

IN-DEPTH ANALYSIS

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# ECB non-standard monetary measures, collateral constraints and potential risks for monetary policy

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Monetary Dialogue July 2018



Policy Department for Economic, Scientific and Quality of Life Policies  
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# ECB non-standard monetary measures, collateral constraints and potential risks for monetary policy

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## **Abstract**

This paper takes a wide view of nonstandard measures in difficult situations. We explore how, and to what extent, prudential metrics written into the new prudential and surveillance regulations can be used as policy instruments. The paper does not try to reach a judgment on which measures will work best. Instead we explore how these policies work; why they depend on high quality collateral/assets; what happens if policymakers are driven to expand the bounds of “sufficient quality or liquidity”; how new credit risks arise and for whom. Some of these risks are quite subtle, implicit or indirect. But they all reduce the effectiveness of the measures in question (a transmission problem). As a result, they require larger interventions to reach certain target values (a feasibility question, given the side effects). Thus, the new prudential regulation regimes offer several nonstandard policy instruments. But they depend of the availability of high quality and liquid collateral/assets. Poor collateral makes nonstandard measures less effective. Less credit and less cheap credit will be offered due to the increasing credit risks.

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## EXECUTIVE SUMMARY

- A new prudential and surveillance system was introduced after the Great Financial Crisis (GFC) of 2008-12 to protect financial markets and financial institutions from the consequences of excessive risk, financial instability and destabilising behaviour.
- This system includes a variety of different prudential or regulatory metrics which the ECB or other policymakers can use to provide sufficient liquidity to underpin the stability and safety of the banks; to influence the growth of credit (up or down); to promote lending and recovery without extra inflation); to steer interest rates, the yield curve and the cost of credit; to stabilise financial markets (including insurance, pensions); and to rule out asset price bubbles.
- These metrics provides the ECB and other policymakers with a series of non-standard monetary measures to be used for regulatory purposes. In reality many of these measures had been present before the GFC. But they were seldom used or used systematically; and never for reasons other than prudential regulation. Moreover they were poorly understood, which is what happens when prudential regulation is neglected or low priority.
- These changes automatically raise the question: can the prudential metrics in the new prudential and regulatory system also be used as pro-active policy instruments? Or as passive stabilisation policies that lead to better economic performance through stability and predictability?
- This paper takes a wide view. It does not try to reach a judgment on which non-standard measures work best. We explore instead how these policies work, why they depend on high quality collateral or assets, what happens if policymakers are driven to expand the list of eligible assets that could be accepted as being of “sufficient quality or liquidity”, and how and for whom these credit risks arise.
- What they have in common is that they all depend on the availability of high quality collateral and/or liquid assets in sufficient quantities. This cannot be guaranteed in all cases and at all times of course. If, in response, we extend the list of collateral assets that may be accepted, then the policy impacts become weaker and various credit risks inexorably creep in.
- The exact form and extent of these credit risks depends on the non-standard measure in question. Some of the more important examples are outlined in the text.
- Many of these credit risks are quite subtle, and they may be implicit or indirect. But they all reduce the effectiveness of the measures in question (a transmission problem) and they all require stronger policy interventions to reach certain target values (a feasibility question, given the side effects).
- **The overall conclusions:** prudential regulation offers a number of additional non-standard monetary measures that can be used as pro-active policy instruments. But they depend of the availability of high quality collateral and/or assets.
- Poor collateral makes non-standard measures less effective, so less credit and less cheap credit can be offered as credit risks expand. There are usually ways that policymakers can offset or reduced those risks, but that comes at the cost of weakening their policy power.

## 1. INTRODUCTION

In recent monetary dialogue papers, we have examined the most popular of the non-standard measures of monetary policy, Quantitative Easing (QE) and to a smaller extent Credit Easing, in considerable detail. Specifically, how those measures work (particularly in recession or crisis period), how much impact they have actually had, and why they may have turned out to be less effective than we hoped.

By way of contrast, in this paper I examine the usefulness of and constraints on the less used and less well understood non-standard monetary policy measures: specifically the deployment of prudential regulation criteria (required ratios, parameters) as policy instruments, and the use of official financing techniques. This is best done by reviewing the implications of the central bank's balance sheet, its size, composition and time structure.

The point of departure is to review the functions of a central bank (section 2) and illustrates how non-standard measures operate through the central bank balance sheet. Section 3 then looks at the factors that can affect the supply of liquidity and section 4 at the appropriate composition and balance sheet size. Section 5 shows how prudential metrics can be used as policy instruments. Finally, section 6 focuses on collateral policy and what can be done if there is poor quality of inadequate collateral. Section 7 concludes.

## 2. NON-STANDARD MEASURES AND CENTRAL BANK BALANCES

### 2.1. Central bank balance sheets

The chief responsibility of a central bank is to maintain the value or purchasing power of a nation's currency. It does so, setting interest rates (those operated as policy instruments) or the money supply. It can also take measures to influence the supply of credit; and then, increasingly, to monitor or regulate the banking system in order to ensure financial stability and sufficient liquidity in the financial markets<sup>1</sup>.

One feature that marks out the central bank as a special institution is the respect, trust and regard for professionalism given to central banks by the public, built on an established reputation and history – over 300 years in some cases. In many ways, the bank's effectiveness as a policymaker depends on this credibility. But, whilst particularly important to a successful central bank, the qualities of respect, trust, clarity of purpose and competence can also be claimed by other institutions.

