

# Centre for Global Finance



## Working Paper Series

**No.15 / 2019**

***Institutional environment and the  
microstructure of the interbank market***

By Thomas Bwire, Martin Brownbridge, Doreen K.  
Rubatsimbira, Grace A. Tinyinondi

The Centre for Global Finance (CGF) Working Paper Series features recent studies by resident members of CGF as well as visiting researchers, altogether demonstrating the depth and breadth of research being undertaken at CGF. The papers are published to facilitate preliminary dissemination of ongoing research, enhance quality of work and contribute to the advancement of knowledge. We acknowledge, without implication, financial support from the DEGRP Research Grant (ES/N013344/2), funded by DFID and ESRC, on “Delivering Inclusive Financial Development and Growth”, the ESRC-NSFC (ES/P005241/1) Research Grant on “Developing financial systems to support sustainable growth in China – The role of innovation, diversity and financial regulation”, and the AXA Research Fund.

List of previous Working Papers of CGF:

- No.1/2018      *Capital, risk and profitability of WAEMU banks: Does cross-border banking matter?* By Désiré Kanga, Victor Murinde, and Issouf Soumaré
- No.2/2018      *Capital flows and productivity in Africa: The angel is in the details.* By François A. B. Bationo, Stephany Griffith-Jones, Victor Murinde, Issouf Soumaré and Judith Tyson
- No.3/2018      *The persistence of bank fragility in Africa: GMM dynamic panel data evidence.* By Abbi M. Kedir, Syed Faizan Iftikhar, Victor Murinde and Bernadette Kamgnia
- No.4/2018      *Reflections on central banking.* By Victor Murinde and Patrick Njoroge
- No.5/2018      *Let beholders behold: Can banks see beyond oil booms and mitigate the Dutch disease?* By Morakinyo O. Adetutu, John E. Ebireri, Victor Murinde and Kayode A. Odusanya
- No.6/2018      *National culture, CEO power and risk-taking by global banks.* By Eilnaz Kashefi Pour and Victor Murinde
- No.7/2018      *Corporate investment, financing and payout decisions under financial constraints and uncertainty: Evidence from UK firms.* By Qingwei Meng, Victor Murinde and Ping Wang
- No.8/2018      *Bank opacity and risk-taking: Evidence from analysts’ forecasts* By Samuel Fosu, Collins G. Ntim, William Coffie, and Victor Murinde
- No.9/2018      *Does microcredit increase hope, aspirations and well-being? Evidence from Sierra Leone.* By Adriana Garcia, Robert Lensink, and Maarten Voors
- No.10/2018     *Lessons from emerging economies for African low income countries on managing capital flows.* By Stephany Griffith-Jones and José Antonio Ocampo
- No.11/2018     *Financial inclusion and economic growth: What do we know?* By Joshua Y. Abor, Haruna Issahaku, Mohammed Amidu, and Victor Murinde

- No.12/2018 *Climate vulnerability and the cost of debt.* By Gerhard Kling, Yuen C Lo, Victor Murinde, and Ulrich Volz
- No.13/2018 *Pan-African banks on the rise: Does cross-border banking increase firms' Access to finance in WAEMU?* By Désiré Kanga, Victor Murinde, Lemma Senbet, and Issouf Soumaré
- No.14/2018 *The peer monitoring role of the interbank market and implications for bank regulation: Evidence from Kenya.* By Victor Murinde, Ye Bai, Christopher J. Green, Isaya Maana, Samuel Tiriongo, and Kethi Ngoka-Kisinguh
- No.1/2019 *Central bank independence: What are the key issues?* By Désiré Kanga and Victor Murinde
- No.2/2019 *Banking services and inclusive development in sub-Saharan Africa.* By Haruna Issahaku, Mohammed Amidu and Aisha Mohammed Sissy
- No.3/2019 *A survey of literature on financial literacy and financial behaviour: Is there a gender gap?* By Maryam Sholevar and Laurence Harris
- No.4/2019 *Capital adjustment over the cycle: Evidence from microfinance institutions.* By Issouf Soumaré, Hubert Tchakoute Tchuigoua, and Hélyoth T.S. Hessou
- No.5/2019 *Provisioning and business cycle: Evidence from microfinance institutions.* By Hélyoth T.S. Hessou, Robert Lensink, Issouf Soumaré, and Hubert Tchakoute Tchuigoua
- No.6/2019 *Lending and business cycle: evidence from microfinance institutions.* By Hubert Tchakoute Tchuigoua, Issouf Soumaré, and Hélyoth T.S. Hessou
- No.7/2019 *Term structure of CDS spreads & risk-based capital of the protection seller: an extension of the dynamic Nelson-Siegel model with regime switching.* By Standley R. Baron and Issouf Soumaré
- No.8/2019 *Confidence, financial inclusion and sustainable economic development.* By Ayse Demir, Reinhard Bachmann, Victor Murinde, Laurence Harris, Christine Oughton and Meng Xie
- No.9/2019 *The network structure of the Malawi interbank market: implications for liquidity distribution and contagion around the banking system.* By Esmie Koriheya Kanyumbu
- No.10/2019 *Aid and Exchange Rates in sub-Saharan Africa: No More Dutch Disease?* By Oliver Morrissey, Lionel Roger and Lars Spreng
- No.11/2019 *Does credit deepening increase financial fragility?* By Peng Yiqing, Niels Hermes, and Robert Lensink
- No.12/2019 *Does microcredit increase aspirational hope? Evidence from a group lending scheme in Sierra Leone.* By Adriana Garcia, Robert Lensink, and Maarten Voors

No.13/2019 *Do better formal institutions promote financial inclusion?* By Peng Yiqing, Niels Hermes, and Robert Lensink

No.14/2019 *Do interbank interest rates reflect the financial soundness of borrowing banks?*  
By Thomas Bwire, Martin Brownbridge, Doreen K. Rubatsimbira, and Grace A. Tinyinondi

Any reproduction, publication and reprint in the form of a different publication, whether printed or produced electronically, in whole or in part, is permitted only with the explicit written authorisation of the authors of this paper. The views expressed in the paper are those of the authors and do not necessarily reflect those of the CGF.

