

**PUBLIC FINANCE RISK ASSESSMENT AND MANAGEMENT: AN ANALYTICAL
FRAMEWORK**

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LEARNING OUTCOMES (KEY WORDS: FISCAL STABILITY AND CONTROLL)

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INTRODUCTION

Risk is a threat manifesting in any vulnerable space, defined as the potential for loss or harm that may arise from a system or entity (Gregory & Bringham, 2015). In the context of finance, risk refers to the uncertainty associated with the potential for financial loss or negative outcomes. It is a fundamental concept in the field of public finance and is a central consideration in financial planning, investment decision-making, and portfolio management (Gregory & Bringham, 2015).

Public finance risk: on the other hand, refers to the specific risks that are associated with the management of government finances and public funds (Shah, 2013). This includes risks related to government spending, taxation, public debt, and the overall fiscal position of a government. Public finance risk is a critical concern for policymakers and public finance professionals, as it can have significant implications for the stability and sustainability of government finances and the overall economy (Shah, 2013).

SYSTEMATIC AND UNSYSTEMATIC RISK IN PUBLIC FINANCE

There are some MDA's (like the Nigerian Sovereign Investment Authority - NSIA and The Debt Management Office - DMO) that play or engage market instruments directly as part of their daily operations, while others do that occasionally when needed. This automatically subjects their finances to market forces. These operations occur when government borrow or lend money, create foreign reserves (currency risk).

SYSTEMATIC RISK:

Definition: Systematic risk, also known as market risk or undiversifiable risk, is the risk that is inherent in the entire market or economy and affects all investments, held by government entities including those of the private sector.

Sources

Economic Factors: Changes in macroeconomic variables such as interest rates, inflation rates, GDP growth, and overall market conditions can contribute to systematic risk. General risk

(world wars 1, 2 & pandemic 2020) and Macroeconomic risk (the great depression & global economic meltdown 2007)

Market Sentiment: Investor sentiment, geopolitical events, global economic trends, and market cycles can influence systematic risk.

Impact on Public Finance

Systematic risk affects all investments in a similar manner, so it cannot be diversified away by holding a diversified portfolio.

For public finance, systematic risk can lead to widespread financial losses, reduced government revenues, increased borrowing costs, and economic downturns.

Examples:

Global Financial Crisis of 2008: A systemic event that affected financial markets worldwide, leading to economic recessions and fiscal challenges for governments.

COVID-19 Pandemic: Another systemic shock that disrupted global markets, causing revenue declines, increased public spending, and fiscal stress for many governments.

UNSYSTEMATIC RISK:

Definition: Unsystematic risk, also called specific risk or diversifiable risk, is the risk that is unique to a particular investment or sector/division relating to the use of public funds. This risk can be reduced through diversification.

Sources

Industry Factors: Risks specific to certain industries, such as regulatory changes, technological advancements, competition, and supply chain disruptions, contribute to unsystematic risk.

Company-Specific Factors: Risks related to individual companies, such as management issues, operational challenges, legal liabilities, and financial performance, are examples of unsystematic risk. NSITF-PFA's.

Impact on Public Finance

Unsystematic risk can be mitigated through diversification strategies, such as investing in a range of sectors or geographic regions.

For public finance, unsystematic risk may affect specific projects, investments, or revenue streams, but it can be managed through prudent risk assessment and portfolio diversification.

Examples:

Sector-specific Risks: For example, a government heavily reliant on oil revenues faces unsystematic risk related to fluctuations in oil prices and demand.

Project-specific Risks: Risks associated with infrastructure projects, such as risk of cost overruns (project's actual expenses exceed the budgeted or estimated costs), risk of delays, or risk of changes in regulatory requirements, represent unsystematic risk.

Effective risk management in public finance involves identifying, assessing, and managing both systematic and unsystematic risks. Diversification, hedging strategies, financial reserves, stress testing, and contingency planning are some of the tools and techniques used to address market risk and enhance financial resilience for government entities.

Political Unsystematic Risk:

Militant attacks on NNPC pipeline Bandit ambush on Katsina farmers.

