MARKET RISK MANAGEMENT POLICY

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1.0 Introduction

This Market Risk Management Policy outlines PremiumTrust Bank's strategy and objectives for market risk management and the approaches and processes by which the Bank achieves those objectives. PremiumTrust Bank Nigeria's market risk policy takes account of, and is consistent with, market risk policy guidance issued by the Central Bank of Nigeria and the Basel Committee on Banking Supervision.

PremiumTrust Bank has a single set of standards for the measurement of market risk to ensure consistency across businesses, stability in methodologies, and transparency of risk. Please refer to the Glossary at the end of this Policy for clarification of various market risk terms and concepts.

1.1 Ownership of the Policy

The ownership of the Market Risk Policy (hereinafter referred to as "the Policy") rests with the Market Risk Manager, who will have the authority of the Board of Directors to implement the Policy across PremiumTrust Bank (hereinafter referred to as "the Bank") and to propose revisions to the Policy.

1.2 Approval of the Policy

The Board of Directors, through the Board Risk Committee, reviews and approves the Policy document from time to time but at intervals not greater than three years. This ensures that the Policy remains aligned with the Bank's overall business objectives, risk management strategy, current and future planned changes in operations and prevailing market realities.

1.3 Policy Exceptions

Policy exceptions must be documented and approved by the Management Risk Committee and reported to the Board at its quarterly meetings.

1.4 Objectives of the Policy

1) To develop a "risk-aware" culture and ensure that all significant market risk exposures are identified, measured, assessed, prioritized, managed, monitored and treated in a consistent and effective manner across the Bank.

2) To deploy appropriate and reliable market risk management tools, including Value-at-Risk methodology, stress testing and factor sensitivity to facilitate management reporting, decision making and capital assessment.
3) To comply with the provisions of the Basel II & III Accords as well as all relevant legislation, regulatory requirements, guidelines, and codes of conduct in effect in Nigeria.
4) To provide our community and other key stakeholders with dependable assurance that the Bank lives its values and responsibly manages the significant market risks applicable to its business.

1.5 Scope of the Policy

This document contains the Policy guidelines for the Bank on market risk management. The Policy frames the overarching guidelines which govern day-to-day market risk management related activities. To this end, the Policy will cover the following:

1) The guiding principles of market risk management framework covering market risk management philosophy, market risk governance structure and roles & responsibilities of market risk functions.
2) Market Risk identification of the different types of market risks such as interest rate risk, foreign exchange risk, equity risk and commodity risk.
3) Market risk measurement and management covering various measures of risk such as Value-at- risk (VaR), back testing, factor sensitivity and loss limits.
4) Market risk appetite covering factors to be considered while determining the Bank's risk appetite.
5) The broad guidelines with respect to stress testing of aggregate market risk.
6) The Standardized or Internal Model Approach for regulatory capital charge computation and factors which will be considered by the Bank for performing capital adequacy calculations.

2.0 Overview of Market Risk

2.1 Definition

The Bank has adopted Basel Accord's definition of market risk viz: - '*the risk of losses in on- and off-balance sheet positions arising from movements in market prices'*. It is the risk that the value of assets and liabilities will be adversely affected by the movement in the value of financial instruments. These movements arise from fluctuations in interest rates, foreign exchange rates, equities prices, and commodities prices. For this Policy manual, the Bank has adopted the aforementioned definition.

2.2 Types of Market Risk

Banks and other financial institutions typically have to deal with several types of market risk, which are interest rate risk, foreign exchange risk, equity risk and commodity risk. Market risk can be classified as general market risk and specific market risk.

a) **General market risk:** This refers to risk of loss owing to changes in the general level of market prices or interest rates. It arises from positions in interest rate instruments and equities;

b) **Specific market risk:** refers to risk of loss caused by an adverse price movement of a security principally due to factors related to the issuer. It includes the risk that an individual debt or equity security moves by more or less than the general market in day-to-day trading.

2.2.1 Interest Rate Risk

Changes in market level of interest rates impacts the value of financial instruments that have an interest rate component (FX Forwards, Bonds, and T-Bills) and the financial condition of the Bank as a whole. Typically, interest rate risk is split into two components: interest rate risk in the Trading Book and interest rate risk in the Banking Book.

Changes in interest rates exposes the Bank to the following other sub-risks that are relevant and are to be identified at portfolio level.

a) **Yield curve risk:** Yield curve risk arises when the slope and or the curvature of the interest rate yield curve changes e.g. when long-term rates rise or fall while short-term rates hold steady.

b) **Re-pricing risk:** This occurs when there are differences between the timing of rate changes and the timing of cash flows e.g. when a bond is not match-funded, or when there is a timing difference between rate sensitive assets and liabilities.

c) **Basis risk:** This is the risk that changes in market interest rates may have different effects on rates received or paid on instruments with similar repricing characteristics (e.g. a floating-rate loan whose rate is based on the three-month Treasury bill rate that is funded with three-month NIBOR deposits). Interest rates for various assets and liabilities change at the same time but not necessarily in the same amount.

d) **Optionality risk:** results from the option embedded in balance sheet or off-balance sheet instruments. Formally, an option provides the owner the right, but not the obligation, to buy, sell or in some manner alter the financial flow of an instrument. Many times this option is exercised as a response to changes in interest rates, with impact on the amount of interest rate risk to which a bank is exposed. For example, an investor might exercise the option to pre-liquidate a fixed rate long-term mortgage credit due to significant reductions in interest rates; therefore, there is a divergence between the financial flows expected up to contract maturity and the financial flows effectively received by the bank.

2.2.2 Exchange Rate Risk

Exchange rate risk is defined as the risk to earnings and capital arising out of adverse movements in exchange rates. Transaction Exposure is the most significant form of exposure to exchange rate risk.

2.2.3 Equity Price Risk

Equity position risk is the risk of a fall in the value of investments in equities arising from a change in equity prices.

2.2.4 Commodity Price Risk

Commodity risk refers to the uncertainties of future market values and of the size of the future income caused by the fluctuation in the prices of commodities.

The Bank does not trade equities and commodities in line with existing regulations.

2.2.5 Trading Credit Risk

Trading credit risk can arise in two different forms: Issuer Risk and Counterparty Risk.

- Issuer Risk is the risk of deterioration in the credit quality of the issuer of a bond. This can cause the market price of the bond to fall while benchmark interest rates remain constant (i.e. the "credit spread" increases). **PremiumTrust Bank does not currently permit trading of corporate bonds.**

- Counterparty risk arises when transactions with future settlement dates are conducted with a customer or another bank. Counterparty risk is further sub-divided into Settlement Risk and Pre-Settlement Risk.

☞ Settlement risk exists when an exchange of value does not take place simultaneously. The risk is that the counterparty defaults after we have fulfilled our end of the contract.

☞ Pre-settlement risk arises when funds are to be exchanged on a future date as is the case with forward FX contracts. The risk is that our trading partner defaults before the settlement date and market rate changes such that the replacement value of the contract would cause the Bank a loss.

Traders must ensure prior to executing a transaction that the counterparty is on the approved list and appropriate credit risk limits are available.