However, there is one feature that is unique to central banks and crucial to its ability to function as a policy maker: the balance sheet. In fact it is the balance sheet which is what really defines a central bank since the central bank is the monopoly supplier of base money in the national currency. It is the central bank's balance sheet that:

- a. facilitates the setting of an interest rate for monetary policy purposes, and/or the control of the money supply and hence credit conditions;
- b. enables the central bank to operate as the lender of last resort (LOLR);
- c. facilitates the issuance of bank notes.

What about the central bank's other responsibilities? Financial stability and prudential regulation do not actually require the use of the central bank's balance sheet (though it is usually very helpful to operate through the balance sheet). Consistent with that, those activities are not always located in the central bank. However, the synergies between those functions and central bank operations are such that significant gains can be made from having them work closely together. Most central banks now have at least some financial stability responsibilities and a direct interest in prudential regulation. Even where a central bank does not have financial stability explicitly in its remit, it nonetheless has the ability to affect it.

Central bank balance sheets are typically similar across countries in certain key features, but with other variations between them. Most central banks are now responsible for at least three things: the note issue, providing bank accounts for commercial banks to facilitate payments in domestic currency, and setting short term policy interest rates.

To pick out one of the more important variations, some central banks – particularly in Asia, but also in the ECB and Europe's national central banks – have significant pools of foreign currency reserves on their balance sheets for potential intervention in currency markets. Others may not if their foreign currency reserves are allocated to their finance ministries. The final decision to intervene in foreign exchange markets, rightly, typically lies with whoever owns the reserves and bears the risk. This may be an interesting topic in itself. But here we focus on the most important domestic elements that apply to all central banks, taking the ECB and euro area as our starting point.

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<sup>1</sup> In the euro area, this is a responsibility of the ECB, not the national central banks.

## 2.2. Non-standard monetary measures

Starting with the Great Financial Crisis (GFC) in 2008-2009, we have seen massive expansions of central bank balance sheets over the past 10 years. This is most simply explained as a result of short-term policy interest rates having reached or at least approached zero. Being unable to go any further, central banks decided to loosen monetary policy by expanding the narrow monetary base (the money supply) directly.

This process is commonly called Quantitative Easing (QE), although in its purest form it was simply a text book expansion of the money supply. If credit risk assets are purchased, it may also become Credit Easing. Initially, QE expansion was used to stem the financial crisis of 2008-9 which had severely impacted the real economy in many countries. After mitigating the initial crisis, the aim was to prevent further deflations or recession and then to support the economy's recovery from recession. In arresting a slide into stagnation and depression and in preventing negative inflation, QE has been relatively successful. But in terms of generating or supporting a nascent recovery, the QE programmes have proved to be rather ineffective. Their numerical impact on growth was small, especially in high debt countries, and they are often perceived to have involved unwanted redistribution effects. In addition, persistent QE risks creating new longer term problems (financial instability when reducing the expanded balance sheet, currency fluctuations, permanent redistributions) while there are some natural impediments to increasing the impact of QE (risk aversion, regulatory requirements, weakened transmission mechanisms, incomplete pass-through, regional/sectoral risk premia, nonperforming loans in the banking system) that are hard to overcome.<sup>2</sup> This paper does not comment on the efficacy of QE as a policy, but instead on how expanded central bank balance sheets might be used, given recent developments in prudential regulation.

## 2.3. A note on other non-standard monetary measures

Since the GFC, the international Basel III regime for prudential supervision has agreed much tougher liquidity requirements for banks<sup>3</sup> than previously. The **Liquidity Coverage Ratio** (LCR) is almost entirely in place, while the **Net Stable Funding Ratio** (NSFR) is still in transition to completion (internationally). Broadly speaking, the LCR specifies a minimum level of assets that must be held in the form of High Quality Liquid Assets (HQLA), officially defined, in order to meet potential outflows. The NSFR, by contrast, looks at illiquid assets and stipulates that they must be backed by an appropriate proportion and maturity of stable term funding. Assets are then weighted by duration and liquidity properties for the stable funding requirement to be calculated.

Another key measure is the **leverage ratio**. This is a constraint which limits the ratio of a bank's assets, unweighted, to its capital. In general it will discourage low-risk, high volume transactions such as repo and other short-term expansions of a bank's balance sheet, *including* those used for market making.

The market consequences of these various changes are still being played out. On one hand, banks now are safer because they hold more liquidity. On the other hand, credit risk changes mean that the unsecured inter-bank lending markets have been shrinking, whilst secured inter-bank markets are steady but not expanding to fill the gap, in part because of the leverage ratio constraint. Market making for illiquid securities has diminished as it is no longer cost-effective for banks to use balance sheet operations to support clients in that way. These market changes are important in the context of this paper because they mean that banks are less able to manage their reserve accounts by lending to, or

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<sup>2</sup> See, for example, Hughes Hallett (2016a, 2016b, 2016c).

<sup>3</sup> Liquidity requirements in other markets have also been tightened: Solvency II for European insurance companies.

borrowing from, another bank. That creates a need and scope for direct policy interventions to ensure that commercial banks can manage their liquidity and meet their regulatory requirements.

The overall effect of these new regulations on banks has been to limit their role as intermediaries compared to pre-GFC times. That in turn means that other firms are growing in importance. A few examples: companies like Apple which are involved in payments; hedge funds which sometimes engage in market making; peer-to-peer lenders; other non-banks showing interest in shadow banking activities. In time this is likely to mean that central banks will want to widen their choice of counterparties and regulatory boundaries. In fact some extensions in that direction are already being made on systemic grounds. Access to the central bank balance sheet is one of the operational choices that we consider later in the paper. But for now we concentrate on commercial banks, defined here to be authorised deposit takers.