All CGF Working Papers can be downloaded from CGF Website.

Centre for Global Finance  
SOAS University of London  
10 Thornhaugh Street, Russell Square  
London  
WC1H 0XG

Email: [cgf@soas.ac.uk](mailto:cgf@soas.ac.uk)

Website: <https://www.soas.ac.uk/centreforglobalfinance/publications/>

# Institutional Environment and the Microstructure of the Interbank Market

THOMAS BWIRE<sup>†</sup>, MARTIN BROWNBIDGE<sup>‡</sup>, DOREEN K. RUBATSIMBIRA<sup>†</sup> & GRACE A. TINYINONDI<sup>†</sup>

<sup>†</sup>Bank of Uganda

<sup>‡</sup>International Advisory Group on Delivering Inclusive Financial Development and Growth project

---

## Abstract

*The interbank markets play two critical roles: as a safety valve for banks for allocating liquidity on a short-term basis and a channel through which Central banks implement their monetary policy. This note describes the institutional environment and the microstructure of the interbank market in Uganda. The interbank market, in general, is small (comprise about 1.6 percent and 1.2 percent of the industry assets and liabilities, respectively) and is characterised by significant frictions in terms of the volumes of trading and interest rates on borrowing and lending. The intensity of activity in the interbank market as this is the only significant market for wholesale funds in Uganda has provided a strong backing for the successful implementation of the Central Bank's inflation targeting monetary policy regime.*

---

Keywords: Interbank Market, Overnight rate, Bank liquidity and reserves, monetary policy, Uganda

JEL Classification: E43, E52, G21.

---

**Correspondence Address:** Thomas Bwire (PI) ([tbwire@bou.or.ug](mailto:tbwire@bou.or.ug)), Bank of Uganda, P.O. Box 7120, Kampala, Tel. 256-41-4230978, Fax. 256-41-4230791. Co-authors: Doreen K. Rubatsimbira ([dkrubatsimbira@bou.or.ug](mailto:dkrubatsimbira@bou.or.ug)); Grace A. Tinyinondi ([gainomugisha@bou.or.ug](mailto:gainomugisha@bou.or.ug)) and Martin Brownbridge ([martinbrownbridge@yahoo.co.uk](mailto:martinbrownbridge@yahoo.co.uk)).

We acknowledge, without implication, financial support from the DEGRP Research Grant (ES/N013344/2), funded by DFID and ESRC, on “Delivering Inclusive Financial Development and Growth”. As such, this paper should not be reproduced, either in part or in whole, electronic or otherwise, without express permission of the project coordinator. The usual disclaimer applies.

## 1. Introduction

The interbank market in Uganda plays two important roles in the economy. At the microeconomic level it provides an essential safety valve for banks. Banks with shortages of liquidity can borrow short term funds from other banks. Banks needing liquidity can also borrow from the central bank, but at a penal rate. The Bank of Uganda (BoU) charges banks which borrow from it a premium of four percentage points above the policy interest rate and also imposes quantitative limits on the amount which each bank can borrow automatically.<sup>1</sup> Similarly, the interbank market provides an outlet for banks with excess reserves to lend to counterparts with a shortage. At the macroeconomic level it provides the location for the BoU to implement her monetary policy by managing liquidity at the aggregate level to achieve its monetary policy operating target; aligning the interbank interest rate with its policy interest rate, the Central Bank Rate (CBR).

Although most interbank loans are either overnight or for 7-days, the overnight market is the most dominant in terms of the magnitude of funds borrowed and lent. Liquidity shortages or surpluses arise either from distributional shocks or from shocks that affect aggregate liquidity (Green *et al.*, 2016). The interbank market allows banks to address problems arising from distributional shocks which transfer liquidity from one bank to another. The shocks that affect aggregate liquidity are countered by the central bank injecting or draining reserves. The BoU's monetary policy objective is to align the 7-day interbank rate with the policy interest rate – the CBR. It implements its monetary policy through regular interventions (usually two or three times a week) in the money market, mainly through an offer to the commercial banks for either a repo (which injects liquidity) or a reverse repo (which drains liquidity). The repos/reverse repos are transacted at the CBR, with the BoU accepting all offers from the banks which are consistent with the CBR (i.e. the BoU fixes the price of liquidity and allows the market to determine the quantity)<sup>2</sup> (Brownbridge and Kasekende, 2018). In effect, the BoU offers to pay the CBR on surplus bank reserves.

This note explores the institutional and microstructure of the interbank market in Uganda and discusses how the BoU's monetary policy affects the interbank market. It is organised as follows. Section 2 provides details of the participants in the interbank market. Section 3 examines the instruments used in the interbank market and the key features of the market. Section 4 sets out the institutional features of the payment and settlement system in Uganda which are relevant for the interbank market. Section 5 presents details of the Lombard facilities provided by the BoU to commercial banks. Section 6 discusses the monetary policy framework in Uganda, how it is implemented through the interbank market and its implications for the market. Section 7 concludes.

---

<sup>1</sup> Banks can also rediscount government securities, which have a remaining maturity of 90 days or less, with the BoU at a discount rate of three percentage points above the policy interest rate.

