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WORLD ECONOMIC CLASSIFICATION

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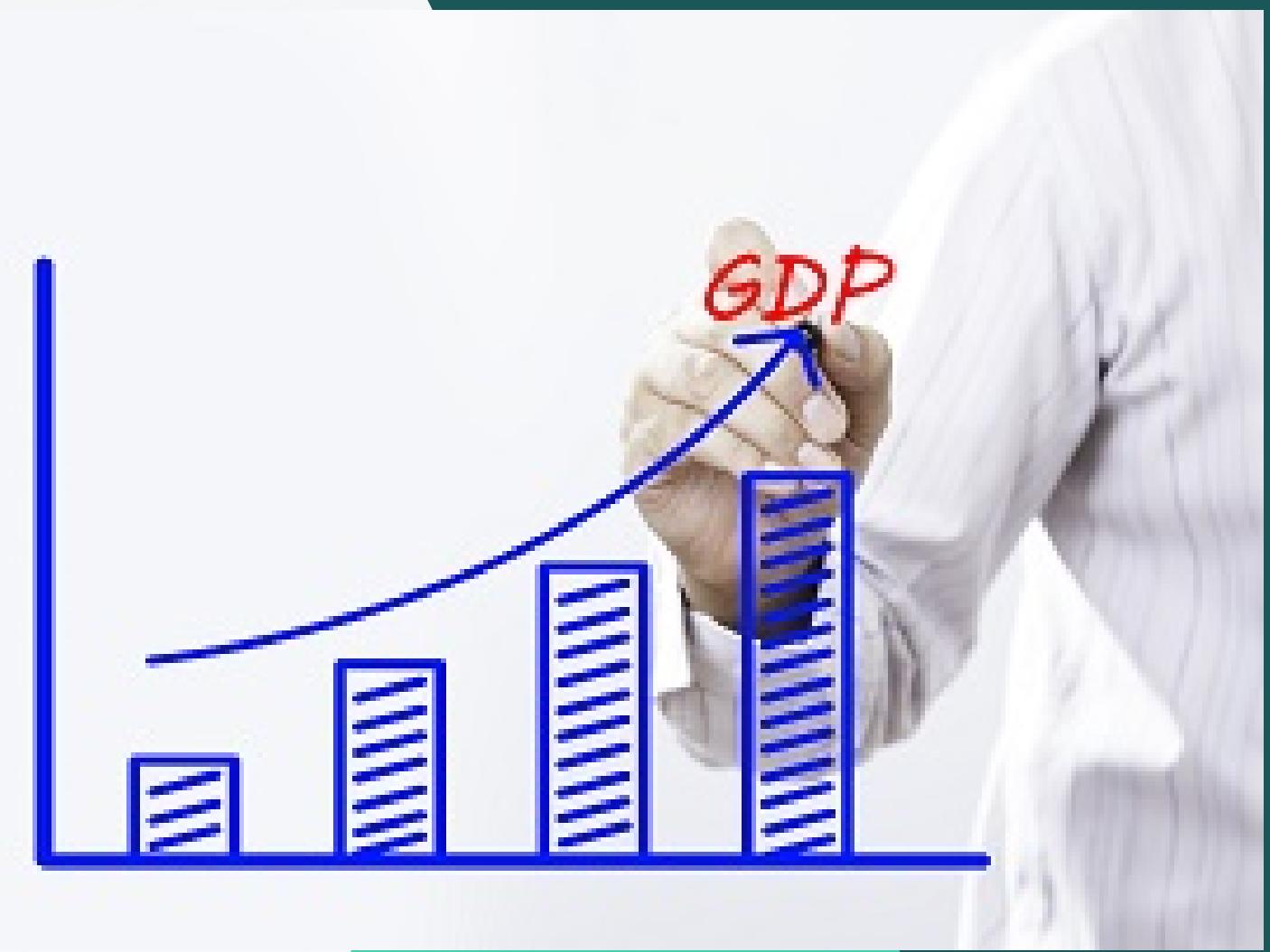
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PROJECT DESCRIPTION

The objective of this project is to apply the knowledge and skills we have acquired over the past months:

- Selecting appropriate datasets for analysis.
- Cleaning and wrangling to prepare the data for analysis and visualization.
- Analyzing the cleaned data to extract insights.
- Predicting future GDPPC for selected countries.



