# Unchartered Territory: Large-scale Asset Purchases by the European Central Bank

By Kerstin Bernoth, Philipp König, Carolin Raab and Marcel Fratzscher

The European Central Bank (ECB) decided at its Council meeting in January to implement a comprehensive program to purchase bonds, including euro area government bonds. The purchases are intended to anchor the rate of inflation and inflation expectations at below but close to two percent again. Given the lack of experience with this unconventional monetary policy instrument, the ECB is venturing into uncharted territory. Market expectations that the ECB would implement an additional round of monetary easing to fulfill its mandate have, in recent months, contributed to a further fall in interest rates and a depreciation of the euro. Since interest rates in the euro area are already very low and the current weak price development is also affected by factors that are difficult to influence through monetary policy, the further effectiveness of the bond purchase program is uncertain. In particular, its success depends largely on its impact on consumption and investment. At the same time, this kind of unconventional monetary policy measure also involves certain risks. The present report describes the current development of inflation in the euro area and outlines the main reasons for the recent decline in prices. It also discusses the transmission channels of a bond purchasing program, their possible relevance for the euro area, and potential risks associated with the program.

Over the past year, the rate of inflation in the euro area has declined steadily and departed clearly from the European Central Bank's (ECB) target of below but close to two percent. Despite a series of conventional and unconventional monetary policy measures, the ECB has so far failed to stabilize inflation or to keep inflation expectations anchored to its inflation target.[1]

In August 2014, at the central bank symposium in Jackson Hole, ECB President Mario Draghi spoke publicly for the first time about declining inflation expectations and announced that the ECB might consider using more unconventional monetary policy measures to stabilize them again. Since then, the ECB has made a number of public statements to gradually prepare the markets for the introduction of a large-scale bond purchase program.

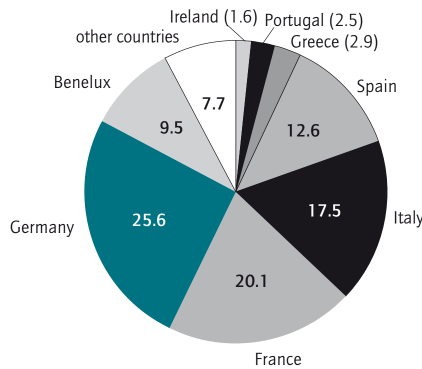
In January 2015, the ECB decided to purchase private and public sector assets to the tune of 60 billion euros per month from March onward until a long-term adjustment of inflation is achieved, at least until September 2016.[2] The ECB will purchase bonds worth approximately 7.2 billion euros (12 percent of total purchases) from European institutions and government bodies including, for example, the European Investment Bank, the European Stability Mechanism, or the Reconstruction Credit Institute *(Kreditanstalt für Wiederaufbau, KfW)*. The remaining 52.8 billion euros will be spent on the purchase programs for asset-backed securities (ABSPP) and covered bonds (CBPP3) established in the fall of 2014, and on government bonds from all euro

1 See K. Bernoth, M. Fratzscher, P. König, and K. Rabe, "Inflationserwartungen im Euroraum sind nicht mehr fest verankert – Neue Maßnahmen der EZB Geldpolitik," *DIW Wochenbericht*, no. 37 (2014): 856-868.

2 See ECB, "ECB announces expanded asset purchase programme," news release, January 21, 2015.

Figure 1

**ECB Capital Key**
In percent




*Source: European Central Bank.*

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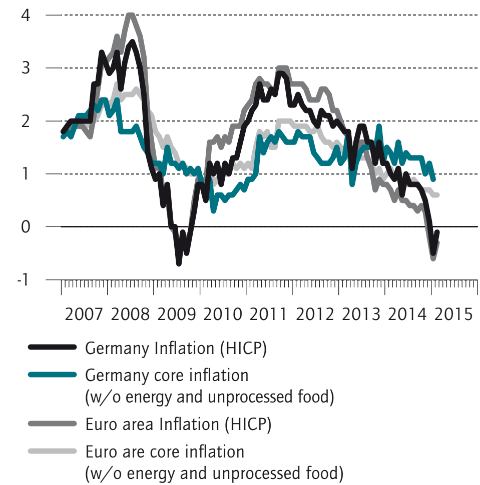
According to the capital key, the largest part of asset purchases will consist of German government bonds; Germany's capital share is roughly 25 percent.

Figure 2

**Inflation in the euro area and Germany**
y-o-y change, percent




*Source: European Central Bank.*

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For the first time since 2009 inflation became negative in December. While this is to a large part due to falling energy prices, also core inflation has continued to decline.

member countries.[3] The latter are purchased according to the ECB's capital key, meaning that about one-quarter of these purchases will include German government bonds (see Figure 1).