Disruptive Risk:

NSITF's challenges due to PFA's and PFC's.

Impact of TSA on MDAs' public finance model

RISK TOLERANCE LEVELS IN PUBLIC FINANCE

Boundaries within which risks are deemed acceptable, is known as the risk tolerance levels which is the risk appetite concept. Nigeria, MDA's (Ministries, Departments, and Agencies) vary in their risk tolerance level based on several factors, including their mandate, objectives, available resources, and leadership style. Governments establish regulatory practices to prevent excessive risk-taking.

- i. MODERATE RISK (risk neutral)
- ii. CONSERVATIVE RISK (risk averse)

iii. **AGGRESSIVE RISK** (risk lover)

CONSERVATIVE RISK: Ministries such as education, healthcare, or social services are often more conservative in their risk approach. They prioritize stability and reliability in their operations, focusing on prudent budgeting, cost-effectiveness, and ensuring uninterrupted service delivery to the public. These MDAs typically prefer low-risk investment options and prioritize capital preservation over aggressive growth strategies.

AGGRESSIVE RISK: The Nigerian Sovereign Investment Authority (NSIA) finance management can be considered an aggressive MDA in terms of its risk tolerance disposition. The NSIA manages Nigeria's sovereign wealth fund and seeks to invest in a diversified portfolio of assets globally to achieve significant returns over the long term.

MODERATE RISK: The Debt Management Office (DMO) can be classified as moderate in terms of handling risks in public finance. The DMO is responsible for managing the country's debt portfolio and ensuring sustainable borrowing practices. The agency takes a more cautious and balanced approach towards debt management, focusing on prudent borrowing, debt sustainability, and risk management strategies. The DMO strives to strike a balance between meeting the government's financing requirements and minimizing the risks associated with excessive debt accumulation.

METHODOLOGIES FOR RISK ASSESSMENT IN PUBLIC FINANCE

There are various methodologies for assessing risk in public finance, including both quantitative and qualitative approaches to revenues, government spending and debts profile. Aim fiscal stability.

QUANTITATIVE METHODOLOGIES

In the context of quantitative risk assessment in Nigerian public finance, particularly considering the volatility of oil prices, scenario analysis, stress testing, and control assessments play interconnected roles in managing and mitigating financial risks.

Scenario Analysis (future outcomes affect key financial indicators):

Definition: Scenario analysis in a quantitative context involves the use of statistical models and historical data to project the financial impact of different plausible scenarios, such as boom and poor oil prices.

Application: In the Nigerian context, scenario analysis would involve creating models that project public finance outcomes under various oil price scenarios, considering factors like government revenue, expenditure and debt..

Interrelationship: Scenario analysis sets the stage for stress testing and control assessments by providing quantitative insights into **how different oil price scenarios** may affect key financial indicators. It establishes a range of potential outcomes for stress testing and helps identify areas that require control assessments.

Stress Testing:

Definition: Stress testing, in a quantitative sense, involves subjecting financial models to **extreme conditions or shocks to assess the system's resilience and or vulnerabilities.**

Application: Stress testing in Nigerian public finance would involve simulating the impact of extreme oil price scenarios, such as a sudden surge in prices (boom) or a sharp decline (doom), on the government's budget, revenue streams, and overall fiscal health.

Interrelationship: Stress testing relies on the scenarios developed in scenario analysis to assess the financial system's ability to withstand extreme conditions. The results of stress testing can then be used to identify weaknesses and areas that require control assessments for risk mitigation.

Control Assessments:

Definition: Control assessments in a quantitative framework involve evaluating the effectiveness of risk management controls and measures in place within the public finance system.

Application: In the case of oil price volatility, control assessments would focus on measures such as diversification of revenue sources, fiscal policies, and contingency planning to mitigate the impact of unpredictable oil price movements.

Interrelationship: **Control assessments are informed by the quantitative insights gained from both scenario analysis and stress testing. The weaknesses and strengths identified** through these processes guide the enhancement and adjustment of risk management controls to better address the financial risks associated with oil price fluctuations.

