# The ABC of quantitative easing or the basics of central bank asset purchases

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## Introduction

On 22 January 2015, the Governing Council of the European Central Bank (ECB)[1] announced it was about to embark on an expanded asset purchase programme, buying euro area government and private sector securities to the tune of € 60 billion every month. On 10 March 2016, it raised the monthly figure to € 80 billion and announced it would expand the programme to include corporate bonds from the non-financial sector.

Such asset purchases fall into the category of 'unconventional' or 'non-conventional' monetary policy, since they are distinct from changes in policy rates. They are described as 'quantitative easing', as they lead to an increase in the quantity of money available in the economy. Asset purchases have proven highly suited to low interest rate environments, when policy rates are approaching their lower bound and traditional monetary policy thus reaches its limits. That said, their purpose is the same: to reduce the real cost of financing in order to boost economic activity and ensure price stability, the primary objective of monetary policy in the euro area.

This article aims precisely to explain why a central bank would introduce an asset purchase programme and how this can contribute to its price stability mandate. The article breaks down into two sections: the first reviews traditional monetary policy, its aims and the way it operates, while also covering its potential disruptions and its limitations. Section two describes the quantitative easing policy that explicitly enables central banks to move beyond such limitations. While not claiming to be exhaustive, the section aims to explain the key mechanisms of asset purchase programmes, chiefly investigating how such programmes affect real financing conditions in the economy and money creation. The article ends on a review of the consequences of asset purchases for public finances and for liquidity in the banking system.

## 1. 'Traditional' vs 'unconventional' monetary policy

In the euro area, price stability is the primary objective of monetary policy. The ECB's Governing Council has defined price stability as an inflation rate of below, but close to, 2 % in the medium term. This level of inflation is considered appropriate to encourage sustainable economic growth and to ward off deflation risk, i.e. a general fall in prices. The ECB's monetary policy measures aim to achieve this target, taking into account the euro area's macroeconomic and financial prospects.

Depending on the circumstances, the ECB will attempt to support or slow down economic activity by modulating financing conditions for households, corporations

(*) The authors would like to thank Jef Boeckx for his valuable comments and suggestions.

(1) For simplicity's sake, this article uses the terms European Central Bank (ECB) and Eurosystem interchangeably, while noting that the Eurosystem comprises the ECB and all national central banks of the euro area countries. Monetary policy decisions are taken by the ECB's Governing Council and implemented at the level of the Eurosystem.

and government. Its monetary policy stance is meant to concretely steer real long-term interest rates – i.e. nominal interest rates with inflation expectations stripped out – on the basis of which economic agents make their consumption, savings and investment decisions. Its measures are driven by the macroeconomic context, as well as the financial environment, the economy's financial structure and the room for manoeuvre available to individual monetary policy instruments.

## TRADITIONAL MONETARY POLICY

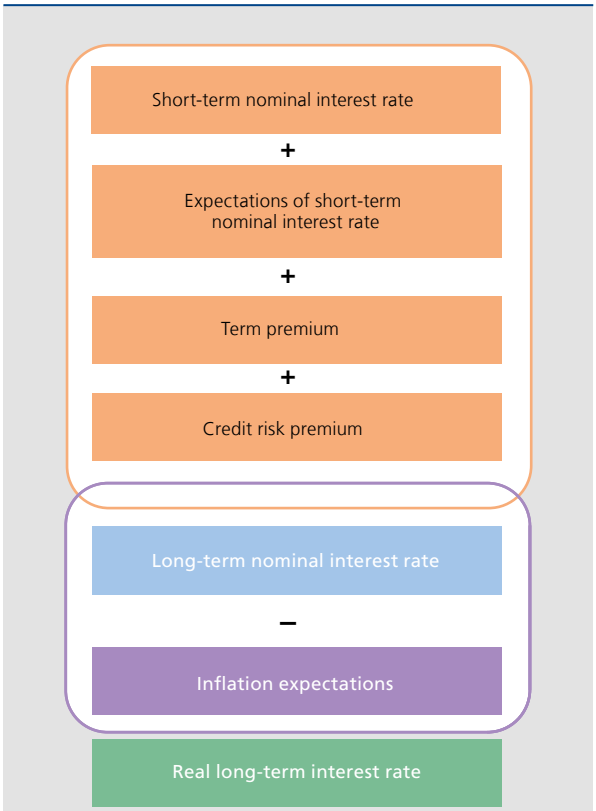
In normal times, the ECB absorbs shocks to the euro area economy by adjusting policy rates, i.e. the short-term interest rates it charges to commercial banks and which it pays on their deposits at the central bank. This is how it attempts to influence general financing conditions in the economy in order to bring economic activity closer to its equilibrium and align inflation to its target.

The ECB will cut its policy rates at times of recession, for instance when production dips below its potential levels and inflation is below its target. Such rate cuts are immediately reflected in the interest rate on the money market, used by banks to provide short-term liquidity to each other, while also partly percolating through into long-term rates. These latter rates capture expectations of future short-term rates as well as premiums, such as term premiums, which serve as compensation for uncertainty about short-term rate[1] developments in the relevant period, and credit risk premiums that cover debtor default risk. Providing inflation expectations remain firmly anchored – i.e. close to levels as defined for price stability – any such reduction in nominal long-term rates should be fully reflected in real long-term interest rates.

Obviously, the ECB only exerts indirect influence on the effective financing conditions of the various economic agents by changing its policy rates. It is clear, moreover, that the stability of inflation expectations is a key driver for trends in real interest rates. Interestingly, Chart 2 reveals a difference, starting in 2013, between five-year real yields on government paper and what would have happened to these yields, had inflation expectations remained firmly anchored at 2 %[2].

Prior to the onset of the financial crisis in 2007-08, monetary policy-making in the euro area effectively

**CHART 1** COMPONENTS OF REAL LONG-TERM INTEREST RATES




– and exclusively – consisted of the ECB adjusting policy rates and its signals being appropriately transmitted to longer-term real rates. The great recession did not merely trigger dramatic cuts in policy rates, it has also forced the Eurosystem to take a whole host of other monetary policy measures.

