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**Subject:** Applied Data Science 1

**Date:** 14-12-2023

**Data Source:** <https://data.worldbank.org/>

**Repository Link:** [https://github.com/nazakatawan/Assignment2\\_ADS1.git](https://github.com/nazakatawan/Assignment2_ADS1.git)

### Exploring Statistics and Trends in World Bank Data

**Abstract** - This report delves into the economic and environmental landscapes of select countries, focusing on the agricultural, forestry, and fishing sectors, urban population growth and forest area, analysis of CO2 emissions and GDP growth, GDP growth, and electricity production. The data spans several decades, offering a comprehensive view of the changes in these key indicators.

#### Analysis of Agriculture, Forestry, and Fishing Contribution to GDP (%):

The grouped bar plot illustrates the percentage contribution of the agriculture, forestry, and fishing sectors to the GDP of various countries from 1964 to 2022. Notable trends include a decline in the contribution of these sectors to Mexico's GDP over the years, contrasting with the steady increase in Indonesia and Argentina. The analysis indicates shifting economic structures and emphasizes the diversified nature of global economies.

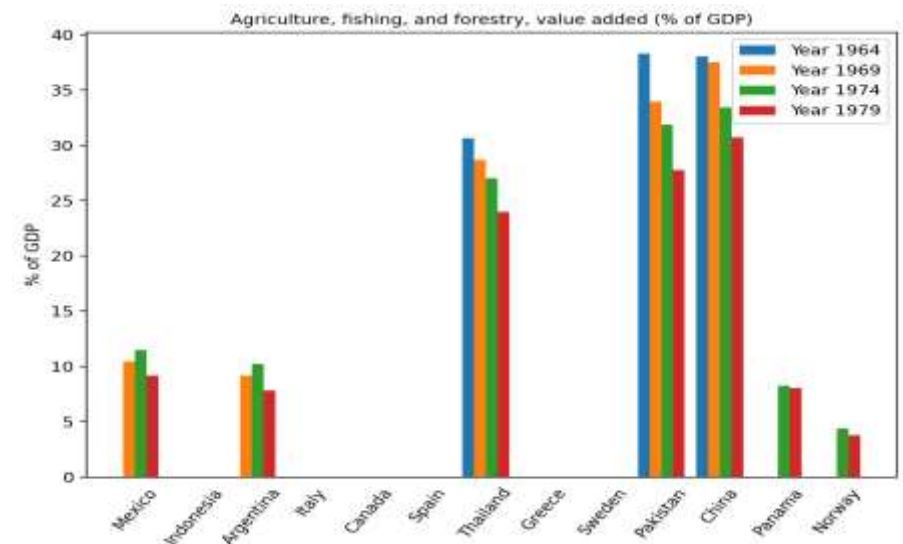


Figure 1: Analysis of Agriculture, Forestry, and Fishing Contribution to GDP (%)

## Analysis of GDP Growth Selected Countries

This analysis depicts the annual GDP growth rates of selected countries from 1964 to 2022. Mexico, Indonesia, and Argentina have experienced fluctuating growth, reflecting the dynamic nature of their economies. Notably, China has consistently maintained high GDP growth rates, underscoring its economic resilience. The analysis provides insights into the economic dynamics and relative performance of these nations over the years.