## Falling Prices in the Euro Area

Price developments in the euro area have been weak for some time. In December 2014, prices fell compared to previous year's level for the first time since the crisis year 2009. The rate of inflation, measured according to the Harmonised Index of Consumer Prices (HICP), was –0.2 percent. In January, the inflation rate reached –0.6 percent, its lowest since the introduction of the euro, but rose again slightly in February to –0.3 percent (see Figure 2). While this development is partly due to sharp declines in energy prices (see Figure 3), core inflation adjusted for energy and unprocessed foods also continued its downward trend and reached its lowest level in January at 0.6 percent.

Inflation swaps suggest that financial market participants expect prices to remain weak. In early February, market participants expected inflation to be –0.4 percent one year ahead and to reach 0.9 and 1.4 percent in three and five years, respectively. Thus, they do not expect a return to the ECB's inflation target even in the longer term (see Figure 4). The expected rate of inflation according to a survey of professional forecasters conducted by the ECB in the fourth quarter of 2014 was slightly higher at an average of 1.1 percent in 2016, 1.5 percent in 2017, and 1.8 percent in 2019.[4]

The weighted share of declining prices as a percentage of all prices (excluding energy prices) in the HICP is currently around 40 percent (see Figure 5) for the entire euro area. However, the individual countries in the monetary union are affected to different degrees by falling prices.[5] In Germany, only around 19 percent of prices are in the deflationary range. In contrast, this share is significantly higher in the euro area countries that are most severely hit by the crisis, i.e. Spain, Portugal, Ireland and Greece. Only in Italy are prices falling in only

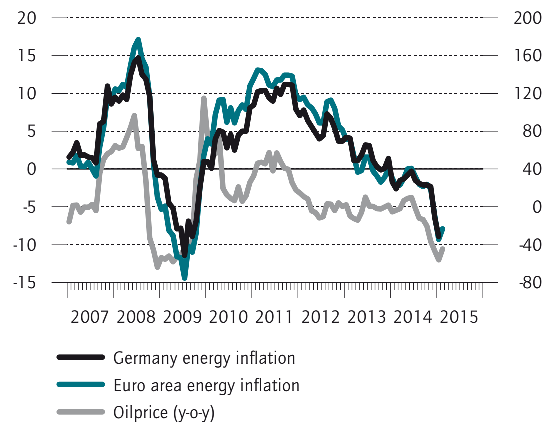
**3** The ECB will not buy more than 33 percent of all bonds from one issuer. Since this share has already been reached with Greek bonds, it cannot currently buy any more Greek bonds. However, the ECB can use upcoming repayments to reduce its share of Greek bonds and may purchase Greek bonds again from July at the earliest.

**4** See ECB, The ECB survey of professional forecasters – 1st quarter of 2015 (January 2015).

**5** Deflation risks are also discussed in K. Bernoth, M. Fratzscher, and P. König, "Weak Inflation and Threat of Deflation in the Euro Area: Limits of Conventional Monetary Policy," DIW Economic Bulletin, no. 5 (2014): 15-28.

Figure 3

**Energy price inflation in Germany and in the euro area (left scale) and the oil price (right scale)**
y-o-y change, in percent




Source: European Central Bank; Thomson Reuters.

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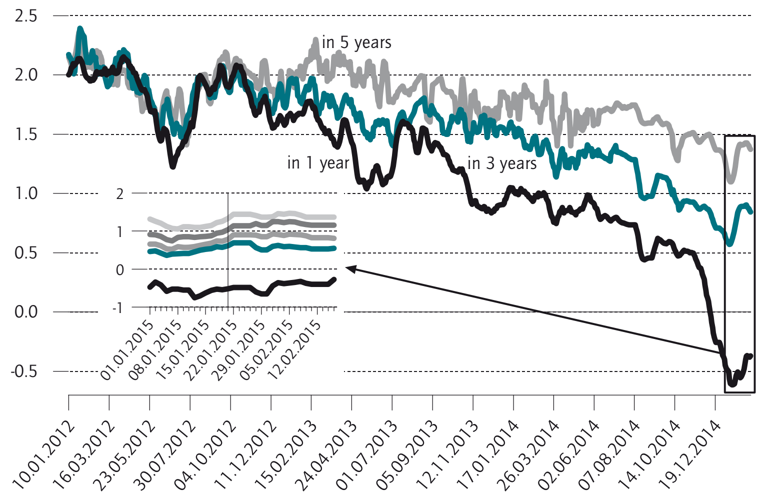
Declining energy inflation is largely driven by the strong decline in oil prices.

