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**Limits in Terms of Eligible Collateral  
and Policy Risks of an Extension of  
the ECB's Quantitative Easing  
Programme**

**Monetary Dialogue  
February 2016**

**COMPILATION OF NOTES**





DIRECTORATE GENERAL FOR INTERNAL POLICIES  
POLICY DEPARTMENT A: ECONOMIC AND SCIENTIFIC POLICY

# Limits in terms of eligible collateral and policy risks of an extension of the ECB's quantitative easing programme

Monetary Dialogue 15 February 2016

COMPILED BY THE DIRECTORATE GENERAL FOR INTERNAL POLICIES

## Abstract

At the press conference following the ECB Governing Council meeting of 3 December 2015, the President of the ECB Mario Draghi reiterated the readiness of the ECB to adopt, if necessary, additional measures - in terms of size, composition and duration of the of the asset purchase programme EAPP - in order to maintain an appropriate degree of monetary accommodation. This may renew criticism to the ECB for not complying with its mandate and its quasi-fiscal role. The notes included in this compilation requested by the Committee on Economic and Monetary Affairs (ECON) for the February 2016 Monetary Dialogue discusses the range of policy instruments potentially available to the ECB to enhance the effectiveness of the EAPP programme, assess the potential limits of a further expansion of asset purchases and investigate key credibility issues eventually faced by the ECB.

This document was requested by the European Parliament's Committee on Economic and Monetary Affairs.

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Original: EN

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Manuscript completed in February 2016

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## INTRODUCTION

At the press conference following the ECB Governing Council meeting of 3 December 2015, the President of the ECB Mario Draghi announced a further expansion of the asset purchase programme (EAPP), initially foreseen for the period March 2015-September 2016. The programme will be prolonged for 6 months (i.e. at least until March 2017) and securities issued by regional and local governments will be included in the list of eligible assets. In addition, the ECB decided to cut the deposit facility rate (by 10 bp. to - 0.30%).

President Draghi reiterated the readiness of the ECB to adopt, if necessary, additional measures (in terms of size, composition and duration of the EAPP) in order to maintain an appropriate degree of monetary accommodation. Different options are feasible, including the increase in the amount of monthly asset purchases currently set at EUR 60bn. This may, however, renew criticism to the ECB for not complying with its mandate and its quasi-fiscal role (via the easing of financing conditions on government debts).

While it is always a challenge to exit from a quantitative easing (QE) programme, there is also the risk to indefinitely expand a QE programme if it is not considered as sufficiently effective and to cross the line beyond which the credibility of the central bank is at stake.

Against the above background, the notes included in this compilation discuss the range of policy instruments potentially available to the ECB to enhance the effectiveness of the EAPP programme, assess the potential limits (in terms of size, duration and composition) of a further expansion of asset purchases and analyse credibility issues eventually faced by the ECB. The main conclusions and policy options are summarised below.

The notes prepared by monetary experts (members of the Monetary Expert Panel) have been requested by the Committee on Economic and Monetary Affairs as an input for the February 2016 session of the Monetary Dialogue.

Daniel Gros (CEPS). In early 2015, the ECB embarked on the secondary markets public sector asset purchase programme (PSPP). The aim was to achieve a “sustained adjustment in the path of inflation” towards the target of below, but close to 2%. Almost one year into the programme there is little sign that this goal is about to be achieved. The ECB has already increased the expected length of the PSPP and the question thus arises whether there are enough PSPP eligible bonds available to continue much beyond the target date of March 2017.

Detailed calculations are difficult since market conditions change often, and the ECB could further change its eligibility criteria. Most calculations indicate that there is no immediate threat of a scarcity of eligible bonds. But the Collective Action Clauses (CACs) incorporated in euro-area bonds since 2013 give 25% of the bond holders a blocking minority. Since the ECB wants to avoid at all costs being put in a situation where it constitutes the blocking minority itself, it cannot acquire more than a quarter of all eligible bonds outstanding. This could represent a hard limit, which, at the present pace of purchases, could be reached in less than two years.

All in all, one can conclude that a moderate expansion of the ECB’s bond-purchase programme is possible. But the claim of the ECB that its PSPP programme is open-ended, and can simply be continued until inflation picks up again, is not credible.

National central banks have taken considerable leeway in terms of the maturity of their own national government bonds they are buying under the PSPP. The ‘singleness’ of the monetary policy is thus no longer ensured. The fact that central banks from countries with

higher debt-to-GDP ratios have bought longer maturities is a ground for concern since this increases the vulnerability of these countries to a return of risk premia.

Most monetary policy decisions have some fiscal implications, but usually they are just a side effect. This changes when a central bank buys government bonds on a large scale (and with the avowed intent to reduce interest rates). The 'no-risk' sharing on the 80% of the purchases under the PSPP has effectively nationalised the fiscal consequences of QE in the euro area. As all national treasuries benefit from the bond-buying, there is little opposition today. But this will change when the time comes to exit QE and then to reverse policy.

A priori there is little one can object to if central banks buy large amounts of government (or indeed other) bonds during a period when inflation is too low and is expected to remain so for a long time. The underlying assumption is that central banks will be able to sell these bonds with the same ease with which they bought them. However, this might not be the case.

Moreover, when the time comes to sell, the maturity of the bonds bought originally will matter. The longer the maturity of the bonds that central banks might have to throw on the market, at some point in the future, the larger their exposure to changing market conditions. This applies of course in particular to countries where risk premia could return quickly given that public debt remains elevated. Risk premia might never return, however, and the bonds purchased under the PSPP might remain on the balance sheet of the eurosystem until they run off gradually. But this is not certain.

In short, there is a clear danger that deep conflicts of interest will arise within the Governing Council when the attainment of the goal of price stability will warrant the unwinding of the purchases undertaken today.

Jens Boysen-Hogrefe, Salomon Fiedler, Nils Jannsen, Stefan Kooths, Stefan Reitz (Kiel Institute for the World Economy). The ECB and the Eurosystem as a whole run a series of risks by extending their QE programme. All of these risks share a common root, which is that the distressed euro area countries face severe economic problems that are of a non-monetary nature (structural discrepancies, rigid labour markets, severe debt overhang, high levels of non-performing loans). Thus, very little relief can be expected from using monetary instruments in general and the increase of its dosage in particular. However, the negative side-effects tend to become stronger when QE programmes are expanded. These QE-related risks concern the political independence of future central bank operations, the credibility of the ECB, disincentives for reform policies and fiscal consolidation, systemic financial risks and the misallocation of capital as well as potential distortions and turmoil in foreign exchange markets. While the recent extension of the QE programme does not represent a new policy paradigm but follows a more-of-the-same approach instead, a higher quantity may at some point turn into a new quality by the very size of the interventions. For obvious reasons, it is impossible to identify crisp thresholds for such qualitative leaps but the now substantially extended asset purchase programmes make this transformation more likely.

Grégory Claeys, Álvaro Leandro (Bruegel). The ECB decision (22 January 2015) to start the sovereign QE programme in March 2015 was welcome and appropriate in the light of the clear downward trend in inflation and the feeble recovery of the euro area.

Nevertheless, in a monetary union such as the euro area, with multiple sovereign debt securities, the execution of such a programme is very complex. The ECB Governing Council imposed limits to ensure ex ante that the ECB would not breach the prohibition of monetary financing. Updated calculations show that these limits will constrain the duration and size of the programme throughout 2017, even when taking into account the changes announced throughout 2015, and especially if the ECB decides to increase its monthly purchases. The

recommendation is that the ECB further alter the programme guidelines. Changes could include the purchase of corporate bonds as well as senior well-rated uncovered bank bonds. A more radical change would be to move away from an allocation of asset purchases between countries based on the ECB capital keys, to an allocation based on the actual size of countries' outstanding debts.

Additionally, the extension of the QE programme raises some legitimate questions on its potential adverse consequences. According to the authors' assessment, the benefits outweigh the potential negative implications, for instance for financial stability or for inequality. Central banks should of course be aware of the potential side effects of their actions (which are generally temporary), but issues of financial stability and inequality are mainly the result of deep structural changes, and therefore other policies remain essential to deal with them. Micro and macro-prudential policies should constitute the first line of defence to avoid the build-up of financial imbalances, while fiscal and social policies are the right tools to fight the current rise in inequality in advanced countries.

Christophe Blot, Jérôme Creel, Paul Hubert (OFCE). A new extension of QE is possible, though certainly limited, either by the current design of the assets purchasing programme, by the future financing needs of Euro area governments, or by a political reluctance to see the ECB bear more risk. This reluctance questions the future of policymaking. Is unconventional monetary policy a temporary tool or is it the "new normal"? If the latter case applies and monetary policy becomes less endorsed with price stability than with the management of risk premia, QE extension will be very likely.

In central bankers communication there is a question of balance of risk as far as QE measures are concerned. In the short-term, the main economic risk remains deflation, so that the actions taken so far contribute to mitigate this risk; they shall not be overly criticized for creating illusory risks of central bank insolvency or an inflation risk. The monetary policy in the Euro area has contributed to the on-going, though weak, recovery. Yet, the tools at the disposal of the central bank may lead to higher inflation and higher risks – either for central bank's solvency or for the economy if not tuned appropriately with business and financial cycles.

Eddie Gerba, Corrado Macchiarelli (London School of Economics). Quantitative easing must be accompanied by fiscal expansion for policy to succeed in stimulating aggregate demand and inflation: only "fiscal" action by the ECB could guarantee that money would be spent as in economies with large public debt, (standard) fiscal expansion would worsen the debt situation. The only way out is therefore for the central bank to commit to holding permanently the public debt purchased, so as to 'sterilise' its corresponding government and taxpayer obligations indefinitely. Although ECB liabilities will increase, the euro system as a whole will remain solvent. This set-up is however not feasible with the current design of QE which implies limited risk-sharing. According to the authors, full risk sharing is needed and it will not constitute a major risk for the central bank's credibility.





DIRECTORATE GENERAL FOR INTERNAL POLICIES  
POLICY DEPARTMENT A: ECONOMIC AND SCIENTIFIC POLICY

# QE infinity: What risks for the ECB?

Daniel GROS

## IN-DEPTH ANALYSIS

### Abstract

There does not seem to be any major technical hurdles to a moderate expansion of the bond purchase programme of the ECB. But the ECB's claim that its QE programme is open-ended and can simply be continued until inflation picks up again is not credible.

Monetary policy is no longer unified in the euro area since the national central banks within the eurosystem are buying different maturities of their own government bonds. Moreover, the unavoidable fiscal implications of a bond-buying programme will also play out at the national level, potentially leading to deep conflicts of interest within the eurosystem if the exit were to coincide with a resurgence of risk premia.

The risks are thus increasing. But they are long term and intangible in nature.

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## LIST OF ABBREVIATIONS

CAC	Collective Action Clause
EAPP	extended' asset purchase programme
ECB	European Central Bank
ESM	European Stability Mechanism
GC	Governing Council (of the Eurosystem)
NCB	National Central Bank
PSPP	Public Sector Purchase Programme
QE	quantitative easing
SMP	Securities Markets Programme
WAM	weighted average maturity

## EXECUTIVE SUMMARY

- The ECB announced recently that it would extend its programme to buy government bonds.
- Technically, this was through an extension of the public sector purchase programme (PSPP) of buying sovereign bonds, which is part of the wider overall 'extended' asset purchase programme (EAPP).
- Given the limited supply of German federal government bonds of more than 2 years maturity, the ECB had to make sub-national debt eligible to be able to expand the programme.
- With this extension, and some flexibility of the issue limit, the planned expansion of the EAPP/PSPP should be feasible.
- Further breathing space is provided by the fact that the PSPP has been fixed in terms of the market value of the bonds to be bought each month by the eurosystem. At present most government bonds trade at about 20% above their face value. Given that the supply of eligible bonds is usually measured by their face value, the supply of eligible bonds at market value is about 20% higher than the outstanding face value.
- All in all, there is thus some room for a further modest increase in the PSPP. But a doubling of its size would create increasing problems in terms of the availability of eligible securities and the issue and issuer limits of 25% and 33%, respectively. The PSPP can thus not really be 'open-ended': if inflation remains below the target level well into next year, the ECB will have to invent new instruments and might face a credibility problem. The experience of Japan has shown that even bond purchases at a much larger scale are no guarantee of success.
- Pushing the deposit rate further into negative territory should increase the effectiveness of the bond purchases. But the actual impact of any reduction in the deposit rate would be limited by the fact that banks can just park surplus funds under their required reserves account with the ECB, which would not involve a penalty rate (the interest rate is 'only' zero).
- There are important differences in the maturity structure of the bonds bought by the national central banks under the PSPP. Monetary policy is thus, de facto, no longer unified.
- Central banks of countries with large public debts tend to buy longer maturities. This increases the exposure of the country to future increases in interest rates.
- The main risk of increasing the size of the PSPP is that it will make an exit more difficult. If an eventual exit were to coincide with higher risk premia, it would be difficult to force the national central banks in countries under financial stress to sell large amounts of their own government bonds.

## 1. INTRODUCTION

With inflation and inflation expectations remaining below its target of “close to but below 2%”), the ECB has announced that it will expand the duration of its asset purchase programme and that it is considering additional expansions.

The continuing weakness of inflation suggests that the impact of the ECB’s programme to buy government bonds has so far been, at best, limited. The ECB is thus forced to walk a fine line between acknowledging the limited impact of its QE (quantitative easing) programme so far and the need for further doses of a measure whose impact so far has been so weak.

The terms of reference for this study contained the following problem:

It is always a challenge to exit from a QE programme, but there is also the risk to indefinitely expand a QE programme if it is not considered as sufficiently effective and to cross the line beyond which the credibility of the central bank is at stake.

The present study comes to a conclusion that contradicts the premise of the above passage: There is little risk that the ECB will expand its QE programme indefinitely because the ECB has imposed limits upon itself in terms of the fraction of outstanding bonds it is willing to buy. The credibility of the ECB might be at stake, however, if inflation remains low, and the ECB is approaching the limit of the bonds it can buy.

The author of this study is on record as casting doubt on the effectiveness of QE operations in general and that of the ECB (or rather the eurosystem) in particular (see Gros, 2015 and Gros et al., 2015). However, this study does not deal with the question of the effectiveness of QE, but rather is concerned only with the availability of eligible bonds and the implications for public-debt management.

The remainder of this study is organised as follows. Section 2 provides a brief review of the factors affecting the availability of eligible bonds for the PSPP. Section 3 documents the extent to which the implementation of the QE policy now differs across member countries. Section 4 then uses a standard approach to show that this differentiation also leads to a differentiation in the fiscal implications of QE and the vulnerability of countries with high debt to an exit. Section 5 concludes.

## 2. PSPP CANNOT BE OPEN-ENDED

There has been some discussion about technical limits to the PSPP, relating limits to the supply of eligible bonds from some member countries. Public debt-to-GDP ratios are high throughout most of the euro area, giving the impression of an ample supply of government securities. But several factors reduce the actual supply of securities available for the PSPP: not all government debt is in the form of bonds (notably in Germany, where a significant proportion of state and municipal debt is the form of bank credit) and an important fraction of government securities is in the shorter range of up to 2 years.

The former factor was the explanation why the ECB had to make sub-national debt eligible. The supply of German federal government bonds for the PSPP was simply too limited.

With this extension, the planned expansion of the EAPP/PSPP should be feasible.

The key long-term limitation, however, is that the ECB is loathe to be put in the position to have a blocking minority in case of a default on government bonds with a collective action clause. This will, over time, limit the eurosystem's ability to buy at most one-fourth of the total amount of 'PSPP eligible bonds'. The PSPP thus cannot be 'open-ended'.

Gros (2015) and Gros et al (2015) have already dealt with some of the other factors affecting the supply of 'PSPP eligible' bonds.

An important point that is often overlooked is the fact that the PSPP has been fixed in terms of the market value of the bonds to be bought each month by the eurosystem (€60 billion total, about €40-50 billion in government bonds). At present most government bonds trade at about 20% above their face value because they were issued when interest rates were higher. Given that the supply of eligible bonds is usually measured by their face value, the supply of eligible bonds at market values is about 20% higher than the outstanding face value.

The rule that no bonds with a yield to maturity of less than the deposit rate should be eligible under the PSPP does not make sense since what matters is not the difference between the deposit rate today and the current yield to maturity of a long-term bond, but rather the longer-term average expected deposit rate. This limit is subject to fluctuations in the bond market. It is thus difficult to estimate how important this (self-imposed) limit will be. At present about 13% of all 'PSPP-eligible' bonds have a yield to maturity lower than the deposit rate of minus 30 basis points. The proportion of bonds yielding less than the deposit rate will not necessarily fall if the deposit is lowered further as bond yields might then also ratchet down across the board.

There is some confusion about the issue and issuer limits of 25% and 33%, respectively. Formally, the issue limit has been increased to 33% in general. But the 25% issue limit applies to bonds with Collective Action Clauses (CACs).

The ECB has stated that purchases should:

not create a situation whereby the Eurosystem would have a blocking minority for the purpose of collective action clauses in which case the issue share limit would remain at 25%.<sup>1</sup>

Given that the CACs were introduced only in 2013, the bulk of the outstanding bonds are still without a CAC. This will change gradually over time, with a different speed in each country given that the maturity distribution differs enormously. By 2017 (four years after 2013), most government bonds available will have CACs attached, given that the average maturity is in most countries around 6-7 years. This limit will thus become more binding over time.

Recent estimates of the supply of PSPP eligible bonds arrive at up to €1,800 billion, assuming present yields and an issue limit of 33%. Applying an issue limit of 25% would reduce the total supply to €1,350 billion. This is not far from the sum to be reached if the PSPP runs for 25 months. With monthly purchases of €40-50 billion in government bonds, total purchases would amount to about €1,000-1,250 billion.

The two limits - issue and issuer - are quite different in nature. The basic rationale of the issuer limit is a hard legal constraint (the ECB should not dominate the price of government bonds as this would constitute 'monetary financing'). However, the 33 % limit is arbitrary. It is impossible to say at what percentage the PSPP dominates the market for the bonds of a particular country. At any rate, the purpose of the PSPP is actually to influence the long term interest rates, and thus by implications also the price of long term government bonds. The dividing line between monetary policy and monetary financing is thus the difference between 'influencing' long terms rates and dominating the market and thus determining rates. It is not possible to establish a clear dividing line. But the ECB should avoid entering too deeply into the grey zone.

The issue limit has a precise numerical value, but it is based on a political consideration. When needed the ECB might breach the 25 % limit on CAC bonds but specify that it will never agree to any restructuring. But this would put the Eurosystem potentially in a politically very awkward position should the need for a restricting arise. Moreover, such a position would contradict the general aim of making government debt easier to restructure so that future rescue operations would require less funding from the ESM.

As mentioned above, purchases are at market value while the supply of bonds is usually counted at face value. Moreover, ongoing fiscal deficits would increase the supply again for the part financed by bonds with a maturity of over 2 years. But the projected deficits for the next two years would imply an additional bond supply of around €200-300 billion.

There is no point in making detailed calculations for the likely supply of PSPP eligible bonds by 2017 as market conditions and eligibility criteria change frequently.

Moreover, while there might be in aggregate enough PSPP-eligible bonds available, shortages might arise in one key country, namely Germany. (Already today the supply of

<sup>1</sup> Part of the confusion has been created by the ECB's website, which mentions the CACs, but only en passant (see <http://www.ecb.europa.eu/mopo/implement/omt/html/pspp-qa.en.html>). At the start of the PSPP, the issue share limit was set at 25%, to be reviewed after six months. (Article 5(1) of the decision of 4 March 2015 states that "the limit will initially be set at 25%, for the first six months of purchases and subsequently reviewed by the Governing Council"). On 3 September 2015, the Governing Council decided to increase it to 33%, subject to a case-by-case verification that it would not create a situation whereby the Eurosystem would have a blocking minority for the purpose of collective action clauses in which case the issue share limit would remain at 25%. The issue limit refers to the maximum share of a single PSPP-eligible security that the Eurosystem is prepared to hold. The issuer limit refers to the maximum share of an issuer's outstanding securities that the ECB is prepared to buy. The issuer limit of 33% is a means to safeguard market functioning and price formation as well as to mitigate the risk of the ECB becoming a dominant creditor of euro area governments. To this end, the 33% limit is applied to the universe of eligible assets in the 2 to 30-year range of residual maturity. Both limits also cover existing Eurosystem holdings of PSPP-eligible bonds in the context of the Securities Markets Programme and any other portfolios owned by Eurosystem central banks.

government bonds is insufficient for significant operations in Estonia, whose central bank has been buying mostly bonds of international institutions.) As mentioned above, the key reason why the Governing Council decided to extend the PSPP to sub-national debt was that, in Germany, the Länder account for a significant share of overall government debt.

But the general conclusion seems clear: there is some room for a further modest increase in the PSPP even beyond March 2017 (the ECB would not have announced this extension if it had not been certain of the availability of eligible bonds). But an extension much beyond that date, e.g. doubling its original size, would create increasing problems in terms of the availability of eligible securities.

This creates a credibility problem: The PSPP cannot really be as open-ended as promised at the start by the President of the ECB in 2015:

They (these purchases) are intended to be carried out until the end of September 2016 and will, in any case, be conducted until we see a sustained adjustment in the path of inflation which is consistent with our aim of achieving inflation rates below, but close to, 2% over the medium term (<https://www.ecb.europa.eu/press/pressconf/2015/html/is150305.en.html>).

If inflation remains below the target level well into next year, the ECB will have to invent new instruments or have to abandon its issue limit.

The experience of Japan has shown that even bond purchases at a much larger scale are no guarantee of success in terms of higher inflation and inflation expectations.

Pushing the deposit rate further into negative territory should increase the effectiveness of the bond purchases. But the actual impact of any reduction in the deposit rate would be limited by the fact that banks can simply park surplus funds under their required reserves account with the ECB, which does not involve a penalty rate (the interest rate is 'only' zero).

Since March 2015, about €500 billion of government bonds have been bought by the eurosystem, but the deposit facility has increased only by less than half that amount. This was possible partly because of an increase in 'required reserves' account, which now stands at over €400 billion, of which only €113 billion are 'required'.<sup>2</sup>

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<sup>2</sup> See [https://www.ecb.europa.eu/press/pr/date/2014/html/pr140605\\_3.en.html](https://www.ecb.europa.eu/press/pr/date/2014/html/pr140605_3.en.html)



### 3. NATIONAL DIFFERENTIATION IN IMPLEMENTATION

One of the key decisions accompanying the launch of the PSPP was that 80% of the bond purchases under this programme should be undertaken by the national central banks in the Eurosystem. Moreover, NCBs are expected to buy the bonds of their own government, and any profits or losses on these securities will remain on the books of the NCB that bought them. This constitutes an important departure from the general rule under which all profits and losses resulting from 'ordinary' monetary policy operations are shared within the Eurosystem. Normally all profits and losses on these 'ordinary' operations are pooled in the so-called 'monetary income' of the Eurosystem, which is then shared among the NCBs according to the capital key (with a small share going to the ECB, which in turn is again owned by the NCBs).

The data suggest that this decentralisation has led to a situation in which each country (or rather each NCB) conducts its own QE programme, only broadly coordinated across the Eurosystem under the guidance of the Governing Council.

The principal evidence of this Balkanisation of the common monetary policy is that the weighted average (residual) maturity (WAM) of the bonds bought by the NCBs under the PSPP shows large cross-country differences. The WAM of the PSPP holdings of the Bundesbank is only about 7 years, whereas that of the Banca d'Italia is about 9.3 years (see Figure 1 below). It is interesting to note that the differences in the maturity distribution have considerably widened after the first two months.<sup>3</sup>

This means that de facto monetary policy is no longer unified in the euro area. The way the PSPP has been implemented does not seem to be compatible with the original ECB decision:

The purchases of eligible marketable debt instruments by the Eurosystem under the PSPP should be implemented in a decentralized manner, giving due regard to market price formation and market functioning considerations, and coordinated by the ECB, thereby safeguarding the singleness of the Eurosystem's monetary policy

([http://www.ecb.europa.eu/ecb/legal/pdf/en\\_dec\\_ecb\\_2015\\_10\\_f\\_sign.pdf](http://www.ecb.europa.eu/ecb/legal/pdf/en_dec_ecb_2015_10_f_sign.pdf)).

In principle, the ECB was supposed to conduct a unified monetary policy under which the short-term interest rate would be identical throughout the euro area. During the acute phase of the euro crisis, the unity of monetary policy appeared to have been destroyed by the risk premia, even on short-term rates. This meant that banks and government in different countries faced different short-term borrowing costs. But the policy was still unified in the sense that the terms under which 'normal' monetary policy instruments were implemented were the same across the euro area. This is no longer the case for the 80% allocated to NCBs under the PSPP.

QE is supposed to work by forcing the private sector to reduce its holdings of longer-term paper. What matters for the portfolio balance of the private sector is not just the amount of bonds, but also their average maturity. Greenwood et al. (2014) measure the impact of QE in the US by the amount of 'ten-year equivalent' bonds withdrawn or, more simply, just the product of the amount of bonds times their WAM. Under this measure, one could argue that the purchases of the Banca d'Italia should have a much stronger impact on the Italian financial market than those of the Bundesbank since the WAM of the purchases of the Banca d'Italia is about one-third longer than that of the Bundesbank (9.3 versus 7 years). Portugal represents an even more striking case with a WAM of its PSPP holdings of over 10 years.

<sup>3</sup> The ECB's own position on this point is not clear as can be seen from the FAQ sheet on the ECB's website: <http://www.ecb.europa.eu/mopo/implement/omi/html/pspp-qa.en.html>. How will you weigh different maturity buckets for your purchases? "The intention is to be market-neutral. The Eurosystem wants to create as little distortion as possible. At the same time, this will not be a strict target and flexibility will be applied, also taking into account the relative values of bonds and the liquidity of the different maturity segments."

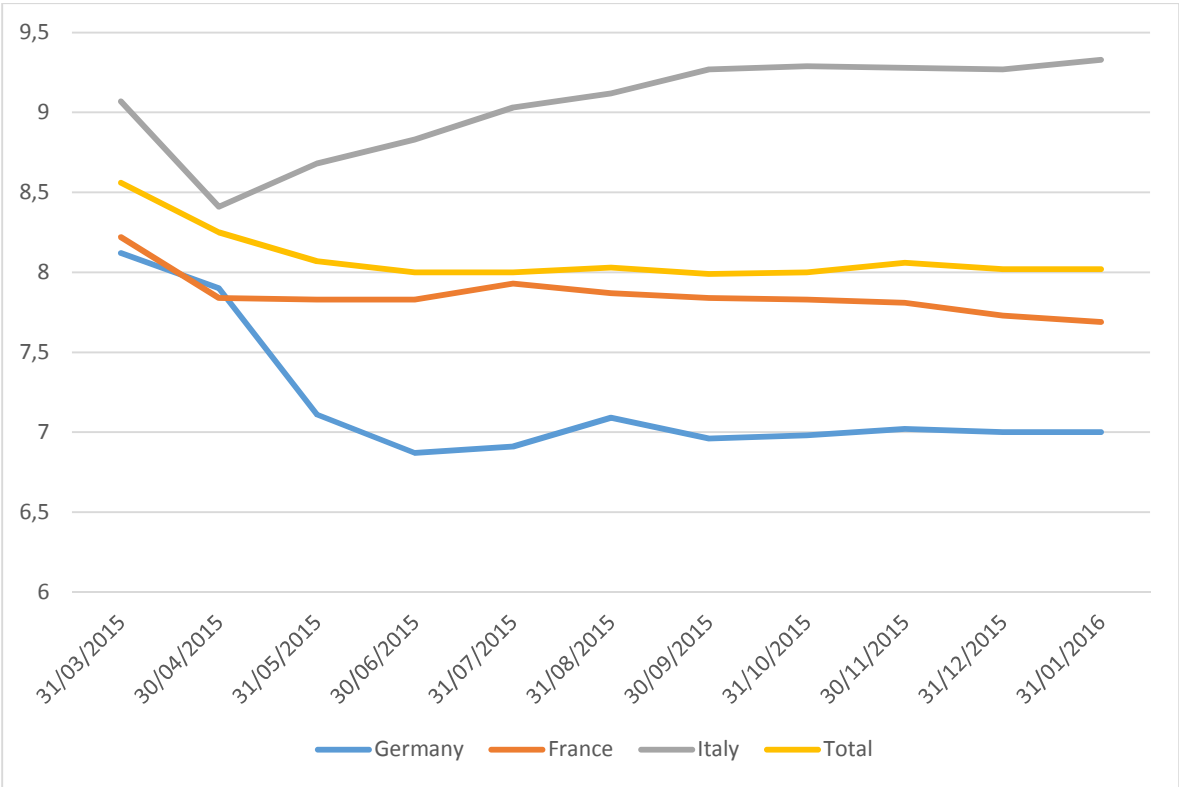
At first sight, it is surprising that the WAM of the purchases of the Bundesbank is so low since the German curve has negative yields until about 7 years and the yield on five-year paper is at present (January 2016) equal to minus 25 bps.

The difference in maturities bought by different NCBs cannot be explained by the differences in the maturity structure of the outstanding debt. As shown in Figure 2 below, the average maturity of the outstanding government debt (in the 2-30 years range) is about 8.2-8.5 years, for all three large euro-area countries (Germany, France and Italy).

The average maturity of all outstanding government bonds is much lower, and indeed lower than the WAM of PSPP purchases. This implies that all NCBs are thus buying bonds with a WAM larger than the outstanding stock. While this is unavoidable, given that only securities with a remaining maturity of more than 2 years are eligible under the PSPP, it also raises concerns.

