Global GDP Trends Dashboard – SQL Server & Power BI Project

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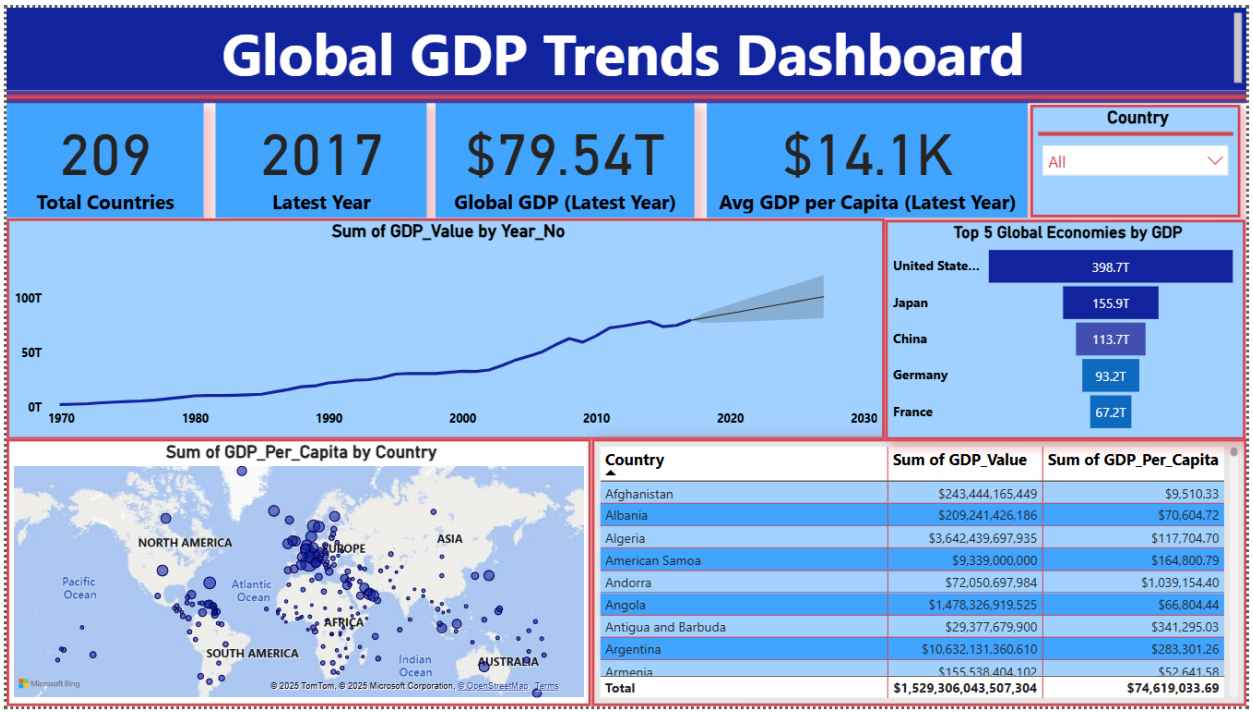

1- Project Overview

I built this project to practice and demonstrate how raw economic data can be transformed into a clean, interactive dashboard using SQL Server and Power BI, similar to how data flows in real business environments. The focus was not just visualization, but building a proper data pipeline from source to reporting.

2- Data & Problem

The dataset contains global GDP and GDP per capita values by country and year. The raw file had several real-world issues, including:

- Commas inside text fields
- Mixed data types
- Large volume of rows
- Fields not ready for direct reporting

Instead of fixing this in Excel or Power BI, I handled all cleaning and preparation in SQL Server, which is how this would normally be done in production.

3- Data Pipeline & Architecture

I designed the pipeline with a clear separation between raw data and reporting logic:

- **Raw staging table** in SQL Server to load the CSV file
- Used proper CSV parsing to handle quoted fields and encoding issues
- Converted numeric fields safely using SQL logic to avoid refresh failures
- Created a **SQL view** as a clean reporting layer for Power BI
- Built a **stored procedure** to reload data consistently
- Scheduled the refresh using **SQL Server Agent**

Power BI connects only to the SQL view, not the raw table, which keeps the report stable and easy to maintain.

4- Dashboard Features

The Power BI dashboard provides both high-level KPIs and detailed analysis:

a. Key KPIs

- Total number of countries
- Latest year available in the dataset
- Global GDP (latest year)
- Average GDP per capita
- Top GDP country

b. Visual Analysis

- Line chart showing global GDP trends over time
- Top economies ranked by GDP
- Interactive country and year slicers

- Scatter plot comparing GDP vs GDP per capita
- World map highlighting GDP per capita distribution
- Detailed table for validation and drill-down

All visuals are fully interactive and respond to filters.

5- Automation & Refresh

The data refresh process is automated on the SQL Server side using a stored procedure and scheduled job. Power BI is designed to refresh after the SQL job runs. For now, the dashboard refresh is triggered manually, but the setup is gateway-ready for full automation.

6- Key Insights

- A small number of countries contribute a large share of global GDP
- High GDP does not always mean high GDP per capita
- Economic growth patterns vary significantly across regions and over time

7- Skills Demonstrated

- SQL Server (data loading, cleaning, views, stored procedures, scheduling)
- Power BI (DAX measures, KPIs, interactive visuals)
- Data modeling and pipeline design
- Handling real-world data quality issues
- Business-focused data storytelling

Final Notes

This project reflects how I approach analytics problems: start with messy data, build a reliable backend, and then create clear and useful visuals for decision-making.

Full SQL scripts and project structure are available on GitHub.