Figure 4

**Inflation expectations**
In percent

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Euro area inflation expectations began to increase again since mid January. Market participants expect roughly 1.4 percent inflation five years ahead.

relatively few product groups despite a weakening economy and various structural problems.

## Causes of Weak Price Developments: Oil Prices, Internal Devaluation, and Debt Reduction

Weak price developments in the euro area are influenced by both demand- and supply-side factors. Production costs are falling due to the decline in oil and energy prices; companies pass at least some of these savings on to consumers in the form of lower prices for goods. The overall impact on the price level will differ from country to country in the euro zone. In particular, it depends largely on the energy intensity of their economies and industries, the duration of the fall in oil prices, the degree of wage and price rigidity, and the development of the exchange rate of the euro against the US dollar.

Moreover, a major trigger for the decline in inflation are relative price adjustments within the euro area. Crisis countries such as Greece, Ireland, Spain, and Portugal are no longer able to reduce their large current account deficits and thus their net foreign liability positions by currency devaluation as they could before the introduction of the single currency. Thus, external re-balancing, the reduction of net foreign liabilities and the restoration of competitiveness has to be achieved by internal devaluation, i.e., a relative adjustment of prices. As a result, either production costs have to fall or productivity in the tradable sector must increase for domestic production to become more competitive.

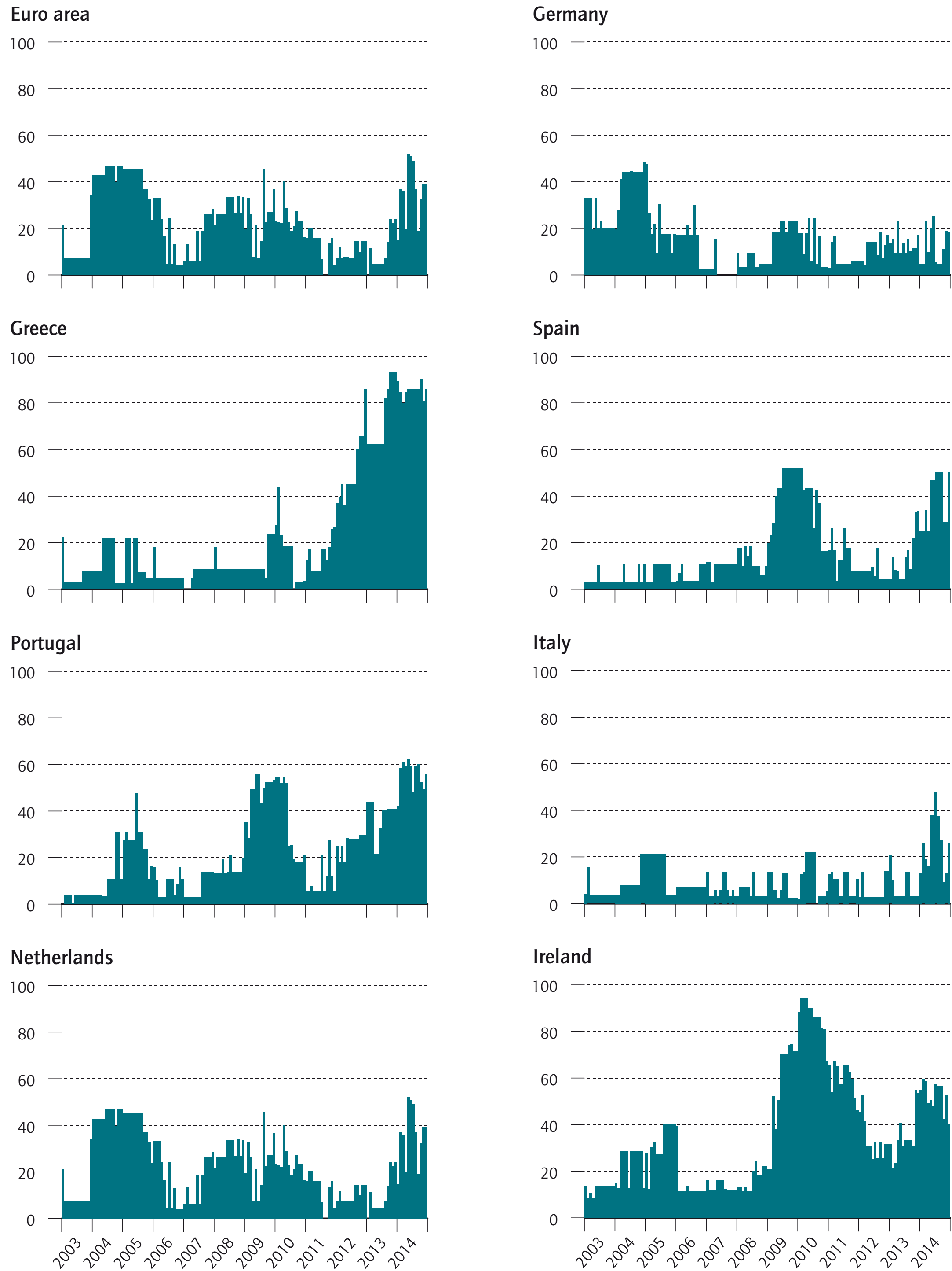
Additionally, production of tradable goods must become more profitable than the production of non-tradables and services in order to strengthen the relative importance of the export sector. This adjustment is already taking place in the crisis countries, although they have not yet resulted in sufficient strong and long-lasting gains in competitiveness (see Figure 6). Furthermore, any productivity gains observable so far should not obscure the fact that these are largely due to a sharp increase in unemployment, particularly in Spain and Greece. These productivity gains have therefore been accompanied by a loss of purchasing power and a weakening of domestic demand; the resultant unemployment induces high social costs. Although the ensuing negative pressure on prices and the decline in import demand will support macroeconomic re-balancing,[6] it has not yet led to suf-