DATASETS

01. World Economic Classifications

- Countries Wealth Rank
- UN Classification 2014
- IMF Classification 2023
- EU, G7
- Fuel Exporting Countries



02. GDPPC IMF

- GDPPC per country from 1980 to 2023
- GDPPC predictions from 2025 to 2029



03. GDP WB

- GDP per country from 1990 to 2023

04. Exchange Rate

- NASDAQ daily exchange rate from 1993 to 2024

INTRODUCTION AND INITIAL HYPOTESIS

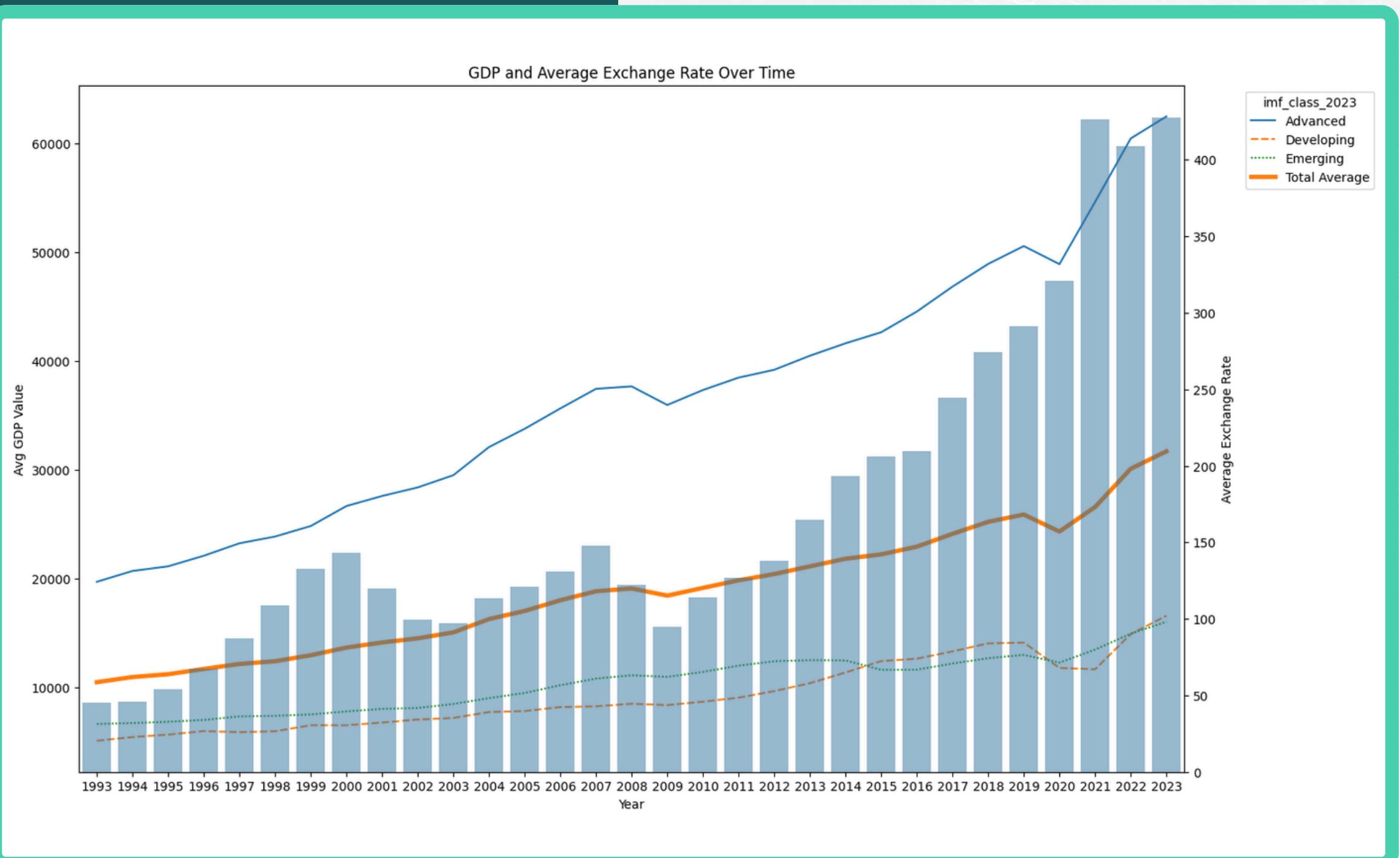
The objective of this project is to use statistical analysis to identify which of the following features most significantly influence Gross Domestic Product (GDP):