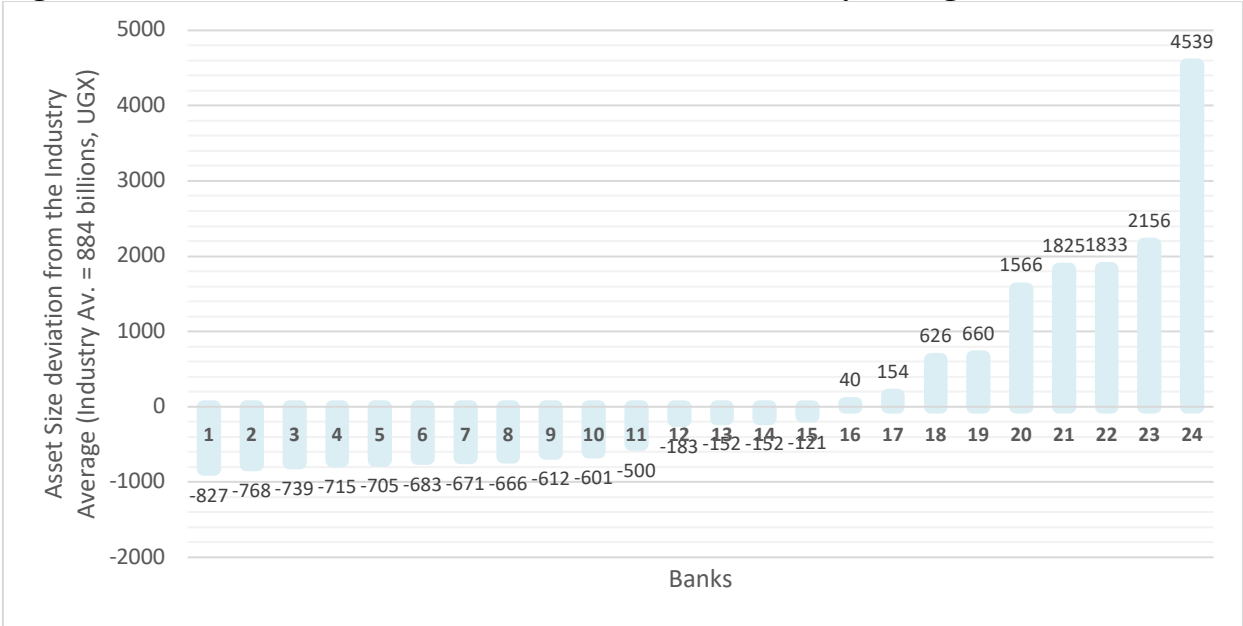
<sup>2</sup> The BoU will accept bids below the CBR for the repo and above the CBR for the reverse repo, but these are rare.

**2. Participants in the interbank market**

The participants in the interbank market comprise the commercial banks and the central bank. As discussed in section 4, all the commercial banks hold accounts in the BoU which facilitates interbank transactions. As of December 2017, Uganda’s banking system comprised 24 commercial banks<sup>3</sup>, differentiated based on ownership and size. Ownership depends on the country of origin of the majority shareholder and as such, banks can be regarded as local or foreign. The latter can be further divided into regional banks, with a parent bank in Africa, and global banks, with a parent bank outside of Africa, in the UK, the US and India. Following the closure of one domestic bank in early 2017, there are currently seven globally owned banks, 15 regional banks and two domestic banks. The total size of the commercial banks’ assets at that date was UGX. 26.5 trillion (Approximately USD 7.2 billion), equivalent to about 26.3 percent of GDP.

**Figure 1** and **Appendix Table 1** show the total assets of each of the 24 commercial banks relative to the industry average, at the end of December 2017. Each of the nine largest banks, together holding about 80.5 percent of the banking system’s total assets, has assets above the industry average. The asset concentration has however fallen over the last decade with the entry of new banks and rapid growth of some of what had been medium sized banks. The Herfindahl Hirschman Index of asset market concentration in the banking market fell from 1,508 in June 2006 to 976 in December 2017.

**Figure 1: Commercial Banks Assets size relative to the Industry Average, December 2017.**



Note: UGX = Uganda Shillings  
 Source: BoU.

**Table 1** shows the structure of the commercial banks’ liabilities, excluding capital, as at December 2017. At the aggregate level, interbank borrowing is not very important. Interbank loans plus other liabilities to domestic financial institutions comprise just 1.2 percent of total liabilities. Banks rely primarily on customer deposits for their funds. As these data provides a snapshot of stocks on a

<sup>3</sup> One bank was resolved by the BoU in January 2017, with some of its assets and liabilities sold to another bank.

particular day (the last day of the year), stock levels on other dates may be larger or smaller. Nevertheless, the interbank market is probably more important than the aggregate figures might suggest. This is because banks' need for funding can sometimes be quite volatile and banks often have to rely on the interbank market to plug funding gaps created by shocks to other components of their balance sheets, such as a withdrawal of a large deposit. Interbank borrowing as a share of total liabilities was larger during 2007 to 2009, when it averaged 5-7 percent of total liabilities. It is not clear why it subsequently fell back.

**Table 1 Structure of Commercial banks' liabilities, percent, December 2017**

<b>Component of liabilities</b>	<b>Share of total liabilities, excluding capital (percent)</b>
<b>Liabilities due to financial institutions in Uganda</b>	1.2
<b>Borrowing from BOU</b>	0.7
<b>Liabilities due to financial institutions abroad</b>	1.0
<b>Deposits</b>	83.2
<b>Other liabilities<sup>4</sup></b>	13.8

Source: BoU

On the asset side of the balance sheet, loans to the private sector and government securities predominate (**Table 2**). Levels of intermediation are relatively modest, reflecting the difficulties which banks experience in identifying and serving creditworthy businesses in an economy dominated by small, informal household enterprises rather than medium and large-scale firms.