**6** See J. Shambaugh, "The Euro's Three Crises," *Brooking Papers on Economic Activity* (Spring 2012): 157-231.

Figure 5

**Share of overall HICP basket in deflation**

Weighted share




*Sources: European Central Bank; own calculations DIW Berlin.*

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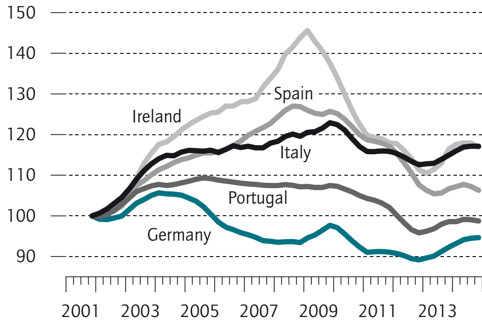
The share of declining prices is particularly large in the crisis countries; in contrast, for Germany, this share is rather low.

Figure 6

**Real effective exchange rates**
Unit labor cost based index, 2001=100




*Source: Thomson Reuters.*

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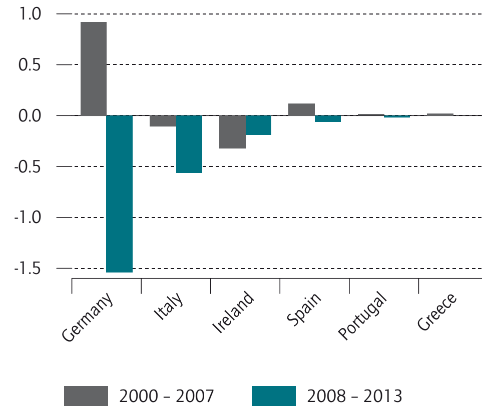
Crisis countries need to continue to devalue in real terms to re-gain competitiveness.

Figure 7

**Change in export market share**
In percentage points




*Source: Thomson Reuters.*

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Export market shares of Germany as well as the euro area crisis countries declined recently.

Figure 8

**Change in share of world exports to the euro area**
In percentage points

*Source: Thomson Reuters.*

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Spain and Portugal raised their export shares to the euro area marginally.

ficient improvements in competitiveness. For example, the market shares of the crisis countries, both globally and within the euro area, have barely increased (see Figures 7 and 8). In addition, the necessary reallocation of resources from the non-tradable to the tradable goods sector has been sluggish. As a result, the macroeconomic adjustment process and the consequent pressure on prices in the crisis countries are likely to continue.

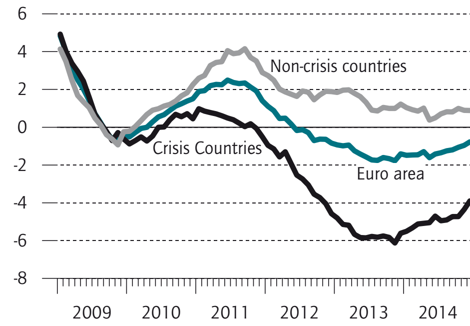
The overall weak price development in the euro area has made the necessary adjustments in the crisis countries more difficult. The lower the rate of inflation of its trading partners and competitors, the lower inflation has to be in the crisis countries in order to achieve the required real depreciation. At the same time, deflationary developments exacerbate their debt overhang problems as they raise the real value of debt, which slows overall economic recovery further. In addition, the structural reforms implemented by the crisis countries also produce a deflationary effect coupled with capacity underutilization; thus, they are unlikely to have much of an impact on aggregate demand and overall economic activity in the short-run.