## MONETARY POLICY TRANSMISSION ISSUES

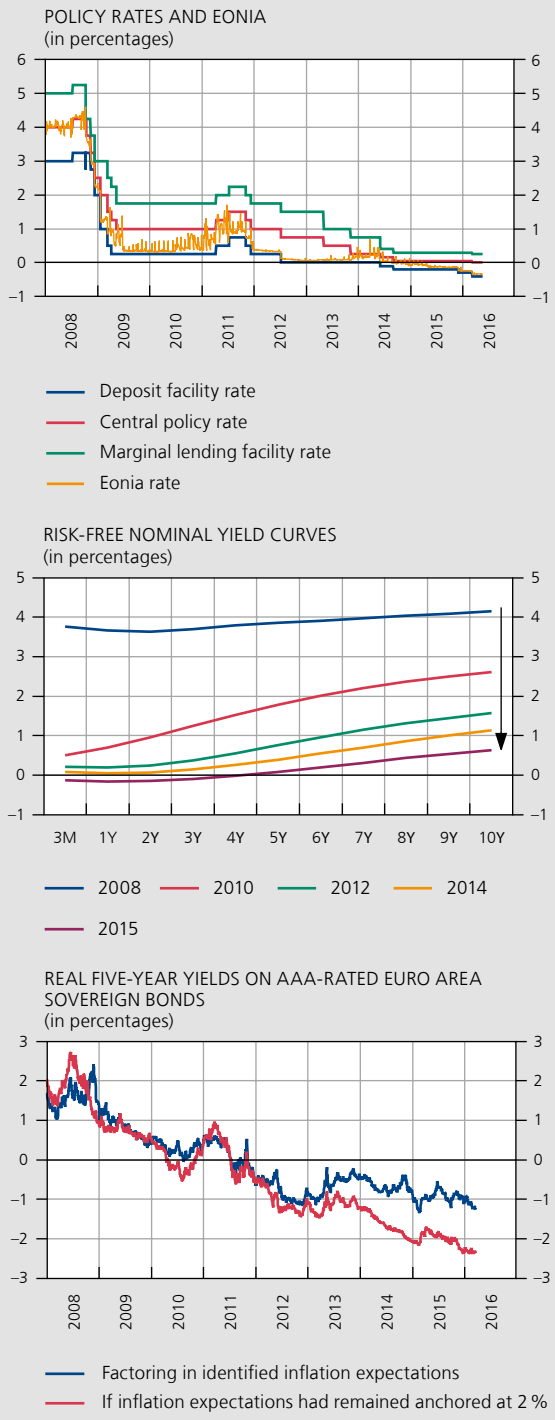
In times of general confidence in the different segments of the financial markets, no obstacles get in the way of smooth monetary policy transmission: the market rates for the various maturities and bank rates adequately reflect the impulses provided by policy rates. However, serious disruptions may occur in the event of major financial instability and massive uncertainty, such as during the period following the collapse of Lehman Brothers on 15 September 2008. As shown in Chart 3, disruption is associated with a steep increase in risk premiums.

In such conditions, central banks have to take special measures to safeguard the impact of their traditional monetary policy. If they are to achieve their price stability objectives, it is essential that they remain able to

(1) Expectations of future nominal short-term rates depend in turn on both macroeconomic prospects and the way the central bank is expected to respond to such prospects. If the central bank response is clear and well understood, long-term rates will react to macroeconomic shocks and thus serve as a stabilising factor.

(2) Note that financial instruments-derived inflation expectation measures include risk and/or liquidity premiums and are therefore less stable than survey data-derived expectations.

**CHART 2** MACROECONOMIC STABILITY CENTRAL TO MONETARY POLICY




Sources: ECB, Thomson Reuters Datastream.

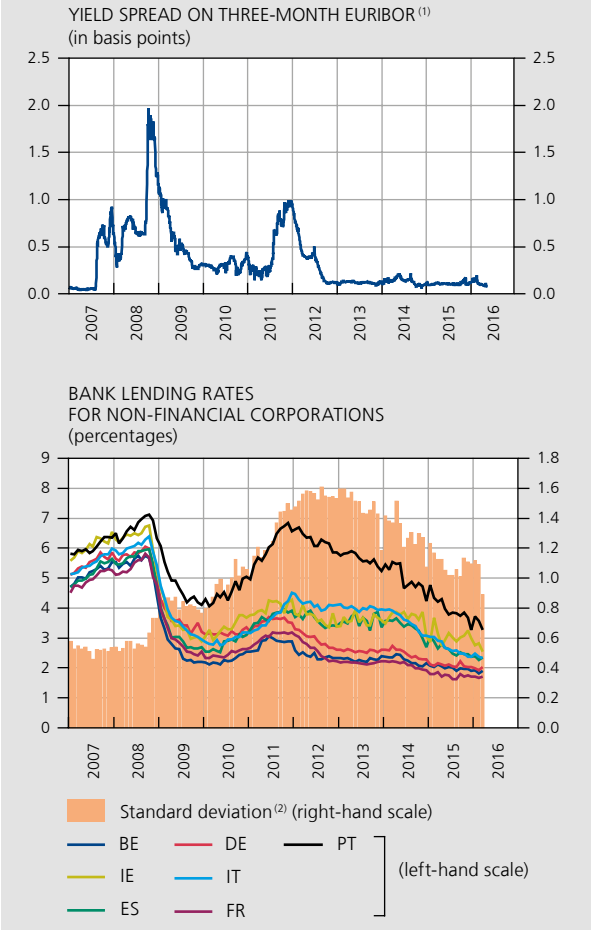
(1) The red line is mechanically constructed based upon observed nominal rates. It may reasonably be expected that nominal rates would have been different if inflation expectations had remained anchored at 2 %.

boost economic activity by influencing general financing conditions in their economies and by protecting bank credit flows to households and corporations. This is particularly true for the euro area, where bank finance dominates.

Between 2008 and 2012, the ECB took several 'unconventional' measures[1] to expand and facilitate liquidity provision from the autumn of 2008, as major trust issues arose between banks and showed in clearly higher risk premiums and funding costs. It acted as lender of last resort to support bank lending to the economy, while it also propped up government paper of the countries hardest hit by the sovereign debt crisis that raged between 2010 and 2012. Across the euro area the ECB has sought to maintain

(1) This is particularly the case within the context of the ECB's enhanced credit support policy, first launched in 2009. For more information, see Boeckx (2012).

**CHART 3** TRANSMISSION ISSUES IN MONETARY POLICY




Sources: ECB, Thomson Reuters Datastream.

(1) Relative to three-month OIS.

