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EMU Reform and the New Normal for Monetary Policy: Challenges and Perspectives

Monetary Dialogue November 2018



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Abstract

This paper assesses the scope for monetary policy in the euro area as it returns to normal financial conditions without support from easy money but with a financial stability objective (whether legislated or not). We find that both financial stability and traditional monetary objectives can be achieved without one limiting the achievement of the other because, in the new normal, the ECB can use new policy tools derived from the regulatory metrics required under the post-crisis macro-prudential framework. Whether they offer large improvements depends on how a clear mandate for financial stability is defined and whether coordination with traditional monetary or fiscal policies is needed. Risks to monetary policy in the new normal are mainly external and depend on the transmission of monetary policies not aligned with ECB policies. This document was provided by Policy Department A at the request of the Economic and Monetary Affairs Committee.

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LIST OF ABBREVIATIONS

ECB	European Central Bank
BoE	Bank of England
BoJ	Bank of Japan
FED	Federal Reserve System
FLS	Funding for Lending Scheme
FOMC	Federal Open Market Committee
GFC	Great Financial Crisis
HQLA	High Quality Liquid Assets
LCR	Liquidity Coverage Ratio
NSFR	Net Stable Funding Ratio
OMO	Open Market Operations
QE	Quantitative Easing
TFS	Term Funding Scheme
TLTRO	Targeted Long Term Refinancing Operations
QE	Quantitative Easing

EXECUTIVE SUMMARY

- Much work has been done since the Great Financial Crisis (GFC) in 2008-12 to create new prudential and surveillance techniques to protect financial markets, financial institutions and the euro-area banking system from the consequences of excessive risk taking, financial instability or destabilising behaviour.
- The new prudential system includes a variety of different prudential or regulatory metrics which the ECB or other policymakers can use to ensure sufficient liquidity cover their lending and to underpin the stability and safety of the banks; to influence the growth of credit up or down; to promote lending and recovery without excessive lending; to steer interest rates; and to stabilise financial markets (including insurance, pensions) and to damp down asset price bubbles.
- As we emerge from the GFC and a period of excess debt, public and private, it is important to check how well euro-area bank lending is protected by these prudential safety measures. There is no doubt that liquidity in the financial system has increased a great deal. Has it increased enough? Yes, almost certainly.
- This paper shows that choices made when implementing both normal and crisis monetary operations have an impact on macro-prudential conditions and regulatory metrics, whether the central bank intended to do so (has a financial stability remit) or not. But can the Bank do it without prejudice to its traditional monetary objectives? Again, yes. In the new normal an imaginative use of its balance sheet gives a central bank the new weapons it needs to act counter-cyclically and support financial stability at the same time.
- *Specific lessons:*
 - i) A central bank may use its balance sheet, not only to set interest rates and the stock of base money, but to affect financial conditions and financial stability. This opportunity arises from the choice of a range of balance sheet parameters created by the regulatory metrics that emerged after the 2008 financial crisis;
 - ii) Many of these new macro-prudential instruments can be operated independently, without impact on monetary policy objectives such as the interest rate or supply of narrow money.
 - iii) The most important aspect is to be able to supply more liquidity in a crisis. This means that, in normal times, balance sheets should be more restrained so as to allow scope for expansion.
 - iv) A financial stability goal can be difficult to take into account properly if a central bank does not have a legal remit or statutory powers for financial stability. A case in point is the ECB. The EU Treaties are specific about monetary policy and banking supervision, but vague on financial stability responsibilities for which national authorities remain in the lead. This mixture of responsibilities raises issues of coordination and capabilities.

Two further lessons: in the new normal, the ECB may need to become more sensitive to credit expansions/contractions caused by spillovers/policy changes in other leading financial centres. Second, a largely unexplored area is coordination with fiscal policy to support the new normal policies.

Conclusion: The presence of new prudential metrics in the ECB's balance sheet provides the policymakers with a series of nonstandard financial measures to be used for regulatory or stability purposes, and to moderate unfavourable shocks. Some of them were present before the GFC. But they were seldom used systematically. Moreover they were poorly understood, which is what happens when prudential regulation is given a low priority.

1. INTRODUCTION

To ask if the euro-area monetary policy framework is still sound and effective as a policy device as we return to “normal” financial conditions after the fragility and bail outs of the Great Financial and Debt Crisis of 2008-14 is a natural question. We need to be sure that the banks are secure and enough liquidity is retained and supplied to the euro-economies to allow the necessary and desirable levels of financing. Ultimately much of this financing must be controlled, or at least underwritten by construction of the ECB’s balance sheet taking into account the new regulatory ratios that commercial banks need to satisfy to ensure adequate liquidity to back their lending programmes. But all of this needs to be done without interfering with or diminishing the ECB’s ability to pursue its traditional monetary objectives: low and stable inflation and, at times, output stabilisation.

In the interval since the crisis, a great deal of work has been done on prudential regulation and supervision. This paper therefore reviews the likely state of the ECB’s balance sheet as it develops into the “new normal” (section 2). Section 3 shows how the need to supply financial stability in the new normal creates new policy instruments in the changes that need to be made to the ECB’s balance sheet composition. So, greater financial stability can be achieved without prejudice to the ability to reach traditional monetary objectives. Section 4 then looks at the practicalities of implementing these new instruments. Sections 5 and 6, respectively, review what we know about the effectiveness of credit control under changes in external monetary shocks/policies and to what extent new prudential policies can do the job for us. Section 7 then concludes.

2. CENTRAL BANK ASSETS AND SUPPLY OF LIQUIDITY¹

Central banks can increase/decrease an economy's money supply and hence reserve balances, by acquiring or shedding assets. This creates/destroys central bank money by expanding or shrinking both sides of their balance sheets. The obvious policy questions are then exactly how large the balance sheet should be, and the best composition of balance sheet (which assets should be held). Different operational parameters and choices about the assets can yield the same level of monetary supply and interest rates, but may have quite different impacts on the regulatory metrics and hence financial stability. We argue that, in the "new normal", these effects need to be recognised and the choices made pro-actively, preferably under a transparent financial stability remit – currently missing from the statutes of some of the world's leading central banks: in particular, at the ECB (Mersch 2018).

2.1. The optimal size of balance sheet

The choice of the optimal size of the balance sheet is not a purely hypothetical issue: as of mid-2018, the US Federal Reserve, the ECB, the Bank of England (BoE) and the Bank of Japan (BoJ) are all contemplating how much, and how quickly, to reduce their asset holdings (BoE, 2018). Their public announcements suggest that it should be monetary policy that determines how much QE (Quantitative Easing) is unwound. What is certainly required in that reserves need to be at a level consistent with policy interest rates: in theory, the money supply should be kept precisely in line with the demand for reserves at any given level of interest rates.