Reserve accounts at the central bank are the highest quality and most liquid asset that a commercial bank can hold. Pre-crisis, the main use of such accounts was to meet necessary payment flows, as routine banking payments between banks were cleared and then settled across their reserve accounts - usually via a Real-time Gross Settlement System. That use of central bank accounts is still very much present. In the UK, the system used to operate in a tiered fashion: only the large commercial banks were allowed to hold reserve accounts, with smaller banks conducting their banking activities via the 'clearers'. And some medium-sized banks chose not have a reserve account. But smaller banks banking with larger banks raises financial stability concerns as it increases interconnectedness. In 2010, the Bank of England rules were relaxed so that even the smallest banks could hold reserve accounts directly. As a result, the number of reserve account holders rose, quadrupling in 7 years.

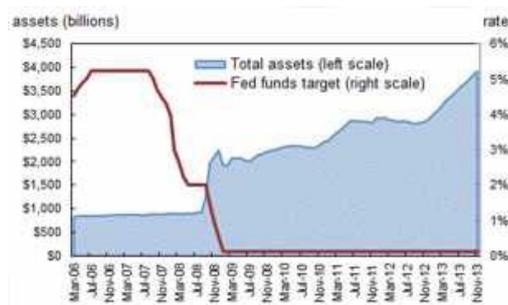
Minimum reserve requirements can also be used as a potential tool to make a bank hold a minimum level of liquidity. But implementation of the LCR rules have probably made any such considerations redundant - the reserve requirements would now have to be set at a particularly onerous level to be binding above the LCR requirements. A case for doing so could still be made if the definition of HQLA was loosened to such an extent that banks were holding too little high quality liquidity (section 6). But it would be difficult for a central bank to impose its own liquidity regime over and above that decided by the Basel Committee and implemented by national laws and regulations.

Reserve account balances count as HQLA. But we do not yet know what proportion of their required HQLA commercial banks will wish to hold in that form. That has been obscured by QE, which makes teasing out what scope there is for using macro-prudential regulations as possible policy instruments difficult.

## 2.4. The operation of QE policies

QE takes the form of direct injections of base money into the system by a central bank that buys suitable financial assets outright and on a large scale. Prior to the GFC, smaller scale purchases were a routine part of central bank open market operations, alongside reverse repo transactions, used to control the monetary base.

Figure 1: The Federal reserve balance sheet and target interest rate



Source: Federal Reserve Financial Statistics (2015).

These purchases mean the assets held by the central bank will rise dramatically (Figure 1) and the money received by the commercial banks and other institutions will be held in their reserve accounts. They may, one hopes, try to lend that cash on for investment purposes or to finance “big ticket” consumption. But in aggregate, commercial banks must hold the level of reserves dictated by the central bank. This represents an expansion of the money supply in its most liquid and high quality form: cash. That is to the benefit of the banks and financial system. In effect the central bank is accepting collateral assets, against future redemption, in order to supply the economy with additional liquidity.

The impact of QE will therefore depend crucially on which assets are bought and in what quantities. The risk is on the central bank. In the UK and the ECB, the vast majority of QE was purchases of government debt, which is counted as HQLA but not necessarily held in large quantities by commercial banks. This is an important factor; to get the desired impact the central bank will need to rely on portfolio rebalancing by whoever (would have) held the assets. Those investors will need to purchase replacement assets. The risk is that the banks, to the extent that they hold government debt, may not do that. They may prefer to hold the cash instead. This may be the reason why QE is not perceived to have been very effective in Japan where the commercial banks did hold large stocks of Japanese government bonds.

To summarise a complicated mechanism briefly, expanding the money supply by outright purchases of assets can affect the economy through many channels. These include direct investment spending, bank lending, and “big ticket” consumption spending, due to lower medium to long-term interest rates. It also stimulates wealth-related spending caused by rising asset prices and/or the induced lower exchange rate. The Portfolio Balance Effect is a channel through which QE influences a wide range of asset prices and interest rates as banks and other financial firms (pension firms, insurance companies, asset managers) try to recover the higher rates of return from their investments lost to QE (Joyce, Liu, Tonks, 2017). This effect is most powerful when the central bank buys low-risk assets that are, or would have been, held by the non-bank private sector, forcing the latter to hold other types of assets. Typically, the other banks and financial institutions would hold riskier assets such as corporate bonds or equities (since deposits would not generate a sufficient return, especially at near-zero short-term interest rates). QE is most effective where it helps bring down risk premia [by country, region, or sector].

But if a central bank buys only those assets held directly by commercial banks, QE may have little effect on the real economy since the banks - especially in a time of liquidity stress - may be happy to hold base money instead of the purchased assets. That is a risk.

Whatever QE does for the real economy, by massively expanding reserve balances that count as HQLA - QE almost certainly made it much easier for commercial banks to meet their LCR requirements and possibly their NSFRs. Individually they would have needed to compete to get 'their' share of deposits created by QE, but there has been plenty to go round. This would normally increase the stimulus effect of QE. On the other hand, depending what sort of deposits a bank received, potential deposit outflows could also rise, offsetting the benefit to the LCR. Retail deposits are treated as 'sticky' and hence do not require matching HQLA. Similarly, if banks were able to issue more term debt, that would count as term funding until it neared maturity. Both would also count as stable funding for NSFR purposes. But if the consequence of QE was a rise in corporate deposits or those from the financial sector, then that would just offset and negate the LCR increase (the effect on the NSFR depends on the term of the funding obtained).

