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IW Monetary Outlook October 2015

Low Inflation: A Challenge for Central Banks

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E31: Price level, inflation, deflation

E52: Monetary policy

E58: Central banks and their policies

Executive Summary

The European Central Bank (ECB) as well as the Federal Reserve Bank (Fed) are currently challenged by inflation below their inflation targets. While the Eurozone recovery is still anemic, the US economy is growing and the labor market improved, such that the Fed now fulfills one target of its dual mandate of stabilizing inflation and maximum employment. While consumer price inflation is low in the US, core inflation remained stable in during the last year. Because of the improved labor market towards near full employment we expect the Fed to conduct an interest rate lift-off. Given the current effective federal funds rate of 0.14 percent, an increase of the federal funds target corridor to 0.25 to 0.50 percent in December 2015 seems possible without endangering growth. It will be a strong signal that the Fed is confident that the economic recovery is strong enough to bring inflation back to its target value in the next year. However, we expect the Fed to abstain from further interest increases until the second half of next year due to the still low inflation rate.

In contrast to the US, the Eurozone's economic recovery does not allow higher interest rates yet. The zero lower bound on interest rates is constraining the ECB's monetary policy very strongly and the ECB's large-scale asset purchases are not inflationary yet, because equilibrium real interest rates are low due to low investment demand. The ECB's large-scale asset purchases are only expected to become inflationary, when equilibrium real interest rates increase such that borrowing costs will be lower than returns on investment. In the current situation the ECB can therefore only prevent prices from falling further. In order to normalize inflation and interest rates, investment has to be revived. Although the establishment of the European Capital Markets Union is an important step to re-integrate European capital markets and to foster cross-border investment, further supply-side reforms are needed for a normalization of inflation and interest rates. Since, inflation has not been improved, we expect the ECB's policy rate to remain at 0.05 percent this year and we expect its large-scale asset purchase program to be prolonged for at least one additional year.

Table 1: IW Monetary Outlook October 2015

Interest rates, in percent

	September 2014	September 2015	Forecast for Oct. 2015	Forecast for Dec. 2015
ECB Main Refinancing Rate	0.05	0.05	0.05	0.05
Federal Funds Rate Target	0.00 – 0.25	0.00 – 0.25	0.00 – 0.25	0.25 – 0.50

Sources: European Central Bank, Federal Reserve Bank of St. Louis, Cologne Institute for Economic Research

1. Low Inflation: A Challenge for Central Banks

On October 22, 2015 the Governing Council of the European Central Bank (ECB) will meet for the penultimate time this year. The Federal Reserve Bank's (Fed's) Federal Open Market Committee (FOMC) will meet between October 27 and October 28, while the Fed's next press conference will be at the end of its last meeting between December 15 and 16, 2015.