Pre-crisis the optimal size of the central bank balance sheet was seldom debated. Interest rates were set to target the price level and, at that rate, the level of notes that would be demanded and supplied. And given both those outcomes, a level of reserves would be supplied consistent with the policy rate. In practice, that level of reserves was often forced by the use of reserve targets and penalty interest rates.

Thus, the optimal size of a central bank balance sheet could, in principle, be calculated by adding the demand for cash and the demand for reserves (together with a number of other autonomous factors which are generally small). But in practice that is likely to be difficult to do successfully because the interest elasticities of the demand for both cash and reserves have never been well determined. Econometric estimates for money demand equations have an unfortunate habit of breaking down as soon as one tries to rely on them for policy making (Goodhart's Law)². But estimating such demand equations in the new normal would be even harder than usual, for the following reasons:

- i. structural breaks in the demand for cash, reflecting new technology developments,
- ii. structural breaks in the demand for reserves, reflecting new prudential regulations; and
- iii. changing trends in the reserves data as a result of QE.

It is unlikely that empirical research will be able to generate estimates of the optimal balance sheet size until central banks return to more normal operations for a while and we have a consistent set of data at that level – which is unfortunate because it means we will only know the empirical answer once it is no longer a pressing question. Nevertheless, it is likely, for the reasons given, that the level of reserve balances and the optimal balance sheet size will remain significantly higher than pre-GFC, even if the demand for cash by the public falls somewhat.

Second, it is also possible that, in the new normal, the *precise* quantity of narrow money no longer matters so much for setting monetary policy. In principle, any excess money balances ought to be

¹ This section and the next are based on the analysis in Fisher and Hughes Hallett (2018).

² As a result, the underlying econometric estimates will be weak in any period that policy has varied.

inflationary. But very large expansions of the narrow money supply over the past 10 years, in many large developed economies simultaneously, did not result in high inflation (although they may have reduced deflation). We can partly explain why that would be the case – the extent to which the bank lending channel of QE was offset, first via the GFC and then higher liquidity requirements. But there are two further considerations.

QE puts base money into circulation in place of purchased assets. That is particularly powerful in a liquidity crisis when markets are dysfunctional, liquidity is precious and asset prices would otherwise be at a discount. In such circumstances it may not be possible or cheap to obtain base money in the market itself, even when offering to repo out the most liquid securities such as US Treasury bills. The sustained peaks of dysfunction were in 2008-9 after the collapse of Lehman Brothers and AIG, and again in 2011-12 as the euro-area crisis unfolded (Fisher 2011). It is not a coincidence that these were the periods when the Federal Reserve and BoE were undertaking most of their QE. In the US, some markets also had to adapt to the negative impact of the Dodd-Frank regulations on market-making liquidity so QE may have had a more prolonged effect.

As market conditions have settled down since the crisis, it is likely that the impact of QE on financial markets has diminished considerably – although no reliable or precise quantification is available to prove it. It is also possible that the continuing stretches of QE in the US and euro area have become increasingly less effective as market functioning has improved³. This improvement in market functioning, albeit not back to unsustainable pre-GFC conditions, gives a prima facie reason to suggest that the sale/maturing of QE assets will not have an equal and opposite effect to their purchase during the crisis period.

The second reason for a weakening of monetary imperatives in the new normal is the assertion that monetary policy should only have a short run or second-order effect on real outcomes. It is quite likely that real interest rates today are in fact being driven by real factors, in particular by sluggish productivity growth in the developed world, and less by monetary policy. If QE unwinds slowly, perhaps by allowing assets to roll off as they mature⁴, then that process is not likely to have a big independent impact on real interest rates.

Overall, the monetary case for tightening by reducing balance sheet size may not be strong. At this stage, one might reasonably think that a wide range of reserves balances is consistent with any particular policy interest rate. As a result, the financial stability implications of balance sheet size would be relatively more important: the supply of narrow money will affect the ease with which banks acquire the HQLA quotas needed to meet their LCR requirements⁵.

The challenge here, of course, is that the actual size of central bank balance sheets in this new era will need to be determined by trial (and possibly error). If QE is unwound and banks see their HQLA shrinking too far or fast, one can expect strong signals back from the market as the price of liquidity starts to rise – being bid up for deposits for example. To the extent that this is consistent with the intentions of monetary policy, it would not cause a problem. But if the monetary base is reduced too far then it could lead to volatile and excessive changes in market interest rates as banks struggle to meet their regulatory metrics.

³ See the QE fatigue argument in Hughes Hallett (2017). That paper details reasons why we should expect QE fatigue to set in.

⁴ This is the publicly stated policy for a number of the purchase operations undertaken by the ECB; one reason being that selling large quantities of less liquid assets would likely cause severe disruption to those markets.

⁵ The liquidity ratio mnemonics are defined in the appendix to this paper.

2.2. Excess cash or shortage, and the ability to influence market rates

A generic decision for a central bank, in the new normal or in crisis, is whether to operate with an ex ante excess of liquidity or allow a shortage. At the margin, moving from one to the other simply requires a slightly larger or smaller balance sheet. The main consequence is whether the central bank ends up supplying or draining liquidity in order to adjust to the 'right' level.

Direct asset purchases have long been part of the tool kit used to adjust the underlying size of the central bank's balance sheet. Open market operations (OMOs) can conventionally take the form of either outright purchases/sales or collateralised lending/deposit facilities. Pre-GFC, it was common for the major central banks to operate their balance sheets in such a way as to maintain a general but small ex ante shortage of base money on a regular basis – which they then offset by routine lending operations to meet the demand for reserves exactly⁶. These short-term operations were generally undertaken at the policy rate so that market interest rates would be set, or at least strongly influenced, by the policy rate. Any longer-term loans or deposits would usually be conducted by auction so that the price for term liquidity is market-determined and no signals are sent about future policy decisions.

Under this shortage approach, in order to force a precise, known quantity for reserves, commercial banks might be required to meet target levels for their reserve accounts, at least during a 'reserve maintenance period' (typically between rate-setting meetings). Once the target level for reserves is known, any shortage can be estimated and supplied by routine lending, subject to a few small 'autonomous factors' – usually other banking flows across the central bank balance sheet. More generally, a wide variety of related operating procedures is possible. For example, some central banks operate in the markets every day (e.g. Sweden) and others once a week (e.g. Bank of England, ECB).

