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

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[1]

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.

[1] The authors thank Niklas Drews for excellent research assistance and Ulrich Stolzenburg for very useful comments and discussions

2. QUANTITATIVE EASING POGRAMME 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 hold. 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)

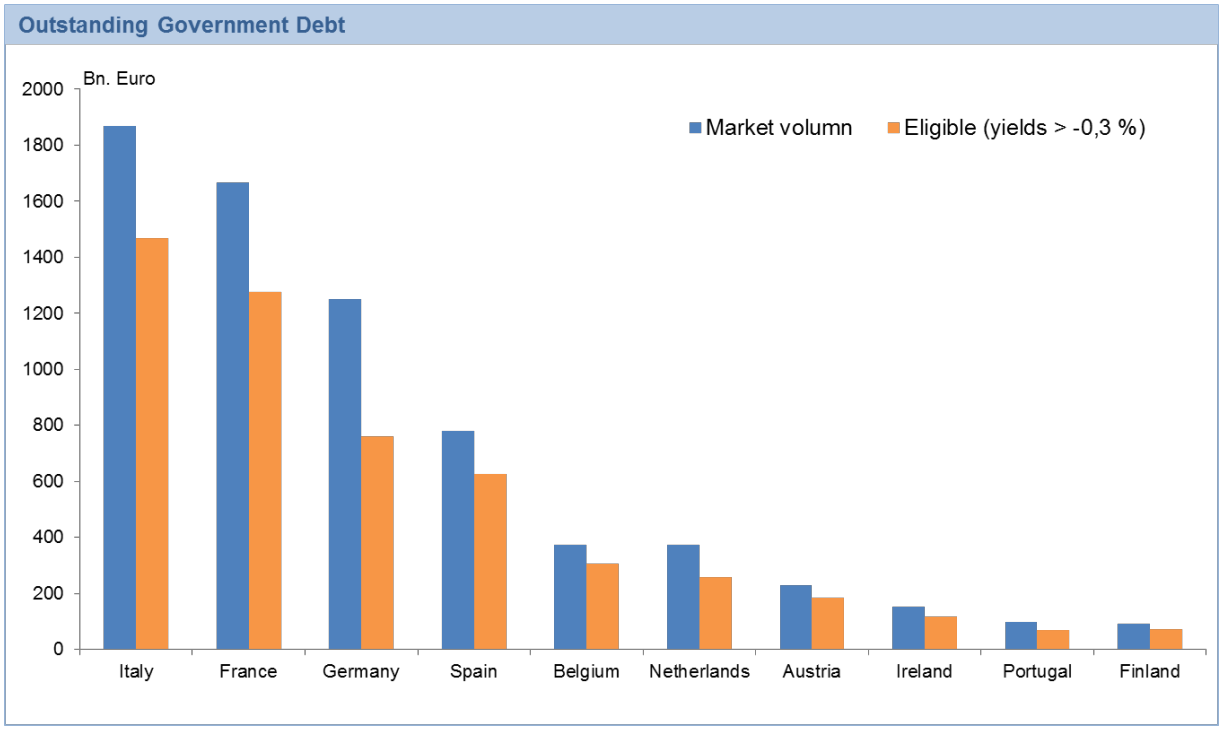
	ABSPP	CBPP3	PSPP	Sum
Holdings	15.3	143.3	491.2	649.9
Monthly purchases on average	1.2	10.2	44.7	56.1

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).[2] 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.[3]

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.

[2] 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.
[3] 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 Claeys 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 Claeys 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: Claeys 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