There are other reasons why QE may be perceived to have been (or actually have been) less effective than most policy makers would like. For example, if QE is conducted while other firms - bank customers as well as the banks themselves - are deleveraging to reduce their exposure or vulnerability in future crises - then the additional borrowing effects will not be visible. The same if borrowing or regulatory requirements are tightened at the same time. And if the share of non-performing loans in total borrowing is rising (or failing to fall) banks may be reluctant to increase let alone replace their loans. In all these cases, if only the highest quality assets are used for QE purposes, as opposed to higher risk assets which might reduce risk premia elsewhere in the economy, the stimulation effect of QE through the banking system is likely to be small. Similarly, if others conduct QE operations at the same time, the impact of the exchange rate channel with respect to that partner will not be visible (while not undertaking an equivalent QE would see the exchange rate rise, see Hughes Hallett (2016a)).

Hence there are a number of qualifications and risks attached to the impacts (real and perceived) of QE which depend how it is used. QE may offer opportunities for additional policy interventions, but to be effective these interventions need to be carefully designed, carefully timed, and to be applied in a more nuanced way (e.g. with respect to risk premia). And attention needs to be given to whether they would be better applied as part of a package of measures.

## 2.5. Where next for QE?

In the UK, US, Japan and Europe, QE was undertaken when policy interest rates were near zero, or even negative. Looking forward to the case where interest rates start to rise, the yield curve is likely to become more upward sloping and it is possible that banks will then decide they would prefer to hold assets with higher rates of return than reserve balances. The obvious way to earn a higher rate of return is to take on more risk - such as credit risk, liquidity risk or the market risk associated with longer-dated assets. However the difference over expected future policy rates may not be significant unless a lot more risk is taken. In which case, commercial banks may decide that they would prefer to continue to hold their HQLA in the form of reserve accounts at the central bank. In other words, given the LCR, the demand for reserve accounts is likely to remain higher than the pre-crisis demand which was principally designed to ensure payments run smoothly.

For example, the level of reserves held at the Bank of England had risen from under £20bn in 2006, to £40bn in late 2008, and to £300bn in 2014. For most of the crisis period, this reflected an excess demand for reserves: commercial banks stopped borrowing from sterling liquidity operations. But less so now: commercial banks collectively are borrowing around £4bn from the Bank. So either some banks have a

problem attracting sufficient funding in the market; or, at current rates, the commercial banks collectively are content to hold an order of magnitude more in reserves than a decade earlier. Also, the non-banks do not have access to the central bank balance sheet. Hence, if the commercial banks still had excess reserve balances, short-term market rates would be dipping below the policy rate. This has not happened recently in any major jurisdiction; in fact, rates have risen.

The apparent increase in the demand for reserve balances, as seen in most developed economies, raises policy questions for central banks as they seek to raise interest rates from crisis levels and decide how much of their QE programmes need to be unwound:

- a. What is going to be the level of demand for reserve accounts, given the LCR, and (by extension) the supply for credit?
- b. How sensitive will that demand be to the level and slope of the yield curve?

### 3. CENTRAL BANK ASSETS AND THE SUPPLY OF LIQUIDITY

Central banks can increase (decrease) the money supply and hence reserve balances, by acquiring (shedding) assets. This creates (destroys) central bank money by expanding (shrinking) both sides of their balance sheet. The policy questions are now how big the balance sheet should be, and which assets should be held. Different operational parameters and choices can lead to the same level of monetary supply and interest rates, but may have different effects on regulatory metrics and hence on financial stability. This paper argues that those effects need to be recognised and the choices made pro-actively, preferably under a transparent financial stability remit.

#### 3.1. Balance sheet size

We start with the choice of the size of the balance sheet. This is not just a hypothetical question. As we stand today, one might expect the Fed, the ECB, the BoE and even the BoJ to be reviewing how much, and how quickly to reduce the size of their asset holdings. We might also conclude that it will be monetary policy that will determine how much of QE is unwound. That is certainly true in that reserves need to be held at a level consistent with policy rates: in theory, the money supply then needs to be kept precisely in line with the demand for reserves at a given level of interest rates.

But this factor has never seemed very strong empirically. Pre-GFC, banks were reasonably attuned to keeping reserve balances in line with a target because of the penalties imposed by the central bank for an excess or a shortage. But, in the absence of such penalties, the overall level of reserves was generally thought to be only mildly sensitive to interest rates. The main reason for volatility in short-term rates was unexpected payment flows and the consequent need to borrow/lend in the market to avoid a penalty rate.

Would very large excess balances and hence excessive base money supply have not caused inflation? Most observers were surprised that such large expansions of the narrow money supply, as seen over the past 10 years jointly in many of the larger developed economies, did not cause more inflation<sup>4</sup>. We have already explained part of the answer – the extent to which the bank lending channel was offset via higher liquidity requirements. But there are three other considerations:

- i) QE swaps base money for purchased assets. That is likely to be particularly powerful in a liquidity crisis, when markets are dysfunctional and liquidity is precious. In such circumstances it may not be possible, easy or cheap to swap any security, even the most liquid securities such as US T-bills or DE bunds, for base money. The sustained peaks of that dysfunction were in 2008-9 after the collapse of Lehman Brothers and AIG, and then again in 2011-12 as the euro area crisis unfolded. These were exactly the periods when the Fed and Bank of England were undertaking most of their QE (euro area QE started in 2015). The risk here is that the quality (and quantity) of assets needed for QE purposes, or as collateral for official lending, deteriorates relative to the severity of the financial difficulties/crisis.
- ii) Market conditions have settled down since. It is likely that the effects of QE on financial markets has considerably diminished – known as QE fatigue – although we have no reliable or precise estimates on hand. It is arguable that the continuing stretches of QE in the US and euro area have become increasingly ineffective because market functioning has improved (endogenously, with the availability of liquidity from QE). There are other reasons why QE fatigue may have set in after a while: i) the supply and quality of assets available for purchase began to fall; ii) repeated applications of QE create expectations of inflation which undermine the downward pressure on