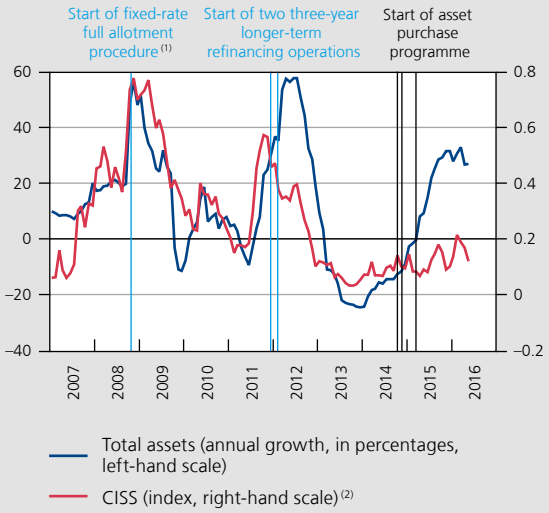
(2) Standard deviation of yields for the 12 euro area Member States on 1 January 2002.

financing conditions in keeping with macroeconomic conditions and its resolutely accommodating monetary policy stance.

The measures taken to ensure smooth monetary policy transmission [1] in the Eurosystem are clear from its balance sheet. Between September 2008 and June 2014, the size of the balance sheet captured the extent to which the banks tapped the ECB for liquidity, which in turn reflected the financial tensions in the euro area. That said, the size of the Eurosystem balance sheet was also determined – albeit to a lesser extent – by the ECB's purchases of specific assets in order to support certain sections of the financial markets [2].

In June 2014, against the backdrop of a calmer financial environment but an essentially still uncertain economic upturn, the ECB put in place measures that would not just ensure but also stimulate the transmission of its monetary policy. Key to these are its targeted longer-term refinancing operations (TLTROs) that encourage banks to resume or expand their lending to the real economy.

**CHART 4** EUROSYSTEM BALANCE SHEET AND FINANCIAL TENSIONS




Source: ECB.

(1) In normal times the Eurosystem provides liquidity to the banking sector in the form of auctions at minimum bid rates equal to the central policy rate, but by October 2008 the Governing Council had moved to a fixed-rate full allotment procedure.

(2) Composite Indicator of Systemic Stress: ex-post indicator of systemic risk based on a broad set of financial data.

## EFFECTIVE LOWER BOUND OF NOMINAL RATE

Irrespective of the quality of its transmission to economic activity and inflation, there are limits to what traditional monetary policy can do. There is indeed a lower bound to key interest rates: with banknotes acting as a non-interest-bearing store of value, nominal rates cannot move too far below zero. If interest rates dipped lower, banks – and more generally all economic actors – would prefer holding cash in the shape of banknotes rather than cashless funds in the shape of deposits. They would do so if the cost of the (negative) interest rates exceeded the costs of transport, custody and management of paper-based money. In essence, then, central banks are constrained in the extent to which they are able to ease monetary policy by cutting policy rates [3] and will have to bring other monetary policy instruments into play if they are to achieve their inflation targets.

In fact, as the Box below shows, central banks require access to a range of other policy instruments to boost the economy in the event of negative shocks, as markets are all too aware of the limits to traditional monetary policy and may thus anticipate the possibility for policy rates to hit the bottom. In these situations, market players will assume that long-term real interest rates cannot fall enough to adequately boost the economy and that inflation will therefore take longer to return to its target rate. If inflation expectations are adjusted downward as a result, this might set off a vicious downwards spiral in which central banks are increasingly less able to boost economic activity as inflation expectations fall and real rates rise. Central banks are thus well-advised to have contingency policies in place to assure the markets that they will take adequate measures to address specific circumstances.

(1) Note that measures taken to keep monetary policy transmission running smoothly are not necessarily inconsequential for the monetary policy stance. The Eurosystem, for instance, puts up a kind of funding security for banks by making long-term liquidity available, the intention being for the banks to be able to continue to lend to the real economy, while at the same time influencing long-term financing conditions in the markets.

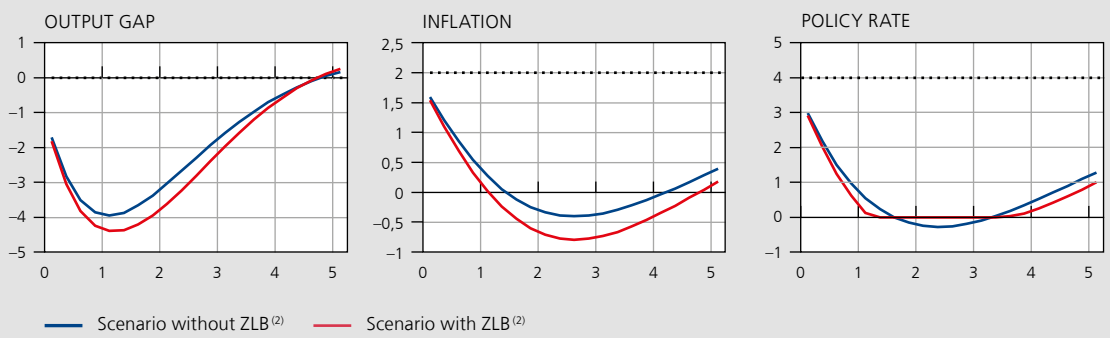
(2) Between September 2008 and June 2014, the ECB agreed two covered bonds programmes in addition to another two government paper purchasing programmes, namely the Securities Market Programme (SMP) and the Outright Monetary Transactions Programme (OMTs). For more information, see ECB (2012).

(3) Some countries also impose legal limits on reductions in selected interest rates. Belgium is a case in point: interest rates on savings accounts can go no lower than 0.11 %, i.e. 0.01 % base rate and 0.10 % fidelity premium.

## Box 1 – The existence of a lower bound for policy rates and how this threatens the stabilising purpose of the central bank

The macroeconomic consequences of nominal interest rates facing a lower bound are captured by the model developed by De Graeve *et al.* (2014). Drawing on calibrated – i.e. artificially generated yet plausible – data, the model shows developments in an economy in the five years following a negative demand shock causing a nearly 4 % output gap and putting heavy downward pressure on inflation. Two scenarios are reviewed, with the first seeing the central bank able to cut its policy rates as it pleases, the markets anticipating its moves, and real long-term rates also falling. This scenario shows boosts to economic activity with economic growth leading to higher inflation. In the second scenario, nominal rates hit a lowest level and real long-term rates cannot fall enough to boost economic activity. The markets anticipate this and expect inflation to return to its target level more slowly. As it turns out, monetary policy in this scenario is more restrictive than desirable, causing a deeper economic crisis and a lengthier period of weak inflation.