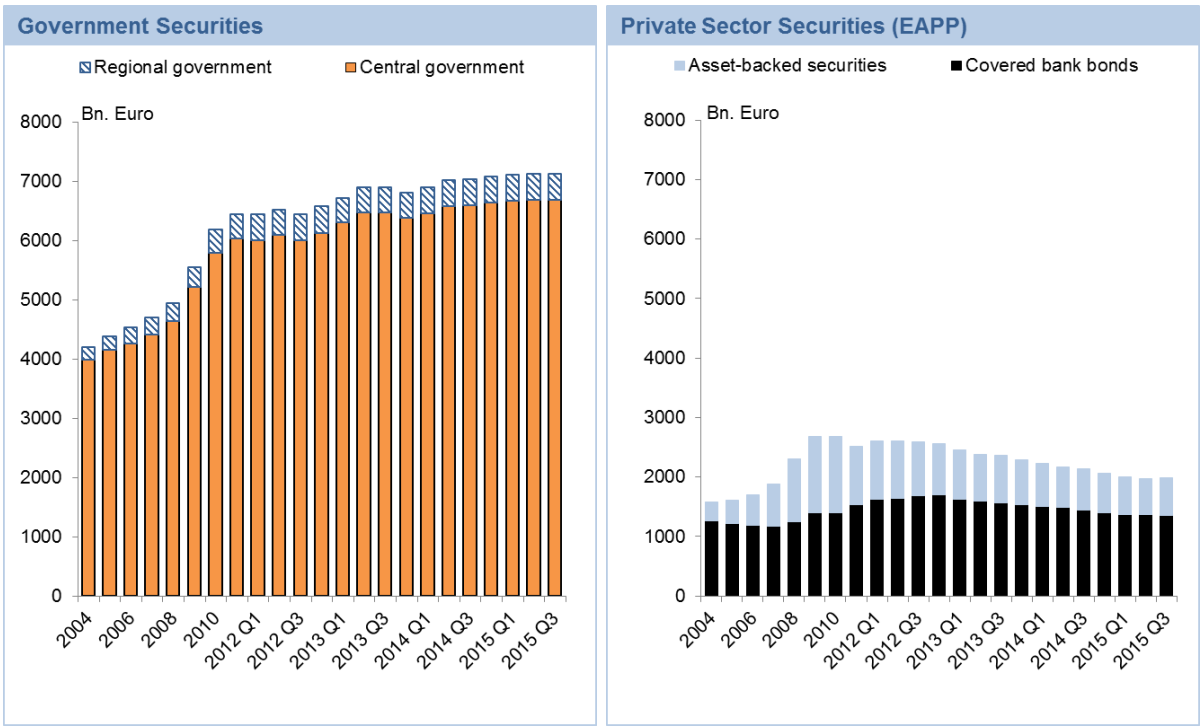
Our analysis in Section 3.1 indicates that, by and large, the expanded QE programme of the ECB can be carried out as envisaged until March 2017 given the current limits and criteria for eligible securities and given the current characteristics of the euro area bond market. This does not come as a big 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.

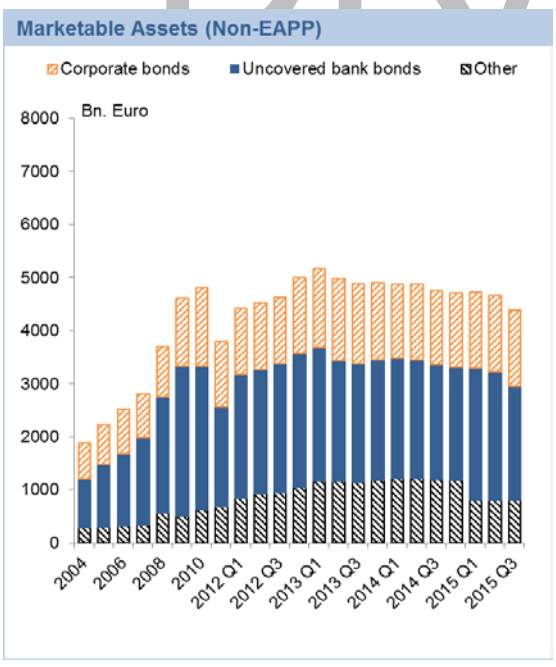
Overall, the ECB probably must adjust the limits and criteria for eligible assets if the QE programme is to be extended further. There are several ways how the ECB could adjust these limits and criteria to significantly increase the amount of eligible assets. However, all of these adjustments would involve 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 tir

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.[4]
- 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, Jannsen et al. 2015) making it much harder for monetary policy to fine tune inflation in the short-term.[5] 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 Jannsen 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.

[4] 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 spiraling downward trends in inflation that could make the case for further monetary stimulus in this regard (Draghi 2016).

[5] 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.[6] 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.[7] 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.