It is also possible to operate routinely with a level of excess liquidity. For example, Botswana is a country where this has been appropriate, and although a small developing economy, it is worth explaining why. Botswana has a high level of foreign exchange earnings, largely from the government's share of the proceeds from the diamond industry, and it targets a composite⁷ exchange rate as its nominal anchor. A proportion of those foreign currency earnings are converted into domestic currency to help meet government expenditure needs. That leads to an excess supply of domestic liquidity. To prevent the risk that the excess liquidity becomes inflationary, the central bank drains liquidity through a deposit facility which also enables the central bank to set a base interest rate. This is a perfectly reasonable way of operating for both government and central bank. It also illustrates the fact that monetary and fiscal regimes can interact with each other to affect the amount of liquidity in the system (if allowed to⁸).

A hybrid, interim approach combining an ex ante excess supply, within a system designed for a shortage, is also possible. When operating with a shortage, it is normal for the central bank to offer only as much liquidity as is needed for the system as a whole and for banks to bid for their share. If necessary, the banks then trade among themselves so that each and every firm's requirements are met. But in a crisis, when the inter-bank market may not be functioning, this approach is problematic. An unlimited amount needs to be offered by the central bank with 'full allotment' (every bidder gets

⁶ Alternatively, one could operate by buying short-term bills at close to the policy rate, rather than making short-term loans. This is not a significant distinction for this paper.

⁷ It targets a weighted average of the currency values of its main trading and investment partners.

⁸ Under the Lisbon Treaty, monetary financing of government expenditure is illegal in the EU. And this has meant that government decisions are not allowed to have a big influence on the central bank balance sheet. In the UK, cash management is undertaken by the Debt Management Office and only small balances are held directly at the BoE.

exactly the cash they need at a pre-determined rate). This was the approach taken by the ECB in 2007 when the first signs of crisis appeared.

The choice of a shortage or excess regime becomes important in the new era, especially when combined with other operational choices. We take each case in turn.

2.3. A corridor or floor system for interest rates

Although central banks can set a policy rate to influence market interest rates, in a market-based economy they can never be sure that market rates will follow the policy rate precisely, even for very short-term rates. So arrangements are made to try to guide market interest rates to stay close to the policy rate (Fisher, 2011). Maximum and minimum rates can then be set to define a 'corridor' around the policy rate to limit volatility. These rates can be set by offering special facilities for commercial banks to borrow or deposit overnight, such that there is never an incentive for commercial banks to operate at rates above or below the corridor bounds.

When conducting QE, where substantial excess base money is created by the authorities, most central banks elected to switch to a 'floor' system for rates, rather than a corridor. There was so much excess base money that rates were quite likely to fall below the policy rate, but were very unlikely to rise above it. In such a world, a minimum rate on all deposits at the intended policy rate can help ensure market rates behave in line with policy intentions⁹. At the ECB, this had the effect that the marginal deposit rate has become the *de facto* policy rate, displacing the higher main refinancing rate at which the ECB offers to lend reserves. At the Bank of England, the reserve targets were suspended. At the FOMC in the US, a legal change had to be made so that they could pay interest on 'excess' reserves and retain some degree of control.

In the new normal, central banks can decide which of these operating systems they prefer to use. If the demand for reserves remains high because of liquidity requirements, then short rates should stay close to the policy rate. That is because the requirements set a minimum, not a maximum or optimum: for tactical reasons most firms would hold plenty of excess HQLA over their LCR in order to avoid the regulatory consequences of falling below it. Internal buffers mean that commercial banks would not be constrained to go into the market immediately to borrow when faced with an unanticipated outflow – as was required pre-GFC when reserve balances were targeted exactly. Nor would commercial banks lend in the market at less than the policy rate, if they can earn the policy rate without limit on their reserve balances.

This situation has been further reinforced by an apparent shrinkage of the unsecured inter-bank market¹⁰ relative to pre-GFC, in which commercial banks used to trade in order to shuffle reserve balances between themselves.

Finally, this choice of corridor or floor system ties in neatly with the decision to operate with a shortage or an excess demand for reserves. Central banks creating an excess will naturally find that the floor system is a more suitable choice, in which draining can be automated by paying interest on any level of reserves.

⁹ If large holders of cash do not have central bank accounts, or cannot receive interest on those accounts, then market rates can fall below the floor whatever the system. If that happens, arrangements have to be made to work around that problem.

¹⁰ Formal reporting of volumes in the unsecured money markets for sterling and euro only commenced a few years ago and insufficient data are available to confirm this trend. The comment is based on anecdotal evidence from market participants.

2.4. Access to the central bank's balance sheet

If central banks allow LCRs to be met principally by reserves, possibly with a default ex ante excess, then their balance sheets will **remain** expanded; in which case complicated rate-setting systems would neither be necessary, nor very attractive. To continue to operate with excess base money and a simple floor system for interest rates, would probably work well to guide market rates close to the policy rate.

Such a simple floor system does raise other challenges however. If procedures are chosen that require a central bank to be precise about the quantity of reserves, then it has to take account of any autonomous factors which wash over its balance sheet on a daily basis: e.g. deposits by non-banks such as government entities. Under a shortage system, any source of fluctuation in domestic currency needs to be tightly monitored and controlled so that the shortages are precisely known. Access to the central bank balance sheet – including by government accounts – is then a potential disturbance (autonomous factor) and such access needs to be curtailed.

Second a simple floor system relaxes the technical necessity for the central bank to set a target value for the precise aggregate amount of reserves they wish to see held by the banks. Instead the market can be left to decide. The central bank can then discover whether it has supplied approximately the right amount of reserves by observing the market rates that emerge. If it wishes, it could even vary its balance sheet to see how sensitive demand really was – this being a 'repeat game' in real time.

A corollary of this arrangement, and possibly an unwelcome one, is that central banks may find themselves under pressure to take deposits from, or lend to, a wider variety of institutions. Given a context in which non-banks have become more influential in providing intermediary services and/or become a systemic risk, this could become an important consideration. No longer would a simple cry of 'monetary policy' allow a central bank to deny such proposals, and the pressure for change could become uncomfortable. A new policy approach could be needed to determine exactly what systemic risks the central bank balance sheet could and should be asked to mitigate, or what economic benefits an active use of the balance sheet could bring. Answering such questions would then determine what size the balance sheet should be.

2.5. The optimal composition of balance sheet assets

We have argued that, even if monetary policy remains the principal determinant of the size of the balance sheet,¹¹ that choice will affect financial stability. A large balance sheet would facilitate the HQLA requirements being met by reserves. A smaller balance sheet might force commercial banks to buy more HQLA in the market. But the size of the balance sheet is not the only parameter affecting the outcome for liquid asset holdings and funding ratios. *Asset composition* may be even more important.

