevent the emergence of speculative asset bubbles) to less destabilizing "lean-against-the wind" policies based on aggregate demand rather than asset prices. As a result, prior to the early 1980s, monetary policy was a recurrent source of instability and Friedman and Schwartz could document that instability through recording significant fluctuations in money growth of the sort shown in the slide "Inflation and M1 Step Function".

Following the Volcker disinflation and continuing through the Greenspan era, monetary policy became less of a source of disturbances. Financial innovation and the reduced cost of moving funds among assets have also increased the "moneyness" of a range of money market instruments.

³ That alternation initially appears in asset prices. One side effect is that central banks can blame asset bubbles and speculation for the business cycle.

For these reasons, identification of monetary disturbances must move away from flagging fluctuations in money and toward the underlying behavior of central banks that prevents the price system from operating. The archetypal shock occurs when central banks allow inflation to become too high and respond by persistently raising short-term interest rates. They then maintain the elevated level of interest rates while the economy weakens. A variant is that some real shock impacts the economy negatively and the central bank maintains the level of the interest rate out of concern for inflation (Hetzel 2008, 2012).

This identification of monetary shocks falls into the Friedman framework of long-and-variable-lags. In practice, because of the lags involved, as explained in the Friedman quotation above from *A Program for Monetary Stability*, a reaction function that entails a simple feedback rule going from inflation to the interest rate peg involves the attempt to manipulate an output gap. In order to lower inflation, the Fed has historically attempted to create a measured, negative output gap to bend inflation down—the proverbial soft landing. The attempt has always foundered for the reasons Friedman (“The Role of Monetary Policy,” 1968, in Friedman 1969, 104-5) described:

[T]here is always a temporary trade-off between inflation and unemployment; there is no permanent trade-off. The temporary trade-off comes not from inflation per se, but from unanticipated inflation.... [T]he monetary authority controls nominal quantities.... It cannot use its control over nominal quantities to peg a real quantity....

4. Does Japan predict the future of the Eurozone?

Japan is an interesting case study for the Eurozone. If the equation of exchange is a useful framework for understanding inflation, the similarity between Japan and the Eurozone suggests that the Eurozone is headed for a period of Japanese style deflation. As shown in Figures 2-5, the numbers that plug into the equation of exchange ($MV=PY$) are now fairly close for Japan over the last two decades and at present for the EMU. For Japan, M2 is the monetary aggregate with the most stable relationship to nominal GDP. It has been growing year-over-year at around 3%, although that figure has recently fallen to 2%. Over a very long period of time, M2 velocity has declined on

average at around a 2% rate. Given its declining work force and low productivity, the growth rate of potential output is around 2%. Plugged into the equation of exchange, those number imply deflation measured by the GDP deflator. In the EMU, M1 and M3 growth are near 3% with declining velocity since 2000. In the equation of exchange possesses predictive value, even these low rates of real output growth will require deflation in the EMU.

5. The monetarist/Keynesian debate over monetary versus real shocks

Keynesians point to real shocks as the source of cyclical fluctuations in the economy. Monetarists pointed to monetary shocks. Milton Friedman and Walter Heller embodied the two sides of the monetarist/Keynesian debate. Keynesians believed that the shocks that cause cyclical fluctuations are real and that the price system does not work well to prevent deviations of output from potential. However, because of sticky prices (a hard-wired unemployment/inflation relationship captured by the Phillips curve), policymakers can use expansionary monetary policy to rectify negative output gaps. Monetarists believed that the economy is reasonably stable unless destabilized by monetary shocks.

For Keynesians, the central bank exerts its influence as though it were an outsized bank. That is, it influences the economy through the way in which it influences conditions in credit markets. Like a financial intermediary, the monetary liabilities of the central bank (the monetary base) along with the money stock are passively determined in response to the real shocks that move real output and to the Phillips curve trade-offs that determine nominal output. Money creation follows loan demand. In Figure 6, Keynesians would argue for money growth following loan demand.

Viewing the central bank as a large financial intermediary leads to thinking of the interest rate set by the central bank as one influence on the extent to which banks broker funds by buying funds cheaply and then lending them out with a markup. A “low” rate peg by the central bank provides an incentive for banks to buy higher-yielding, risky assets. A “low” interest rate is prima

facie evidence of “easy” money, but a lack of loan demand can frustrate an “accommodative” monetary policy.

In contrast, for monetarists, the central bank is unique because of its power to exercise control over the nominal value of its liabilities and, as a consequence, the nominal amount of purchasing power. Power over the control of money endows the central bank with power over the nominal expenditure of the public through the exercise of a portfolio balance effect.

For monetarists, the real rate of interest is a critical part of the price system. It is the price of consumption today in terms of consumption foregone in the future. If individuals are pessimistic about the future, a low real interest rate (a low natural interest rate) will be required to persuade them to consume enough today (refrain from attempting to transfer consumption to the future) to maintain aggregate demand equal to potential output. The monetary control required to avoid the creation and destruction of money that destabilize prices and the economy requires allowing market forces to determine the real interest rate. Moreover, if individuals are sufficiently pessimistic about the future, the real interest rate consistent with the full employment of resources could be negative. That is, only a negative interest rate would transfer sufficient demand from the future to the present to maintain the demand for output equal to potential output. In this event, if the shock that depressed output was a monetary shock, the central bank should expand the money stock to maintain nominal expenditure (nominal GDP growth). At present, in the Eurozone, a negative “natural” rate of interest cannot be ruled out given the low level of consumer confidence and the drastic reduction in the wealth of households.

6. Contractionary monetary policy as the cause of recession: the 2008-2009 recession

A brief summary of the monetarist argument for contractionary monetary policy as the cause of the 2008-2009 recession is as follows. In 2008, the cumulative effect of a long, persistent inflation shock depressed real income *and* raised headline inflation. Figure 7 shows the cessation in 2007 of the prior steady increase in real disposable income. The resulting shock to income and future

consumption prospects required a lower real interest rate. Figures 8 and 9 show the declines in consumer confidence and in household net worth that began in 2007. Again, these indicators signaled the need for a lower real interest rate to offset an increase in consumer pessimism.

