

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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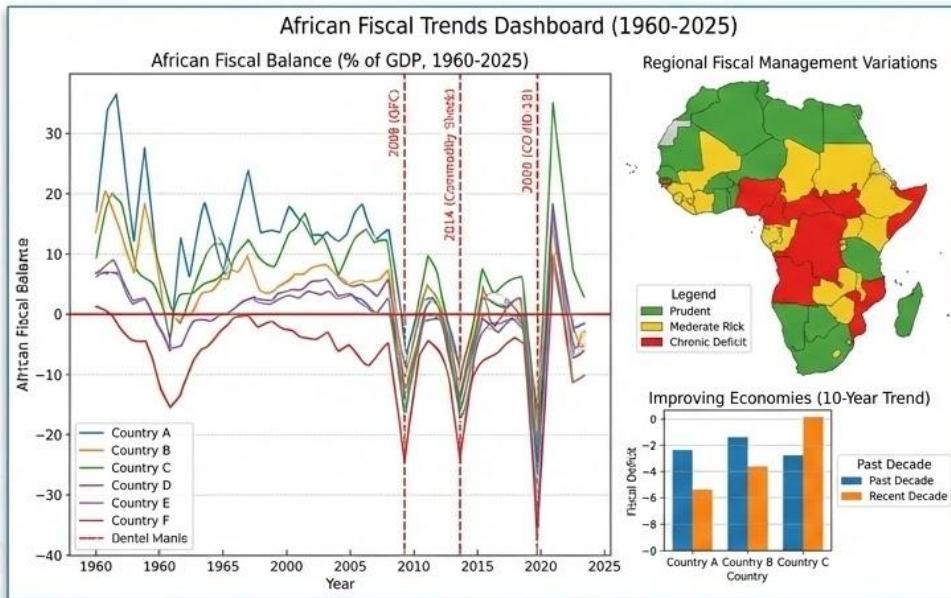
Comprehensive Analytical Framework

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:

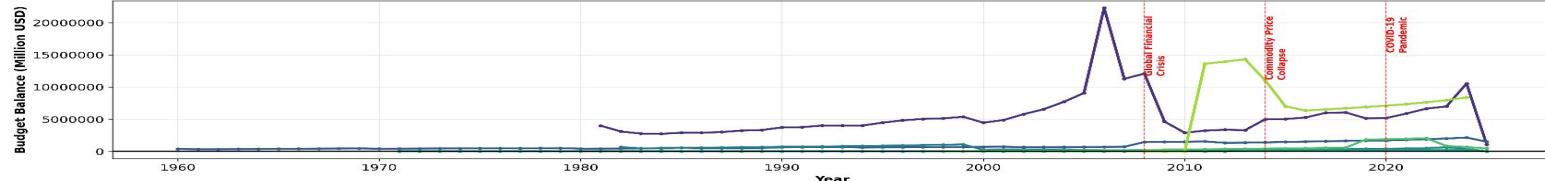
- Chronic deficit patterns** in specific countries
- Economic shock impacts** clearly visible (2008, 2014, 2020)
- Regional variations** in fiscal management
- Improving trends** in several economies

