



BANK of ZAMBIA

Operating Rules and Guidelines for the Overnight Lending Facility

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ACRONYMS

BoZ	Bank of Zambia
CSD	Central Securities Depository
DVP	Delivery versus Payment
FoP	Free of Payment
ILF	Intra-day Liquidity Facility
OLF	Overnight Lending Facility
OMO	Open Market Operations
Repo	Repurchase Transaction
ZIPSS	Zambia Interbank Payment and Settlement System

1. INTRODUCTION

- 1.1 The mission of the Bank of Zambia (BoZ) is to achieve and maintain price and financial systems stability for balanced macroeconomic development.
- 1.2 The BoZ utilises the Overnight Lending Facility (OLF) Window to provide short-term liquidity assistance to commercial banks. This window is accessed by commercial banks when they experience immediate short-term liquidity needs.
- 1.3 These guidelines present the operational rules and guidelines that govern the operations of OLF. The guidelines are structured as follows: Section 2 describes the eligibility and accessibility of the facility while Section 3 outlines the process of lodging applications. Collateral arrangements are presented in Section 4, followed by the description of the pricing mechanisms in Section 5. Settlement of the loans and the maturity proceeds procedures are described in Sections 6 and 7, respectively. The OLF operational timeline is outlined in Section 8 while the provision for the review of the OLF Guidelines is presented in Section 9.

2. ELIGIBILITY AND ACCESSIBILITY

- 2.1. Commercial banks with clearing accounts at the BoZ are eligible to participate on the OLF.
- 2.2. Commercial banks can access the OLF in two ways:

a) Overnight Repo with Bank of Zambia (Direct Route)

Commercial banks can directly apply for an overnight loan through the Central Securities Depository (CSD) system as outlined in Section 3 below.

b) Automatic OLF (Indirect Route)

Commercial banks can also access the overnight loan automatically by lapsing intraday credit into the following day. In this case, unpaid credit obtained under the intra-day Liquidity Facility (ILF) automatically converts to an overnight loan. Collateral against such loans will be held by the BoZ until the overnight loan is repaid in full.

- 2.3. BoZ reserves the right to make changes on accessibility and eligibility as and when deemed necessary. Any such change will be communicated to the commercial banks.

3. LODGING OF APPLICATIONS

- 3.1. Applications to access OLF will be made electronically in the BoZ CSD system.
- 3.2. Participants shall be allowed to submit more than one application per day provided the applications are submitted before the close of the OLF window and that there are sufficient securities to cover the amounts applied for.

BoZ reserves the right to restrict the number of applications made in a given period as and when deemed necessary. Any such change will be communicated to the commercial banks.

- 3.3. Participants can submit applications any time from start of Business Day in the CSD. However, approval of the loan application(s) will only be made from 15:00 to 16:00 hours (OLF Authorisation Window).
- 3.4. No withdrawals can be made once applications have been approved by BoZ. In the event that an application needs to be withdrawn, a written request should be made before the application is approved.

4. COLLATERAL ARRANGEMENTS

- 4.1. All loans accessed will be on a repo basis with any or a combination of the following instruments as the underlying security: Treasury bills, Government bonds, and qualifying BoZ OMO Term deposits.
- 4.2. In the event that the Intraday Repo converts to an overnight loan, securities repoed under the ILF shall be eligible for use to the extent possible to cover the overnight loan. Currently, only Treasury Bills are eligible as collateral for ILF.
- 4.3. Only instruments with greater than 7 days to final maturity date shall be eligible as security.
- 4.4. The Bank will apply haircut margins on the underlying securities to be used as collateral on the OLF. Haircuts shall be applied taking into account the market value of the securities. Applicable hair-cut margins shall be structured as follows:

Table 1 Haircut margins on underlying securities

Instrument	Remaining Days to Maturity	Haircut over Market Value
Treasury Bills	Greater than 7 days	5%
Government Bonds	Greater than 7 days	5%

- 4.5. In the event of default, the repoed securities covering the loan, that is, the market value of securities including the haircut will be forfeited to BoZ.
- 4.6. BoZ reserves the right to make changes to collateral arrangements as and when deemed necessary. Any such change will be communicated to the participants.

