

# GDP AND WORLD BANK LOANS ANALYSIS OF SOUTH ASIA

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Project's Github : [https://github.com/prayag-pds/data-analysis-projects/tree/main/world\\_bank\\_gdp\\_sql\\_py](https://github.com/prayag-pds/data-analysis-projects/tree/main/world_bank_gdp_sql_py)

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## INTRODUCTION-

This project examines the GDP and loans of individual countries. Mainly be focused on 3 countries, i.e. India, Bangladesh and Pakistan. As they were once a single country. Focusing on economic development and crisis sustained over the years after their democracy. Analyzing over 70 years of data up until 2024. It explores the relationship between World Bank's two departments, The International Bank of Reconstruction and Development (IBRD) and The International Development Association (IDA) with the individual GDPs of countries. The report highlights the year over year stats of countries and compares the loans to GDP. This analysis provides insights into the country's financial stability and economic development.

## DATA DESCRIPTION-

Three datasets are used in this project.

1. IBRD Statement of Loans and Guarantees
  - **Source:** [LINK](#)
  - **Time Frame:** 1950-2024
  - **Size:** 9311 Rows & 29 Columns
  - **Variables:** Region, country, borrower, loan status, interest rate, project name, original amount, repaid amount and other currency columns, board approval date and other date columns.
2. IDA Statement of Credits, Grants and Guarantees
  - **Source:** [LINK](#)
  - **Time Frame:** 1950-2024
  - **Size:** 10864 Rows & 27 Columns
  - **Variables:** Region, country, borrower, loan status, interest rate, project name, original amount, repaid amount and other currency columns, board approval date and other date columns.
3. GDP
  - **Source:** [LINK](#)
  - **Time Frame:** 1960-2024
  - **Size:** 266 Rows & 69 Columns
  - **Variables:** Country Name, Country Code, Indicator Name, Indicator Code, Year from 1960 to 2024.

## DATA PREPARATION-

### TOOL- *SQL & Python*

- The GDP dataset is wide, so to make it narrow, i.e. unpivot it I used **Python's** 'pandas.melt()'.

```
id_vars = list(dataset_edit.columns)[0:4]
value_vars = list(dataset_edit.columns)[4:]

dataset_melt = dataset_edit.melt(id_vars=id_vars, value_vars=value_vars, var_name='Year',
value_name='GDP')
```

*Jupyter Notebook* → [LINK](#)

- Initial Dataset: **266 Rows & 69 Columns**

Country Name	Country Code	Indicator Name	Indicator Code	1960	1961	1962
Aruba	ABW	GDP (current US\$)	NY.GDP.MKTP.CD			

- Unpivoted Dataset: **17000+ Rows & 6 Columns**

Country Name	Country Code	Indicator Name	Indicator Code	Year	GDP
India	IND	GDP (current US\$)	NY.GDP.MKTP.CD	1960	\$ 37,02,98,83,876.18
India	IND	GDP (current US\$)	NY.GDP.MKTP.CD	1961	\$ 39,23,24,35,784.04

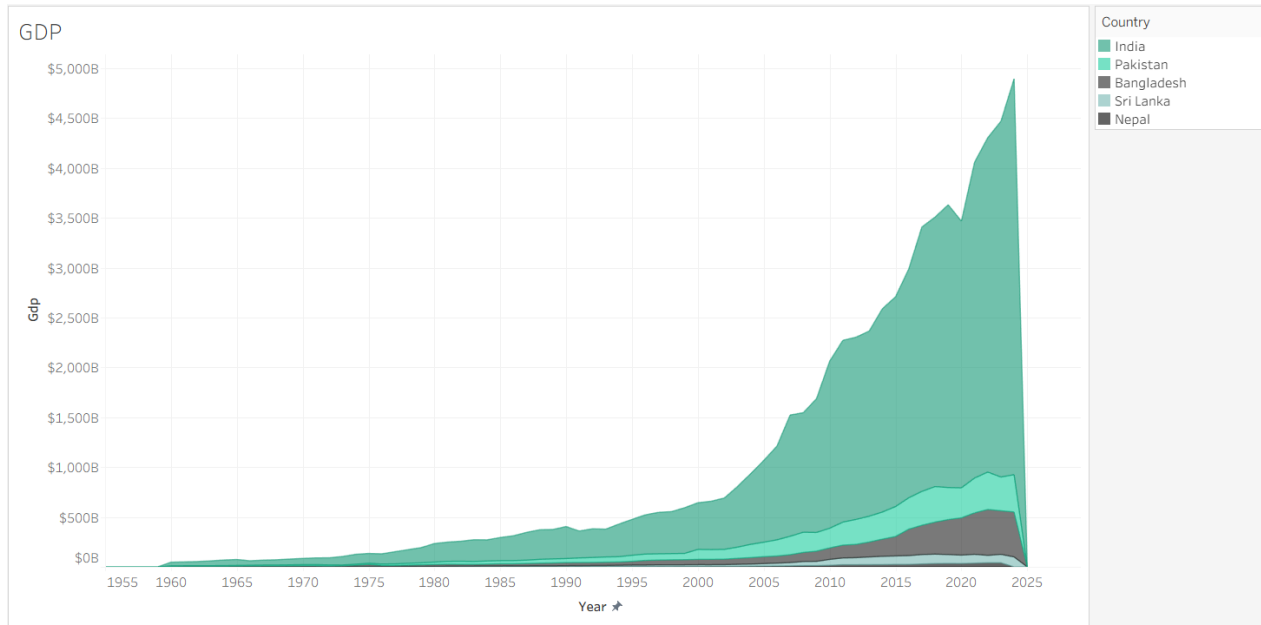
- Created 3 tables - 'ibrd\_loans\_latest', 'ida\_loans\_latest' and 'gdp\_data', then imported the individual csv files to postgresql for further analysis.
- Added 'year' column to both IBRD and IDA tables using **SQL**.

```
ALTER TABLE ibrd_loans_latest
ADD COLUMN year INT
.
UPDATE ibrd_loans_latest
SET YEAR = EXTRACT(YEAR FROM board_approval_date::DATE)
```