**Table 2 Structure of Commercial bank assets, percent, December 2017**

<b>Component of assets</b>	<b>Share of total assets (percent)</b>
<b>Cash</b>	4.2
<b>Balances with the BoU</b>	9.6
<b>Claims on financial institutions in Uganda</b>	1.6
<b>Claims on financial institutions abroad</b>	6.1
<b>Government securities</b>	21.0
<b>Loans</b>	38.3
<b>Fixed assets</b>	3.1
<b>Other assets</b>	16.1

Source: BoU

A substantial share of banks' balance sheets comprises foreign currency denominated items. At end December 2017, 36 percent of the banking system's deposits, and 41 percent of its loans consisted of foreign currency deposits and loans, respectively. Banks usually have a substantial surplus of foreign currency; the value of foreign currency deposits exceeded the value of foreign currency loans (by about USD 519 million at end December 2017). These surpluses of foreign currency are mostly invested in deposit accounts abroad, usually as nostro accounts in parent or affiliated banks. Given the surplus of foreign currency resources and the fact that statutory cash reserve requirements on all types of deposits, must be met in domestic currency, banks in Uganda rarely have liquidity shortages in foreign currency. Hence there is virtually no foreign currency denominated interbank borrowing

<sup>4</sup> Includes items in transit, provisions and miscellaneous items



and banks do not have to mobilise foreign currency liquidity from their parent banks or other external sources.

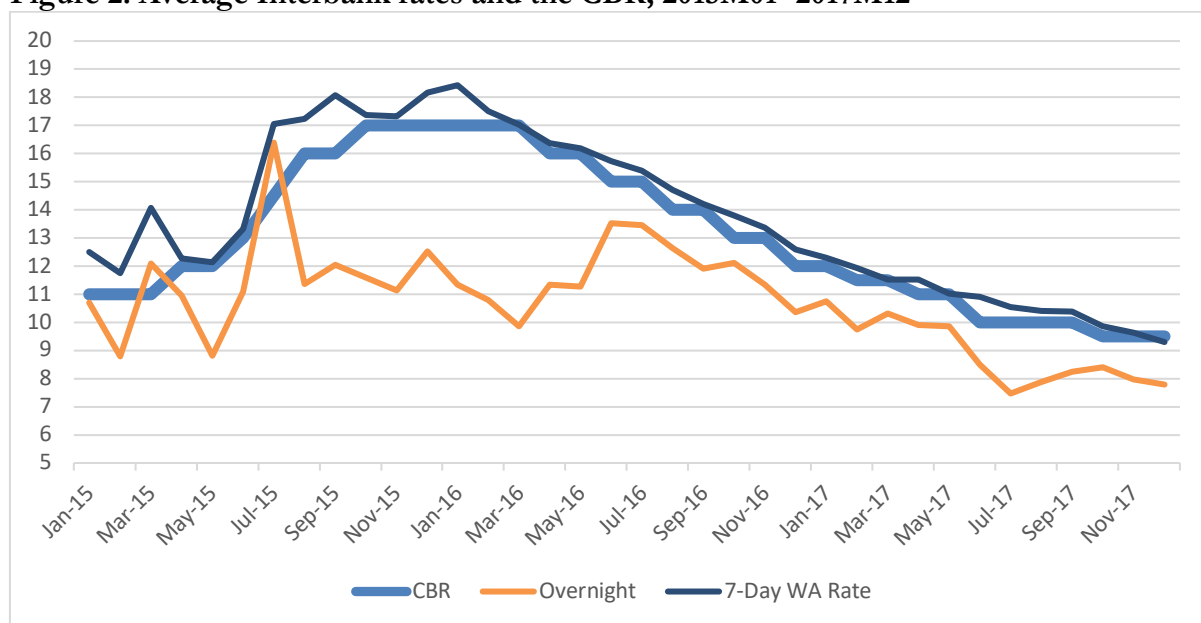
### 3. Instruments used in the interbank market

Consistent with other interbank markets (Federal Reserve Board, 2005; European Central Bank, 2011; Bank of Japan, 2012; US)<sup>5</sup>, the main instruments on the Ugandan interbank market are unsecured interbank loans. The vast majority of the interbank loans are overnight or 7-day maturities, although occasionally there are loans for longer maturities such as 14 and 30 days. Interest rates in the interbank market are market determined but are linked to the prevailing BoU policy rate, as discussed in Section 5.

**Table 3** provides data on the monthly turnover and average interest rates on the overnight and 7-day interbank loans during 2016. Average daily turnover in the overnight loan market was UGX 75 billion while that in the 7-day loan market was UGX 19 billion. This implies that the average outstanding stock of overnight loans during 2016 was UGX 75 billion while that of the 7-day loans was UGX 132 billion.

As can be seen in **Figure 2** and the two columns on the right hand side of **Table 3**, the average interest rates on overnight loans were consistently below the Central Bank Rate (CBR) since August 2015, although the deviation from the CBR was reduced, from June 2016 onwards, largely because of a change in the liquidity management procedures of the BoU.

**Figure 2: Average Interbank rates and the CBR, 2015M01 -2017M12**



Source: BoU

The average interest rates on the 7-day loans have been slightly above the CBR, although the deviation is usually quite small; about 50 basis points or less.

<sup>5</sup> The only exception is in the U.K where there are active markets in secured and unsecured overnight loans (Bank of England, 2012)

The difference in interest rates between the overnight and the 7-day interbank loans is because the BoU's money market interventions, to inject or mop up liquidity, directly target the 7-day interbank rate and hence that rate is close to the CBR. The BoU targets the 7-day rate because there is a closer relationship between the 7-day rate and other interest rates in the economy than there is between the overnight rate and other interest rates, hence targeting the 7-day rate provides for a stronger transmission of monetary policy than would be with targeting the overnight rate. As described in section 6.3.1, the BoU's 7-day repo and reverse repos effectively put a floor under the 7-day interbank rate at the prevailing CBR, but there is greater scope for deviations of the overnight interbank rate from the CBR.