5. PRICING MECHANISMS

- 5.1. **Interest payable on the OLF Loan is calculated on a simple interest basis:**

$$\text{Interest Payable} = \text{Loan Amount} \times \text{OLF rate} \times \frac{n}{365}$$

Where:

Loan Amount is the amount of the overnight loan the commercial bank borrows.

OLF rate is the rate applied to the loan and is available on the OMO Statistical Release on the Reuters Information System.

n is the tenor of the loan.

The OLF rate is determined by adding a margin to the BoZ Policy Rate. The margin shall be set and changed by the Bank of Zambia as and when required depending on its overall monetary policy stance.

5.2. The determination of the required value of the Treasury Bills is undertaken in the following steps:

5.2.1. Determination of Margin Cover (required Present Value/Market Value) of securities is as follows:

$$\text{Margin Cover} = \text{Loan Amount} \times (1 + \text{Haircut Margin})$$

Where:

Loan Amount is the amount of the overnight loan the commercial bank wants to borrow.

Haircut Margin is the amount of haircut to be applied on the loan amount (see Table 1 above for respective haircuts on underlying securities).

5.2.2. Determination of the required face value of securities

The market value of the collateral calculated in step 5.2.1 above is then used to calculate the required face value as follows:

$$FV = MV \times \left(1 + \frac{rn}{365}\right)$$

Where:

MV is the required market value of the security being repoed and is calculated as above (see 5.2.1)

r is the *current* weighted average yield rate (in decimals) obtaining on the most recent Treasury bill auction;

n is the number of days between settlement date and maturity date of the repoed security; and

FV is the face value of the security to be repoed.

Example:

Consider a transaction with the following features:

Amount to be borrowed:	K 5,000,000.00
Security to be repoed:	182 days Treasury bill
Settlement Date:	2 November 2009
Treasury bill Maturity Date:	7 December 2009
Number of Days between settlement date and Treasury bill Maturity Date:	35 days
Current Yield Rate on a 182-day Treasury bill:	12%
Applicable Hair-cut Margin:	5%

With these features, the security's market value (*MV*) consideration will be:

$$MV = 5,000,000.00 \times (1 + 0.05)$$

$$= 5,250,000.00$$

The required face value (*F*) of the security will be calculated as follows:

$$FV = 5,250,000.00 \times \left(1 + \frac{0.12 \times 35}{365}\right)$$

$$= 5,310,410.96$$

5.3. The determination of the required value of the Government Bonds is undertaken in the following steps:

5.3.1. The calculation of the *MV* for government bonds is the same as step 5.2.1 above.

5.3.2. The required face value (*F*) of Government bonds shall be determined by application of the following formula:

$$F = \left[\frac{MV}{\left(\frac{C/2}{\left(1 + \frac{r}{2}\right)^w} + \frac{C/2}{\left(1 + \frac{r}{2}\right)^{1+w}} + \frac{C/2}{\left(1 + \frac{r}{2}\right)^{2+w}} + \dots + \frac{1 + C/2}{\left(1 + \frac{r}{2}\right)^{n+w}} \right)} \right]$$

Where ***MV*** is the required market value of the security being repoed;

- C** is the coupon rate originally applied to the bond at issue date;
- r** is the *current* weighted average yield rate obtaining on the most recent Government bonds auction;
- n** is the total number of coupon periods remaining after the next coupon payment;
- w** is number of days between settlement date and the next coupon payment date divided by the original number of days in coupon period; and
- F** is the face value of the security to be repoed as collateral.