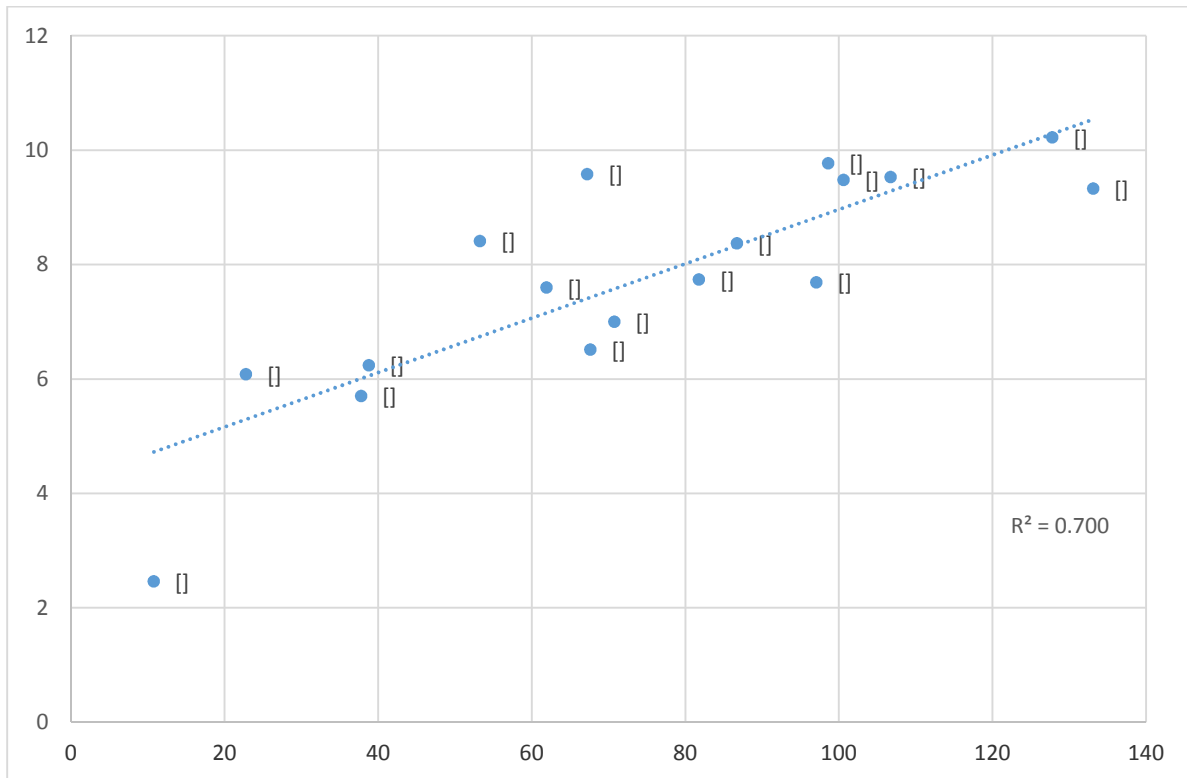
Looking at the WAM of the purchases across countries shown in Figure 2 below, it seems that the NCBs of countries with a high public debt (as a ratio to GDP) also buy longer maturities. This implies that the national central banks of those countries facing a danger of a resurgence of risk premia are buying more at the longer end. This increases future refinancing risks especially for those countries least able to afford it.

Figure 1. Eurosystem holdings under PSPP (in %, y-axis) – Weighted average maturity (time, x-axis)



Source: Own elaboration on ECB data.

Figure 2. Gross debt to GDP (in %, x-axis) and weighted average maturity of holdings under PSPP (in year, y-axis)



Note: Cyprus omitted.

Source: Own elaboration on ECB and IMF data.

## 4. FISCAL IMPLICATIONS

It is a widely accepted principle that for fiscal purposes one can consolidate the central bank and the Treasury, at least for the 'standard' case of a country that has its own currency (see also Gros et al., 2015, which develops the basic idea discussed here). In this case, any gains or losses of the central bank are transferred over time to the (national) Treasury. Monetary and fiscal policy thus cannot be kept completely separate when the (national) central bank intervenes in the public-sector debt market.

Within the euro area, profits and losses of national central banks are usually pooled in the monetary income of the eurosystem and redistributed to the constituent NCBs, according to the capital key, which determines the shares of each country in the ECB. The NCBs then sooner or later, transmit most of their profits to their national Treasuries.

This procedure only applies, however, to ordinary monetary policy operations. Apparently the public sector purchase programme (PSPP) was not regarded as a 'normal' monetary policy operation since it was decided that 80% of the asset purchases would be taken by the NCBs under their own responsibility. The reason for this was obviously that the NCBs from creditor countries, such as Germany or the Netherlands, were worried that they might have to share in the losses if there was a default on the bonds bought under this programme. Moreover, these purchases, which remain only on the books of the individual NCBs, will have to be exclusively for national bonds.

The fact that 80% of the purchases under the PSPP will be undertaken by NCBs means that most of the purchases under the PSPP/EAPP will mainly have the effect of shortening the duration of the existing national public debt. The deposits of (commercial) banks with the NCB represent effectively public debt with a zero duration (these deposits can be withdrawn daily). When the Bundesbank buys a German government bond with a residual maturity of 7 years, it reduces the maturity of that part of the German public debt from 7 years to zero (one day, to be precise).

The extension of the PSPP means that the reduction in the effective WAM and thus also the duration of government debt will be substantial.<sup>4</sup> If the PSPP leads national central banks in the euro area to buy the maximum of 25% of the bonds (with a maturity above 2 years) the average WAM of the (publicly traded) government would be reduced by 1.75 year (=7/4) years for Germany and 2.25 years (=9/4) for Italy. The WAM of the outstanding bonds with a maturity above 2 years is about 8 years, as mentioned above. The PSPP could thus lead to a substantial reduction of the WAM of that part of public debt.<sup>5</sup>

The public debt management agencies of the euro area countries could of course avoid this reduction in effective maturity by issuing more long term debt. But so far there is little sign of this happening. A reduction in the WAM of this size will make high-debt countries like Italy substantially more exposed to increased risk premia when the PSPP has to be reversed.

One of the reasons why the crisis of 2011/2 had little impact on the effective cost of public debt for Italy was that the average remaining maturity of Italian public debt was rather high at this point. The Italian Treasury was able to point out to markets that government finances were relatively little affected by the high risk premia at the time (up to 400 to 500 basis points).

<sup>4</sup> For more detail on this fiscal aspect, see Gros et al., 2015. At the current level of interest rates changes in maturity and duration are very close to each other.

<sup>5</sup> The reduction in the WAM of the entire public debt outstanding would of course be lower since the existing short term debt (with remaining maturities below 2 years) would not be affected. But what matters in a crisis is mainly the proportion of longer term debt, which provides protection against sudden changes in market conditions. It is the reduction on the longer terms debt held by the public which should be a cause for concern.

Purchases under the PSPP would reach 25 % of the outstanding public of highly indebted countries only if the program were to be extended much beyond the present envisaged end-date of March 2017. For the time being the purchases are pro-rata ECB shares (which are based equally on GDP and population shares). This implies that the reduction in WAM operated by, for example, the Banca d' Italia is much higher if related to GDP than that which results from the purchases of the Bundesbank. But the same is not necessarily the case if one relates the reduction in WAM or duration to the overall stock of public debt outstanding.

The relative impact of PSPP purchases on the domestic debt market for Portugal would show a greater relative impact because the ECB share of purchases of Portuguese bonds is considerably above share of Portugal in the euro area GDP and its GDP per capita is much below the euro area average. The market for public debt of Portugal is thus the one most deeply affected by the PSPP.

The case of countries with very little public debt (Luxembourg and the Baltic countries) has so far attracted little attention because these countries are relatively small and their NCBs have been willing to buy the bonds of international institutions. But it is clear that these countries will benefit least, in terms of lower debt service costs, from the PSPP.

Bonds purchased under QE do not necessarily have to be sold when QE ends and the central bank wants to increase rates again. The Federal Reserve has for the time being excluded any substantial sales of the bonds it bought under its various QE programmes. But conditions in the euro area might be different. The same reasoning which led to the PSPP programme (namely, that a large balance sheet is equivalent to a more accommodative stance) might then induce the Governing Council to conclude that a reduction of the balance sheet of the eurosystem becomes appropriate once inflation has returned to the ECB's target.

If the Banca d' Italia would then be forced to sell the bonds it had bought under the PSPP, it might make substantial losses if risk premia had returned. These losses would effectively have to be borne by the Italian Treasury as the Banca d' Italia had effectively behaved like a public-debt management agency for the Italian Treasury. This had been the case in Italy for a long time until the famous 'divorzio' of the 1980s, which relieved the Banca d' Italia from the duty to support the market for government bonds.<sup>6</sup>

As an aside, one should note that the fact that the 80% of the bond-buying executed by NCBs on their own profit and loss account can be consolidated with the national public debt also implies that there is no economic justification for the 25% limit on each issue, which the ECB has set for the programme. The rationale for this limit was that the ECB (or rather the Eurosystem) should not have a blocking minority in case a government goes into default. Since 2013, all government bonds issued by eurozone members have collective action clauses (CACs), under which a super majority of bond-holders (75%) can decide to accept an offer of rescheduling or a hair-cut on the nominal value in case of a default. If the Eurosystem held more than 25% of any one bond issue, it could obstruct such a restructuring, which it would be obliged to do since, according to many, accepting a restructuring of its bond holdings would constitute 'monetary financing' of a government.

However, this legal reasoning does not make sense from an economic point of view. Whether or not a national central bank agrees to a restructuring of the debt of its own government makes no difference for the consolidated fiscal accounts of the country, as one can consolidate the NCB with the national Treasury.

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<sup>6</sup> In 1981 the Bank of Italy was "divorced" from the Italian Treasury and no longer forced to buy bonds left over from Italy's debt auctions. It started the era of independence of the Bank of Italy, but also of high interest rates to encourage people to purchase bonds. This followed a period during which real interest rates were used to be negative and inflation double digit.

## 5. CONCLUSIONS

In early 2015, the ECB embarked on the secondary markets public sector asset purchase programme. The aim was to achieve a “sustained adjustment in the path of inflation” towards the target of below, but close to 2%. Almost one year into the programme there is little sign that this goal is about to be achieved. The ECB has already increased the expected length of the PSPP and the question thus arises whether there are enough PSPP eligible bonds available to continue much beyond the target date of March 2017.

Detailed calculations are difficult since market conditions change often, and the ECB could further change its eligibility criteria. Most calculations indicate that there is no immediate threat of a scarcity of eligible bonds. But the Collective Action Clauses (CACs) incorporated in euro-area bonds since 2013 give 25% of the bond holders a blocking minority. Since the ECB wants to avoid at all costs being put in a situation where it constitutes the blocking minority itself, it cannot acquire more than a quarter of all eligible bonds outstanding. This could represent a hard limit, which, at the present pace of purchases, could be reached in less than two years.

All in all, one can conclude that a moderate expansion of the ECB’s bond-purchase programme is possible. But the claim of the ECB that its PSPP programme is open-ended, and can simply be continued until inflation picks up again, is not credible.

National central banks have taken considerable leeway in terms of the maturity of their own national government bonds they are buying under the PSPP. The ‘singleness’ of the monetary policy is thus no longer ensured. The fact that central banks from countries with higher debt-to-GDP ratios have bought longer maturities is a ground for concern since this increases the vulnerability of these countries to a return of risk premia.

Most monetary policy decisions have some fiscal implications, but usually they are just a side effect. This changes when a central bank buys government bonds on a large scale (and with the avowed intent to reduce interest rates). The ‘no-risk’ sharing on the 80% of the purchases under the PSPP has effectively nationalised the fiscal consequences of QE in the euro area. As all national treasuries benefit from the bond-buying, there is little opposition today. But this will change when the time comes to exit QE and then to reverse policy.

A priori there is little one can object to if central banks buy large amounts of government (or indeed other) bonds during a period when inflation is too low and is expected to remain so for a long time. The underlying assumption is that central banks will be able to sell these bonds with the same ease with which they bought them. However, this might not be the case.

Moreover, when the time comes to sell, the maturity of the bonds bought originally will matter. The longer the maturity of the bonds that central banks might have to throw on the market, at some point in the future, the larger their exposure to changing market conditions. This applies of course in particular to countries where risk premia could return quickly given that public debt remains elevated. Risk premia might never return, however, and the bonds purchased under the PSPP might remain on the balance sheet of the eurosystem until they run off gradually. But this is not certain.

In short, there is a clear danger that deep conflicts of interest will arise within the Governing Council when the attainment of the goal of price stability will warrant the unwinding of the purchases undertaken today.

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**NOTES**



# Limits in terms of eligible collateral and policy risks of an extension of the ECB's quantitative easing programme

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## IN-DEPTH ANALYSIS

### Abstract

By expanding the Extended Asset Purchase Programme the ECB intends to increase the dosage of its QE policies. We inspect the availability of eligible assets in euro area securities markets under the adjusted criteria and analyse the effectiveness of QE policies in the current economic environment. We also explore whether the effectiveness of monetary policy interventions could be enhanced. While the effectiveness of QE currently seems to be rather limited, the policy risks of QE are increasing; these risks include risks for the independence and credibility of the ECB, increasing systemic risks, and risks to lower incentives for structural reforms.



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## EXECUTIVE SUMMARY

- In December 2015, the ECB announced to further extend its Quantitative Easing (QE) programme; most importantly, the programme is now intended to run at least until March 2017 instead of ending in September 2016.
- As the ECB has changed the limits and criteria for eligible bonds the extended QE programme is by and large feasible given the current market characteristics of euro area security markets. When the ECB plans to further expand its QE programme it may have to adjust the limits and criteria again. This could increase the risks associated with the programme and raise questions whether these limits and criteria have been chosen arbitrarily.
- Experiences with QE programmes raise doubts as to its effectiveness in the current situation and it is questionable whether a lack of monetary stimulus is currently the most pressing issues for the euro area. Behind this backdrop, the extension of the QE programme will at best have modest stimulating effects and there seem to be no policy instruments available to significantly enhance the effectiveness of QE within the monetary mandate of the Eurosystem.
- While positive effects seem very limited, the ECB and the Eurosystem as a whole run a series of risks by extending their QE programme. All of these risks share a common root, which is that the distressed euro area countries face severe economic problems that are of a non-monetary nature (structural discrepancies, rigid labour markets, severe debt overhang, high levels of non-performing loans). Thus, very little relief can be expected from using monetary instruments in general and the increase of its dosage in particular.
- However, the risks of QE programmes tend to become stronger when they are expanded. These QE-related risks concern the political independence and the credibility of the ECB, disincentives for reform policies and fiscal consolidation, systemic financial risks and the misallocation of capital as well as potential distortions and turmoil in foreign exchange markets.
- While the recent extension of the QE programme does not represent a new policy paradigm but follows a more-of-the-same approach instead, a higher quantity may at some point turn into a new quality by the very size of the interventions. For obvious reasons, it is impossible to identify crisp thresholds for such qualitative leaps but the now substantially extended asset purchase programmes make this transformation more likely.

## 1. INTRODUCTION<sup>1</sup>

In December 2015, the ECB announced to further extend its Quantitative Easing (QE) programme, the so-called Expanded Asset Purchase Programme (EAPP), in several dimensions. The main reasons were higher downside risks for the inflation outlook, continuous downward revisions of earlier inflation projections (raising concerns that inflation projections are currently upward biased), and fears that inflation expectations may de-anchor. Higher downside risks for the inflation outlook reflected both a further decline in oil prices and somewhat higher risks stemming from the general external environment.

With the expansion of its QE programme the ECB is basically doing more of the same in order to make inflation approach the target rate faster than it would otherwise. However, experiences with QE have raised some doubts as to its effectiveness and it is questionable whether a lack of monetary stimulus is currently a pressing issue for the euro area at all. Given that low inflation is to a large extent caused by low oil prices and that an extremely expansionary monetary policy stance (and QE) is associated with significant policy risks may cast further doubts on whether there is currently a strong case for even more monetary stimulus. In this Briefing Paper, we discuss the extension of the ECB's Quantitative Easing (QE) programme with a focus on limits in terms of eligible collateral, the effectiveness of QE, and policy risks stemming from this programme. We are doing so by discussing three aspects of relevance when evaluating the QE programme:

- Is further monetary stimulus necessary to reach the policy aim of the ECB?
- Is QE effective in reaching this aim and are there measures available to enhance its effectiveness?
- What are the costs and policy risks associated with a further extension of QE?

We start by briefly describing the most relevant features of the now extended QE programme (Section 2) and by providing an overview of the euro area sovereign bond market to assess potential quantitative limits (Section 3). There, we also discuss implications of the trade-off between further expanding the QE programme and further easing the limits and criteria of eligible bonds. In Section 4, we assess the effectiveness of the ECB's QE programme and whether measures are available to the ECB to enhance it. We also examine whether there is currently a strong case for further monetary stimulus in the euro area. Finally, we discuss major policy risks associated with the QE programme (Section 5). As an update to an earlier paper (Boysen-Hogrefe et al. (2015)), the Appendix re-assesses the QE-related financial risks as they are closely linked to some of the overall policy risks.

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<sup>1</sup> The authors thank Niklas Drews for excellent research assistance and Ulrich Stolzenburg for very useful comments and discussions

## 2. QUANTITATIVE EASING PROGRAMME OF THE ECB

### 2.1 Overview of the original EAPP

As of March 2015, the already existing private sector purchase programmes (Asset-Backed Securities Programme, ABSPP, and Covered Bonds Purchase Programme, CBPP3, launched in September 2014) were supplemented by a large-scale Public Sector Purchase Programme (PSPP). Together, they constitute the Expanded Asset Purchase Programme (EAPP) with a monthly purchase volume of €60 billion. Originally, this programme was intended to run at least until September 2016 implying an overall asset volume of about €1.1 trillion. It was announced from the start that a further extension of this programme would be envisaged until the inflation rate returns to the medium-term target level.

Within the original EAPP, one sixth of the overall volume (€10 billion per month) was to be spent on Asset Backed Securities and Covered Bonds, while the lion's share (€50 billion per month) was to be spent within the PSPP of which 12% (6 billion euros) was allocated to assets of supranational institutions. The remaining €44 billion was to be spent mainly on central government bonds and on debt securities of some national agencies (the list of which is subject to amendment by the Governing Council) and will be allocated across countries in accordance with the ECB's capital keys. 80% (€40 billion) of PSPP spending will go to sovereign debt held by national central banks and 8% (4 billion euros) to sovereign debt held by the ECB. The individual national central banks will focus their purchases exclusively on their home markets. Overall, most of the risks of the PSPP purchases (€40 billion per month or 80% of the volume of the programme) are not supposed to be shared.

To be eligible for the PSPP, a sovereign bond must fulfil the following criteria:

- Remaining maturity of two to 30 years
- Denomination in euro
- Yield above the ECB deposit rate
- Collateral-standard for ECB monetary policy operations

The last criterion can be met either by a sufficiently high credit ranking or if the issuing country is a beneficiary of an EU financial assistance programme. However, whenever such a programme is under review, purchases of government bonds of the country in question are suspended. Furthermore, the Eurosystem as a whole may not hold more than 33% of the debt of any single issuer and not more than 25% of any given issue. These limits include bonds bought under the Securities Market Programme and other central bank bond holdings. According to the ECB, the 25% per issue limit was set to avoid the question of monetary financing of governments because any higher ownership share would give the Eurosystem a blocking minority in any restructuring process. In September 2015, the ECB decided that the 25% per issue only applies to those securities that involve a blocking minority if more than 25% of the issue are held. For all other securities a 33% per issue limit applies.

## 2.2 Expansion of the EAPP and new criteria for eligible assets

In December 2015, the ECB announced its decision to continue purchasing assets worth €60 billion each month until March 2017 or beyond in a bid to raise inflation back to the medium-term target of below but close to two percent.

In addition to that, some supporting measures were taken:

Firstly, the interest rate on the deposit facility was lowered to -0.3 percent. *Ceteris paribus*, this increased the number of bonds eligible for purchase, because any bond that yields less than the deposit rate is excluded from the Extended Asset Purchase Programme (EAPP). This condition is necessary since otherwise it would be possible to generate excess earnings from the Eurosystem by selling it lower yielding bonds and parking the payments received at the ECB.

Secondly, the principal payments from securities bought under the Programme are to be reinvested. This means that maturing bonds will not result in an automatic reduction of the programme size. It could also help to extend its programme in the future: currently, for bonds to be eligible, their time to maturity must lie between two and 30 years. Presumably, one reason to exclude bonds with a shorter lifespan was to avoid the Programme shrinking prematurely. This is now no longer necessary.

Thirdly, debt instruments of regional and local governments are now eligible for purchase by their respective central banks. This might prove especially relevant in the case of Germany: the ECB capital key assigns the Bundesbank a very significant role in the EAPP but, depending on the eventual size of the Programme and on market conditions, there might be a time at which there are not enough eligible bonds issued by the German central government. The market for regional government debt in Germany, however, is the most sizeable in Europe.

### 3. ELIGIBLE ASSETS AND POTENTIAL LIMITS OF FURTHER EXPANSIONS OF ASSET PURCHASES SOVEREIGN BOND MARKETS IN THE EURO AREA MEMBER STATES

#### 3.1 Overview of the euro area sovereign bond market

In 2014 and 2015, NCBs and the ECB purchased assets with a total value of roughly €650 billion. While purchases under the ABSPP started in November 2014 and under the CBPP3 in October 2014, first bonds under the PSPP were purchased in March 2015. Until the end of 2015 the average asset purchases per month of €56.1 billion were broadly in line as envisaged in the EAPP (Table 1).

Earlier studies on the PSPP showed that given the limits and criteria for eligible bonds (i.e., the 25% per issue limit) the programme could by and large be executed until September 2015 (see, e.g., Boysen-Hogrefe et al. 2015). The limits and criteria could only become binding for some smaller countries, but their bond market sizes have little impact on the overall volume of the programme. With regard to an extension of the programme, several studies raised doubts as to whether this would be feasible for all of the large economies, such as Germany, without changing the limits and criteria for eligible securities.

Table 1: Purchases under the EAPP until Dec 2015

(Billion Euro)

	ABSPP	CBPP3	PSPP	Sum
Holdings	15.3	143.3	491.2	649.9
Monthly purchases on average	1.2	10.2	44.7	56.1

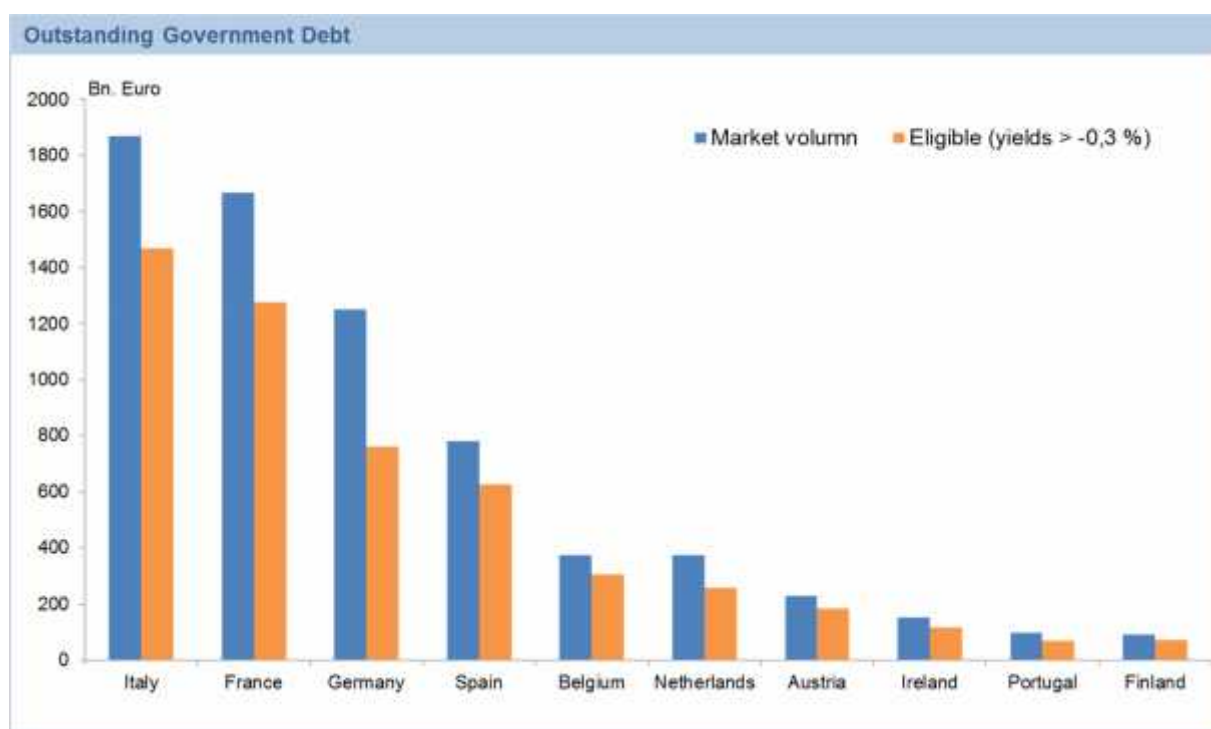
Source: ECB, own calculations.

We analyse below whether the expanded programme of the ECB is still feasible with regard to the amount of eligible debt securities. Such an analysis has to be based on several assumptions and should be taken as a rough approximation that has to be interpreted with caution.

In our analysis, we assess the entire PSPP and not only on the remaining programme at the beginning of 2016. We focus on 10 countries with the largest markets for debt securities. We do not include Greece in our analysis due to its small share in the overall programme and because Greek debt securities were not eligible in some phases of the programme. Our analysis is done in three steps.



Figure 1: Outstanding amount of debt securities in selected euro area countries



Source: Allianz Global Investor QE Monitor, January 2016; own calculations.

Step 1: We apply the criterion that yields of eligible securities should be above the interest rate on the deposit facility, which is currently at  $-0.3\%$ , to the face value of the outstanding amount of all debt securities issued by central governments (Figure 1).<sup>2</sup> Typically, the cut-off of  $-0.3\%$  for eligible securities is relevant for securities with shorter maturities only. As a consequence, when taking this cut-off into account the criterion that the maturity of eligible securities should be higher than two years is hardly binding any longer in many cases. However, this is not true for Italy, Spain, Portugal and Ireland. Therefore, we subtract securities with a maturity of less than 2 years.<sup>3</sup>

Step 2: We apply the 25% limit to the number of securities as calculated above. We do so because we do not have detailed information on the share of the securities to which either the 25% or the 33% per issue limits apply. In this regard, our results are conservative approximations that can be interpreted as lower limits. We add debt securities from national agencies that are also eligible for the EAPP taken from Claeys et al. (2015) and again apply the 25% per issue limit.

Step 3: We add debt securities from regional governments by using the following approximation: we take the nominal values of these debt securities provided by the ECB and assume that the ratio between nominal values and the eligible face value is the same as for the respective central government. We subtract holdings of the ECB under the SMP.

<sup>2</sup> We use the figures provided in the Allianz Global Investors QE Monitor of January 2016 and assume that the share of debt securities with yields above the cut-off of  $-0.3\%$  applies on average over the whole programme.

<sup>3</sup> The criterion that the maturity should not exceed 30 years is relevant in very few cases. Some securities issued by the central government in Ireland have maturities of above 30 years; they are, however, taken into account in our calculations.

We compare the resulting amount with the “planned purchases” under the PSSP according to national ECB capital shares. It turns out that for six countries the differences between the sum of eligible debt securities and the “planned purchases” is close to zero, equal to zero, or negative (Table 2). However, some of the assumptions we made are rather conservative (holdings under the SMP from 2014 are likely to decline, 25% limit is not binding for all securities) and we did not take into account issuances of new debt securities.

Table 2: Eligible debt securities under PSPP and planned purchases

(Billion Euro)

	25 % of eligible outstanding amount	Agencies	Regional governments	SMP	Sum	Planned purchases	Difference
Italy	367		6	76	297	200	97
France	319	23	29	0	372	230	142
Germany	190	33	56	0	279	293	-14
Spain	157	4	11	29	142	144	-2
Belgium	76		4	0	80	40	40
Netherlands	64		0	0	65	65	0
Austria	46		1	0	48	32	15
Ireland	29			10	19	18	1
Portugal	17		0	15	2	29	-26
Finland	18		1	0	19	21	-2

Notes: Agencies: 25% of debt securities (2-30 years maturity) issued by national agencies, data from Claey's et al. (2015). Regional governments: Data from ECB, outstanding amount (face value), analogous relation between face value for central government debt securities and eligible amount. SMP: Data from Claey's et al. (2015). Max. purchases: Calculated as number of month of the programme until March 2017 times €44 billion multiplied by ECB capital share.

Source: Claey's et al. 2015, ECB, own calculations.

For example, for Portugal, Ireland and Spain the SMP holdings are likely to decline, increasing the amount of eligible debt for the PSPP. Moreover, issuances of new debt securities are relevant. For example, Spain plans to issue more than €200 billion of debt securities in 2016. In addition, the central government in Germany plans to issue about €100 billion of debt securities with a maturity of more than 2 years. The number of eligible securities seems to be most binding for Portugal because in recent years debt securities were replaced by loans and the ECB already owns a sizeable amount of Portuguese debt securities via the SMP program. However, debt securities of Portugal represent only a relatively small share of the whole programme.

The extension of eligible assets to debt securities of regional governments has the largest implications for Germany and Spain. For Spain, this extension was probably not very important due to the large amount of debt securities that will be issued in 2016 and early 2017. However, for Germany this extension could become crucial to execute the full amount of “planned purchases” because the number of debt securities issued by March 2017 (taking the 25% to 33% per issue limit into account) would probably not be sufficient to outweigh the amount of approximately €56 billion of securities that stem from regional governments.

### 3.2 Trade-off between criteria for eligible assets and limits of the asset purchase programme

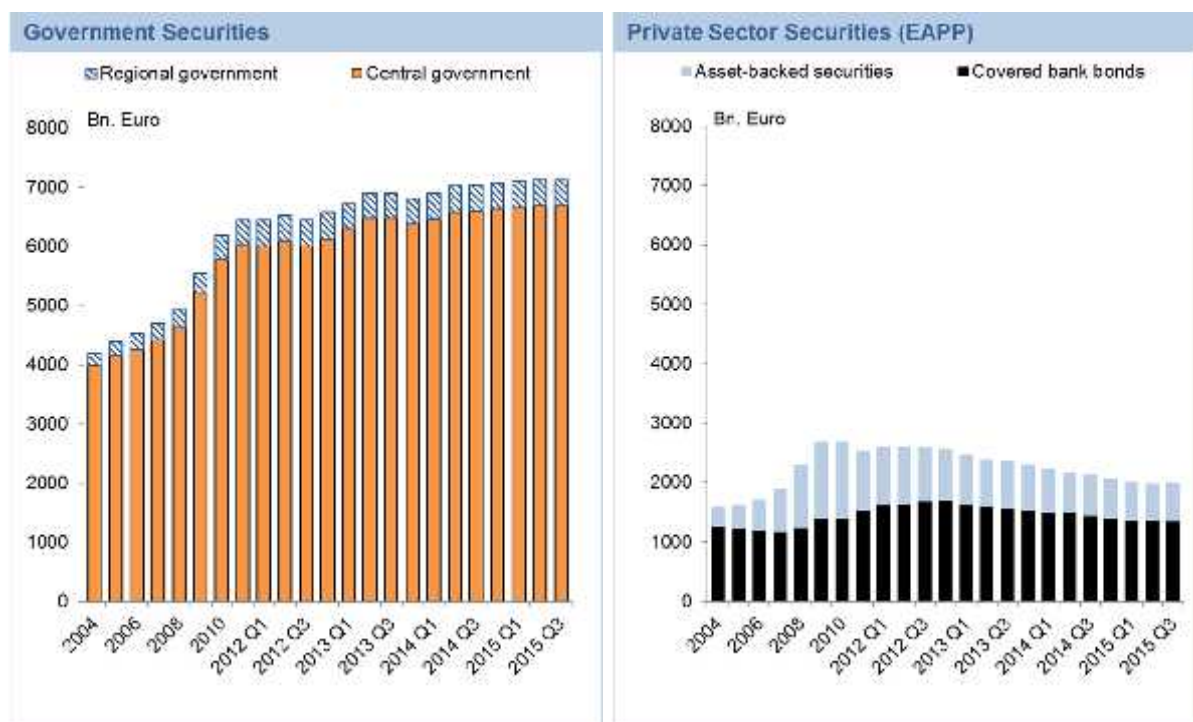
Our analysis in Section 3.1 indicates that, by and large, the expanded QE programme of the ECB can be carried out as envisaged until March 2017 given the current limits and criteria for eligible securities and given the current characteristics of the euro area bond market. This does not come as a big surprise because for obvious reasons the ECB would not announce a QE programme that can hardly be carried out. However, our analysis also showed that the adjustments of the limits and criteria for eligible bonds were relevant to ensure that the expanded programme can be carried out in its envisaged volume because for some countries, like Germany, the original limits and criteria could have become binding. Further adjustments of the limits and criteria may become necessary if market conditions change or when the ECB wants to further expand its QE programme.