- Exchange Rate
- Fuel Export Status
- EU Membership
- G7 Membership

Based on the insights gained from this analysis, we will select the most suitable prediction method to forecast GDP per capita (GDPPC) for the next five years.



DEFINITIONS



GDP per capita is the total economic output of a country divided by its population

- Reflects the average income of the country's residents.

Exchange rate is the value of one country's currency in terms of another currency.

- It influences the cost of imports and exports, foreign investments
- Reflects the overall economic stability of a country.

CLEANING PROCESS

- **Column Type**

Applying the correct type for each column

1

2

- **Adding ISO Codes**

Adding columns with ISO2 and ISO3 codes to facilitate future plotting.

- **Data Wrangling**

Converting raw data into a usable form by combining multiple datasets

3

4

- **Missing Values**

Estimating the NaN values based on other values in the database (interpolation)

5

- **Exporting Clean Data**

Once the data is ready, exporting it to a new folder for further analysis



BASIC EDA

This analysis compares country classifications by the UN in 2014 and the IMF in 2023 to observe changes.

The countries that transitioned to developed status are:

- Singapore
- United Arab Emirates
- Israel
- Malaysia
- Indonesia

CORRELATIONS



01. Exchange Rate

GDP directly affects currency exchange rates:

- When GDP rises, a country's currency value increases.
- Investors use GDP to guide their decisions.
- Central banks consider GDP when adjusting interest rates.



02. Fuel Export Status

Countries rich in petroleum resources underperform economically:

- Reduced economic stability
- More frequent civil wars



03. EU Membership

Countries in the European Union generally have a higher GDPPC than countries not in the European Union



