

## The International Transmission of Liquidity Regulation

*The LCR, which will be fully phased in this year, is the first global liquidity regulation to apply to banks. But there is little evidence on the effects of bank liquidity regulation, in particular with regard to cross-border effects. Using a new dataset on Individual Liquidity Guidance (ILG) – which is similar to the LCR – in the UK from 2010 to 2015 we observe that banks hold considerable ‘excess’ liquidity and increase their liquid assets when liquidity requirements are increased. But they cut their external lending to both banks and non-banks following an increase in liquidity requirements, while increasing their exposures to sovereign bonds qualifying as high quality liquidity assets.*

During the global financial crisis many banks which had adequate capital failed or experienced financial distress as they were not liquid. Previously, bank regulation had focused on capital but the crisis showed the importance of liquidity and the potential for solvent banks to experience runs. The introduction of global liquidity standards – the Net Stable Funding Ratio (NSFR) and the Liquidity Coverage Ratio (LCR) – in the Basel III accord aim to ensure that banks can survive runs.

The LCR has been phased in from 2015 to 2019 to allow banks to adjust, and so there is little evidence so far on how banks react to liquidity regulation. Few countries have recent experience with liquidity regulation<sup>1</sup>, and far fewer have applied it in a time varying and bank-specific manner. The UK is an exception to this as banks were subject to Individual Liquidity Guidance (ILG) from their microprudential supervisors from 2010 to 2015 and are still subject to Pillar 2 liquidity requirements.

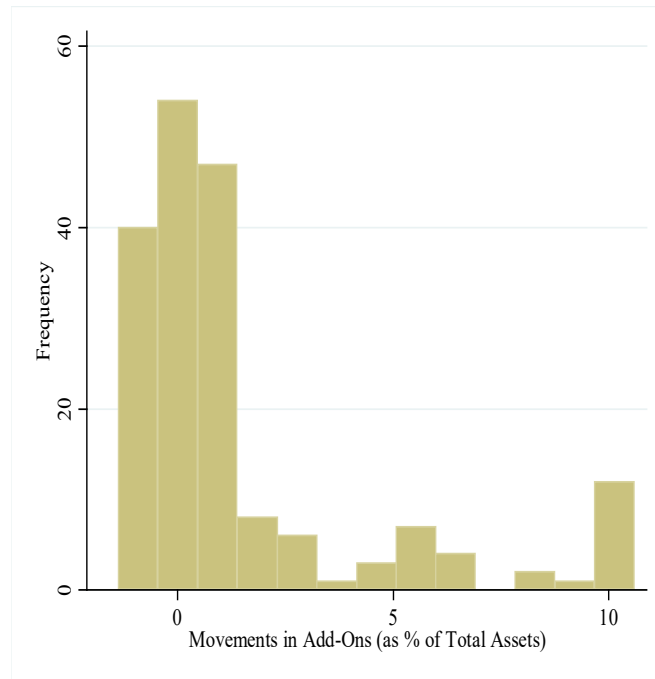
### *[A] A new UK dataset on liquidity requirements*

We build a rich new dataset which includes UK banks’ liquidity regulations from 2010 to 2015, together with bank balance sheet variables to examine the impact of liquidity regulation on UK banks’ external lending and sovereign debt holdings. As ILG was a key part of microprudential supervision it was frequently adjusted and we have over 100 changes in the ILG. For identification purposes, we focus on *add-ons*: these capture idiosyncratic risks not captured through parts of the liquidity requirements that relate to balance sheet items. On average, when ILG add-ons were tightened, the increase in required liquid assets was 2.5% of total assets (Chart 1).