The ongoing debt deleveraging in the private and public sectors further contributes to the weak price development in the crisis countries. The share of impaired loans to total assets on bank balance sheets is still very high and there are clear indications that for both, households and companies, debt reduction still has precedence over new investment spending. Among other things, this is manifested in the overall decline in lending. For example, since 2012, loans to non-financial corporates in the crisis countries have fallen on average at a rate of about 4.3 percent per year. While the decline has slightly slowed down lately, overall credit growth continues to be in negative territory. (see Figure 9). In the recent Bank Lending Survey (BLS) conducted by the ECB, Europe-

Figure 9

**Credit to the non-financial private sector (new business)**

y-o-y change, percent




*Source: European Central Bank.*

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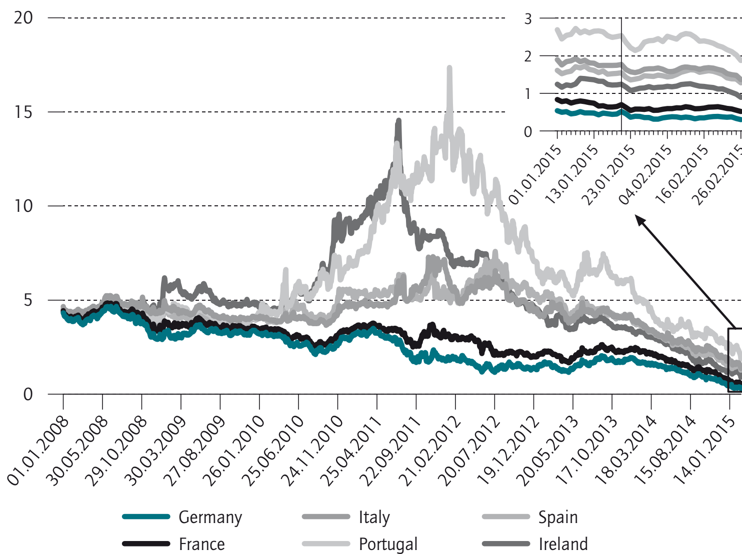
Credit growth in crisis countries is still decreasing although recently at a slower pace.

Figure 10

**10 year government bond yields**

In percentage points




*Source: Thomson Reuters.*

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Interest rates on government bonds are converging since September 2013. The announcement of the new purchase program had a significant bbut quantitatively small effect on the announcement day.

an banks reported in the fourth quarter of 2014 a slight increase in demand for loans by firms and households and the surveyed institutions stated that their refinancing conditions had eased considerably in the past few months.[7] Despite all this, the balance sheet adjustment process in the crisis countries is far from complete and is likely to continue to have a downward effect on prices also in the future.

Furthermore, the fall in demand caused by fiscal consolidation has also contributed to the decline in prices. As necessary and appropriate the restoration of sustainable public finances and the reduction in national debt levels are, under the present institutional arrangements of the currency area, the lack of fiscal flexibility and international transfer mechanisms mean that the major part of the burden of intra-euro area adjustment must be borne by the crisis countries. This deleveraging process constitutes the other side of the paradox of thrift, i.e., that higher aggregate savings push down aggregate demand and thereby exacerbate the ongoing recession. As a consequence, the debt overhang problem in the crisis countries is liable to get worse.[8]

It can therefore be said that weak price developments are determined to a substantial degree by factors that are difficult to influence by a single monetary policy. At the same time, however, given the fact that the ECB has clearly missed its inflation target and that inflation expectations are further deteriorating, paired with the significant public pressure on the central bank to take action have probably turned the balance in favor of the establishment of a large-scale asset purchase program.

Since only a few central banks have made use of similar purchase programs to date, there is only little empirical evidence on the effectiveness of such purchases. Empirical studies suggest, however, that purchases may indeed contribute to a reduction in interest rates, but whether this effectively stimulates economic growth and inflation is not clear.

## Empirical Evidence of the Effectiveness of QE in the US and UK

Studies examining the effects of bond purchase programs in the United States and the United Kingdom between 2009 and 2012 confirm that immediately after the announcement or right at the start of the programs (long-term) interest rates fell significantly and sharp-

**7** See ECB, The euro area bank lending survey – 4th quarter 2014 (January 2015).

**8** See P. Cour-Thiman and B. Winkler, "The ECB's non-standard monetary policy measures: the role of institutional factors and financial structure," *Oxford Review of Economic Policy* 28 (4) (2012): 765-803.

ly.[9] However, tentative simulations show that the initial decline in interest rates leveled off quickly within a few months, although one should mention that the general volatility of interest rates makes it rather difficult to identify the effects after a few months.