04. G7 Membership

G7 countries are slightly more productive when factoring in GDPPC

GDPPC EVOLUTION OVER TIME

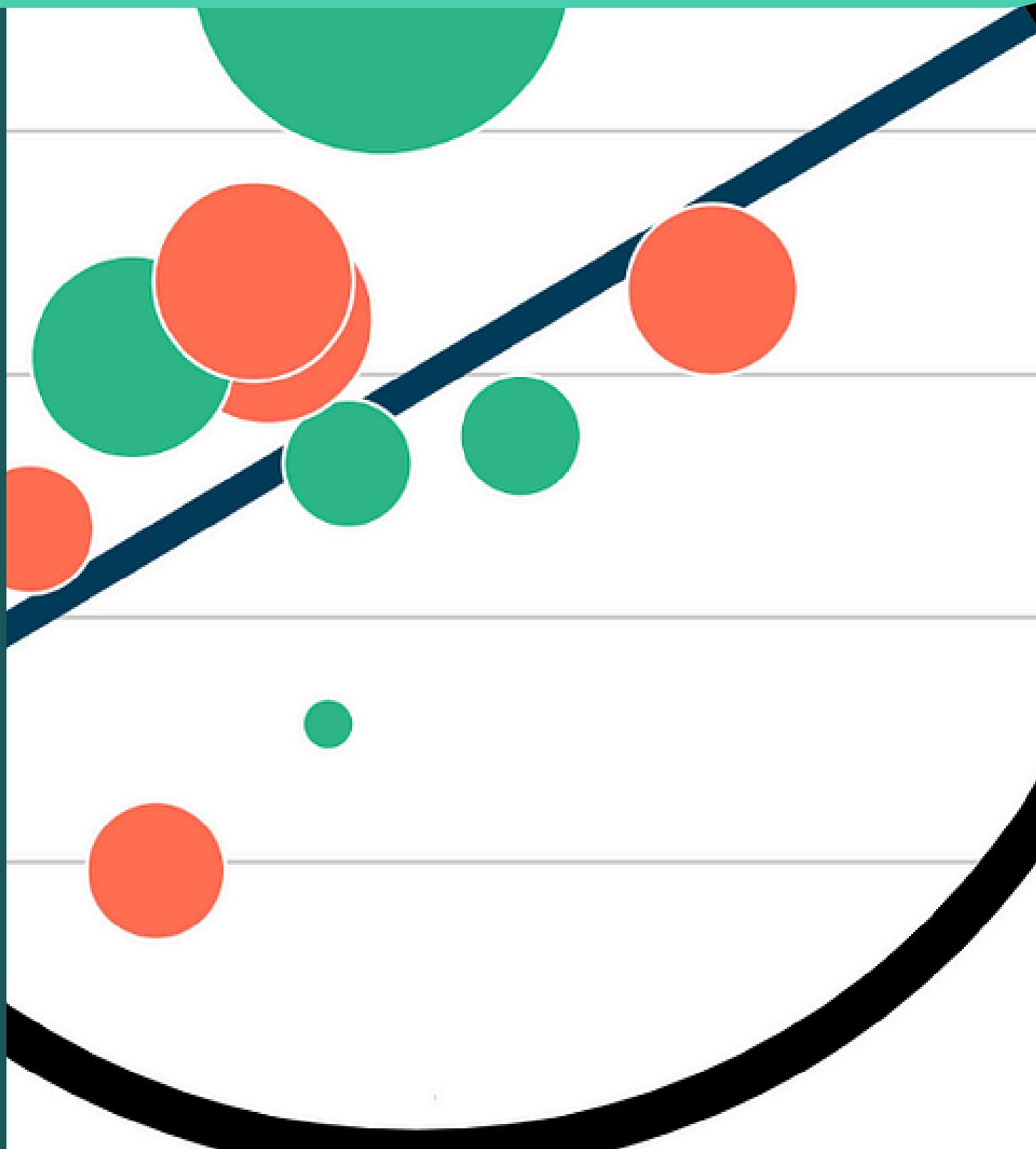
This plot illustrates the evolution of GDP per Capita (GDPPC) from 1993 to 2023. The animated visualization highlights significant increases in GDPPC across the EU, USA, and Australia. Additionally, upon closer inspection, notable outliers become apparent, including:

- Luxembourg
- Ireland
- Qatar
- Singapore
- Switzerland

These countries exhibit exceptional GDP per Capita values, distinguishing them from the broader trends observed globally.



OUTLIERS



- 1
- 2
- 3
- 4
- 5

Luxembourg:

- Financial Sector
- High Productivity
- Small Population

Singapore:

- Strategic Location
- Advanced Economy
- Efficient Government Policies

Ireland:

- Foreign Direct Investment: Favorable tax policies
- Tech and Pharma Hub
- Skilled Workforce

Switzerland:

- Strong Financial Sector
- Economic and Political Stability
- High Value-Added Industries

Qatar:

- Natural Resources: Vast reserves of natural gas and oil
- Small Population
- Investment in Infrastructure

PREDICTION METHOD

- Given that our data is a time series, we have chosen ARIMA for prediction.
- To evaluate our model, we will use the Time Series Split method, ensuring robust testing.
- The predicted GDP per Capita (GDPPC) from our model will be compared with the projections provided by the European Central Bank.