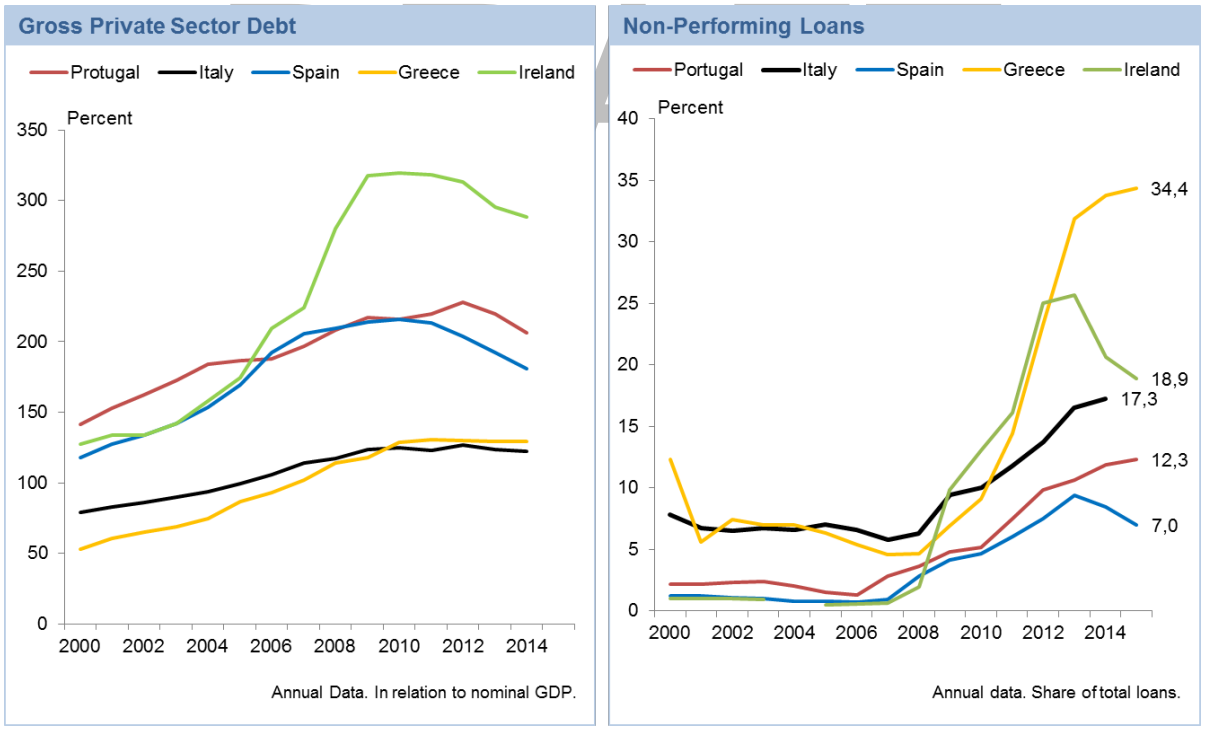
[6] For a comprehensive description of how QE is supposed to work, see Gern et al. (2015).
[7] For a comprehensive discussion of the effectiveness of QE, see Gern et al. (2015).

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 statues 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

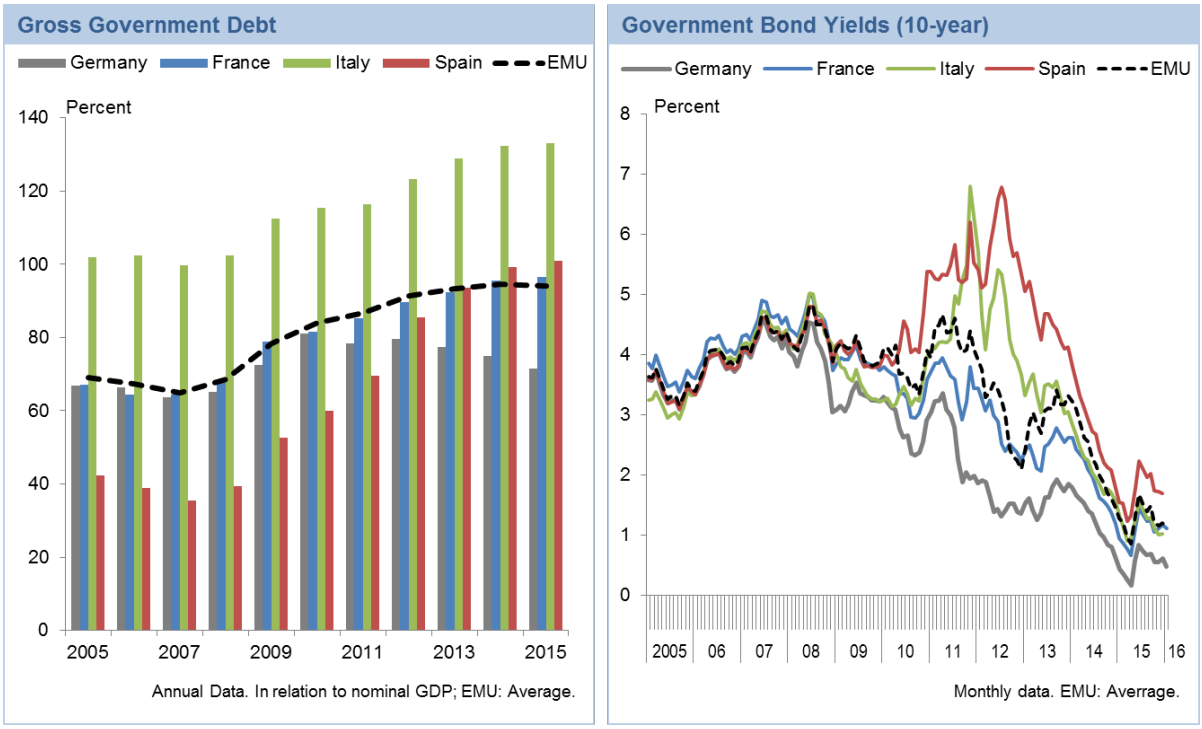
As discussed in Section 4, the effectiveness of QE in a post-crisis period of a bank-based and heterogeneous currency area is limited both in terms of boosting inflation and stimulating economic activity. By continuously increasing the dosage of QE the ECB runs the risk to stir up expectations that it 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.[8]