2.3 Summary

The above highlighted risks, if not addressed, may result in information deficiencies, financial loss, increased costs, loss of professional reputation and failure to keep or increase market share, any and all of which could lead to franchise risk that adversely affect shareholders' value. The nature, magnitude and structure of the processes and controls put in place to manage the Bank's market risk is a reflection of the level of risk tolerance, otherwise referred to as Risk Appetite of the organization.

The Bank will, therefore, put in place sound market risk management processes for identifying, measuring, monitoring, controlling, and reporting exposure to each sub-class of market risk. The Market Risk appetite represents in a sense the amount of money that the Bank is prepared to lose due to market risks over a pre-defined period of time. The Market risk appetite is defined with regard to the quantum and composition of market risk that exists currently in the Bank and the direction in which the Bank wishes to manage it. The statement of the overall appetite for market risk, which includes high-level market risk limits, is reviewed and approved intermittently by the Board. The Bank must ensure that market risk appetite is further delegated to appropriate levels within specific areas of responsibility.

All activities involving market risk in PremiumTrust Bank must be conducted and managed in defined Risk-Taking Units bound by this policy statement. Trading is by its nature immediate, and some of the controls used in other risk areas cannot be easily applied because of lack of time for pre-approvals. The Bank seeks to ensure that an adequate, independent perspective is incorporated into the trading and risk-taking process. This is done by having:

- A structured system of Market Risk Limits that have adequate independent approvals and clear requirements for reporting and accounting.
- A Risk Management organization that works closely with the trading unit yet is independent and able to perform an effective check and balance function.
- A requirement that Product Programs are prepared to ensure that all aspects of products and activities are analyzed and approved prior to actual risk-taking in the markets and/or with clients.
- Clearly defining Roles and Responsibilities of the various stake holders in the risk management process.

3.0 Market Risk Governance

The following are the main guiding principles that underpin the Market Risk Policy of the Bank:

- Regulatory Stipulations of the Central Bank of Nigeria (CBN).
- Basel Committee on Banking Supervision (BCBS) – *Minimum Capital Requirements for Market Risk – Feb 2019.*

3.1 Basel Committee on Banking Supervision - Corporate Governance

The Basel Committee on Banking Supervision (BCBS) set out the 'Core Principles for Effective Banking Supervision', which were revised in September 2012. These are standards for sound prudential regulation and supervision of banks and banking systems. The document provides that the supervisor determines that banks have adequate market risk management processes that takes into account their risk appetite, risk profile and market and macroeconomic conditions and the risk of a significant deterioration in market liquidity. These includes prudent policies and processes to identify, measure, evaluate, monitor, report and control or mitigate market risks on a timely basis.

3.2 Market Risk Governance Architecture

The governance structure describes the broad picture of market risk management in the Bank. It covers risk-related decision-making mechanisms/protocol, required co-ordination and possibly reconciliation to avoid the profusion of roles, perspectives, goals and activities.

From a market risk management perspective, the Risk Governance covers the roles and responsibilities of:

- The Board members
- Various Committees
- The Chief Risk Officer (CRO)
- Executive Management
- Various Market Risk functions.
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3.3 Market Risk Roles and Responsibilities

The roles and responsibilities of key stakeholders are detailed below:

3.3.1 The Board of Directors

- The Board of Directors reviews and approves the policy from time to time and is responsible for the overall governance of the market risk management process.
- The Board has the discretion to delegate responsibilities and define terms of reference in

  the management of market risk to the Board Risk Committee or ALCO.

3.3.2 The Board Risk Management Committee

The Board Risk Management Committee is responsible for:

- Evaluating the Bank's market risk exposures in light of current market conditions, established risk limits, operating performance and other relevant factors.
- Ensuring compliance with all applicable laws, regulations and operating standards.
- Reviewing and recommending changes to the Board as needed to ensure that the Bank has in place at all times, risk management policies that address market risk exposures and comply with regulations and best practices.
- Approving and recommending risk tolerance levels, limits and metrics taking into consideration, the strength of the Bank's capital adequacy, overall quality of risk management and reporting systems.
- Providing oversight to ensure that market risk management monitoring and reporting functions in the Bank are independent of business lines or risk-taking processes.
- Establishing and reviewing appropriate risk appetite and tolerance for market risks that articulates the nature, types, and levels of such risks that the Bank is willing to assume.
- Reviewing the Bank's market risk profile through periodic reports submitted by the Management and reviewing the quality and adequacy of risk monitoring, testing and governance.

3.3.3 Managing Director

The Managing Director is responsible for:

- Recommending the Bank's overall market risk capacity and appetite to the Board.

- Ensuring that the Bank has adequate expertise, systems and procedures for implementation of market risk management policies and objectives.
- Overseeing the implementation of market risk strategies, policies and structures across the Bank.
- Providing overall leadership, vision and direction for effective implementation of the market risk management framework across the bank.
- Promoting effective management of market risk and fostering the establishment and maintenance of an effective market risk culture.

3.3.4 Assets and Liabilities Management Committee (ALCO)

- reviewing the socio-economic climate, market update and outlook relating to market and liquidity risk issues.
- reviewing the Bank's market and liquidity management strategies using key performance indicators such as portfolio sensitivity, balance sheet ratios, Value-at-Risk (VaR), stress testing.
- recommending strategy, policy and procedures covering composition and diversification of assets and liabilities.
- providing guidelines on pricing of deposits and credit facilities and monitor its implementation.
- setting systems and tools including threshold and risk tolerance limits for funding concentration, target liquid ratios and setting limits for liquidity gaps.
- reviewing and approving the methodology and processes for Funds Transfer Price (FTP) and overseeing its implementation.
- analysis of market and industry, analyzing market risk environment and determining the trading and investment strategy.
- reviewing and authorizing investments in new market instruments for inclusion in the Bank's portfolio and procedures for assessing its market risk.
- setting guidelines for management of Fair Value Through Other Comprehensive Income (FVOCI) and Amortized Cost (AC) investments.

3.3.5 Chief Risk Officer (CRO)

- oversight of the market risk management policies, procedures, methodologies and recommending same to BRC for review and approval.
- ensuring that the market risk management units have adequate resources in terms of expertise, systems, procedures and methodologies for carrying out their roles efficiently.
- supervising and monitoring day-to-day activities of the market risk unit.
- monitoring and controlling, on regular basis, the market risk profile of the Bank and its operations.
- assisting the Board and the Management to effectively discharge their market risk management oversight functions through robust and actionable information flow and regular interactions.
- recommending to ALCO the market risk limits and monitoring compliance with approved limits.

3.3.6 Market Risk Management Unit (MRMU)

- developing and continuously maintaining market risk management principles for identifying, measuring, monitoring, controlling, and reporting market risks.
- promoting and assisting with the implementation of the Market Risk Policy in the Bank.
- providing ALCO and other stakeholders with practical recommendations for the management of market risks.
- monitoring and ensuring adherence to set limits for dealers, products and obligors.
- ensure that Traders and Operations are properly applying all policies and procedures with respect to market risk.
- advising Line Management should any of those policies and procedures not be observed and reducing or curtailing business activity until they have been restored.
- ensuring that appropriate stress testing procedures are conducted and communicated to Management.