To illustrate the point, we take the BoE as an example. As of now, it could continue to hold a large portfolio of gilts to maintain reserves at a high level¹². Gilts are HQLA. If the BoE sold some of its gilts, reducing the reserves supplied and hence its balance sheet, the total quantity of HQLA in the market would be unchanged. But if commercial banks then end up holding large portfolios of gilts or other long-dated liquid assets instead of reserve balances, that would increase the market risk held on their balance sheets. And that could add to the risk of financial instability in the system. This is unlikely to

¹¹ A central bank may provide services to a range of customers, including other central banks. The extent of such activities can clearly affect the balance sheet.

¹² Technically the BoE's QE gilts are held off balance sheet in a special purpose vehicle (SPV). On the balance sheet is a loan to the SPV to finance those purchases. This is done for accounting and risk purposes, but it does not affect the economic outcomes.

be a desirable outcome for either the central bank or firms. Alternatively, commercial banks could optimise risk vs. return across all the HQLA available which would likely make them want to hold credit assets (loans), or other short-term liquid securities, rather than gilts. So simply swapping gilts for cash is unlikely to have much effect in practice. But other choices certainly could.

One alternative for the BoE is to keep the size of its balance sheet unchanged, but alter the composition of the assets purchased. Suppose that the BoE replaced its gilt portfolio with a portfolio of purchased illiquid assets which were all non-HQLA: leading to portfolios of loans (**credit easing** rather than just monetary easing). That would be equivalent to an injection of HQLA – hence liquidity – into the system. This could potentially be a powerful policy tool.

There are other options too. Suppose the BoE sold all its QE assets and carried out direct large scale lending operations instead. That would maintain its balance sheet and reserve balances in place, and hence HQLA at a similar level. But the impact on the commercial banks would depend on what parameters are set in or by those lending operations (price, term, collateral). In general, relying on short-term funding on a large scale from the central bank could represent a significant replacement risk to the individual institutions; they would have to continually rebid for their needs even while market conditions were changing. The funding that commercial banks receive indirectly as a result of sustained central bank asset purchases is in practice likely to change slowly, and hence be more predictable for them, than funds supplied by large scale lending operations.

The central bank is also unlikely to want to make routine short-term lending operations on very large scale since that would be resource intensive and give them operational risk. Maintaining an expanded balance sheet mostly through outright purchases would appear to be a more comfortable outcome for both sides from an operational point of view.

However, there are also risks associated with the purchase of large quantities of assets. Buying government bonds can be thought of as a (private sector) credit risk-free strategy for a central bank; but it does not leave the central bank completely free of risk. First it ties the central bank to uncertain fiscal outcomes which may affect future borrowing conditions. And if a serious possibility of government default does emerge then wider considerations apply which include risks to central bank independence. Buying government bonds specifically implies a one-off monetary financing of government expenditure. In addition, there is an interest rate risk on any portfolio of long-term securities. That led the BoE to get a government indemnity for its QE portfolio, given that it holds a relatively small amount of free capital and reserves itself.

Next, if private sector securities are bought, there is credit risk to take care of. A government indemnity or other form of capital support could help with that; but, at the same time, one can expect the government to (quite reasonably) argue it should have some influence over what is bought, if it is bearing the risk. Then there will be pressures by different interest groups for the central bank to buy ‘their’ preferred assets. Buying some assets and not others will have an impact on relative spreads and capital allocations in the economy. That could be useful as a form of industrial or sectoral policy. But it also carries the risk of re-politicising the central bank’s monetary policy: to support “Zombie” firms, create distortions and the danger of being stuck with an inappropriate portfolio as circumstances change. In response to these pressures, a central bank’s defence might then be to ‘buy the market’ in an attempt to avoid distortionary allocations of capital.

In sum, buying large quantities of private sector assets outright in the new normal is not a very attractive proposition. The one exception is the ECB, where political constraints and absence of a fiscal union in the EU make it harder to buy sovereign debt, especially given the varying credit risk across different EU member states. The ECB might therefore have a preference to buy private assets,

especially in disadvantaged areas or sectors. But it has chosen instead to buy the private market in a neutral way so as not to favour the disadvantaged areas over others.

3. BALANCE SHEET OPERATIONS IN THE NEW NORMAL

3.1. Collateral policy

To the extent that the central bank chooses to use lending or draining operations, the policy question becomes what collateral it should accept or place. By changing the eligibility of less liquid collateral, a central bank can influence commercial banks' liquidity metrics. Such a policy of 'Eligibility Easing', seen by some as a variant of credit easing, has been suggested by Huertas (2018). It reflects what some central banks actually did in the crisis.

If the central bank takes non-HQLA as collateral as the ECB does at the margin, then it offers a very powerful liquidity transformation that would directly impact the LCR measures. Most central banks would be wary of doing that to any extent for at least two reasons: First because of the increased contingent credit risk and interest rate risk. The use of appropriate haircuts could equalize the risk to the central bank to a large degree, although the haircuts can become both large and difficult to calculate correctly given the uncertainty of future financial events.

A downside of high haircuts for very illiquid collateral is that the larger the haircut, the more conservative it needs to be to ensure protection and the less support is offered. Against that, collateral which is completely illiquid in the market has virtually no opportunity cost for the commercial bank. So haircuts will not deter commercial banks from trying to utilise as much illiquid but eligible collateral as they can in order to get more HQLA in return.

A second consequence of a very broad definition of collateral eligibility (in normal times) is that commercial banks would be less independently liquid and less resilient than they appeared. It would also likely distort markets by reducing illiquidity premia, and hence price differentials between those assets that were both eligible and traded, whilst increasing demand for and supply of them. The central bank would then be encouraging growth in markets that only exist on account of their own collateral policy. Some might argue that this would be a positive outcome. But unless done to offset some other externality, it becomes a market distortion.

The BoE anticipated this risk. It introduced special rules for lending against illiquid collateral, in which three different collateral sets are defined with varying liquidity characteristics against which different prices and quantities can be lent. Index-Linked Term Repo operations (Fisher, 2011) are conducted in which any of the three collateral sets can be used, with different bid prices allowed. Greater quantities are offered by the BoE automatically for less liquid collateral, as commercial banks bid up the price to use it. This was based on a design by Klemperer (2008, 2016). It is technically complex to implement but has functioned reasonably well in the period since 2010 (albeit that the demand for extra reserves at that time was low because of QE).

In contrast, the ECB is currently offering to lend "full allotments" against a very broad collateral set, including some non-HQLA (where the risks are born by the National Central Banks). The ECB's collateral policy was originally determined by the need to treat all euro-area countries equally (Mercier and Papadia 2011). To make that work resulted in a very broad eligibility regime, much which was relatively illiquid – or would have been if it were not eligible (a degree of liquidity being endogenous to central bank acceptability). Emergency measures have expanded the eligibility definition even further. Given the risks involved, this may not be the best (safest) way of operating.