Going forward, the main question is to what extent the limits and criteria for eligible securities have to be adjusted if the ECB plans to further expand its QE programme. The ECB could make such adjustments in several ways:

- Reducing the interest rate on the deposit facility: While this would lower the cut-off for eligible securities and allow the ECB to buy more assets with negative yields those assets could particularly add to the financial risks of QE.
- Adjusting the per issue and the per issuer limits: The 25% per issue limit for assets for that holdings of more than 25% are associated with a blocking minority for purposes of collective action clauses (that is relevant in case of defaults) was explicitly set by the ECB to avoid the question of monetary financing. According to this interpretation, the ECB would avoid any adjustments of this limit. Questions of monetary financing could also intensify if the ECB increased the 33% per issuer (and the 33% per issue limit) and became a dominant creditor of central governments in the euro area. Moreover, market functioning could be put at severe risks if the ECB dominated market of specific securities.
- Greater emphasis on covered bonds and asset-backed securities: Currently these asset classes account for a relatively small part of the EAPP only. However, these markets are considerably smaller than the markets for government securities (Figure 2) and the ECB also applies limits and criteria to there, in particular to safeguard market principles.
- New asset classes: Some assets classes exist that currently are not eligible for the EAPP but are eligible as collateral for ECB refinancing operations (Figure 3). These assets are in general riskier than the assets currently eligible for the EAPP. Therefore, the ECB applies haircuts to those assets in their refinancing operations to limit the risks for the ECB's balance sheet. However, those haircuts could not be applied within a QE programme, which means that the financial risks would significantly increase.

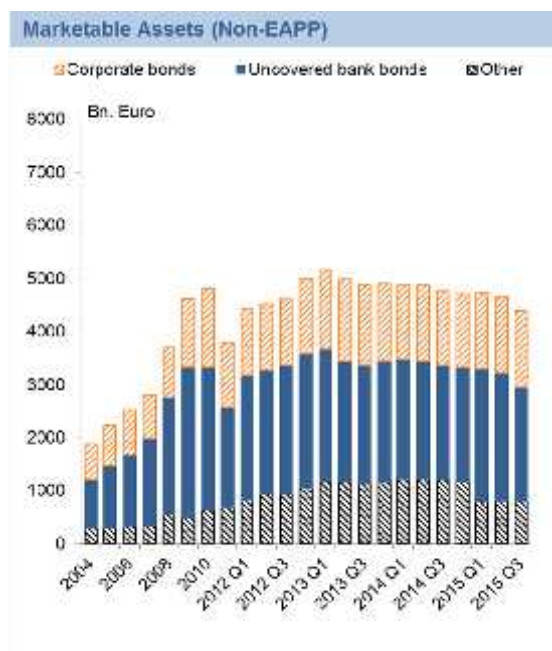
Overall, the ECB probably must adjust the limits and criteria for eligible assets if the QE programme is to be extended further. There are several ways how the ECB could adjust these limits and criteria to significantly increase the amount of eligible assets. However, all of these adjustments would involve the following drawbacks: financial risks would significantly rise, questions of monetary financing would intensify, or market functioning would be put at risk. Moreover, if the ECB continuously changes the limits and criteria this could raise questions whether these limits and criteria have been chosen rather arbitrarily.

Figure 2: Eligible Marketable Assets for ECB refinancing operations



Notes: Nominal amounts, averages of end of month data over each time period shown.  
Source: ECB.

Figure 3: Eligible Marketable Assets for ECB refinancing operations ctd.  
(Billion Euro)



Notes: Nominal amounts, averages of end of month data over each time period shown.  
Source: ECB.

## 4. EFFECTIVENESS OF QUANTITATIVE EASING

### 4.1 Is more monetary stimulus necessary to ensure price stability?

With regard to the price stability mandate as interpreted by the ECB, the latter sees itself under enormous pressure to provide more monetary stimulus as the inflation rate has been below the envisaged target of below but close to 2 percent for about three years now. Moreover, the ECB (and other professional forecasters) continually had to revise their inflation forecasts downwards, and recently fears that inflation expectations could de-anchor have intensified (Constâncio 2015). From this perspective, the ECB's ambitions to provide more monetary stimulus appear straightforward. However, on closer inspection the case for additional stimulus is less obvious:

- The most recent ECB forecast (in line with other available forecasts) indicates that inflation is expected to be above 1.5 percent in 2017 on average (ECB 2015). This forecast implies that inflation is expected to pick up from its current level of close to zero and to be very close to the inflation target of the ECB in the second half of 2017. Currently, the path of inflation is lower than expected in the latest forecast of the ECB of December 2015. However, this can be explained by the unexpected decline in oil prices experienced after the forecast was made.
- Inflation is currently being driven by the persistent slump in oil prices. Oil-price induced inflation changes are usually not a matter of monetary policy concern because their effects on inflation vanish automatically after one year as long as they do not trigger second-round effects that lead to spiralling downward cycles of inflation. The core inflation rate that excludes oil prices and other temporary factors stands at about 1 percent. However, indirectly the oil price also put some downward pressure on core inflation, which means that effectively, the current deviation of inflation from the ECB target can be explained to a large extent by the oil price slump that was characterized by downward-trending oil prices since mid-2012.<sup>4</sup>
- Financial crises are usually followed by long-term adjustment processes associated with weak recoveries that also weigh on inflation (Reinhart and Rogoff 2008, Boysen-Hogrefe et al. forthcoming). Moreover, the available evidence suggests that monetary policy is less effective following financial crises and that the transmission channels are different from those in normal times (Bech et al. 2014, Janssen et al. 2015) making it much harder for monetary policy to fine tune inflation in the short-term.<sup>5</sup> In such a situation, central banks may do best in tolerating a somewhat lower inflation rate for a longer period than they would do in normal times.
- The observation that inflation was continuously revised downwards for several years can be explained by the slump in oil prices (because forecast are usually based on the assumption that the oil price will not change or remain constant in real terms). Moreover, the beginning and the end of recessions are notoriously hard to predict (see, e.g., Dovern and Janssen 2015) so that the recession in the euro area between 2011 and 2013 that was associated with the sovereign debt crisis led to downward revisions of inflation for some period, as well. Therefore, it is not obvious that inflation forecasts are currently fundamentally upward biased.

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<sup>4</sup> While the effect of the oil price on the core inflation rate can be interpreted as a second round effect, the current assessment of the ECB seems to be that there are no spiralling downward trends in inflation that could make the case for further monetary stimulus in this regard (Draghi 2016).

<sup>5</sup> The different inflation path in the euro area compared, e.g. with the United States, can be explained by the fact that the euro area was hit by a second crisis, namely by the sovereign debt crisis, that was associated with a recession, exerting further downward pressure on inflation.

- Some measures of long-term inflation expectations indicate that expectations may de-anchor (e.g., inflation expectations capturing a 5 year-period starting in five years derived from market rates have been far below 2 percent). However, these expectations are highly correlated with oil price fluctuations, which affect inflation only temporarily, casting doubt on the reliability of these measures. On the one hand this correlation could be interpreted as a signal that oil price fluctuations lead to significant second-round effects on inflation that will last for more than five years. On the other, it could be simply the case that these measures are currently not appropriate for gauging long-term inflation expectations (Darvas and Hüttl 2016). The long-term inflation expectations measured in the ECB Survey of Professional Forecasters seem to be still firmly anchored at levels of below but close to 2 percent (ECB 2016).

#### 4.2 Is QE effective?

The effectiveness of QE programmes in stimulating the economy and in lifting inflation is an empirical question.<sup>6</sup> Estimating the effects of QE on the economy is, however, extremely difficult because there has so far been little experience making it hard to disentangle the effects of QE from the effects from other factors. These difficulties are mirrored in the broad range of results of numerous empirical studies.<sup>7</sup> The findings of these studies vary between very weak effects to very strong effects and differ with regard to the relevance of the transmission channels and the persistence of these effects on the economy. However, as a general pattern, it seems that QE programmes that were conducted in times of financial market distress had larger stimulating effects on the economy than those more recent QE programmes that were conducted when financial market distress was already alleviated. This pattern coincides with results in the literature that do not specifically focus on QE but on the effectiveness of monetary policy in general during financial crises. Chirarelli et al. (2013) find that monetary policy in the euro area tends to have been more effective in the period directly after the beginning of the global financial crisis while Bech et al. (2014) find that monetary policy is not effective in the recovery following a financial crisis presumably because very important transmission channels, e.g., the credit channel, do not work as they do in normal times. Jannsen et al. (2015) show in a comprehensive empirical approach that monetary policy is effective at the beginning of financial crises, i.e. because it is able to reduce uncertainty and restore confidence, but that it is largely ineffective in the recovery following a financial crisis. This evidence suggests that the QE programme of the ECB will be less effective than earlier programmes conducted by the Fed or the Bank of England. Other reasons, why the QE programme of the ECB may be less effective than its US and UK counterparts include the following:

- As QE operates via purchases in securities markets, the financing conditions in the more bank-based euro area economies may respond less strongly.
- More pronounced structural and political problems in the euro area potentially dampen the effects of monetary stimulus in general.
- The various euro area member states differ significantly in their economic situations, making joint monetary policy for the whole euro area more difficult.

Overall, the QE programme of the ECB may have had positive but small effects on GDP growth and inflation in the euro area, with the exchange rate being one important transmission channel.

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<sup>6</sup> For a comprehensive description of how QE is supposed to work, see Gern et al. (2015).

<sup>7</sup> For a comprehensive discussion of the effectiveness of QE, see Gern et al. (2015).

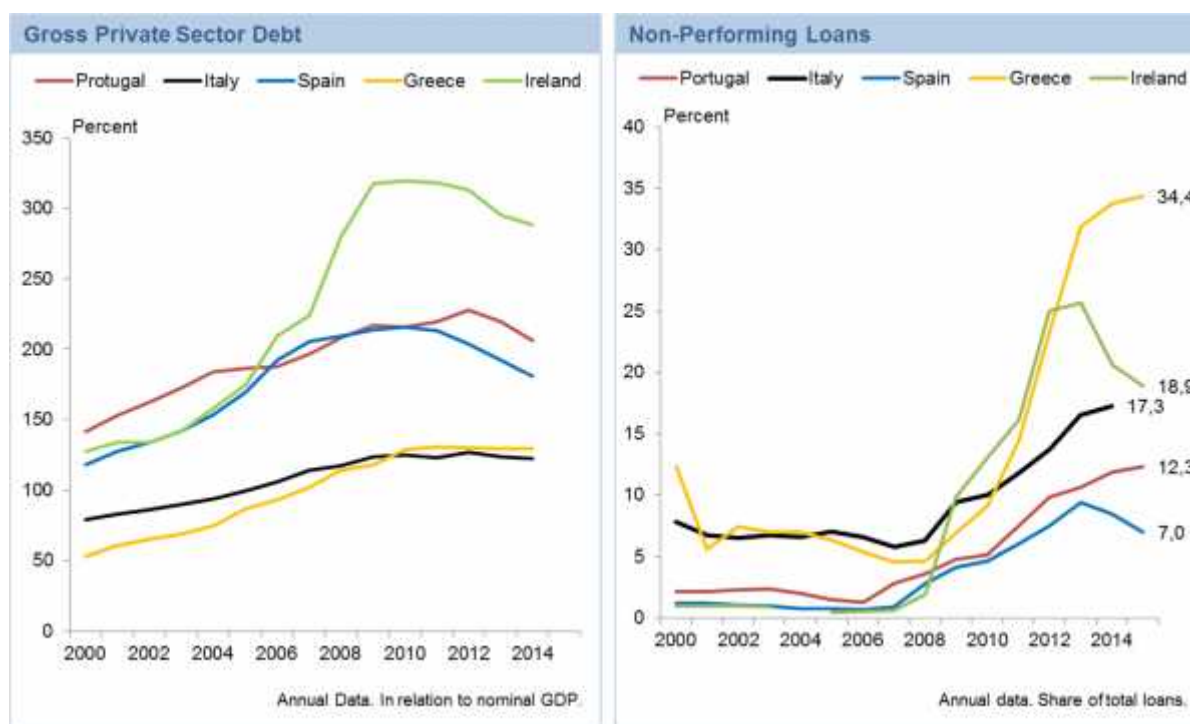


### 4.3 Policy instruments to enhance the effectiveness of QE

Today's QE policies by the ECB are designed to lower the financing cost of potential investors in order to stimulate spending and economic activity in the private sector that will ultimately result in higher rates of inflation. So far, the ECB exerts an indirect impact on private investors' capital cost by reducing the expected longer-run refinancing cost of the banking sector (via signalling a longer period of low short-run policy rates) and by reducing the yields of longer-term public securities which – via the portfolio balance channel – is expected to reduce the interest rates of private securities.

However, so far QE does not seem to be very effective in stimulating economic activity. One reason is that currently important transmissions channels of monetary, such as the credit channel, are hampered. This is a typical pattern in the aftermath of a financial crisis, as the private sector in distressed economies tries to reduce high debt burdens while the banking sector is still suffering from high amounts of non-performing loans (Figure 4). Moreover, and also in line with post-financial crisis experience, growth prospects are currently low and weigh on investment activity of firms. Behind this backdrop, it seems unlikely that gradual adjustments of QE will significantly enhance its effectiveness. Therefore, we briefly discuss only three more far-reaching proposals that substantially deviate from the current QE programme. However, while it is very uncertain whether these proposals would be very effective in stimulating the economy they come along with significantly higher risks.

Figure 4: Private Sector Debt and Non-Performing Loans



Sources: Bank for International Settlements, World Bank.

In the course of the QE operations carried out so far, the capital cost for private investors have dropped although to a lower extent than the yields of government bonds. This suggests that QE may be more effective if more private securities were purchased by the Eurosystem. However, this would raise questions with respect to what securities to buy as this is prone to distort risk premia in general or the capital cost between different credit segments or industries of the private sector.

Since the European financial crisis, the banking system in some member states has been suffering from significantly higher levels of non-performing loans that reflect – among other problems – mal-investments that have been started in the preceding credit boom and that then have turned out as being non-sustainable. To the extent that high levels of non-performing loans prevent the credit creation capacity of the affected banks, the Eurosystem could buy these toxic assets and by so doing relieve the commercial banks' balance sheets. However, this bailout would not only turn the Eurosystem into a bad bank (which would conflict with its policies for investment grade collateral standards) but would also not solve the problem of the limited credit-worthiness of the borrowers. As long as their debt-overhang persists they are unlikely to be granted fresh credit by commercial banks.

Finally and most radically, the ECB could fall back on monetary practices that are known as "helicopter money". In the current debt-backed monetary system, money and credit creation go hand in hand (new money comes into circulation whenever bank grants fresh credit to a non-financial institution). Thus, the money creation process is hampered whenever the non-financial borrowers suffer from insufficient financial soundness. "Helicopter money" bypasses the credit creation side of money production and distributes money unilaterally among the private sector. While such a drastic step might be considered an elegant one-off coup (by monetizing the debt overhang away) from a strictly academic point of view, it raises even more fundamental questions and conflicts with the current statutes of the ECB. As a matter of fact, this operation would drastically change the monetary system transforming it from a debt-backed into a pure fiat money system.



## 5. POLICY RISKS OF QE AND CONCLUSION

The ECB and the Eurosystem as a whole run a series of risks by extending their QE programme. All of these risks share a common root, which is that the distressed euro area countries face severe economic problems that are of a non-monetary nature (structural discrepancies, rigid labour markets, severe debt overhang, high levels of non-performing loans). Thus, very little relief can be expected from using monetary instruments in general and the increase of its dosage in particular. However, the negative side-effects tend to become stronger when QE programmes are expanded. These QE-related risks concern the political independence of future central bank operations, the credibility of the ECB, disincentives for reform policies and fiscal consolidation, systemic financial risks and the misallocation of capital as well as potential distortions and turmoil in foreign exchange markets. While the recent extension of the QE programme does not represent a new policy paradigm but follows a more-of-the-same approach instead, a higher quantity may at some point turn into a new quality by the very size of the interventions. For obvious reasons, it is impossible to identify crisp thresholds for such qualitative leaps but the now substantially extended asset purchase programmes make this transformation more likely. In the following, we discuss the most important risks in more detail.

### Disappointed expectations, communication, and central bank reputation

As discussed in Section 4, the effectiveness of QE in a post-crisis period of a bank-based and heterogeneous currency area is limited both in terms of boosting inflation and stimulating economic activity. By continuously increasing the dosage of QE the ECB runs the risk to stir up expectations that it cannot but disappoint. This might turn out harmful to the overall reputation of the monetary authority. Of course, in terms of communicating its monetary policy strategy, it is difficult for the ECB to explain a prolonged period of below-target inflation rates as it has very closely – and somewhat unnecessarily – linked its overall credibility to reaching this target relatively closely in relatively short time periods. However, its monetary mandate of price stability – as laid down in the Maastricht Treaty – would not stand in the way of a nuancing the interpretation of price stability somewhat differently. In particular, the ECB could put more weight on the medium-term (as there are fundamental external and internal reasons why inflation is currently below the level targeted level) and it could also re-stress the importance of monetary aggregates which was formerly known as the first pillar of its policy strategy (as euro area-wide credit creation is back in positive territory for more than one year now).

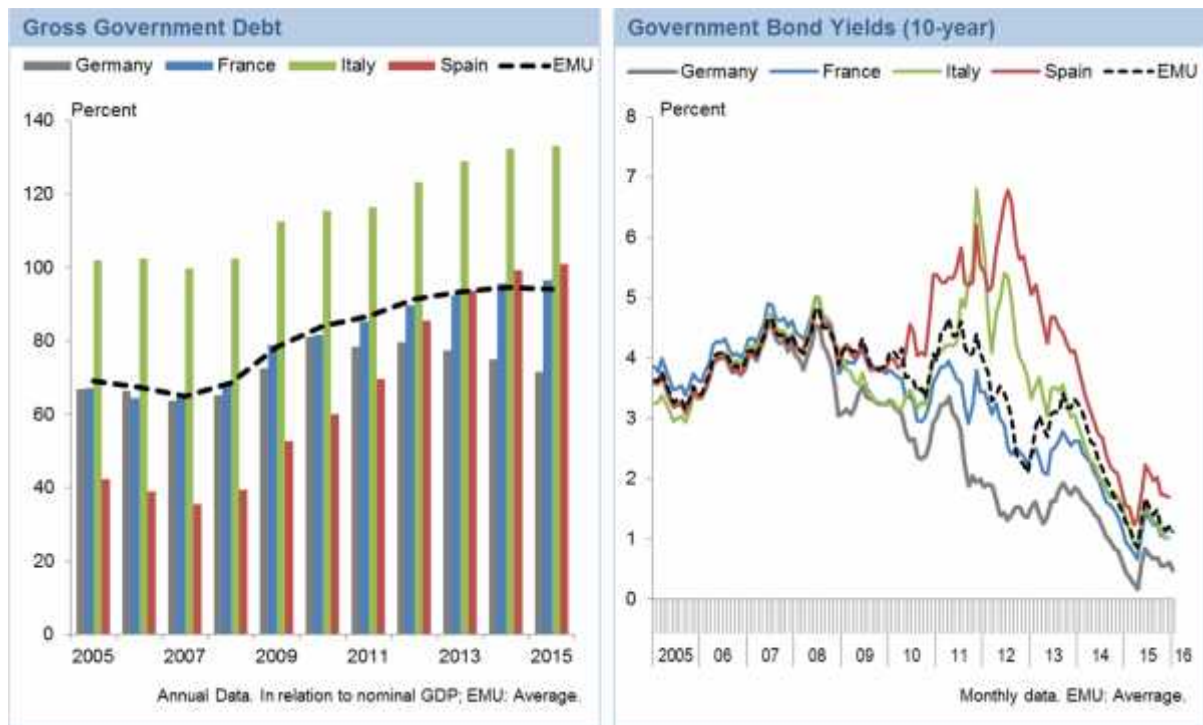
### Central bank independence and questions of monetary financing

The expanded QE programme increases the default and interest risks of the Eurosystem (Appendix A). While taking these risks on central bank system's balance sheets is the very essence of QE in order to bring long-term interest rates down via monetary operations, these risks may negatively affect central bank independence as it increases the incentives for the ECB to choose an inferior monetary policy strategy in the future to avoid losses due to interest rate risks or due to sovereign debt defaults. The incentives to avoid losses may be mitigated if governments are prepared to recapitalize their national central banks and the ECB to compensate the Eurosystem for losses incurred due to QE policies.<sup>8</sup>

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<sup>8</sup> Alternatively, the ECB may fall back on higher minimum reserve requirements in the future to tie up more high powered money and increase the Eurosystem's expected incomes from seigniorage.

Figure 5: Government Debt and Government Bond Yields



Sources: Eurostat, European Commission.

Apart from pending loss risks, ever extended QE programmes threaten the independence of the central bank also in a second dimension. By carrying out the Public Asset Purchase Programme the Eurosystem becomes the most important single creditor of European governments. Any future sales operations are likely to affect the financing conditions of these governments. Thus, implicitly, the responsibility for fiscal sustainability is in part devolved upon the Eurosystem's central banks. Also, questions of monetary financing could intensify particularly because the monetary policy of the ECB (including the OMT announcement) has contributed to a situation where government bond yields are at record low levels contrasting to very high debt-to-GDP levels in some countries (Figure 5).

### Systemic financial risks and misallocation of resources

With QE central banks do not only try to reduce market interest rates by purchasing securities but also try to give a credible commitment towards leaving interest rates at very low levels for an extended period of time (e.g., because an exit would be associated with significant financial risks, see Appendix A) to overcome the time inconsistency problems of forward guidance. However, very low interest rates for an extended period of time stimulate risk-taking (Rajan 2005), potentially fuels asset price bubbles, in turn increasing systemic risks and possibly triggering banking crises. These risks of very expansionary monetary policy tend to increase the longer it is in place (Maddaloni and Peydro 2011, 2012). Moreover, very expansionary monetary policy can also trigger the misallocation of real resources and thereby dampen potential growth (White 2012) and hinder necessary adjustment processes in the aftermath of financial crises (Hoshi and Kashyap 2004; Caballero et al. 2008).

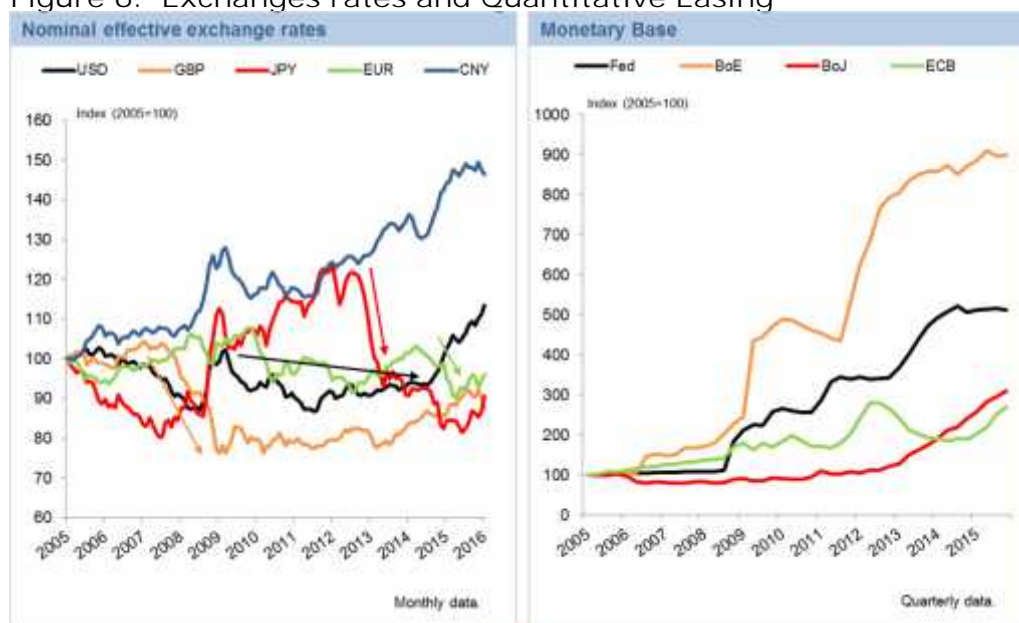
## Disincentives for structural reform policies and fiscal consolidation

The president of the ECB has repeatedly declared that the expansionary monetary stance must be accompanied by structural reforms and efforts to consolidate public finances. Currently, refinancing costs of euro area governments are at record-low levels, but consolidation efforts are not very ambitious. Therefore, the ECB runs the risk of not providing a window of opportunity for reform policies by keeping governmental refinancing cost low, but rather to unintentionally lower the reform pressure as capital markets can no longer discipline those governments that run non-sustainable fiscal policies.

## Potential distortions on foreign exchange markets and domestic production structures

The world economy has seen massive consecutive QE programmes in all major currency areas since the global financial crisis in 2007. These monetary interventions left their marks in the global exchange markets with substantial devaluations coming along with QE programmes (Figure 6). As long as domestic circumstances prevent QE programmes from significantly stimulating domestic credit creation, the QE-related reduction of domestic interest rates will all the more tend to trigger capital exports as investors will look for higher yields abroad. This puts pressure on the exchange rate. Seen in isolation, this effect is fully in line with the ECB's attempt to bring the average euro area-wide inflation rate nearer to its 2 percent target. Also, it would stimulate export industries in the euro area. However, as the exchange rate is a relative international price, monetary policies in all currency areas are heavily interwoven such that interventions in one currency area affect the central banks' intentions in the rest of the world. This involves the risk of world-wide competition for devaluations ("currency wars") where all central banks continuously respond to each other ending up in a destructive spiral of beggar-their-neighbour policies.<sup>9</sup>

Figure 6: Exchanges rates and Quantitative Easing



Sources: Thomson Reuters Datastream, own calculations.

<sup>9</sup> Even without such an escalation, the impact of QE on the exchange rate could distort domestic production structures. While the USD-EUR exchange rate stood near its PPP level in 2014, today it is about 20 percent below this mark (euro area average according to OECD calculations). The longer this deviation persists, the more will domestic production structures adapt to the new relative price of domestic and foreign goods.

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## APPENDIX A:

### FINANCIAL RISKS FOR THE EUROSISTEM – AN UPDATE

In Boysen-Hogrefe et al. (2015), we argued that the financial strength of the ECB is a fundamental precondition for effective and credible monetary policy. The reason is that insufficient financing may lead to a situation where the central bank is forced to either ask for support from the government, or opt for a higher-than-optimal path of inflation to generate compensating revenues from regular liquidity transactions (Schwarz et al., 2014, p.10). Lack of independence and/or non-optimal monetary policy practice severely cuts into a central bank's reputation and ability to anchor inflation expectations at their targeted levels. This is empirically confirmed by Adler et al. (2012) and Klüh and Stella (2008). The empirical results based on a large cross-section of countries reveal that insufficient financial health seems to force central banks to resort to unduly excessive monetary policies. Adhering to non-optimal monetary policy due to insufficient financing has been termed 'policy insolvency' of a central bank (Stella and Lönnberg, 2008).

Below, we update our discussion of risks for the ECB policy solvency arising from the prolonged QE programme. The ECB's announcement extending the asset purchase programmes for another six months from October 2016 to March 2017 suggests a further substantial increase of the Eurosystem's asset holdings. Regarding the Public Sector Purchase Programme (PSPP) the national central banks (NCB) are supposed to acquire government bonds at a monthly average rate of €40 billion and the ECB at a monthly rate of another €4 billion, amounting to a maximum increase of the Eurosystem's government bond holdings of €264 billion.

#### A.1 Default Risks

Counterparty default as a major source of financial risk is generally perceived to be confined to the private sector as European governments (except for Greece) are expected to meet their debt obligations. When looking at sovereign CDS markets, however, market participants assign non-zero default probabilities to at least a subset of governments in the euro area (Falagiarda and Reitz, 2015).

From the overall maximum amount of €1,100 billion in government bonds of euro area member states to be purchased within the current QE programme a fraction of €1,000 billion arises from transactions of national banks and a fraction of €100 billion from ECB transactions, each according to the respective ECB capital shares. The final sum of purchased government bonds will be somewhat lower than this figure because for a number of countries the amount of outstanding debt is not large enough to meet the 25-percent limit. For instance, Latvia and Lithuania lack significant outstanding debt, which is why both are not mentioned in the table. In addition, Portugal is expected to reach the limit in December 2016, while the stock of outstanding government debt in Germany leaves room for further purchases until March 2017.<sup>10</sup>

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<sup>10</sup> See Claeys et al. (2015) for further details.

The 25-percent limit is perceived to be a legal requirement to prohibit monetary financial of government budgets. It is argued that a junior creditor cannot block a potential restructuring of a euro area country debt.<sup>11</sup>

Bearing these qualifications in mind, the fourth column of Table A.1 reveals the potential maximum shares of purchases of countries currently participating in the PSPP (the third column reports the actual purchases of national central banks until December 2015, taken from the ECB website<sup>12</sup>).