4.0 Market Risk Processes

4.1 Market Risk Process Flow

The Bank will have appropriate market risk management processes that provide a comprehensive bank- wide view of market risk exposures. The processes will be consistent with the risk appetite, risk profile, systemic factors and capital strength of the Bank. The processes will consider micro and macroeconomic conditions and the risk of a significant deterioration in market liquidity. Roles and responsibilities for identification, measuring, monitoring, control, and reporting of market risk will be carried out as per specific policies and governance mentioned within this document.

The Bank's market risk management unit under the CRO will establish an appropriate market risk environment that fosters:

- Effective systems for accurate and timely identification, aggregation, monitoring and reporting of market risk exposures to the Bank's Board and Senior Management.
- Establishing appropriate market risk limits consistent with the Bank's risk appetite, risk profile and capital strength.
- Effective communication with the relevant staff on market risk limits.
- Exception tracking and reporting processes that ensures prompt action at the appropriate level of Senior Management including Asset & Liability Committee and Management Risk Committee where necessary.
- Effective controls on the use of models to identify and measure market risk and set limits.
- Adequate procedures for allocation of exposures to the trading book.

Figure 1: Market risk process flow

4.1.1 Market Risk Identification

In analyzing the overall market risk of the Bank, a detailed identification exercise of market risks applicable will be undertaken on an on-going basis.

4.1.2 Market Risk Measurement Approach

Risk measurement will be performed by using different risk approaches for each type of market risk. The Bank's risk measurement procedures will be based on

modern techniques such as sensitivity analysis, value-at-risk (VaR), duration analysis, gap analysis, trading loss triggers and limits, stress testing analyses amongst others. Stress testing programs will include market risk exposure amid extraordinary circumstances in the financial markets.

4.1.3 Market Risk Exposure and Limits

The Bank must establish limits which will not be breached by its system & staff while managing its market risks. These exposures and limits will have the following dimensions:

- asset classes relating to fixed income and foreign exchange.
- dealer-wise.
- day and overnight.
- loss-size

4.1.4 Market Risk Monitoring

The risk management function will independently monitor and assess market risk and the risk characteristics of the Bank.

- ☞ Adequate processes will be in place to ensure timely and accurate market risk monitoring.
- ☞ The processes will also ensure an active dialogue regarding risk and will be used to challenge the various investment areas.

4.1.5 Market Risk Control

- ☞ The Bank's internal control process will include internal audit and review, and an effective risk limit structure.
- ☞ The control processes will also include determining and abiding by the Bank's overall risk appetite and market exposure limits.

4.1.6 Market Risk Review

- ☞ The Bank will assess and review its market risk management policies, processes and procedures periodically as per prevailing market risk environment, based on the main findings of the monitoring reports and the results of analysis of developments arising from external market changes and other environmental factors.

- ☞ The results of such review should be properly documented and reported to the Management and the Board Risk Committee.

4.1.7 Market Risk Reporting

The Market Risk Management Unit will prepare market risk reports and circulate to the relevant stakeholders in the Bank.

- ☞ Market risk will independently be reported by the risk management function through standardized risk reporting in a prompt, accurate and consistent manner.
- ☞ In addition to regular standardized reporting, proactive risk analysis will be facilitated and reported to Senior Management of the Bank.

5.0 Market Risk Identification

The Risk identification section of this Policy provides a framework for identification of dimensions of Market Risk at granular levels.

- The Bank is exposed to Market Risk in a variety of ways in the normal course of business. Market risk exposure may be explicit in portfolios of securities (bonds and treasury bills) and instruments that are actively traded, such as foreign exchange. It can also be implicit, such as interest rate risk arising from the mismatch of loans and deposits. Market risk can also arise from off-balance sheet items such as forwards, futures and interest rate commitments.
- It should be noted that some products are subject to more than one market risk factor e.g. FX Forward is subject to 3 market factors – Spot FX, Local Currency Interest Rates, and Foreign Currency Interest Rates.
- It is critical to the management of risk in any bank to have accurate and timely information on current positions and a clear understanding of the risks associated with specific instruments. To aid identification and assessment of relevant risks as such Product Programs are required. Product Programs require approval from the New Product Committee of the Bank. Approvals signify that the operations, systems, credit risk, market risk, accounting, legal and regulatory compliance processes associated with the product are correct and in place.

5.1 Interest Rate Risk Identification

- Changes in market level of interest rates impact the value of financial instruments that have an interest rate component (Forward FX, Bonds, and T-Bills) and the financial condition of the Bank as a whole. Typically, interest rate risk is split into two components: interest rate risk in the Trading Book and interest rate risk in the Banking Book.
- Re-pricing risk occurs when there are differences between the timing of rate changes and the timing of cash flows e.g. when a bond is not match-funded, or when there are maturity gaps between loans and deposits.
- Basis risk exists when an asset/liability is priced at one yield curve (set of interest rates) while the liability/asset funding that asset is priced at another e.g. when a portfolio of Government bonds are funded by money market deposits.

- Yield curve risk arises when the slope and or the curvature of the interest rate yield curve changes e.g., when long-term rates rise or fall while short-term rates hold steady.

5.2 Exchange Rate Risk Identification

Exchange rate risk is the risk to earnings and capital arising from adverse movements in currency exchange rates that are used for valuation of open foreign currency positions.

- Exchange rate risk is generated not only when Treasury buys and sells currency from customers and counterparties, but also from other banking activities such as accrual of interest on foreign currency loans and deposits.
- Accurate determination of open foreign currency positions can be done only from the books and records of the Bank. Every business day, preferably prior to the start of trading, the Trader's Blotter must be reconciled to the net open positions as shown by the books and records of the Bank by a Compliance Officer.
- The net open position in a currency (e.g., the Euro) is the difference between assets and liabilities (including off-balance sheet assets and liabilities,) denominated in Euro.
  - Net Open FX Position in Euro is determined by: (Assets plus Contingent Assets denominated in Euro) Less (Liabilities plus Contingent Liabilities denominated in Euro).A positive number (Assets exceed Liabilities) represents a "Long" or "Overbought" position in the currency. A negative number (Assets are less than Liabilities) represents a "Short" or "Oversold" position in the currency.

- It is important to point out that a maturity mismatch in foreign exchange does not by itself create FX risk. A 3-month forward sale of Euro 1 million against the U.S. dollar, covered by a spot purchase of Euro 1 million against the U.S. dollar does not result in a net open position even after the settlement date of the spot transaction. The only market risk that remains is from changes in interest rate differentials between the Euro and the U.S. dollar.

5.3 Equity Price Risk Identification

- Equity risk is the risk to earnings or capital that results from adverse changes in the value of the Bank's equities-related portfolios. Equity risk could be systematic (i.e. an adverse change in the overall level of equity prices), or unsystematic (an adverse change in the stock price of the specific company).
- The Bank does not engage in trading equities or in investments in equities.

5.4 Commodity Price Risk Identification

- Commodity risk is the risk to earnings or capital that results from adverse changes in the value of the Bank's commodities-related portfolios. Commodity risk refers to the uncertainties of future market values and of the size of the future income, caused by the fluctuation in the prices of commodities. These commodities may be oil, grains, metals, gas, electricity etc.
- **The Bank does not engage in trading commodities or in investments in commodities**.

6.0 Market Risk Measurement

This section of the Policy covers risk measurement techniques that are applicable to various Market Risk types as noted in section 3.