Now that more normal conditions have returned, the ECB needs to consider whether it wishes to retain such a broad collateral set as part of the "new normal". The pressure to use the least liquid collateral in ECB operations will inevitably intensify if and when the ECB reduces its supply of reserves.

3.2. The term structure

A further dimension of balance sheet choice is the maturity (or term) of the central bank's operations. First, consider outright purchases. These are neither permanent since assets are generally fixed maturity and can be sold at any point; nor is the stock held time-limited since maturing assets can always be replaced/refinanced. But, in general, swapping cash for term securities shortens the maturity of the portfolio of assets in the system and thus flattens the yield curve. Thus the longer the maturity, the bigger is the impact.

Second, consider central bank lending operations. To the extent that central banks choose to lend or drain, they can do so at a range of maturities. The target interest rate for monetary policy is usually short-term; that is, until the next policy meeting.¹³ To facilitate that, at least a portion of lending will need to be offered at very short maturities; daily or weekly. But short-term operations (unless fully allotted at the policy rate) are an unpredictable source of liquidity (draining) for commercial banks. Relying on short-term auctions in large scale would therefore create additional liquidity risk. And very large operations may increase operational risk for both central banks and their counterparties. So a portion of longer-term operations – maybe up to 12 months – are typically used to reduce the turnover in the short-term operations in order to make the latter manageable and the supply of reserves more predictable for individual banks.

As an example, to make the point, both the ECB and the BoE have engaged in multi-year loans as a crisis measure to support their real economies. The BoE's latest Term Funding Scheme (TFS) lent over £125bn for up to 4 years¹⁴. Unlike its predecessor, the Funding for Lending Scheme, the TFS lends cash (FLS lent 9-month Treasury Bills¹⁵). So the TFS scheme directly increased the level of reserve balances; 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 whilst supplying cash which can be held to help meet HQLA. But, by making cheap funding available to all banks at the same fixed price, these schemes also depress competition in the banking market. That is to say, prices can become determined by, or consistent with, the central bank's desired policy rate, rather than at a price determined ex-post (and endogenously) in the markets after banks have competed for the loans they want or need.

Within the banking sector, it is clear from published statistics that the FLS boosted the smaller, growing challenger banks, whereas the TFS appears to have been used more by the larger banks. Be that as it may, as those measures 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 political economy arguments which arise if the central bank ends up providing extensive term funding directly to commercial banks. For example, such term funding can have unpredictable effects on competition as some banks will inevitably benefit more than others (as in FLS vs. TFS). If the banks end up over-lending – to the housing market say – then the central bank may take the blame. And if a bank over-extends itself using central bank funds, will the central bank come under more pressure to bail it out? There is more credit (and possibly fiscal)

¹³ Technically any point on the yield curve, or the slope of the yield curve itself, could be the policy target. The Swiss National Bank targets 3-month Swiss Franc Libor rates, for example.

¹⁴ £126.4bn as at 12 September 2018. Source: Bank of England website.

¹⁵ The FLS is essentially a collateral swap and therefore off balance sheet, while TFS is a collateralised loan on balance sheet.

risk associated with longer-term funding. Arguably, providing more extensive liquidity funding is akin to part-nationalising the banking system.

The Bank of England has already announced the prospective closure of the TFS and the ECB has closed its version, the TLTROs, to new operations. But, given the political economy arguments that could be levelled at outright QE purchases, one cannot exclude term funding operations entirely in the future, at least as a crisis measure.

3.3. Leverage ratio considerations

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 can have an impact on the unweighted measures which we can now use for policy purposes, such as leverage ratios, unless that is explicitly ruled out. The reason for doing so 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 add liquidity as well. But if those extra reserves are counted as assets for the leverage ratio, improving liquidity metrics would increase capital requirements whenever that leverage ratio was binding. To that extent, such a policy would be pro-cyclical in the new era and thus limit the central bank's ability to mitigate whatever negative shock had occurred.

By contrast, leaving reserves out of the leverage ratio calculations gives the central bank a potential macro-prudential policy instrument through its balance sheet size. Whether this is an independent tool from interest rates depends on whether the central bank can separately influence both the price and quantity of money. In principle that should not be possible. But in practice, at least when interest rates are close to zero, there does seem to be some ability to do both. On the other hand, excluding reserve accounts is probably a sensible policy for other reasons, as noted by the BoE (PRA, 2016).

Having specified the need for and possibility of new policy instruments created by changes in the central bank's balance sheet in the new era, we now turn to two issues of implementation that will become important in the new normal.

4. USING PRUDENTIAL RATIOS AS POLICY INSTRUMENTS

At this point in the new normal, the banks are safer because they hold more than sufficient liquidity. On the other hand, changes in credit risk mean that unsecured inter-bank lending has been shrinking, while the secured inter-bank markets are steady (not expanding) in part because of the leverage ratio constraint. Market making for illiquid securities has also diminished as it is no longer cost-effective for banks to use their balance sheets to support clients. These market changes are important for this paper because they mean that banks are now less able to manage their reserve accounts by lending to, or borrowing from, other banks. That creates a need for new policy interventions to ensure that commercial banks can diversify to manage their liquidity and meet their regulatory requirements.

The overall effect of the new regulations on banks has therefore been to limit their role as intermediaries compared to pre-GFC times. That in turn means that other firms are growing in importance. In time this is likely to lead central banks to want to widen their choice of counterparties and regulatory boundaries in the new normal. In fact some extensions in that direction are already being made on systemic grounds.

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. 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 banking activities via the clearing system. And some medium-sized banks chose not use a reserve account. They banked with larger banks instead, which raises stability risks as it increases interconnectedness. The lesson: even the smallest banks will now need to hold reserve accounts.

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 has probably made any such limits redundant; the reserve requirements would have to be set at an unusually high level to be binding above 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. This might become a risk if “eligibility easing” was used on a regular basis (as in the ECB, it would seem). 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 in 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 extracting what scope there is for using macro-prudential regulations as possible policy instruments difficult.

However by massively expanding reserve balances that count as HQLA, QE almost certainly made it easier for commercial banks to meet their LCR and NSFR requirements – whatever it may have done for the real economy. This would normally increase the stimulus effect of QE. On the other hand, depending what type of deposits a bank receives, potential deposit outflows could also rise to offset the increase in 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. In addition, both would 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 the LCR increase (the effect on the NSFR depends on the term of the funding obtained).

5. EXTERNAL SHOCKS, BANK LENDING AND LIQUIDITY

Until now our analysis has been confined to internal stability by treating the Euro financial system as closed. But do the same arguments hold when the Euro banks are exposed to shocks or changes in financial conditions outside the euro area? Or when changes in the performance of the economy originate outside the banking system?