**Table 3:** Monthly Turnover (UGX, billions) and average interest rates on Overnight and 7\_day interbank loans in 2016

	Turnover Overnight loans	Turnover 7_day loans	Average interest rate on overnight loans	Average interest rate on 7_ day loans	Average Overnight rate minus CBR	Average 7_day rate minus CBR
January	1494	474	11.5	18.0	-5.5	1.0
February	1428	464	11.1	17.5	-5.9	0.5
March	1588	390	10.3	17.2	-6.7	0.2
April	1974	260	11.7	16.4	-4.3	0.4
May	1407	274	12.1	16.2	-3.9	0.2
June	1294	428	13.6	15.7	-1.7	0.3
July	1648	443	13.6	15.4	-1.4	0.4
August	1813	378	12.7	14.7	-1.5	0.5
September	1466	474	12.1	14.2	-1.9	0.2
October	1635	363	12.5	13.9	-1.1	0.3
November	1702	353	11.6	13.4	-1.4	0.4
December	1295	273	10.7	12.6	-1.7	0.2
Average per day	75	19				

Source: BoU

**Tables 4 and 5** provide details of interbank loans by bank size, over the period December 2013 to March 2017. Specifically, **Table 4** gives data on overnight loans, while **Table 5** gives data on 7-day loans. The data covers lending and borrowing by all banks except for one small bank which was closed during the period covered. Lending and borrowing are disaggregated into three groups of banks differentiated by size. The small banks are defined as banks with a market share of assets of below 1 percent. There are 11 small banks in **Tables 4 and 5**, with a combined market share of 8.1 percent.<sup>6</sup> Medium sized banks are defined as those with an asset market share of between 1 percent and 7.5 percent. There are 10 medium sized banks with a combined market share of 42.5 percent. Large banks are those with a market share of above 7.5 percent. There are four large banks with a market share of 49.4 percent.

**Table 4:** Interbank Borrowing and Lending by Size of Banks; overnight loans; December 2013 to March 2017

Bank group	Lending (% of total lending)	Borrowing (% of total borrowing)	Lending interest rate minus CBR (unweighted average of banks)	Borrowing interest rate minus CBR (unweighted average of banks)
Small banks	9.7	11.0	-2.1	-1.8

<sup>6</sup> The market share is calculated as the average asset market share as of December 2013 and December 2016.

<b>Medium banks</b>	42.8	60.8	-2.4	-2.9
<b>Large banks</b>	47.5	28.2	-3.4	-3.7

Source: BoU

In the overnight market, the overall share of lending by value for the three groups of banks roughly matches their asset market share. However, medium sized banks borrow much more than they lend, accounting for 60 percent of borrowing in the overnight market. The converse is the case for large banks, which lend much more than they borrow. When we look at overnight interest rates, the small banks on average pay more to borrow than medium and large banks, by 1.1 and 1.9 percentage points respectively. The large banks have the lowest borrowing costs in the interbank market. However, small banks have obtained slightly better interest rates (i.e. higher rates) than medium sized and large banks for their lending.

Large banks earned interest rates averaging 1.3 percentage points lower than small banks for overnight lending. The most likely explanation for this is that the large banks have been more liquid than small banks and medium banks and so have been both more keen to lend in the overnight market and have had less need to borrow; hence both lending and borrowing rates for the large banks have been lower than for the other two size categories of banks. In addition, as discussed below, some large banks are constrained in their lending to other banks in the market by bank specific credit limits imposed by their headquarters, and these banks sometimes have to offload surplus liquidity at interest rates well below the average interbank market rates to the few banks that they are still able to lend to, given their credit limits.

The 7-day interbank market is dominated by the medium size banks which account for 49 percent and 61 percent of lending and borrowing respectively. In contrast to the overnight market, small banks borrow much less than they lend in the 7-day market. Small banks pay the highest borrowing rates followed by medium sized banks, but the differential in borrowing rates between all three size categories is small. Small banks earn the lowest interest rates when lending in the 7-day market, while medium banks earn slightly more than large banks.

**Table 5 Interbank Borrowing and Lending by Size of Banks; 7-day loans; December 2013 to March 2017**

<b>Bank group</b>	<b>Lending (% of total lending)</b>	<b>Borrowing (% of total borrowing)</b>	<b>Lending interest rate minus CBR (unweighted average of banks)</b>	<b>Borrowing interest rate minus CBR (unweighted average of banks)</b>
<b>Small banks</b>	19.3	9.1	0.1	0.6
<b>Medium banks</b>	49.0	61.9	0.5	0.4
<b>Large banks</b>	31.7	29.0	0.4	0.0

Source: BoU

The interbank market is characterised by significant frictions because of credit limits which banks impose on other banks in the market and which creates a degree of market segmentation. Each bank sets a quantitative credit limit for every other bank, which is determined by the former's assessment of the credit risk entailed in lending to the latter. For the subsidiaries of international banks, credit limits must be approved by, and in some cases are determined by, their headquarters.

Because of the credit limits, some banks which are seeking funds in the interbank market are restricted to borrowing from a sub-set of banks which sometimes means that the interest rates they must pay are higher than would be the case if they were not constrained by credit limits. As discussed above, large banks with surplus funds sometimes are constrained in lending these funds on the interbank market because of credit limits. Not surprisingly, the consequences of credit limits for interest rates create arbitrage opportunities for banks which are not constrained by these limits. It also means that there is greater variation in interbank interest rates on any given day, especially for the overnight rates.

As noted above, interbank loans are unsecured. However, even where loans are secured, when a bank is closed and put into liquidation, its creditors do not have the automatic right to realise their loan security. Instead, under the provisions of the Financial Institutions Act, 2004 (FIA), secured creditors are reimbursed from the realised assets of the liquidated bank according to a ranking set out in the FIA. Secured creditors are only reimbursed after some other categories of creditor, such as the Deposit Protection Fund, have been fully reimbursed. Hence it is possible that the assets of the liquidated bank will not be sufficient to fully reimburse its secured creditors. The BoU has attempted to encourage banks to trade liquidity through horizontal repurchase agreements, and has prepared a Master Repurchase Agreement for this purpose.

