

30538 Final Project: Rising Interest, Rising Burden: Debt Service Challenges in Africa

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Research Question:

- What are the potential macroeconomic factors that might disproportionately affect African countries, and what policy measures can mitigate these challenges?
- This study examines the factors contributing to the high debt-servicing burdens faced by African nations and evaluates potential policy solutions, such as interest rate reductions and debt restructuring, to address these challenges.

Approach and codings:

First, we check the external debt in African countries to see the current situation with static plots, and then compare interest-to-GNI for African data with other representative emerging and Non-African (all countries except for Africa) markets to see the potential factors that hinder the African financing by with a weighted average of interest-to-GNI, normalizing the different credit risks.

We retrieve from the International Debt Statistics and create a chart comparing annual borrowing (Disbursements) with annual repayments of principal and Interest Payment. Additionally, we calculated Net Borrowing (funds available for development).

We check the overall trend across markets with a shiny app. Due to technical issues between Altair and shiny, we used Matplotlib. A checkbox enables you to select multiple markets. Alphabetic credit ratings were converted to numbers, decreasing from better A to lower C. A switch is also created to compare each country's data as a supplement for static plots.

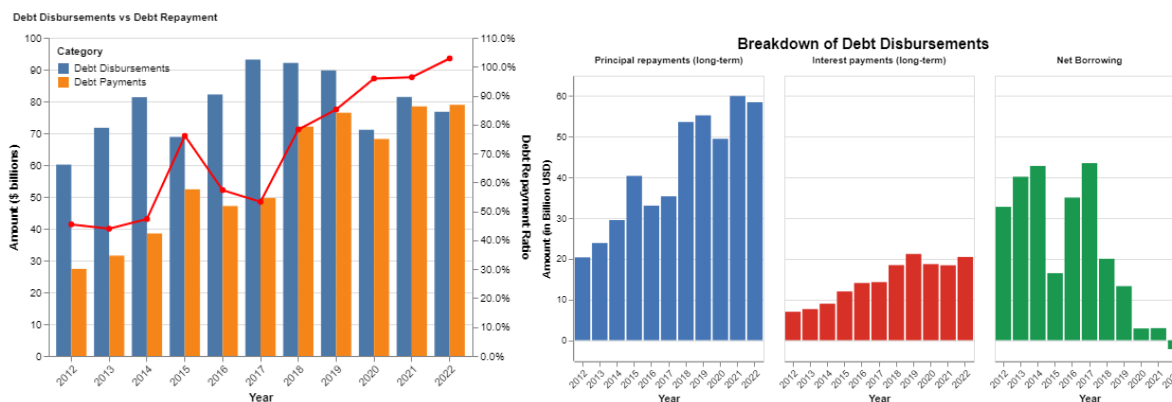
Data Sources:

- World Bank Databank (World Development Indicators): Data on debt-to-GNI ratios, interest payments.
- Credit Rating Data: Average credit ratings provided by major credit rating agencies. These ratings were quantified and obtained through internal access at the UNDP.
- International Debt Statistics: Supplementary data on external debt and repayment.

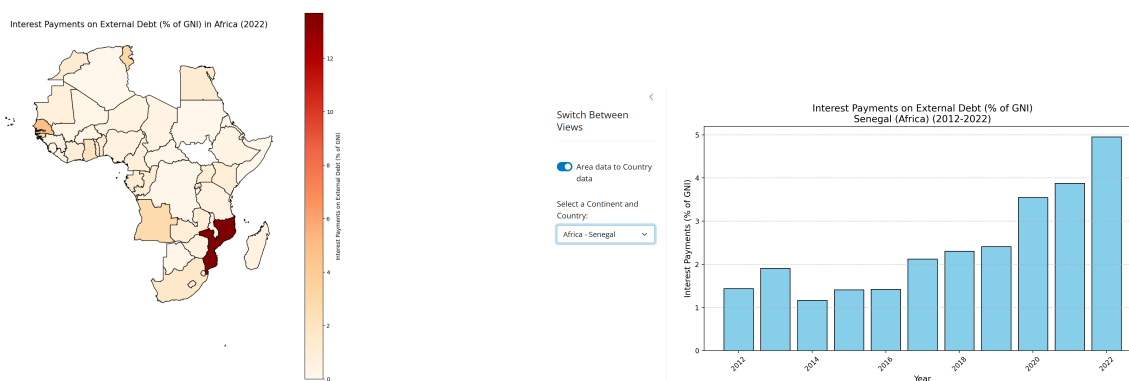
Findings:

1. Static Plot

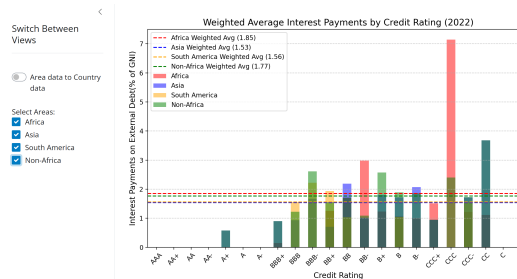
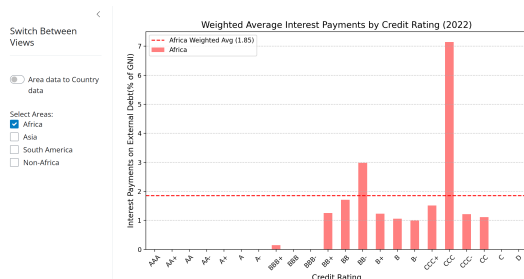
- Debt Landscape (2012-2022): Annual borrowing in Africa (~\$80 billion) is largely offset by repayments, limiting net financing for development.



- Interest Payments on External Debt (2022): Mozambique (13.9%) and Senegal (4.9%) have experienced the heaviest burdens. Namibia and Libya lack data and are excluded from the plot to avoid the impact of imputing missing values.



- Data wrangling to create csv file for plotting head map and creating app
2. Dynamic Analysis (Shiny App): See py.file in shiny-app
- Weighted Average Interest Rates: African countries face a higher average (1.85%) compared to Asian countries (1.53%).
 - Credit Rating Comparison: Within the same credit ratings, African countries consistently pay higher interest rates. For instance, BB-rated African countries face rates near 3%, compared to just over 1% for non-African peers.



Policy Recommendations:

- Rate Reductions: Alleviate financial burdens and allow reallocation of funds toward infrastructure and economic development.
- Targeted Support: IOs should prioritize Africa in their debt relief initiatives.

Challenges:

- Data Availability: Inconsistent macro economic data across African countries.
- Analytical Complexity: Difficulty in isolating the effects of external factors, such as commodity price fluctuations and geopolitical issues.

Future Research:

- Investigate the relationship between governance indicators and debt-servicing outcomes.
- Conduct case studies on successful debt restructuring in Africa.
- Expand the analysis to include other regions for comparative insights.
- Econometric regression: control other macro-economic factors such as GNI and credit rating to focus on the impact of interest rate.
- Check the negative effect of a reduction/alleviation of interest payment to prevent the moral hazard in African countries and protect the lenders from the risk of loan default.