THE EXISTENCE OF A LOWER BOUND FOR THE POLICY RATES THREATENS THE STABILISING ROLE OF THE CENTRAL BANK (1)



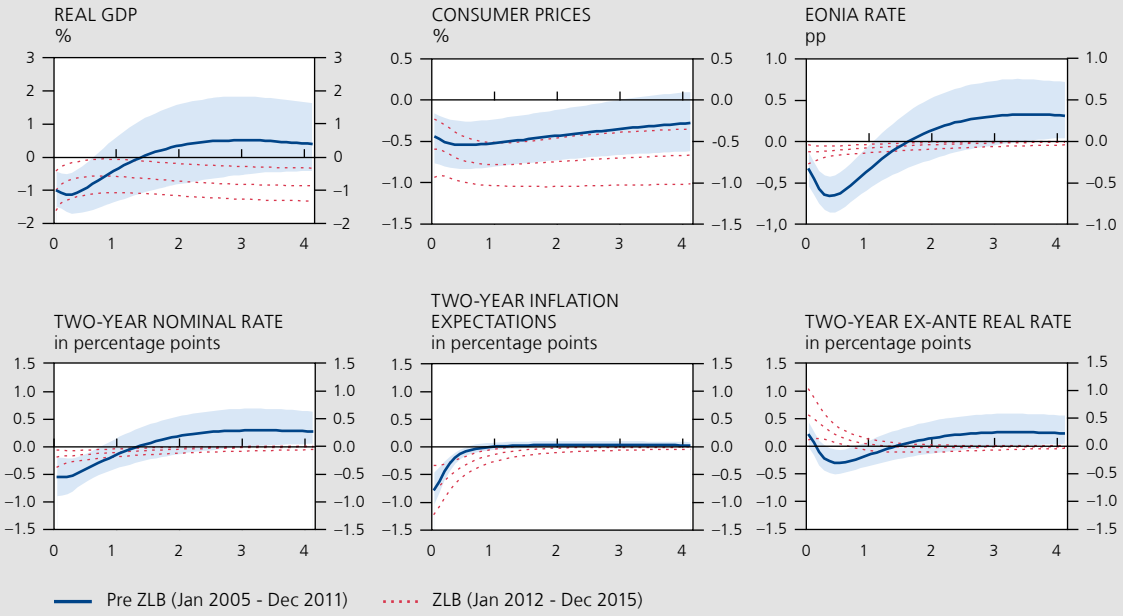

Source : De Graeve *et al.* (2014).
(1) The dotted lines represent the variables' long-term equilibrium levels.
(2) ZLB : the zero lower bound is jargon for the lowest level of nominal interest rates.

This theoretical finding, that a lower bound for nominal interest rates gets in the way of the central bank's stabilising role, is borne out by the euro area's economic reality. The charts below plot the dynamic effects of a negative demand shock using a model based on real data. More specifically, the charts show GDP, consumer prices, the nominal interest rate, inflation expectations and, lastly, the real rate in the four years following a one-off 1 % GDP fall caused by a demand shock. Two distinct periods are shown : in the first – the pre-ZLB period – there is still enough room for policy interest rates to fall. In the second – the ZLB period, which begins in January 2012 – there is much less room for manoeuvre. Interest rates have come down further since then, but these reductions have been small.

Unlike the first period, the most recent period shows a more subdued downward trend in overnight and two-year rates. Prior to 2012, these rates had fallen significantly in response to a negative demand shock, but they have hardly budged over the recent period, while interest rates have been near their lowest level. As a result, and in contrast to the previous situation, real interest rates are now mainly determined by inflation expectations.

In the first period, nominal interest rates dipped well below inflation expectations, causing real interest rates to contract and thus stimulating economic activity. This is no longer the case under current conditions. In fact, in recent years real interest rates have been going up, as inflation expectations fell more sharply than nominal interest rates in response to the negative demand shock. This makes traditional monetary policy more restrictive and adds up to a slower recovery and less strong inflation dynamics when compared with the pre-ZLB period. In fact, against the backdrop of rates at their lower bound, the repercussions of a negative inflation shock are more persistent and may cut inflation expectations adrift. Chart 2 of this article captures this phenomenon.

DYNAMIC EFFECTS OF A NEGATIVE DEMAND SHOCK IN THE EURO AREA (1)




Source: NBB.

(1) Deviations from the long-term average. The effects shown were calculated by an econometric vector autoregressive model (VAR). Exogenous demand shocks were identified by imposing sign restrictions on the impact of such shocks.

Instruments that help central banks continue to stimulate economic activity when policy rates are nearing their lower bound are ranked among the so-called 'unconventional' monetary policy arsenal.

Within the latter, the forward guidance on policy rates is a key monetary policy measure: by announcing that rates will remain low for some time, central banks influence expectations on short-term interest rates and reduce uncertainty on their development, thus putting more downward pressure on long-term rates. The ECB started providing forward guidance in July 2013, when the Governing Council said it expected "key ECB interest rates to remain at present or lower levels for an extended period of time". It also mentioned that its forward guidance was "based on the overall subdued outlook for inflation extending into the medium term, given the broad-based weakness in the real economy and subdued monetary dynamics". This guidance has since been adjusted somewhat but continues to apply.

Another instrument is quantitative easing (QE), meaning that the central bank purchases significant amounts of debt instruments in the markets to help support their valuations, put pressure on returns and ease the general financing conditions in the economy. The backdrop of historically low policy rates and renewed deterioration

of inflation prospects triggered such ECB policy on 22 January 2015, when the Governing Council revealed it was about to embark on a programme for the purchase of private and government debt securities up to an amount of € 60 billion a month [1]. To accelerate the return of inflation to its target, it stepped up its monthly purchases to € 80 billion in March 2016 and expanded the programme to include non-financial corporate bonds [2]. The intention is to continue these purchases up until the end of March 2017 or longer if need be, and at least until the Governing Council sees a sustained adjustment in the path of inflation that is consistent with its price stability objective.

