CENTRAL BANK OF NIGERIA

GUIDANCE NOTES ON THE CALCULATION OF CAPITAL REQUIREMENT FOR MARKET RISK FOR NON-INTEREST FINANCIAL INSTITUTIONS IN NIGERIA

STANDARDIZED APPROACH

AUGUST, 2018

Table of Contents

Definitions of Terms

	Term	Definition
1	Non-Interest Financial Institutions	Means banks and other financial institutions under the regulatory purview of the Central Bank of Nigeria that provide banking and other financial services on the basis of Islamic Commercial Jurisprudence.
2	*Sukuk* (Islamic Investment Certificates)	*Sukuk* are certificates of equal value representing undivided shares in ownership of tangible assets, usufruct and services, or (in the ownership) of assets of particular projects or special investment activity.
3	Banking Book	The bank's on and off-balance sheet exposures except those falling under the scope of trading book.
4	Fair Value	A fair value amount for which the asset can be exchanged between knowledgeable and willing parties in an arm's length transaction.
5	Marked-to-Market	It means to revalue a transaction, position, exposure or contract at current market value
6	Marked-to-Model	It represents the valuation of an exposure, position or transaction using a model whose parameters are estimated, on continuous basis, based on the market price or market factors.
7	Trading Book	The trading book represents a bank's exposure in financial instruments which are held with the intention of trading or hedging internal exposures.

1.0 INTRODUCTION

1. Market risk is defined as the risk of loss in on and off-balance sheet positions arising from movements in market prices. The risks in NIFIs that are subject to the market risk capital requirement are:
   - Equity position risk in the trading book;
   - Benchmark risk in trading positions in *Sukuk*;
   - Foreign exchange risk; and
   - Commodities and inventory risk.

2. The market risk capital charge on an equity position in the trading book and trading positions in *Sukuk* shall be applied to trading book items based on the guidance provided in the paragraphs below. For the foreign exchange, commodities and inventories risks, market risk will apply to the trading book positions at the NIFIs' level.

3. Trading positions are defined as those positions of a NIFI that are held for short-term resale and/or with the intent of benefiting from actual or expected short-term price movements or to lock in arbitrage profits.

4. NIFIs shall have clearly defined policies and procedures for including or not including any position in the trading book. Such policies shall be commensurate with the NIFI's capabilities and capacities for risk management. The NIFI shall have a well-documented procedure to comply with stated policies and procedures, which shall be subject to periodic Internal Audit/*Shari'ah* Review.

5. A trading book consists of positions in equity instruments, *Sukuk*, foreign exchange, as well as commodities and inventories held for the purpose of trading by a NIFI. It can also include exposures of a NIFI held to hedge its trading positions, on the basis of *Shari`ah*-compliant contracts. Only those instruments which are free of any restrictions on their tradability will be eligible for trading book capital treatment. Further, the trading positions shall be actively managed and a frequent and accurate valuation of the trading positions shall be made.

1.1 Objective of the Guidance Note

6. This Guidance Notes identifies and prescribes the treatment of positions and settlement risk pertaining to estimating capital requirement for market risk;
   - Benchmark risk in trading positions in *Sukuk;*
   - Equities in the trading book;
   - Foreign exchange risk; and
   - Commodity and inventory risk throughout the NIFI.

The capital requirement takes into account both on-and off-balance sheet positions that are subject to market risk. NIFIs that are not able to properly measure and manage the risks associated with financial instruments which are sensitive to multiple risk factors shall not conduct business in those instruments.

2.0 POLICIES AND PROCEDURES

7. The policies and procedures of the NIFI to include an instrument or position in the trading book shall address the following considerations, at a minimum:
   - The types of activities the NIFI considers to be part of its trading book activities for capital adequacy purposes;
   - The extent to which an exposure can be marked-to-market on a daily basis;
   - If not marked-to-market, the extent to which an exposure can be marked-to-model, with clearly defined criteria;
   - How far the NIFI can have access to reliable valuations for the exposure that can be validated by external parties, in a coherent manner;
   - The legal, regulatory or operational restrictions on immediate liquidation of the exposure, if any;
   - The capacity and systems of the NIFI to manage its risk relating to trading positions; and
   - The criteria for, and extent of, transferring risks and exposures between the banking book and the trading positions of the NIFI.