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<sup>4</sup> But see Hughes Hallett (2018) for a different view.

interest rates further along the yield curve; iii) adherence to the zero lower bound means that interest rate reductions, per unit of QE, will be smaller the lower are market rates at the start of the exercise (Hughes Hallett, 2016a). These factors, plus the change in market functioning, gives us prima facie reasons to suspect that active unwinding QE will, in normal times, be asymmetric: that is, not have an equal and opposite effect to having implemented QE in the crisis period. In addition, the unwind effects begin (though expectations) before the unwinding of the QE itself.

- iii) A third reason for the weakening of monetary imperatives is that monetary policy should only have a short run or second-order effects on real outcomes. If that is true, it is likely that real interest rates today are being driven mostly by real factors, not nominal ones. In fact, 10-year real US interest rates are now at around the same level as they were before QE commenced. If QE unwinds slowly by allowing assets to mature<sup>5</sup> in their own time, then this is unlikely to have a large impact on real interest rates.

**Summary:** the monetary case for tightening by reducing balance sheets may not be strong. A wide range of reserve balances is probably consistent with any particular policy rate and unwinding QE slowly would probably not have a large impact on the economy. As a result, the implications for financial stability are likely to be relatively more important. The size of the balance sheet will then affect the ease with which banks can acquire the HQLA quota needed to meet their LCR. In part, the final answer has to be empirical. If QE is unwound and banks see their HQLA shrinking too far, one can expect some strong signals back from the market – bidding up for deposits for example - as the price of liquidity starts to rise. To the extent that this is consistent with the intentions of monetary policy, then it would not be a problem. But if there is a conflict it will lead to volatile or excessive changes in market rates as banks struggle to meet their regulatory metrics.

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<sup>5</sup> Another reason is that selling large quantities of less liquid assets could cause severe disruption to those markets.

## 4. NON-STANDARD MONETARY MEASURES AND THE BANK'S BALANCE SHEET COMPOSITION

### 4.1. Asset mix and quality

Even if monetary policy were to remain the principal determinant of the size of the balance sheet, the composition of a central bank's balance sheet, affecting financial stability and the effectiveness of markets<sup>6</sup>, is still relevant to the choice of the balance sheet. So, a central bank could decide to keep a large balance sheet and allow HQLA requirements to be met by reserves. Or it could force commercial banks to buy HQLA in the market, by shrinking its balance sheet. But the sheer size of the balance sheet is not the only central bank metric affecting the outcome for the LCR.

To illustrate, the central bank could hold a portfolio of government bonds to maintain bank reserves at a high level. Government bonds are, of course, HQLA. If it then sold those bonds, reducing the reserves supplied, it would reduce its balance sheet by changing its composition, but leave the total quantity of HQLA unchanged. But if commercial banks end up holding large portfolios of government bonds or other long-dated liquid assets instead of reserve balances, that would increase the market risk on their balance sheets. That could add to the risk of financial instability, hardly an optimal outcome.

A different way to keep the size of the balance sheet unchanged is to alter the type (and hence composition) of assets held. Suppose first that the central bank replaces its government debt portfolio with a portfolio of purchased illiquid assets. Now suppose that the new assets are all non-HQLA: portfolios of loans for example. In that case changing the composition of assets would be equivalent to a larger injection of liquidity into the system. But one could get the same impact on liquidity cover ratios and same policy impact for a smaller holding of HQLA assets. This shows the impact of inferior collateral on non-standard policies. For that reason we might suppose a cautious central bank would not choose to do this. It would also be an interesting implication of some recent suggestions along these lines that ask the central bank to invest in a broader range of assets which happen to be illiquid ('Peoples QE' or 'Green QE' are two obvious examples). But that involves a separate issue and a change in objective that need to be analysed in a different paper.

There are further scenarios to be included. Suppose the Central Bank sold all its government bonds and carried out large scale official subsidised lending operations instead (often called credit easing if directed to specific firms or financial institutions). That would keep the balance sheet and reserve balances, and hence HQLA, at a similar level. But the impact on the commercial banks would depend on what parameters are set in those lending operations (price, term, collateral). In general, short-term funding from the central bank, on a large scale, could represent a significant liquidity risk for individual institutions who would have to continually rebid for their needs while market conditions could change. This is the implication of the cheap short-term lending operations of the ECB, and stands in contrast to the ECB's OMT (outright monetary transactions proposal that followed, Hughes Hallett 2015), and the LTROs and the Funding for Lending schemes that do not imply this liquidity risk transfer.

What are then the key considerations for a central bank? It is unlikely to want to have routine short-term lending operations on a very large scale. Having a high level of lending is operationally more intensive and hence risky, as well as providing uncertain funding for the commercial banks individually. The funding that commercial banks receive indirectly as a result of sustained central bank asset

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<sup>6</sup> A central bank may provide services to a range of customers, including other central banks, and the size of those activities can clearly affect the balance sheet.

purchases is likely to be more predictable for them. So maintaining an expanded balance sheet through outright QE purchases appears to be a more comfortable outcome for both sides.