Table A.1: Potential write-downs under current QE and loss bearing capacities of national central banks

Country	Key (%)	(Billions euro)				
		Holdings		Loss bearing capacity		
		End of 2015	Exp. max.	Reserves	Seigniorage	Total
Austria	2.8	12.6	30.8	40.5	57.4	97.9
Belgium	3.5	15.9	38.5	42.5	71.6	114.1
Cyprus	0.2	0.0	2.2	2.9	4.1	7.0
Estonia	0.3	0.0	3.3	2.7	5.3	8.0
Finland	1.8	8.1	19.8	23.9	36.9	60.8
France	20.1	91.7	221.1	269.9	419.6	689.5
Germany	25.6	115.6	281.6	354.2	558.9	913.1
Greece	2.9	0.0	31.9	34.5	58.0	92.5
Ireland	1.6	7.6	17.6	20.1	32.8	52.9
Italy	17.5	79.2	192.5	245.4	368.8	614.2
Luxembourg	0.3	1.1	3.3	3.6	5.1	8.7
Malta	0.1	0.0	1.1	1.2	1.8	3.0
Netherlands	5.7	25.6	62.7	76.0	117.7	193.7
Portugal	2.5	11.2	27.5	34.9	51.6	86.5
Slovakia	1.1	4.6	12.1	10.4	9.7	20.1
Slovenia	0.5	2.2	5.5	5.5	20.4	25.9
Spain	12.6	56.8	138.6	127.4	245.1	372.6

Source: ECB, Benink and Huizinga (2015), own calculations.

In addition to potential losses from government default, Table 3 also shows reserves and discounted future seigniorage of national central banks as measures of their potential loss-bearing capacities. The numbers are taken from Benink and Huizinga (2015) and report the amount of equity, reserves, provisions, revaluation accounts that may cover the potential losses (column 5). Column 6 shows the calculated sum of discounted future shares of ECB seigniorage that is interpreted as the amount of additional debt a central bank is able to service.<sup>13</sup> The loss-bearing capacities sum up to €3,360 billion for the euro area countries included.

As was already concluded in Boysen-Hogrefe et al. (2015), Table A.1 indicates sufficient reserves of national central banks to cover losses from potential government defaults. Even in the unlikely event of a total shortfall could the national central banks' existing reserves deal with the associated losses even within the expanded PSPP. Only in the case of Spain and Slovakia do the potential maximum losses exceed current reserves.

<sup>11</sup> Note that for Greece, the 25% limit has already been exceeded.

<sup>12</sup> See <https://www.ecb.europa.eu/mopo/implement/omt/html/index.en.html>.

<sup>13</sup> The estimates stem from Buiter and Rahbari (2012) and are based on a non-inflationary scenario with an underlying GDP growth rate of 1% and a discount rate of 4%.

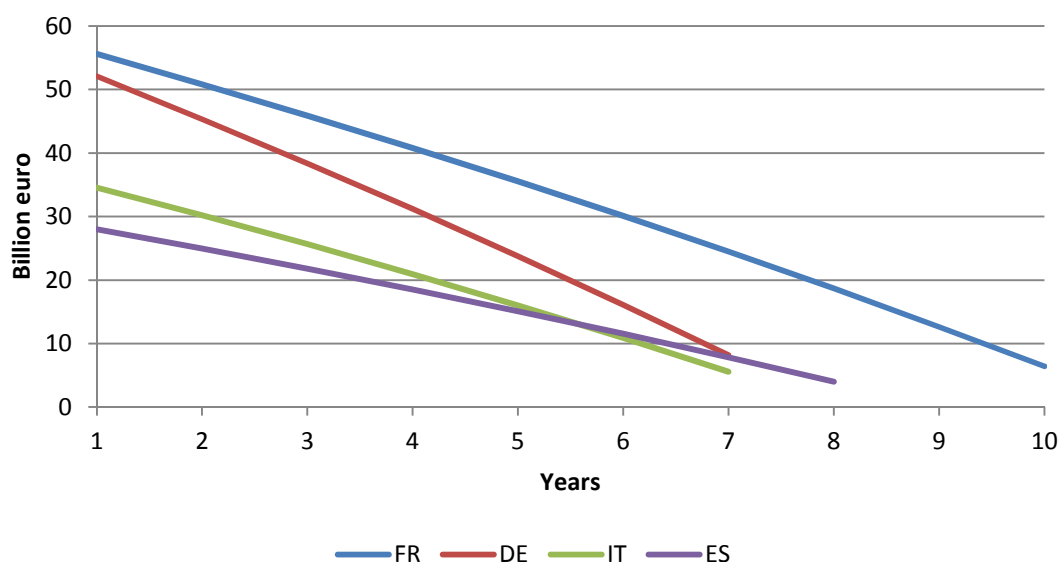
The updated figures confirm the existing financial health of the ECB system. The accumulated reserves are large enough to cover losses even from extreme default scenarios. Once again, however, we stress that a significant deviation from optimal monetary policy may already occur in scenarios of less-than-complete defaults.

## A.2 Interest Rate Risks

Boysen-Hogrefe et al. (2015) identified interest rate risks as a second important source of potential losses. Although government bond purchases are expected to be 'held-to-maturity' and are not subject to revaluations in the accounting sense, the concept of policy solvency recognizes potential losses from future sales of government bonds. It has been argued that improvements in the European business cycle, which the ECB monetary policy currently aims at, will call for increasing interest rates in the future. However, monetary authorities may hesitate to sell back QE bonds and resort to less efficient measures to tighten the policy stance.

To capture the size of this problem, in Boysen-Hogrefe et al. (2015) we calculated the approximate potential future write-downs using the projected purchases within the current QE as reported in Table A.1. The calculated (weighted) average maturities of outstanding bonds for France, Germany, Italy, and Spain are based on Claeys et al. (2015). Representing more than 70% of expected purchases, Banque de France, Bundesbank, Banca d'Italia, and Banco de Espana take a major fraction of interest rate risks. While the average maturity of French government bonds is 9.3 years, the average maturity of German, Italian, and Spanish bonds is 6.4, 6.7, and 7.2 years, respectively. Weighted average yields of outstanding bonds are used as an approximation of the average coupon. Potential losses then arise from an unexpected instantaneous increase of the interest rate (300 basis points) assuming a country-specific (constant) discount rate to calculate changes in the present value of government bonds. The losses depicted in Figure A.1 thus arise from the product of the decline of the average present value and the country-specific total amount of government bond purchases.

Figure A.1: Interest Rate Risk of QE (abrupt scenario)



Source: Own calculation based on data from Claeys et al. (2015).

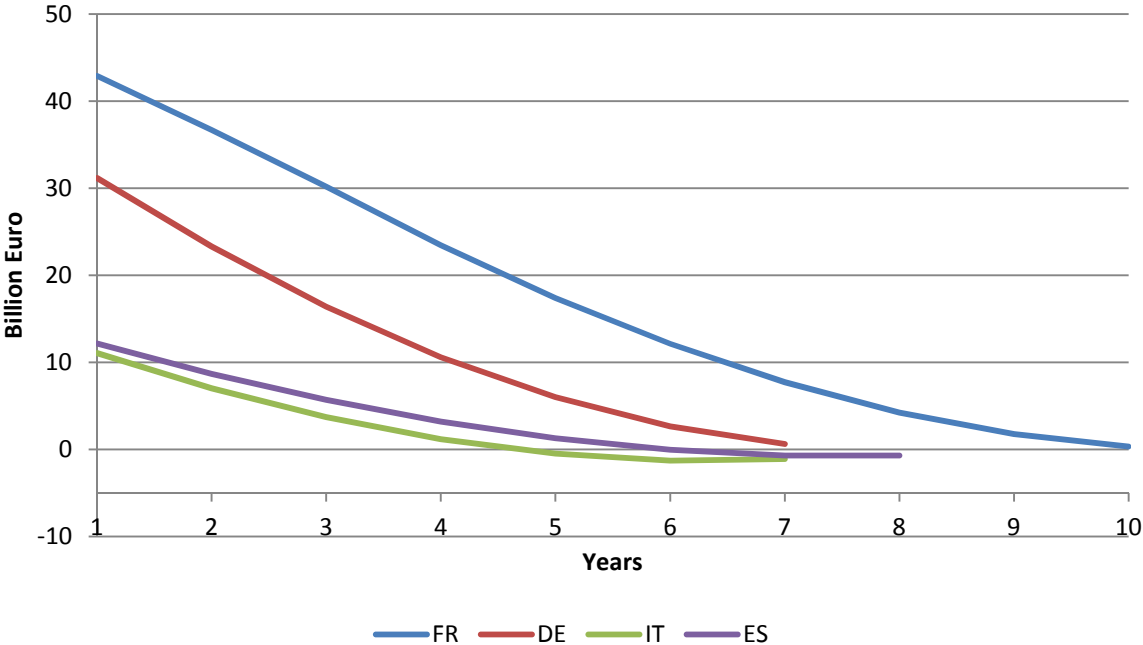


Compared to our calculations in Boysen-Hogrefe et al. (2015) the potential losses in the first year increase due to the extended purchases from roughly €37 billion to values of around €56 billion in the case of France and €52 billion in the case of Germany respectively. The two countries share a relatively similar amount of risk, because outstanding French government bonds exhibit the longest average maturity, while Germany maintains the largest capital share. Elevated interest rate risks are also observed for Italy and Spain increasing from levels of around €20 billion to around €30 billion. The generally lower numbers for both countries are a result of lower total amounts of government bond purchases and shorter average maturities of the respective debt instruments. Interest rate risk declines linearly over time as the remaining maturity grows shorter.

Boysen-Hogrefe et al. (2015) also provided a robustness check assuming a more gradual future interest rate increase together with a successful policy aiming at a decline in bond spreads vis-à-vis Germany. As an alternative scenario an increase at a yearly delta of 0.5% to a maximum of 4% is assumed starting from March 2017, when government bond yields will also have converged to a level of 0.5%. These interest rates are also employed as discount rates to calculated present values of government bonds. The increase in discount rates typically leads to a slight convexity of time paths of the associated losses for the respective national central banks as represented in Figure A.2.

The projected losses are significantly lower than in the above case due to lower average discount rates. For instance, first-year interest rate risk declines from €56 billion to €43 billion in the case of France, while first-year risk decreases by €21 billion in the case of Germany. Negative values for Italy and Spain may occur, because the increase in the level of European interest rates is offset by the assumed decline in government bond spreads. Of course, due to the extension of the PSPP programme, interest rate risks are substantially higher than before.

Figure A.2: Interest Rate Risk of QE (gradual scenario)



Source: Own calculation based on data from Claeys et al. (2015).

The different scenarios strengthen the view that projected losses are economically significant, particularly when considering the recent prolongation of the asset purchase programmes. The updated figures confirm that a return to more conventional monetary policy might be hampered particularly in the period right after March 2017. Consequently, the incentive to leave interest rates at low levels constitutes a serious obstacle to ECB credibility in the event of an announcement to return to more conventional monetary policy.

**NOTES**



DIRECTORATE GENERAL FOR INTERNAL POLICIES  
POLICY DEPARTMENT A: ECONOMIC AND SCIENTIFIC POLICY

# Policy options and risks of an extension of the ECB's quantitative easing programme: An analysis

Eddie GERBA, Corrado MACCHIARELLI

## IN-DEPTH ANALYSIS

### Abstract

During the press conference on 3 December 2015, president Mario Draghi reiterated the readiness of the ECB to adopt additional measures in order to maintain an appropriate degree of monetary accommodation. Different options are available, including the increase in the amount of monthly purchases of assets, currently set at 60 billion EUR per month. However, there are risks involved in extending these asset purchase operations, including the renewed criticism against the ECB for not complying with its mandate and entering the fiscal financing territory. This paper reviews the available unconventional monetary policy options for the ECB and considers the potential risks involved with each. It also briefly discusses key credibility issues that ECB might eventually face.

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## EXECUTIVE SUMMARY

During the press conference on 3 December 2015, President Mario Draghi reiterated the readiness of the ECB to adopt additional measures in order to maintain an appropriate degree of monetary accommodation. Different options are available, including the increase in the amount of monthly purchases of assets, currently set at 60 billion EUR per month. However, there are risks involved in extending these asset purchase operations, including the renewed criticism against the ECB for not complying with its mandate and entering the fiscal financing territory. This paper reviews the available unconventional monetary policy options for the ECB and considers the potential risks involved with each. It also briefly discusses key credibility issues that ECB might eventually face.

Even though bank lending in EA is slowly increasing as per the effect of QE, the level is still well below the level that would be needed to generate an improvement in the real activity. Recent evidence shows that the reason behind the low levels of (private sector) lending is the vastly growing volume of non-performing loans (NPLs).

Zero lower bound interest rate and QE risk increasing the volume of NPLs, eroding bank profitability even further, reducing credit-to-GDP ratios, and therefore putting at stake any opportunities for contemporaneous or future growth. This, however, would largely depend on the future stance and design of QE and any accompanying measures.

Regarding the practical extensions announced this December, there is a worry concerning the fact that the ECB has ventured below zero in June 2014. Should banks absorb the cost of holding money, this will risk making banks even less willing to lend. Liquidity constrained consumers and businesses might thus be the one suffering.

The ECB has timidly loosened the self-imposed "issue" restriction not to own more than 25% of any single bond. This (issue) limit has been brought to 33%. While this is an improvement, it is still not enough as QE purchases will still interact with previous acquisitions of bonds by the ECB or the NCBs, limiting the pace of purchases overall, particularly for some countries.

The idea of extend the list of eligible collateral to include securities issued by regional and local governments would alleviate the scarcity problem. Overall, however, this would help simply buying time, but would not lead to the recovery of the euro area economies. The latter is by large a political decision. Indeed, local bonds from cities and municipalities have the fall back of central governments. Hence, the decision to put these bonds in the pot will possibly change the ECB's balance sheet composition but not its intrinsic exposure to risk.

We acknowledge that the ECB would still be able to consider

- An extension of the current asset purchase programme beyond the current March 2017 deadline
- An increase in the pace of monthly purchases from 60 billion EUR per month at present
- A change in the composition of asset purchases
- A further cut in the (currently negative) deposit rate and the ECB lending rate; the latter not without risks, considering what outlined above.

The first point clearly underscores the risk of a prolonged monetary policy easing in a conventional sense, or the "how long" scenario, making exits strategies particularly relevant when the time will come.

So far, the ECB's action in non-standard mode was based on a principle of separation between the interest rate policy and recourse to exceptional measures.

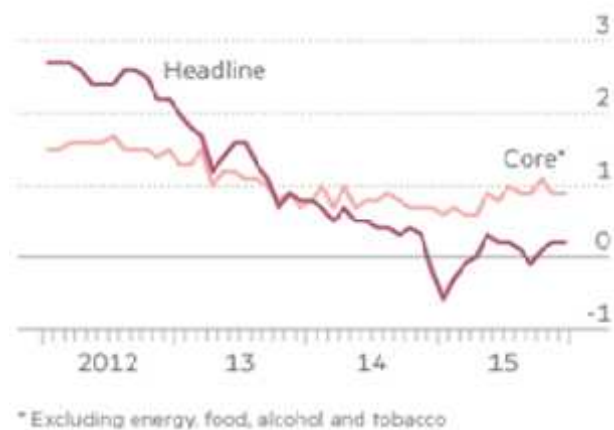
We see as a promising area the interaction of QE with fiscal expansion for the policy to succeed in stimulating aggregate demand and inflation. Overall, however, this interaction is not possible, especially in the presence of countries with limited fiscal space, in a framework which admits only limited risk sharing.

We also discuss that other (complementary) options could be direct lending to banks and non-banks; amendments in the NPL regulation and foreign exchange interventions.

## 1. INTRODUCTION

In March 2015, ECB officially started its extensive Asset Purchasing Programme (APP). The purchases amount to 60 billion EUR per month, and it was announced that the programme would run until at least September 2016. The aim of the QE was, as expressed by Mr Mario Draghi, to do whatever it takes to bring the core consumer-price-index (CPI) back to the 2%-target. However, by November 2015, it became clear that the core CPI was still well below the ECB's threshold. In fact, as Figure 1 shows, inflation has had hard time to even cross 1%. In light of this, and following the last Governing Council meeting of the ECB on 3 December 2015, it was announced that the APP would be extended in scope, time, and possibly even size: in particular, the list of eligible collateral would be extended to include securities issued by regional and local governments, and the programme would be extended by at least 6 months until March 2017. At the same time, the deposit rate was cut further by 10 b.p., down to -0.30%, and President Draghi confirmed that the ECB is considering of increasing further the size of QE in the near future should inflation remain low (Financial Times, 5 January 2016).

Figure 1: Euro Area CPI headline and CPI core developments  
(year-on-year % change)



Source: FT on Datastream data

Figure 2: EA GDP growth rate  
(quarter on quarter % changes)



Source: Trading economics based on Eurostat data

In light of the deteriorating economic conditions in the euro area (EA), the effectiveness of QE is being brought into question; even more, now that different options of further monetary easing are being considered and their risks evaluated. In the remaining of the paper, we outline what these options are, discuss some of their economic, monetary and financial effects, as well as consider some of the risks entailed.

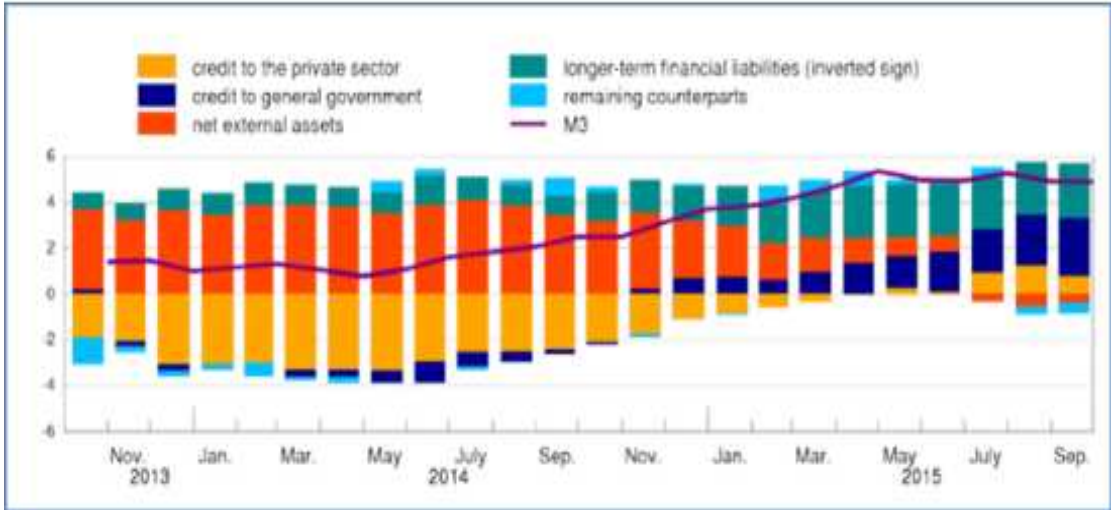


## 2. PROVISIONAL EVALUATION OF THE ECONOMIC IMPACTS OF QE: KEY EURO AREA INDICATORS

Before discussing what further options the central bank holds in terms of reviving the economy, we should first evaluate the impacts of QE to date. The ECB has claimed it to be a success. Looking at the empirical evidence, as discussed before, the inflation rate has been in a steady decline since April 2015. By October same year, the rate even turned negative and has remained around the zero-level ever since (Figure 1). GDP growth rate for the area has started to contract once again since May last year, putting an end to the slow climb commenced in 2014 (Figure 2).

Turning to bank lending, the downward trend observed above seems to hold. Even though bank lending in EA is slowly increasing, the level is still well below the level that would be needed to generate an improvement in the real activity. Using data from an ECB report in July (Figure 3), the largest share of the growth in the money supply (M3) over the past year and a half is accounted for by an increase in credit to the public sector, and not credit to the private sector, which is the one required instead in order to generate economic growth (Economonitor, 18 November, 2015).

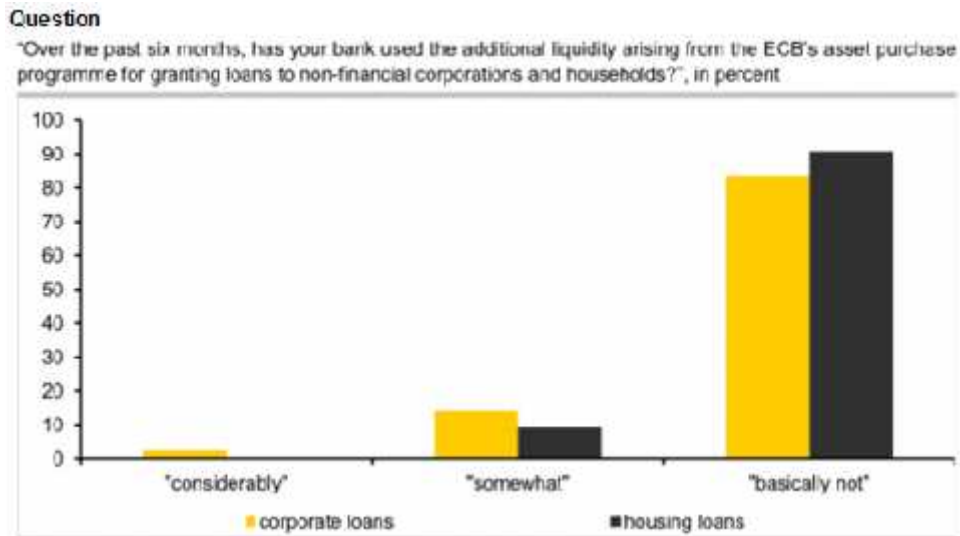
Figure 3: Contribution of the M3 counterparts to the annual growth rate of M3 (percentage points)



Source: European Central Bank

A survey conducted by Commerzbank in October 2015 reveals a similar trend. They show that QE has had almost no effect on bank lending on balance. Roughly 85 per cent of banks said that QE has not increased lending and basically no bank saw a sizeable effect as the result of QE (Figure 4). The report concludes that liquidity is not a key factor that limits lending (Commerzbank Economic Research, 30 October 2015). In fact, the interest rates charged on loans are still relatively high despite a high liquidity on the market. Furthermore, the risk premium charged by banks is above 2 per cent despite the extremely low interest rates paid on deposits (Figure 5).

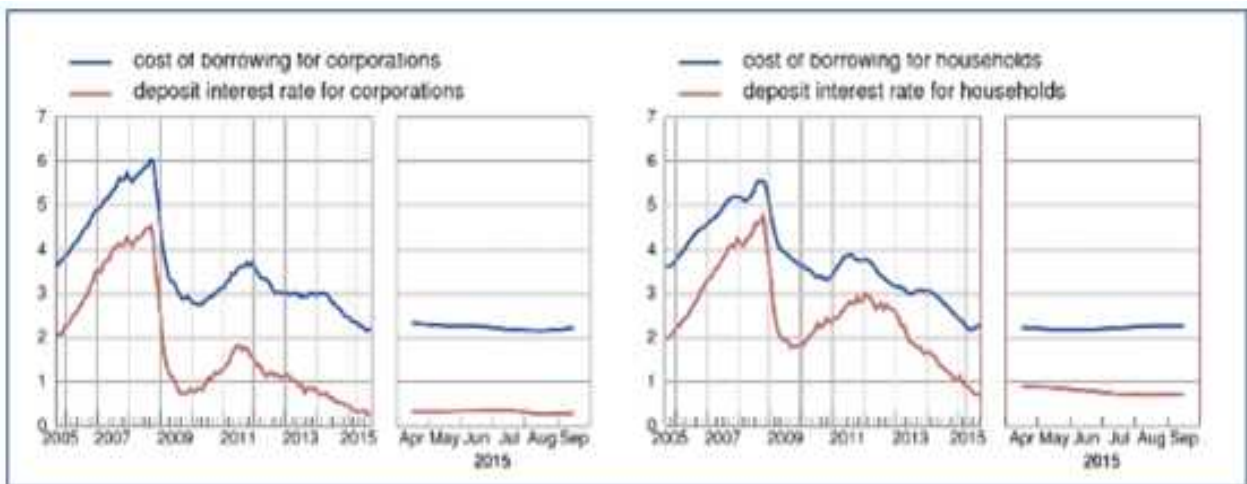
Figure 4: Impact of liquidity on loan supply decisions



Source: Commerzbank based on ECB Bank Lending Survey

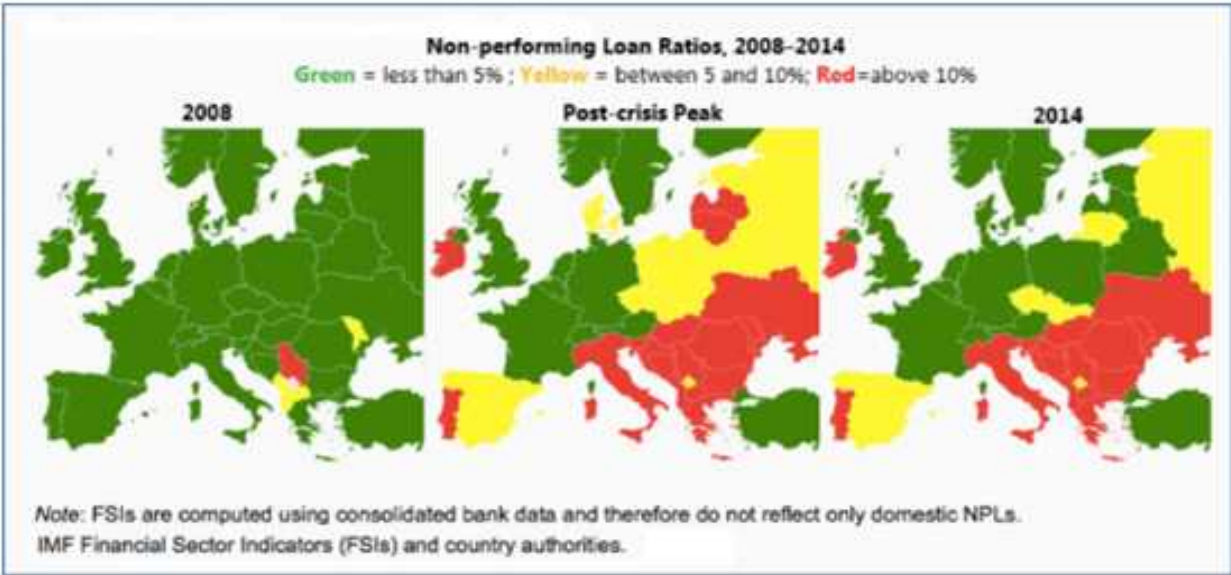
Since lending to the private sector has been pointed out as the key factor for reviving growth in Europe, the question remains to why the costs of borrowing remain high for firms and households. Recent evidence (IMF, 2015; BIS; 2015) shows that the reason behind the low levels of (private sector) lending is the vastly growing volume of non-performing loans (NPLs) across the continent. For the EU as a whole, NPLs stood at over 9 per cent of GDP at the end of 2014, or 1.3 trillion EUR. This is more than double the level recorded in 2009. The volume is especially high for the peripheral EA countries, such as Portugal, Italy, Greece and Cyprus (Figure 6), and for small and medium-sized enterprises (Aiyar et al., 2015).

Figure 5: Bank interest rates on new loans and deposits (annual rates)



Source: Economonitor

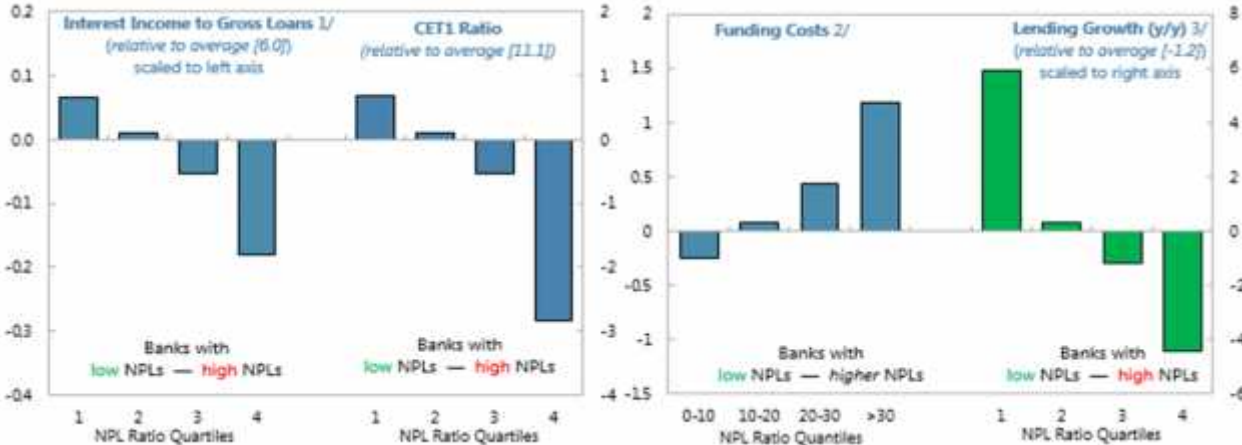
Figure 6: Non-performing loans in Europe



Source: IMF

However, SMEs are exactly the firms that are most dependent on banks extending their loans. Moreover, those are firms generating around two-thirds of EU’s output and employment. This has serious implications for economic recovery since NPLs tend to reduce the credit-to-GDP ratio and GDP growth, while increasing unemployment (Espinoza and Prasad, 2010; Nkusu, 2011; Klein, 2013). In fact, high NPLs tie up bank capital that could otherwise be used to increase lending, leading to a reduction in bank profitability, a rise in funding costs and thus a reduction in credit supply overall (Figure 7; see also Aiyar et al., 2015).

