Portfolio Risk Analysis Report

Introduction:

In this report, we analyze the time series data of an equity portfolio to identify the key drivers of portfolio risk, performance, and ESG trends. The analysis includes visualizations of ESG scores by sector, risk contributions from assets and sectors, and correlations between ESG factors and portfolio risk measures.

2. Methodology

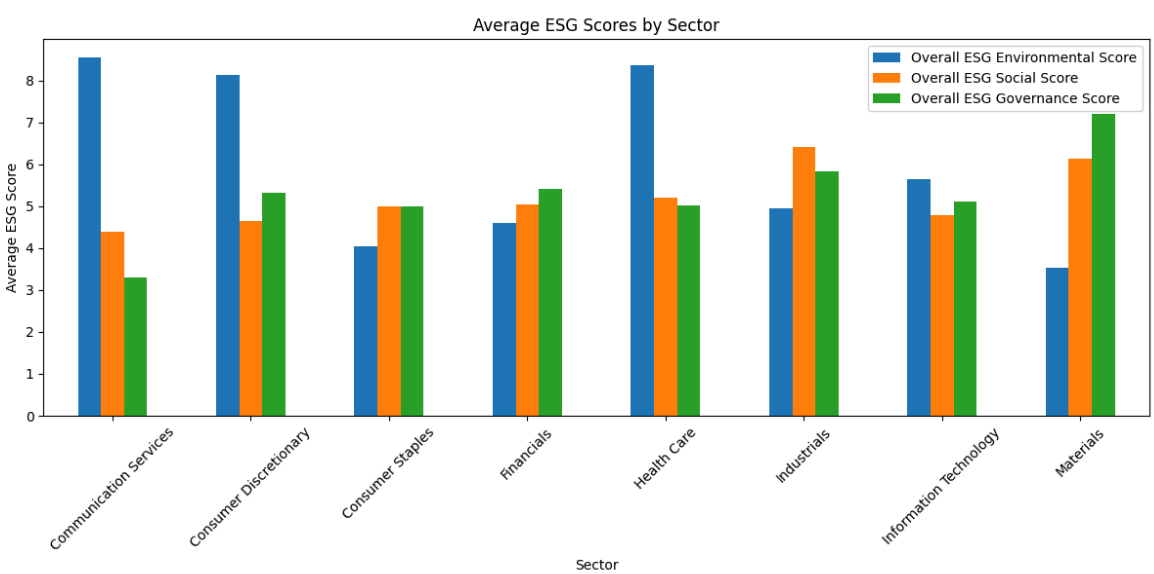
I utilized several metrics in my analysis, including:

- **Total Risk**: Measures the volatility and overall risk of individual assets and sectors.
- **Tracking Error**: Captures the deviation of asset returns from the benchmark, used to assess active risk.
- **ESG Scores**: Environmental, Social, and Governance scores that reflect sustainability metrics of the assets.
- **Beta**: Measures the sensitivity of an asset to benchmark returns, providing insight into relative risk.