However, the ECB focused on headline inflation and its fear that high headline inflation would pass through to wage demands. As late as July 2008, the ECB actually raised its repurchase rate. The result of maintaining a high level of the repurchase rate while the economy weakened replicated the classic tight monetary policy of a stop phase of stop-go monetary policy (Hetzel 2008 and 2012). Money growth (M1) decelerated and produced a recession.

7. Contractionary monetary policy as the cause of recession: the general case

For monetarists, central bank procedures possess a characterization in terms of monetary control. With an interest-rate instrument, the monetary control required to stabilize the price level necessitates procedures that move the rate target in a way that tracks the natural rate of interest (the real interest rate that keeps output in line with potential output).

The quantity equation $MV=Py$ is an identity. Quantity theorists think about causation for business-cycle fluctuations as running from left to right (from M to y). The monetary emissions and absorptions that destabilize economic activity occur when the central bank fails to respect the working of the price system. Just as with any price fixing, shortages and excesses appear. In the case of monetary policy, they appear in the form of money creation and destruction.

Figure 10 shows the common movements in the growth rate of nominal and real output. The issue of identification deals with how to attribute causation to these common movements. The difference between the graphs is inflation (measured by the implicit GDP deflator). The issue is what forces determine the difference (inflation) and whether the sharp decline in the nominal GDP growth line indicates a monetary shock transmitted to the real GDP series.

Quantity theorists look to money as relevant evidence. What is relevant is the existence of a well-defined demand for real money (purchasing power) and central bank control of the money

stock. An empirical counterpart may not be readily available. For example, in the United States, the Board of Governors does not measure the deposits that banks sweep off their balance sheet overnight, unless by accident banks sweep them to some other part of their balance sheet.

Figure 11 shows M1 and M3 growth. M3 growth includes a significant amount of debt instruments. For that reason, it is hard to disentangle causation between it and the economy. It is best viewed as a contemporaneous indicator of the economy. M1 growth is a better measure of transactions demand. The deceleration of M1 from 10% growth in mid-2006 predicted the recession that began after 2008Q1. However, in a time of financial turmoil when market participants desire liquidity and the safety of too-big-to-fail institutions, they transfer out of the debt instruments in non-M1 part of M3 into the demand deposits of M1. Figure 12 shows how in fall 2008 and in 2009 investors transferred out of the illiquid deposits of banks into demand deposits. Those flows distorted M1 by swelling its size without any implications for the stance of monetary policy. At these times, M3 becomes the better indicator because it internalizes these substitutions.

Figure 13 shows the velocity of the monetary aggregates M1 and M3. Velocity declines for both aggregates. If money is a measure of the impact of monetary policy on nominal GDP growth, then declining velocity makes a given level of money growth more restrictive. A growth rate of money of 3% combined with declining velocity leaves little room for real growth without deflation. A measure of the decline in velocity is the difference between the M1 growth and nominal GDP growth shown in Figure 14. Figure 15 shows the analogous graph for M3. Assuming historical relationships reappear and that money growth stays at 3%, nominal GDP growth will have to fall to zero. In order to sustain 2% real growth, the price level (GDP deflator) will need to decline by about 2% per year. The future of the Euro, if it survives, is Japan.

Accounting for the distortions arising from the flight from illiquid to liquid deposits, the behavior of the monetary aggregates indicates that monetary policy has been contractionary from mid-2006 through at least mid-2012. Since 2011, both M1 and M3 indicate contractionary monetary

policy. The remaining slides address the issue of whether the recession and subsequent protracted slow growth in the Eurozone originated in the behavior of the ECB or in the behavior of private actors.

Figure 16 shows the behavior of long-term and short-term interest rates. The 90-Day Deposits rate is the one determined by the ECB's interest rate target. As shown, the ECB began pushing up short-term rates toward the end of 2005. The stability in the long rate implies stability in the public's expectation of inflation. The increase in the short-term rate was then an increase in the real rate. The initial increase in short-term rates, which began in 2006Q1, appropriately reflected the strengthening in the Eurozone economy. As shown in Figure 17, which shows the ECB's rate target, they corresponded to the strength in the economy shown by the increase in the level of the PMI.

As shown in Figure 17, as measured by the PMI, the Eurozone economy began to weaken in 2007Q4. However, not until October 2008 did the ECB begin to lower rates. With the weakening of the economy, the interest rate consistent with full employment (the natural rate of interest) declined. The cause of the recession was the failure of the ECB to lower its rate target in line with the weakening of the economy (decline in the natural rate). What accounts for this failure? The answer is an exclusive focus on headline inflation and wage inflation.

Figure 18 shows the level of the ECB's repurchase rate along with measured inflation. The initial increase in rates at the start of 2006 took place largely when inflation was steady at 2%. That fact adds to the assumption that the increase in short-term rates was entirely real. At this time, the emergence of a middle class in China and India was creating a worldwide demand for oil, commodities, and meat. The resulting increase in the relative price of energy, commodities, food created an inflation shock that passed through to the price level of the industrialized countries.

Figure 19 shows the dollar price of crude. It started increasing in summer 2004 and then spurted starting in 2007. As shown in Figure 20, by the end of 2007, this relative price shock raised headline inflation sharply and had begun to pass through into core inflation.

The key point is that these increases in inflation were transitory. Again, as shown by Figure 16, which displays long-term bond rates, the ECB retained credibility and expected inflation did not increase. Nothing in this inflation surge raised the natural rate of interest (the interest rate consistent with full employment). On the contrary, the adverse impact on the real disposable income of consumers and the resulting weakening in economic activity that began in late 2007 made the existing real rate of interest too high. Monetary policy became contractionary over the course of 2008 when the ECB failed to lower its repurchase rate.