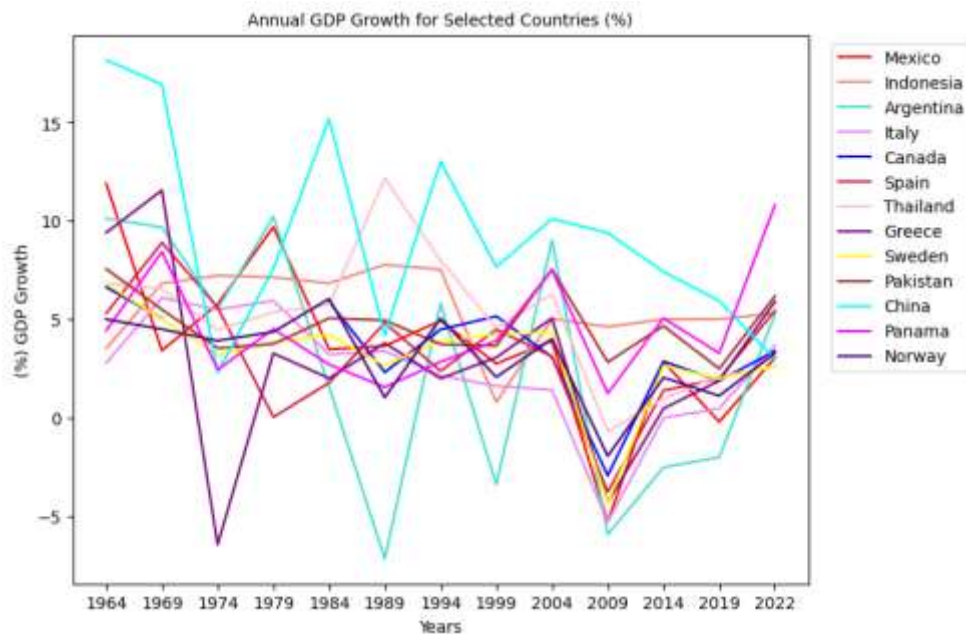


Figure 2: GDP Growth of Selected Economies

## Correlation Matrix Analysis (Greece):

The correlation matrix for Greece explores the relationships between urban population growth, electricity production, agriculture, forestry, and fishing sectors, CO2 emissions, forest area, and GDP annual growth.

fishing sectors, CO2 emissions, forest area, and GDP annual growth. A positive correlation between urban population growth and CO2 emissions is observed, emphasizing the environmental implications of urbanization. The negative correlation between forest area and CO2 emissions underscores the importance of maintaining green spaces for ecological balance.

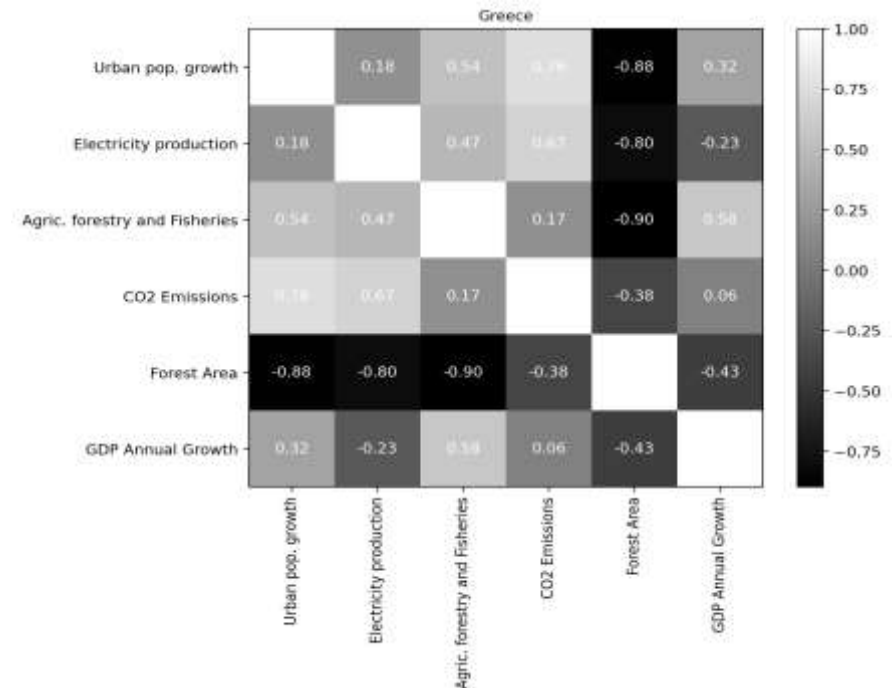


Figure 3: Analysis of Key Indicators for Greece

## Correlation Matrix Analysis (Sweden):

The correlation matrix for Sweden explores the relationships between urban population growth, electricity production, agriculture, forestry, and fishing sectors, CO2 emissions, forest area, and GDP annual growth. Sweden's strong negative correlation between forest area and CO2 emissions highlights the country's commitment to environmental

sustainability. The positive correlation between GDP growth and forest area suggests that economic development can coexist with responsible environmental practices.