6.1 Interest Rate Risk Measurement

- Changes in the value of interest-rate sensitive instruments (like bonds, T-bills, forward FX contracts, etc.) in the Trading Book are determined by marking-to-market daily, using independently observed market rates at close of business. Results should flow into the Bank's income statement.
- Interest rate risk in the Trading Book is expressed in terms of the sensitivity to the impact of a 1 bps (o/ne basis point, or 0.01%) upward shift in interest rates (the market factor).
- Changes in interest rates affect the market value of financial assets and liabilities of the Bank. Interest rate risk in the Banking Book is measured by the Repricing Gap. Assets, Liabilities and eligible off-Balance Sheet items are distributed in pre-determined time bands according to their residual time to maturity (if fixed rate) or time remaining to their next re-pricing date (if floating rate). Indefinite maturity items may be assigned to time bands based on their behavioral pattern using statistical models.

  - Net Interest Income Sensitivity Analysis/Simulation is conducted to measure the potential changes in Net Interest Income arising from the timing differences in the maturity of the assets and liabilities in the Bank's Repricing Gap schedule.
  - Economic Value Equity (EVE) is an economic concept that gauges the impact of interest rate changes on fair market values of asset, liabilities, and equity. EVE captures the change in economic value of the bank even though that change may not be reflected in the bank's accounting books and records.

- The bank's interest rate risk management policy is to minimize risk with the aim to achieve financial structure objectives defined and approved by Executive Management.

6.2 Exchange Rate Risk Measurement

- Net Open FX Positions in the Trading Portfolio are marked-to-market daily at the close of the trading day using market FX rates obtained independently of the Traders. Profit and loss should flow into the Bank's income statement.

- Net Open FX Positions are generally monitored and reported in terms of the U.S. dollar or as a percentage of shareholders' funds. Any internal limits set on Net Open FX Positions will be either equivalent to prevailing limits set by the CBN or stricter.

6.3 Valuation of positions in the Trading Book

Changes in the value of interest-rate sensitive instruments (bonds, T-bills etc.) in the Trading Book are determined by marking-to-market daily, using independently observed market rates at close of business. Results are reported in a daily Dashboard Report. If the prices required to mark-to-market certain positions cannot be obtained, then such positions will be marked-to-model.

6.3.1 Marking-to-Market (MTM)

Marking-to-market is the daily valuation of positions at readily available close-out prices that are sourced independently. Such prices include:

- prices obtained from trading systems. (eg. Reuters, Bloomberg)
- quotes from independent, reputable brokers.
- quotes from independent and reputable market information providing organizations (eg. FMDQ)
- interpolated prices derived from independently sourced prices.

6.3.2 Guidelines for Marking-to-Market

All positions held in the trading book will be MTM at least daily.

- For performing MTM of positions, the closing rate is applied for the positions held by the Bank.
- For any position, if a daily MTM is not possible then the following process will be carried out in the order mentioned:
  - If MTM is not possible for current day, the previous day's market price will be used or the last traded rate for that instrument.
  - If any position type is not traded or not available from authorized sources for the past 5 business days, then Mark-to-Model will be carried out for such positions.

6.4 Other Risk Measurement Tools

A volatile environment exposes the Bank to the type of risks discussed in the above section. To this end, MRMU will utilize other risk measurement and management techniques to protect the interests of the Bank.

6.5 Value at Risk (VaR)

VaR is a single, summary, statistical measure of possible portfolio losses. Specifically, VaR is a measure of possible losses due to 'normal' market movements. Losses greater than the VaR are suffered only with a specified small probability. The VaR quantifies the potential losses that could occur in the Bank's trading (or investment) portfolios as a result of movements in market variables at a specified confidence level. For example, the Bank may determine that it has a 5% one-month VaR of NGN100million. This means that there is a 5% chance that the Bank could lose more than NGN100million in any given month.

The Expected Shortfall can also be computed to ascertain the expected value of the portfolio loss if the VaR is exceeded. It is the average of losses past the confidence level risk threshold for calculating the Value- at-Risk.

MRMU will estimate VaR, daily with a confidence level not lower than 95% and a holding period of one day for liquid positions but not more than two weeks (or 10 business days). The Bank must always ensure that the length of the holding period is referenced to the liquidity[4] of the markets. MRMU can also determine an appropriate holding period if the trading positions does not change significantly over the holding period and/or is appropriately hedged. MRMU will use a Treasury application or internally developed models to compute VaR at individual trading/position and at portfolio level considering the correlations within the risk categories.

6.5.1 Methods of VaR estimation

6.5.1.1 Historical Simulation method

The historical method simply re-organizes actual historical returns, putting them in order from worst to best. It then assumes that history will repeat itself, from a risk perspective and is a good indicator of the near-future or, in other words, that the recent past will reproduce itself in the near-future. This approach will be revisited if

markets exhibit significant volatility or during troubled times. The Bank will follow this method for VaR measurement and reporting purposes.

6.5.1.2 Variance Covariance method

This approach applies exponentially declining weights to the returns from distant past (and greater weights to more recent returns) in order to estimate conditional volatilities and correlations. The underlying assumption in this is that returns are normally distributed. It is dependent on two factors - an expected (or average) return and a standard deviation to plot a normal distribution curve.

6.5.1.3 Monte Carlo simulation method

The third method involves developing a model for future price returns and running multiple hypothetical trials through the model. A Monte Carlo simulation refers to any method that randomly generates trials, but by itself does not tell us anything about the underlying methodology.

6.5.2 Sensitivity Measures

The Trading Book normally consists of many different bonds, T-bills and Forward FX contracts of different maturities. Consequently, it is necessary to calculate Factor (interest rate) Sensitivity of the portfolio as a whole or even a sub-set of the portfolio.

6.5.2.1 Duration analysis

MRMU will use duration approach as one of the sensitivity measures for the fixed-income instruments/portfolio. This method enables us to determine approximately how bond prices will change in the face of specified changes in bond yields or interest rates.

For instance, MRMU may utilize the following potential shifts in yields or interest rates to measure the impact on fixed income portfolio or as determined by the CRO.

- 100 basis points
- 200 basis points
- 300 basis points

The weighted average duration of instruments will be computed and presented by the Head, Market Risk (or his designate) to the CRO at least on a monthly basis. The Market Risk Manager will submit a report on sensitivity of trading portfolio based on interest rate sensitivity, mentioned above, to the ALCO.

6.5.2.2 Price Value Basis Point (PVBP or PV01)

PV01 refers to impact on net present value of the exposure/position due to a 1 basis point move in an interest rate ceteris paribus (when the PV01 is in USD, it is the same as DV01 i.e., Dollar value of 1 basis point).

Modified duration is one of the prerequisites to compute the PV01. This will be estimated as DV01=price * D/10,000. Where price is the current price of the instrument and D is the modified duration, and 10,000 is the 1 basis point movement.

6.5.3 Back testing of Var

Back testing typically consists of a periodic comparison of the Bank's daily VaR measures with the daily profit or loss ("trading outcome"). Comparing the risk measures with the trading outcomes simply means that the Bank counts the number of times that the risk measures were larger than the trading outcome. Since the actual trading outcomes experienced by the Bank are the most important and relevant figures for risk management purposes, the risk measures should be benchmarked against this reality, even if the assumptions behind the risk calculations are limited in this regard. Thus, back testing using actual daily profits and losses is a useful exercise since it can uncover cases where the risk measures are not accurately capturing trading volatility in spite of being calculated with integrity. The Bank will perform back-testing of overall VaR given that risk aggregation across all major risk categories has been done. Exceptions will be accounted for, using the most recent twelve months of data.