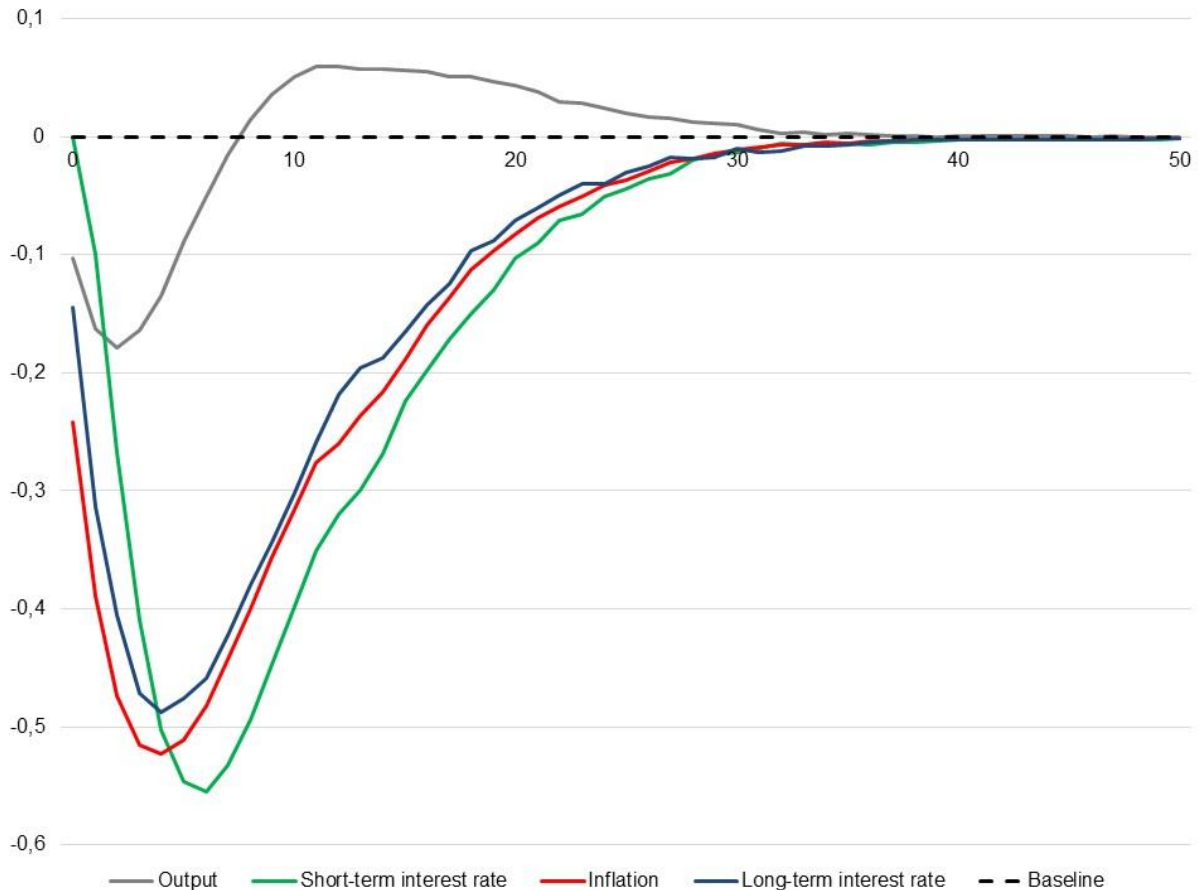
ECB president Mario Draghi surprised market participants at the September press conference by hinting at a possible enlargement of the ECB's large-scale asset purchase program due to slow growth and due to unimproved inflation (Draghi, 2015). Fed-chair Janet Yellen disappointed the markets in September by delaying the expected federal funds rate target lift-off to possibly the end of the year. Yellen argued, that "[t]he Committee continues to anticipate that the first increase in the federal funds rate will be appropriate when it has seen some further improvement in the labor market and is reasonably confident that inflation will move back to its 2 percent objective over the medium term" (FOMC, 2015). However, she noted that "[m]ost participants [of the FOMC] continue to expect that economic conditions will make it appropriate to raise the target range for the federal funds rate target later this year, although four participants now expect that such conditions will not be seen until next year or later" (FOMC, 2015).

Both central banks are challenged by low inflation and interest rates near the zero lower bound. This is a situation, in which monetary policy has to be accommodative in order to achieve higher inflation and a higher level of market interest rates, while being restricted in the conduct of monetary policy. Figure 1 shows the situation of deteriorating inflation expectations in the stylized macroeconomic model of Demary (2015). As inflation expectations in the model have declined and lost their nominal anchor, inflation and output start to fall. Long-term interest rates fall, too, since these yields contain inflation and output expectations which have worsened. In this situation, the policy interest rate is too high, so the central bank has to lower it. In reality both central banks pegged their policy interest rates to near zero percent in order to stimulate output and to bring inflation back to its target value. This monetary policy was supplemented in reality by the commitment to leave interest rates at near zero for a long time period (forward guidance) and by large-scale asset purchases (quantitative easing). As long as inflation expectations are unanchored, a lower policy rate is necessary for aggregate demand not to fall. If the near zero policy rates and the additional large-scale asset purchases are successful in stabilizing the economy, output will increase and overshoot its long-term trend, thereby leading to inflationary pressures. These inflationary pressures would allow the central banks to increase the short-term policy rate back to its baseline value in order to prevent inflation to increase above its target values. It can be inferred from the figure that it is not neces-

sary for the central banks to wait until inflation reached its target to start increasing its policy rate. Instead, it can normalize its policy rate as inflation starts to converge back to its target value. As inflation stabilizes, the long-term market interest rates could converge back to their old baseline levels ending the low interest rate environment (Demary/Hüther, 2015).