Furthermore, while the effect on interest rates in both countries, particularly during their first bond purchase programs, was very pronounced, interest rate effects of proceeding programs were much smaller or even not statistically significant according to some studies. One possible explanation for this is that quantitative easing works largely through its signaling effect (see box). This suggests that it is neither the number of purchase programs nor the respective purchase volume that is crucial but the signal being sent by the central bank that it is willing to use any means to defend its inflation target. In addition, the later programs were implemented at a time when interest rates on the bond markets were already extremely low. Therefore the substitutability between bonds and central bank money was probably quite high, implying that further reductions in interest rates could have hardly been achieved.

Furthermore, a number of studies have examined to what extent purchases of government bonds by the Federal Reserve and the Bank of England affected other assets such as corporate bonds or foreign exchange rates. There is evidence that sovereign bond purchases also reduce interest rates on corporate bonds, thus improving companies' financial situations. In contrast, the effect on exchange rates was much more muted.

Moreover, also the effects of asset purchases on output and inflation are difficult to evaluate. Although some studies show that both magnitudes can be stimulated by means of asset purchases, however, the underlying assumptions on the size of interest rate effects made in these studies are often not very convincing.[10] Hence, any inference based on estimation results of potential stimulating effects achieved in other countries should be taken with great caution.

## What Is Expected of Asset Purchases in the Euro Area?

Since the empirical results, on the whole, are inconclusive with regard to the effectiveness of previous purchase programs, it is difficult to assess to what extent the ECB's purchase program will strengthen the euro area economy and will have a positive impact on inflation.

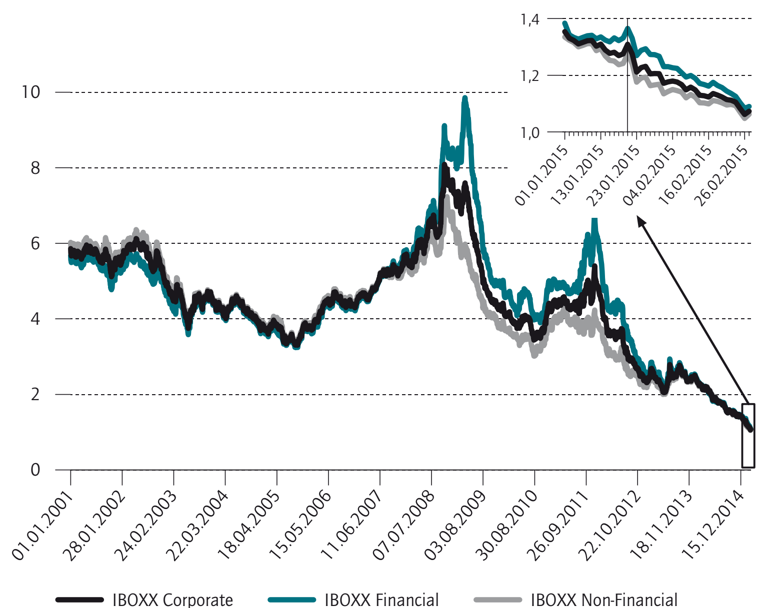
Interest rates in the euro area, in particular the spreads between crisis countries and Germany, are currently at a historical low level. The convergence of interest rates in the euro area observed already since September 2013 is likely to have been supported by expectations about a bond purchase program (see Figures 10). A quite pronounced effect could be observed on inflation expectations. Already one week prior to the announcement, perhaps in anticipation of the program, and on the day of the announcement inflation expectations were revised noticeably upward across various maturities (see Figure 4).

While the announcement channel was obviously working well, it is questionable what role in the euro area the so-called portfolio balance channel (see box) has in the transmission process of bond purchases. Since in-

Figure 11

**Bond market indices**

In percentage points




*Source: Thomson Reuters.*

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Interest rates on corporate bonds (financial and non-financial sector) are trending downward and are currently even below their pre-crisis level.

**9** Martin and Milas (2012) summarize a number of empirical studies on the effectiveness of the quantitative easing programs implemented by the US Federal Reserve and the Bank of England.

**10** See for example Baumeister, C. and Benati, L. (2010): Unconventional monetary policy and the great recession, ECB Working Paper No 1258; Chung et al. (2011): Have we underestimated the likelihood and severity of zero lower bound events?, Federal Reserve Bank of San Francisco, WP No 2011-01; Peersman, G. (2011): Macroeconomic effects of unconventional monetary policy in the euro area, CESifo Working Paper No 3589; Lenza, R. et al. (2011): Monetary policy in exceptional times, Economic Policy, 25, 295-339.