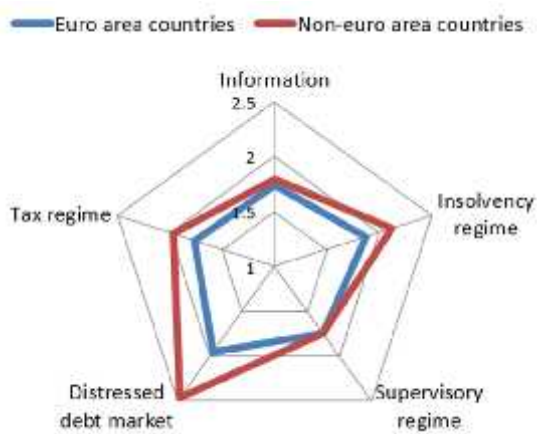
Figure 7: Euro Area implications of high NPLs for bank performance (percentage points)



Source: Aiyar et al. (2015)

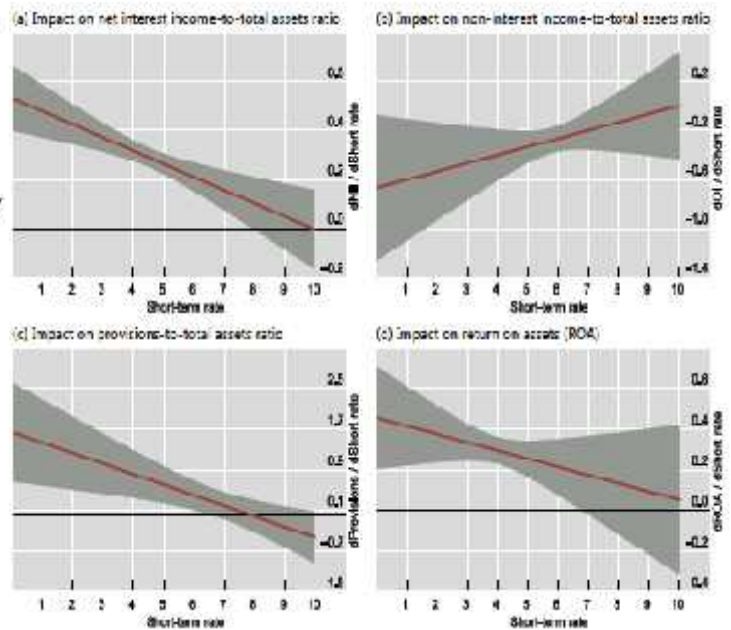
NPLs remain very persistent in the Euro Area, where the write-off rates for banks remain much lower than for US or Japanese banks. According to Aiyar et al. (2015), the reasons for that can be traced back to limited tax deductibility of provisions, weak debt enforcement and ineffective bankruptcy procedures that discourage write-offs and increase the cost of recovering assets provided as collateral for loans. Additional reasons are rigid accounting rules that hinder timely loss recognition and a lack of a sizeable market for distressed debt in Europe. The following diagram summarizes the results from an IMF survey, using a metrics where 1 equals 'no concern' and 3 reflects a high degree of concern for authorities and banks. From the survey, the specificities mentioned above for the EA countries are particularly evident (Figure 8).

Figure 8: Survey-based scores on obstacles to NPLs resolution: EA vs non-EA



Source: IMF survey of country authorities and banks

Figure 9: Effect of change in the policy rate on bank profitability



Source: Borio et al. (2015)

Likewise, a recent BIS study (Borio et al., 2015) shows that the impact of monetary policy rate on bank profitability declines with the level of interest rates and the slope of the yield curve (Figure 9). The results of the paper imply that unusually low interest rates and an unusually flat term structure erode indeed bank profitability.

Bridging those two arguments, it means that the zero lower bound interest rate and QE, which intends to flatten the yield curve, risk increasing the volume of NPLs, eroding bank profitability even further, reducing credit-to-GDP ratios, and therefore putting at stake any opportunities for contemporaneous or future growth. This, however, would largely depend on the future stance and design of QE and any accompanying measures.

### 3. NEGATIVE INTEREST RATES, SO WHAT?

By mid-November 2015, about a third of the debt issues by Euro Area governments had negative yields. That means that investors holding to maturity won't get all their money back. Figure 10 illustrates that for 'safe' countries, almost the entire maturity spectrum of bonds trades at negative yields. If we take the shorter-end spectrum of debt, for instance 2-year, we see that by November 2015, almost all European debt was trading negatively (Figure 11). Just a year earlier, only 5 countries' debt traded below 0%. This could be seen as a success of the ECB policy, as QE aimed at lowering those yields and pushing investors out from the sovereign debt market.

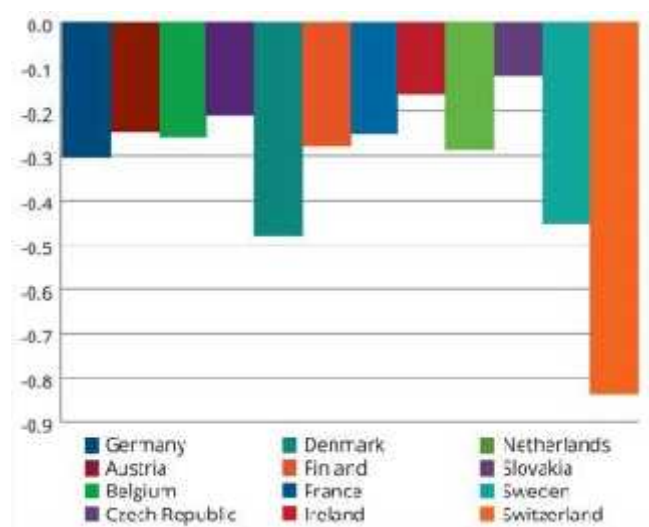
Figure 10: Euro Area bond maturities trading at negative yields in Nov 2015



Source: Bloomberg

Source: Bloomberg and The Economist

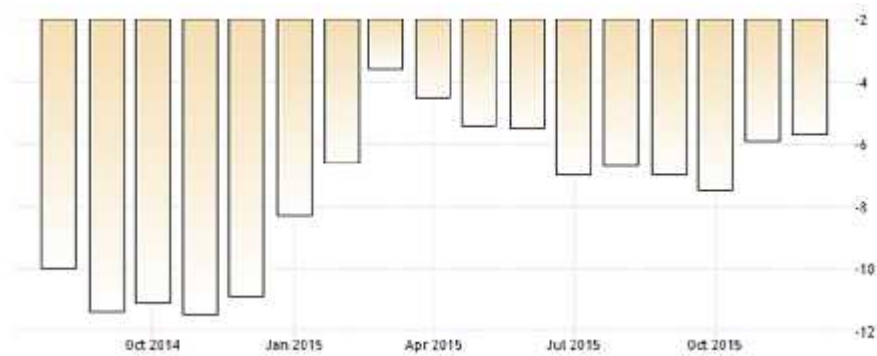
Figure 11: Two-Year Government Bond Yields for European Debt in Nov 2015



But negative yields also expose the economy to certain risks. As we reminded in a previous note (Gerba and Macchiarelli, 2015a), extremely low government borrowing costs could result in misallocation of capital, which coupled with a weak currency could trigger capital flight and some asset values could collapse. Negative yields may also fail to boost economic growth if consumer and business confidence remain low. This is in particular true if consumer and business believe that the policy stance is ambiguous. In an environment of policy uncertainty, businesses will wait to invest and consumers will hoard money, resulting in low aggregate demand despite the negative yields. In September 2015, the CFA institute noted that dividends and repurchases amongst firms had recently exceeded capital spending, implying that large companies see little need for new productive capacity. At the same time, velocity of money continued to fall. Both are symptoms of an unsecure view of the future by firms and households (CFA, 7 September 2015). This is supported by persistently high saving rates across the Eurozone, coupled with a high volatility of consumer confidence (Figure 12).



Figure 12: Euro Area Consumer Confidence (level)



Source: Eurostat

Another obvious side effect of negative interest rates is that of pushing retirees and pension funds (and others requiring positive cash flow) to move into riskier segments of the market. Rather than accepting negative returns on government bonds, many fixed-income managers choose high(er)-yield bonds, emerging market debt, and high-dividend equities. Some observers are concerned this could result in a broad-based fixed-income asset bubble (CFA, 7 September 2015).

### 3.1 IS AN EXTENSION OF THE PROGRAMME A GOOD IDEA?

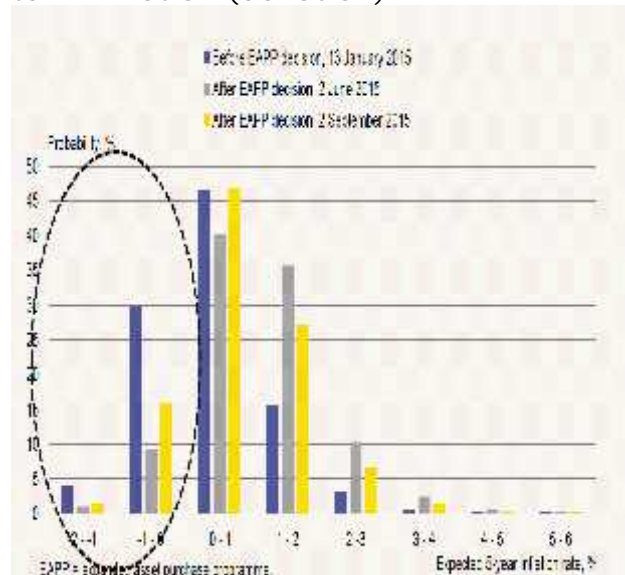
Mr. Draghi stated that the programme will possibly continue until at least March 2017 and, in any case, until the Governing Council sees a sustained adjustment in the inflation's path, consistent with the ECB's goal of achieving inflation rates close to, but below, 2% over the medium term.

Figure 13: Survey of Professional Forecasters expectations for inflation



Source: ECB Data. Last observation 2016Q1

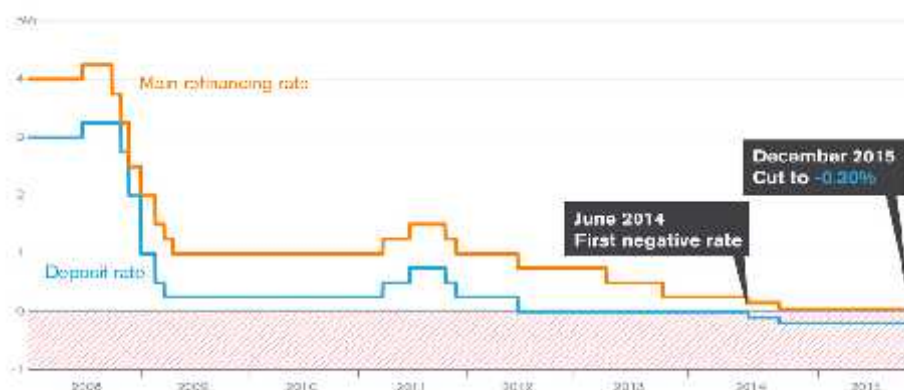
Figure 14: Probability of expected long term inflation (deflation)



Source: Bank of Finland (2015)

One of the ECB's top measures of long-term inflation expectations, the five-year, five-year euro zone breakeven forward EUIL5YF5Y has stabilized at around 1.7% recently after a rebound from a low below 1.5% in January (not shown here). Survey of Professional Forecasters' expectations have generally remained stable as well in recent months, at around 1.8%, over the long horizon (5-year), whereas expectations at shorter horizons have improved (Figure 13). All in all, the decision to implement the ECB' Asset Purchase Program seems to have indeed reduced tail risks of deflation, even if this trend has weakened over time, as the data for June vs. September in Figure 14 would suggest. The latter trend would be also possibly driven by weaker energy prices, as we reminded in a previous note. Notwithstanding some improvements in consumer sentiment and inflation expectations (particularly at shorter horizons), the ECB is dispelling any prospects of early tapering for now.

Figure 15: Euro area main refinancing rate and deposit rate



Source: Bloomberg

Regarding the practical extensions announced this December, there is a worry concerning the fact that the ECB has ventured below zero in June 2014, and now charges banks 0.3 percent to hold their cash overnight. Cutting the deposit rate further was indeed tailored to make more bonds eligible for QE purchases (Figure 15). In practice, however, there is a risk that the policy of cutting the deposit rate further, while unfreezing additional eligible bonds, might harm the money markets, and add to the existing uncertainty on lending (see also Gerba and Macchiarelli, 2015b). In fact, pushing the deposit rate lower implies banks may want to pass this cost and make more clients pay (rather than earn) an interest rate to hold their money, with the obvious side effect of clients preferring to hold cash instead. While that risk has not yet materialized – as banks have been reluctant to pass on negative rates for fear of losing customers – there is still a worry that when will banks absorb the cost of holding money on the books themselves, they will squeeze their profit margin between lending and deposit rates even further, giving themselves less of a cushion in case of a funding crunch. This risk making banks even less willing to lend, rather than more, as the policy of negative deposit rates was intended. Liquidity constrained consumers and businesses might thus be the one suffering (Bloomberg, 3 December 2015).

The ECB has timidly loosened the self-imposed “issue” restriction not to own more than 25% of any single bond, thereby increasing its portfolio composition. By decision of the ECB's Governing Council of 3 September 2015, this (issue) limit has been brought to 33%, “subject to a case-by-case verification” (ECB, 2016). By loosening the issue limit, possible OMTs and EAPP interactions would be a bit further down the line. Overall, however, there is a concrete risk that even a 33 per cent issue limit would leave barely any room for possible OMT purchases, in addition to the planned QE purchases. This is true especially for some peripheral euro area countries (Gerba and Macchiarelli, 2015b).

As the issue limit refers to the maximum share of a single PSPP-eligible security that the Eurosystem is prepared to hold, the agreed limit would thus make QE purchases interact with previous acquisitions of bonds by the ECB or the NCBs, limiting the pace of purchases overall. One of the main constraints in completely removing the issue limit is political. Said that, the latter can also be interpreted as a compromise between guarding the ECB's credibility, while, at the same time, granting markets well-functioning. Some comments are warranted in Section 5.

Finally, the last Governing Council's decision of 3 December 2015 to extend the list of eligible collateral to include securities issued by regional and local governments would help relax some constraints on the current QE programme and release some of the collateral. Since QE purchases are determined on the basis of the ECB's capital keys, some countries do most of the purchases. We have highlighted how for some large EA countries (e.g. Germany, the Netherlands) the short maturity spectrum is trading at negative rates, with a large proportion of bonds dipping below the ECB's threshold of, now, -0.3 per cent. This leaves some central banks – the Bundesbank in primis – out of bonds to buy. Hence, the decision to accept regional and local governments' bonds can enable these NCBs to reach the overall bond buying level more easily, alleviating the collateral scarcity problem. Overall, however, this would help simply buying time, but would not lead to the recovery of the euro area economies. The latter is by large a political decision. Indeed, local bonds from cities and municipalities have the fall back of central governments and typically enjoy lower credit rating than the latter. Hence, the decision to put regional and local governments' bonds in the pot will possibly change the ECB's balance sheet composition but not its intrinsic exposure to risk.

While this decision may help balance the system, and support a softening of the scarcity bond problem by helping some rates – namely Germany's – move back into green territory, this extension could also help “rejuvenate slack markets such as Italy or Spain”, a Reuters report says. In the latter case, however, benefits will be limited since regional borrowings will count in calculating a country's overall debt stock, hence issuances will generally be capped for countries with low fiscal space.



## 4. WHAT OTHER OPTIONS DOES THE EURO AREA HAVE?

Taking into account these economic, monetary and market conditions, the key question becomes how the institutions will steer the Euro Area economies to growth? More specifically, what options do the ECB has at the moment, and what are the risks involved with each of those alternatives?

The most obvious and straightforward options are to increase the size and scope of the current QE programme. This could be a combination of:

- ✓ An extension of the current asset purchase programme beyond the current March 2017 deadline
- ✓ An increase in the pace of monthly purchases from 60 billion EUR per month at present
- ✓ A change in the composition of asset purchases, perhaps to include the riskier corporate and high-yield bonds (possibly even to extend it into the territory of equities) and/or increasing purchase of bonds belonging to government agencies and/or expand the list of agencies eligible for QE (see also Gerba and Macchiarelli, 2015b)
- ✓ A further cut in the (currently negative) deposit rate and the ECB lending rate; the latter not without risks, considering what outlined above.

The first point clearly underscores the risk of a prolonged monetary policy easing in a conventional sense, or the “how long” scenario (see also Reza et al. 2015), making exits strategies particularly relevant when the time will come (see Gerba and Macchiarelli, 2015a, and Section 5).

### 4. 1 JOINT MONETARY AND FISCAL STIMULUS

It is understood that the most effective way of providing liquidity directly to households and businesses without generating new debt is by giving away “helicopter money”. However, since the ECB does not have a mandate to give money away directly to firms and consumers (just exchange one asset for another, in respect of the Treaty on the Functioning of the EU), helicopter money (referred to as money creation to support aggregate demand) need to be backed by fiscal policy decisions (Grenville, 2013).

In a recent article Bossone (2014) show that QE can, under strong liquidity preferences by the agents, fail to boost aggregate demand.<sup>1</sup> While the programme will succeed in raising asset prices, under liquidity preference dominance, it will fail to stimulate consumption and investment since agents absorb any amounts of reserve money created by QE and hold onto them without changing their decision plans. Hence, the policy-induced reduction in the nominal interest rates on less liquid assets cannot be large enough to prop up the marginal utility from holding risky assets beyond that of consumption and money. They also show that the same failures will arise from negative interest rates, forward guidance, or monetary authority acting irresponsibly in the sense of Krugman (1998). Aiyar et al. conclude that at the zero-lower-bound with strong liquidity preferences, QE cannot work unless it is supported by fiscal policy.<sup>2</sup> Thus, only the mix of monetary and fiscal stimulus can provide purchasing power directly to private and public agents.<sup>3</sup>

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<sup>1</sup> In an environment of secular stagnation, exceptions for growth become low and agents’ preference for liquidity high.

<sup>2</sup> At zero interest rate, long-term debt and liquidity are perfect substitutes and their marginal utility exceeds that of riskier assets.

<sup>3</sup> Since the budget deficit (generated by a fiscal stimulus) can be irreversibly funded through money creation, the government budget constraint is permanently relaxed by an equivalent amount. The

Monetary cum fiscal stimulus can resolve safety trap by boosting demand without creating public or private debt.

QE must be accompanied by fiscal expansion to boost inflation and aggregate demand. However, in economies with large public debt, fiscal expansion would worsen the debt burden and thus neutralising the expansionary effects from a fiscal stimulus. Therefore, in order for the joint policy to succeed, the central bank should commit to hold permanently the debt purchased, so as to 'neutralise' forever the government and taxpayer obligations (see also Bossone, 2015). Some comments are warranted in Section 5.

#### 4.2 DIRECT LENDING

A complementary (see also Section 5) way of boosting lending is for the central bank to lend directly to non-bank institutions or banks for a longer period of time (the latter along the lines of the already implemented Long Term Refinancing Operations – LTROs, for instance). Beyond what already discussed, cutting the ECB deposit rate risk indeed making banks reduce the exposure to the ECB to minimum. Hence, instead of increasing their lending to households and businesses, banks could respond by hoarding money or moving money to non-euro zone central banks. To avoid such scenario and get banks to lend more, the ECB may therefore need to wave "a lending carrot" (Reuters, 2014). This could be done in conjunction with QE, in respect of the separation principle between monetary policy and liquidity management.

Lending to non-banks should only be done under some type of emergency function (so as to avoid it becoming permanent). An example of it could be Bank of England's 'Funding for Lending' program. Under this, banks can exchange loans on their books for UK Treasury bills for up to four years. The aim is to push the banks to borrow against those Treasury bills to increase their lending. This strategy will be successful if lending is primarily driven by an inability of banks to access liquidity in private markets (Labonte, 2014).

#### 4.3 AMENDMENTS IN THE NPL REGULATION

However, if the root of the problem is an increasing number of NPLs on banks' balance sheet, then the remedy required to release that liquidity would be different. In that case, a comprehensive approach to accelerating NPL resolution is needed. The latter can be achieved if:

- ✓ The ECB and national regulators tighten bank supervision
- ✓ Structural reforms making bankruptcy more efficient and making it easier to collect debt are to be put in place
- ✓ Markets for distressed assets are to be developed

On the first point, a line of international experience shows that swift recognition of loan losses is crucial to incentivizing NPL resolution and corporate restructuring. On the one hand, more conservative provisioning and collateral valuation would encourage banks to resolve NPLs quickly. On the other hand, higher capital set aside by banks would make it easier to meet loan-restructuring targets within a reasonable period of time. In times of systemic crises, banks could agree with supervisors on standardized criteria to distinguish nonviable firms from viable ones. The first would require liquidation, while the second a simple restructuring (Aiyar et al., 2015).

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disposable income of all agents can thus be equally raised, and because of Ricardian equivalence effects, consumption can increase permanently.

On the second point, lengthy court procedures should be shortened and out-of-court arrangements should be encouraged as alternatives. Currently, there are high legal discrepancies between countries. Such reforms would make it easier for banks to write off bad loans since it would increase the value of collateral provided by borrowers.

Lastly, a liquid distress market would allow banks to connect with specialist investors who are experienced in managing impaired assets. That would allow them to write off their distressed assets quicker, and push them to expand their lending further. In some cases, a publically supported asset management company can help kick-off such a market. Spain's SAREB is an example. In that instance, anticipating upcoming asset sales, its entry onto the market allowed banks to adjust their asset valuations and start selling NPLs. In turn, this attracted more investors and third-party loan servicers.

These three pillars of reform are complementary and should be implemented simultaneously (Aiyar et al., 2015).

#### 4.4 FOREIGN EXCHANGE INTERVENTION

There is an array of other measures that the ECB can undertake to loosen market conditions. One of them is a direct intervention in the foreign exchange market in order to devalue the EUR further and boost trade and foreign direct investment. Naturally, the central bank buys or sells its currency reserves in order to influence the value of the exchange rate directly. In practice, however, the current situation of a weakening EUR does not urgently call for this sort of intervention – strictly speaking. Said that, all such interventions would anyway have a further 'signalling effect' confirming ECB's commitment to do "whatever it takes" to boost the real economy (see also Labonte, 2014).

#### 4.5 OTHER UNCONVENTIONAL MEASURES

A practical option might be for the ECB to re-define its inflation target, in particular if we accept the idea that the euro area is entering a period of longer-term lower economic growth (or secular stagnation). The central bank could either change its definition in order to incorporate other price-movements apart from the consumer-led one, such as the retail price index (RPI), or it could lose the current inflation-target set at 2% in order to capture the rigidities arising from the new economic environment. The risk (not to be understated) of amending the definition of inflation under policy uncertainty is that inflation expectations might become de-anchored and credibility seriously undermined.<sup>4</sup> Even in a scenario where the current expectations in the euro area are de-anchored, and settled at a level below 2%, a revision of the ECB's official target might assist in re-anchoring them, in the light of the weaker economic conjecture. Overall, however, this may come at the cost of affecting central bank's credibility as it may be seen, yet again, as a drastic change in the ECB's policy stance in an attempt to cope with stubbornly low expectations. Considering that price stability defines the very ECB's objective, and its political independence is considered conducive to maintaining price stability according to the target, making the ECB follow rather than lead market expectations (see Alesina and Stella, 2010) might affect the bank's credibility.

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<sup>4</sup> Some would even argue that the current expectations in the Euro Area are already de-anchored such that these measures might assist in re-anchoring them.

## 5. IS THE ECB FACING A DILEMMA BETWEEN INTERVENTIONISM AND INDEPENDENCE?

Notwithstanding some improvements in consumer sentiment and inflation expectations (particularly at shorter horizons), as discussed, the ECB is dispelling any prospects of QE early tapering at the moment. With the latter decision of September 2015, the ECB is not attempting to violate the separation principle between standard and non-standard measures. On the contrary – due to the persistent clear downside risks to price stability – creating an expectation for a withdrawal of the monetary accommodation further down the line is not unreasonable. Still the situation may change.

During the recent periods, the ECB has constantly expressed concerns about its targeted inflation objective, clearly communicating how QE has the sole purpose of achieving the ECB's mandated objectives, and explained how their actions would achieve these objectives.

In Section 4, we highlighted how extending the QE programme indefinitely underscores the risk of a prolonged monetary policy easing in a conventional sense, or the “how long” scenario (see also Reza et al. 2015). The latter making exits strategies particularly relevant when the time will come (see Gerba and Macchiarelli, 2015a). A risk remains that, beyond a certain point, large-scale purchases of long-term government bonds may be misconstrued as an attempt to monetize large fiscal deficits, which has historically led to high inflation, with no effects on the real economy.

Given the potential threats to central bank independence associated with the implementation of QE, it is clear that the latter has an “effective bound” (Reza et al. 2015). Nevertheless, where the ECB's bound lies is still unclear.

At the same time, it should be mentioned there are many potential elements that may put a “cap” on the size and duration of QE a priori: for instance people, as the result of the economic uncertainty, may react by wanting to inter-temporarily smooth the unwinding of the policy over time (by increasing precautionary savings, for instance). All in all, signalling correctly seems crucial at the moment.

### 5.1 A TAXONOMY OF ECB'S UNCONVENTIONAL MONETARY POLICIES

There is no doubt that narrow inflation targeting failed to deliver stability of the economic and financial system as a whole. Interventions like QE, usually requiring asset purchases, made the distinction between monetary and fiscal policy become blurred and put independence at risk. However, for the sake of focusing on the European QE's stated purpose, i.e. bringing inflation on check, we should leave financial stability implications aside here (for a discussion see Gerba and Macchiarelli, 2015a).

Table 1: A taxonomy of unconventional monetary policies

	Form of intervention	Channels of propagation	Transmission Mechanism
Market-based measures	Targeted asset purchases in private or sovereign debt markets	Portfolio rebalancing	Changes in relative supplies affect asset prices and long-term interest rates, easing financing conditions
Bank-based measures	Long-term refinancing operations (LTROs) Open market operations with full-allotment, longer maturity, extended number of counterparties, relaxed collateral requirements (acceptance of illiquid collateral)	Money multiplier	Increased bank reserves stimulates bank lending
		Collateral channel	High-quality collateral redirected to access market funding, restoring funding and market liquidity (including in collateral markets)
		Indirect portfolio rebalancing	Activated if banks use central bank liquidity to purchase private or sovereign debt

Source: Gabor (2012; 2014)

Rather, it should be noted that in times of protracted recession and high debt, combined with a risk of deflation (i.e. as the current one) the temptation to resort to central banks' facilities becomes high. In the name of growth, the recourse to "helicopter money" may be seen as the only solution (Bossone, 2014). The fundamental problem is the long-term cost associated with it: the potential loss of central bank's independence and the political consequences of inflation (Blinder, 2010).

Like other central banks in advanced economies, the ECB faced huge dilemma in finding a way out of the crisis. But in contrast to other central banks, the ECB had major constraints deriving from the complexity of the governance framework of the monetary union: one central bank and n Treasuries. In the jargon of game theory, the problem with this set-up is that the Member States' fiscal authorities are better off if the ECB intervenes, obviating the need for fiscal intervention; likewise the ECB is better off if governments agree to use fiscal stimulus, in a coordinated fashion – as in a one country scenario (e.g., a fully-fledged fiscal union in the long term) – thus alleviating the pressure on the ECB (see Onorante, 2007; Alcidi and Giovannini, 2013).

With the implementation of QE, the ECB delivered its assessment of the situation and explained what response it intended to provide. Therefore, the ECB's action in non-standard mode was based on a principle of separation between the interest rate policy and recourse to exceptional measures.<sup>5</sup> In other words, this dilemma was addressed by reclaiming the

<sup>5</sup> The separation principle is a direct application of the Tinbergen Principle (1952) to the conduct of monetary policy. This framework, adapted to inflation targeting strategies, has been translated into monetary policy and liquidity management strategies, consistent with the ECB's operational framework, where a distinction of this type is more appropriate (Smets, 2009). The ECB has clearly stated that it intends to maintain a clear separation between:

(i) Monetary policy operations, signalling the appropriate level of short-term interest rates;

importance of distinctive financial systems, defined through the traditional market-based and bank-based dichotomy (ECB, 2010).

The former is determined by assessing the situation in terms of the price stability objective. The latter depends on the functioning of the transmission mechanism. Bank-based measures, exploited the flexibility of the existing framework, and were indeed not intended as an instrument for steering inflation (Table 2). In contrast, the market-based unconventional measures were guided by financial or economic variables, for instance putting a ceiling on the yield of some peripheral long-term government bonds (see also Bernanke and Reinhart, 2004), as in the case of the Security Market Program, or, in the case of QE, with the broader goal of overcoming deflationary pressures.

Table 2: The ECB's unconventional crisis policies

	Nature of commitment	Interactions with funding markets
<b>Bank-based crisis measures (start date)</b>		
Enhanced credit support (Oct 2008)	Full-allotment, longer maturity (3 to 6 months), relaxed collateral requirements	Allow collateral substitution given sovereign collateral discrimination in European repo markets
LTRO I (May 2009)	Three, one-year, LTROs June, Sept. and Dec. 09;	Lengthen liquidity planning horizon (Trichet, 2009) and collateral substitution
LTRO II (May 2010)	One, 6-months, LTRO (May 2010)	Address tensions in markets for collateral and possible contagion
LTRO III (October 2011)	Two, one-year, LTROs (Oct. and Dec. 2011)	Mitigate scarcity of eligible collateral and collateral discrimination. Temporary effect on Spanish and Italian yields.
LTRO IV (Dec. 2011)	Two, three-year LTROs (Dec. 2011 and Feb. 2012); relaxed collateral requirements	Same as above
<b>Market-based crisis measures</b>		
Covered Bond Program I (May 2009 to June 2010) and II (Nov. 2011 to Oct. 2012)	Commitment to volumes CBPP I = EUR 60bn CBPP II = EUR 40bn (Hold to maturity)	Lower cost of funding in the covered bond market, a long-term source of market funding for European banks
Securities Market Programme (May 2010, suspended Jan. 2011; restored in July 2011, terminated with launch of OMTs)	Sterilized, one-off purchases, no commitment to volume, no disclosure of originator of instrument.	Restore liquidity in sovereign bond markets important for bank funding (collateral). Temporary effect.
Outright Monetary Transactions (announced Aug 2012; not implemented)	Unlimited amount, conditional to implementing an adjustment program under the ESM	No intervention yet; strong <i>signalling effect</i>
Expanded Asset Purchase Programme (EAPP) (January 2015, until Sept. 2016; possibly extended until March 2017)	1.14 EUR trillion (or about EUR 60 billion/month) in the first round	Provide further monetary stimulus at the zero lower bound.

Source: Adapted from Gabor (2012; 2014)

As discussed, once the underlying objective has been achieved, the ECB will be confronted with the political economy aspects of unwinding extraordinary measures. Indeed, it should be noted how all the market crisis-based measures needed to be unwound at some point, leading the ECB to adopt several different measures (Table 2).