3. Key Findings and Visual Insights

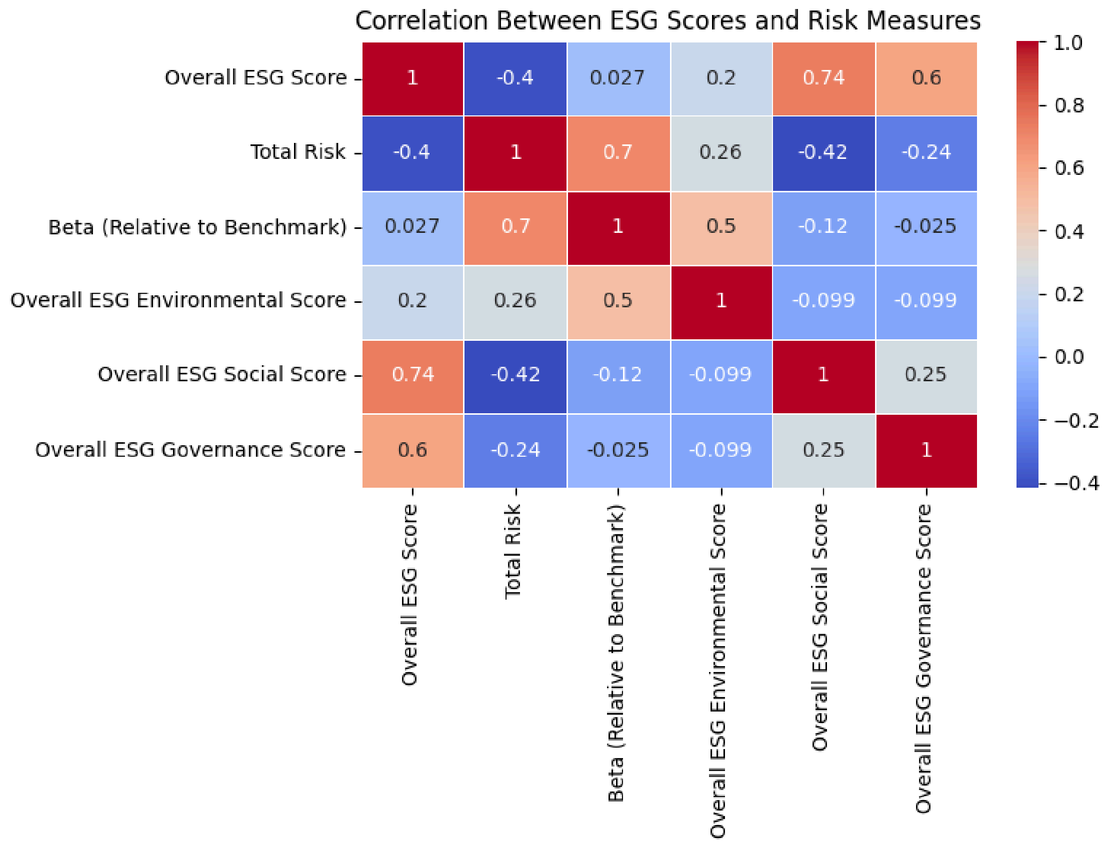
Average ESG Scores by Sector

The bar chart displays the average ESG scores (Environmental, Social, Governance) across different sectors. It highlights variations in sustainability performance, with some sectors showing stronger environmental or governance practices than others.



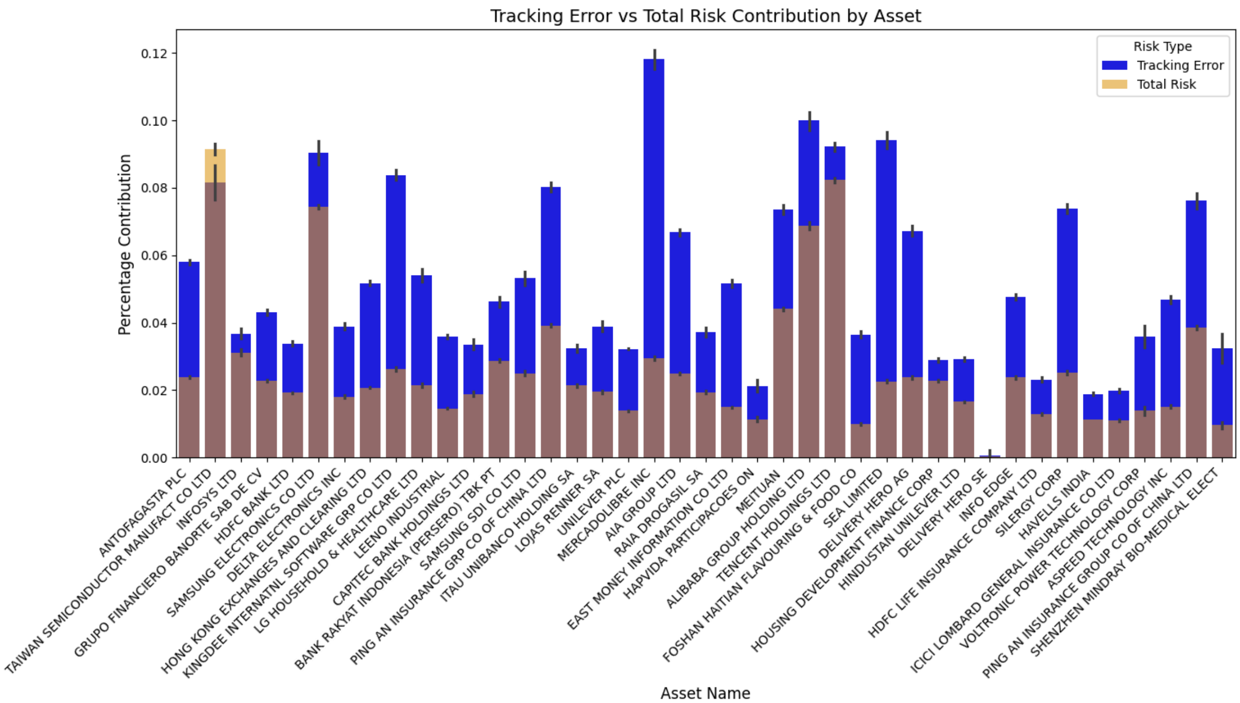
Correlation Between ESG Scores and Risk Measures