8. In order for a NIFI to include any instrument or position in the trading book for capital treatment, some minimum requirements shall be fulfilled. These requirements include:

   (a) a clearly documented trading strategy, approved by senior management, for relevant positions, instruments or portfolios; and

   (b) Well-defined policies and procedures for the active management, reporting and monitoring of the trading positions.

9. All other exposures that are not defined as trading book positions should be classified as banking book exposures. This will include both on-and off-balance sheet positions.

3.0 GUIDANCE ON VALUATION PRACTICES

10. NIFIs shall have adequate systems and controls for carrying out the valuation of positions in the trading book. In view of the less liquid positions of some *Sukuk* and equity positions held by NIFIs, adhering to prudent valuation practices as set out in the following sub-sections is of vital importance. Less liquid positions, however, are not to be excluded from the trading book solely on the basis of lesser liquidity.

11. NIFIs shall have robust systems and controls, with documented policies and procedures for the valuation process. These systems shall be integrated with the NIFI's enterprise risk management processes and shall have the ability to give confidence to the CBN and its management regarding the reliability of the valuations. The policies and procedures shall include:

(a) Clearly defined responsibilities of the personnel and departments involved in the valuation;

(b) Sources of market information, and review of their reliability;

(c) Frequency of independent valuations;

(d) Timing of closing prices;

(e) Procedures for adjusting valuations between periods;

(f) Ad-hoc verification procedures; and

(g) Reporting lines for the valuation department that should be independent of the front office.

12. Such policies and procedures shall also take into consideration compliance with the relevant accounting standards (International Financial Reporting Standard (IFRS) and Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) and supervisory requirements as may be issued by the CBN from time to time.

3.1 Valuation Methodologies

13. NIFIs shall use either of the following valuation methodologies in order of preference:

(a) mark-to-market; and

(b) mark-to-model, subject to the approval of the CBN.

Mark-to-market valuation requires daily valuation of positions based on independently sourced current market prices.

14. In the case where a NIFI is unable to mark-to-market its positions as a result of certain limitations on the reliability of their price estimates owing to low volume and number of transactions or in distressed market conditions, it can use mark-to-model for the valuation of its trading positions provided it is established that the market for an asset is inactive or that a transaction on which a valuation might have been based is a distressed transaction, so that no reliable fair value estimate is possible.

15. In order to verify that the market for an asset is inactive, a NIFI shall establish that there is a lack of recent transactions with sufficient frequency and volume, which could otherwise provide ongoing price information related to the assets to be valued (which

may be *Sukuk* and/ or other *Sharī`ah* compliant instruments).

16. A NIFI shall also verify that price quotations available in the market are not up-to-date and have large variations overtime. The prices should demonstrate a significant premium related to liquidity risk underlying the instruments. A NIFI shall also confirm that the bid–ask spread has become abnormally wide or has been fluctuating overtime, and that quoted prices available in the market are not related to any stressed market conditions.

17. After the verification of the aforementioned points, subject to CBN approval, a NIFI may use the mark-to-model technique for estimating the value of assets. Mark-to-model valuation methodology is benchmarked, extrapolated or otherwise calculated from a market input. Such calculations shall be performed while taking a conservative approach.

18. Senior management shall be aware of trading book exposures that are calculated using mark-to-model and should understand the impact of using this technique on reporting the risk and performance of the NIFI. To the extent possible, any market inputs used shall reflect market prices. For particular products, generally accepted valuation methodologies shall be used. Internally developed models shall be subject to verification and testing of assumptions, calculation methods and software implementation by CBN and independent parties such as internal auditors, consultants, etc.

19. Those responsible for risk management shall be aware of any weaknesses of the model used. The model shall be reviewed periodically in order to verify the accuracy of its performance. To cover the uncertainties of mark-to-model valuation, valuation adjustments shall be made as appropriate.

20. NIFIs shall also have an arrangement for independent verification of market prices or model inputs for accuracy. Such verification shall be made at least monthly. When pricing sources are few or limited, valuation adjustments or other appropriate measures may be used by NIFIs.