[8] 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).

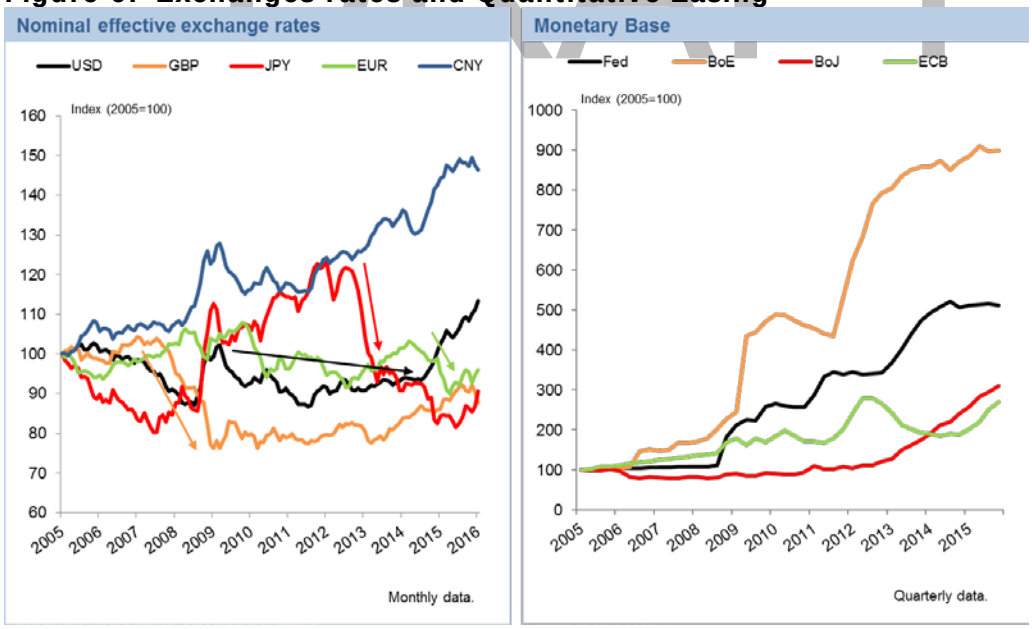
Disincentives for structural reform policies and fiscal consolidation

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.[9]

Figure 6: Exchanges rates and Quantitative Easing



Sources: *Thomson Reuters Datastream, own calculations.*

[9] 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 EUROSYSTEM – 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.[10]

[10] 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.[11]

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[12]).

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

(Billions euro)

		Holdings		Loss bearing capacity		
Country	Key (%)	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.[13] 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.

[11] Note that for Greece, the 25% limit has already been exceeded.
[12] See https://www.ecb.europa.eu/mopo/implement/omt/html/index.en.html.
[13] 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%.