6.5.3.1 Back testing framework

For a given portfolio, back-testing will involve the comparison of VaR for a one day holding period with changes in market value of trading portfolio for that day. If loss data for one day is more than VaR for the previous working day, a breach occurs. Otherwise, if loss is less than VaR, there is no breach/violation. Back testing will be performed on a daily basis and the breach/exception, if any, will be recorded. This

procedure will be continued for next 250 business days for the purpose of verifying back-testing results. The number of exceptions observed in the back testing results will be slotted under zones[6] and this will be reported to Management intermittently. The following table defines the three zones:

Table 4: Scaling Factors of Back-testing

Zone	Number of Exceptions	Incremental Multiplicative Factor
Green	**0 to 4**	0
Yellow	**5**	0.4
	6	0.5
	7	0.65
	8	0.75
	9	0.85
Red	**10 or more**	1

Table 5: Tracking Model Performance

No of Exceptions	Zone Description	Model Performance
0 to 4 exceptions	**Green Zone**	Small chance of erroneously accepting the model
5 to 9 exceptions	**Yellow Zone**	More likely for inaccurate models than accurate models
10 or more exceptions	**Red Zone**	Problem exists with the Bank's model

All exceptions generated from the back-testing program will be documented. Based on the exception classification, necessary action will be taken on the risk models.

6.6 Stress Testing

- ☞ Stress testing will be based on exceptional but plausible events. The stress testing policy will cover the following dimensions:

- Identification of risk factors for stress testing
- Dimensions for creating stress scenarios.
- Guidelines for creation of stress scenarios
- Types of stress tests
- Stress limits, monitoring and remedial actions

6.6.1 Approaches to Stress Testing

- ☞ Stress testing will be conducted under two broad categories which are:

  - **sensitivity tests** i.e., impact of change in one risk factor; and
  - **scenario tests** i.e., impact of simultaneous moves in a number of risk factors

- ☞ Stress scenarios will cover different levels of adversity namely mild, moderate, and severe scenarios.
- ☞ Stress testing will be conducted on a position and/or a portfolio by subjecting the portfolio to different types of stress scenarios. These scenarios can be classified as:

- simple stress scenarios
- scenarios based on historical observations.
- standardized scenarios and
- portfolio specific scenarios

6.6.2 Risk Factors for Stress testing

- ☞ The risks identified for various positions in the relevant section of this document will be considered as core risk factors, which will be stressed.
- ☞ The core risk factors that may be stressed under any stress scenario are:

- parallel yield curve shifts

- changes in the steepness of the yield curve
- changes in value of significant currencies
- changes in foreign exchange rate volatility

6.6.3 Guidelines for Scenario Selection

- ☞ Stress scenarios describe extraordinary market movements.
- ☞ Historical scenarios will be considered along with the search for worst case scenarios.
- ☞ The selection of scenarios will be consistent with the risk profile of the Bank.

6.6.4 Portfolio Specific Stress Tests

Scenarios need to cover the macro-economic factors and other factors which cannot be captured at position level or at a sub-portfolio level. Such scenarios will be portfolio level stress scenarios.

- Based on the risk factors of the portfolio and expert judgment; a portfolio specific scenario will be constructed.
- A plausible, surprising political and/or economic event can be assumed and the changes to the risk factors of the portfolio will be identified.

6.6.5 Frequency of Stress Testing

Stress testing will be conducted for all trading and Investment book positions.

- ☞ The frequency of stress testing will depend upon the nature of positions that are involved in a portfolio.
- ☞ Stress testing is performed on an on-going basis on actual exposures at least once a month, more frequently in volatile markets and limits/exposures reduced if potential stress losses are deemed to be unacceptable. Both, a large price shock as well as scenario analysis, are used and results communicated to Line Management, the Market Risk Manager and ALCO.
- ☞ For a portfolio consisting of less volatile positions, stress testing will be conducted on a quarterly basis.
- ☞ The dimensions for deciding frequency of stress testing are:

- change in the market environment.

- change in the operating environment.
- change in a specific industry/sector.
- change in the risk profile of the Bank.

☞ Ad-hoc stress tests will be conducted when there is a rapidly changing political environment or economic condition.

6.6.6 Remedial Actions

☞ The Bank will take remedial actions based on results obtained from stress testing if necessary, such actions may include:

- restructure, unwind or hedge a position.
-
- augment the level of capital to enhance the buffer to absorb shocks.

☞ The remedial action will be based upon:

- the size of potential loss that occurs from the stress event
- the probability of the stress loss event
- impact of the stress loss on earnings
- impact of the stress loss on capital

6.6.7 Documentation of stress test results

☞ MRMU must ensure proper documentation of the stress tests undertaken.

6.7 Measurement of Trading Credit Risk

6.7.1 Pre-settlement Risk

PSR lines should be appraised using a Credit Risk Factor of 20%[1] of the notional amount of the transaction. The assumption is that 20% of the notional contract value represents a reasonable estimate of the most likely risk that the Bank is taking. This

[1] *Or the current estimate of volatility*

implies that the counterparty can have outstanding at any one-time notional contracts totaling five times the approved PSR line.

6.7.2 Settlement Risk

Given that Settlement Risk pertains to principal value, it should be measured or appraised as full credit exposure.

6.8 Validation Methods for Risk Measurement

The Internal Audit department will put in place a validation process to ensure that market risk measurement models are suitably validated by qualified persons independent of the development process. The process would include validation of the following:

- Data input into building models:

  - assumptions surrounding estimation of intermediate and final risk parameters.

- Output model validations will be conducted when:

  - the models have been developed and when there are any changes that have been made to the models.
  - any structural changes that have occurred in the market or changes in composition of the portfolio, which might make the model no longer accurate.
  - tests need to be conducted to demonstrate that any assumptions that are made within the internal model are appropriate and do not underestimate risk.

7.0 Market Risk Limits Framework

7.1 Market Risk Limits Structure

PremiumTrust Bank has established a risk management framework for Price Risk viz:

- The structure of Price Risk Limits depends on the accounting treatment i.e. whether the portfolio is Marked-to-Market (MTM) or Accrued.
- Marked-to-Market accounting revalues positions at current market prices. This applies to all trading accounts including foreign exchange, derivatives, and securities held in trading accounts. Profit and loss on such positions is recognized immediately in the income statement. Sensitivity Limits and Value-at-Risk (VAR) methodology are used for measuring the price risk of MTM (trading) portfolios.
- Accrual accounting recognizes income and expense over the life of the asset or liability which is carried on the balance sheet at amortized cost. This applies to traditional deposit/loan portfolios, credit card receivables, funding, and interest rate gapping activities (generally known as the "Banking Book"). The Economic Value of Equity (EVE) approach will be used for measuring the interest rate risk in the Banking Book.

- For both Trading and Accrual portfolios, price risk is measured (using proprietary Market Risk Systems or Financial Models) by:

- identifying the market factors to which the portfolio is exposed.
- calculating the sensitivity of the position to a unit change in such market factors.
- computing the Value-at-Risk (VAR) for Trading Portfolios, and Earnings at Risk (EAR) or Economic Value of Equity (EVE) for Accrual Portfolios.