The asset purchases – and, more specifically, the public sector purchases that got underway in March 2015 – constitute a major change in Eurosystem monetary policy. They marked the transition from a 'relatively passive' to a 'clearly active' balance sheet management. By the end of May, the ECB had purchased securities to the tune of around € 1 000 billion, while the total increase of its balance sheet should exceed € 1 800 billion by March 2017.

## 2. Asset purchases as monetary policy instrument

This second section covers the mechanisms of quantitative easing and the way in which it is expected to contribute to the central bank's price stability objective. Drawing on the general philosophy underpinning asset purchases, this section reviews a range of key questions on the way such programmes work and what their impact is.

### 2.1 What general philosophy underpins asset purchases ?

Like lower policy rates, asset purchases aim to push down real yields and add extra easing to the financing conditions in the economy. These purchases are also supposed to be supportive of aggregate demand and bring inflation into line with price stability as defined by the central bank. They represent a conscious focus on encouraging consumption and investment over saving in order to support economic activity. The spillover effects of these measures protect the economy against the risk of secular stagnation, meaning a situation of no or lacklustre economic growth because traditional monetary policy is not working [3].

### 2.2 What types of assets do central banks focus on ?

When conducting a policy of quantitative easing, central banks typically target high-quality – i.e. low-risk – long-term assets whose markets are both broad and liquid. The primary aim, after all, is not to depress credit risk premiums but to influence the various components of real long-term rates in general. Longer-term securities are key here, as consumption and capital spending decisions have longer horizons. Lastly, by targeting large and liquid markets, they can buy enough assets to influence financing conditions in the economy at large without disrupting the functioning of the markets.

The majority of debt securities purchased under the Eurosystem's asset purchase programme are public sector securities issued by euro area governments or by European supranational institutions. On 27 May 2016, the total public sector amount purchased stood at nearly € 800 billion, on an overall figure of around € 1 000 billion, with terms to maturity of these public sector securities averaging around eight years.

### 2.3 How do asset purchase programmes influence financing conditions ?

Through asset purchases, central banks push down both risk-free nominal yield curves and credit risk premiums, and also depress real long-term yields by supporting inflation expectations. Drawing on Chart 1, what follows is an attempt to break down the influence on the specific components [4].

#### EXPECTATIONS ON NOMINAL SHORT-TERM INTEREST RATES

By buying long-term assets, the central bank expresses a willingness to keep policy rates low for an extended period.

A quantitative easing policy implies the accumulation on the asset side of the balance sheet of significant amounts of long-term securities at fixed and typically low yields, as these securities carry relatively little risk and were acquired

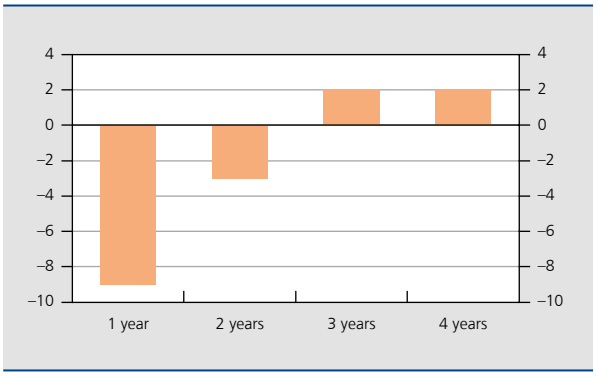
(1) The expanded asset purchase prorgramme (APP) launched in January 2015 by the Eurosystem includes the third programme for the purchase of euro-denominated covered bonds (CBPP3), the asset-backed securities purchase programme (ABSPP) that started in November 2014 and a significant public sector purchase programme (PSPP).

(2) As part of a corporate sector purchase programme (CSPP).

(3) For more information about secular stagnation, see Boeckx *et al.* (2015).

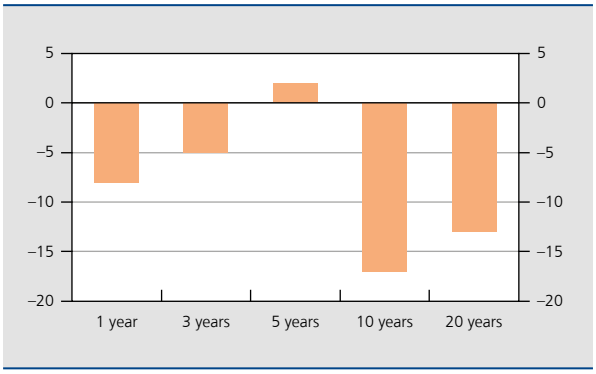
(4) This section mainly draws on the outcomes of the event study by Altavilla *et al.* (2015) investigating the impact of the ECB's APP on a wide range of assets. The study also factors in expectation effects : in addition to the actual announcement on 22 January 2015 it takes on board statements about a possible APP between 1 September 2014 and 22 January 2015. However, it does not incorporate the announcements of recent extensions (in December 2015 and in March 2016). The outcomes plotted in the charts reflect controlled event studies for an event window of one single day. By stripping out any other macroeconomic data releases, it is able to isolate the APP effect.

**CHART 5** CHANGE IN THE EURO AREA'S RISK-FREE THREE-MONTH FORWARD RATE AT TIME OF APP ANNOUNCEMENT[1]




Source: Altavilla *et al.* (2015).
(1) Outcomes of a controlled event study for an event window of one single day.

**CHART 6** CHANGE IN BUND YIELDS AT TIME OF APP ANNOUNCEMENT[1]




Source: Altavilla *et al.* (2015).
(1) Outcomes of a controlled event study for an event window of one single day.

at a time of low interest rates. On the liabilities side of the balance sheet, these items are financed by bank reserves, at the interest rate paid on the deposit facility. In these conditions, an abrupt rate increase would push up the central bank's financial liabilities without its revenues recording the same trend.

By holding long-term assets funded by short-term liabilities, the central bank is exposed to a maturity transformation risk that will keep it from raising short-term rates. If credible, this situation will help it to constrain interest rate expectations and therefore nominal long-term yields. What is more, a lengthy period of ample bank liquidity induced by this asset purchase programme implies that overnight interest rates should stay close to rates paid on deposits – and therefore below the central policy rate[1]. From that perspective, a quantitative easing policy reinforces the forward guidance message on policy rates.