*Data Prep SQL Queries* → [LINK](#)

## EXPLORATORY DATA ANALYSIS-

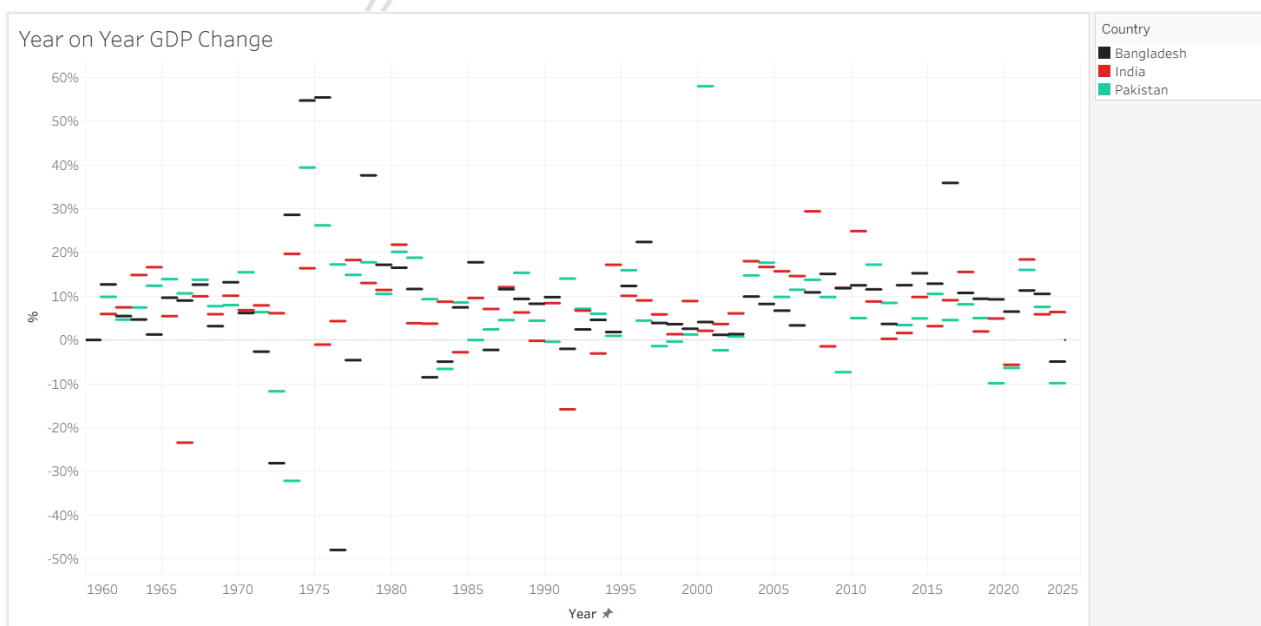
- The eda was done with **SQL**.  
**EDA SQL Queries** → [LINK](#)
- GDP of top 5 countries in South Asia:**



This graph shows the GDP growth compared to other South Asian countries.  
Top 3 countries- India, Bangladesh, Pakistan.

- India**, they are **significantly a larger** economy than all others combined. Visible **dip** could be seen in the year **2020**, from **\$2.836T to \$2.675T** caused by the **pandemic**. Another visible year is **1991**, from **\$321B to \$270B** caused by **devaluation of Rupee**. After the year **2000**, the growth has been very **steady and fast**.
- Bangladesh**, up until 2018, they were the **3<sup>rd</sup>** largest economy in the South Asia but in year **2019** they **overtook Pakistan** by having a GDP of **\$351B** compared to **Pakistan's \$321B**. Thus becoming **2<sup>nd</sup>** largest economy. Having a quite **linear increase**. Even though they were once the **same country**, having **same government** being recognized as **East Pakistan** for Bangladesh and **West Pakistan** for present day Pakistan.
- Pakistan**, at present Pakistan is the **3<sup>rd</sup>** largest economy in South Asia. The economy is increasing, but when compared to India and Bangladesh, Pakistan's **growth is very gradual, saturated**. There is a visible decrease in GDP in the years **2019 and 2020**. Caused by **economic instability, declining foreign reserves, increased taxes, currency devaluation and other political factors**.