Figure 1: How Central Banks React to Unanchored Inflation Expectations

Percentage point deviations from baseline



Note: Simulated deterioration of long-term inflation expectations and stabilization of inflation expectations by the central bank. Simulation based on the model of Demary (2015).

Source: Cologne Institute for Economic Research

But the challenge for the ECB and the Fed is that their policy rates are already near the zero lower bound on interest rates, i.e. they are in a situation in which much lower policy rates are needed. The situation can worsen, because forward-looking market participants could expect interest rates not to become lower which leads to a further deterioration of inflation expectations and thereby to deflationary developments (Demary/Hüther, 2015). That is why the ECB and the Fed switched to target longer-term interest rates either by communicating that the future path of their policy rates will remain low for an extended period of time (*forward guidance*) or by large-scale assets purchases (*quantitative easing*). However, it is not guaranteed that keeping in-

terest rates low – either by forward guidance or by quantitative easing – will lead to inflation. Andolfatto/Williamson (2015) find in a monetary model that quantitative easing can be deflationary at the zero lower bound. This is especially the case when firms abstain from investing. In normal times quantitative easing should lower the borrowing costs for firms and thereby stimulate investment. But in case of a low investment demand, e.g. caused by a deleveraging of firms or a lack of investment opportunities, quantitative easing only reduces the interest rate costs for firms which influences their price setting behavior and leads to a diminishing cost-push effect on inflation. Since we observe a low investment demand, this situation seems plausible to explain, why the ECB's and the Fed's large-scale asset purchases are not inflationary yet. It seems more, that a precondition for quantitative easing to be inflationary would be that the returns on investment have to exceed borrowing cost. This leads us to the conclusion that an improved economic recovery with higher investment is necessary for stabilizing inflation and for an exit from the low interest rate environment. For achieving this, structural problems have to be solved, which cannot be achieved from monetary policy.

2. Eurozone: ECB Is Likely to Increase Asset Purchases

Eurozone indicators did not improve in such a way that inflationary pressures could likely arise in the distant future. The consumer price inflation rate declined from the already low value of 0.3 percent in the September 2014 to -0.1 percent at the latest available data point in September 2015. Inflation expectations are still below 2 percent. The output gap improved from -3.2 percent last year to -2.7 percent this year, but stays negative. Inflationary pressures will, however, only arise, when output starts to overshoot potential output. Although output gap indicators can be biased by measurement errors, the low GDP volume growth rate of 0.7 percent of this year as well as of last year indicate no sign of the Eurozone overheating and thereby no sign of inflationary pressures. The still high Eurozone unemployment rate of 11.5 percent indicates, moreover, that Eurozone GDP evolves below potential. Deflationary pressures persist due to the low growth environment.

The only indicator which shows a sign of normalization is the growth rate of the monetary aggregate M3. It went down as a consequence of the Eurozone banking crisis and it has needed a long time to normalize. With a growth rate of 4.8 percent, M3 is back at a value that is consistent with stable prices. It can, however, be doubted that the normalization of M3 is sufficient for the ECB to increase its policy rate of 0.05 percent by even a small amount in the distant future. Instead there is evidence that it would be necessary for the ECB to prolong its large-scale asset purchase program, since it is not inflationary up to now and inflation has worsened towards deflation.