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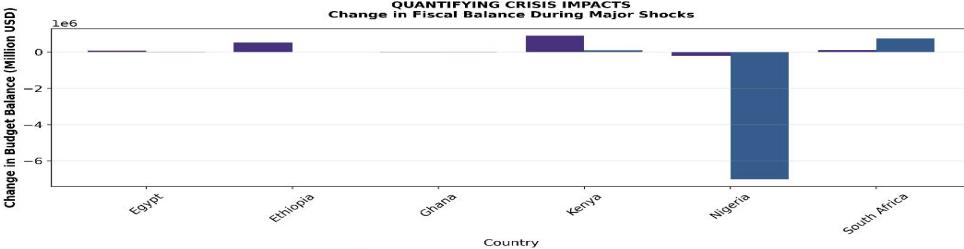
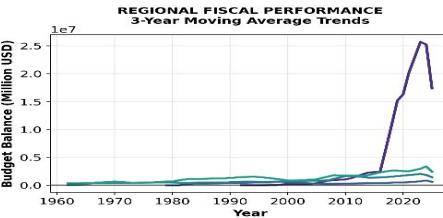
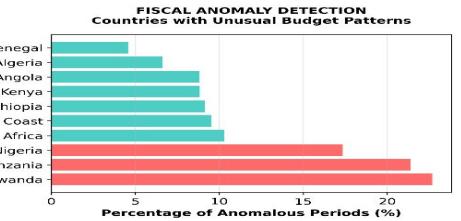
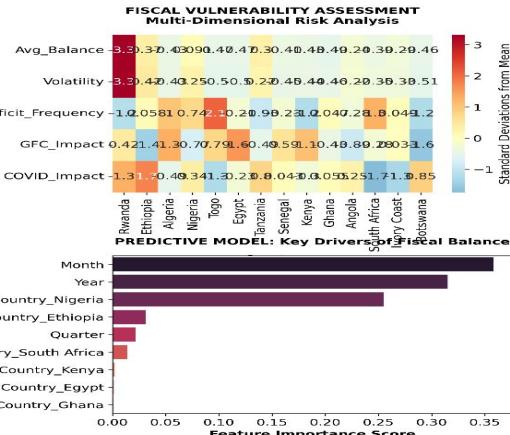
AFRICAN FISCAL HEALTH: Comprehensive Analysis for Policy Makers

Budget Deficit Trends, Risks, and Strategic Recommendations

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



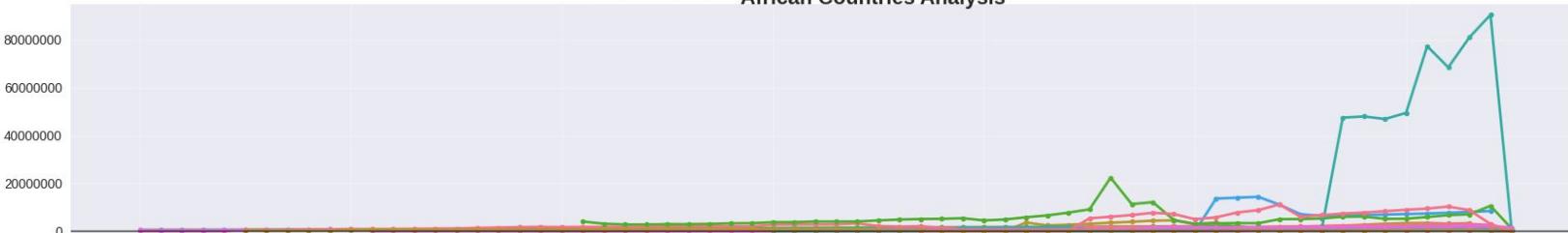
Risk Dimensions



FISCAL ANALYSIS DASHBOARD: Budget Deficits & Surpluses

Budget Balance Trends by Country (Yearly Averages)
African Countries Analysis

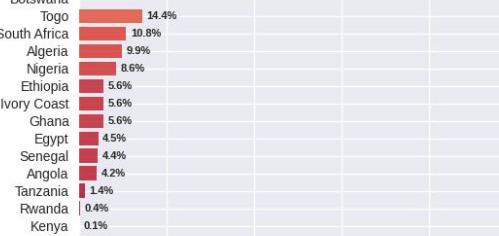
Budget Balance (Million USD)



Recent Performance
(Last 3 Years Average)

	Average Balance (Million USD)
Rwanda	8,171,677
Ethiopia	7,888,097
Nigeria	5,652,355
Tanzania	2,589,493
Ivory Coast	2,009,366
South Africa	1,474,295
Angola	1,218,086
Algeria	759,491
Senegal	746,936
Kenya	522,420
Egypt	415,718
Ghana	187,393
Botswana	116,691

Deficit Frequency
(% of Time in Deficit)



Budget Volatility
(Standard Deviation)



Average Balance (Million USD)