The ECB feared that lowering rates with sharply increasing headline inflation would risk its credibility. Moreover, the increase in headline inflation had begun to pass through to wage rates (Figure 21). The ECB was especially concerned about inflationary wage demands of German labor unions (Hetzel 2012, 221). The ECB started to lower its rate target only when headline inflation fell sharply in fall 2008. The steady increase in short-term rates while the economy is weakening and over a period of low inflation implies an increasingly restrictive monetary policy. The contractionary monetary policy over this period is evident in the deceleration in M1 that began in late 2006.

The discussion above attributed the high M1 growth of 2009 and early 2010 to a substitution out of the debt instruments in M3 into the demand deposits of M1. It is true that a revival in nominal GDP growth followed this monetary acceleration (Figure 14). That timing could indicate causation running from money to output. However, the revival in economic activity after mid-2009 could just as easily be a sympathetic response to the revival in the United States, which experienced a cyclical trough in May 2009. The end of the inventory decumulation that contributes to the dynamics of cyclical fluctuations stimulated growth. In any event, the rapid M1 growth disappeared over the course of 2010 and the Eurozone economy slipped back into recession in 2012.

The ECB is a victim of its own credibility. As shown in Figure 22, it has largely stabilized expected inflation. As a result, firms setting prices for multiple periods continue to set Euro prices based on future inflation of around 2%. At the same time, money growth is consistent with very little

growth in Euro expenditure. This mismatch between Euro expenditure growth and expected inflation has resulted in recession.

8. Separating credit policy and monetary policy

A central bank can both act as a financial intermediary and as a creator of money. If it issues long-term debt to buy assets, it acts like a financial intermediary. If it buys long-term, illiquid assets through creating money (the monetary base), it is a creator of money. Confusion arises when the ECB increases the size of its balance sheet in a way that influences financial intermediation but without creating money.

Figure 22 shows the various interest rates that the ECB sets. The repurchase rate has become the interest rate at which commercial banks with funding difficulties borrow from the ECB. The overnight deposit rate determines short-term, risk free market interest rates. The point to keep in mind in the following discussion is the following. If the natural rate of interest is negative, the ECB's overnight deposit rate offers an attractive place for commercial banks to place funds.

Twice now, at the end of 2011 and early in 2012, the ECB offered 3-year loans to commercial banks. As shown in Figure 23, the increase in this LTRO lending was accompanied by a decline in the repurchases arranged by the ECB with the solvent banks, especially in Germany. Figure 24 shows the share of Eurozone countries in the lending operations of the ECB. The peripheral countries are increasingly important.

Consider now ECB lending to Spain in a long-term refinancing operation. To make the example concrete, assume that a Spanish bank had financed domestic lending by borrowing from a German bank, perhaps its parent. The German lending bank wants to end its loan to avoid being stuck with assets in a depreciated currency if Spain abandons the Euro. The Spanish bank borrows from the ECB and uses the Euros to repay the German bank. The German bank, given the limited lending opportunities that it faces, deposits the Euros at the ECB. It lends to the ECB at a favorable

rate given that the natural rate of interest is negative. The end result is that intermediation financed by the German bank is now financed by the ECB.

Nothing in this operation increases the money stock. It is simply a substitution of the ECB for the German bank in financial intermediation. Nevertheless, the operation swells the balance sheet of the ECB. Figure 25 shows the funds in the ECB's deposit facility.

9. An immediate policy prescription

The ECB lacks a coherent strategy for creating the monetary base required to sustain money creation. In normal times with positive interest rates and strong demand for loans by business from banks, it could expand the monetary base through refinancing operations with banks. It cannot do that now without lending heavily to insolvent banks. The ECB has pushed the overnight deposit rate to zero. It should leave that rate alone.

It then needs to overcome the internal resistance to money creation caused by the necessary link to the debt extinction of government. The ECB should buy packages of government debt with weights allotted according to the agreed on seigniorage shares (relative GDPs) of governments. Seigniorage is an inevitable concomitant of monetary base creation, but it does not have to be directed toward any particular government. The ECB should buy packages of government securities to whatever extent necessary to create strong growth in aggregate nominal demand. It can use nominal GDP growth as a target and M1 growth as an indicator. Alternatively, it can target M1 growth and use nominal GDP growth as an indicator.

President Dragi needs to stop saying that the ECB does not precommit. Only a policy that offers some hope for the future can hold things together now. He needs to commit to a policy that will expand aggregate demand in Euros and stop making fiscal reforms a precondition for expansionary monetary policy. Politicians will then have to do their part.

The German public sees internal inflation as a sign of abandonment of the discipline that allowed it to achieve a current account surplus. The ECB has to be clear that surplus countries will experience inflation above 2 percent for extended periods of time. Structural reform is required to eliminate the current account deficits of the peripheral countries given the inability to depreciate a domestic currency. However, the ECB needs to start by recognizing that Europe's problems are more than structural. Monetary policy needs to stop being contractionary and stop being used as a lever for achieving structural changes.

10. A Do No Harm Rule

Friedman (1970, 12) wrote:

[I]t was believed [in the Depression] ... that monetary policy had been tried and had been found wanting. In part that view reflected the natural tendency for the monetary authorities to blame other forces for the terrible economic events that were occurring. The people who run monetary policy are human beings, even as you and I, and a common human characteristic is that if anything bad happens it is somebody else's fault.

In the course of collaborating on a book on the monetary history of the United States, I had the dismal task of reading through 50 years of annual reports of the Federal Reserve Board. The only element that lightened that dreary task was the cyclical oscillation in the power attributed to monetary policy by the system. In good years, the report would read "thanks to the excellent monetary policy of the Federal Reserve..." In bad years the report would read "Despite the excellent policy of the Federal Reserve...", and it would go on to point out that monetary policy really was, after all, very weak and other forces so much stronger.