However, central banks cannot commit to keeping rates low for too long a period, that is to say a period after which the situation and/or macroeconomic conditions could reverse dramatically – which is why the measure's 'signalling effect' primarily shows up in the short-term segment of the yield curve, as Chart 5 demonstrates.

(1) When the liquidity surplus in the banking system is negligible, overnight rates tend to be very close to the central policy rate. In the euro area, this is the rate on the main refinancing operations. In a situation of excess bank liquidity – that is to say, when liquidity exceeds reserve requirements and liquidity-absorbing autonomous factors – overnight rates typically approach those on the deposit facility (for more information, see Boeckx and Ide, 2012).
(2) Prices of and yields on debt securities move in opposite directions, as a rate increase reduces the value of outstanding securities. In concrete terms, securities issued at an initial coupon of 4 % will find no buyers when interest rates rise to 5 % from 4 %, unless prices are cut to the extent that the – fixed – coupon offers its potential buyer a 5 % return.
(3) The formula applied to the Eurosystem's purchases indeed derives from the national central banks' shares in the ECB's capital.

## TERM PREMIUMS

By engaging in large-scale purchases of long-term assets, the central bank significantly raises demand without supply keeping pace. As a result, selected debt instruments become rarer in the market, adding to their prices and depressing yields[2]. Term premiums are specifically hit by these asset purchases, as these decline in as much as the central bank siphons long-term assets from the markets, reducing duration risk and acting as a negative influence on the premiums that markets demand for holding these assets.

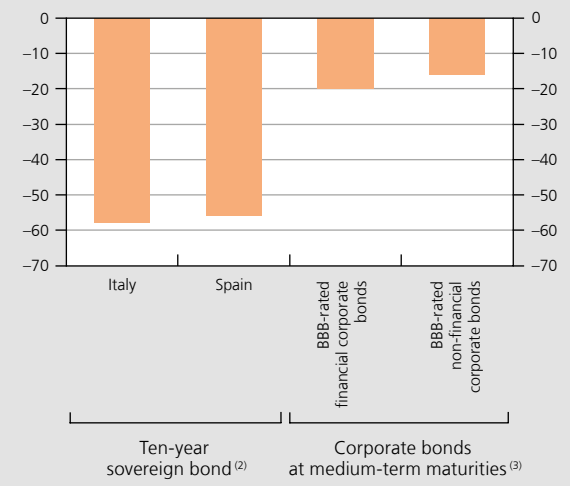
A case in point: the Eurosystem's announcement of its asset purchase programme severely affected yields on German Bunds, the asset purchased most[3]. Chart 6 reveals the yield slump to have been most marked for longer maturities.

## CREDIT RISK PREMIUMS

In the wake of the fall in yields on assets purchased by the central bank, a number of investors holding liquidity and looking to maximise the risk/return features of their portfolios will switch into other asset classes. By rebalancing their portfolios to include higher-yielding but riskier securities, these investors in turn depress the returns on the asset classes they shift to.

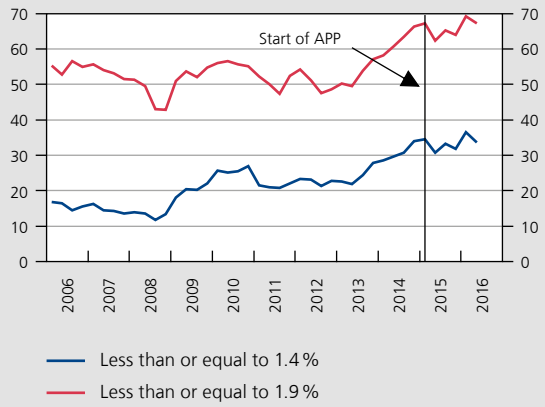
Investors typically select securities with a set of very specific features – they are said to have a 'preferred habitat' – in terms of duration, liquidity or credit risk, with the most heavily affected returns being those on securities that most resemble those purchased by the central bank. This then triggers a domino effect across

**CHART 7** SPREAD CHANGES ON SOVEREIGN PAPER AND PRIVATE SECTOR ISSUES AT TIME OF APP ANNOUNCEMENT (1)




Source: Altavilla *et al.* (2015).
(1) Outcomes of a controlled event study for an event window of one single day.
(2) Government bond spreads relative to ten-year Bunds.
(3) Corporate bond spreads relative to swaps with similar maturities.

**CHART 8** AGGREGATE PROBABILITY DISTRIBUTION OF LONG-TERM INFLATION EXPECTATIONS (1)




Source: ECB.
(1) Five-year expectations derived from the ECB survey of professional forecasters. Latest available data: second quarter of 2016.

the broad range of financial assets and ends up generally easing financing conditions across the economy, with credit risk premiums coming down as investors focus more on riskier assets.

And so the Eurosystem's asset purchase programme triggered a drop in the risk-free interest rate that percolated through into narrowing yield spreads between risky and less risky assets – e.g. Italian and Spanish government bonds relative to German Bunds, as well as securities issued by the private sector.

### INFLATION EXPECTATIONS

By launching an asset purchase programme, a central bank shows its intention to further ease its monetary policy in order to promote economic activity and push inflation back up, clearly engaging with its mandate. Quantitative easing policies are expected to anchor inflation expectations or get them to move back up. Their credibility is higher when the central bank promises that the programme will stay in place until inflation is in keeping with its target. Any increase in inflation expectations will bring pressure to bear on real long-term rates, supporting investment and consumption.

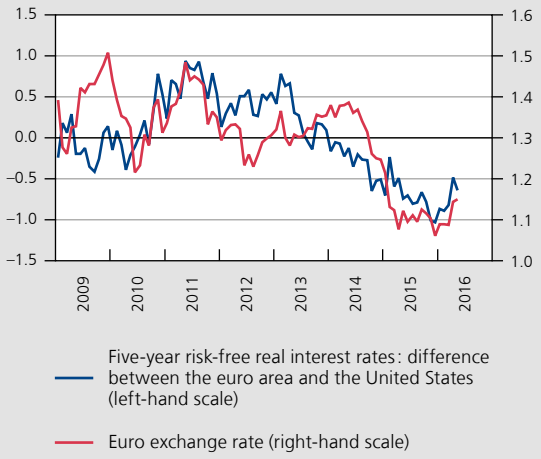
The Eurosystem's asset purchase programme has proven somewhat supportive to euro area inflation expectations. For one thing, the number of ECB-surveyed professional forecasters predicting inflation at or below 1.4 % in the next five years – i.e. well below the Eurosystem inflation target – has recently stabilised, after recording a consistent quarter-after-quarter increase. That said, inflation expectations have not stabilised at pre-2013 levels – particularly not expectations based on financial data, although these should be interpreted with caution in view of high volatility.