Table 2: Key Eurozone Indicators

In percent

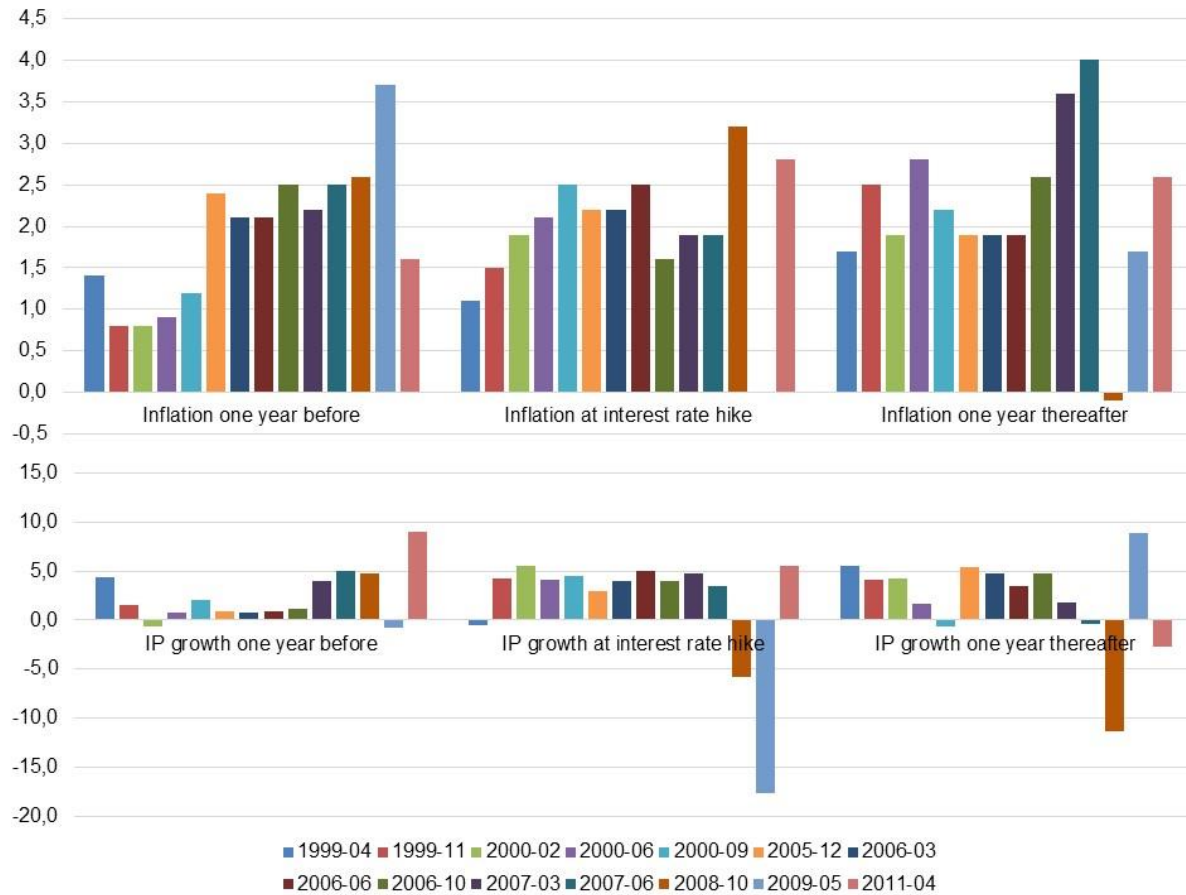
	Previous Year	Latest Data
Consumer Price Inflation Rate	0.3	-0.1
Core Inflation Rate	0.8	0.9
Inflation Expectations for Next Year	1.2	1.3
Output-Gap	-3.2	-2.7
GDP Volume Growth Rate	0.7	0.7
Monetary Aggregate M3 Growth	2.1	4.8
Unemployment Rate	11.5	11.5