There are also risks at the official level with the purchase of large quantities of assets. Buying government bonds can be thought of as credit risk-free for a central bank, but it is not completely free of risk. First it ties the central bank to uncertain fiscal outcomes which may affect future borrowing conditions, and if a risk of government default does emerge then wider considerations apply which would include risks to central bank independence. Buying government bonds also implies a once-off monetary financing of government expenditure. However, there is market risk on any portfolio of longer-term securities: the Bank of England has a government indemnity for its QE portfolio, given that it holds a fairly small amount of free capital and reserves itself. That, in ideal circumstances, would help the central bank's policies be more effective.

If private sector securities are bought, there is perhaps a greater credit risk. A government indemnity could help with that too; but as a result one can expect the government to argue that it should have some influence over what is bought. There will always be pressures from different interest groups for the Central Bank to buy 'their' assets. Buying some assets and not others will have an impact on relative spreads, and hence the allocation of capital and a redistribution of activity in the economy. That might be useful as a form of industrial policy; but it also carries the risk of re-politicising the Central Bank's monetary policy, of supporting "Zombie" firms, of creating distortions and being stuck with an inappropriate portfolio as circumstances change.

In response to these pressures, a central bank's defence would be to 'buy the market' in order to avoid distortionary allocations of capital. Buying large quantities of private sector assets outright in normal times is not a very attractive proposition.

#### **4.2. Maturity (term-structure) composition issues**

A different dimension of balance sheet composition choice is the maturity/ term structure of central bank operations. First, consider outright purchases. These are neither permanent (most assets are fixed maturity and can be sold at any point), nor is the stock already held time-limited since maturing assets can always be replaced/refinanced. Crucially, however, outright purchases do not supply liabilities directly to the banks; but indirectly via deposits or other liabilities of the banking system. To the extent that those liabilities arrive via retail deposits they are likely to be sticky and are considered stable funding under the NSFR. If term debt is issued to attract the funding, then that will help limit the liabilities held in the financial system that might otherwise concern the central bank. But if liabilities arrive in the form of wholesale market or corporate deposits then they are not stable funding and would not help build up HQLA.

Second, consider the central bank's lending operations. To the extent that central banks choose to lend at all, they can do so at a range of maturities. The target interest rate for monetary policy is usually short-term – until the next policy meeting.<sup>7</sup> To facilitate that, at least some portion of loans will be made at very short maturities – daily and/or weekly. But short-term operations (unless fully allotted at the policy rate) are a very unpredictable liquidity source for commercial banks. Relying on short-term auctions in large scale would therefore create liquidity risk. And very large operations increase operational risk for both central banks and their counterparties. So, typically, a portion of longer-term loans are used in part to reduce the turnover in the short-term operations in order to make the latter more manageable and the supply of reserves more predictable. But both the ECB and the Bank of

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<sup>7</sup> Technically any point on the yield curve, or the slope of the yield curve, could be the policy target. The Swiss National Bank targets 3-month Swiss Franc Libor rates.

England have engaged in multi-year loans as a crisis measure and to help support the real economy. The Bank of England's Term Funding Scheme has lent around £127bn for up to 4 years. Unlike its predecessor, the Funding for Lending Scheme (FLS), the TFS lends cash (FLS offered 9 month Treasury Bills<sup>8</sup>), and so the TFS has directly increased the level of reserve balances, but the FLS did not.

Liabilities of over 12 months maturity are very useful to the banking system in that they represent stable funding which helps meet NSFR requirements. But, by making cheap funding available to all banks at the same fixed price, these schemes depress competition in the banking market. That is to say, at a price determined by or consistent with the central bank's desired policy rate, rather than at a price determined endogenously ex-post after banks have competed for the loans they want or need.

Interestingly, there are reports within the UK banking sector that the FLS boosted the smaller, growing challenger banks, whereas the TFS is said to have been used more by the larger banks. Be that as it may, as those measures and the ECB LTRO's mature, all banks will have to replace their term funding in the market. That could help push up longer-term rates, albeit at a time when the authorities are likely to tighten anyway.

Will central banks be tempted to lend at longer than 12 months to help meet NSFR needs? That seems unlikely, absent a crisis. There are various political economy arguments which arise if the central bank ended up persistently providing extensive term funding directly to commercial banks. It has unpredictable effects on competition as some inevitably benefit more than others. If the banks end up over-lending – e.g. to the housing market – then the central bank may take the blame. If a bank over-extends itself using central bank funds, will the central bank be under more pressure to somehow bail it out? There is more credit (and possibly thereby fiscal) risk associated with longer-term funding. Arguably, providing more extensive funding is, in effect, to partly nationalise the banking system.

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<sup>8</sup> The FLS was essentially a collateral swap and therefore off balance sheet. TFS is a collateralised loan and therefore on the balance sheet.

## 5. PRUDENTIAL RATIOS AS POLICY INSTRUMENTS

Central bank operations can also affect a commercial bank's capital requirements. Reserve balances are generally zero-weighted on a risk basis, so changes in reserves have no impact on risk-weighted capital ratios. But they could have an impact on other unweighted measures that might be used for policy purposes, such as liquidity or leverage ratios and ultimately the NSFR requirements.

Excluding assets obtained for leverage ratio purposes from reserve accounts turns out to be a sensible policy. Leaving aside that it is already in the central bank's hands to determine the overall level of reserves, and in some regimes each individual bank's holdings. The real issue is what happens dynamically over the credit cycle.

Suppose that there is a liquidity crisis, or even just a straightforward economic downturn, and the central bank decides that it needs to expand the money supply for conventional monetary policy purposes. Supplying more reserves – by any of the methods described in this paper – would then add liquidity. But if those reserves were counted as assets for the leverage ratio, improving liquidity metrics would potentially increase capital requirements whenever the leverage ratio was binding. To that extent, such a policy would become pro-cyclical and limit the central bank's ability to mitigate whatever negative shocks had been experienced.