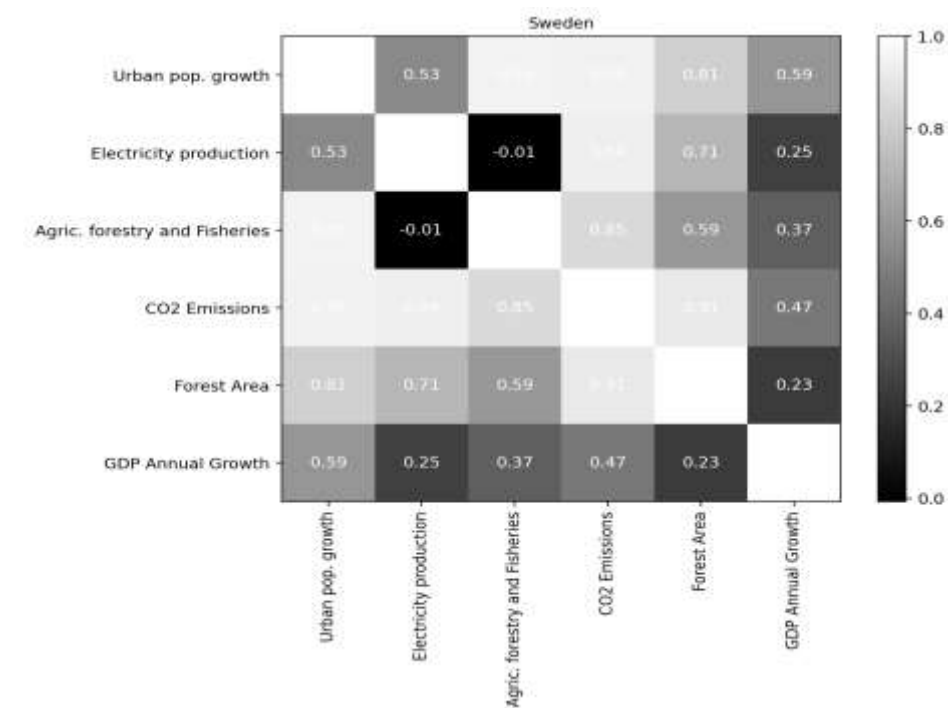


Figure 4: Analysis of Key Indicators for Sweden

Electricity Production Trends:

This analysis plot for electricity production showcases the trends from 1964 to 2022 for selected countries. China exhibits a substantial increase in electricity production, aligning with its rapid economic growth. Spain and Norway showcase relatively stable trends, emphasizing the importance of consistent and sustainable energy practices. The fluctuating trends in Mexico and Indonesia reflect the challenges these nations face in meeting growing energy demands. This analysis underscores the diverse

approaches countries take in addressing their energy needs and the potential environmental impacts.