In summary, scenario analysis provides the quantitative foundation by projecting financial outcomes under different oil price scenarios, stress testing assesses the system's resilience to extreme conditions, and control assessments evaluate the effectiveness of risk management controls. Together, these methodologies create a comprehensive quantitative framework for understanding, managing, and mitigating financial risks in Nigerian public finance, particularly in the face of volatile oil prices.

QUALITATIVE METHODOLOGIES

In the context of risk assessment in Nigerian public finance, particularly focusing on insecurity related to herdsmen attack and Biafra agitation, qualitative methodologies play a crucial role. The interrelationship between scenario analysis, stress testing, and control assessments is essential for understanding and mitigating the risks associated with these issues.

Scenario Analysis

Definition: Scenario analysis involves the identification and evaluation of different plausible future scenarios that may impact the financial stability of the public sector.

Application: In the case of insecurity caused by herdsmen attack and Biafra agitation, scenario analysis would involve exploring various potential developments, such as increased conflict, displacement of populations, disruptions to economic activities, and the potential for political instability.

Interrelationship: Scenario analysis provides a foundation for stress testing and control assessments by outlining the range of potential risks and challenges that the public finance system may face due to insecurity.

Stress Testing:

Definition: Stress testing involves assessing the financial system's resilience under adverse conditions, such as economic downturns, political instability, or security threats.

Application: Stress testing in the context of Nigerian public finance would assess how well the financial system can withstand the financial shocks arising from insecurity caused by herdsmen attack and Biafra agitation. This includes evaluating the impact on revenue generation, budget allocations, and overall fiscal health.

Interrelationship: Stress testing relies on the scenarios identified in scenario analysis to simulate adverse conditions. It helps identify vulnerabilities and weaknesses in the financial system, providing insights that can inform control assessments and risk mitigation strategies.

Control Assessments:

Definition: Control assessments involve evaluating the effectiveness of existing risk management measures and controls in place within the public finance system.

Application: In the context of insecurity, control assessments would focus on measures in place to mitigate financial risks associated with herdsmen attack and Biafra agitation. This includes evaluating the efficiency of security measures, contingency plans, and crisis response mechanisms.

Interrelationship: Control assessments are informed by the insights gained from scenario analysis and stress testing. The weaknesses and gaps identified in these processes guide the improvement and enhancement of control measures to better address the specific risks associated with insecurity.

In summary, scenario analysis lays the groundwork by outlining potential future developments, stress testing simulates the impact of adverse conditions on public finance, and control assessments evaluate the effectiveness of risk management measures. Together, these methodologies provide a comprehensive framework for understanding, managing, and mitigating the financial risks associated with insecurity caused by herdsmen attack and Biafra agitation in the Nigerian public finance context.

RISK MANAGEMENT STRATEGIES IN PUBLIC FINANCE

1 Risk Assessment and Measurement: Governments assess the likelihood and potential impact of potential risks. Using quantitative and qualitative methods, such as scenario analysis and stress testing, are used to measure the potential losses or gains associated with particular risks.

This evaluation helps prioritize risks and allocate appropriate resources for risk mitigation.

2. Risk Identification: This includes the identification of risks specific to the government's financial position, such as economic downturn, refinance risk interest rate risk, volatility risk, and potential changes in legislation or government policies. It also involves identifying financial risks related to specific projects or investments undertaken by the government.

3. Risk Mitigation: Once risks are identified and assessed, governments implement measures to mitigate their potential negative impacts. This internal action can **include diversifying investments, implementing hedging strategies, adopting appropriate debt management policies**, or establishing contingency funds to cover unexpected expenses.

4. Financial Regulation and Oversight: Governments establish regulatory practices to prevent excessive risk-taking.

INSTRUMENTS USED IN PUBLIC FINANCE AND THEIR RISKS COMPONENT

GOVERNMENT BOND: A government bond is a debt security issued by a government to support government spending and obligations. It is a promise by the government to pay the bondholder a certain amount of interest for a specified period and to repay the face value on the maturity date.