Percentage of Periods

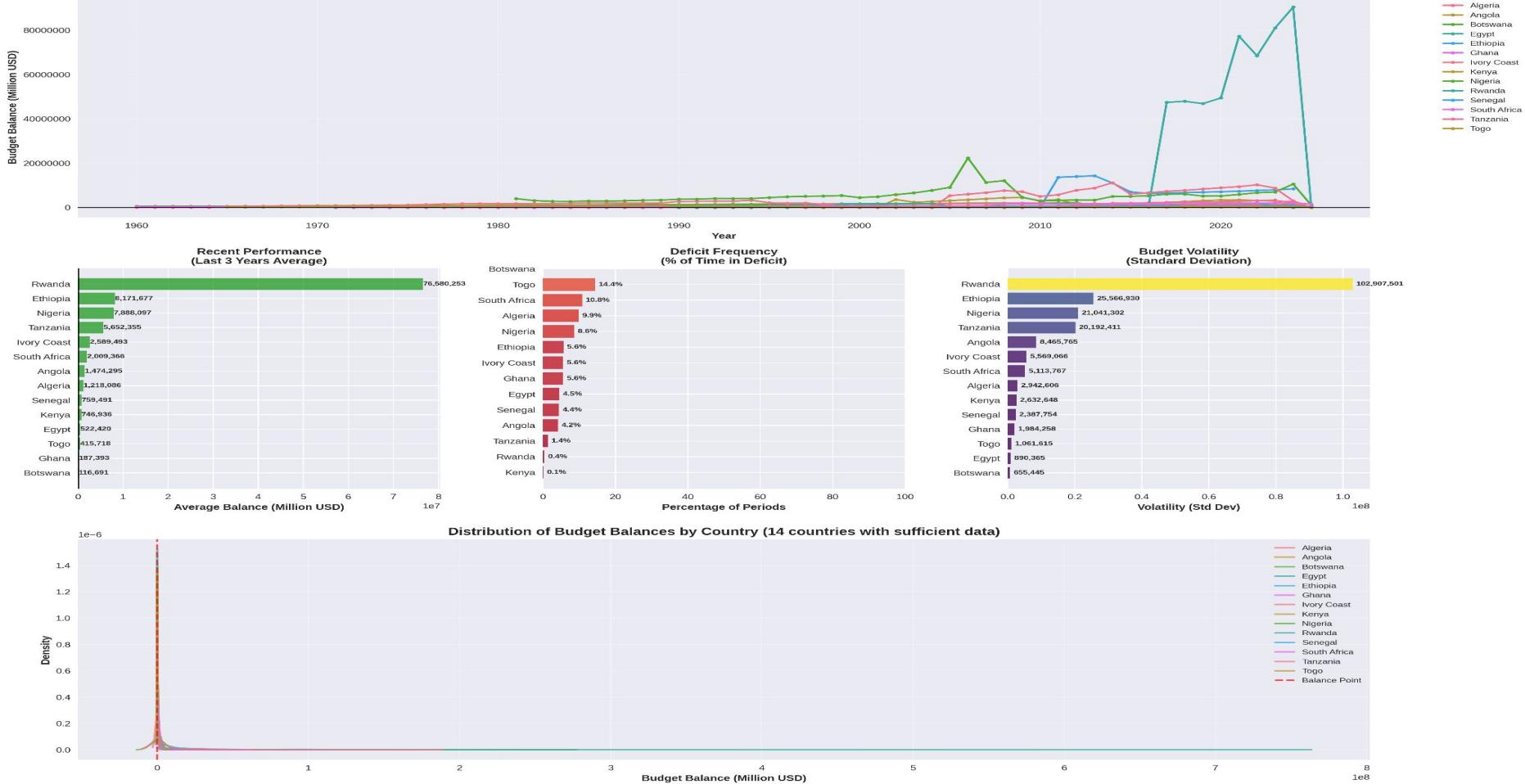
Distribution of Budget Balances by Country (14 countries with sufficient data)



Legend:

- Algeria
- Angola
- Botswana
- Egypt
- Ethiopia
- Ghana
- Ivory Coast
- Kenya
- Nigeria
- Rwanda
- Senegal
- South Africa
- Tanzania
- Togo

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



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