This criticism does not in any way detract from the challenges posed by making policy in real time. In real time, sorting out the nature of the shocks that are impinging on output is inherently difficult. Policymakers do not have the luxury of waiting for the long-run perspective. For that reason, they need to examine the historical record dispassionately to determine whether monetary shocks are common feature of recessions. If so, Friedman's argument for a rule that prevents monetary shocks gains credence. Friedman (1968 [1969], 106) wrote:

The first and most important lesson that history teaches about what monetary policy can do—and it is a lesson of the most profound importance—is that monetary policy can prevent money itself from being a major source of economic disturbance.... The Great Contraction might not have occurred at all, and if it had, it would have been far less severe, if the monetary authority had avoided mistakes, or if the monetary arrangements had been those of

an earlier time when there was no central authority with the power to make the kinds of mistakes that the Federal Reserve made.

Figure 1
Inflation and M1 Step Function: 1959-81

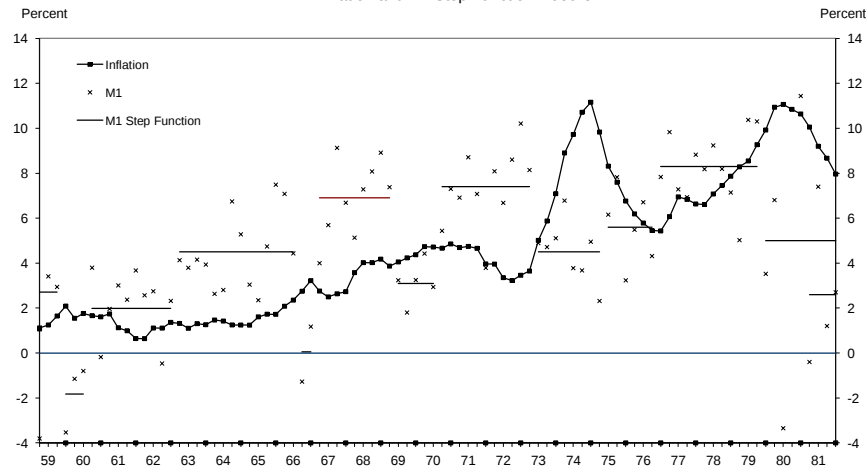


Figure 2
Japan: Money and Nominal Output Growth

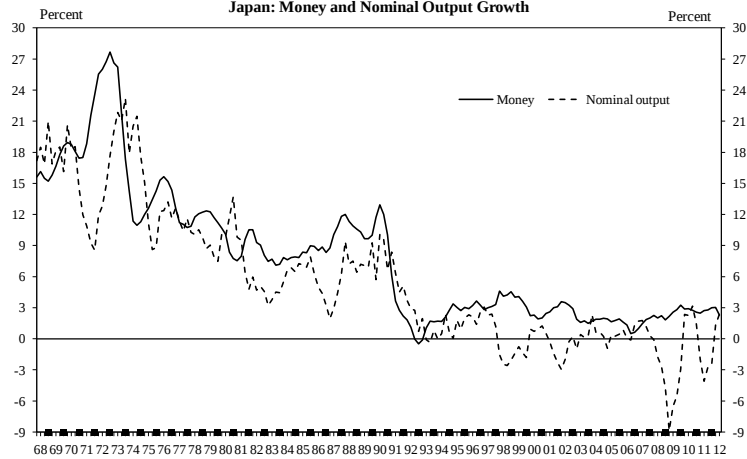
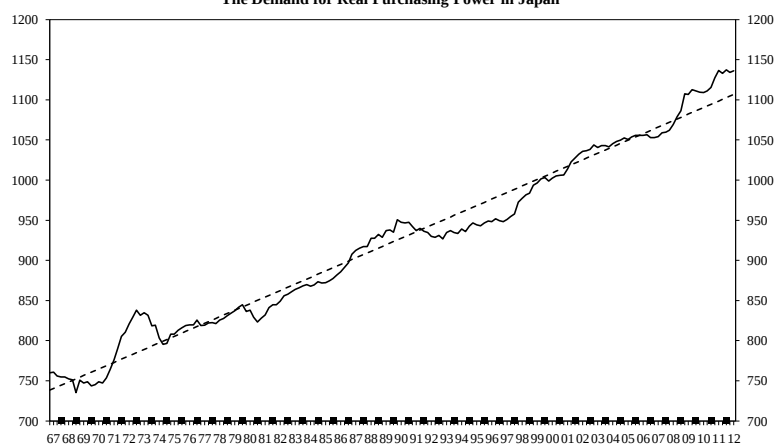
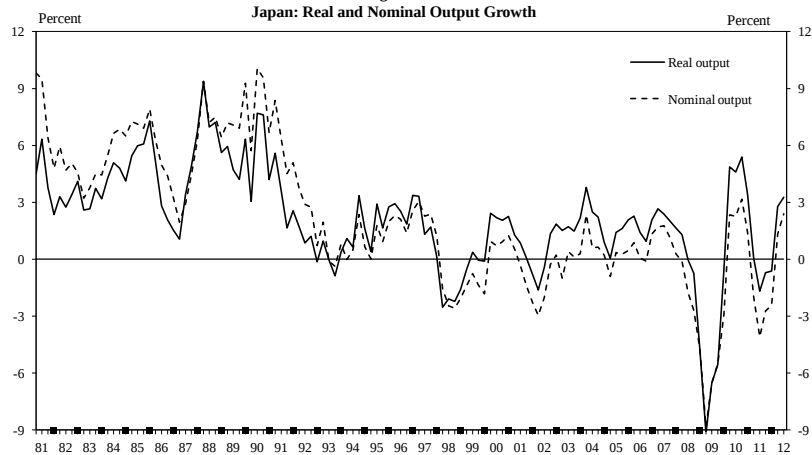


Figure 3
The Demand for Real Purchasing Power in Japan



Notes: Quarterly Observations of the natural logarithm of M2/GDP with trend. The dashed line is the trend line derived from the fitted regression $\ln(M2/GDP) \cdot 400 = 736.26 + 2.035T$, T is a time trend. Heavy tick marks indicate fourth quarter of year. Source: BOJ and Haver Analytics.