Sources: ECB, Eurostat, OECD, Cologne Institute for Economic Research

Historical evidence of ECB interest rate hikes strengthen our view that the ECB will not increase its policy rate in this year and may not in the first half of next year. Figure 2 shows Eurozone inflation and the growth rate of Eurozone industrial production at three points in time: one year before an interest rate increase, at the time of the interest rate hike and one year thereafter for the times in the history of the ECB when it increased its policy rate. From this figure can be inferred that the ECB cared more about inflation and implicitly about inflation expectations and less about the business cycle when it increased its policy rate. Although the growth rate of industrial production was low or even negative in the year before most of the interest rate hikes, an interest rate hike was, however, preceded by inflation of at least 0.8 percent and often of at least 1.5 percent in the year before. In the month of the interest rate hike the inflation rate was at 1.5 percent and higher with the exception of 2009 when the ECB increased its policy rate although inflation was only at 0.0 percent. The reason for this exception might be the inflationary pressures from the year before, when the inflation rate was higher than 3.5 percent. In the years following the Global Financial Crisis the inflation rate has become more volatile and thereby harder for the ECB to forecast. With the exception of the years 2008 and 2009 the ECB increased its policy rate in a stable growth environment with the growth rate of industrial production between 4 and 5 percent. What can also be observed is that the rate of inflation exceeded the value 1.5 percent one year after the interest rate hike in all but one cases. In five times inflation was above 2.0 percent after the ECB's policy rate increase. From this numbers should not be inferred that a policy rate increase has an inflationary effect. Instead, these number should be interpreted in that way, that the ECB increased its policy rate, when the governing council expected inflation to be high in the future.

Figure 2: Inflation and Growth Rate of Industrial Production before, at, and after Historical ECB Interest Rate Hikes

In percent



Sources: European Central Bank, Eurostat, Cologne Institute for Economic Research

Under the assumption that the ECB will act in accordance with historical evidence, an interest rate hike in this year and beginning of next year seems to be very unlikely. With inflation at -0.1 percent this month and inflation at 0.3 percent the year before as well as inflation forecasts way below the medium term target value of near but below 2.0 percent, an interest rate increase would weaken the inflation outlook further. It seems more likely that the governing council takes the deflationary developments seriously and prolongs its large-scale asset purchase program for at least one additional year in order to bring inflation back to its target value.

3. US: Fed Is Likely to Start Interest Rate Hike

The monetary outlook for the US looks more favourable compared to the Eurozone outlook. Although the inflation rate declined to 0.2 percent this year, it was at 1.7 percent in the previous year. Compared to the Eurozone, deflationary pressures seem

less persistent. While core inflation was at 0.9 percent in the Eurozone, the core inflation rate in the US is 1.3 percent and thereby nearer to the inflation target.

As also found in the Eurozone, the US-GDP evolves below potential with an output gap of -2.4 percent in this year and output gap of -3.0 percent in the year before. Inflationary pressures can, however, arise in the distant future, since GDP growth is robust at 2.7 percent this year. It might be possible that US-GDP will move faster towards potential output compared to the situation in the Eurozone. Inflationary pressures could also arise from the monetary aggregates, with M2 growing at 6.7 percent this year and 5.8 percent in the year before. Although inflation is below its target value of 2.0 percent, the unemployment rate is near its target value of 5 percent. Inflationary pressures will arise in the US when the labour market achieves full employment.

Table 3: Key US Indicators

In percent

	Previous Year	Latest Data
Consumer Price Inflation Rate	1.7	0.2
Core Inflation Rate	1.6	1.3
Inflation Expectations for Next Year	2.1	2.1
Output-Gap	-3.0	-2.4
GDP Volume Growth Rate	2.6	2.7
Monetary Aggregate M2 Growth	5.8	6.7
Unemployment Rate	5.9	5.1

Sources: Federal Reserve Bank of St. Louis, Federal Reserve Bank of Philadelphia, OECD, Cologne Institute for Economic Research