ARIMA

- Effectively capture the patterns and trends in time series
- Predicts time series data using past values and errors.
- Uses relationships with past values

Time Series Split

- Tests the effectiveness of our model
- Maintains Temporal Order which is crucial for time series analysis.
- Simulates Real-world Scenarios, training on past data to predict future outcomes.

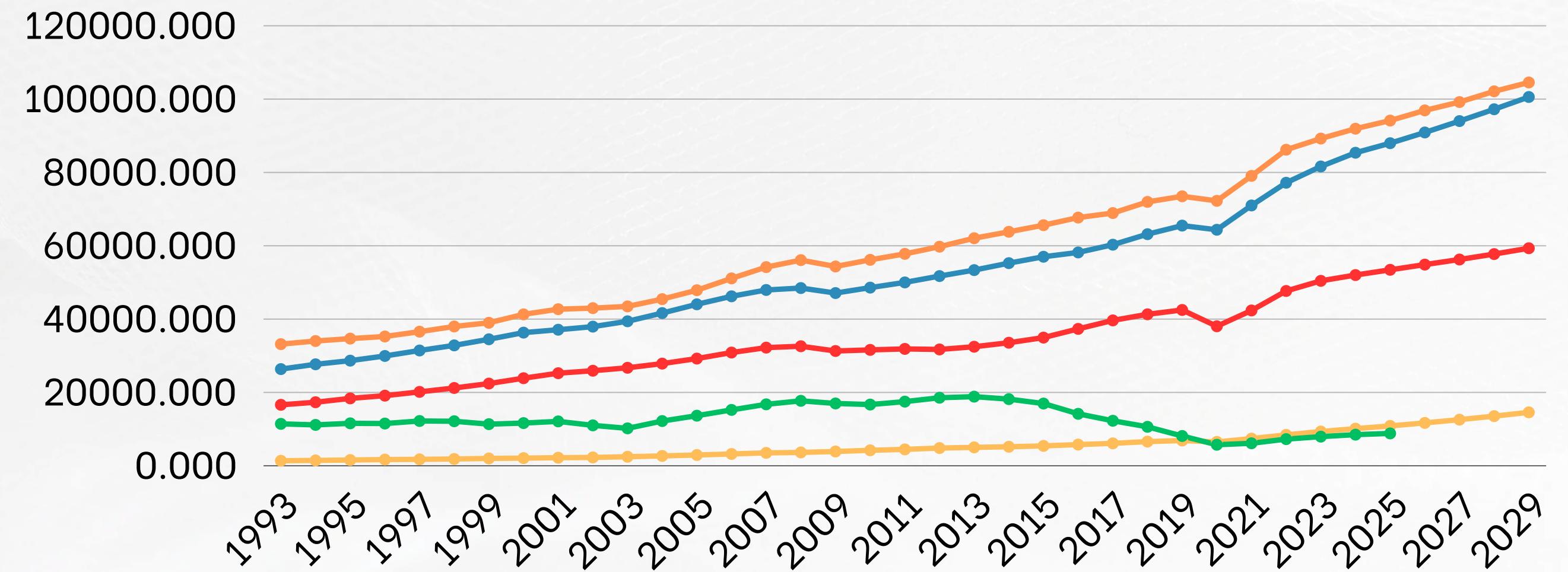
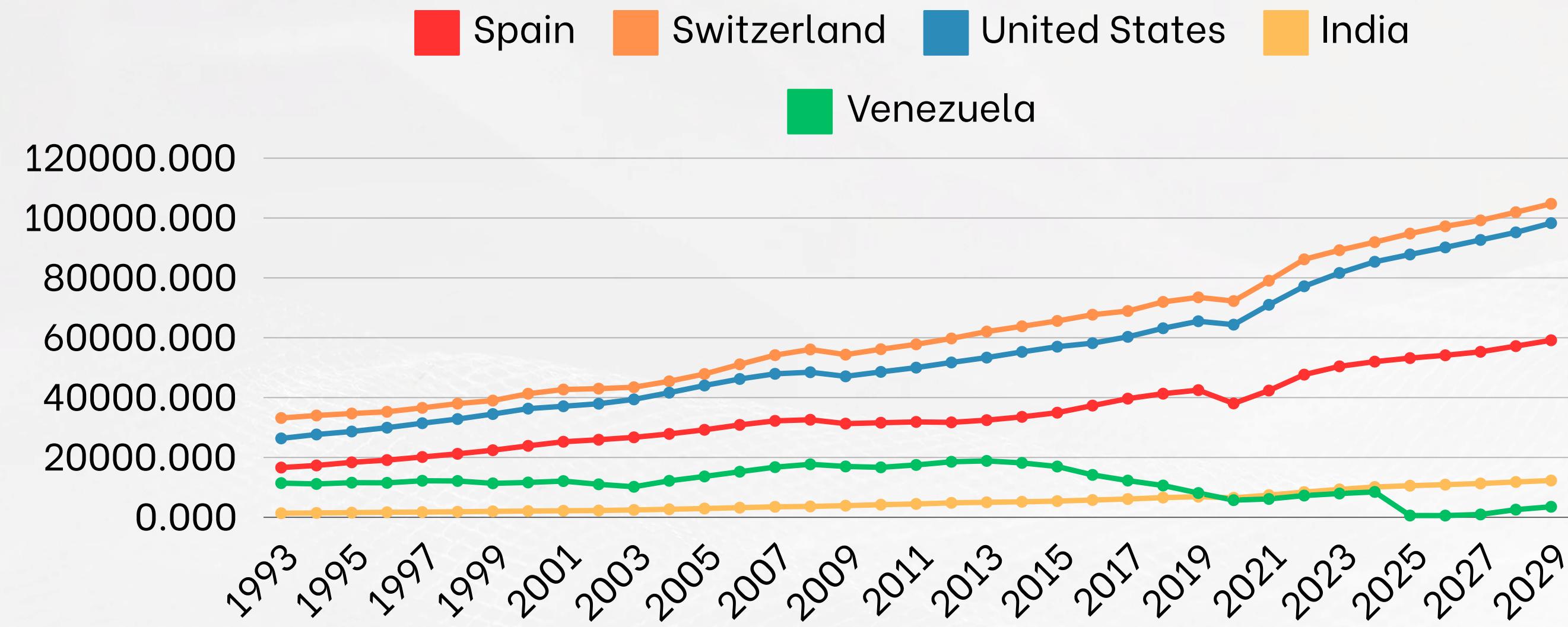
Comparison

- Our results will be compared with the BCE forecast for the next 5 years

PREDICTIONS COMPARISON

By contrasting our model's predictions with the ECB's, we observe its accuracy:

- Our model tends to forecast more pessimistically for nations with lower GDPPC.
- Conversely, it projects more optimistically for countries with higher GDPPC.





ANALYSIS CONCLUSION

- Wealth distribution across countries has remained largely stagnant over the past 30 years.
- Economically, fuel-exporting nations tend to underperform.
- Global events such as financial crises and pandemics significantly impact GDP and exchange rates negatively.

A graphic of a human brain in shades of orange and yellow, set against a background of blue mechanical gears and a small teal circle containing a person icon with three stars above it. A blue line graph is overlaid on the brain, showing an upward trend from left to right.

PREDICTION CONCLUSION

- Economies anticipate GDP rebound post-COVID-19, driven by recovery efforts.
- Advancements in technology, like digital services and renewable energy, fuel GDP growth.
- GDP forecasts are contingent on global conditions and policy dynamics.

THANK YOU



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