Figure 4
Japan: Real and Nominal Output Growth



Notes: Quarterly Observations of four-quarter percentage changes of real and nominal output (GDP). Heavy tick marks indicate fourth quarter of year. Source: BOJ and Haver Analytics.

Figure 5
Japan: MV=PY Results in Deflation

GDP Deflator and Income Formation

(1) GDP Deflator

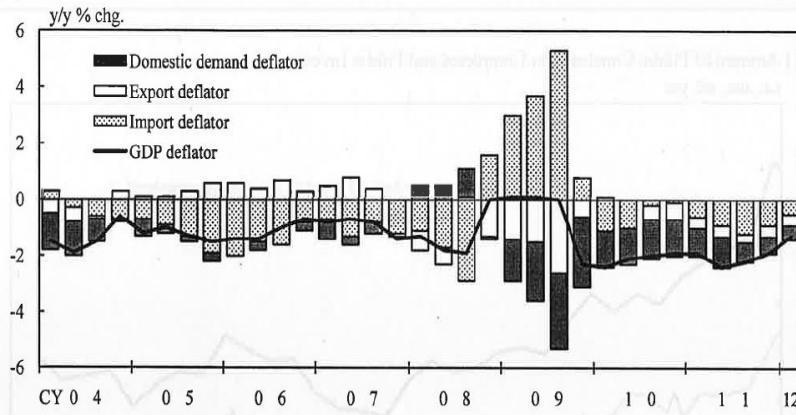


Figure 6
Broad Measures of Money and Loans Move Together

Euro zone money supply, loans

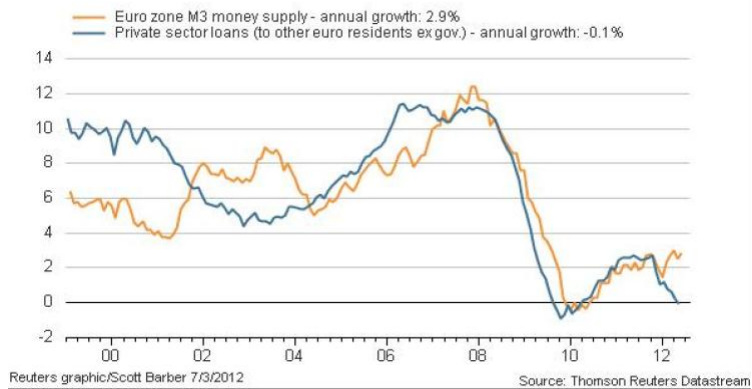


Figure 7
Euro Area Real Gross Disposable Income

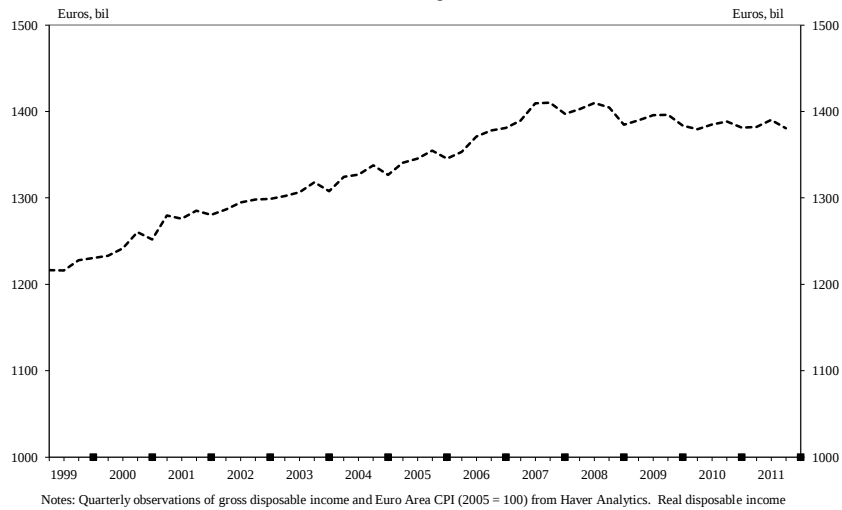