Example:

Consider a transaction with the following features:

Amount to be borrowed:	K5,000,000.00
Security to be pledged:	2-year Government bond
Coupon rate:	4.5% (i.e. half of 9% annual coupon rate)
Settlement Date:	2 November 2009
Next Coupon Payment Date:	7 December 2009
Original Number of Days in Coupon Period:	182
Current Yield Rate on a 2 year Govt bond:	16%
Applicable Hair-cut Margin:	5%

With these features, the security's market value (MV) consideration will be;

$$MV = 5,000,000.00 \times (1 + 0.05)$$

With 35 days between the settlement date and the next coupon payment date, $w=35/182=0.1923$, the required face value (F) of the security will then be calculated as follows:

$$FV = \frac{5,250,000.00}{\frac{0.09/2}{(1 + \frac{0.16}{2})^{0.1923}} + \frac{0.09/2}{(1 + \frac{0.16}{2})^{1+0.1923}} + \frac{0.09/2}{(1 + \frac{0.16}{2})^{2+0.1923}} + \frac{1 + 0.09/2}{(1 + \frac{0.16}{2})^{3+0.1923}}}$$

$$= 5,580,508.94$$

6. SETTLEMENT PROCEDURE

- 6.1. The settlement of the overnight loans will be on the same day (T+0).
- 6.2. When BoZ has authorized the transaction, the CSD shall transfer the nominated quantity of each security from the Participant's Account to the BoZ

Account. The value of the securities will be determined in accordance with Section 5 above.

- 6.3. The cash leg will be settled in ZIPSS in line with DvP Model 1.
- 6.4. Commercial banks can check the status of the operation and access the Individual Results Report from the CSD.

7. MATURITY PROCEEDS

- 7.1. On maturity date, the CSD shall await receipt of a repayment confirmation message from ZIPSS before releasing the repoed securities (collateral). If DVP Cut Off time is reached prior to receipt of a repayment confirmation message, the CSD shall send a cancellation message to ZIPSS. This will be treated as a default and the CSD shall not release the repoed securities. In addition, the following penalty will levied on the transaction:

$$Penalty = F \times P \times \left(\frac{N}{365} \right)$$

where

F = Unremitted funds (Principal)

P = BoZ Penalty rate

N = Number of days the funds were unremitted (which in the CSD is by default equivalent to 1¹)

The calculation of this penalty will be done and effected outside the CSD.

- 7.2. In the case of automatic OLF loans, the CSD will automatically attempt the settlement of the overnight loan at the beginning of the next business date (maturity day). If DVP Cut Off time is reached prior to receipt of a repayment confirmation message, the CSD shall send a cancellation message to ZIPSS. This will be treated as a default and the CSD shall not release the repoed securities.
- 7.3. BoZ will determine and set the number of overnight loan extensions to be automatically performed by the system. In the event that the Bank of Zambia policy permits extensions and if the overnight loan (Direct and Automatic) is not settled by DVP cut-off on the maturity day, the system will automatically

¹ In the CSD system, a loan repayment can only be outstanding for one day (maturity date). At DVP Cut-off time on maturity date, the repayment is cancelled and not queued up again. Therefore (N/365) is by default equivalent to (1/365).

extend the loan for an additional allowable period depending on the policy. In this case, the CSD shall calculate the additional overnight charge. Currently, the policy does not allow the extension of an OLF loan. If the overnight loan is not repaid at DVP Cut Off time at the end of the allowable extension period, the CSD shall send a cancellation message to ZIPSS. This will be treated as a default and the CSD shall not release the repoed securities. In addition, the following penalty will levied on the transaction and charged outside the CSD:

$$Penalty = F \times P \times \left(\frac{N}{365} \right)$$

where

F = Principal

P = BoZ Penalty rate

N = Number of days the funds were unremitted (which in the CSD is by default equivalent to 1²)

- 7.4 Should there be system failure on ZIPSS/CSD, the Bank of Zambia shall manually recover payments by 10.00 hrs. by collecting principal and interest, and shall return securities held against the overnight loan, through a Free of Payment (FoP) transaction.

² See footnote 1.