Interest Rate Risk: Fluctuations in interest rates can affect the market value of government bonds.-

Inflation Risk: High inflation can erode the purchasing power of the bond's future cash flows.-

Default Risk: The risk that the government may not be able to meet its debt obligations.

INSTRUMENTS USED IN PUBLIC FINANCE AND THEIR RISKS PROFIL cont.

TREASURY BILLS (T-bills):Definition: Treasury bills are short-term securities issued by the government to raise funds and manage short-term liquidity needs. They are sold at a discount from their face value and do not pay interest before their maturity.

Interest Rate Risk: Changes in interest rates can affect the market value of T-bills.-

Reinvestment Risk: If interest rates decline, the investor may not be able to reinvest the proceeds at the same rate.-

Liquidity Risk: T-bills may be less liquid than other forms of short-term debt instruments.

PUBLIC-PRIVATE PARTNERSHIP (PPP):Definition: A public-private partnership is a contractual arrangement between a public sector authority and a private party, where the private party assumes significant financial, technical, and operational risk in the design, financing, building, and operation of a project.

Financial Risk: The private party may face financial risk in the form of cost overruns, revenue shortfalls, or inability to secure funding.-

Operational Risk: The private party may face operational challenges in delivering the agreed services or infrastructure.-

Regulatory Risk: Changes in regulations or government policies can impact the project's profitability and operations.

RISK ASSERTIONS IN PUBLIC FINANCE

Risk assertions serve as a framework for identifying, assessing, and managing risks effectively. By explicitly stating the risks faced by public finance entities, they can develop risk mitigation strategies and plans to safeguard financial sustainability. Risk assertions in public finance covers:

1. The risk of inaccurate financial reporting due to errors or misstatements.
2. The risk of fraud or misappropriation of public funds.
3. The risk of non-compliance with regulatory requirements and government policies.
4. The risk of revenue volatility and economic instability impacting financial sustainability.

5. The risk of inadequate controls and procedures leading to operational inefficiencies.
6. The risk of cybersecurity breaches and data privacy threats.
7. The risk of inadequate oversight and governance structures.
8. The risk of reputation damage due to negative publicity or public perception.
9. The risk of inadequate funding or budget constraints affecting service delivery.
10. The risk of political interference or changes in government policies impacting financial stability.

RISK COMPLETENESS TEST IN PUBLIC FINANCE

A risk completeness test in public finance is a process used to assess and evaluate the adequacy and comprehensiveness of risk assessment, identification and mitigation analysis in public financial decision-making. **It aims to ensure that all potential risks** associated with a specific sector or project and investment relating to the risk in public finance are identified, analyzed, and accounted for.

The purpose of a risk completeness test is **to prevent any significant risks from being overlooked** or underestimated, which could lead to unexpected financial losses or negative impacts on public finances. It involves a systematic and rigorous examination of all potential risks, including both internal and external factors that could affect the success or viability of a public finance. Procedures typically involved in conducting a risk completeness test in public finance:

GAP ANALYSIS: Conduct a gap analysis to identify any deficiencies or gaps in the current risk management framework. Compare the existing controls against best practices, regulatory requirements, and industry standards.

DOCUMENTATION AND REPORTING: Document the findings of the risk completeness test, including the identified risks, assessment results, recommended actions, and implementation status. Prepare a comprehensive report summarizing the findings and recommendations for management, oversight bodies, and stakeholders.

RISK MONITORING AND REVIEW: Establish a system to monitor and review public finance to track all new potential risk and or identified risks throughout the project or investment lifecycle. This ensures that any emerging risks are promptly identified and appropriate actions are taken to mitigate them.

FRAMEWORK FOR PUBLIC FINANCE RISK ASSESSMENT AND MANAGEMENT *ANAN risk audit framework 2024*

Many risk management framework are used in the public sector, including ISO 31000, the IRM framework, and the NIST-SP 800-30 framework. However, this paper will focus only on frameworks related to public finance

THE INTERNAL AUDIT DEVELOPMENT FRAMEWORK (IADF): encompasses tools like Internal Control Assessments for evaluating the efficacy of internal controls within public financial processes, Risk Assessment Questionnaires for identifying specific risks in public finance, and Control Self-Assessment (CSA) to engage management and staff in assessing risks and controls within their areas.