Figure 8
Consumer Confidence



Figure 9
Household Net Worth

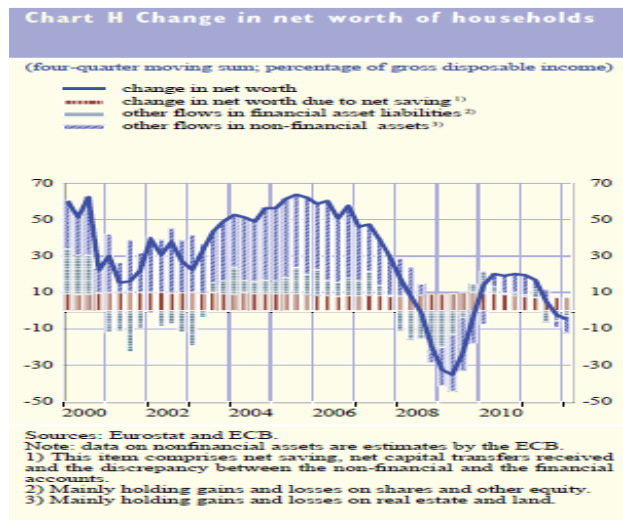


Figure 10
Euro Area Real and Nominal GDP Four-Quarter Growth

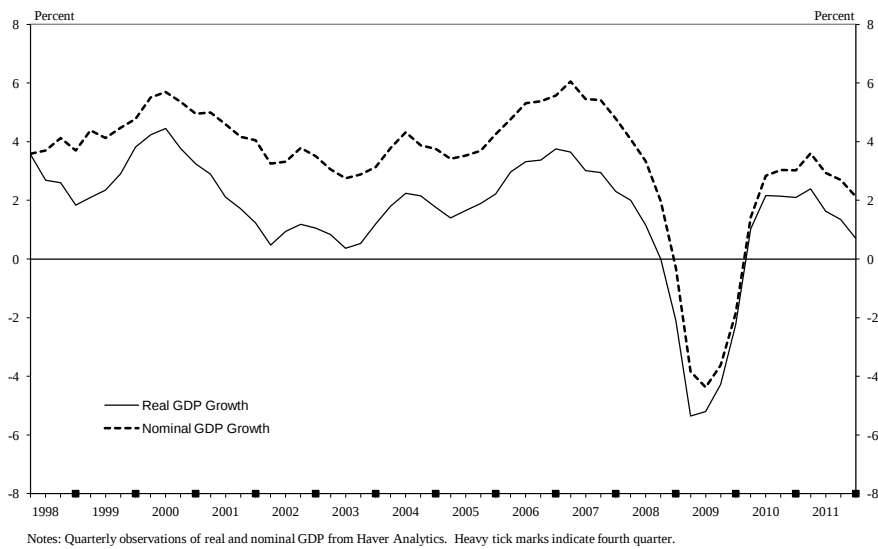


Figure 11
EMU Money Growth

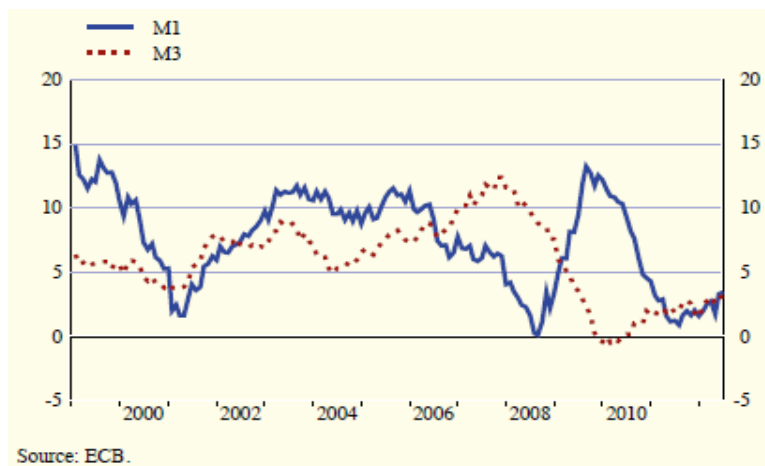


Figure 12
M3, M1 and Flight to Liquidity

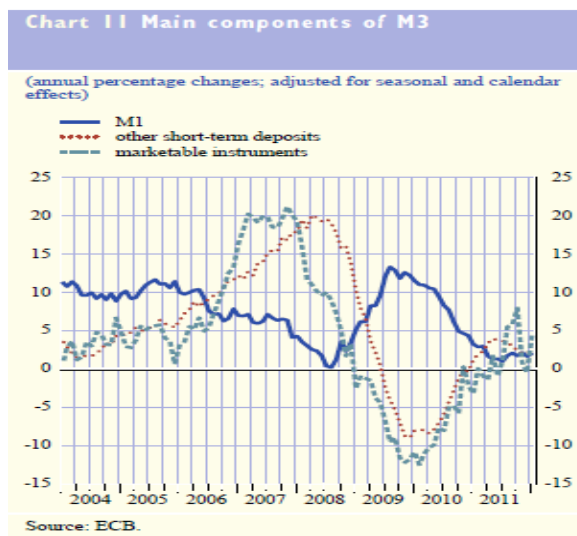


Figure 13
Euro Area Velocity and Interest Rates

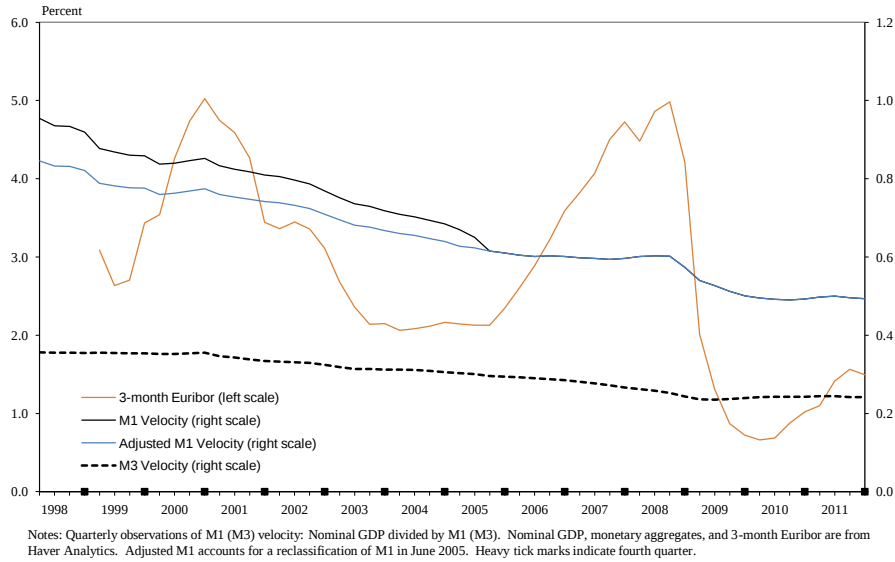


Figure 14
Euro Area M1 and Nominal GDP Four-Quarter Growth

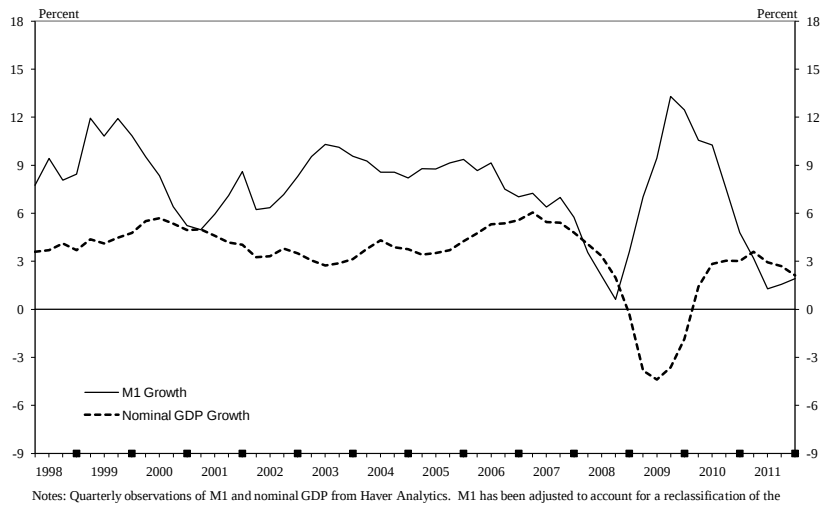


Figure 15