The heatmap shows the correlation between ESG scores and risk measures, highlighting relationships with overall risk and beta. It helps identify how ESG factors are associated with different risk levels.



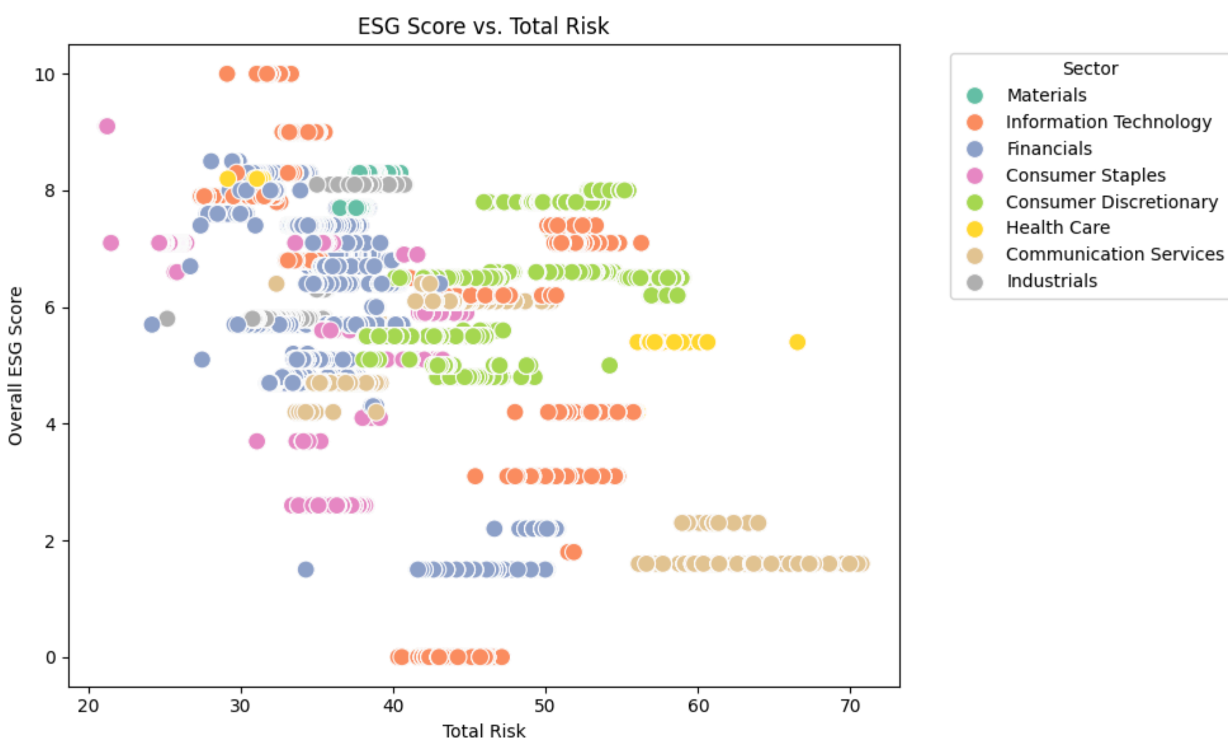
Tracking Error vs Total Risk Contribution by Asset

This bar plot compares the percentage contribution of Tracking Error and Total Risk across different assets. It helps visualize how each asset contributes to the overall tracking error and total risk in the portfolio.