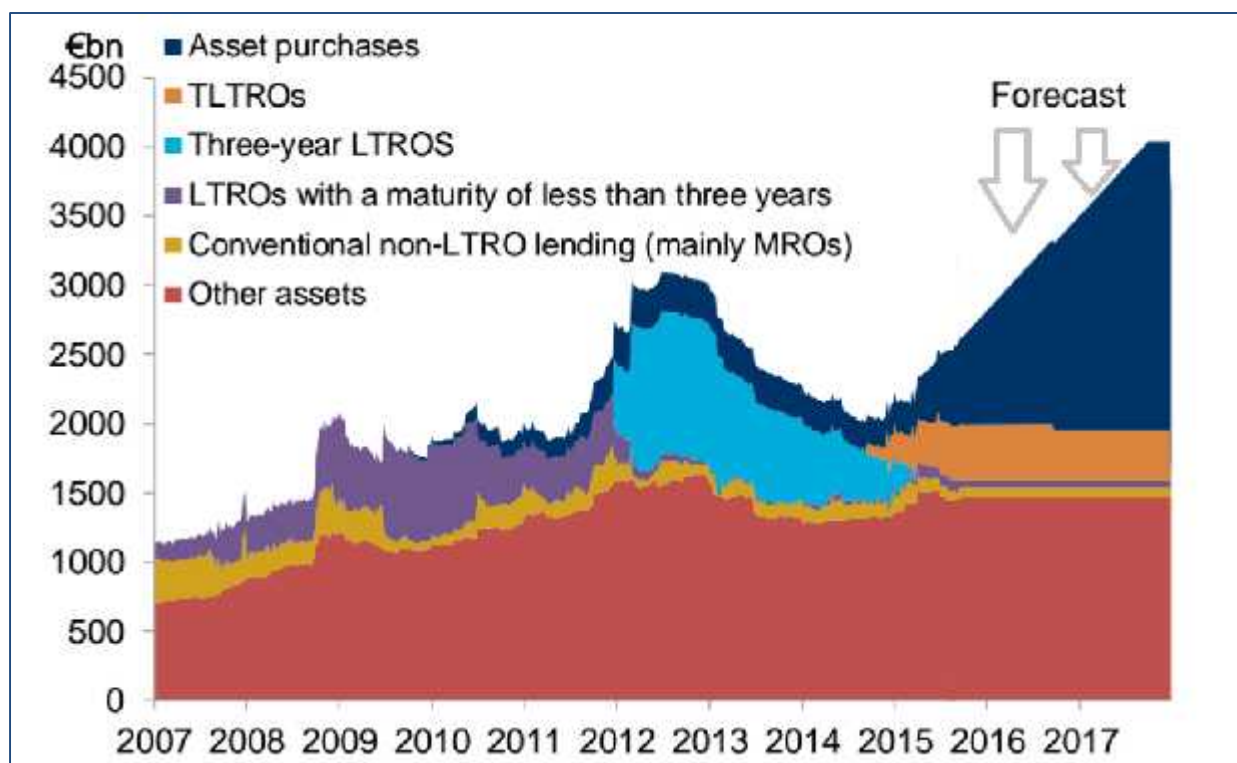
It is important to point out that the intense criticism of the QE program for discouraging fiscal discipline rarely recognizes that sovereign bond purchases have been so far of a much smaller volume than bank-based liquidity injections (see Figure 16). Even so, the European

(ii) Liquidity management operations, which main objectives is to keep money market rates close to the policy rate and to ensure money market well-functioning.



QE has to be understood as part of a monetary policy strategy, not as an attempt at indirectly funding government. Said that, purchases will increase over time, making monetary-fiscal policy interactions very relevant.

Figure 16: Eurosystem ECB's balance sheet (assets side)



Source: Oxford Economics

## CONCLUSIONS

Going back to the point made in Section 4.1, we believe QE must be accompanied by fiscal expansion for policy to succeed in stimulating aggregate demand and inflation: only fiscal action could guarantee that money would be spent. As Bossone notes (2014; 2015), in economies with large public debt, fiscal expansion would worsen the debt situation. Hence, the only way out would be for the central bank to commit to holding permanently the public debt purchased, so as to 'sterilise' its corresponding government and taxpayer obligations indefinitely. Although ECB liabilities will increase, the euro system as a whole will remain solvent (see also Gerba and Macchiarelli, 2015b). This set-up is currently not possible given the design of QE with limited risk-sharing (Buiter, 2015; Gerba and Macchiarelli, 2015b; Blazkiewicz-Schwartzman, 2015).

Given the circumstances, the ECB did the right thing when it chose to intervene in buying government bonds, because the alternative of doing nothing would have been worse. But now the concern is: will limited risk-sharing be enough?

As discussed, full risk sharing will not constitute a risk to the central bank's credibility (Gerba and Macchiarelli, 2015b), and one should consider the potential costs of wanting to keep involvement limited, against the potential benefits.

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# European Central Bank quantitative easing: Limits and risks

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## IN-DEPTH ANALYSIS

### Abstract

Since its launch in January 2015, the European Central Bank (ECB) has made a number of significant changes to the original guidelines of its quantitative easing (QE) programme. These changes are welcome because the original guidelines would have rapidly constrained the programme's implementation. The changes announced during 2015 expand the universe of purchasable assets and give some flexibility to the ECB in the execution of its programme. However, this might not be enough to sustain QE throughout 2017, or if the ECB wishes to increase the monthly amount of purchases in order to provide the necessary monetary stimulus to the euro area to bring inflation back to 2%. To increase the programme's flexibility, the ECB could further alter the composition of its purchases, by waiving the issue limit for AAA-rated bonds, by making other securities eligible for purchase, such as corporate or senior uncovered bank bonds, or by adjusting the distribution of purchases by country. The extension of the QE programme also raises some legitimate questions about its potential adverse consequences. In our view, the benefits of this policy still outweigh its potential negative implications for financial stability or for inequality. The fear that the ECB's credibility will be undermined solely because of its QE programme also seems to be largely unfounded. On the contrary, the primary risk to the ECB's credibility is the risk of not reaching its 2% inflation target, which could lead to expectations becoming disanchored.

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## EXECUTIVE SUMMARY

- The European Central Bank (ECB) has made a number of significant changes to the original design of its Quantitative Easing (QE) programme since the programme started in January 2015. The bank has expanded the list of national agencies whose securities are eligible for the Public Sector Purchase Programme (PSPP); it has changed the issue share limit; it has added regional and local government bonds to the list of eligible assets; it has announced that the programme would continue at least until March 2017; and it has declared its intention to reinvest the principal payments on the securities purchased under the programme as they mature.
- The changes to the design of the programme announced during 2015 expand the universe of purchasable assets and should therefore delay the time at which limits will be reached. However, the decision to reinvest the principal payments as bonds mature, by increasing the monthly monetary purchase after March 2017, would also lead to the limits being reached sooner. In the same way, a decision by the ECB to increase the amount of PSPP purchases each month would also frontload the purchases. In the end, because of the issue share limit, for a given set of securities there will always be a trade-off between larger monthly purchases and a prolonged programme.
- Further changes to the design of the programme could include waiving the issue limit for AAA-rated bonds, or purchasing senior uncovered bank bonds as well corporate bonds. A more radical change could be to move away from an allocation of asset purchases between countries based on the ECB capital keys to an allocation based on the actual size of their outstanding debt.
- We also discuss the possible financial stability risks of a prolonged and large-scale QE programme, and conclude that the benefits of large-scale asset purchases outweigh their potential risks in terms of financial stability. However, micro- and macro-prudential policies should be used forcefully to prevent such risks from materialising.
- We also consider the potential effects that a prolonged asset-purchase programme could have on inequality. Our view is that the primary mandate of the ECB is to maintain price stability, and considerations of inequality are not within its purview, unless inequality prevents the transmission of monetary policy in some way. The ECB should therefore focus on fulfilling its price stability mandate by supporting the fragile recovery now taking place in the euro area. This is the best way for monetary policy to contribute to the avoidance of an increase in inequality.
- The fear that the ECB will lose its credibility solely because it is currently buying a large amount of sovereign bonds appears to be largely unfounded. The primary risk to the ECB's credibility is the risk of not reaching its inflation target. In our view, the ECB should therefore try to find the right balance between the risk of breaching the monetary financing prohibition and the risk of not fulfilling its mandate because of the limits imposed on its own QE programme.

## 1. INTRODUCTION

On 22 January 2015, the European Central Bank (ECB) introduced the Public Sector Purchase Programme (PSPP). Under the PSPP, the Eurosystem started in March 2015 to buy sovereign bonds from euro-area governments and securities from European institutions and national agencies.

On 3 December 2015, ECB president Mario Draghi announced an extension of the programme. While it was initially foreseen to last until at least September 2016, it was extended until at least March 2017. Additionally, regional and local government bonds were added to the list of eligible assets for purchase, and the interest rate on the deposit facility was lowered from -0.2% to -0.3%.

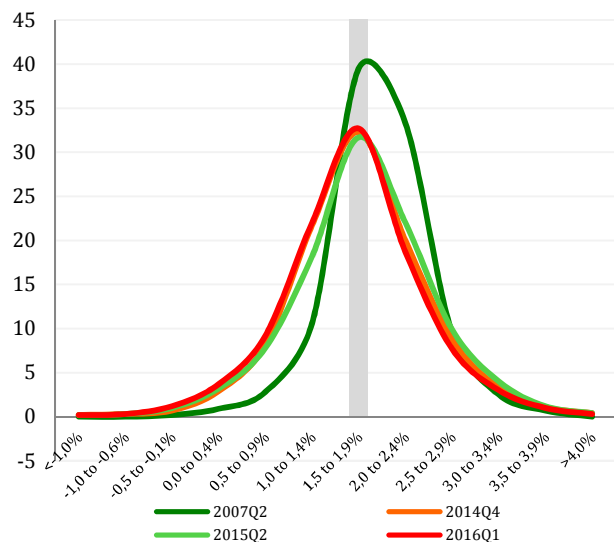
President Draghi said that the asset purchase programme would continue “until we see a sustained convergence towards our objective of a rate of inflation which is below but close to 2%”<sup>1</sup>. This goal remains far from being fulfilled: euro-area year-on-year headline inflation has been below 2% since January 2013, below 1% since November 2013, and was still at 0.2% in December 2015, while core inflation was only at 0.9%. In the meantime, and most importantly, both medium- and long-term market-based expectations and inflation forecasts have started to fall again (Figure 1). As both measures suggest, after a clear decline until the end of 2014, inflation expectations rebounded significantly after QE was announced in January 2015 and during the whole first half of 2015. However, expectations recently fell back to previous lows, heavily influenced by the steep decline in oil prices, as explained in Darvas and Hüttl (2016).

Figure 1: Market-based and survey-based inflation expectations in the euro area

Figure 1a : 5-year 5-year forward inflation-linked swap (%)



Figure 1b: 5-year ahead HICP probability distribution from Survey of Professional Forecasters (%)



Sources: Thomson Reuters Eikon and ECB Survey of Professional Forecasters (2016).

<sup>1</sup> Draghi (2015c).

For these reasons and because inflation appears likely to substantially undershoot the ECB's staff forecast over the next two years, it is probable<sup>2</sup> that the ECB will enhance its programme further in order to fulfil its mandate and bring inflation back towards 2% in the medium term. Even if the impact of asset purchase programmes is more difficult to measure than that of more conventional monetary measures, a growing literature<sup>3</sup> concludes that QE programmes implemented around the world boosted inflation, output and employment. For the euro area in particular, the effects of QE are even more difficult to pin down given that the programme only started in March 2015. However, there are already some indications that QE is having some impact on the euro-area economy. The effects on the exchange rate and on interest rates (and in particular on financial fragmentation in the euro area, with credit rates converging again) have been the most visible. In terms of inflation, monetary measures take time to materialise in prices and it is very difficult to know what can be attributed exactly to QE, but, for instance, the basket share of the consumer price index in deflation declined from 40% at the beginning of 2015 to 25% at the start of 2016. Darvas (2016) also shows that core inflation adjusted for second-round effects of energy prices went up over 2015 and, after reaching a low point in Q1 2015 of around 0.7%, it is now at 1.2%, a level unseen since 2011.

However desirable they might be, the recent – and maybe future – extensions of the asset purchase programme raise questions about how its size and its duration can be materially increased given the finite volume of purchasable debt securities. In fact, the universe of purchasable debt securities needs to be expanded because of the ECB's self-imposed limit on the proportion it can hold of a given debt issue (decided at the launch of the programme) and not so much because of the scarcity of debt securities.

Claeys et al (2015b) showed already at the launch of the PSPP that without any changes to the design of the programme this limit could be reached in March 2017 or before in a number of countries. For Germany, calculations in Claeys et al (2015b) suggested that the limit would be reached in April 2017. Given the structure of the programme using the ECB capital keys to determine the distribution of purchases between countries, this could have seriously limited its effectiveness.

Since then, the issue share limit was raised in September 2015, and the changes to the programme in December 2015 further expanded the universe of eligible debt that can be purchased by the Eurosystem. However, these expansions might still not be enough to prevent the limits being reached before the inflation target is achieved. Furthermore, the unconventional and previously untested nature of such a programme poses legitimate questions regarding the potential adverse consequences that such a substantial and prolonged programme could have.

In the next section we explain the changes to the design of the purchase programme during its first year of implementation, and their implications for our calculations on when the limits will be reached, also envisaging a scenario in which the monthly amounts purchased under the PSPP would be increased. We then discuss potential risks that accompany a lengthy and massive asset-purchase programme in terms of inequality, financial stability and the central bank's credibility.

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<sup>2</sup> Draghi (2016) hinted at further easing during the press conference following the Governing Council of January 2016.

<sup>3</sup> See for instance Baumeister and Benati (2010) or Kapetanios et al (2012).

## 2. POTENTIAL IMPLEMENTATION LIMITS OF THE ASSET PURCHASE PROGRAMME

### 2.1. The extended asset purchase programme's original guidelines

On 22 January 2015 the ECB announced a massive expansion of its asset purchase programme. To supplement the Asset-Backed Securities and Covered Bonds Purchase Programmes (ABSPP and CBPP3) launched in September 2014, the ECB introduced a new Public Sector Purchase Programme (PSPP) to buy sovereign bonds from euro-area governments and securities from European supranational institutions and national agencies. While total monthly purchases of asset-backed securities and covered bonds had previously amounted to approximately €10 billion per month, the new purchases of sovereign bonds, supranational institutions, and agencies raised the figure to €60 billion per month, €44 billion of which was dedicated to purchases of government and national agency bonds (and this €44 billion was divided between euro-area countries according to each country's capital subscription at the ECB). The purchases started on 9 March 2015 and were originally meant to last at least until September 2016. The ECB's Governing Council also made it clear at the time that the programme was open-ended and that purchases would be conducted until the ECB would see "a sustained adjustment in the path of inflation which is consistent with the aim of achieving inflation rates below, but close to, 2 percent".

On top of the eligibility criteria (i.e. only debt securities with a remaining maturity between 2 and 30 years and with a yield above the deposit rate can be bought), the ECB's Governing Council also decided to put in place a 25 percent issue limit and a 33 percent issuer limit on Eurosystem holdings. The 25 percent issue limit was imposed to prevent the ECB from having "a blocking minority in a debt restructuring involving collective action clauses". This indicated that the ECB did not wish to be in a position in which it had the power to block a potential vote on the restructuring of ECB-held debt of a euro-area country, because not blocking such a restructuring would be interpreted as monetary financing of a member state.

A more extensive description of the initial programme, of its rules and composition of the purchases, can be found in Claeys et al (2015b).

### 2.2. Changes to the ECB's guidelines since March 2015

The ECB's rules on the Public Sector Purchase Programme (PSPP) have gradually been adapted since the programme started in March 2015. As highlighted in Claeys et al (2015b), the original rules rapidly constrained the purchases in countries in which public debt was small and in which no national agencies were identified as eligible for purchases. The aim of most of the changes was therefore to expand the universe of available debt securities that the Eurosystem could purchase, in order to delay the point at which the programme would reach its limits in each euro-area country.

In July 2015, the ECB expanded the list of national agencies whose securities are eligible for purchase under the PSPP (see Table 1), thereby allowing the Eurosystem to purchase debt securities in countries where the limits had already been reached, or were expected to be reached soon.

In September 2015<sup>4</sup>, the issue share limit was increased from 25% to 33% for debt securities not containing collective action clauses (CACs). This change to the maximum amount that the Eurosystem can hold of a particular issue allows the PSPP to potentially continue for longer than was originally possible under the previous rules.

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<sup>4</sup> Draghi (2015b).



Table 1: List of national agencies whose securities are eligible for purchase

<b>Agency</b>	<b>Country</b>
Caisse d'amortissement de la dette sociale (CADES)	France
Union Nationale Interprofessionnelle pour l'Emploi dans l'Industrie et le Commerce (UNEDIC)	France
Bpifrance Financement SA	France
ACOSS	France
Caisse des Dépôts et Consignations (CDC)	France
Agence Française de Développement (AFD)	France
Instituto de Credito Oficial	Spain
Kreditanstalt fuer Wiederaufbau	Germany
Landeskreditbank Baden-Württemberg Foerderbank	Germany
Landwirtschaftliche Rentenbank	Germany
NRW.Bank	Germany
Cassa Depositi e Prestiti S.p.A.	Italy
Finnvera Oyj	Finland
Bank Nederlandse Gemeenten N.V. (BNG)	Netherlands
Nederlandse Waterschapsbank N.V. (NWB)	Netherlands
Nederlandse Financieringsmaatschappij voor Ontwikkelingslanden N.V. (FMO)	Netherlands
SID - Slovenska izvozna in razvojna banka, d.d.	Slovenia
Työttömyysvakuutusrahasto (TVR)	Finland
ÖBB-Infrastruktur AG	Austria
Autobahnen- und Schnellstraßen-Finanzierungs-AG (ASFINAG)	Austria
Infraestruturas de Portugal S.A. (IP)	Portugal
ENMC - Entidade Nacional para o Mercado de Combustíveis E.P.E	Portugal
Ferrovie dello Stato Italiane S.p.A.	Italy
Terna S.p.A. - Rete Elettrica Nazionale	Italy
ENEL S.p.A.	Italy
SNAM S.p.A.	Italy
Administrador de Infraestructuras Ferroviarias – Alta Velocidad (Adif AV)	Spain
SNCF Réseau	France
Caisse Nationale des Autoroutes (CNA)	France
DARS d.d.	Slovenia

Note: Agencies which became eligible in July 2015 are noted in bold.

In December 2015<sup>5</sup>, the Governing Council announced many new changes to the design of the PSPP. First, it decided to reduce the deposit rate from -0.2% to -0.3%. Since the Eurosystem decided to purchase bonds with yields above the deposit rate in order to avoid making a direct loss on the purchases<sup>6</sup>, the cutting of the deposit rate effectively increased the amount of debt securities eligible for purchase (even if the rate cut also reduced yields

<sup>5</sup> Draghi (2015c).

<sup>6</sup> When the ECB adds a bond with a yield above the deposit rate on the asset side of its balance sheet, it should make a profit out of it (at least as long as the deposit rate is not increased) even if this yield is negative, because it creates some reserves on its liability side that are remunerated at the deposit rate by the banks.

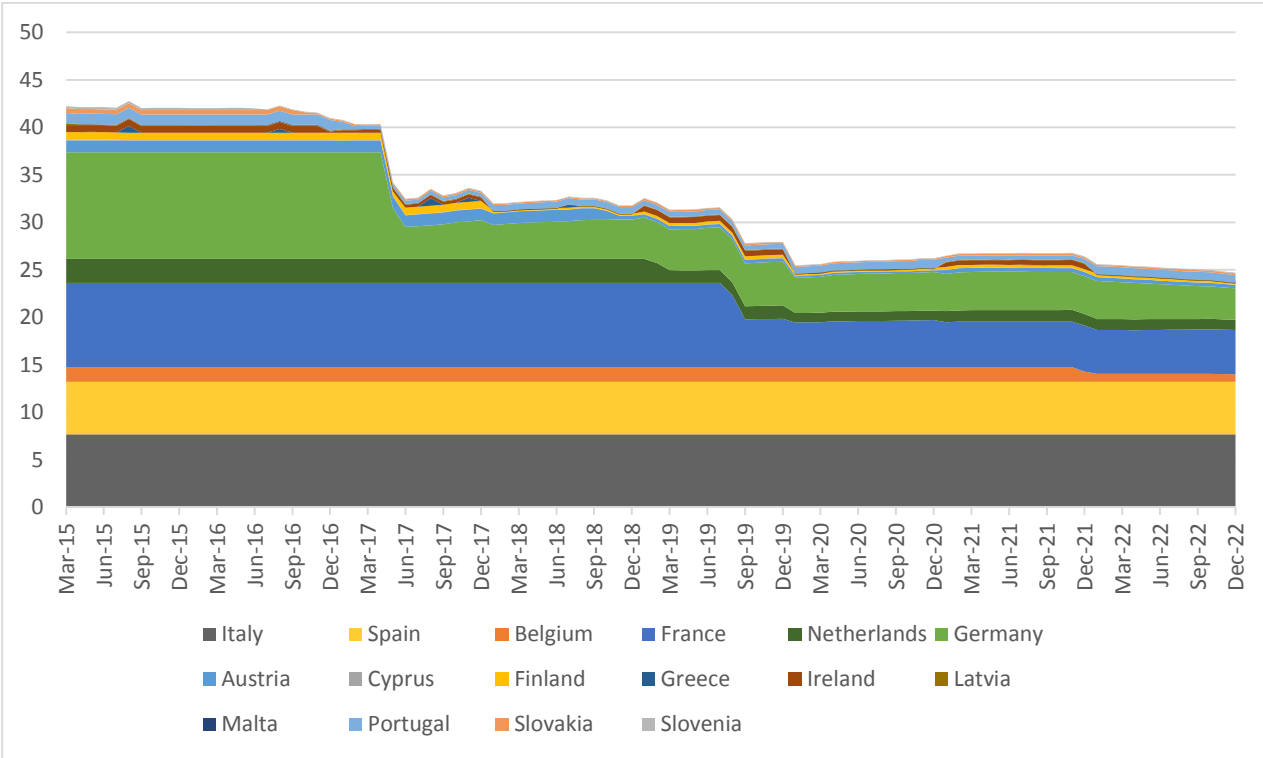


and therefore limited the volume increase). Second, the ECB decided to continue the PSPP past the previously-announced minimum end-date, September 2016, until March 2017, “or beyond, if necessary”. Third, euro-denominated debt issued by regional and local euro-area governments became eligible for purchase. Finally, the ECB declared its intention to reinvest the principal payments on the securities purchased under the programme as they mature, for as long as necessary. This effectively implies that in March 2017, two years after the start of the programme, when the first bonds bought by the Eurosystem will start to mature, monthly purchases of sovereign and agency bonds could exceed €44 billion, as the principals of these maturing bonds will be reinvested.

### 2.3. Limits of the programme in terms of size, duration and composition

Claeys et al (2015b), published at the time of the start of the purchases, calculated when the ECB’s limits would be reached in each euro-area country (Figure 2). In this section we update these calculations<sup>7</sup> in light of the changes to the rules. We also include national agencies in our calculations<sup>8</sup>.

Figure 2: Projection of monthly purchases per country with original rules (excluding national agencies) from Claeys et al (2015b)



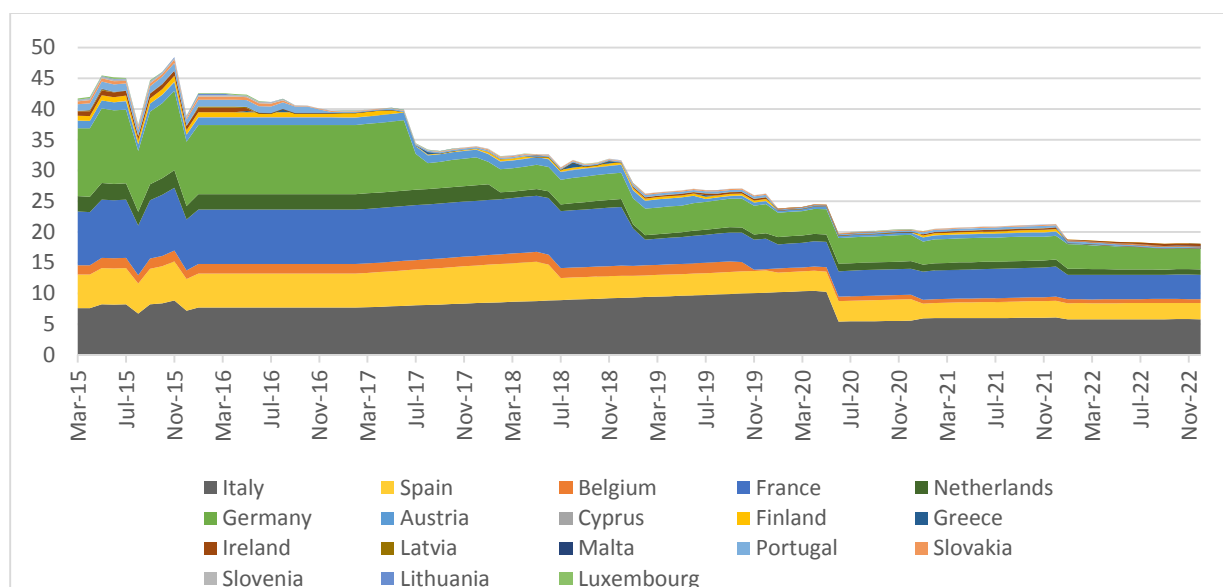
Sources: Bruegel based on ECB, NCBS, National Treasuries, Datastream.  
 Note: Luxembourg, Lithuania and Estonia do not appear on this chart given the very small amount of debt securities of these countries in the market.

<sup>7</sup> The assumptions and method used can be found in the annex to Claeys et al (2015b).  
<sup>8</sup> Note that we do not include here the purchases of supranational bonds, which are also part of the PSPP and represent €6bn per month. Our previous projections of when the limits would be reached for supranational institutions can be found in Claeys et al (2015b). They should be unchanged as long as these institutions’ debt securities contain collective action clauses. However, we were not able to retrieve any information about this. In cases in which bonds do not contain CACs, the limit would be moved to 33% instead of 25%, which would extend the purchase limit from the end of 2016 to mid-2017.

Before September 2015 the issue limit was 25% regardless of the type of bond. Now, however, this limit is 33% if the issue does not contain a collective action clause. Unfortunately, information on whether an issue contains a CAC is not readily available. We know, however, that according to the ESM Treaty<sup>9</sup>, all euro-area government debt securities with maturity over one year issued after 1 January 2013 contain CACs. Therefore, we envisaged two extreme scenarios: in the first scenario, we assume that all eligible debt securities, be they from agencies, local governments, or central governments, have CACs, in which case the Eurosystem can only hold a maximum of 25% of a country's eligible debt securities. In the second scenario, we assume that the only debt securities to have CACs are those issued by central governments after 1 January 2013 (in this scenario, the Eurosystem can hold 25% of each issue containing CACs, and 33% of each issue which does not). Reality will lie between these two extremes.

Figure 3 shows our projections for the monthly purchases, by country, in the scenario in which every debt security contains a CAC. Despite the increase in eligible debt (with the expanded list of agencies, and the new ability to buy regional and local debt), the limits are reached roughly at the same time as in Figure 2, and even earlier in some cases. This is because of the reinvestment of principals, which kicks in in March 2017: it effectively raises the amounts purchased each month, and increases the speed at which the limits are reached. In fact, while redemptions of PSPP holdings will be small at first, they would accelerate quickly as more and more debt securities held by the Eurosystem mature. In Germany, for instance, the holdings maturing in March 2017 will be worth a few million euros, while, were the programme to go on until then, they will be worth roughly €1.5 billion per month in March 2019, which is sizeable because it would increase the monthly purchases of German bonds by approximately 10%. This effectively means that, while the limits will be reached at roughly the same time as before the rules changed, the balance sheet of the Eurosystem will be bigger at that time thanks to the increase in eligible debt.

Figure 3: Projection of monthly purchases per country, including national agencies (Scenario 1: all debt securities contain CACs)



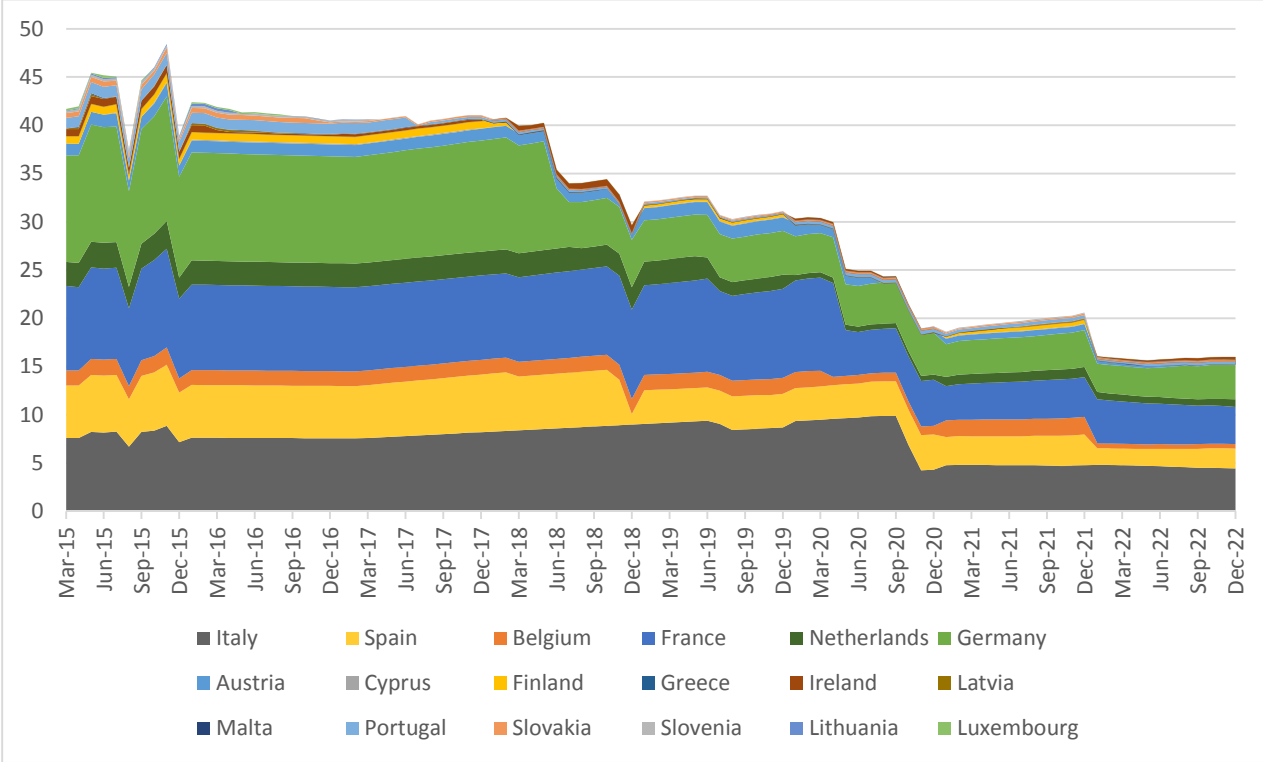
Source: Bruegel based on ECB, NCBs, National Treasuries, Thomson Reuters.

Note: Purchases before January 2016 match the actual purchases made by the Eurosystem (which can be found here <https://www.ecb.europa.eu/mopo/implement/omt/html/index.en.html> ), while they are our projections starting in February 2016.

<sup>9</sup> ESM Treaty Article 12 Paragraph 3.