Euro Area M3 and Nominal GDP Four-Quarter Growth

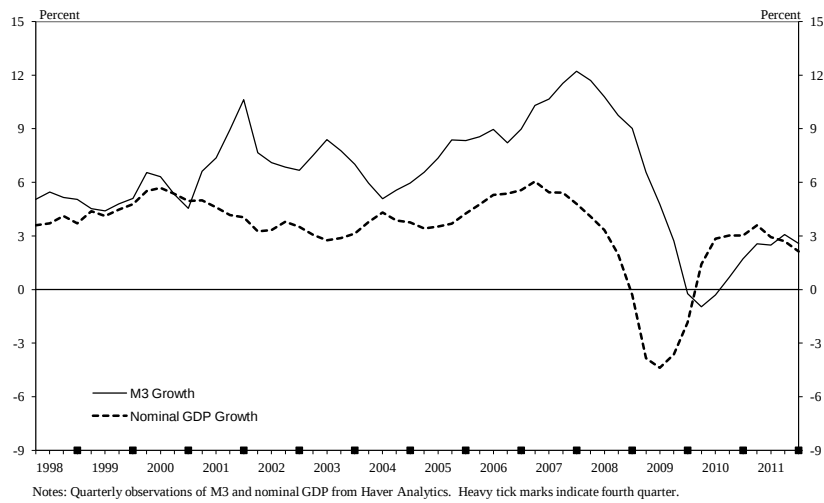


Figure 16
Euro Interest Rates

Interest Rates

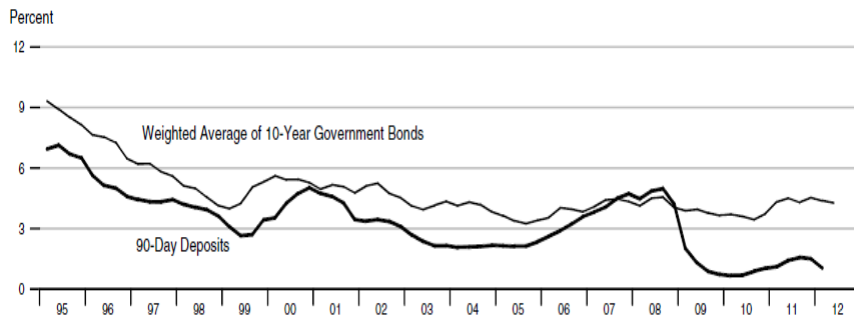


Figure 17
Economic Activity and the Repurchase Rate

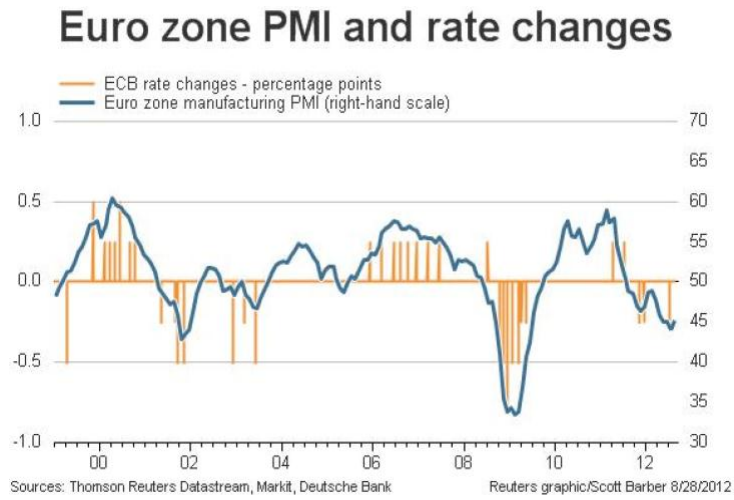


Figure 18
Inflation and the Repurchase Rate

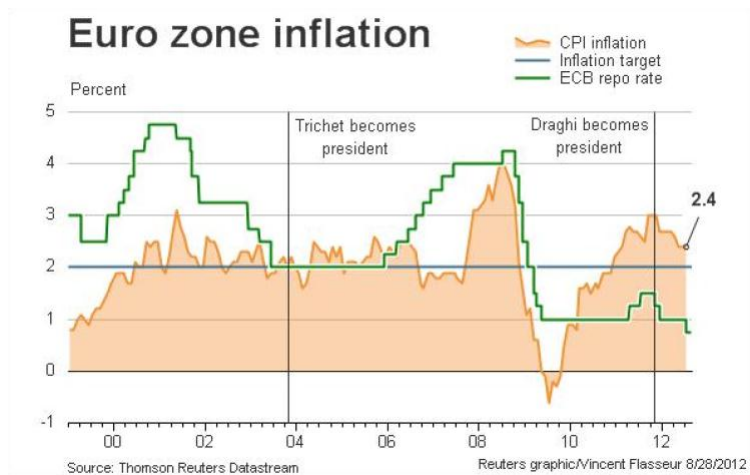


Figure 19
Energy Prices Created an Inflation Shock

Crude Oil Prices

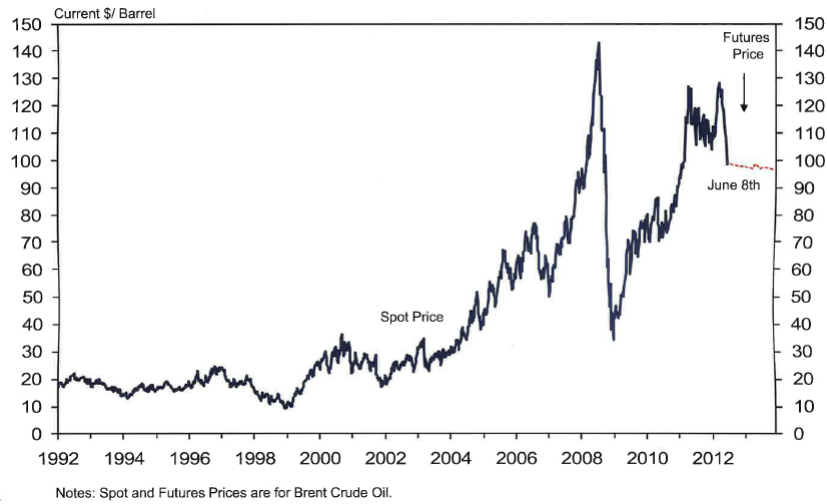


Figure 20
Eurozone Inflation: Core and Headline
ECB Refinancing Rate

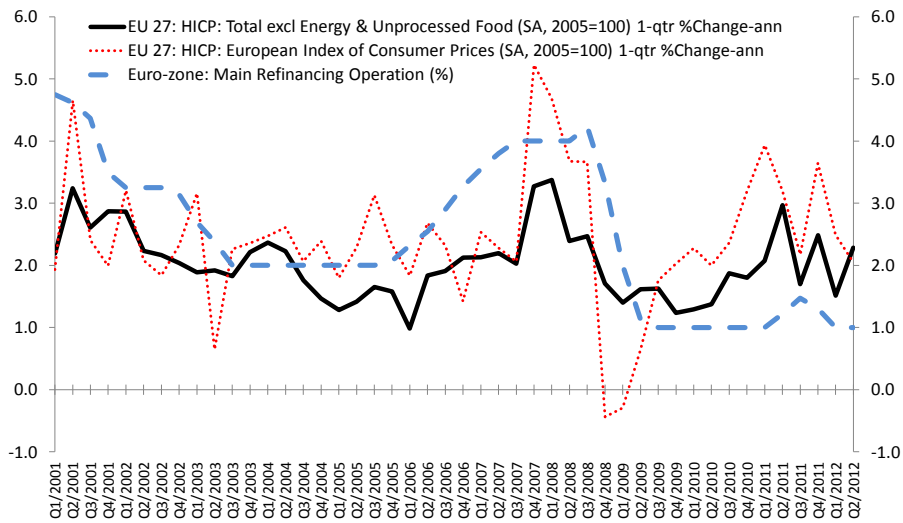