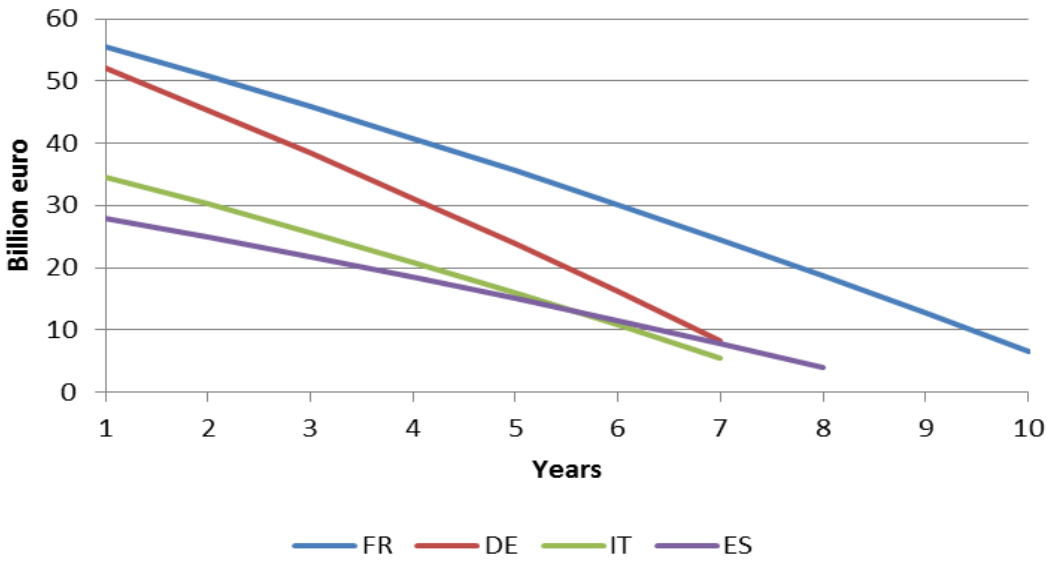
The updated figures confirm the existing financial health of the ECB system. The accumulated reserves are large enough to cover losses even from extreme default scenarios. Once again, however, we stress that a significant deviation from optimal monetary policy may already occur in scenarios of less-than-complete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



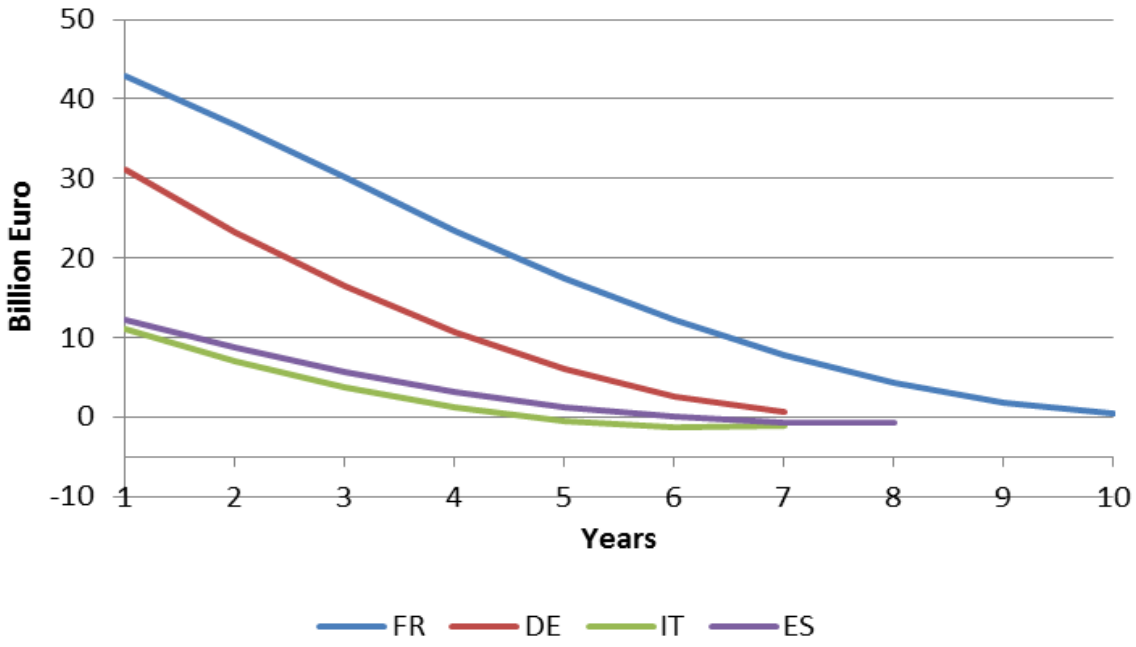
Source: Own calculation based on data from Claeys et al. (2015).

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-á-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.