Figure 4 shows our projections for the second scenario, in which only central government debt securities issued after 1 January 2013 are assumed to contain CACs. The limits will be reached later than in scenario 1, as can be seen easily by comparing figures 2 and 3. For example, while in scenario 1, purchases in Germany are heavily constrained after August 2017, this is not the case until June 2018 in scenario 2.

Figure 4: Projection of monthly purchases per country, including national agencies (Scenario 2: only central government debt issued after the 1<sup>st</sup> of January 2013 contains CACs)

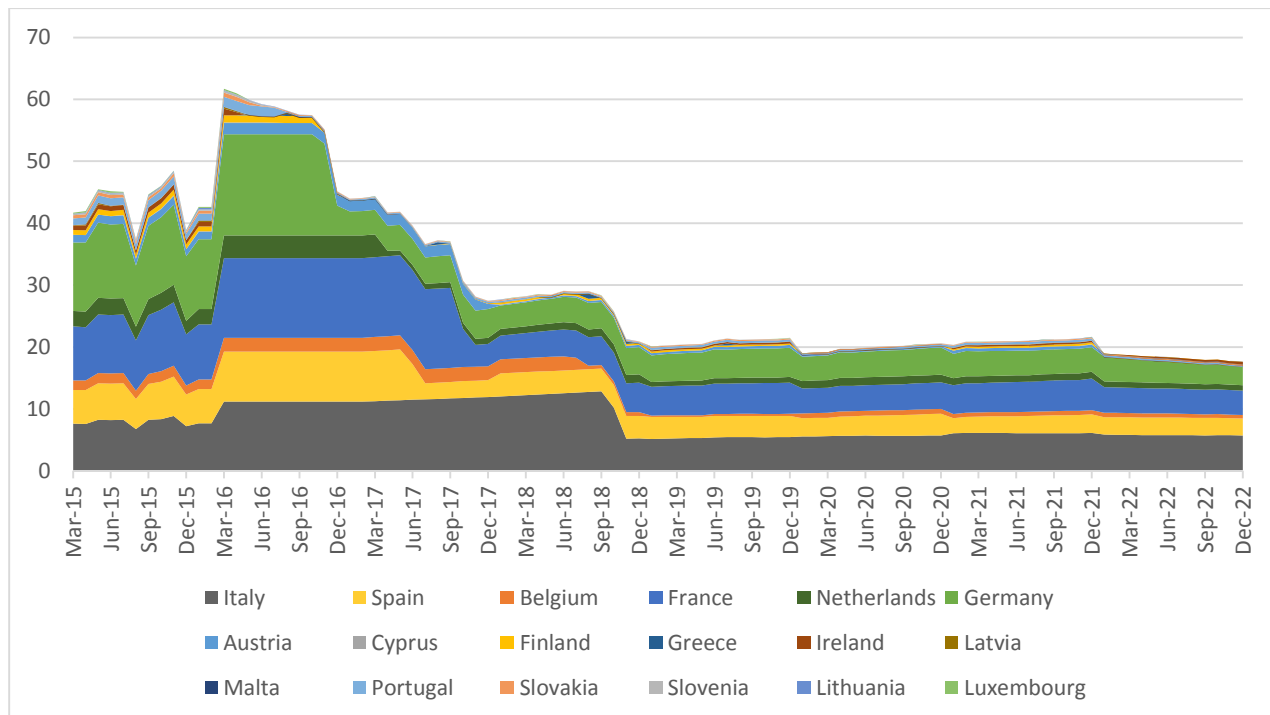


Source: Bruegel based on ECB, NCBs, National Treasuries, Thomson Reuters.

Note: Purchases before January 2016 match the actual purchases made by the Eurosystem (which can be found here <https://www.ecb.europa.eu/mopo/implement/omt/html/index.en.html> ), while they are our projections starting in February 2016.

On 21 January 2016, President Draghi hinted at further easing, given “downside risks” related to heightened uncertainty about the growth prospects of emerging economies, volatility in financial and commodity markets, and geopolitical risks. While this further easing could come in the form of a further reduction in the deposit rate, which would increase the amount of debt eligible for purchase (provided that the yields on these securities do not fall excessively in the meantime), the Governing Council might also decide to increase the amounts purchased each month under the PSPP. The Eurosystem is currently purchasing €44 billion of agency and government debt per month, but this could be raised. In Figures 5 and 6 we show our projections of monthly purchases were the amounts purchased each month to increase from €44 billion to €64 billion in March 2016, in both scenarios. As is apparent, the limits in each country would be reached much more quickly. Under the more restrictive scenario 1, the limit in Germany, the country in which purchases are the highest, would be reached even before March 2017. An increase in monthly purchases might be desirable to provide immediately a more accommodative stance to the euro area’s monetary policy in order to reach the inflation target, but it might not be compatible with a longer duration of the programme if the rest of the programme design remains unchanged.

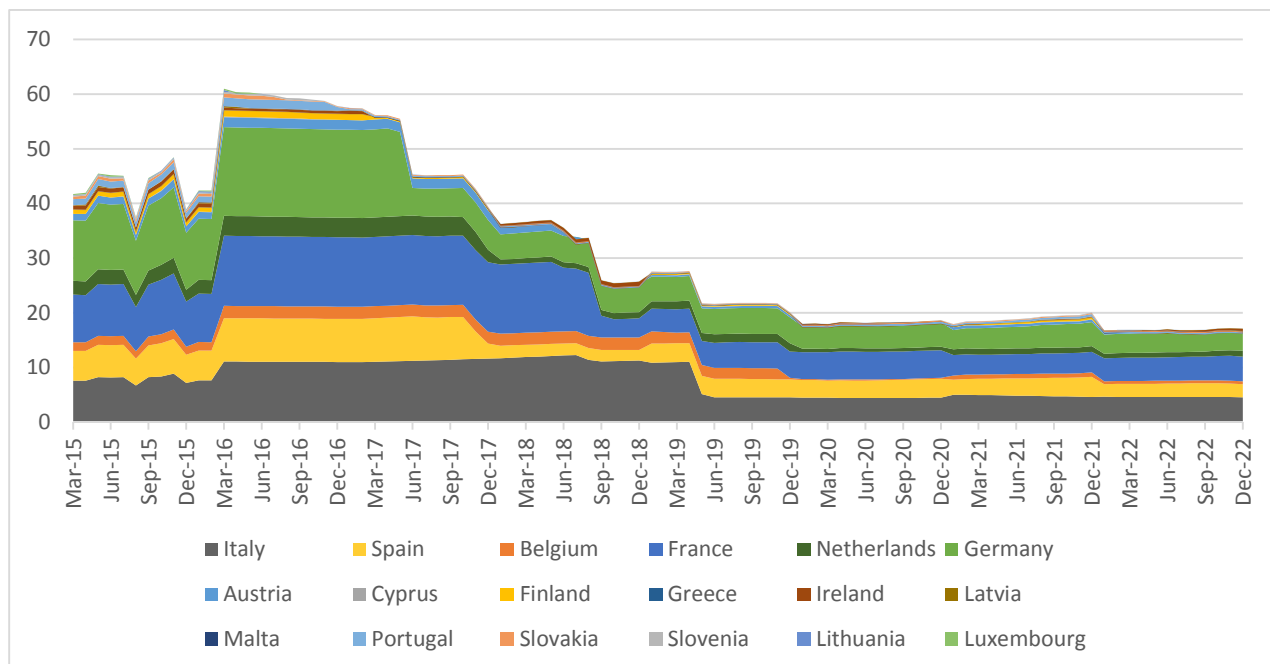
Figure 5: Projection of monthly purchases per country, including national agencies, if amount purchased is increased to €64 billion (scenario 1: all debt securities contain CACs)



Source: Bruegel based on ECB, NCBs, National Treasuries, Thomson Reuters.

Note: Purchases before January 2016 match the actual purchases made by the Eurosystem (which can be found here <https://www.ecb.europa.eu/mopo/implement/omt/html/index.en.html>), while they are our projections starting in February 2016.

Figure 6: Projection of monthly purchases per country, including national agencies, if amount purchased is increased to €64 billion (scenario 2: only central government debt issued after the 1<sup>st</sup> of January 2013 contains CACs)



Source: Bruegel based on ECB, NCBs, National Treasuries, Thomson Reuters.

Note: Purchases before January 2016 match the actual purchases made by the Eurosystem (which can be found here <https://www.ecb.europa.eu/mopo/implement/omt/html/index.en.html>), while they are our projections starting in February 2016.

## 2.4. What could be done to further extend the duration of the programme if necessary?

Claeys et al (2015b) already recommended that the ECB increase the 25% issue limit to address the constraint that it would place on the size and duration of the PSPP. Claeys et al (2015b) also recommended that the list of eligible agencies be broadened. These changes have been put in place since March 2015, but that might not be enough to increase the pool of eligible assets. That is why Claeys et al (2015b) also recommended waiving entirely the issue limit, at least for AAA-rated bonds. This would allow, for instance, longer purchases of German sovereign bonds or European Investment Bank bonds.

The composition of the purchases could also be further altered. As already discussed at length in Claeys et al (2014), there are other types of assets that the Eurosystem could purchase if the ECB QE programme needs to be enhanced to bring inflation back to target. This could lengthen the duration of asset purchases, and increase the monthly monetary stimulus.

The Eurosystem could purchase senior well-rated uncovered bank bonds. While they are riskier than the covered bank bonds which are already being purchased under the CBPP3, the comprehensive assessment carried out by the ECB and national supervisors in 2014 and 2015 should theoretically ensure that euro-area banks are adequately capitalised and can smoothly absorb financial shocks. According to the ECB, there is currently more than €2 trillion of uncovered bank bonds which are eligible as ECB collateral<sup>10</sup> (the Eurosystem collateral eligibility framework is not exactly similar but is roughly comparable to the eligibility criteria of assets for purchase, except for instance in terms of accepted maturity and minimum yield).

Another possibility would be for the Eurosystem to purchase corporate bonds, of which there are almost €1.5 trillion eligible for collateral purposes (although part of these are not euro-denominated, or are issued by corporates outside the euro area, in which case they should not be eligible). Purchases of these securities might have different, or even complementary, effects, as explained in Claeys et al (2014). However, they could help the Eurosystem provide a stronger monetary accommodation for a longer period, and delay worries that the QE programme would reach its limits before the path of inflation is consistent with the inflation target.

Finally, the ECB Governing Council could also decide to change the way purchases are spread across euro-area countries, in order to shift some of the purchases from countries in which the limit will be binding (e.g. in Germany by the Bundesbank) to other national central banks. The first major country in which the limits will be reached is Germany, because the amounts purchased in each country are proportional to the country's capital subscription to the Eurosystem, of which Germany is the largest, while there is proportionally much less outstanding debt in Germany than in Italy, for example. Distributing the purchases across countries according to their outstanding debt instead of distributing them according to the ECB capital keys would lead to limits being reached in every country at roughly the same time<sup>11</sup>. Given the various channels through which asset purchases can influence monetary conditions and thereby economic activity and prices, changing the country distribution of purchases could alter the effects of QE in the euro area<sup>12</sup>, which should be carefully taken into consideration by the Governing Council, were it to take this decision.

<sup>10</sup> Data available at <https://www.ecb.europa.eu/paym/coll/charts/html/index.en.html>

<sup>11</sup> In this case the proportion of debt containing CACs would determine when the limit will be reached in each country, but the timing of the limits in each country will nevertheless be more synchronised.

<sup>12</sup> The signalling, portfolio rebalancing, exchange rate and wealth effect channels could be unaltered by such a decision (depending also on who is selling the securities to the ECB), while the yield differential could be

### 3. POTENTIAL RISKS RELATED TO UNCONVENTIONAL MONETARY POLICY

The unconventional and previously untested nature of these policies poses some legitimate questions regarding their potential adverse consequences for financial stability, inequality and in terms of the credibility of the ECB.

#### 3.1. Risks for financial stability<sup>13</sup>

The ECB's asset purchase programme, combined with the other unconventional monetary measures implemented since 2008 to avoid a full-scale liquidity crisis in the banking sector and the break-up of the euro area, contributes to an accommodative monetary policy stance. Cuts to the central bank rates to close to or even below zero, large-scale asset purchases, long-maturity lending to banks and forward guidance lead to loose monetary conditions that should stimulate growth and bring inflation back towards the 2 percent target. By increasing inflation and output (and therefore public debt sustainability), these measures should benefit financial stability. However, prolonged accommodative monetary policies could also pose some challenges to financial institutions and might have adverse consequences through various channels for financial stability.

One of the purposes of monetary policy is to support the economy by encouraging more risk-taking at a time when risk-taking in the financial system is less than socially desirable. However, if risk-taking becomes excessive and goes beyond what is socially desirable, it might contribute to future financial instability. It is very difficult to say when risk-taking becomes excessive, but as discussed in Claeys and Darvas (2015), banking indicators do not suggest substantially-increased risk-taking over the last six years and show on the contrary a clear tightening of credit standards in the euro area, while bank leverage has declined significantly, which should reduce the risks to financial stability. Bank regulation, stricter supervision and market pressure might have played an important role in limiting financial-sector leverage.

Increases in asset prices disconnected from fundamentals are also often mentioned as a potential side effect of QE programmes. However, while it is true that stock-market indices have been trending higher throughout the world over the last few years, simple equity valuation indicators do not suggest any obvious bubbles. The same appears to be true for housing prices in the euro area<sup>14</sup>.

QE programmes are also accused of threatening financial stability by reducing the profitability of financial institutions. For instance, some life insurance companies in the euro area have liabilities with longer maturities than their assets and are thereby exposed to a decline in interest rates given the guaranteed returns they promise to clients<sup>15</sup>. But it also appears that non-life insurance activities are expected to perform well in the coming years, which might compensate for the declining profitability of life insurance, which is often provided by the same companies. Moreover, as argued by President Draghi in January 2016<sup>16</sup>, even if the ECB monitors the impact of its low rate policy on financial stability, the

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compressed further and therefore have a different effect than in the case with a distribution based on capital keys. It is difficult to know which effects would dominate. See Claeys et al (2014) for details on how these theoretical channels operate.

<sup>13</sup> This section summarises the more in-depth analysis, findings and recommendations of Claeys and Darvas (2015).

<sup>14</sup> See details and graphs in Claeys and Darvas (2015).

<sup>15</sup> In the euro area, German, Austrian and Lithuanian life insurers are the most exposed to this risk. See Claeys and Darvas (2015) for the data on each country.

<sup>16</sup> Draghi (2016): "it's not exactly a mandate to protect banks' profitability, or for this matter insurance companies' profitability. But of course we are aware of the consequences of this, and the best answer to these

ECB's mandate is not per se to ensure the profitability of any particular financial institution, especially if the decline in profitability of this institution arises from an unsustainable business model based on a peculiar maturity mismatch<sup>17</sup>.

Should monetary policy target financial stability explicitly? The global financial crisis has demonstrated that price stability in itself is not sufficient to ensure financial stability. Bubbles and boom-bust credit cycles emerged and eventually led to very high costs in terms of reduced output and unemployment in several advanced countries. A broad consensus has emerged that financial stability issues should be addressed ex ante. However, there is no consensus on the role of monetary policy in supporting financial stability. In our view, monetary policy tools are not well suited to tame financial excesses when the financial cycle deviates from the economic cycle or when financial cycles in euro-area countries differ. Monetary policy should focus on its primary mandate of area-wide price stability. Micro-prudential supervision, macro-prudential supervision, fiscal policy and regulation are the keys to mitigating financial stability risks. It is still too early to judge the effectiveness of the new European frameworks for micro- and macro-prudential supervision. The literature assessing these tools in other jurisdictions has produced some encouraging results, but the complex European set-up could make their implementation less effective.

Overall, as assessed by Claeys and Darvas (2015), the benefits of unconventional monetary policy measures including large-scale asset purchases seem to outweigh their potential risks to financial stability. The ECB should nevertheless be vigilant and be aware of the potential financial stability consequences of its monetary policy actions. Prudential policies, to which the ECB will now contribute via the Single Supervisory Mechanism and the European Systemic Risk Board, should be implemented forcefully in order to create a first line of defence in addressing financial stability concerns and avoiding the build-up of financial imbalances in the euro area.

### 3.2. Distributional effects of QE<sup>18</sup>

The increase in income and wealth inequality observed in many advanced countries in recent decades is a long-term trend and primarily the result of deep structural changes, including skill-biased technological change, globalisation, demographics, institutional and political changes and, in particular, changes to fiscal, educational and labour institutions. Nevertheless, there are some concerns that QE programmes could amplify this trend, at least in the short and medium terms.

Through increases in financial asset prices, central bank asset purchases could increase inequality between the wealthy and poor, between the young and old, and also between regions when they have different financial structures. Increases in the value of assets such as equities and government and corporate bonds will tend to favour the rich who have greater holding of them, as illustrated in Claeys et al (2015a) using the ECB's Household Finance and Consumption Survey (2013). Because older people tend to have higher savings and might sell them in the future in order to maintain their consumption, while younger

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concerns is to make sure that the overall economy returns to growth, to sustainable growth, with price stability, and that's the best answer for the stability of the financial and the banking sector as well."

<sup>17</sup> In theory (for instance in Diamond and Dybvig, 1983), the main role of financial institutions is to transform short-term liabilities into long-term assets in order to provide to depositors liquidity services and at the same time ensure them of the best return as possible. Banks are generally characterised by this maturity mismatch. Life insurances, with longer-term liabilities, do not have to provide a liquidity service to their creditors (or at least not as much as banks) and should therefore not be characterised by a maturity mismatch and should be able to invest almost entirely their liabilities in long-term assets. What we observe in some euro-area countries is the opposite mismatch in which assets are shorter-term than liabilities, which in theory is not optimal because it could be done at the individual level without resorting to a financial intermediary.

<sup>18</sup> This section summarises the in-depth analysis, findings and recommendations of Claeys et al (2015a).



households will usually buy these assets in the future in order to save for retirement, QE programmes might have distributional consequences across generations. QE can also benefit households differently depending on the structure of their financial assets, since certain households could make better use of the opportunity offered by low-interest rate borrowing than others.

However, QE programmes could also reduce inequality through an increase in (or at least a stabilising effect on) housing prices and a fall in interest rates. Housing is the main asset of the middle class<sup>19</sup> and therefore house price increases will tend to compress the wealth distribution. Falls in mortgage interest rates also tend to benefit people with lower incomes who spend a greater share of their income on servicing their debts.

Likewise, the stimulative effects that unconventional monetary policy has on the economy tends to reduce inequality. The empirical literature suggests that asset purchase programmes tend to boost inflation, output and employment. In the absence of these policies, unemployment would thus be higher, which would lead to higher income inequality because the poor and low-skilled are the most likely to lose their jobs in recessions and because wages are the primary source of revenue for poorer and lower-income people.

The ECB's primary mandate is to maintain price stability, and considerations of inequality are not within its purview, unless inequality prevents the transmission of monetary policy in some way. The ECB should therefore focus on its price stability mandate by supporting the fragile recovery now taking place in the euro area. This is the best way for monetary policy to contribute to the avoidance of an increase in inequality.

Another important policy question is how to tackle inequality in general, and whether governments should design special measures in a deep recession or in a situation in which central bank actions increase inequality. For example, in the United States, policies such as the Home Affordable Refinance Programme, which helped homeowners with negative home equity to refinance their mortgages, might have helped dampen the rising inequality that resulted from the housing slump. Fiscal and social policies are the right tools to fight inequality. As documented by Darvas and Wolff (2014), there are huge differences in the efficiency of social redistribution systems in EU countries. For their levels of social expenditure and personal income taxes, several southern European countries and Belgium achieve a much smaller reduction in inequality than other EU countries. Revising national tax/benefit systems for improved efficiency, intergenerational equity and fair burden-sharing between the wealthy and the poor is the right way to fight inequality.

### 3.3. Credibility risks for the ECB

The primary mandate of the ECB is to ensure price stability in the euro area, and the ECB's credibility is based on fulfilling this mandate. If inflation deviates significantly from "below but close to 2%" for a prolonged period of time, expectations might start to deviate as well, and companies and households might start making decisions concerning wages and prices with a different inflation anchor in mind, which could be very dangerous given the self-fulfilling nature of inflation expectations. Since the beginning of 2013, inflation has been trending well below its target and expectations have started drifting downwards as a result. The ECB has thus not been fulfilling its mandate and is therefore at risk of losing its credibility.

On the contrary, the fear that the ECB will lose its credibility because of the significant amount of sovereign bonds it is currently buying appears to be unfounded for several reasons. First, it is true that if inflation was running well above the 2% target and that the ECB was buying sovereign bonds with the sole objective of easing financing conditions on

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<sup>19</sup> See the various graphs illustrating these points in Claeys et al (2015a)



government debts despite the fact that it could drive inflation further above the target, then the ECB could easily lose credibility and put itself in a very dangerous situation. However, the current situation is the opposite. Inflation is currently very low and the ECB needs to avoid at all costs that the inflation expectations of euro-area citizens and companies become disanchored. Without the option of easing monetary conditions further through rate cuts, the ECB had to resort to QE, like every other major central bank, in order to provide the necessary accommodation to fulfil its mandate.

Second, since the launch of the PSPP, the ECB Governing Council has been very careful to avoid breaching the prohibition of monetary financing included in the EU Treaty. The 25 percent issue limit for bonds containing CACs is there to prevent the ECB from having “a blocking minority in a debt restructuring involving collective action clauses” (ECB, 2015). This clearly indicates that the ECB does not want to be in a position in which it would have the power to block a potential vote on the restructuring of the ECB-held debt of a euro-area country, because not blocking such a restructuring could be interpreted as monetary financing of a member state. On the contrary, if a majority of creditors with collective action clauses would accept a restructuring of some bonds, the ECB could do nothing against such a restructuring and would have to accept it. Because it would not be voluntary, it would not be considered as monetary financing and would therefore not be in contradiction with the EU Treaty.

In our view, the problem is that the ECB has been so careful to avoid the possibility of monetary financing ex ante that it has put the operational implementation of its QE programme at risk by constraining it too much, as detailed in section 2. The ECB should instead try to balance both the risk of breaching the monetary financing prohibition and the risk of not fulfilling its mandate because of the limits imposed on its own QE programme. For instance, the risk of monetary financing of an AAA-rated government such as Germany's appears to be currently negligible and should not act as a constraint on the full implementation of the programme and the achievement of the ECB's mandate. We therefore renew our recommendation to the ECB to waive the 25% limit, at least for well-rated countries, in order to simplify the implementation of its QE programme.

## CONCLUSIONS

The sovereign quantitative easing programme of the ECB finally started in 2015. This decision was welcome given the clear downward trend in inflation and the feeble recovery of the euro area in the last few years.

Nevertheless, in a monetary union such as the euro area, with multiple sovereign debt securities, the execution of such a programme is very complex. The ECB Governing Council imposed limits to ensure ex ante that the ECB would not breach the prohibition of monetary financing. However, our updated calculations show that these limits will constrain the duration and size of the programme throughout 2017, even when taking into account the changes announced throughout 2015, and especially if the ECB decides to increase its monthly purchases. We recommend that the ECB further alter the programme guidelines. Changes could include the purchase of corporate bonds as well as senior well-rated uncovered bank bonds. A more radical change would be to move away from an allocation of asset purchases between countries based on the ECB capital keys, to an allocation based on the actual size of countries' outstanding debts.

Additionally, the extension of the QE programme raises some legitimate questions on its potential adverse consequences. In our assessment, the benefits outweigh the potential negative implications, for instance for financial stability or for inequality. Central banks should of course be aware of the potential side effects of their actions (which are generally temporary), but issues of financial stability and inequality are mainly the result of deep structural changes, and therefore other policies remain essential to deal with them. Micro and macro-prudential policies should constitute the first line of defence to avoid the build-up of financial imbalances, while fiscal and social policies are the right tools to fight the current rise in inequality in advanced countries.

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DIRECTORATE GENERAL FOR INTERNAL POLICIES  
POLICY DEPARTMENT A: ECONOMIC AND SCIENTIFIC POLICY

# Rooms for extension of the ECB's quantitative easing programme

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## IN-DEPTH ANALYSIS

### Abstract

The announcement of an extension of quantitative easing (QE) until March 2017, at least, has cast doubts on the strength of the Euro area recovery and it has raised concerns about the credibility of the ECB. In this contribution, we argue that the current design of QE prevents unlimited monetary accommodation and, meanwhile, it may reduce the effectiveness of QE. Extending QE again through a modification in its design is thus possible. It will be effective provided governments and the ECB are able to cooperate.

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## EXECUTIVE SUMMARY

- Considering the extension of the quantitative easing (QE) programme announced on December 3<sup>rd</sup>, 2015, the ECB would hold 11% of the stock of debt issued by central and other government tiers of Eurozone countries in March 2017. The proportion of debt held by the ECB would remain relatively limited in comparison with public debt holdings by other central banks. The Federal Reserve, the Bank of England and the Bank of Japan hold respectively 13.5%, 22.5% and 27.1% of public debt issued by their respective governments.
- The criteria set by the ECB regarding its ability to purchase securities in the secondary market may limit the scope for increasing the size of the Public Sector Purchase Programme (PSPP). Yet, under its current design, the ECB's purchase of public securities would amount to €520bn in 2016, representing 38% of total financing needs of Euro area governments.
- To amplify the monetary stimulus, the ECB should decide to remove the 25% purchasing limit, should remove the deposit floor constraint on purchases, should target new types of securities (i.e. corporate debts or sovereign derivatives) and should deviate from the capital shares, hence increasing risk-sharing of the programme.
- Insolvency and inflation risks should not be overestimated. Today's risk for ECB's credibility is not to increase inflation but to be unable to avoid below-target inflation and deflation.

"If at first you don't succeed, Mr. Kidd", "Try, try again, Mr. Wint."  
Diamonds are forever, directed by G. Hamilton

## 1. INTRODUCTION

In January 2015, the ECB announced a substantial increase in its asset purchase programmes. Until then, the ECB had been buying asset-backed securities (ABS) and covered bonds (CB) for an approximate amount of €10bn per month. Following the January 2015 announcement, the total assets purchases has risen to €60bn per month. The additional purchase of €50bn of assets per month is made through the Public Sector Purchase Programme (PSPP). This programme consists of €6bn of debt securities of EU supranational institutions and €44bn of debt securities of sovereign, national agencies and national utilities. The programme started in March 2015 and was initially supposed to last at least until September 2016.

Following the Governing Council of the 3<sup>rd</sup> December 2015, the President of the ECB announced the decision to extend the length of the programme until March 2017 at least. The monthly amounts stand still but eligible assets have been extended to regional and local governments' bonds. Besides, the ECB also announced a reduction in the deposit facility rate, which stands now at -0.3%.

It is interesting to note that this extension has been either perceived as a disappointment, because it was of a limited size, or as a threat to the ECB's credibility, because it produced a growing size of its balance sheet, some quasi-fiscal policies and a possible risk of insolvency.

In the following, we first discuss the size of QE and highlight the constraints that the ECB has imposed itself to limit its QE policies. These constraints, as they stand, up to now, limit its margins for maneuver and should help refraining fears of unlimited monetary accommodation.

Second, having said that does not preclude from discussing the possible risks of the QE extension. If the risk of inflation and the risk of insolvency are non-negligible risks, this is certainly because they both relate to a possible lack of coordination between ECB monetary policy and fiscal policies. We will argue that though important, this risk remains low in the European context.

Another kind of risk finally relates to the timing of the announcement. The precocity of the extension announcement, which is maybe intended to counter-balance the delay in announcing the QE programme, leaves open the question of future margins for maneuver for the ECB. What would they be and would the overall design of the new programme have to change? The question of the extension of eligible assets would be posed as would be the possible increase in the monthly assets' purchases. The question of QE effectiveness is thus central in this respect. We briefly review the options.

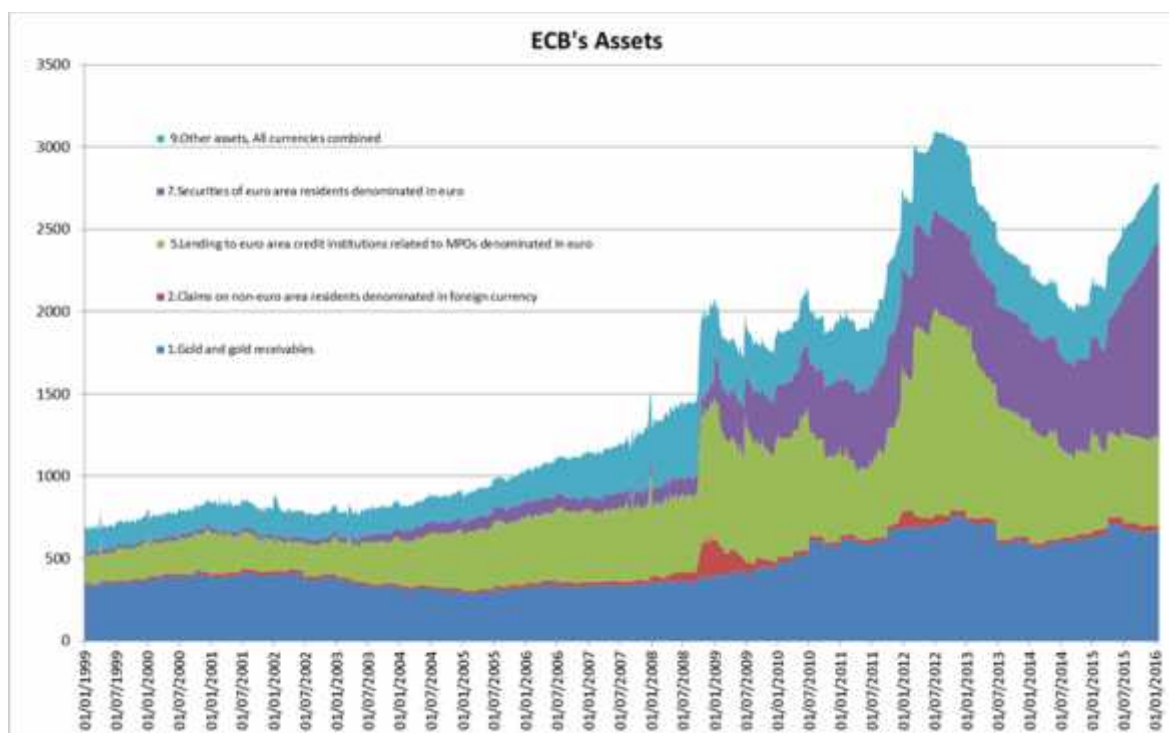


## 2. EXTENDING QE: HOW AND HOW MUCH?

The extension in the duration of the Asset Purchase Programme (APP) to March 2017 with the monthly purchase rate maintained at €60bn consists in a €360bn increase in the size of the APP. The Governing Council maintained its language that the programme would continue until a sustained adjustment in inflation, suggesting that a further extension beyond March 2017 would be possible if inflation remained low. The ECB also announced the reinvestment of principal payments, so when bonds mature the ECB will reinvest the principal.