Global Financial Cycles and Macro-Prudential Policies: Can macro-prudential policies or non-monetary tools such as capital controls and reserve requirements enable policy makers to mitigate shocks in the form of sudden stops or reversals in external financial flows? Can the external exchange rate (fixed, floating or hybrid) mitigate or insulate an economy from monetary policy transmissions from larger advanced economies and reduce the volatility in domestic banking or financial markets induced by global capital flows?

Exploring this issue is important because the accommodating monetary policies of the past decade are being tapered at a time of increased global financial flows. As a result, interest rates and asset prices in recent years have become increasingly correlated globally. That means short-term and long-term interest rates are increasingly influenced by the rates in advanced nations, predominantly rates in the United States. The resulting co-movements are likely to affect exchange rates, policy rates, long-term interest rates, international bank lending and portfolio flows. Obviously such volatility creates instability, uncertainty, and will be of interest to policymakers. Do we have policy measures to mitigate such effects?

Transmission of Large Economy Monetary Policies to Smaller Economies: Current research argues that the monetary transmission effect from advanced economies has created a global financial cycle. If so, can the type of exchange rate regime used in the affected economy cushion or remove the transmission of large economy policies to smaller economies? Specifically, how might policymakers moderate appreciations of the domestic real exchange rate caused by capital inflows when interest rates in the leading economies decrease? Or moderate the depreciations when advanced economy interest rates rise? Even with a single currency and single interest rate, the smaller euro-area economies may be differentially affected if the external exchange rate can offer little protection.

An alternative approach is to accumulate (buy up) foreign exchange reserves to sterilize incoming financial flows that drive up the price of domestic currency in order to moderate the degree of currency appreciation. In practice, many smaller economies have relied on this kind of direct foreign exchange interventions to deal with gross capital inflows. Hence, an evaluation of the effectiveness of that strategy is an important part of the answer to the question of what will be needed in the new normal.

Impact of Global Financial Cycles: Rey (2015) argues that, since capital moves freely, the global financial cycle (GFCy)¹⁶ constrains national monetary policies regardless of the exchange rate regime. Hence, the monetary “trilemma” that contends that free capital mobility and independent monetary policies are attainable only if exchange rates are floating, no longer holds. In other words, the GFCy converts the monetary trilemma into a monetary dilemma because independent monetary policies are only possible if the capital account is managed. However this leads to an obvious policy dilemma: do we really want to restrict capital mobility? Ways to limit that dilemma are: (i) targeted capital controls; (ii) acting on the source of the financial cycle, the U.S. Federal Reserve or other central banks; (iii) to use macro-prudential policies to act on the transmission channel cyclically by limiting credit growth, leverage and liquidity ratios during upturns; and (iv) act on the transmission channel directly by imposing stricter limits on leverage and liquidity ratios for all financial intermediaries.

¹⁶ The abbreviation GFCy is used to differentiate the global financial cycle from the Global Financial Crisis (GFC).

Global Financial Cycle Characteristics: Rey identifies the global financial cycle by showing the co-movement of capital flows, asset prices and credit growth with the VIX¹⁷, a measure of uncertainty or risk aversion in the financial markets. Capital flows also show a strong co-movement with gross financial flows and global factors as proxied by the VIX. Combining these results reveals a financial cycle in gross capital flows, credit creation and asset prices that is negatively correlated with fluctuations in uncertainty and risk aversion. Even at a regionally disaggregated level¹⁸, capital inflows are negatively correlated with the VIX, with the exception of FDI inflows which are positively correlated.

Next Rey finds that in all the main financial centres *credit growth* is negatively linked to the VIX and that this correlation is strongest in North America and Western Europe. This is an important result for the future because the recent literature has confirmed that excessive credit growth is a strong predictor of crises (Gourinchas and Obstfeld 2012; Schularik and Taylor 2012). Further Rey also finds that low values of the VIX, over a period of time, are associated with a build-up in the GFCy: more capital inflows and outflows, more credit creation, more leverage and higher asset price inflation.

Hence, given the weight of the US dollar in international financial markets, we need to examine the impact of (re)financing costs in dollars on the GFCy; that is, of US monetary policy. If surges in capital flows, and credit flows, are associated with increases in global leverage, it is likely that monetary conditions in financially leading economies will be transmitted world-wide by cross-border credit flows, especially to those with less depth in their financial markets (typically smaller economies). Consideration therefore needs to be given to gross flows to monitor currency and maturity mismatch effects on the balance sheets of financial intermediaries and households because such mismatches are known to contribute to financial instability.

Monetary spillovers to small open economies: In open economies, the exchange rate is the obvious transmission channel for external monetary conditions. If the exchange rate floats, a fall in the foreign interest rate leads to an appreciation of the domestic currency. A similar effect is created by asset purchases by major central banks which drive down their interest rates. As for interest rates in a euro economy, the ECB can respond to changes in foreign monetary policy by changing its own policy rates. Or it can do nothing. But in either case, credit offered in the small economy will expand because the funding base (reserves, liquidity) in the banking system will increase because of the capital inflows and not fully adjusted domestic interest rates. This will happen whether the small economy likes it or not, **unless** the ECB chooses to follow the lead country's central bank. The opposite will happen if the lead economy raises interest rates: capital outflows, a loss of credit control, contracting credit in the banking system (falling reserves and liquidity). Again, the only way to avoid these negative effects is to follow the centre's central bank's lead.

A second source of spillovers is that the pricing of small country bonds in local and international markets will inevitably be determined, in part, by US interest rates used for global benchmarking of yields and risk appetite. In addition, capital flows created by cross-border bank lending, portfolio flows and risk sharing account for a good part of gross capital flows between smaller economies. And the cross-border lending share in total capital flows has decreased over time while the portfolio share has increased.¹⁹ These composition shifts and increased benchmarking can only make it more difficult to control credit expansions (or decline) by conventional monetary means.

¹⁷ The VIX is the Chicago Options Exchange Market Volatility Index. The VIX is a measure of the implied volatility of S&P500 index options. The VSTOXX is the European equivalent, VFTSE in the UK, and VNKY for Japan.

¹⁸ Rey examines six regions: North America, Western Europe, Central and Eastern Europe, Latin America, Asia, Emerging Asia and Africa.

¹⁹ Mohanty (2014).

These observations matter because they show that, even within the Euro, the smaller economies are subject to influences from outside; and differentially so if no attention is given to new and possibly non-monetary or unconventional policies in the new normal. The ECB has a remit not to put any national economy at an advantage as a result of its policies; but it has no remit to allow a member economy to be put at a disadvantage.

Policies to moderate external shocks: Is a flexible Euro exchange rate better placed to moderate the impact of external financial and monetary shocks on the banking system in Europe's smaller or weaker economies? In practice there is little consensus on how policy makers should respond to the transmission of external policy shocks.