Box

**Monetary Policy at the Zero-Lower-Bound: Can Bond Purchases Help?**

Following the example of other central banks such as the Bank of England or the US Federal Reserve, the ECB has decided in January to adopt further unconventional monetary policy measures, given the lack of scope for interest-rate cuts. The aim of this quantitative easing (QE) policy is to stimulate economic growth and thus inflation performance. In theory, such asset purchases work through a number of different transmission channels.[1]

### Portfolio Balance Channel

By making large-scale purchases of a certain type of security, a central bank reduces their supply on the financial market and therefore increases the amount of money in circulation. Transactions of this kind raise prices in the relevant securities segment and lower the interest rates on these securities. As a result of the lower interest rates on these assets combined with the increased money supply, investors will attempt to rebalance their portfolios and look for alternative investments with greater profitability. This increases demand for assets that are close substitutes for the bonds bought by the central bank, which also causes their price to rise and their interest rate to fall. Ideally, this process has an impact on various classes of securities, resulting in falling interest rates on a broad front, thereby stimulating private consumption and investment activities. The subsequent increase in aggregate demand will eventually lead to a rise in the aggregate price level.

The effectiveness of the portfolio balance channel depends crucially on the type of assets purchased by the central bank. First, the securities acquired should not be close substitutes for central bank money. When interest rates are very low, investors will be more inclined to keep their assets in the form of cash and deposits at the central bank. Consequently, quantitative easing in a low-interest environment is only likely to induce an exchange of bonds for cash but may not unfold a substantive impact on prices and interest rates in the relevant securities segment.

Second, the central bank should buy up bonds with a high substitutability for those securities that are important for investment and credit financing of households and firms. This allows any interest rate cuts to be channeled to the real economy more efficiently.

### Signal and Announcement Channel

By announcing and giving explicit justification for the introduction of a purchase program, the central bank is helping market participants better understand its own assessment of the monetary and economic situation. Moreover, the central bank is indicating its intention to pursue an expansionary monetary policy over a longer period of time. Accordingly, market participants should amend their short-term interest rate expectations downward. This reduces long-term interest rates, devalues the currency, and stimulates aggregate spending. At the same time, the central bank is sending out a signal that it is tackling the deflationary trend with all means possible, which should, in theory, lead to rising inflation expectations.

### Fiscal Channel

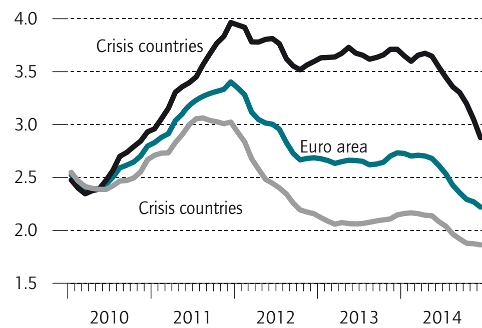
If the central bank's securities purchases include mainly government bonds, then these purchases will ease government budget constraints. If government bonds are purchased for an indefinite period or expiring securities are replaced with new purchases of the same amount, this is, in effect, a monetization of government debt. The *de facto* reduction of public debt is equal to the amount of bond purchases. However, if the purchases are only temporary, new debt is reduced by the interest burden associated with the bonds purchased. The government now issues interest payments to the central bank rather than to private bondholders. In turn, the central bank distributes its profits to the government, including interest income from holding bonds. As a result, public budget constraints are relaxed, which improves the scope for implementing fiscal policy measures without raising public debt.

**1** Tobin, J. (1969): "A general equilibrium approach to monetary theory", Journal of Money, Credit and Banking, 1(1), 15–29; Allan H. Meltzer (1973). "Mr. Hicks and the 'Monetarists," Economica 60(157), 44-59; Buiter, Willem H., The Simple Analytics of Helicopter Money: Why it Works - Always (August 21, 2014). Economics, Vol. 8, August 2014.

terest rates in the euro area have already fallen sharply since 2013, any further reductions in interest rates will probably be only of small magnitude. Moreover, it is uncertain whether any minor interest rate cuts will have noticeable effects on the real economy. Interest rates on corporate bonds have already fallen significantly (see Figure 11). Moreover, the vast majority of European firms are financed primarily by bank loans. Also here, interest rate reductions in the market for government bonds are not likely to have a major impact,

Figure 12

**Loan interest rates**
**(non-financial corporations, new business)**
In percent, volume-weighted average
(3-month moving average)




*Source: European Central Bank.*

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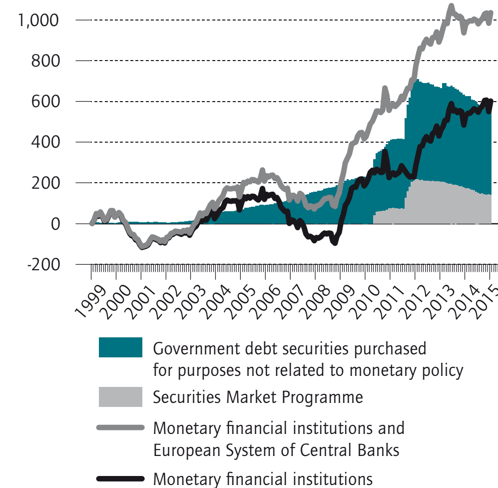
Interest rates for non-financial firms in crisis countries are converging to the level in non-crisis countries since 2014.