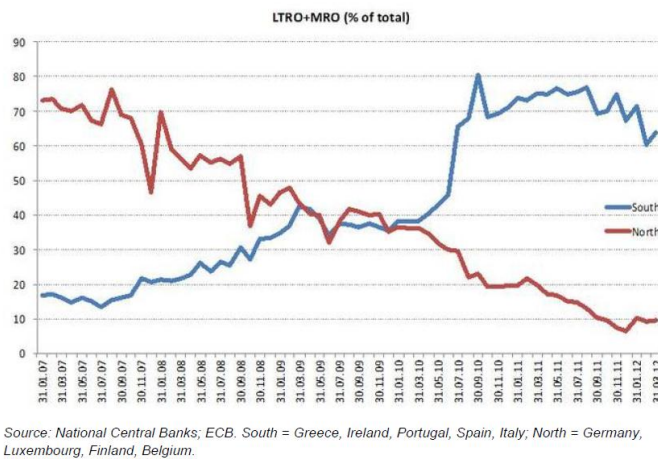


Figure 21
Wage Inflation

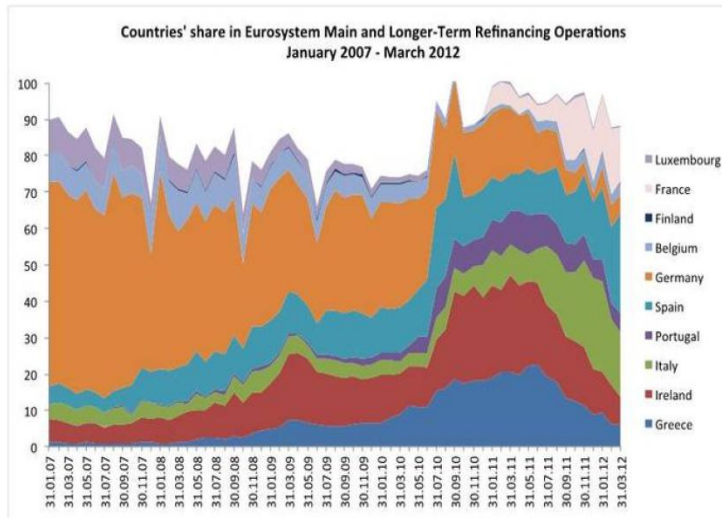


Figure 23
ECB Long-term lending and short-term repurchases



- LTRO is long-term refinancing operations. MRO is main refinancing operations. Merler, Silvia and Shahin Vallee. "Chart of the Week – The Consequences of Financial Disintegration." Bruegel, May 3, 2012.

Figure 24
Eurozone Countries Share of ECB Lending



- Merler, Silvia and Shahin Vallee. "Chart of the Week – The Consequences of Financial Disintegration." Bruegel, May 3, 2012

Figure 25
ECB's Deposit Facility