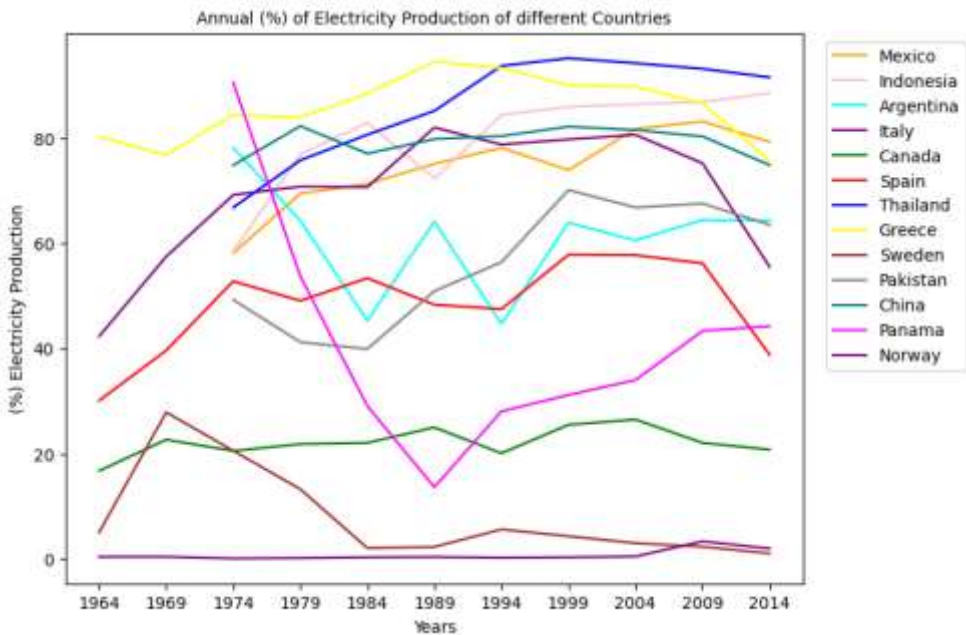


Figure 5: Electricity Production Insights

Analysis for Arable Land and Forest Area:

This analysis plot for arable land and forest area illustrates the changes in land use patterns for selected countries. Notably, Sweden maintains a balance between forest area and arable land, reflecting sustainable land management practices. Argentina exhibits a gradual decline in arable land, possibly indicating the expansion of other land uses. This analysis provides insights into how countries manage their land resources, balancing agricultural needs with environmental conservation.

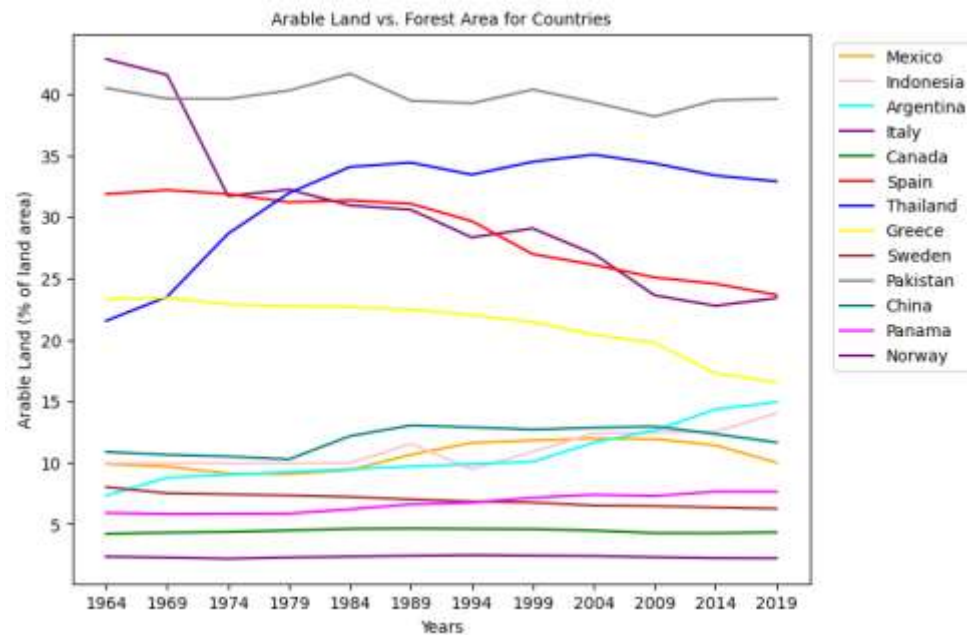


Figure 6: Analysis for Arable Land and Forest Area by Countries

### Urban Population Growth and Forest Area

In this analysis our focus is on urban population growth and forest area, a grouped bar plot highlighted evolving trends from 1964 to 2019. Correlation analysis revealed a robust negative association (correlation coefficient  $\approx -0.877$ ) between urban population growth and forest area. This points to a significant decrease in forest area as the urban population expands. These insights offer a succinct understanding of the intricate relationship between economic sectors, environmental sustainability, and demographic changes in Greece.

