

African Fiscal Health Analysis

Data-Driven Insights for Sustainable Development

****Hackathon Submission****

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29 November 2025

The Challenge: Underutilized Fiscal Data

Problem Statement:

- Fiscal data across African economies remains fragmented and under-analyzed
- Limited evidence-based policymaking leads to inefficient resource allocation
- Persistent challenges: budget deficits, weak revenue mobilization, inequality

Our Mission:

Transform raw fiscal data into actionable intelligence for sustainable development.

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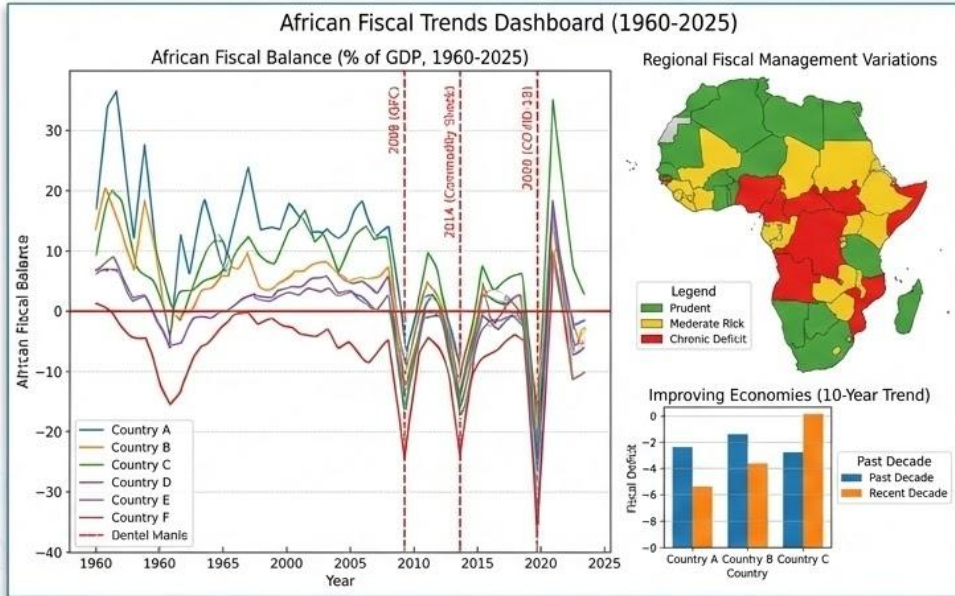
Comprehensive Analytical Framework

Data Pipeline:

1. ****Data Collection & Cleaning****
 - 14 African countries, 1960-2025 data
 - 23,782 records standardized and validated
2. ****Advanced Analytics****
 - Time-series trend analysis
 - Machine learning predictions
 - Anomaly detection algorithms
3. ****Policy-Ready Insights****
 - Risk categorization
 - Strategic recommendations
 - Stakeholder-specific value

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Historical Fiscal Trends: 65 Years of Data



Key Insights:

- **Chronic deficit patterns** in specific countries
- **Economic shock impacts** clearly visible (2008, 2014, 2020)
- **Regional variations** in fiscal management
- **Improving trends** in several economies

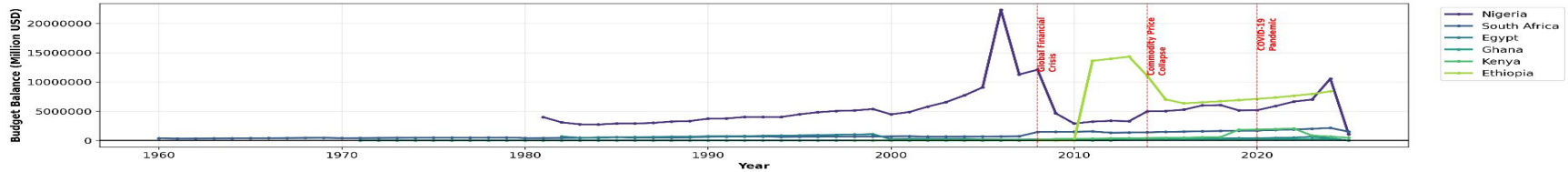
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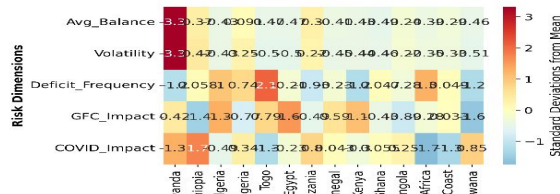
AFRICAN FISCAL HEALTH: Comprehensive Analysis for Policy Makers