However, a second approach is to restrict capital flows in or out, which according to some, could assist monetary policy in the short-run by moderating the size and volatility of inflows and could modify inflows toward more stable flows (to reduce the risk of damaging outflows in the future). A third approach is to consider using macro-prudential tools, as in sections 2 and 3 above.²⁰ Data from Akinci and Olmstead-Rumsey (2015) show that capital inflow restrictions and macro-prudential policies that target the banking sector are associated with lower credit growth. That could be useful innovation to hold in reserve.

FDI and Financial Market Depth: Ostry et al. (2010) find that countries with larger stocks of foreign liabilities or financial FDI fared worse in the global financial crisis than countries with larger stocks of nonfinancial (physical) FDI.

This suggests the depth of financial markets important in this context. Barajas et al. (2013) find evidence of a positive relationship between financial depth, economic growth and volatility. By contrast, rapid expansions in credit are often associated with higher bank fragility and the likelihood of a systemic banking crisis.

²⁰ See Committee on the Global Financial System (2009) for a more detailed review.

6. THE WEIGHT OF HISTORY

One constant in this review of the “new normal” for EMU monetary policy is that it is almost certain that the euro-area, in common with many other economies, will enter the next recession with higher debt and lower interest rates than the policymakers and the policy institutions are equipped to deal with. This significantly constrains their policy options and capacity to deal with a severe recession. Hence the discussion above of how the ECB’s balance sheet and prudential regulation can be used to extend or augment the conventional responses: the “old normal”.²¹

However, if we regard the discussion of balance sheet policies and prudential regulation as “unconventional” unconventional monetary policies, there is no shortage of “conventional” unconventional policies to go with them: nominal GDP or price level targeting, QE, negative interest rates, helicopter money, explicit (or preferably implicit and automatic) coordination with fiscal policy to support the weakened monetary policy arsenal in these cases. Many of these possibilities have been reviewed at length in previous monetary dialogues: each has its benefits and costs, but the side effects often outweigh numerically weak benefits. For example, QE is expensive in terms of the boost to GDP per unit purchase of assets and is better deployed to prevent a financial collapse than create a recovery; it also has unfavourable distributional effects and is difficult to use for removing risk premia without favouring one economy over another (credit easing is similar). Nominal GDP or price targeting involves the same type of policy rule with time varying weights as a more nuanced implementation of inflation targeting would. Negative interest rates have awkward distributional consequences, need to be kept small if they are not to distort investment, and seldom have the intended effect because they lower profitability in the banking sector.

But the option that has not been fully explored is coordination with fiscal policy, especially in bad times. There is plenty of recent evidence that fiscal policy is more effective in bad times than good (Auerbach and Gorodnichenko 2012; Blanchard and Leigh 2013); and that Riccardo equivalence, long term debt and borrowing costs tend not to rise in bad times (Auerbach and Gorodnichenko 2017). So a convenient way to implement that coordination would be to issue GDP bonds (Hughes Hallett, 2016a,b). This would make the coordination automatic; that is without recognition lags or measurement delays. The bonds work through the financial markets and therefore lie outside parliamentary delays and political manipulation, yet force fiscal expansions made in bad times to be paid back in good times. At the same time, they remain part of national fiscal policy as fiscal federalists would define it. GDP bonds, or a similar support mechanism, would therefore be an important and perhaps necessary innovation to consider as part of the new normal.

²¹ The opposite case of how to handle the next boom is less problematic because the conventional instruments are still in place, still effective, and supplemented by the usual controls on excess lending and credit expansions.

7. CONCLUSIONS

This paper shows how choices made when implementing both normal and crisis monetary operations will have an impact on macro-prudential conditions and regulatory metrics, whether the central bank has a corresponding legal remit or not. In the new normal, an imaginative use of its balance sheet could give a central bank at least some of the weapons it needs to act counter-cyclically *and* to support financial stability.

Specific lessons:

- i) A central bank may use its balance sheet, not only to set interest rates and the stock of base money, but to affect financial conditions and financial stability. This opportunity arises from the choice of a range of parameters based in part (but not always) on the regulatory metrics that emerged after the 2008 financial crisis.
- ii) Many of these new macro-prudential instruments can be operated independently, without impact on monetary policy objectives such as the interest rate or supply of narrow money.
- iii) The most important aspect is to be able to supply more liquidity in a crisis. This means that in normal times, balance sheets should be more restrained so as to allow scope for expansion.
- iv) A financial stability goal can be difficult to take into account properly if a central bank does not have a legal remit or statutory powers for financial stability. A case in point is the ECB. The EU Treaties are specific about monetary policy and banking supervision, but vague on financial stability responsibilities for which national authorities remain in the lead. This mixture of responsibilities raises issues of coordination and capabilities.

Two further lessons: in the new normal, the ECB may need to become more sensitive to credit expansions/contractions caused by spillovers from policy changes in leading financial centres. Second, a largely unexplored area is greater coordination, with fiscal policy working to support the new normal monetary policies.