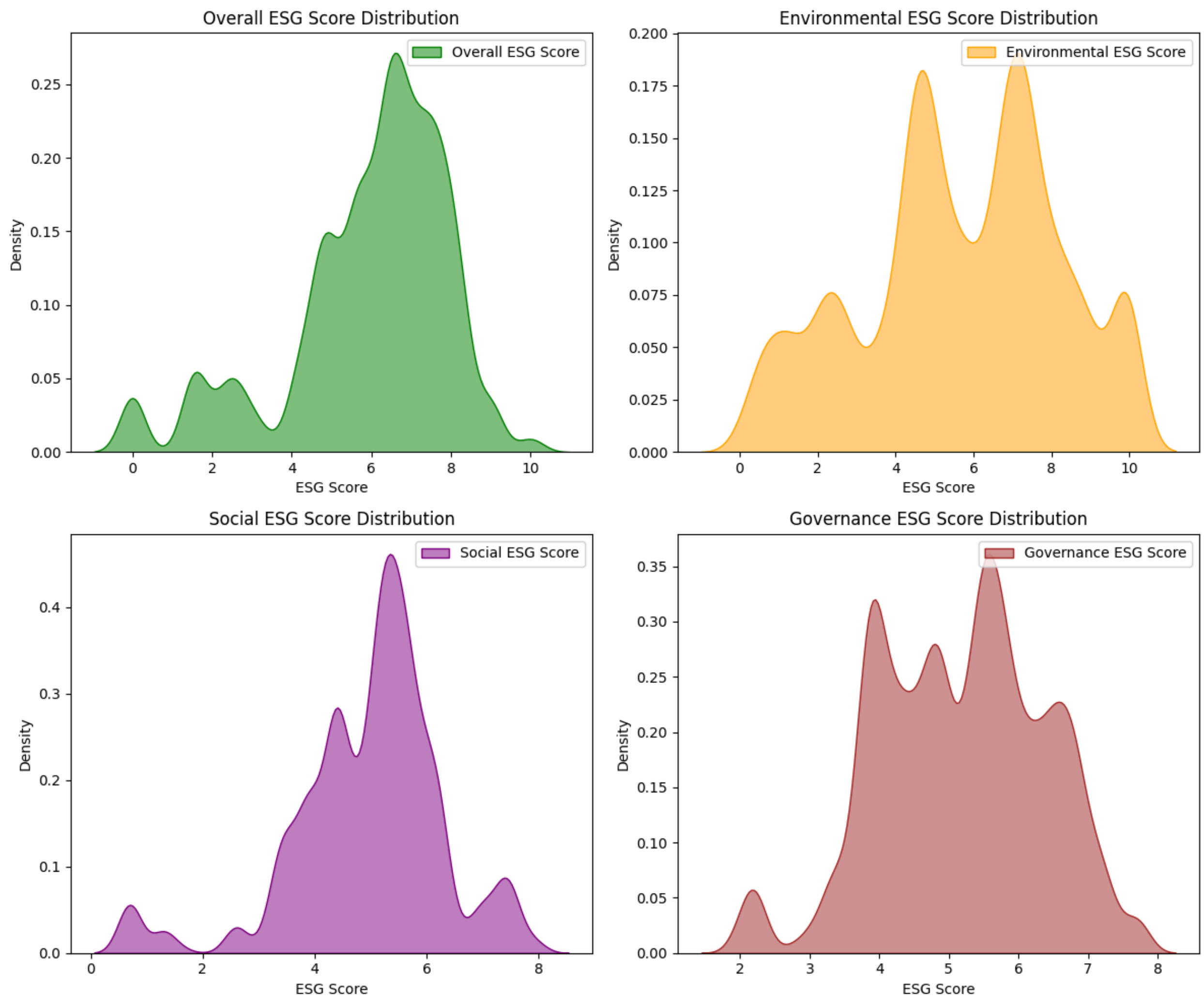
ESG Score vs. Total Risk

The scatter plot shows the relationship between Total Risk and Overall ESG Score, with sectors represented by different colors. It visually indicates how ESG scores vary across sectors relative to their total risk levels.



ESG Score Distributions

This grid of KDE plots shows the distributions of different ESG scores across the dataset, including Overall ESG, Environmental, Social, and Governance scores. The plots provide insights into the density and spread of each score category.



Geographical Risk Contribution

This choropleth map visualizes the percentage contribution of Total Risk by country, using color intensity to highlight areas with higher risk contributions. It helps identify geographical regions with significant risk exposure in the portfolio

Weighted Average ESG Score Over Time

This line plot visualizes the trend of the weighted average ESG score over time. It shows how the ESG score, adjusted for asset weights, changes across different dates. The plot helps track the portfolio's sustainability performance over time