By contrast, leaving reserves out of the leverage ratio calculation gives the central bank a macro-prudential policy instrument through its balance sheet size. It could even, where necessary, expand its balance sheet and offset any monetary effects via interest rates (perhaps by cutting rates less than otherwise given the likely circumstances of easing). That way it could use the two tools, interest rates and money supply, simultaneously to help hit both monetary and financial stability objectives. That is just the classic theory of economic policy result: to reach two policy targets, we need two independent instruments. However, this does pre-suppose that the demand for reserves is not interest rate sensitive – otherwise there would not be two effective instruments, just the one. But experience so far has been that reserves are relatively insensitive to interest rate changes, especially if (as in the US) the required reserves carry a rate of return related to the policy rate.

## 6. COLLATERAL POLICY, SHORTAGES OF QUALITY ASSETS?

### 6.1. Illiquid or poor collateral and credit risk

To the extent that the central bank chooses to use official lending operations, then the main policy question becomes what collateral should it accept (at what liquidity level, and from whom). By widening eligibility to accept less liquid collateral, the central bank can improve commercial banks' liquidity and stabilise financial markets. Such a policy of 'Eligibility Easing', a variant of credit easing perhaps, has been suggested by Huertas (2018) as a non-standard monetary policy measure because it reflects what several central banks actually did in the crisis.

If a central bank takes non-HQLA assets as collateral, as the ESCB does at the margin, then it would be offering a powerful liquidity transformation that would directly impact on LCRs. Most central banks would be wary of doing that in any size for at least two reasons. First, they have to face the increased credit and market risk. The use of appropriate haircuts could mitigate the risk to the central bank to a large degree, although the haircuts could become large and difficult to calculate accurately given the uncertainty of future financial events. A further downside of haircuts for very illiquid collateral is that the larger the haircut, the more conservative it tends to be and so less support is offered. But collateral which is completely illiquid in the market has virtually no opportunity cost for the commercial banks when offered/sold to the central bank. So high haircuts would not deter commercial banks from trying to utilise as much eligible illiquid collateral as possible in order to get a higher HQLA score.

A second consequence of a broad definition of collateral eligibility in normal times is that commercial banks would be less liquid and less resilient in a crisis than they had appeared to be ex ante. It would also likely distort markets by squeezing liquidity premia and hence price differentials of those assets that were both eligible and traded, whilst increasing demand and supply of them.

One possible resolution, taken from the Bank of England, is to introduce special operations for lending against illiquid collateral. One could define different collateral sets with varying liquidity characteristics (Fisher, 2011). Separate or linked Repo operations with any of the three sets could be used with different bid prices. Basically, higher prices and greater quantities can be set automatically for the less liquid collateral, the more the commercial banks bid to use it. This is technically complex to implement, but has been found to function reasonably well at the Bank of England since 2010, despite the low demand by the commercial banks for extra reserves during the QE period. This thought does suggest that these variants of non-standard monetary measures should be designed together with other policies in the form of a single package

By contrast, the ECB is currently offering to lend in full allotment operations, against a very broad collateral set, including some non-HQLA (noting that the risk is born by the national central banks (NCBs)). The ECB's original collateral policy was determined by the need to treat all the euro area countries equally. That resulted in a very broad definition of collateral eligibility to equalise the benefits. That definition then included much which was relatively illiquid - or would have been, had they not been declared eligible [an extra degree of liquidity having appeared because marginal assets had become tradable to the central bank]. Emergency measures, perfectly justified at the time, but less so now in many EU economies, have expanded the collateral set even further.

Now that more normal conditions have largely returned, the ECB needs to consider whether it wishes to retain such a broad collateral set as part of the "new normal". Even pre-crisis, there were reports that some participating banks held weekly exercises to submit the least liquid, but eligible collateral to the ECB. That pressure will now be intensified by the new liquidity ratio regulations/requirements that will bite as economies improve and the banks wish to lend more.

## 6.2. What if the supply of higher quality assets runs out?

A shortage of assets of suitable quality for central bank operations is entirely possible in this context. Indeed they have already threatened QE policies at the ECB and Bank of England at times, although action to find alternative good quality assets avoided major damage to the QE policies in question.

The obvious way out is to widen the definition of which assets can be accepted, or from whom they can be accepted (to avoid local risk premia in the economies most in need of help), or to consider some form of credit easing for key but distressed firms in a particular sector at risk, or to extend the maturities of the assets that can be accepted (to widen the term structure of assets held on the central bank's balance sheet in order to flatten a larger section of the yield curve). This could increase the supply of acceptable collateral without significantly reducing its quality. What should not be done, as far as possible, is to reduce the quality of assets purchased or taken as collateral. Taking poor collateral reduces the price of cheap credit that can be offered (risk premia will be imposed), with the result that non-standard monetary policies become less effective.

This scenario of supply shortages is not unrealistic. It appears to have happened in the UK in 2016 when the Bank of England could not fill its quota of quality bonds and had to offer excessively high prices to buy the bonds it did get. The ECB is thought to have faced the same problem. Thus, to lower interest rates by market means can easily become subject to diminishing returns as the interest rate reductions, per unit asset purchased, become smaller and smaller. In that case, low interest rates become less and less effective in terms of the output and employment generated. Moreover the drying up in the supply of bonds risks creating a price bubble in the asset concerned, and its near substitutes, and hence in the financial markets if there is a bust in supposedly safe assets.