Under the PSPP, national securities are purchased in proportion to the Eurozone's national central banks' shareholdings of the ECB (in effect, in proportion to the size of national economies). With the extended PSPP, the size of the ECB's balance sheet will increase and may rapidly resume the peak above €3,000bn observed in August 2012<sup>1</sup> (see figure 1). At the time of announcement, the total assets held by the ECB amounted to €2,200bn. The total assets to be purchased in this window are now supposed to reach €1.5 trillion. In March 2017, the ECB would hold 11% of the stock of debt issued by central and other government tiers of Eurozone countries.

Figure 1: ECB's balance sheet (assets), € Billions



Source: ECB.

As a matter of fact, the ECB provides information on the breakdown of purchases realized since March 2015. Under a stable allocation of debt instruments' purchases by the ECB, we can infer the proportion of European debts held by the ECB by March 2017 (table 1).<sup>2</sup> In December 2015, total purchases of sovereign assets issued by Euro area governments

<sup>1</sup> At the time of the first announcement on the PSPP in January 2015, the total assets held by the ECB amounted to €2,200 billion and the President of the ECB Mario Draghi explicitly formulated at several occasions in 2014 the objective of increasing the size of the balance sheet.

<sup>2</sup> See <https://www.ecb.europa.eu/mopo/implement/omt/html/index.en.html>.

amounted to €434.8bn, hence 4.5% of total gross public debt. Taking into account the SMP, the ECB is holding 5.7% of gross public debt issued by Euro area governments. Consequently, the ECB has become a significant actor in the market for public debt in the Euro area. It will become a more significant one after the QE extension. Considering a stable breakdown of purchases computed as the monthly average of purchases in 2015, we can compute the expected amount and allocation of debt securities that could be held by the ECB in March 2017.<sup>3</sup> Overall, the ECB holdings of debt securities would represent 11.1% of total gross public debt of the Euro area<sup>4</sup>. The ECB would hold, for example, 9% of Italian debt, 11% of French debt, 13% of German and Spanish debt, 15% of Finnish debt and 28% of Slovakian debt.

Table 1: Gross public debt and ECB holdings of sovereign

	Gross public debt (2015) Billion, national currency	Central bank holdings (31.12.2015), Billions national currency*	Central banks holdings (31.12.2015) as % of gross public debt*	Central banks holdings (PSPP+SMP) (31.12.2015) as % of gross public debt	Planned ECB holdings (31.03.2017), Billion euro *	Planned ECB holdings (31.12.2017) as % of gross public debt*
Belgium	437.7	15.9 (3.7)	3.6	3.6	39.7	9.1
Germany	2156.8	115.6 (26.6)	5.4	5.4	289.1	13.4
Estonia	2.1	0.0 (0.0)	0.0	0.0	0.0	0.0
Ireland	203.7	7.6 (1.7)	3.7	7.6	19.0	9.3
Greece	337.3	0.0 (0.0)	0.0	4.6	0.0	0.0
Spain	1087.3	56.8 (13.1)	5.2	7.5	142.0	13.1
France	2098.9	91.8 (21.1)	4.4	4.4	229.4	10.9
Italy	2174.4	79.2 (18.2)	3.6	6.5	198.0	9.1
Cyprus	18.5	0.3 (0.1)	1.5	1.5	0.7	3.8
Latvia	9.4	0.7 (0.2)	7.3	7.3	1.7	18.2
Lithuania	15.8	1.1 (0.3)	7.0	7.0	2.8	17.5
Luxembourg	11.2	1.1 (0.3)	9.9	9.9	2.8	24.8
Malta	5.6	0.3 (0.1)	5.1	5.1	0.7	12.6
Netherlands	467.9	25.6 (5.9)	5.5	5.5	64.0	13.7
Austria	291.2	12.6 (2.9)	4.3	4.3	31.6	10.9
Portugal	229.0	11.2 (2.6)	4.9	10.2	28.1	12.3
Slovenia	32.4	2.2 (0.5)	6.9	6.9	5.6	17.2
Slovakia	41.2	4.6 (1.1)	11.2	11.2	11.6	28.0
Finland	130.3	8.1 (1.9)	6.2	6.2	20.2	15.5
<b>Euro area</b>	<b>9758.4</b>	<b>434.8 (100.0)</b>	<b>4.5</b>	<b>5.7</b>	<b>1086.9</b>	<b>11.1</b>
Supranationals		60.1			150.26	
U. Kingdom	1664.8	375.0	22.5			
United-States	18189.0	2462.0	13.5			
Japan	1197146	325001.9	27.1			

\*: PSPP only for the ECB. % of total sovereign purchases in brackets.

Sources: ECB, European Commission, OFCE.

The proportion of debt held by the ECB, though on an upward trend, remains relatively limited in comparison with public debt holdings by other central banks in the world like the Federal Reserve, the Bank of England and the Bank of Japan. Indeed, the ECB would hold a smaller share (11.1 %) of total debt in 2017 than the US Fed at the end of 2015, with its

<sup>3</sup> Without taking into account the residual amount held from the SMP.

<sup>4</sup> In December 2015, the ECB has decided to include in the PSPP euro-denominated marketable debt issued by regional and local governments located in the euro area. This decision would yet leave unchanged the estimate above since regional and local governments debt is consolidated with central government debt.

holdings of 13.5% of US public debt. The £375bn held by the Bank of England through its QE programmes<sup>5</sup> represented 22.5% of total debt issued by the British government. By the end of 2015, the Bank of Japan was holding more than a quarter of Japanese total public debt.

The purchases of debt instruments by the ECB have also appeared limited as far as financial market expectations are concerned. Actually, before QE extension, financial market operators had expected an increase in debt purchases of €650bn.

An important question about QE has been its incidence on risk and allocation of it. The ECB indicated that the credit risk of the €6bn debt of the supranational EU institutions and €4bn of the national debt securities would be shared across the Eurosystem according to shareholdings. The credit risk of the remaining €40bn of national securities would remain with the national central bank of the issuer. In practice, sovereign debt purchases with national risk sharing are limited by the loss absorption capacities of the national central banks.

It is noteworthy that PSPP risk-sharing is lower than that involved by the Securities Market Programme (SMP) in 2010-2012 with its acquisition of €220bn public and private debt securities from Greece, Ireland, Italy, Portugal and Spain to be held to maturity. Within the SMP, profits and losses are shared across national central banks according to the ECB's shareholdings rather than borne by the national central bank of the issuing government. The PSPP also differs substantially from the Outright Monetary Transactions (OMT) instrument, as announced in September 2012. OMT enables the ECB to purchase the debts of distressed Eurozone sovereign states as a stabilizing mechanism. In this case, the ECB has stated its intention to hold purchased bonds on its own balance sheet, effectively sharing the associated risks among all Eurozone member states.

The current design of the PSPP limits the scope for increasing its size. The ECB has indeed fixed rules limiting the amount of securities that can be purchased in the secondary market. First, bonds must have a remaining maturity between 2 and 30 years. Then, the ECB cannot buy assets for which the yield is below the deposit rate. The proportion of German/French bonds yielding below the deposit rate (and hence ineligible) (see figures 2a and 2b) is a key consideration in explaining why the ECB decided to cut further the deposit rate in December 2015, from -0.2 to -0.3%. It has lifted a bit the limit and therefore permitted the ECB to keep on buying "safe" German and French public debts. Second, under the current programme, government bonds are purchased in proportion to the ECB's capital shares. The ECB can buy up to 33% of a country's outstanding stock of eligible bonds (the limit is 25% for bonds with collective action clauses, CACs, to ensure that the ECB will never hold a blocking minority). Since government debt is not distributed uniformly across the Euro area, the purchase limit is self-limiting as it can bind on different countries at different times. The smallest countries are already close to the limits and will have insufficient domestic debt to fulfill their quotas. The programme therefore allows for affected central banks to purchase supranational bonds. However, because supranational purchases account for 12% of the overall stock of purchases, reallocation of debt purchases towards supranational bonds will not always be possible, e.g. if the domestic debt limit is hit in a large country.

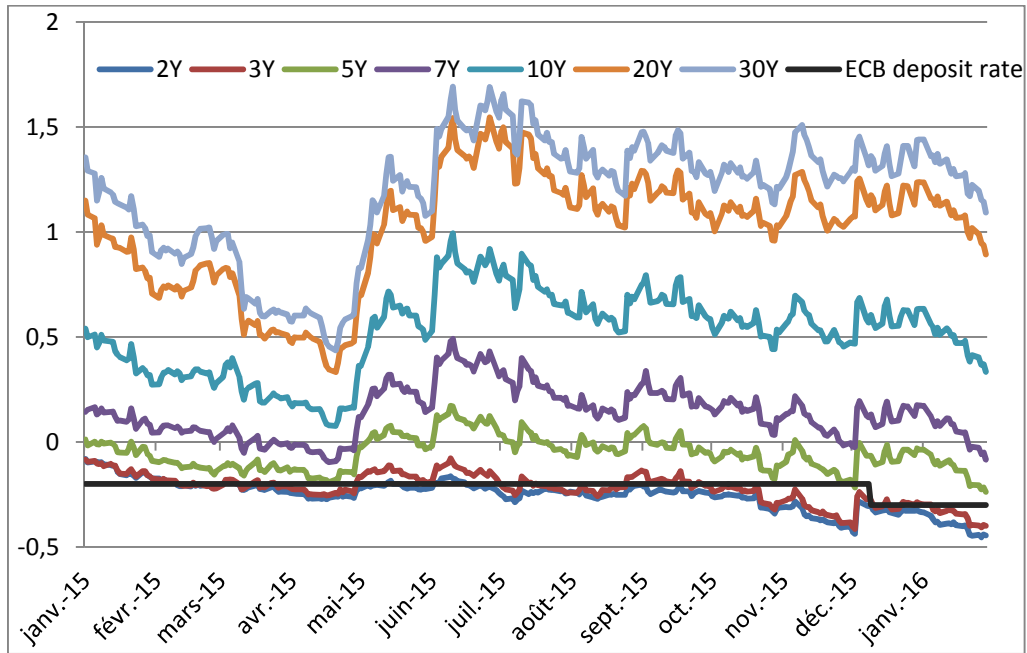
Actually, based on projections of countries' borrowing requirements, small countries are approaching the debt limits suggesting that the ECB will have to switch to supranational debt purchases. Germany may hit the limit shortly after September 2016, with Portugal and Finland not far behind, or Latvia, Luxembourg and Estonia, as emphasized by Clays,

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<sup>5</sup> The QE in the UK started in March 2009 after the BoE announced £200bn purchases of Gilts. The programme has come to a halt until October 2011 and resumed (it was then called QEII) to reach £375bn in November 2012.

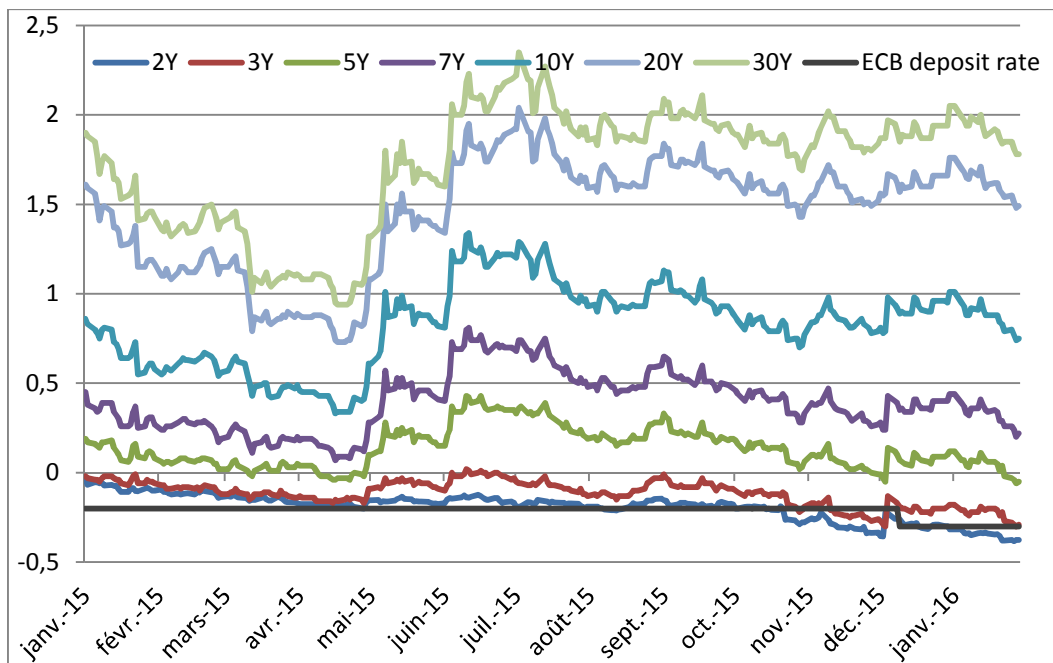
Leandro and Mandra (2015). In Portugal, the limit is notably reached because of the SMP programme. That suggests only little scope for extending the programme under its current design.

Figure 2a. Sovereign yields in Germany at different maturities (in %)



Sources: Datastream, ECB

Figure 2b. Sovereign yields in France at different maturities (in %)



Sources: Datastream, ECB

### 3. EXTENDING QE: WHAT RISKS?

With QE, ECB has engaged in a new way of conducting monetary policy.<sup>6</sup> Before the financial crisis, the conduct of monetary policy boiled down to fixing the policy rate and providing liquidity – through main refinancing operations (MRO) and long-term refinancing operation (LTRO) – in order to bring the short-term market rates close to the target fixed by the central bank. Liquidity was provided against collateral limiting the risk of central bank operations.<sup>7</sup>

With the financial crisis, central banks have entered a new era where criteria for collateral have been modified, where the size and composition of the balance sheet's assets have been significantly altered. The ECB holds covered bonds, asset-backed securities and sovereign bonds. The central banks actions now entail risks. Thus, there is a possibility that asset purchased by the ECB (either through the PPSP, or ABSP or CBPP) programmes become worth much less, either because people later worry more about default, or because one government actually defaults, or exits the Euro area. ECB may then suffer from capital losses. The issue then arises of a potential need to recapitalize the ECB or national central banks, and eventually of central bank's insolvency. Another issue relates to so-called on-going "quasi-fiscal" policies by the ECB and their impact on inflation.

#### 3.1 Insolvency risk

Can central banks go bankrupt? It might be considered that this risk is limited as they issue a specific liability: central banks' reserves, held by the financial sector. Central banks issue base money (reserves held by banks and paper money), which may be considered as a non-interest bearing liability.<sup>8</sup> Following this argument, central banks would always be solvent. There are yet limits to the issuance of base money and even if central banks are not under the same regulations as commercial banks, troubles may arise. They have already occurred in the past, as reminded by Stella and Lönnberg (2008).

Intertemporal insolvency is the most relevant concept to assess the financial position of central banks (see Reis, 2013, 2015, and the appendix). It explicitly takes into account as a liability the present discounted value of expenditures (the future costs of running central banks – administrative costs – and future payments to the Treasury) and the present discounted value of revenues: seigniorage profits (interest saved on the current and future stocks of non-interest bearing liabilities<sup>9</sup>). Insolvency occurs when seigniorage revenues do not cover present discounted expenditures. This approach accounts for the possibility of central banks to increase assets to a very large value and finance these asset purchases by issuing reserves. It is clearly the argument according to which central banks would never fail. Yet, considering that functioning costs are negligible and for given expected payment to the Treasury, central banks' solvency boils down to the ability for central banks to raise seigniorage revenues.

May revenues from seigniorage become infinite? The answer is no. If central banks issue reserves to finance assets purchases, the banking sector may seek to exchange excess reserves for banknotes. Therefore, real revenues from seigniorage are limited by the demand for money and eventually eroded by inflation. Then, there would be a need to

<sup>6</sup> It was actually already the case with CBPP, SMP or even with other unconventional monetary policy measures. Yet, the size of PSPP makes this change more significant.

<sup>7</sup> Monetary policy operations in the United States did not consist in direct lending to the banking system but in Treasuries purchases. Yet, the Fed only purchased short maturity assets limiting the risk of its portfolio.

<sup>8</sup> Actually, most central banks (including the ECB) have decided to remunerate reserves. Yet, this interest rate is lower than interest rate earnings on assets held by central banks.

<sup>9</sup> The central bank issues reserves and may acquire assets in counterparty. Revenues are then the interest paid on those assets financed by issued reserves.

recapitalize the central bank. It is generally supposed that seigniorage revenues are hump-shaped so that they decrease beyond a threshold level.

According to several authors central banks are inherently linked to governments so that central banks' finance is not an issue (central banks finance has to be consolidated with government finance). Treasury always provides a financial backup to central banks and central banks cannot be insolvent separately from governments. According to Buiters (2006), "the concept of a financially independent central bank is therefore, in substance, vacuous, whatever the formal legal status of the central bank... First the inflation target has to be financeable by the state, that is, the consolidated central bank and government. Second, when monetary policy is institutionally delegated to central bank, the Treasury has to stand behind the central bank".

Yet, for the ECB, no central government stands behind the ECB but national central banks. It may be argued that it makes no difference if NCB's are backed by national governments and the ECB is backed by NCB's. However, as emphasized by Stella and Lönnberg (2008) governments do not always stand behind central banks. First, they may sometimes be reluctant to meet their commitments. Besides, in some countries, independence issue is so strong that it is explicitly stated (by law) that "the central bank is not responsible for the liabilities of the state and the state is not responsible for the liabilities of the central bank". It is notably the case for the Baltic states. Yet, for most Euro area countries, governments would certainly stand behind national central banks. However, they may not be able to recapitalize them. ECB and national central banks are indeed exposed to sovereign risk. It is doubtful though that governments would be able to recapitalize any central bank suffering from capital losses on Treasury securities. Then, central banks' insolvency is either inherently linked to government insolvency or to inflation risk.

### 3.2 Inflation risk

QE operations are sometimes referred to as "quasi-fiscal" operations as they do not conform to traditional monetary policy (Park, 2015). According to Goodfriend (2011), "quasi-fiscal operations" are operations putting taxpayers at risk; hence they are equivalent to fiscal decisions. This argument can be related to the Fiscal theory of the price level (FTPL) (Sims, 1994; Woodford, 1994) which draws extensively on the interactions of fiscal and monetary policies at the equilibrium (Leeper, 1991). Del Negro and Sims (2015) have recently discussed, in this framework, about the Fed's QE policies and concluded that fiscal backing by the Fed did not pose any issues of Fed's solvency except under extreme conditions, namely hyper-inflations.

The FTPL discusses about the fiscal requirements for achieving a stable economic system, according to the nature of monetary policy. In case the latter is aggressive at taming inflation, fiscal policy ought to target a stable debt-to-GDP ratio unless the economy is unstable. Otherwise, fiscal policy can be relieved from the objective of fiscal sustainability because monetary policy leaves the consumer price jump so that the real value of debt stabilizes in proportion to GDP. The FTPL works like a Quantity theory of Public Debt: in contrast with the Quantity theory of money according to which higher money creation leads to higher prices, the FTPL states that higher nominal debt eventually leads to higher prices when the central bank is "passive".

The current QE programme by the ECB nicely fits into this framework. The purchases of debt instruments ease the financing conditions of governments (bond prices are going up and yields are going down) and as a counterpart, the ECB is increasing high-powered money. This may lead banks to increase reserves or lead to higher money creation, then inflation. Does it mean a higher risk? No, in theory, as the price jump occurs at equilibrium.



Stated differently, nominal values are growing, but real values remain constant. The QE experiment is thus embedded in a general equilibrium framework, i.e. a stable framework.

What about the inflation risk in practice? As a matter of fact, if inflation increases above ECB's target, ECB's credibility will be undermined. Yet, QE and the decision to extend it beyond September 2016 have precisely aimed at reshaping inflation's expectations in order to finally meet the 2% inflation target in the medium term. Therefore, today's risk for ECB's credibility is not to increase inflation but to be unable to avoid deflation.

QE programmes carry some risks of insolvency or inflation. A prerequisite to a stable equilibrium is cooperative behaviors by governments and the central bank. Yet, those risks are currently rather limited, with governments aiming at limiting their debt-to-GDP ratios, whereas deflation risk remains pervasive. Being passive and still resorting to standard central banking would be far riskier as the Euro area's prolonged depression would fuel deflation, hence posing a threat to central bank credibility.

## 4. EXTENDING QE AGAIN: IS IT POSSIBLE?

Given the limited increase in the size of the APP, the reason for the extension of December 2015 has remained unclear. The ECB could have announced the extension of the APP later; it could have completed it with a size extension in December 2015 without extending it to new asset types. The ECB has sent two signals. The first one relates to the availability of debt instruments. Due to the internal limits, there may have been risks of scarcity on the Treasuries' markets. Extending QE to new assets like regional debt instrument is a good way to circumvent the possible scarcity of debt instruments. Keeping in mind that Germany and Spain have large and liquid regional debt markets, QE extension has been targeted to cope with and resolve scarcity. Second, QE extension can be interpreted as a type of "forward-guidance". With the announcement of continuing asset purchases until March 2017, the ECB has signaled its will to maintain short-run interest rate at their current (low) level until then. This reflects the perceived risk of continuing below-target inflation by the ECB. Does this mean that QE could be extended in size and/or to new assets?

As we have argued, there is only limited room for scaling up the QE programme under its current design. Increasing its size or its allocation would thus require some modifications in its design.

First, the ECB could decide to remove purchasing limit (the 33% limit for bonds without CACs). This would generate a long-lasting and sharp influence on debt liquidity and may improve the effectiveness of QE. As a matter of fact, an important transmission channel of QE is the portfolio balance effect.<sup>10</sup> The central bank's purchases push prices of sovereign assets up and lead investors to seek for close substitutes. In the end, sovereign yields decrease and corporate yields as well. Investors can also switch to foreign (non-European) sovereign assets leading to currency depreciation. Consequently, the effectiveness of the portfolio balance effect is high if the central bank alters significantly the market liquidity of public debt by buying large amounts of sovereign assets.

Actually, in 2015 the total purchases of government public debt securities (excluding supranational purchases) by the ECB have been €434.8bn whereas estimates of financing needs have amounted to €1,400bn. It must be reminded that securities are not purchased on the primary market but on the secondary market. Yet comparing assets purchases with yearly issuance of securities provides information on the liquidity impact of ECB decisions and then on its ability to influence sovereign assets' prices. In the case of Slovakia (see table 2), the ECB purchases amounted to €5.2bn in 2015 approaching 90% of the Slovakian financing needs. If the ECB had realized its operations on the primary market, it would have acquired nearly all assets issued during the year. 10% would have been left to other investors forcing them to switch to other assets. With €115.6bn purchases of German bonds, the ECB has absorbed the equivalent of 66% of financing needs. Supposing that ECB monthly purchases for 2016 are of the same amount as in 2015, the ECB would then buy 79% of the German financing needs. To compare with the implementation of the QE I and QE II of the Bank of England, purchases realized in 2009 (respectively in 2012) have represented 97.2 % (respectively 76 %) of Gilt issuances.

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<sup>10</sup> See Blot, Creel, Hubert and Labondance (2015).



Table 2. Public financing needs and ECB yearly purchases of public debt securities

	Total financing needs in (€ bn)		ECB PSPP purchases (€ bn)		ECB PSPP purchases (in % of financing needs)	
	2015	2016	2015	2016	2015	2016
Belgium	80.8	76.3	15.9	19.1	19.7	25.0
Germany	175.2	175.2	115.6	138.8	66.0	79.2
Estonia	na	na	0.0	0.0	na	Na
Ireland	20.8	16.7	7.6	9.1	36.4	54.4
Greece	na	na	0.0	0.0	na	Na
Spain	231.9	236.2	56.8	68.2	24.5	28.9
France	376.3	395.9	91.8	110.1	24.4	27.8
Italy	349.9	323.7	79.2	95.1	22.6	29.4
Cyprus	na	na	0.3	0.3	na	Na
Latvia	na	na	0.7	0.8	na	Na
Lithuania	3.1	2.8	1.1	1.3	35.8	48.1
Luxembourg	na	na	1.1	1.3	na	Na
Malta	0.5	0.7	0.3	0.3	52.9	50.0
Netherlands	73.7	56.6	25.6	30.7	34.8	54.3
Austria	25.2	24.9	12.6	15.2	50.1	61.0
Portugal	35.9	31.3	11.2	13.5	31.3	43.1
Slovenia	3.5	5.5	2.2	2.7	63.0	49.0
Slovakia	5.2	6.8	4.6	5.5	89.6	81.6
Finland	16.9	17.5	8.1	9.7	47.9	55.4

Sources: ECB, IMF (Fiscal monitor, April 2015)

Note: Financing needs are calculated as the sum of new debt resulting from budget deficit and debt arriving to maturity.

Second, the ECB could remove the deposit floor constraint on purchases. This would permit to purchase all “safe” debts (with a negative yield). A glance at figures 2a and 2b shows that the loss incurred by the ECB (the yield on some assets could fall below the yield on some liabilities) would be small.

Third, the ECB could target new types of securities, i.e. corporate debts or sovereign derivatives. While the current spot curve means that German Bunds with residual maturity of less than 3½ years are yielding below the deposit rate, and so are ineligible, the forward curve shows that all Bunds with maturities more than 2 years are eligible (with yields above -0.3%) by the end of 2016. So the proportion of total debt that is eligible for purchase could be increasing over time and constraints on the total size of the APP would be less tight for extensions beyond September 2016.

Fourth, the ECB could deviate from the capital shares, hence increasing risk-sharing of the programme. Politically speaking, it would certainly be very difficult to implement. Economically speaking, it questions the link between risk-sharing and overall risk and/or effectiveness of PSPP. The fact that Mario Draghi made clear that: “risk-sharing is fundamental for the effectiveness” of OMT, suggests that the limited risk-sharing of QE impinges on its effectiveness. It is noteworthy that in the US, QE purchases are being held in the System Open Market Account (SOMA) where possible losses are shared across the Federal Reserve System.

Three arguments can be put forward to conclude that increasing risk-sharing will increase risk or decrease effectiveness. First, coupon payments are kept within national borders. Hence, because fiscal policy remains country-specific, national authorities should bear the credit risk. If credit risk is shared across Euro area countries, governments may be less

motivated to balance their budget and sustainability issues will arise. Uncooperative behaviors between governments and the ECB would destabilize the Euro area economy and fuel inflation risk. Second, national central banks have the fiscal support of their respective governments, not the ECB. Third, risk-sharing is useless and has no effect on the effectiveness of QE since it has no effect on the creation of high-powered money.

However, greater risk-sharing also has some advantages. First, the Banking Union is supposed to disrupt the link between governments and national banking sectors. Requiring national central banks to purchase large amounts of their government debt would regenerate that link. Second, if a government's solvency is at risk, the limited risk-sharing may increase the cost of funding relative to a QE programme with more risk-sharing.

## **4. CONCLUSIONS AND POLICY IMPLICATIONS**

To sum up, a new extension of QE is possible, though certainly limited, either by the current design of the assets purchasing programme, by the future financing needs of Euro area governments, or by a political reluctance to see the ECB bear more risk. This reluctance questions the future of policymaking. Is unconventional monetary policy a temporary tool or is it the “new normal”? If the latter case applies and monetary policy becomes less endorsed with price stability than with the management of risk premia, QE extension will be very likely.

In central bankers communication there is a question of balance of risk as far as QE measures are concerned. In the short-term, the main economic risk remains deflation, so that the actions taken so far contribute to mitigate this risk; they shall not be overly criticized for creating illusory risks of central bank insolvency or an inflation risk. The monetary policy in the Euro area has contributed to the on-going, though weak, recovery. Yet, the tools at the disposal of the central bank may lead to higher inflation and higher risks – either for central bank's solvency or for the economy if not tuned appropriately with business and financial cycles.

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## APPENDIX

From a theoretical perspective, Reis (2013, 2015) disentangles 3 types of insolvency:

- "period insolvency" when the value of assets becomes inferior to the value of liabilities. The current net worth of the central bank is negative and it is unable to pay dividend to the government because of capital losses.
- "rule insolvency", does arise when the central bank is not able to meet its commitments (the rule of dividend as defined in its charter). "This may be equivalent to period insolvency if the rule implies that dividends can never be negative" (Reis, 2015).
- "intertemporal insolvency". Here, future commitment and revenues are taken in to account to assess the situation of central banks. Such an approach takes explicitly into account the intertemporal budget constraint and central banks become insolvent when present discounted revenue are lower than present discounted expenditures.

To provide better insight into the distinction made above, it is useful to recall that on the asset side, central banks hold different types of assets: official foreign exchange reserves, credit to the financial sector, Treasury securities and other securities since the financial crisis. Before the financial crisis, 40% of ECB assets was lending to Euro area credit institutions through MRO and LTRO. This share has now fallen under 20% whereas securities issued by Euro area residents have jumped from 6.7% in 2006 to 43% in January 2016 (30.3 for securities held for monetary purpose only).<sup>11</sup>

For central banks, the main source of default is related to losses on foreign exchange reserves or capital losses on risky assets. On the liability side, central banks issue a non-interest bearing liability (also called high-powered money), which is the sum of reserves held by the credit institutions and banknotes in circulation.

According to the distinction above, the central bank would be insolvent if losses on exchange rate reserves or capital losses are such that the value of assets becomes inferior to the value of liabilities. Net worth becomes negative and the central bank cannot pay dividend. It should be recapitalized. Yet, for some central banks rules allow central banks to create "revaluation account". Then losses become an asset and can be viewed as a claim on government. By this accounting operation, current losses may be compensated by future profits. Stella and Lönnberg (2008) remind that central banks are indeed not requested to meet the same legal obligations as commercial banks. Realized profits may be retained and not distributed to owners. Then "period insolvency" may not be relevant. Nor would be "rule insolvency" if, by accounting operations, the central has the ability to postpone its commitments regarding the payment of dividend.

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<sup>11</sup> For the US, more than 85% of the Federal Reserve Bank's assets were Treasury securities. At the beginning of 2006, the Fed did hold neither bank loans nor agency securities. Banks loans represented more than 20% of the Fed's assets in 2008Q3. This share has gone back to zero by the end of 2015 and Agency and GSE-backed securities now represent nearly 40% of the balance sheet.

**NOTES**







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ISBN 978-92-823-9268-3 (paper)  
ISBN 978-92-823-9269-0 (pdf)

doi: 10.2861/15835 (paper)  
doi: 10.2861/34342 (pdf)