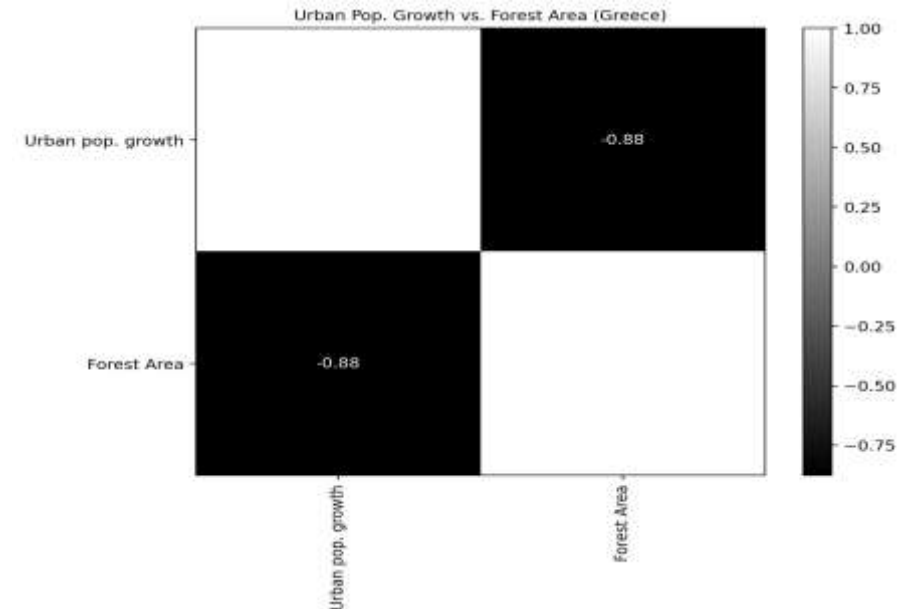


Figure 7: Urban Population Growth and Forest Area

### Analysis of CO2 Emissions and GDP Growth

The exploration of CO2 emissions and GDP growth in Greece, depicted through a grouped bar plot of Agriculture, Forestry, and Fishing as a percentage of GDP, unravelled nuanced trends from 1964 to 1979. The fluctuations in these sectors over the selected years hinted at dynamic economic shifts. Further correlation analysis indicated a weak positive association (correlation coefficient  $\approx 0.059$ ) between CO2 emissions and GDP growth. This suggests that while there is some alignment, other influential factors impact Greece's economic and environmental dynamics.

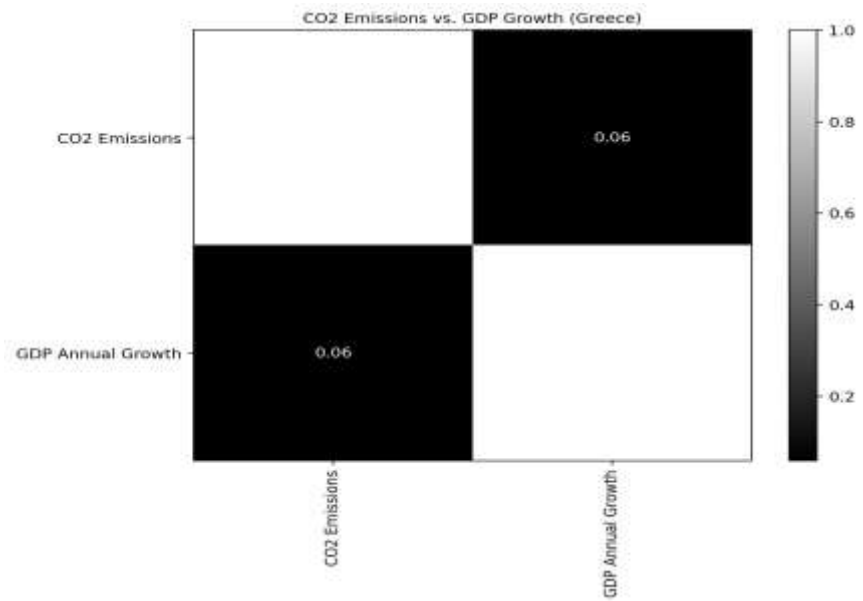


Figure 8: CO2 Emissions and GDP Growth