## 2.4 Do asset purchase programmes affect exchange rates?

As yields move down in the wake of the asset purchase programme, investors may look abroad for more favourable returns. Such portfolio rebalancing in favour of foreign assets typically reduces the value of the domestic currency relative to other currencies, making exports cheaper and imports more expensive. This has the added advantage of promoting domestic economic activity and pushing up inflation.

Since mid-2014, the euro has recorded steep falls relative to the US dollar, which are in part down to the expectations of a Eurosystem asset purchase programme and its actual announcement in January 2015. Note also the parallel development of the common currency's exchange rate and five-year real interest rates – the latter clearly showing that, in real terms, it has become much less attractive to invest in the euro area. That said, we would

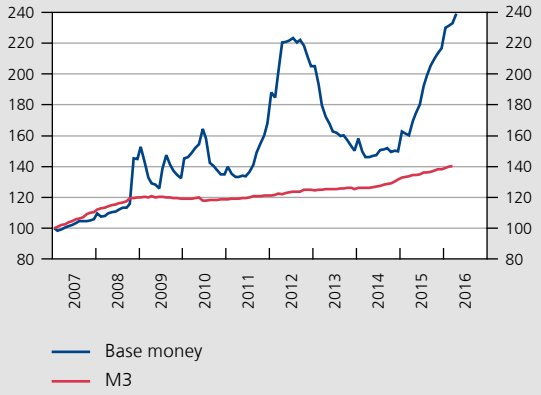
**CHART 9** INTEREST RATE DIFFERENTIAL AND EXCHANGE RATE BETWEEN THE EURO AREA AND THE UNITED STATES




Source: Thomson Reuters Datastream.

**CHART 10** BASE MONEY AND MONEY SUPPLY IN THE EURO AREA (1)

(index 2007 = 100)




Source: ECB.

(1) Base money, sometimes called 'central bank money', comprises all banknotes and coins in circulation in the euro area, as well as the monetary assets kept with the Eurosystem by euro area credit institutions. In addition to banknotes and coins in circulation, the broader M3 measure also includes short-term liabilities (deposits and marketable instruments) of the euro area's monetary financial institutions (MFIs) with respect to other euro area residents (non-MFIs).

do well to remember that numerous other factors – including macroeconomic conditions in the United States as well as US monetary policy – affect exchange rates and differences in real interest rates between the two economic areas.

## 2.5 Do asset purchase programmes create money?

Quantitative easing policies imply a focused attempt to generate large-scale growth of the reserves kept with the central bank by commercial banks. These reserves combine with banknotes and coins in circulation to make up base money, also known as central bank money. Debt securities purchases are indeed financed by the issue of reserves, which is the sole prerogative of the central bank and which constitutes bank liquidity – i.e. the amount of money that can be used for payment purposes in the banking system. Chart 11 shows how the asset purchases are included on the asset side of the central bank's balance sheet while the liabilities side records the accounts of the credit institutions the securities are purchased from or which act as intermediaries (1).

(1) By necessity, a transaction involving a non-banking agent – e.g. a household or corporation – will go through the banking sector, which has the monopoly of holding central bank reserves.`

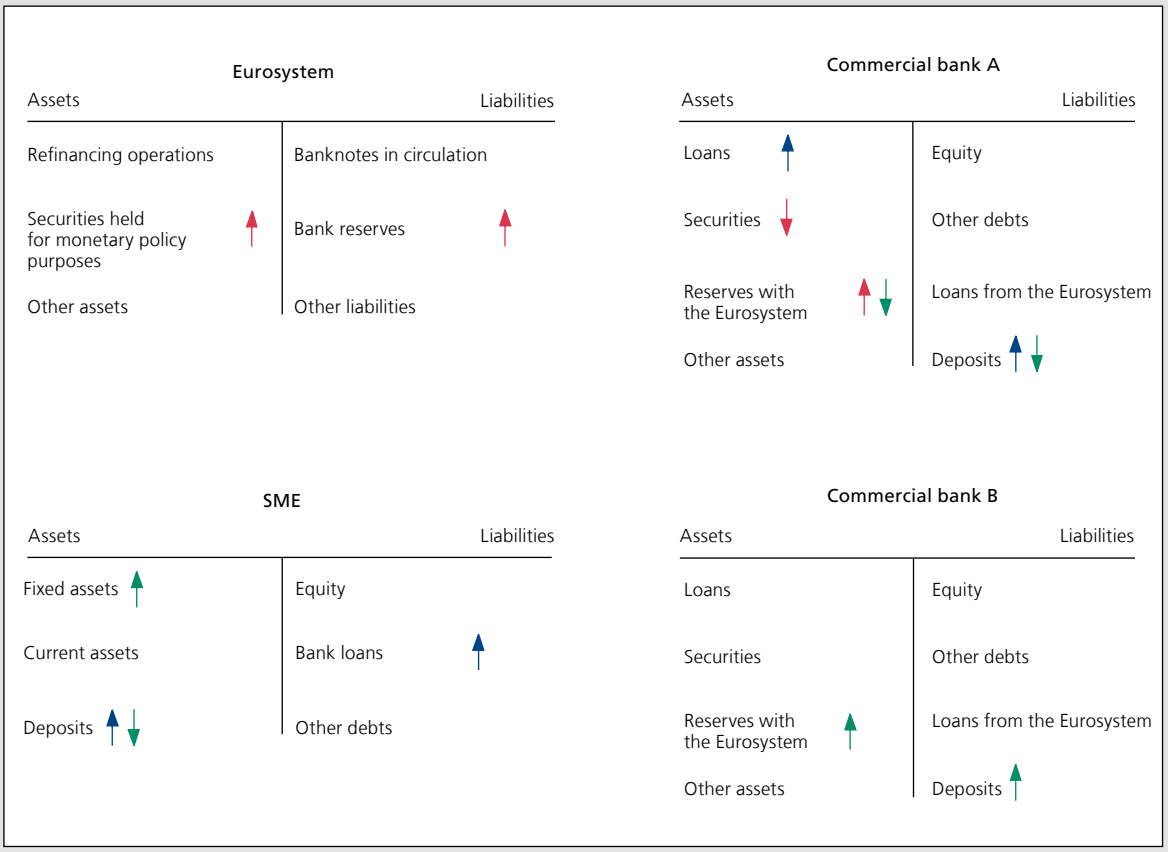
(2) It should be noted that an increase in broad money related to portfolio adjustments in favour of shorter-term, more liquid, assets is expected to have a more moderate macroeconomic and inflationary impact than a similar increase induced by a pick-up in the provision of credit.