4.0 MEASURING MARKET RISK

21. As mentioned in paragraph 1, market risk calculation includes:

    (a) Equity position risk in the trading book;

    (b) Benchmark risk on trading positions in *Sukuk*;

    (c) Foreign exchange risk; and

    (d) Commodities and inventory risk.

22. The calculation methodologies for these risks are provided below. The total market risk capital charge summed arithmetically will be the overall measure of the market risks from the aforementioned sources.

4.1 Equity Position Risk in the Trading Book

23. The market risk capital charge for equity securities (including common shares and investments in Islamic collective investment schemes) in a NIFI's trading book comprises two components that are calculated separately as specified below:

4.1.1 ***Specific Risk***

24. The capital charge for specific risk is 8% on all long equity positions which must be calculated on a security-to-security basis (for each national market).

4.1.2 ***General Market Risk***

25. The capital charge for general market risk is 8% on all long equity positions. These positions must be calculated on a market-by-market basis (for each national market).

4.2. Benchmark Risk in Trading Positions in *Sukuk*

26. In the case of benchmark risk in trading positions in *Sukuk*, the capital charge comprises two components that are calculated separately as specified below:

4.2.1 ***Specific Risk***

27. The capital charge for specific risk covers against an adverse movement in the price of a *Sukuk* held for trading due to factors related to an individual issuer. Offsetting is restricted only to matched positions in the identical issues. No offsetting will be permitted between different issues even if the issuer is the same, since differences in features of *Sukuk* with respect to profit rates, liquidity and call features, etc. would imply that prices may diverge in the short run.

28. The capital charge for specific risk will depend on the RW of the issue and the term to maturity of the *Sukuk*, as follows:

Categories*		Capital Charge
Government	AAA to AA-	0%
	A+ to BBB-	0.25% (residual term to final maturity<=6months) 1.00% (residual term to final maturity>6and<=24months)
		1.60% (residual term to final maturity>24months)
	BB+ to B-	8%
	Below B-	12%
	Unrated	8%
		0.25% (residual term to final maturity<=6months)

Investment grade	1% (residual term to final maturity>6and<=24months)
	1.60% (residual term to final maturity>24months)
BB+ to BB-	8%
Below B-	12%

*The CBN has the discretion to apply a different specific RW to *Sukuk* by certain foreign governments/issuers

4.2.2 ***General Market Risk***

29. The capital charge for General Market Risk captures the risk of loss arising from changes in benchmark profit rates.

30. Subject to CBN approval, the capital charge for general market risk can be calculated by either the "maturity" or the "duration" method.

(i) Maturity method

31. The capital charge for general market risk will depend on the residual term to maturity or to the next re-pricing date, using a simplified form of the maturity method on the net positions in each time band in accordance with the table below:

Residual Term to Maturity	RW
1 month or less	0.00%
1–3months	0.20%
3–6months	0.40%
6–12months	0.70%
1–2years	1.25%
2–3years	1.75%
3–4years	2.25%
4–5years	2.75%
5–7years	3.25%
7–10years	3.75%
10–15years	4.50%
15–20years	5.25%
>20years	6.00%

(ii) **Duration method**

32. At CBN discretion, NIFIs with the necessary capability may use the more accurate "duration" method. However, for NIFIs to use the duration method, they will be required to meet certain criteria to be specified by CBN. This method shall be used consistently by NIFIs, unless a change is approved by the CBN.

33. The steps involved in the calculation of capital charge for general market risk using duration method are as follows:

a) Calculate the price sensitivity of each *Sukuk* position (called "weighted positions") in terms of a change in profit rates between 0.6 and 1 percentage points depending on the maturity of the *Sukuk (*table 3a).

b) Slot the resulting sensitivity measures into a duration-based ladder with 13 time bands as set out in Table 3a.

c) Subject long positions in each time band to a 5% *vertical disallowance* on the smaller of Offsetting positions (i.e. a matched position) in each time band (in table 3c).

d) From the results of the above calculations, two sets of weighted positions–the net long position in each time band–will be produced. The maturity ladder is then divided into three zones, as follows: zone1, 0–1 year; zone2, >1< 4 years; and zone 3, > 4 years. NIFIs shall be required to conduct two further rounds of offsetting:

(i) between the net time band positions in each of the three zones; and

(ii) between the net positions across the three different zones (i.e. between adjacent zones and non-adjacent zones).