### **Chart 1: Changes in liquidity requirements (add-ons) as a % of total assets**

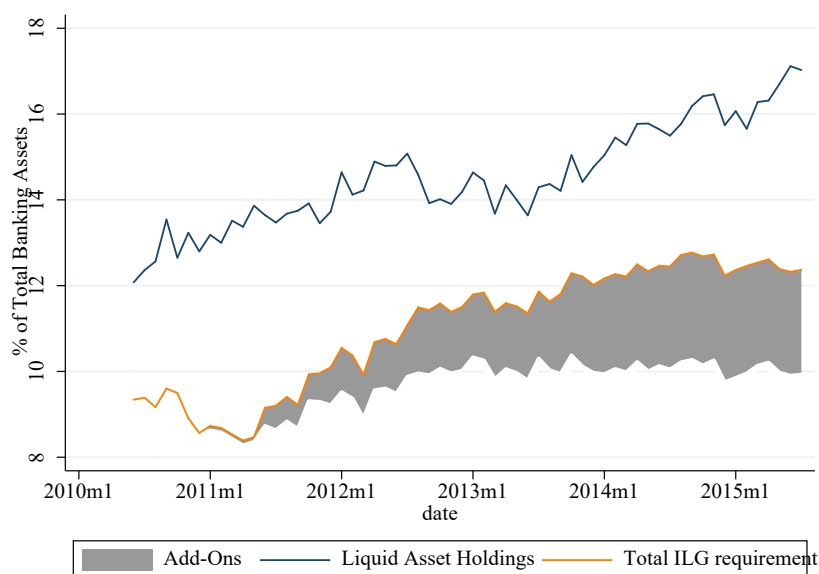
---

<sup>1</sup> A few countries have applied cash-reserve requirements and securities-reserve requirements in the past, but these were generally abandoned in the 1970s and 80s due to complexity and the interaction with government debt management (Monnet and Vari 2018).



Similarly to capital requirements we observe that banks hold considerable reserves of “excess liquidity” (Chart 2), or in other words their ratio of high quality liquid assets (HQLA) to total assets is considerably above the amount required by their supervisors.

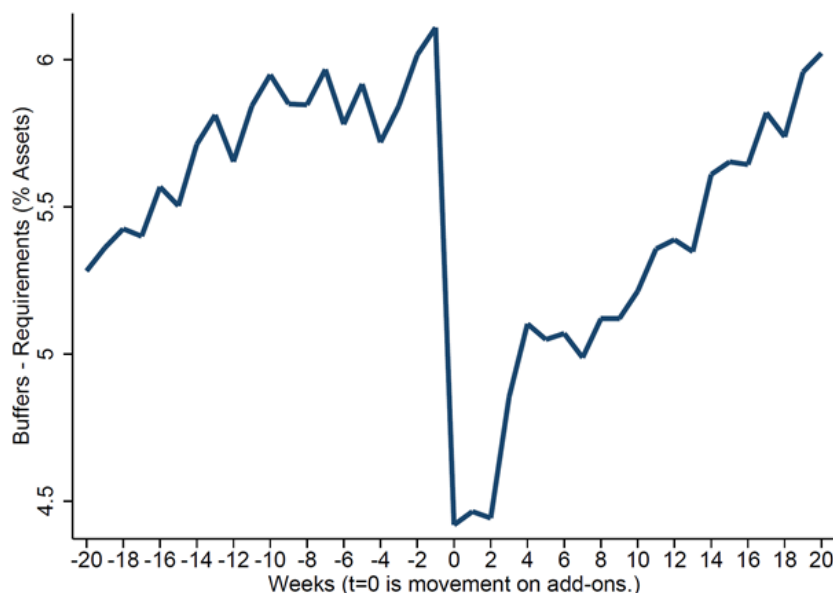
**Chart 2: Banks’ actual holding of liquidity and liquidity requirements with detail on add-ons (% of total assets)**



Banks take time to build their excess liquid assets following an increase in requirements. Chart 3 below plots the average excess liquidity a bank holds in the period around a change in add-ons. Banks increase their excess liquidity before the change in requirements and then rebuild it afterwards. Banks take approximately five months to rebuild their excess liquidity, from the second week after the increase in add-ons. Overall this suggest that liquidity regulation and

supervision induced banks to hold higher levels of liquidity even though the change in ILG was not binding.

**Chart 3: Event study of variations of Excess Liquid Buffers (Liquid Buffers – Requirements) around the time of an add-on movement**



To some extent, we also see that capital and liquidity appear to be substitutes in the sense that banks with higher capital ratios hold a lower level of “excess liquidity”. Larger banks hold smaller excess liquidity, in line with Bonner and Eijfinger (2016), which is likely to be because larger banks have a greater access to funding sources meaning that a lower excess is required. Higher group financing is also associated with a lower liquidity cushion, consistent with centralised liquidity management allowing banks to be more flexible

#### *[A] Examining the effect of liquidity requirements on lending*

Current liquidity regulation has been designed so that banks hold a higher proportion of liquid assets and fund themselves longer-term. However, for a bank needing to hold more liquid assets or to fund itself long-term comes with a cost. Liquid assets have a lower expected yield than illiquid longer-term assets, and long-term funding is more expensive as investors demand a premium when they lose the ability to withdraw their funds on demand.