REFERENCES

- Auerbach, Alan and Yuri Gorodnichenko. 2012. Measuring the Output Responses to Fiscal Policy. *American Economic Journal: Macroeconomics*, 4, 1-27.
- Auerbach, Alan and Yuri Gorodnichenko. 2017. *Fiscal Stimulus and Fiscal Multipliers*, NBER Working Paper 23789, Cambridge, MA.
- Akinci, Ozge, and Jane Olmstead-Rumsey. 2015. *How Effective are Macroprudential Policies? An Empirical Investigation*. International Finance Discussion Papers, Washington DC: Board of Governors of the Federal Reserve System
<https://www.federalreserve.gov/econresdata/ifdp/2015/files/ifdp1136.pdf>.
- Bank of England (2018), 'The Bank of England's future balance sheet and framework for controlling interest rates'. Bank of England Discussion Paper, August 2018. At https://www.bankofengland.co.uk/paper/2018_/boe-future-balance-sheet-and-framework-for-controlling-interest-rates.
- Barajas, Aldo, Thorsten Beck, Era Dabla-Norris, and Sayed Reza Yousefi. 2013. *Too Cold, Too Hot, Or Just Right? Assessing Financial Sector Development Across the Globe*. IMF Working Papers, Washington, DC: International Monetary Fund. At: <https://www.imf.org/external/pubs/ft/wp/2013/wp1381.pdf>.
- Blanchard, Olivier and Daniel Leigh. 2013. Growth Forecast Errors and Fiscal Multipliers. *American Economic Review*, 103, 117-20.
- Committee on the Global Financial System. 2009. *Capital flows and emerging market economies*. CGFS working Group chaired by Rakesh Mohan, Basel, Switzerland: Bank of International Settlements.
- Fisher, P.G. (2011), 'Recent developments in the sterling monetary framework'. Bank of England speech given at Manchester University, March 30. Available at: <https://www.bis.org/review/r110401a.pdf>.
- Gourinchas, Pierre-Olivier, and Maurice Obstfeld. 2012. Stories of the Twentieth Century for the Twenty-First. *American Economic Journal: Microeconomics*, pgs. 226-265.
- Her Majesty's Treasury (2018), 'Financial Relationship between HM Treasury and Bank of England: memorandum of understanding'. At: <https://www.gov.uk/government/publications/financial-relationship-between-the-treasury-and-the-bank-of-england>.
- Huertas, T (2018), 'Are banks still special?', *The Journal of Financial Perspectives*, EY Global Financial Services Institute, Vol 5, No 1, February. pp 1-15.
- Hughes Hallett, A. 2016a. Ultra-low/Negative Yields on Euro Area Long Term Bonds: reasons and implications for monetary policy, *European Parliament, Brussels*, from <http://www.europarl.europa.eu/committees/en/econ/monetary-dialogue.html>.
- Hughes Hallett, A. 2016b. Transmission Channels of Unconventional Monetary Policy in the Euro Area: where do we stand? *European Parliament, Brussels*, from <http://www.europarl.europa.eu/committees/en/econ/monetary-dialogue.html>.
- Hughes Hallett, A (2017). In 'Extending Quantitative Easing: Additional Risks for Financial Stability? *Compilation of Notes*'. pp7-28. Luxembourg: Publications Office of the European Union. Monetary Dialogue, DOI: 10.2861/36569.

- Hughes Hallett A, and Paul Fisher (2018). ECB nonstandard monetary measures, collateral constraints and potential risks for monetary policy, *European Parliament, Brussels* <http://www.europarl.europa.eu/committees/en/econ/monetary-dialogue.html>.
- Hughes Hallett, A. and A. Chams-Eddine (2018). Abundant Liquidity and Bank Lending Activity in the euro: an assessment of the risks. *European Parliament, Brussels*, <http://www.europarl.europa.eu/committees/en/committees/en/econ/monetary-dialogue.html>.
- Klemperer, P (2008) 'Product-mix auctions', *Journal of the European Economic Association*, 2010, 8, pp526-36. Updated in (2016) and available at: <https://www.nuff.ox.ac.uk/users/klemperer/productmix.pdf>.
- Mercier, P and F Papadia (eds) (2011), 'The Concrete Euro'. Oxford University Press.
- Mersch, Y (2018), 'Financial stability and the European Central Bank'. Speech at the ESCB Legal Conference, Frankfurt/Main, 6 September 2018. Available at: <https://www.bis.org/review/r180906a.htm>.
- Mohanty, Madhusudan S. 2014. *The Transmission of Unconventional Monetary Policy to the Emerging Markets - An Overview*. BIS Papers No 78, Basel, Switzerland: Bank of International Settlements.
- Ostry, Jonathan D., Atish R. Ghosh, Karl Habermeier, Marcos Chamon, Mahvash S. Qureshi, and Dennis Reinhardt. 2010. *Capital Inflows: The Role of Controls*. IMF Staff Position Note, Washington, DC: International Monetary Fund. <https://www.imf.org/external/pubs/ft/spn/2010/spn1004.pdf>.
- Prudential Regulation Authority (2016) 'PRA statement on the leverage ratio': <https://www.bankofengland.co.uk/prudential-regulation/publication/2016/prs-statement-on-the-leverage-ratio>.
- Rey, Helene. 2015. "Dilemma Not Trilemma: The Global Financial Cycle and Monetary Policy Independence." *NBER Working Paper Series*, May. <http://www.nber.org/papers/w21162>.
- Schularik, Moritz, and Alan Taylor. 2012. "Credit Booms Gone Bust: Monetary Policy, Leverage Cycles, and Financial Crises, 1870-2008." *American Economic Review*, pgs. 1029-61.

APPENDIX: LIQUIDITY AND STABLE FUNDING RATIOS

Since the GFC, the Basel III regime for prudential supervision has agreed tougher liquidity requirements for banks than previously. The **Liquidity Coverage Ratio** (LCR) is almost entirely in place, while the **Net Stable Funding Ratio** (NSFR) is still under development. 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, defaults or missed interest payments. The NSFR stipulates that any illiquid assets must be backed by an suitable proportion *and* maturity of stable long term funding. Assets are then weighted by duration and liquidity properties for the stable funding requirement to be calculated.

In both cases, the ratios are calculated to have a minimum threshold of 100%. Above that, bank lending is deemed safe in that it is covered by sufficient liquidity or easily realisable assets. That means any liquidity above the specified threshold could be used to expand lending without attracting additional risk. Liquidity below that threshold shows the loans are not backed by sufficient liquid funds/assets and a credit contraction is necessary to avoid excessive risk.

The **liquidity cover ratio**, by contrast, is designed to ensure that banks hold sufficient reserves of high-quality/easily sold liquid assets (HQLA) to allow them to survive a period of liquidity stress lasting 30 calendar days. The monitoring scenario capturing the period of stress combines elements of bank-specific liquidity and market-wide stress and includes many of the shocks experienced between 2007 and 2012. The 30-day stress period is the minimum period deemed necessary for corrective action to be taken by the bank's management or its supervisors. The **LCR** requires internationally active banks to hold a stock of HQLA at least as large as maximum net cash outflows expected over the stress period.

Do the Euro-area banks satisfy the required funding ratios? Liquidity cover for bank lending in the Euro area has been adequate since late 2013²²; and has remained good since the end of 2015. Interestingly, this matches well with such evidence as we have on the stable funding backing bank lending in the Euro area. In fact the NSFR ratio shows stable funding (in a stress test sense) has been in place since late 2013, and has been strong since 2015.

A related ratio for measuring bank safety 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.

²² Hughes Hallett and Chams-Eddine (2018), tables 3 and 4.

This paper assesses the scope for monetary policy in the euro area as it returns to normal financial conditions without support from easy money but with a financial stability objective (whether legislated or not). We find that both financial stability and traditional monetary objectives can be achieved without one limiting the achievement of the other because, in the new normal, the ECB can use new policy tools derived from the regulatory metrics required under the post-crisis macro-prudential framework. Whether they offer large improvements depends on how a clear mandate for financial stability is defined and whether coordination with traditional monetary or fiscal policies is needed. Risks to monetary policy in the new normal are mainly external and depend on the transmission of monetary policies not aligned with ECB policies. This document was provided by Policy Department A at the request of the Economic and Monetary Affairs Committee.

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