The residual net positions are then carried forward and offset against opposite positions in other zones when calculating net positions between zones 2 and 3, and zones1 and 3.

The offsetting will be subject to a scale of disallowances (*horizontal disallowances*) expressed as a fraction of matched position, subject to a second set of disallowance factors (Table 3b).

e) The general market risk capital charge will be the aggregation of three charges: net position, vertical disallowances and horizontal disallowances (Table 3c)

Table 3a Duration Method: Time Bands and Assumed Changes in Yield

Zone	**Time Band (Expected profit rate>=3%)**	**Time Band (Expected profit rate<3%)**	**Assumed Change in Expected Yield (%)**
Zone1	1month or less	1month or less	1.00
	>1–3months	>1–3months	1.00
	>3–6months	>3–6months	1.00
	>6–12months	>6–12months	1.00
Zone2	>1–2years	>1.0–1.9years	0.90
	>2–3years	>1.9–2.8years	0.80
	>3–4years	>2.8–3.6years	0.75
	>4–5years	>3.6–4.3years	0.75
	>5–7years	>4.3–5.7years	0.70

Zone3	>7–10years	>5.7–7.3years	0.65
	>10–15years	>7.3–9.3years	0.60
	>15–20years	>9.3–10.6years	0.60
	>20years	>10.6–12years	0.60
		>12–20years	0.60
		>20years	0.60

Table3b Duration Method: Horizontal Disallowances

Zone	TimeBand	Within the Zone	Between Adjacent Zones	Between Zones 1 and 3
Zone1	<=1month	40%	40%	100%
	>1–3months			
	>3–6months			
	>6–12months			
Zone2	>1–2years	30%	40%	
	>2–3years			
	>3–4years			
Zone3	>4–5years	30%		
	>5–7years			
	>7–10years			
	>10–15years			
	>15–20years			
	>20years			

Table 3c: General Risk Capital Charge Calculation

The sum of:		
Net position	**Net long weighted position**	**x 100%**
Vertical disallowances	Matched weighted positions (i.e. the smaller of the absolute value of the short and long positions with each time band) in all maturity bands	x 10%
Horizontal disallowances	Matched weighted positions within Zone1	
	Matched weighted positions within Zone2	
	Matched weighted positions within Zone3	
	Matched weighted positions between Zones1 and 2	
	Matched weighted positions between Zones 2 and 3	
	Matched weighted positions between Zones 1 and 3	

4.3 Foreign Exchange Risk

34. The capital charge to cover the risk of holding or taking long positions in foreign currencies, and in gold and silver[1] is calculated in two steps by measuring:

a) the exposure in a single currency position; and

b) the risks inherent in a NIFIs' portfolio mix of long and short positions in different currencies.

4.3.1. Measuring an exposure in a single currency and an open position in a unilateral binding promise to buy or sell gold and silver.

35. The net open position in each currency exposure is calculated by adding the following:

- Net spot position (total assets less total liabilities including accrued profit in the currency in question);
- Net position of a binding unilateral promise by the NIFI to buy and /or sell currencies on a specified future date (that are not included in the spot position);
- Guarantees and similar off-balance sheet instruments that are likely to be called and irrecoverable; and
- Any other items representing an exposure to risk in foreign currencies–for example, a specific provision held in the currency in question but the underlying asset is held in a different currency.

36. The net open position with a unilateral binding promise to buy or sell gold or silver should first be expressed in terms of the standard unit of measurement (i.e. ounces or grams) and then be converted at the current spot rate into the reporting or base currency.

37. Structural positions which are of a non-trading nature and are merely positions taken in order to hedge partially or totally against the adverse effect of the exchange rate on the NIFI's capital ratio may be excluded from the calculation above, subject to the CBN satisfaction that such positions are merely to protect the NIFI's capital ratio.

There is no capital charge for positions related to items that are deducted from the NIFI's capital, such as investments in non-consolidated subsidiaries or long-term participations denominated in foreign currencies which are reported at historical cost.