PUBLIC FINANCE MANAGEMENT (PFM) framework: there are tools for **Budget Analysis**, assessing budget formulation and execution processes, including credibility, forecasting, and expenditure control. Additionally, there are Procurement Assessment Tools to evaluate transparency and efficiency in public procurement, along with the utilization of established financial reporting and auditing standards to ensure the accuracy and reliability of financial information

SPUR SHIFT IN PUBLIC FINANCE RISK MANAGEMENT FROM TRADITIONAL METHODS GLOBALLY

SPUR SHIFT IN PUBLIC FINANCE RISK MANAGEMENT FROM TRADITIONAL METHODS GLOBALLY

The integration of Data Analytics-Artificial Intelligence, Cyber security-data protection and ESG approach to risk assessment and mitigation from the traditional methods are key trends shaping the future of risk management in the financials of the public sector globally today:

Data Analytics and Artificial Intelligence: The **global shift from traditional to Data analytics and Artificial Intelligence** risk management in public finance signifies a fundamental evolution in how governments manage financial risks. Artificial Intelligence 's ability to continuously learn and adapt also enhances its effectiveness in detecting evolving fraud schemes, making it an invaluable tool in safeguarding public funds and maintaining public trust in government financial systems. By analyzing historical data and real time Big Data related to government revenue, expenditure, and debt, financial trends and patterns can swiftly pinpoint risks like the risk of rapid debt accumulation, indicating fiscal vulnerability. These insights facilitate effective risk management in the finance of public sector, enhancing overall financial resilience and sustainability

Cybersecurity and Data Protection

In these digital era globally, deployment of Cybersecurity and Data Protection are commonly used to pinpoint risk in public finance through leveraging advanced tools and technologies to continuously assess and analyze the digital landscape for potential vulnerabilities, threats, and anomalies. By employing robust cybersecurity measures such as intrusion detection systems, anomaly detection algorithms, and security information and event management (SIEM) solutions, public finance entities can proactively identify data breaches risk, cyberattacks risk, unauthorized access risk and mitigate them.

Implementing data protection mechanisms such as encryption, access controls, and regular security audits can strengthen the resilience of public financial systems against cyber threats risk. This holistic approach not only helps in pinpointing existing risks but also in anticipating and mitigating future cybersecurity risk challenges, ensuring the integrity, confidentiality, and availability of sensitive financial data.

INTEGRATING ESG (ENVIRONMENTAL, SOCIAL, GOVERNANCE) PUBLIC FINANCE RISKS

Globally ESG (Environmental, Social, Governance) considerations in public finance risk mitigation action on:

Environmental Risks: These include climate change impacts, natural disasters, resource scarcity, pollution. Governments may face risks such as increased costs for climate mitigation changes (increasing industries carbon taxes).

Social Risks: These encompass a range of issues such as labor practices, human rights, community relations, and diversity and inclusion. Governments may face risks community opposition to projects.

Governance Risks: These relate to the governance structures, transparency, accountability, and ethical practices of public institutions. Risks include lack of stakeholder engagement.

ACCOUNTANTS AS RISK MANAGER OF PUBLIC FINANCE

1. Risk assessment: Accountants vigilantly monitor public finance data within accounts to preempt any financial risks to ensure they are not caught off guard.
2. Identifying and analysing financial risk: Accountants are responsible for identifying and analyzing various financial risks within public finance, such as market risk, credit risk, liquidity risk, and operational risk. They use financial models and analysis to assess the severity of these risks and their potential impact on public funds.
3. Developing risk mitigation strategy: Once risks are identified and analyzed, accountants help in the risk avoidance, risk reduction, risk sharing and risk retention process.
4. Providing financial advice: Accountants play a pivotal role in providing financial advice to public finance decision-makers, such as government agencies, municipalities, and public institutions. They offer insights and recommendations on managing financial risks, improving financial performance, and ensuring compliance with regulations and fiscal policies. Their advice is critical in ensuring the overall financial stability and sustainability of public finance.