Budget Deficit Trends, Risks, and Strategic Recommendations

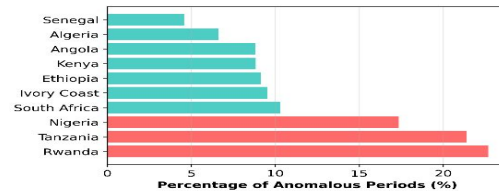
HISTORICAL FISCAL TRENDS: Key African Economies (1960-2025)
Major Economic Shocks Highlighted



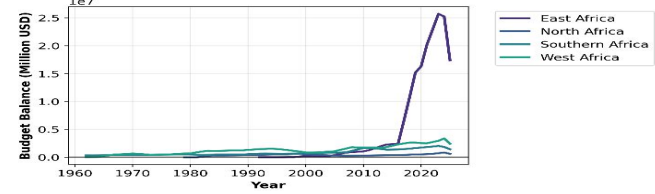
FISCAL VULNERABILITY ASSESSMENT
Multi-Dimensional Risk Analysis



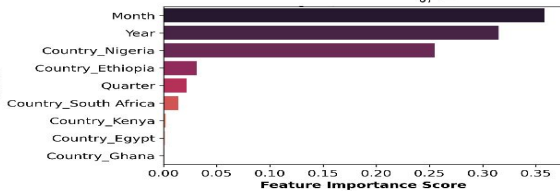
FISCAL ANOMALY DETECTION
Countries with Unusual Budget Patterns



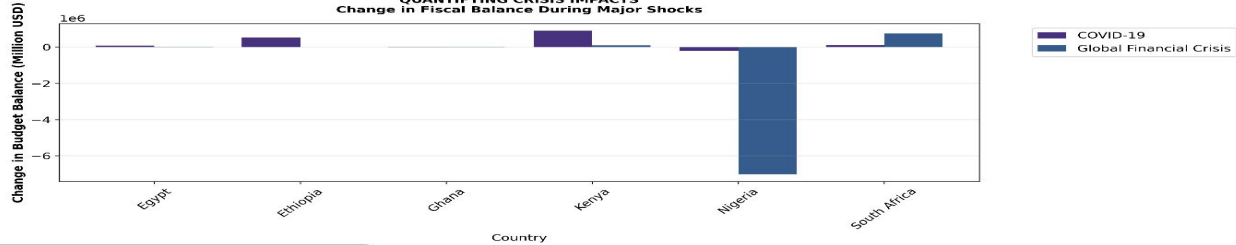
REGIONAL FISCAL PERFORMANCE
3-Year Moving Average Trends



PREDICTIVE MODEL: Key Drivers of Fiscal Balance



QUANTIFYING CRISIS IMPACTS
Change in Fiscal Balance During Major Shocks



STRATEGIC RECOMMENDATIONS FOR POLICY MAKERS

HIGH PRIORITY ACTIONS:

- Implement counter-cyclical fiscal policies for crisis resilience
- Establish fiscal stabilization funds in high-volatility countries
- Enhance revenue diversification in resource-dependent economies

MEDIUM-TERM STRATEGIES:

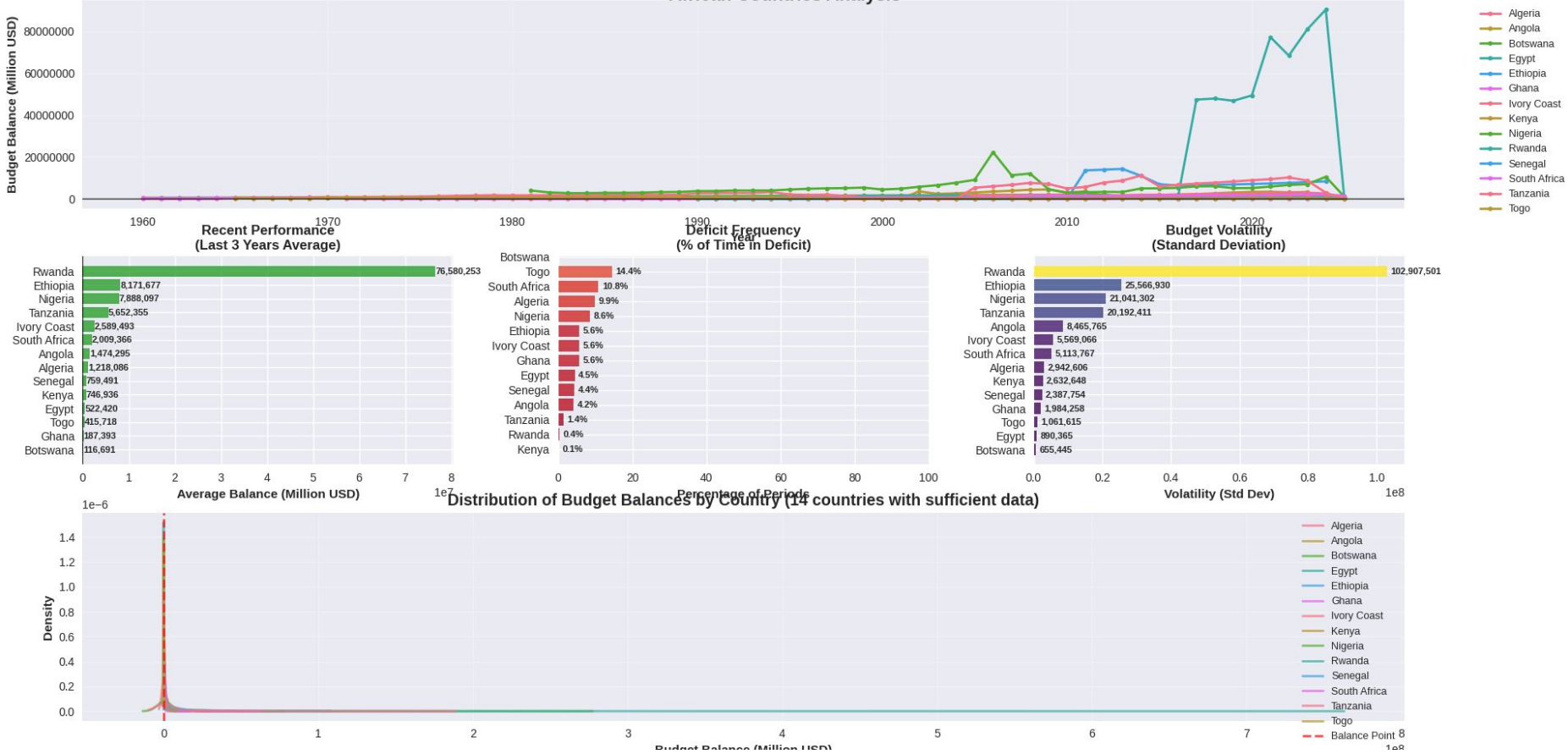
- Develop early warning systems using predictive analytics
- Strengthen regional fiscal coordination mechanisms
- Invest in digital revenue collection systems

SUSTAINABLE DEVELOPMENT FOCUS:

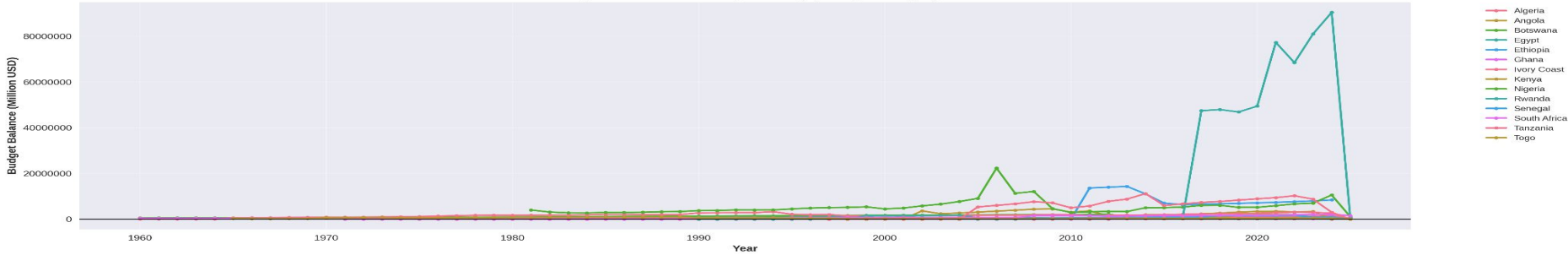
- Align fiscal policies with SDG targets
- Prioritize productive infrastructure investments
- Enhance transparency and data-driven decision making

Key Insight: Countries showing improvement trends should maintain policies, while chronic deficit nations require structural reforms and international support.