The same problem applies in the euro area too. In fact, the problem might be more acute for the ECB because the highest quality bonds will be those issued by the German government. There are obvious scarcity risks if the ECB tries to meet the needs of all financial markets in the euro-area economies with top quality German bonds alone – not to mention the damage to the ECB's remit that all euro-area economies be treated equally. In fact, scarcity does seem to have had adverse effects on the effectiveness of non-standard monetary measures in the euro area<sup>9</sup>; not by so much as to cause the policies to collapse because the market for appropriate collateral or assets dries up, but because the prices for those bonds that can be traded are forced up by the scarcity. As a result, interest rates may fall more than was intended (which might be helpful in bad times, but is not helpful on average), and it is damaging because it implies adverse effects on liquidity conditions (as seen in expanding bid-ask spreads, a shortening of order books, and a decrease in the dealers' ability to bear risk). These adverse effects are rather subtle, and vary with market conditions. They also appear to become more marked (i.e. double in size) in periods of illiquidity and when yields are already high – that is, when you need non-standard measures most. Taken together they imply strong diminishing returns to such measures, especially in bad times. That is a special risk in the euro area.

## 6.3. Risks to the central bank (the ECB in particular)

The risk of default on an asset creates a possible loss on the ECB's balance sheet, instead of on the balance sheet of an already indebted government. Three points here:

- i) The changes to income flows wash out: the interest payments made to the ECB would cease, but the extra profits paid to national governments by the ECB will also cease.

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<sup>9</sup> The results quoted in this paragraph are based on the research of Sclopper et al (2017) at the Bundesbank, and reflect the use of AAA rated 10-year German Government bonds.

- ii) The default risk can, to some extent, still be offloaded on the NCBs with limited means for resolution. This lowers the probability that the NCBs could bail themselves out; and that undermines the credibility of the policies being pursued at the ECB level, and raises the probability that domestic governments will have to rescue their NCB with new bonds and become further indebted in the process.
- iii) A write-down of the ECB's assets need not have direct short-term implications for tax payers since central banks do not need to maintain capital/asset or liquidity ratios to function. Even if the ECB felt the need to repair its capital base, it would ask shareholder governments for extra capital that can be supplied in the form of bonds – in effect creating new QE assets to generate new interest payments. No immediate implications for taxpayers therefore. The real danger here is rather different. If the defaulted bond is not replaced, there will be no bond to sell back into the market in the exit strategy. Realising this, private agents will expect additional inflation in the future.

## 7. CONCLUSIONS

Non-standard monetary measures, and their near relatives (official lending, credit easing or OMT operations), have become important policy instruments in recent years because they are among the few policy instruments that remain effective in bad times – and in particular when interest rates have come close to their zero lower bound. They are also useful where sectors or regions of the economy are subject to unfavourable risk premia.

For the most part, these measures have been deployed for monetary policy reasons – to target short-run demand pressures and inflation. They also affect financial stability through their impact on the financial system in general and bank balance sheets in particular. Different operational choices give the same monetary impact but differentiated impacts on regulatory metrics and market conditions. These choices need to be recognised and made explicit under a formal financial stability mandate which the ECB currently lacks.

What these measures all have in common is that they depend on the availability and use of good quality collateral or, equivalently, high quality liquid assets to function. A shortage of such assets exposes the economy or segments of the economy, to additional credit risk. That, of course, is a danger to the central bank's balance sheet, but not a danger which would lead to a breakdown in the role of the central bank and hence in the financial markets. There are a number of ways in which those risks can be offset and absorbed in the rest of the economy or by government over time.

The real danger is that these credit risks (poor collateral, poor quality or illiquid assets) will make the measures less effective. Less credit, or less cheap credit, will be offered for each non-standard intervention.

This means larger interventions to achieve the same objectives – with the exaggerated side-effects that come with non-standard policies (increased inflation expectations, more nonperforming loans, greater inequalities, distortionary capital allocations, a depreciating currency, QE fatigue). Unfortunately the use of such measures on a systematic basis is too new for there to be any reliable numerical evidence on how strong these adverse effects are likely to be.

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### Questions:

Background: We typically assume that monetary policy can be set appropriately for any given fiscal policy across the Eurozone. But that could result in the real exchange rate getting out of line in particular member economies; or in a build-up of risk via excessive financial and fiscal imbalances. Assess GDP bonds as way to start redressing those imbalances.

- 1) How do we ensure that the balance of fiscal policy is right overall, and in individual economies, so that monetary policy is set right?
- 2) Are GDP-bonds a practical proposition? Do they offer a good way to coordinate fiscal and monetary policy implicitly (that is without explicit negotiations between governments and the ECB that could compromise the ECB's independence)? How should they be priced?

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This paper takes a wide view of nonstandard measures in difficult situations. We explore how, and to what extent, prudential metrics written into the new prudential and surveillance regulations can be used as policy instruments. The paper does not try to reach a judgment on which measures will work best. Instead we explore how these policies work; why they depend on high quality collateral/assets; what happens if policymakers are driven to expand the bounds of “sufficient quality or liquidity”; how new credit risks arise and for whom. Some of these risks are quite subtle, implicit or indirect. But they all reduce the effectiveness of the measures in question (a transmission problem). As a result, they require larger interventions to reach certain target values (a feasibility question, given the side effects). Thus, the new prudential regulation regimes offer several nonstandard policy instruments. But they depend on the availability of high quality and liquid collateral/assets. Poor collateral makes nonstandard measures less effective. Less credit and less cheap credit will be offered due to the increasing credit risks.

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