Quantitative easing-derived increases in base money, and consequently of the central bank balance sheet, do not automatically translate into an equal upturn in the money supply – i.e. the money that the broader economy can mobilise for payment purposes – which, like base money, consists of banknotes and coins in circulation, but also comprises short-term bank liabilities such as deposits.

For an asset purchase programme-related base money increase also pushing up the money supply, this programme should result in higher deposits at commercial banks or possibly more euro banknotes and coins in circulation.

This may be the case when the seller of an asset purchased by the central bank is a non-banking resident: a household, a non-financial corporation, a regional government, etc. And this is also the case when central bank asset purchases boost lending, whether because more favourable financing conditions bump up demand, or because higher central bank reserves encourage commercial banks to expand their supply. In keeping with the old adage that loans make deposits, new lending will create an equally sized deposit, boosting the money supply. A final way in which the asset purchases might cause a broad increase in money is by pushing up demand for monetary assets included in M3. As asset purchases depress long-term yields, investors indeed forego long-term securities for liquid assets such as short-term deposits (2).

CHART 11 PURCHASE OF ASSETS BY THE EUROSYSTEM AND LENDING TO AN SME




By contrast, if the seller of the central bank-purchased assets is a bank that elects to keep the proceeds of these sales in reserves with the central bank, or if he is an economic agent resident abroad, higher central bank reserves will not affect deposit levels or the money supply.

Chart 11 presents a simplified take on the impact of asset purchases on balance sheets. It shows the Eurosystem buying debt securities in the market, commercial bank A selling securities to the Eurosystem and lending to an SME, the SME using the loan to buy new equipment, and a commercial bank B where the SME's supplier deposits the proceeds of the equipment sold. Note that the bank transfer between the SME and its supplier from bank A to bank B influences the individual reserves of these commercial banks with the central bank. However, the total volume of the banking reserves created by asset purchases is fundamentally determined by the central bank: it is not influenced by the commercial banks' decisions to lend, nor by any transfer between these two banks.

## 3. How do asset purchases impact on public finances?

The Eurosystem's asset purchases chiefly involve government paper and are therefore not without implications for public finances. That said, this government paper is purchased in the secondary market and involves existing debt. But although there is therefore no immediate effect on the government's debt ratios, asset purchases do push down interest rate charges by depressing returns on existing debt, while of course also pushing down yields on newly issued securities. Another way of looking at this would be that these purchases enable a lengthening of debt durations, while interest rate charges stay the same. With the EU's budget framework reducing the temptation for Member States to issue more debt, the downward effect on yields is more pronounced.

In the current context, asset purchases are also a source of government revenues, as the central bank is funding the purchase of long-term public sector assets by issuing

central bank reserves. With reserves paid at the deposit facility rate – currently negative and below the returns on the securities purchased – the central bank is making a profit, a proportion of which is returned to the Member States-shareholders. However, at some point in the future the deposit facility rate might well exceed yields on the securities now in the central bank's possession. If that happens, the central bank may see its profits contract or even incur losses, depressing central bank-derived revenues for governments. With this in mind, the central bank might move to change its reserves policy and constrain profits paid out to governments.

## 4. How to exit from a system of ample liquidity created by an asset purchase programme?

An asset purchase programme funded by the issuance of reserves inevitably creates a significant and lasting increase in the banking sector's liquidity surplus. However, excess liquidity can be absorbed through a range of channels.

Obviously, excess reserves will simply melt away, if nominal economic growth revives, that is to say when more robust economic activity dynamics due to the asset purchases trigger a greater demand for cash. More cash withdrawals by economic agents reduce their deposits with banks and cause concomitantly lower bank reserves with the central bank. This is also the case if growth encourages lending: more lending typically coincides with more deposits, and leads to greater reserve requirements – excess reserves making way for required reserves, in fact.

Ignoring, for the moment, the possibility of a 'natural' reduction fuelled by greater demand for cash and bank loans thanks to reviving economic activity, it is central bank policies that primarily determine the development of excess reserve levels. If, as the Eurosystem did in December 2015, a central bank chooses to reinvest amounts repaid, excess reserves will not decline as the volume of securities held does not shrink. If no reinvestment policy is pursued, excess reserves will shrink as debt securities are repaid. To repay them, governments will typically use the deposits held with commercial banks and, like those deposits, reserves held with the central bank will also contract.

## Conclusion

Being able to pursue a policy of quantitative easing provides a central bank with a vital edge whenever it needs to move beyond the limits of traditional monetary policy. Large-scale purchases of long-term debt securities enable it to manage long-term real interest rates and to continue to stimulate economic activity when policy rates approach their lower bound.

Asset purchases by central banks influence the various components of long-term real interest rates in highly direct and more subtle ways. By depressing real long-term rates, they encourage consumption and investment at the expense of savings, while depreciating the domestic currency and promoting exports. By supporting aggregate demand, asset purchase programmes fuel inflation and thus contribute to central banks' price stability objectives.

Inevitably, asset purchases push up base money, chiefly in the shape of higher central bank reserves in the banking system, but they do not necessarily translate into an equally large increase in broad money. At this point in time, the purchase of mostly government assets has a favourable impact on public finances, but these benefits are not guaranteed to last. Any discontinuation of quantitative easing and the concomitant system of abundant liquidity fundamentally hinges on specific central bank policies. Not only does it depend on the central bank's asset purchases, but also on any reinvestment of amounts repaid.

To date, the Eurosystem's decision to embark on an expanded asset purchase programme on 22 January 2015 has reduced nominal yields across different sectors of the financial markets and has brought a measure of stabilisation to euro area inflation expectations. In turn, the APP-derived fall in real yields has sparked a depreciation of the euro relative to the dollar. All in all, the Eurosystem's asset purchase programme has definitely contributed to a further easing of its monetary policy.

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