Commercial banks also use foreign exchange swaps to trade liquidity; the swaps have similar maturities to the interbank loans. Domestic banks both lend and borrow Ugandan Shillings through the foreign exchange swap market. The counterparties in the swap market are either other domestic commercial banks or offshore financial institutions, usually international banks. Some of the foreign currency swap transactions are initiated by offshore portfolio investors seeking to generate interest income.

### **Payment and Settlement Infrastructure**

The payment and settlement infrastructure for interbank deals involves the clearing accounts which each commercial bank holds in the BoU - the Real Time Gross Settlement (RTGS) system which is linked electronically to all commercial banks, and a Reuters dealing system which links all of the banks and the BoU.

Commercial banks settle their payment obligations with each other on the clearing accounts that they hold in the BoU; they hold both Uganda Shilling and forex clearing accounts. The Ugandan Shilling clearing accounts of the commercial banks are subject to the cash reserve requirements (CRR) discussed in Section 6, which apply at the end of the trading day. During the trading day the balances on the clearing accounts can fall below the minimum levels stipulated in the CRR but they cannot become negative. There is an intra-day liquidity facility available for banks to borrow from the BoU to avoid their balances becoming negative. This borrowing must be repaid by the end of the day and is secured against government securities which are deposited by the commercial bank with the BoU. However not all banks participate in the intra-day liquidity facility and deposit securities with the BoU for this purpose.

Based on the best bid and ask principle<sup>7</sup>, banks post firm two-way quotes on Refinitiv (formerly Reuters) that obligate them to transact a bid of UGX 1.0 billion and all banks have visibility of each other's real-time quote. The two-way quote has a spread of three (3) percentage points e.g. a quote

---

<sup>7</sup> Borrowing the highest amount possible at the lowest rate and lending the lowest amount possible at the highest price.

of 9.0/12.0 implies that a bank is willing to borrow UGX 1.0 billion at 9.0 percent and lend UGX 1.0 billion at 12.0 percent. A bank could elevate its quote if market conditions tighten or lower the quote if conditions ease. The change in quotes could also be motivated by presence of counter-party risk, usually, a reflection of the lender's perception on the counter-party's collateral in the horizontal repo market as well as credit lines and lending limits. Deals are conducted on the Reuters platform and once a deal has been confirmed by both counter parties, the dealers document the trade details and transmit to their respective back offices for settlement. The back-office staff of both the borrowing and lending banks, implement the transaction and settlement is done on the RTGS system. The settlement is done by debiting the Uganda Shilling clearing account of the lending bank and crediting that of the borrowing bank. Once an interbank transaction has been confirmed, the Reuters Deal Tracker will on a real time basis provide details, accessible to all of the banks, of the time of the transaction, amount, maturity and interest rate but exclude the identity of both the borrower and lender.

Commercial banks can also borrow or lend Shillings using foreign exchange swaps. The counterparties for the swaps comprise other domestic commercial banks and offshore institutional investors. Most of the offshore counterparties are large international banks with subsidiaries in Uganda. Swap transactions are negotiated bilaterally. Dealers negotiate the swap points for a given maturity. The foreign exchange legs of the swaps are usually settled overseas, on the accounts held by the participants in correspondent banks. The Shilling leg of the swap is settled through the RTGS system. Once the swap has been transacted, the Reuters dealing system provides details to all banks of the timing, the currencies, magnitude and the swap points, but does not identify the transacting banks.

#### **4. Lombard Facilities**

In addition to the intra-day liquidity facility, there are two liquidity facilities provided by the BoU to commercial banks; the rediscount facility and the bank lending facility. These are Lombard windows which are primarily designed to assist banks which are solvent but illiquid; i.e. they cannot meet their liquidity requirements from the market. As such they are micro-prudential instruments, designed to ensure that a solvent bank does not fail to honour its liabilities because of illiquidity.

Both facilities are at penal rates. The BoU will rediscount government securities with 90 days or less to maturity held by commercial banks at the prevailing rediscount rate, which is set at one percentage point above the upper band around the CBR. The upper band on the CBR is currently three percentage points above the CBR. The BoU will lend to commercial banks against government securities with 90 days or less to maturity at the prevailing bank rate, which by law is one percentage point above the rediscount rate. Loans are for a maximum of 30 days. The banks have an automatic right to access the bank lending window, provided that they can supply the requisite security, for amounts up to 25 percent of their cash reserve requirement (CRR). Lending above this threshold is at the discretion of the BoU.

#### **5. Framework for monetary policy operations and liquidity management**

## 6.1 *The Monetary policy framework*

Since July 2011 the BoU has conducted monetary policy through an inflation targeting (IT) monetary policy framework (Brownbridge and Kasekende, 2018). The BoU sets a policy interest rate, called the Central Bank Rate (CBR) every two months at a monetary policy committee meeting. The CBR acts as the operational target of monetary policy. To implement monetary policy, the BoU aims to align a short-term interest rate with the CBR on a continuous basis, so that this will provide a guide for other longer-term interest rates in the economy which in turn will influence the level of aggregate demand. The short-term interest rate which the BoU aims to align with the CBR is the 7-day interbank rate. As such the BoU aims to control the price of liquidity in the banking system rather than the quantity of liquidity, which had been the case under the monetary targeting framework which the BoU employed prior to the adoption of the IT framework. The BoU sets a band, which is currently three percentage points above and below the prevailing CBR within which it aims to contain all interbank interest rates (not just the 7-day interbank rate). This means that if the banking system in aggregate suffers a liquidity shock which threatens to drive interbank rates away from the CBR, the BoU will intervene in the money market to counter the shock, by injecting or draining liquidity, so as to keep the interbank interest rates, especially the 7-day rate, as close as possible to the CBR.