7.2 Price Risk Limits

Price Risk Limits include Factor Sensitivity limits and Value at Risk (VAR) limits for Mark-to Market portfolios, Net Open Position Limits for FX and Economic Value of Equity (EVE) limits for Accrual portfolios; all Price Risk Limits are expressed in local currency with the exception of the FX NOP.

- The Bank's requirements for Price Risk Limits, with associated Management Action Triggers (MAT), form part of an annual **Market & Liquidity Risk Limits Package** presented by Line Management to ALCO for approval.
- The Risk-Taking Unit (Treasury) will operate within approved Price Risk Limits at all times.

- Excesses of Price Risk Limits must be reported immediately to Line Management and it is expected that any limit excess will be corrected at the first opportunity. Limit excesses of 10% or more will be reported to the Chief Risk Officer (CRO). This report must show the approved limit, the date and size of the excess, the cause of the excess and the expected date when the excess will be corrected. Limit excesses may not be approved retrospectively. Line Management is responsible for monitoring frequency and seriousness of excesses and for taking necessary corrective or disciplinary action.
- Requests to increase Price Risk Limits must be endorsed by Line Management and made well in advance to Market Risk Manager for approval; if the Risk-Taking Unit is in excess of its approved limits, approval for increased limits will not be granted until the excess has been corrected.

7.3 Market Risk Limits Package

Limits and triggers are recommended by Line Management for the Risk-Taking Unit in an annual Market Risk Limits Package for approval by the Market Risk Manager and ALCO. Each package must detail requirements for Factor Sensitivity limits, Value at Risk (VaR) limits, Net Open Position Limits and Management Action Triggers (MAT) and any other limits as may be deemed necessary in accordance with prevailing regulations and economic conditions.

Approval of Market Risk Limits will take into account the quality of the control environment (as evidenced by Audit ratings), the capacity to manage risk, and expected revenues (risk/return evaluation). Various qualitative factors such as the experience and skill of the trader, the market environment and trading liquidity will also be taken into account. Price Risk Limits must be approved by ALCO and the Board.

7.4 Market Risk Limits Exceptions

While the market risk limits have been designed to be dynamic and comprehensive, extraordinary circumstances may occur in adverse market conditions that can result

in Treasury department seeking an exception approval from the Market Risk unit for limit violation.

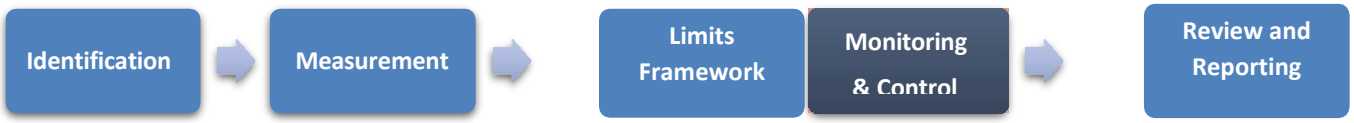
- ☞ The exception given for any position will be valid for the period indicated in the approval.

- ☞ All authorized exceptions will be reported to ALCO at its next regularly scheduled meeting.

Table 6: Management Action Trigger for Losses

Trigger levels	Action to be taken
Actual loss amount at 100% to 110% of MAT	Refer the position for review by the CRO
Actual loss amount in excess of 110% of MAT	Refer to CRO & MD

8.0 Market Risk Monitoring and Control



8.1 Risk Monitoring

The monitoring of exposures in a consistent and efficient manner is a critical component of the Market Risk Management process flow. Monitoring must be done on trading and accrual portfolios to ensure that warning signals or breaches at detected as early as possible and remediating action taken as necessary. A closely related process is reporting which ensures that observations are documented and made available to relevant stakeholders.

8.1.1 Monitoring of Exposures in the Trading Book

Exposures classified under Trading Book as based on definition laid down by the CBN will be monitored daily for their adherence to the conditions laid down for their inclusion in the Trading Book. Actual losses will be compared with VaR values to establish the veracity of the model in use.

8.1.2 Monitoring of Exposures in the Banking Book

Exposures classified under the Banking Book will also be monitored but the related reports can be done less frequently (monthly or quarterly).

8.2 Risk Control

Controls are needed to ensure that risk exposures are contained within the bounds of the approved limits in place. Given that the Bank does not trade or invest in commodities and equities, controls for Interest Rate and Exchange Rate risk are presented as follows:

8.2.1 Interest Rate Risk Control

- Interest rate risks in the Trading Book are monitored daily. Exposure is compared to the approved Market Risk Limits and excesses, if any, are dealt with immediately as per the requirements of this Market Risk Policy.

- Interest rate risk in the Trading Book is controlled by the following Market Risk Limits:

  - Factor Sensitivity Limit (FSL) which is a limit on the maximum allowable change in the value of the portfolio for a 1 bps adverse change in interest rates.
  - Volume limits may sometimes be implemented because of systems inadequacy/unavailability.

  - Value at Risk (VAR) limit that may be set for interest rate risk alone but may be set for the RiskTaking Unit as a whole.
  - Management Action Triggers (MAT) are set either by product/activity or for the Risk-Taking Unit as a whole.
  - Stress testing is performed on actual exposure at least once a month, more frequently in volatile markets and limits/exposures may be reduced if potential stress losses are deemed to be unacceptable.
  - Stress Testing is done on requested limits prior to approval. In general, potential stress losses for established products should not exceed 2 – 6 months of trading revenues. If potential stress losses are deemed unacceptable, reduced limits are approved.

8.2.2 Exchange Rate Risk Control

- Exchange rate risk is monitored daily. Net Open FX Positions are compared to the approved market risk limits and excesses, if any, are promptly addressed as per the requirements of the Market Risk Policy.
- Exchange rate risk is controlled by means of market risk limits that are routinely applied for trading (marked-to-market) portfolios.
  - Position Limits are set to limit the total size of the Net Open FX Position
  - Value at Risk (VAR) limits may be set for a foreign exchange portfolio (exposure to a number of currencies) but will usually be set for the Risk-Taking Unit as a whole.
  - MATs are set either by trading desk or for the Risk-Taking Unit as a whole.
  - Stress testing is performed on an on-going basis on actual exposure at least once a month, more frequently in volatile markets, and the results communicated to Line Management, the Market Risk Manager and ALCO. Stress Testing is performed by applying a shock move (say, 5 standard deviations), and by scenario analysis (what

if?). Scenario analysis is particularly useful in the case of pegged currencies when "going off the peg" may result in a devaluation of 30% or more.

- Stress Testing is done on requested limits prior to approval and potential stress losses are compared against projected revenues (risk/reward analysis). In general, potential stress losses should not exceed 2 – 6 months of trading revenues. If the potential stress losses are deemed unacceptable, reduced limits are approved.

9.0 Market Risk Review and Reporting

9.1 Market Risk Review

- The ALCO will periodically carry out evaluation of the Bank's market risk procedures, limits, and exposures.
- The Bank will adopt procedures for reviewing & monitoring performance which will provide for:

  - setting of key performance indicators appropriate to the needs of the Bank.

  - monitoring the extent to which the market risk policy, objectives and targets are met.