---

[1]Gold, silver and currency fall under foreign exchange risk in accordance with the Sharī'ah principles that require the exchange of currencies to be made in an equal amount on a spot basis.

4.3.2 Measuring the foreign exchange risk in a portfolio

38. A NIFI is allowed to use either a short hand method or an internal model approach in calculating the risks inherent in its mix of long and short positions in different currencies. However, the shorthand method, as stated below, is recommended.

    (a) Convert the nominal amount of the net position (net long or net short position) in each foreign currency as well as in net long gold and silver into the reporting currency using spot rates.

    (b) Aggregate the sum of converted net short positions and the sum of converted net long positions.

    The greater sum of net short positions or net long positions calculated in (b) is added to the net position of gold and silver, to arrive at the overall net position. The capital charge is 8% on the overall net position.

39. The use of an internal model approach by a NIFI is subject to the CBN explicit approval and fulfillment of qualitative standards; specifications of market risk factors being captured into the NIFI's risk management system; quantitative standards; comprehensive stress testing programme; and validation of the models by the CBN.

4.4 Commodities and Inventory Risk

40. This section sets out the minimum capital requirements to cover the risks of holding or taking long positions in commodities, including precious metals but excluding gold and silver (which falls under foreign exchange risk as set out in section 6.0), as well as the inventory risk which results from NIFIs holding assets with a view to reselling or leasing them under Ijarah contract.

41. A commodity is defined as a physical product which is, and can be, traded on a secondary market - for example, agricultural products, minerals (including oil) and precious metals.

42. Inventory risk is defined as the risk arising from holding items in inventory either for resale under a *Murabahah* contract, or with a view to leasing under an *Ijarah* contract. In the case of inventory risk, the simplified approach described in paragraph 47 below should be applied.

43. Commodities risk can be measured using either the maturity ladder approach or the simplified approach for the purpose of calculating the capital charge for commodities risk. Under both approaches, each commodity position is expressed in terms of the standard unit of quantitative measurement of weight or volume (barrels, kilograms, grams, etc.). The net position in each commodity will then be converted at current spot rates into the reporting currency.

44. Positions in different groups of commodities cannot be offset except in the following instances:

a) The sub-categories of commodities are deliverable against each other.

b) The commodities represent close substitutes for each other.

c) A minimum correlation of 0.9 between the price movements of the commodities can be clearly established over a minimum period of one year to the satisfaction of the CBN. Netting of positions for different commodities is subject to the CBN approval. Under the maturity ladder approach, the net positions are entered into seven time bands as shown in the table below:

MATURITY LADDER

	Time Band
1	0–1month
2	1–3months
3	3–6months
4	6–12months
5	1–2years
6	2–3years
7	>3years

45. A separate maturity ladder is used for each type of commodity, while the physical stocks are allocated to the first time band. The capital charge is calculated as follows:

a) The sum of short and long positions that are matched is multiplied by the spot price for the commodity and then by the appropriate spread rate of 1.5% for each time band.

b) The residual or unmatched net positions from nearer time bands may be carried forward to offset exposures in a more distant time band, subject to a surcharge of 0.6% of the net position carried forward in respect of each time band that the net position is carried forward.

c) Any net position at the end of the carrying forward and offsetting will attract a capital charge of 15%.

46. The summation of the above three capital charges represents the total capital charge for commodities risk based on the maturity ladder approach.

47. Under the simplified approach as applied to commodities, the net position, long or short, in each commodity requires a capital charge of 15% to cater for directional risk plus an additional capital charge of 3% of the gross positions – that is, long plus short positions–to cater for basis risk. The capital charge of 15% applies to assets held by NIFIs in inventory

with a view to resale or lease.

48. For *Istisna* work-in-process (WIP), WIP inventory belonging to the NIFIs shall attract a capital charge of 8% (equivalent to a 100% RW). In the case of the balance of unbilled WIP inventory under *Istisna* without parallel *Istisna*, in addition to the RW for credit risk, a capital charge of 1.6% is applied (equivalent to a 20% RW) to cater for market risk exposure.

49. The funding of a commodities position that exposes the NIFI to foreign exchange exposure is also subject to a capital charge as measured under the foreign exchange risk (refer to subsection 4.3).