8. OLF OPERATIONAL TIME

The OLF shall be active towards close of business in order to encourage active trading in the inter-bank market. The following table presents a summary of the operational time for OLF, accessed through the direct and the indirect (automatic) routes:

Table 1 Operational Time of the OLF (Direct and Automatic)

08.15	• Start of Business Day for the CSD • Commercial banks can apply for an overnight loan through the CSD
10.15	• BoZ communicates the OLF Rate to the commercial banks through the OMO Statistical Release on the Reuters and Bloomberg Information Systems.
15.00 – 16.00	• Subject to adequate collateral, the BoZ authorises the provision of credits to commercial banks' settlement accounts. • The second leg of the transaction (Repayment) is automatically created on the CSD.
16.15	• If the prevailing policy allows, any unpaid ILF loans in the ZIPSS are automatically converted into overnight loans. However, if the Bank of Zambia's prevailing policy does not allow the creation of an automatic overnight loan, the securities repoed for the ILF loans will be rediscounted.
Following Business Day	
08.15	• ZIPSS automatically attempts to settle repayments by collecting loan and interest amounts accessed through both the automatic and the direct route. If commercial bank's current account has insufficient funds, the system postpones recovery until DVP Cut-off.
16.20	• If the overnight loan (direct and automatic is not repaid at DVP Cut-off time, the CSD shall send a cancellation message to ZIPSS. This will be treated as a default and the CSD shall not release the repoed securities. • In the event that the Bank of Zambia policy permits extensions, If the overnight loan (Direct and Automatic) is not settled by DVP cut-off on the maturity day, the system will automatically extend the loan for an additional allowable period depending on the policy.

9. REVIEW OF OLF GUIDELINES

The Operating Rules and Guidelines for OLF will be reviewed every two years or when deemed necessary.

10. APENDICES

APPENDIX 1 – Intra-day Liquidity Facility³

The BoZ has in place an intra-day Liquidity Facility (ILF) that provides intra-day liquidity support to commercial banks. Commercial banks can repo securities to BoZ in order to obtain intra-day liquidity at any time during the Business Day with no interest charged. The securities repoed are transferred from the commercial banks' holdings to the BoZ's holdings. The transaction is reversed at the final cut-off time of ZIPSS at 16:15 hours once the loan is repaid in full by the commercial bank. However, if at final cut-off time of ZIPSS, the commercial bank has insufficient funds to pay off the loan in full, the credit that is not repaid will be converted either into an overnight loan or become a permanent trade depending on the prevailing policy.

If the prevailing policy dictates that the unpaid ILF be converted to an automatic OLF loan which attracts interest, the BoZ will continue to hold the securities until the loan is repaid by DVP Cut-Off time. If at DVP Cut Off time the loan is not repaid, this will constitute a default and a penalty will be levied on the transaction in line with Section 7.1.

However, if the Bank's prevailing policy does not allow the creation of an automatic overnight loan, the securities repoed to obtain the intraday credit collateral will be rediscounted at the ZIPSS final cut-off time. The rediscounted securities shall be sufficient to cover the unpaid ILF.

Notwithstanding the above, BoZ reserves the right to make changes to the rules relating to unpaid ILF as and when deemed necessary. Any such change will be communicated to the commercial banks.

³ Refer to the 2015 Zambia Interbank Payment and Settlement Systems (ZIPSS) Rules

APPENDIX 2 – CSD TIME TABLE

CSD Event	Time	Activities
Start of Day	08.00 hrs	The business date is moved to current system date. Housekeeping functions can be undertaken such as maintenance of parameters, participant details, and user maintenance.
Start of Business Day	08.15 hrs	The system is ready to process available future transactions and new transactions.
Intraday Auction Cut-Off	16.00 hrs	The system processes auction related transactions only when the intraday auction window is open. No auction related transactions can be undertaken after the intraday auction cut-off.
DVP Cut-Off	16.20 hrs	The system processes DVP Transactions only when DVP service is open. When DVP is executed, all DVP transactions that are not in final status are cancelled.
FoP Cut-Off	16.25 hrs	The system processes FoP Transactions only when FoP service is open. When FoP is executed, all FoP transactions that are not in final status are cancelled. Also all FoP transactions that are not matched will be automatically cancelled.
End of Business Day	16.30 hrs	All business transactions cannot be processed beyond this time. Housekeeping functions can take place.
End of Day	16.35 hrs	CSD system closes. Back-up and archiving can take place.

Note: The BoZ reserves the right to change the Timetable as and when deemed necessary.

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