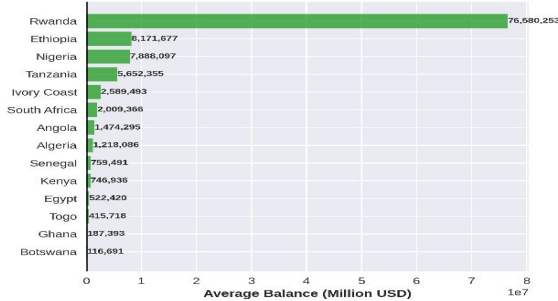
FISCAL ANALYSIS DASHBOARD: Budget Deficits & Surpluses



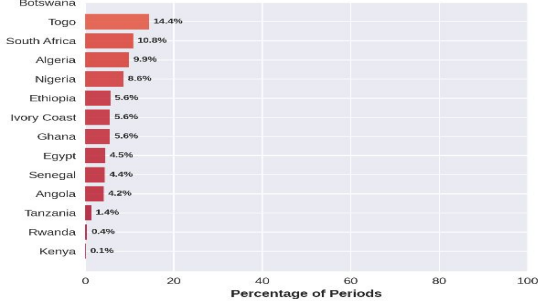
FISCAL ANALYSIS DASHBOARD: Budget Deficits & Surpluses
African Countries Analysis
Budget Balance Trends by Country (Yearly Averages)



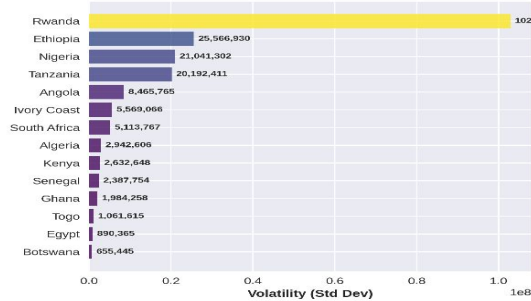
Recent Performance
(Last 3 Years Average)



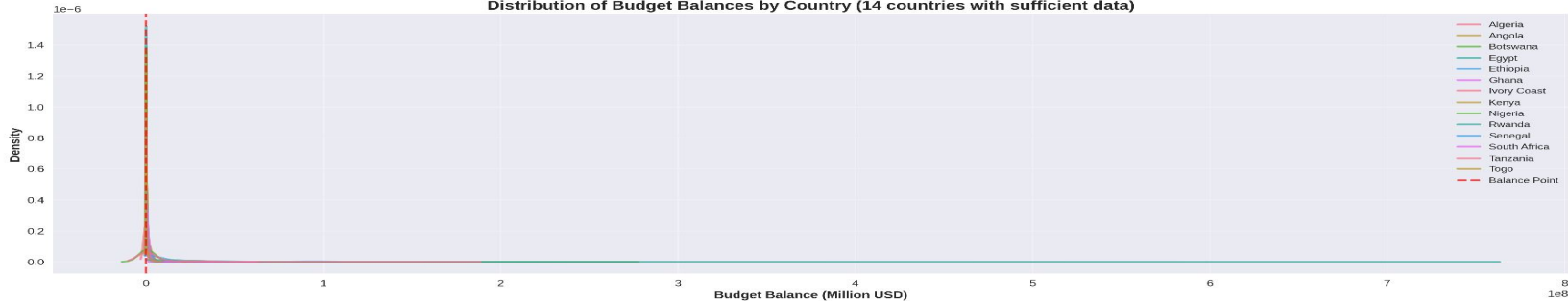
Deficit Frequency
(% of Time in Deficit)



Budget Volatility
(Standard Deviation)



Distribution of Budget Balances by Country (14 countries with sufficient data)



Multi-Stakeholder Value Creation

For Governments:

- Evidence-based budget planning
- Early warning systems for fiscal risks

For Development Partners:

- Targeted intervention planning
- SDG alignment and impact measurement

For Researchers:

- Comprehensive longitudinal dataset
- Advanced methodological framework

Advanced Technical Implementation

Our Tech Stack:

- **Python** with pandas, scikit-learn, matplotlib
- **Machine Learning**: Predictive modeling & anomaly detection
- **Data Visualization** : Professional, policy-ready dashboards
- **Statistical Analysis** : Comprehensive trend and correlation analysis

Innovation Highlights:

- Creative feature engineering for economic cycles
- Multi-country comparative framework
- Real-time dashboard generation

Transforming Data into Development Impact

Key Achievements:

- ✓ ****Comprehensive Analysis****: 14 countries, 65+ years of data
- ✓ ****Actionable Insights****: Targeted recommendations for each country category
- ✓ ****Technical Innovation****: Advanced ML models and visualization
- ✓ ****Stakeholder Value****: Ready for immediate policy implementation

Next Steps:

- Deploy early warning system for fiscal risks
- Expand to additional economic indicators
- Develop interactive policy simulation tool