Banks can respond in many ways to liquidity regulation and empirical evidence on the effects is limited. Banerjee and Mio (2017) examine the domestic consequences of the introduction of ILG in the UK, and show banks increase their high quality liquid assets and reduce interbank loans and short-term wholesale funding.

We use this dataset to examine the change in lending by banks following a change in liquidity requirements. However, we have to make an important adjustment: when banks hold liquid assets in the form of government debt this is recorded as a loan to that country, in the same way as a loan to a firm or household. When faced with an increase in liquidity requirements a UK bank might increase its holdings of, for example, German government debt – because these qualify as liquid assets to meet its requirements – but at the same time the bank might

also cut lending to the German real economy. These might cancel each other out but would have very different effects than if the bank didn't adjust overall. So we adjust our series to exclude securities which would qualify for banks' liquidity buffer.

Once we do this, we find that banks cut their total lending growth by 0.654 percentage points following a one percentage point increase in liquidity guidance add-ons. If we split this between lending to banks and to non-banks the cut is broadly the same for both (a cut of 0.773pp for interbank lending and 0.681 for non-bank lending). In comparison, banks also increase their holdings of foreign securities that qualify for the liquidity buffer (as percentage of total external lending) by 0.208 pp for each 1pp increase in liquidity requirements. The reduction in lending to non-banks is a notable contrast to the effect of bank capital regulation (Aiyar et al. 2014, Danisewicz et al. 2017), which finds that banks cut their interbank lending following an increase in capital requirements but not their real economy lending. Their hypothesis is that real economy lending is less elastic than interbank lending. However, in contrast to capital regulation, interbank lending has a specific advantage in that, because it is short-term, interbank lending is less penalised by liquidity regulation as it is considered to be an inflow during the period of stress. This could be one reason why we see an effect of changes in liquidity requirements on both interbank and non-bank lending.

*[A] What does this mean for liquidity policy?*

Changes in liquidity regulation does seem to have an effect on banks: banks hold excess liquidity over their requirements, and when these requirements are increased banks end up holding more liquidity than before. This suggests that regulation and supervision may be effective in incentivising banks to hold more liquidity even if the regulatory guidance is not binding.

Similarly to capital regulation (Aiyar et al. 2014), liquidity regulation appears to have international effects. Movements in liquidity requirements have two cross-border effects: a broad reduction on external lending. But also an increase of flows to countries that issue liquidity buffer qualifying securities. The Bank of England's Individual Liquidity Guidance is similar to, but not exactly the same, as the Basel III Liquidity Coverage Ratio. As such, some of the ways in which banks react to ILG may not be exactly the same as their reaction to the LCR. But given the broad similarities between the two types of regulations, our results provide useful quantitative insight as to how banks might respond to changes in the LCR, in particular with regard to the potential effects on external lending.

## References

- Aiyar, S, C Calomiris, J Hooley, G Korniyenko and T Wieladek (2014), "The International Transmission of Bank Minimum Capital Requirements", *Journal of Financial Economics* 113(3): 368-382.
- Banerjee, R and H Mio (2018), "The impact of liquidity regulation on banks", *Journal of Financial Intermediation* 35(PB): 30-44.
- Bonner, C and C W Eijffinger (2016), "The Impact of Liquidity Regulation on Bank Intermediation", *Review of Finance* 20(5): 1945-1979.

Danisewicz, P, D Reinhardt and R Sowerbutts (2017), "On a tight leash: does bank organisational structure matter for macroprudential spillovers?", *Journal of International Economics* 109: 174-194.

Monnet, E and M Varis (2018), "The history of liquidity requirements as monetary policy tools". Mimeo.

#### Bios:

Dennis Reinhardt is a research advisor in the International Directorate of the Bank of England. Prior to his current role, he worked at the Study Centre Gerzensee. He received his PhD in Economics from the Graduate Institute of International and Development Studies, Geneva. His research interests include international finance and banking, international capital flows and financial openness as well as capital controls and financial vulnerabilities.

Rhiannon Sowerbutts is a research advisor in the Financial Stability Strategy and Risk Directorate of the Bank of England. Her work focuses on macroprudential policy, capital flows and international banks. She received her PhD from Universitat Pompeu Fabra.

Carlos Eduardo van Hombecck is a research economist in the International Directorate of the Bank of England. He received his PhD in Economics from the University of Maryland. During his PhD he worked as an intern at the IMF and the ESRB. Before his PhD, he worked for 5 years as an economist at Gavea Investimentos, a hedge fund. His research interests include international capital and banking flows, including the role of international financial centres, and financial aspects of economic integration.