- The Bank will conduct reviews at planned intervals and when significant changes occur as approved by the Assets & Liabilities Committee (ALCO).

9.2 Market Risk Reporting

Risk reports will be concise, accurate, coherent and timely.

- Reports will cover current position, dynamics of risk exposure through time and any exceptions from policy prescriptions.

9.2.1 Interest Rate Risk – Monitoring and Reporting

- Interest rate risks in the Trading Book is monitored daily while that of the Banking Book is monitored at least on a quarterly basis. Exposure is compared to approved Market Risk Limits and excesses, if any, are dealt with immediately as per the requirements of Market Risk Policy.
- Interest rate risk in the Banking Book is reported in the monthly or quarterly Market Risk reports. The report is prepared by individuals who are independent of the risk-taking units.
- Interest rate risk of the Trading Book is shown in the Market Risk Dashboard and other regular Market Risk reports. The report is prepared by individuals who are independent of the risk-taking unit.

9.2.2 Foreign Exchange Risk – Monitoring and Reporting

- Foreign exchange risk is monitored daily. Net Open FX Positions are compared to approved market risk limits and excesses, if any, are promptly addressed as per the requirements of Market Risk Policy.

- ☞ Actual exposures against limits are shown in the Market Risk Dashboard and other regular Market Risk reports.

10.0 Regulatory Capital Charge

10.1 Introduction

The Bank will manage the market risks in its books on an ongoing basis and ensure that the capital requirements for market risks are being met on a continuous basis. The capital requirement considers.

both on- and -off balance sheet positions that are subject to market risk.

The Bank will adopt Standardized Approach[8] for computing the capital requirement for market risk as per CBN guidelines. In order to use the Internal Models Approach, the Bank must obtain approval from the local regulatory authority that it meets certain minimum risk management and control standards (as specified by the Basel Committee). However, the Bank will move towards the implementation of Internal Models Approach in a phased manner by computing the capital requirement using VaR methodology.

10.2 Standardized Approach

The Standardized Approach is a risk-weighted process that requires the application of certain uniform techniques in calculating capital for market risk and is suitable for situations where (a) marking to market is not possible, as may be the case in undeveloped markets, and (b) historic data is either not available or is unreliable. The Standardized Approach ignores correlations and generally overstates the level of market risk. Under the Standardized Approach, the Bank will compute market risk capital charge on the following verticals:

- Interest Rate
- Foreign exchange

10.2.1 Capital Charge for Interest Rate Risk

The capital charge for interest rate related instruments would apply to current market value of these items in the Bank's trading book. The minimum capital requirement is expressed in terms of two separate capital charges i.e.

- ☞ Specific risk capital charge for each security both for short and long positions; and
- ☞ General market risk capital charge towards interest rate risk in the portfolio where long and short positions in different securities or instruments can be offset.

10.2.2 General market risk capital charge

General Market Risk capital charges are intended to capture the risk of loss to the Bank's interest rate and exchange rate portfolios due to adverse movement in market factors i.e., interest rates, stock prices and exchange rates.

This general market risk capital charge for interest rate positions is computed using either of the two methods prescribed by CBN, namely, the Maturity method and the Duration method. Capital values are arrived at, after a series of steps, in the form of vertical and horizontal disallowance capital figures.

[8]*Standard Approach refers to regulatory capital charge calculation for market risk as stipulated by the CBN circular on Basel II implementation dated 10th Dec 2013 with reference id BSD/DIR/CIR/ GEN/LAB/06/053*

10.2.3 Specific risk capital charge

Specific Risk capital charges capture risk of loss due to the issuer specific risk inherent in each interest rate position. The computation takes into account the rating, residual maturity and the "risk category" of an issue. There are three risk categories, namely Government, Qualifying and Other. Qualifying securities includes securities issued by Public Sector Enterprises, Multilateral Development Banks, and securities rated Investment grade by rating agency.

10.2.4 Capital charge for Exchange Rate Risk

Two processes are needed to calculate the general market risk capital requirement for foreign exchange risk.

- The first is to measure the exposure in a single currency position.
- The second is to measure the risks inherent in the Bank's mix of long and short positions in different currencies.

Banks will comply with a capital requirement of 8% of their net open position in foreign currency.

10.2.5 Market risk capital charge computation for the Bank

Finally, both the general market risk capital and specific risk capital values for each of the asset classes need to be summed up to arrive at the portfolio market risk

capital charge for the Bank. The Bank's Market Risk Capital Charge Model must detail the above computation and will be employed for ascertaining regulatory capital charge for market risk in the Bank.

10.3 Internal Models Approach

The Bank will work towards the attainment of the Internal Models Approach in a phased manner. The Internal Model must be able to handle both linear and non-linear portfolios and must calculate Value at Risk (VAR) daily using the following:

- a price shock equivalent to a ten (10) trading day holding period.
- an observation period based on at least a year of historical data and updated at least once a quarter.
- a 99% confidence level.
- Correlations may be recognized both within risk factor categories and across categories.

The capital required to support market risk is equal to the larger of the previous day' VAR (at a 99% confidence level over a 10 day holding period) or a multiplier times a 60-day moving average of VAR, plus a specific risk add-on. The multiplier is initially set at 3 but can increase, depending on the results of back-testing.

Back-testing determines the frequency with which actual trading losses exceed the prior day's VAR (adjusted to a one- day holding period). In principle, this should happen 1days in 100 (since the confidence level is 99%). If the actual frequency is significantly greater than 1%, the model is considered inaccurate, and the multiplier increases.

Specific risk is price variation that cannot be explained by changes in general market conditions. The specific risk add- on can be calculated either by an Internal Model or by the Standard Model and can be eliminated if an internal model can be shown to capture adequately default and event risk. Businesses with a concentration of specific risk must be separately backtested.

Appendix 1. Glossary of Market Risks Terms and Concepts

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Assets and Liabilities Management Committee (ALCO)

ALCO is a senior management committee responsible for managing the balance sheet and overall liquidity in the Bank. A primary function of ALCO is to balance the needs of different business groups to ensure that the overall priorities of the Bank are met. This includes establishing an internal transfer pricing mechanism consistent with the Bank's balance sheet objectives. The Treasurer and/or Asset and Liability Manager establish guidelines for ALCO, including frequency of meetings.

Fair Valued Through Other Comprehensive Income (FVTOCI)

These are securities are normally purchased for the medium term to hedge balance sheet interest rate risk i.e. when a sustained fall in interest rates is expected over several months. These securities are neither designated as FVTPL or Amortized Cost. The assets in this category can be sold or held till maturity. Investments in the FVTOCI portfolio will be marked to market at least monthly and the impact flowing to the Bank's capital. The purchase of securities for this account class must follow guidelines established by Treasurer and/or ALM Head.

Balance Sheet and Liquidity Ratios

These are used not only to manage liquidity but also to maintain or achieve a desired balance sheet structure. Examples are: Total Loans/Total Deposits, Borrowed Funds/Total Assets, and Liquid Assets/Total Assets etc. Treasury will propose the limits, which will be approved by ALCO.

Banking Book

This is a term that is normally given to the Accrual Portfolio that is composed of traditional deposits and loans, interbank placements, consumer loans etc.