Monetary policy implementation takes place through regular interventions in the money market. The BoU aims to achieve its operational target by varying the amount of liquidity in the money market. Liquidity is defined as the commercial banks' excess or deficit cash reserves; i.e. their total holdings of cash reserves relative to the statutory cash reserve requirement.

## 6.2 *Cash Reserve Requirement*

The cash reserve requirement (CRR) is not used as an active monetary policy tool. The BoU does not vary the level of the CRR for monetary policy purposes; instead it remains constant, in terms of a percentage of the relevant deposit base, over the long term. Nonetheless the CRR plays an important role in the implementation of monetary policy and so a brief description of it is necessary in order to understand how monetary policy is implemented.

Each commercial bank has a statutory reserve requirement which it must meet over a 14-day reserve averaging cycle; i.e. the average level of reserves over the 14-day cycle must not fall below the bank's statutory CRR. In addition, although banks do not have to meet the reserve requirement on each day of the cycle, they cannot allow their reserves to fall below 50 percent of their statutory reserve requirement on any single day. The CRR for each bank is set at 8 percent of that bank's total deposit base on average over the previous 14-day cycle. The Ugandan Shilling equivalent of foreign currency deposits is included in the banks' deposit base for purposes of computing the CRR. Eligible cash reserves are defined as the Shilling cash deposits which each bank holds with the BoU plus a proportion (10 percent or 5 percent) of the cash held in each bank's vaults. Banks which have large branch networks outside of Kampala are allowed to include 10 percent of their vault cash as eligible reserves<sup>8</sup>, while all other banks are allowed to include 5 percent of their vault cash.

---

<sup>8</sup> Eligible reserves comprise of total shilling deposits at BOU and the proportion of vault cash allowed

Banks which face a shortfall in cash reserves will normally attempt to meet this shortfall by borrowing from other banks which hold excess reserves. Hence by varying the amount of aggregate reserves held by the banking system, the BoU can influence the interest rates at which banks lend to each other; the less liquidity there is in the money market, the higher will be interbank rates and vice versa.

### 6.3 *Implementation of monetary policy and liquidity management*

On a daily basis, the BoU monitors both the daily level of banks' excess or deficit cash reserves, and the cumulative level from the start of the reserve averaging cycle. It also makes forecasts of banks' cash reserves for the next 10 days, based on forecasts of the main factors which affect these reserves, such as government expenditures, tax receipts, BoU purchases or sales of foreign exchange, planned issuances of treasury securities, etc. Together with market intelligence, these data guide the BoU's decisions to intervene in the money market.

The BoU has three instruments which it uses to manage liquidity and thereby achieve its operational target for monetary policy. These are: i) repurchase and reverse repurchase operations; ii) secondary market sales or purchases of government securities; and iii) BoU deposit auctions. Since the introduction of the IT framework in July 2011, the BoU has experimented with different modalities of liquidity management in an effort to develop the most effective way to control interbank interest rates. The paragraphs below describe the modalities as of the time of writing this paper.

#### 6.3.1 *Repurchase and reverse repurchase operations*

Repurchase operations (repos) and reverse repurchase operations (reverse repos) are the main and most frequently used tool of monetary policy operations. In practice repos are more often used than reverse repos because the banking system usually holds substantial amounts of excess liquidity, which must therefore be mopped up by the BoU if interbank rates are not to fall below the CBR. When the BoU wants to intervene in the money market, it will offer the commercial banks a repo or reverse repo, depending on whether it wants to mop up or inject liquidity. Both the repos and the reverse repos are offered at the CBR, with the BoU accepting all bids from commercial banks at the CBR. Thus, the BoU sets the price for the repos and reverse repos and allows the quantity to be determined by demand in the market.

Repos and reverse repos are collateralised by government securities held by the borrowing party. The BoU holds a stock of UGX 1.2 trillion of securities which it uses to back its repos. When commercial banks borrow from the BoU through a reverse repo, they use their own holdings of government securities. If the banks' government securities have 90 days or less to maturity, the amount borrowed equals the face value of the security, whereas if the security has more than 90 days to maturity, a 25 percent haircut is imposed so that the bank can only borrow 75 percent of the face value of the security. Government securities are held in electronic form on a Central Securities Depository (CSD) which is housed in the BoU. When a repo or reverse repo is transacted, the ownership of the collateral which secures the transaction does not change ownership on the CSD from the borrower to the lender but rather, a caveat is placed for the duration of the repo or reverse repo.

The BoU's interventions in the money market are linked to the timing of the CRR maintenance cycle. On the first day of the 14-day cycle, which always falls on a Thursday,<sup>9</sup> subject to the prevailing liquidity conditions, the BoU may offer Commercial banks a 7-day repo or reverse repo, to mature on the following Thursday. Hence during each 14-day CRR maintenance cycle, the BoU would offer two 7-day repos or reverse repos; the first on the first day of the cycle and the second on the eighth day. This gives banks the opportunity to use the repos or reverse repos to assist them to plan their liquidity management over the cycle.

The BoU also offers repos or reverse repos on days other than the first and eighth days of the CRR maintenance cycle, when this is warranted by unanticipated liquidity shocks, but when it does this the repo or reverse repo will also mature on the same day as the outstanding 7-day repos or reverse repos. For example, if liquidity tightens, or is expected to tighten, sharply on the third day of the cycle, the BoU might offer a reverse repo with a 5-day maturity. Hence all outstanding repos mature on the same day. Given that the 7-day repos or reverse repos usually anchor the 7-day interbank interest rate, the main purpose of the shorter dated repos or reverse repos is to manage the volatility in the overnight interbank rate, and in particular to prevent the overnight rate from deviating outside of the band around the CBR. Without the shorter dated repos, the overnight interbank rate would often fall steeply towards the end of the CRR maintenance period if there is surplus liquidity in the market, because banks have already accumulated sufficient reserves to meet their CRR and have no other outlet for surplus funds until the start of the next cycle.