Figure 13

**Cumulated purchases of euro-denominated euro area government bonds by monetary financial institutions and the European System of Central Banks.**
In millions of euro




*Source: European Central Bank.*

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Cumulated purchases of government bonds amount to roughly $\frac{2}{3}$ of what private institutions have purchased. Starting in 2010, a large part of these purchases serves monetary policy related purposes (i. e. was bought under the umbrella of the SMP).

even if they can be successfully passed through; since 2014, bank lending rates have in the euro area fallen considerably (see Figure 12). Furthermore, as pointed out above, the crisis countries continue to exhibit rather weak credit demand due to the ongoing process of debt deleveraging. For that reason, lower interest rates and additional central bank money will not necessarily lead to more bank lending.

At the same time, lower interest rates are indeed likely to improve the refinancing situation of governments in the euro area and enhance fiscal authorities' room for maneuver. The downside of this is certainly that financial markets will have less of a disciplining effect on governments. Hence, there is the risk that low interest rates could significantly reduce the pressure to carry out much-needed structural reforms.

Even if the European economy is stimulated by the ECB's bond purchases, stimulating effects on the real economy and inflation are expected to be short-term, at best; such measures are clearly not a panacea to sustainably and durably revive the euro area's economy.

Furthermore, the bond purchases are likely to turn the central bank into one of the largest creditors of euro area member states. Holdings of government bonds on the balance sheets of the national central banks have grown considerably through purchases under the now terminated Securities Market Programme (SMP), as well as through regular purchases by national central banks for the purpose of portfolio management (see Figure 13).[11] They are expected to rise substantially as a result of the new purchase program. The program might thus create a problematic interdependence between (national) central banks and their fiscal authorities. It is important that national governments would willingly accept any valuation losses to the central bank that may result from future policy rate hikes. Otherwise the euro area would run the risk of slipping into a regime of fiscal dominance in which any effective control of inflation is complicated by fiscal considerations.[12]

This leads to the more general question of how unconventional monetary policy measures could be phased out in the future, something that now poses a serious problem for all major central banks. Should central banks reduce their asset portfolios before policy rates are increased in order to avoid valuation losses? Or would a reversal of

**11** These purchases were conducted regularly between 2002 and 2010 and were likely implemented without much public attention but fully in line with European regulations. They served to assist the portfolio and risk management of the national central banks.

**12** Leeper, E., Zhou, X. (2013): Inflation's role in optimal monetary-fiscal policy. NBER Working Paper 19686; Sims, C. (2013): Paper money. American Economic Review 103(2), 563–584. / SIMS.

purchases generate too strong upward pressure on secondary market yields? In future, its new purchase program is likely to leave the ECB facing the challenge of devising a well-considered exit strategy and post-crisis monetary policy regime. An exit can only be successfully conducted if the monetary dominance of the central banks in the euro area is maintained.[13]

## Conclusion

Price developments in the euro area have slowed further in recent months; for the first time since 2009, inflation has fallen into negative territory. The ECB has now missed its inflation target for several quarters. The resulting pressure on the ECB to take action to fulfill its mandate may have finally tipped the balance in favor of introducing a large-scale asset purchase program.

However, weak price developments are also determined by factors that are difficult to influence with monetary policy—particularly in the current environment of very low interest rates. Expectations of the introduction of a bond purchase program and its announcement are likely to have already induced an increase in inflation expectations and supported the depreciation of the euro. Yet any further effects on the level of interest rates, as well as any real economic impacts, are likely to be rather limited temporally and quantitatively.

In particular, large-scale quantitative easing is not sufficient as the sole economic policy measure for combatting the ongoing effects of the crisis in the euro area. As even ECB President Draghi outlined in August at the Jackson Hole symposium itself, it is, in particular, the fiscal policies of those countries that still have fiscal scope that must play a key role in overcoming the crisis.

Monetary policy measures should not be implemented in isolation; a coordinated monetary, fiscal, and structural policy with a strong orientation towards sustainable growth is required for the entire euro area.

**13** See P. Turner, "The exit from non-conventional monetary policy: What challenges?," *BIS Working Paper* 448 (May 2014).

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