Brokers

Brokers act as agents between two financial institutions to facilitate transactions in return for a fee. Written approval must be obtained from the Country Executive and a Senior Risk Officer prior to using a specific broker. Market Risk Managers will review brokerage fees monthly; changes in the use of particular brokers or the pattern of brokerage fees can be indicators of overtrading or other Trader impropriety.

Counterparty Risk

Counterparty risk has two components – settlement risk and pre-settlement risk. Settlement risk arises when the exchange of value between counterparties does not take place simultaneously – the risk is that the counterparty defaults after we have fulfilled our side of the deal. Pre-settlement risk arises when funds or instruments are exchanged on forward settlement dates. The risk is that our

trading partner fails before settlement date and the market rate changes so the replacement value of the contract would cause us a loss.

Defeasance Period

This is the length of time needed to eliminate (decrease) the risk of a position either through an outright sale or by establishing an offsetting hedge.

Earnings at Risk (EAR)

Earnings at Risk (EAR) measures the potential pre-tax earnings impact, over a specified reporting period (generally, rolling 12months forward), for the accrual portfolio from a defined change in interest rates e.g., a parallel upward shift of 1 bps (0.01%). It is a forward-looking measure, analogous to Factor Sensitivity in trading portfolios.

Equity (Price) Risk

Equity risk is the risk to earnings or capital that results from adverse changes in the value of the Bank's equity related portfolios. Equity risk could be systematic (i.e., an adverse change in the overall level of equity prices), or unsystematic (an adverse change in the stock price of the specific company).

Economic Value of Equity (EVE)

This measures the potential change in economic value of the accrual portfolio for a pre-defined change in interest rates. The pre-defined changes may either be 'standard' or 'stress' shifts in interest rates. Change in 'economic value' is defined as either change in market value, or change in future net interest revenue on a present value basis.

Factor Sensitivity

Factor Sensitivity is the change in the market value of a position for a unit change in a given independent Market Factor while holding all other Market Factors constant.

Exchange Rate Risk

Exchange rate risk is the risk to earnings and capital arising from adverse movements in currency exchange rates that are used for valuation of open foreign currency positions.

Amortized Cost (AC)

Securities that are purchased with the intention of holding to maturity are categorized as Amortized Cost (AC). Investment classified under this portfolio need not be marked to market and will be carried

at acquisition cost, unless it is more than the face value in which case the premium should be amortized over the period remaining to maturity.

Generally, accounting rules allow a sale prior to maturity only under exceptional circumstances.

Interest Rate Risk

Interest rate risk arises when there is a mismatch between positions that are subject to interest rate adjustment within a specified period. The Bank's lending, funding and investment activities give rise to interest rate risk. Debt securities (such as T-Bills and Government Bonds) as well as forward foreign exchange contracts and other instruments that have an interest rate component, are also subject to interest rate risk from an adverse change in interest rates. The immediate impact of a variation in interest rates is on the Bank's net interest income, while a longer term impact is on the Bank's net worth since the economic value of the Bank's assets, liabilities and off- balance sheet exposures are affected.

Issuer Risk

Issuer risk is the risk that the market value of a security or other debt instrument will fall when the perceived or actual credit worthiness of the issuer changes.

Line Management

Line Management are those officers within and above Risk Taking Units who are responsible for business activities that generate market risk.

Liquidity Risk

Liquidity Risk is the risk of financial and reputational loss or insolvency arising from the inability to fund assets or meet maturing obligations as they fall due without incurring unacceptable costs or losses. Liquidity risk includes the inability to manage unexpected market conditions that may lead to changes in funding sources or impair the ability to liquidate assets or trading positions in an orderly way.

Management Action Trigger (MAT)

Management Action Triggers are required for all mark-to market trading portfolios. Reports showing monthly cumulative profit or loss compared to the triggers must be submitted daily to Line Management. Customer revenues should be excluded.

The Management Action Trigger defines management's tolerance for accepting price risk related losses on a cumulative 21-day basis. Losses measured on a mark-to-market and realized basis that exceed the Management Action Trigger must be reported to the next level of management above the Risk-Taking Unit. A stop loss limit is to be agreed with that next level of management and documented in writing and immediately applied to the position when triggered.

Market Factor

A Market Factor is any price or rate that is used directly to value a financial instrument; market factors include interest and foreign exchange rates, fixed income, equity and commodity prices. No Risk-Taking Unit may trade unless all material Market Factors have been identified.

Product Programs, Permitted Products and Currencies

Risk Taking Units may only transact in products and currencies that are permitted as part of the Market Risk Limits Package, or by approved Product Programs. While a List of Permitted Products and Currencies is likely to include relatively simple, widely traded items, written Product Programs are required where product complexity is high and requires effective coordination between a number of functions. Product Programs typically cover product description; customer base; product profitability; risk limits and controls; operations; infrastructure and resource requirements; accounting procedures; and legal, regulatory and tax considerations.

Rate Reasonability Process

Compliance in consultation with Treasury must establish and maintain an effective process to verify that all trading room transactions are executed and revalued at prevailing market rates. The process must be documented and approved by the Market Risk Manager.

Risk Taking Unit

A Risk-Taking Unit is any business organization with approved Market Risk Limits. A Risk-Taking Unit could be a trading unit, or a business comprising several trading and other units, or a country.

Stress Testing

Stress testing is a simulation that evaluates a portfolio's performance under defined exceptional circumstances and quantifies the financial impact. It must be performed at least quarterly for both trading and accrual portfolios.

Trading Liquidity

Trading liquidity is defined as the ability to exit a position (buying or selling in the market) rapidly and without affecting market prices unduly.

Transfer Pricing

Business Units generate market risk in the normal course of their banking activities, such as taking deposits, making loans to corporations or individuals, or executing foreign currency transfers. ALCO establishes guidelines for transfer pricing of the risk from Business Units to the Treasury or Risk-

Taking Unit. In general, prevailing market rates are the starting point for transfer pricing but may be modified at ALCO's discretion in order to achieve the Bank's balance sheet objectives.

Value at Risk (VAR)

The size of a trading position does not in itself reveal the level of potential risk that a Risk-Taking Unit is exposed to. Marking-to-market only measures current profit/loss. Value at Risk calculates for a trading portfolio the distribution of the possible changes in market value resulting from possible market movements and then takes the "worst" case at a specified confidence level.

Value at Risk is computed using a proprietary market risk system such as Calypso, or financial model, using three years of historical data of market factor volatilities and correlations. Regulatory authorities generally apply a 99% confidence level (2.326 standard deviations). This implies that in 1 out of 100 trading days profit or loss will exceed the VAR. Value at Risk is a statistical tool that assumes deep and liquid markets and a normal distribution (bell curve) of daily price movements. Such conditions rarely exist in the real world, especially in stress situations, limiting the use of VAR as a risk management tool. However, Regulators, Analysts and Senior Management find VAR a convenient gauge of market risk.

APPROVAL DETAILS & VERSION CONTROL		SIGNATURE
DOCUMENT NAME	MARKET RISK MANAGEMENT POLICY	
OWNER	MARKET RISK MANAGEMENT	
AUTHOR	HEAD, MARKET RISK MANAGEMENT	
REVIEWER	CHIEF RISK OFFICER	
FINAL APPROVAL	BOARD OF DIRECTORS	
VERSION	VERSION 4	
DATE OF APPROVAL		