In situations of excess liquidity, the BoU, therefore, offers to borrow for 7 days at the prevailing CBR, all of the liquidity which banks do not want to hold. In effect this puts a floor under the 7-day interbank rate, as banks have no incentive to lend to each other at less than the CBR if they can lend to the BoU at the CBR. As can be seen in **Figure 2**, the BoU has been quite successful in controlling the 7-day interbank rate; most 7-day trades are conducted at, or slightly above, the CBR.

### 6.3.2 *Secondary market sales or purchases of government securities*

The BoU uses secondary market sales of government securities to mop up liquidity for longer periods. These instruments are used to address structural liquidity, which is liquidity in excess of that required by the commercial banks to meet their CRRs and their normal operations and which, in the absence of action by the BoU, would remain in the market for long periods. During 2015 and 2016 substantial volumes of structural liquidity accumulated in the banking system largely because the creation of base (reserve) money as a result of government borrowing from the BoU and the BoU's net purchases of foreign exchange from the banks, the combination of which exceeded the growth in demand for base money, which is determined by the public's desire to hold cash and the banks' CRRs.

The BoU holds a stock of government securities, mostly Treasury Bonds, which were issued to it for purposes of recapitalisation. As of January 2017, it had been issued with UGX 960 billion of these government securities, of which UGX 646 billion had been sold on the secondary market. The BoU

---

<sup>9</sup> If the Thursday is a public holiday, the BoU will offer repos on the following day making the tenor of the 6 days instead of 7 days



also occasionally buys government securities on the secondary market, when it wants to inject liquidity for longer periods than allowed by a reverse repo.

Commercial banks quote prices for secondary market trades of securities on their Reuters dealing terminals. When the BoU wants to conduct a secondary market trade it contacts the banks with the best quotes and negotiates the volume and price of the trade. Often a secondary market intervention involves multiple trades with several different banks spread out over several days.

### 6.3.3 *Bank of Uganda Deposit Facility*

The BoU deposit facility is designed to mop up liquidity for maturities longer than the repo but shorter than secondary market sales of securities. The maturities offered through the deposit facility are 28 and 56 days. As with the repo, deposit auction facilities are conducted at fixed interest rates with the BoU accepting all bids at the applicable interest rate. Because the maturities are longer than the repos, the BoU accepts interest rates at CBR plus a margin above the CBR which should be less than the difference between the present and the previous CBRs. In addition, a computing of the 28-day and 56-day deposit facility based on a 7-day period is also considered.

## 6. Conclusions

There is a functioning interbank market in Uganda, involving mainly short-term interbank lending. Although banks in Uganda rely predominantly on customer deposits to fund their activities, most banks engage in interbank transactions on a regular basis to meet short term marginal liquidity needs or to dispose of short-term surplus liquidity. Nonetheless, there are frictions in the money market which sometimes lead to wide variations in interbank rates, especially for overnight transactions. These frictions mainly arise because large international banks, which command a large share of available liquidity in the market, impose credit limits on lending to some of the smaller banks; in effect rationing the supply of liquidity to these banks.

The money market is the location for the implementation of the BoU's inflation targeting monetary policy. The BoU sets a policy interest rate and then intervenes in the money market, transacting with the commercial banks, to drain or inject liquidity in order to align the 7-day interbank interest rate with the CBR. The instruments which the BoU uses for money market interventions are short term repo and reverse repos, a 28 day and 56-day central bank deposit facility and secondary market sales of government securities.

Going forward, we utilize this description of the structure of Uganda's interbank market to undertake two empirical analyses. First, investigate whether the interbank interest rates paid by individual banks are influenced by the financial soundness indicators of the borrowing banks, the structure of the banking industry, i.e. size and ownership and the bank specific demand for funds on the market. Second, we empirically test the relationship between the interbank market and monetary policy.

## References

- Bank of England (2012). *The framework for the Bank of England's Operations in the Sterling Money Markets*, London, Bank of England (up dated June 2012).
- Bank of Japan (2012). *Functions and Operations of the Bank of Japan*, Institute for Monetary and Economic Studies, Tokyo, Bank of Japan.
- Brownbridge, M., and Kasekende, L. (2018), "Inflation Targeting in Uganda: What lessons can we learn from five years of experience?" in *Monetary Policy in sub-Saharan Africa* (eds Andrew Berg and Rafael Portillo), Oxford University Press.
- European Central Bank (2011). *The Monetary Policy of the ECB*, European Central Bank, Frankfurt – am-Main.
- Federal Reserve Board, U.S. (2005). *The federal reserve system: Purpose and functions* (9<sup>th</sup> ed.), Washington, D.C: Board of Governors of the Federal Reserve System.
- Green, C., Bai, Y., Murinde, V., Ngoka, K., Maana, I., and Tiriongo, S. (2016), Overnight interbank markets and the determination of the interbank rate: A selective survey, *International Review of Financial Analysis* **44**, 149 – 161.

**Appendix Table 1:** Relative Commercial Bank Asset size to the Mean industry assets, as at December 2017.

<b>Bank</b>	<b>Asset Size (UGX, billions)</b>	<b>Deviation from Mean assets</b>
1	57	-827
2	116	-768
3	145	-739
4	170	-715
5	179	-705
6	201	-683
7	214	-671
8	218	-666
9	272	-612
10	284	-601
11	385	-500
12	701	-183
13	732	-152
14	732	-152
15	763	-121
16	925	40
17	1039	154
18	1510	626
19	1544	660
20	2451	1566
21	2710	1825
22	2717	1833
23	3041	2156
24	5423	4539
<b>Mean asset size</b>	<b>884</b>	