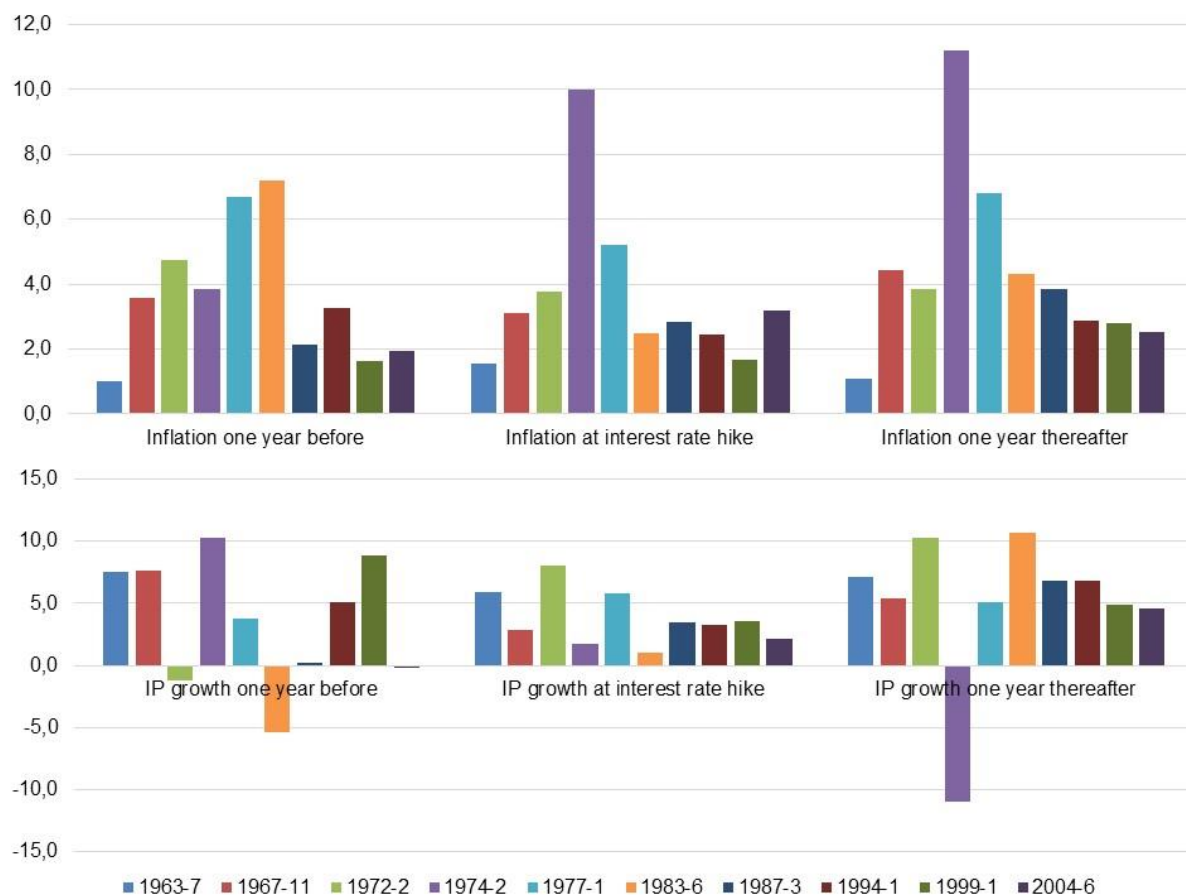
The current target corridor for the federal funds rate lies between 0.0 percent and 0.25 percent with an effective federal funds rate currently at 0.14 percent. Although the inflation outlook does not indicate an increase on the target by comparing the history of the Fed's interest rate lift-offs, the Fed could start a symbolic lift-off to a corridor ranging from 0.25 to 0.50 percent. This small increase will not endanger the inflation outlook, since the new target corridor might increase the effective federal funds rate from the expected value of 0.125 percent only by 0.25 percentage points to the expected value 0.375 percent. An expected effective federal funds rate of 0.375 percent will still leave room for lower values as well as for higher values for the federal funds rate. With such a symbolic interest rate hike the Fed could signal confidence in the economic recovery.

Although there is some room for a small symbolic interest rate hike in December, it can be doubted that there will be further increases of the federal funds rate target at

the beginning of next year. Compared with historical evidence, the Fed's interest rate hikes took place in an environment with higher inflation (Figure 3). When the Fed increased the federal funds rate target in the past, inflation was often not only near or above 2 percent at the moment of the interest rate hike, but also in the year before and the year thereafter. Especially in the year after the interest rate hike inflation and the growth rate of industrial production were often higher than in the year before. From this can be assumed that the Fed acted forward-looking and increased the federal funds rate because the FOMC expected inflation and economic growth to be strong enough in order to increase the policy rate. It seems plausible that the Fed continues to conduct monetary policy via a corridor instead of an average value for the federal funds rate target in order to achieve a smooth exit from the low interest rate policy.

Figure 3: Inflation and Growth Rate of Industrial Production before, at, and after Historical Fed Interest Rate Hikes

In percent



Source: Federal Reserve Bank of St. Louis, Cologne Institute of Economic Research

From this historical evidence we conclude, that the Fed will only increase the federal funds rate by a small and symbolic amount this year, while it will leave the funds rate there at the beginning of the next year in order to analyse if the economy is further improving. Thereby the Fed will increase the federal funds rate target probably only when the inflation outlook further improves. However, it cannot be predicted if the Fed will change its operating procedures in the future via an average federal funds rate target as in the past instead of a target corridor. But it seems that a corridor is more convenient for the transition period in order to reduce the volatility in the effective federal funds rate.

4. Conclusion and Policy Recommendations

The ECB as well as the Fed are currently challenged by low inflation with the Eurozone being threatened by beginning forms of deflation. While the Eurozone recovery is still anemic, the US economy is growing and the labor market improving towards full employment. With an unemployment rate near 5 percent the Fed now fulfills one target of its dual mandate of stabilizing inflation and the labor market. In contrast to the US, the Eurozone's slow economic recovery makes interest increases in this year unlikely. It seems that the zero lower bound on interest rates is constraining the ECB's monetary policy very strongly, because equilibrium real interest rates are low due to low investment demand. Other than analyzed in Krugman (1998) who comes to the result that monetary policy can escape a liquidity trap by committing to an inflationary policy, central banks seem currently having a hard time in generating inflation. Escaping the zero lower bound might be difficult as long as the equilibrium real interest rate is low or even negative (Demary/Hüther, 2015). As long as returns on investment are lower than borrowing cost, the ECB's large-scale asset purchases will not become inflationary.

For the ECB's monetary policy to be inflationary, the equilibrium real interest rate has to increase, such that real borrowing cost lie below the real return on investments. But it is necessary to revive long-term investment instead of increasing government expenditures. For interest rates to normalize and to bring the ECB's policy rate persistently away from the zero lower bound, therefore, growth friendly and investment friendly policies are needed for the long-term. Establishing a European Capital Markets Union to foster the re-integration of European capital markets and to foster an investment-friendly environment seem to be the right steps for long-term recovery. In order to revive cross-border investment, minimum standards for insolvency regimes are essential for reducing uncertainty for investors. Moreover, reviving securitization will be important, since high quality securitization produce low-risk investment products beyond sovereign debt. A higher supply of low-risk financial contracts will be necessary to increase returns on safe-assets. Increasing the returns on safe-assets

is necessary to end the current situation in which money and sovereign debt are close substitutes (Caballero/Farhi, 2014). But before these supply-side reforms are not in effect, it is unlikely that the ECB gets room for a higher policy rate.

For the US an interest rate hike by a tiny amount would be a strong signal that the Fed is confident that the economic recovery is robust. It seems, however, that the zero lower bound on interest rates also restricts the Fed's monetary policy. Since inflation is still way below the Fed's inflation target of two percent, the Fed should conduct further increases in the federal funds rate not before the second half of 2016. When inflation starts to converge back to its target in 2016 the Fed will get room for a higher policy rate. In order to avoid strong responses of financial markets the Fed should formulate its federal funds rate target in form of a corridor during the transition period towards a higher interest rate level. The strong financial market responses in 2013 when the Fed announced to reduce bond purchases showed that a monetary policy exit has to be conducted smoothly.

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