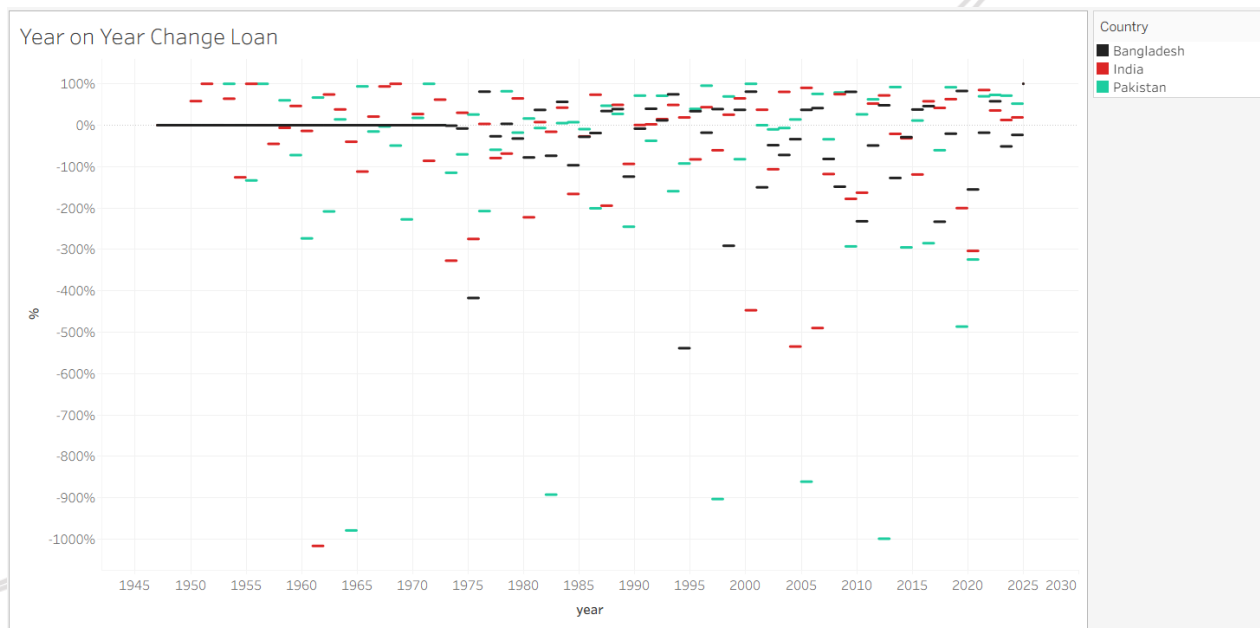
- Rate of Change of GDP every year:**



This graph shows top 3 countries in South Asia.

- **India**, there are 2 big downturns, **1966 & 1991** both largely due to devaluation of rupee. In 1991, the **foreign exchange reserves** became staggeringly **low**, resulting to **devalue Rupee** to increase exports.
- **Bangladesh**, they got their Independence in the year **1971**, that caused **war related destruction**, in return economic collapse. Post that, Economic reforms were made and as the GDP was so low, even a slight positive in the economy made a big difference. To be precise, between **1972 to 1975** GDP increased from **\$6B to \$19B**. In **1976**, after **assassination** of the leader of Bangladesh, **military took over** and economy was struck again, **1974 famine**, lowering to **\$10B**. **Inflation** remained high due to **currency devaluation** and supply deficiencies.
- **Pakistan**, their timeline could be said to be closely related to both India and Bangladesh. In 1971, after **separation of Bangladesh** (formerly known as East Pakistan) from Pakistan (formerly known as West Pakistan), both suffered severe damage. Pakistan, was hit at a larger scale as it **lost its territory, core business sectors, population** and the burden increased as to **accommodate refugees** that came from Bangladesh. Pakistan have had consistent **political instability** through the years. The increase in the year **2000** correlates to the **100% YoY change in loans**. **Economic reforms, debt restructuring and negotiations with lending bodies**.

#### • Year-on-Year World Bank Loan:



Country	due_vs_gdp	total_due	year
Pakistan	16.619%	\$ 56,15,67,56,272.58	2023
India	5.584%	\$ 1,99,22,66,29,408.00	2023
Bangladesh	0.000%	\$ 15,21,600.75	2023

- **India**, in **1961**, there was a very big YoY change of **-1000%**, caused by the govt's decision to launch the **3rd Five Year Plan**, focusing on Economic growth. After negotiations with countries. The **World Bank** and other countries formed a **consortium to support India**, resulting in large **inflow of investments**. As the **foreign exchange reserves** were **low**, the country relied on **external funds and loans**. The rest major loan increases in the **2000s** were attributed to the **infrastructure development** needs. And in **2020**, **COVID-19** caused big havoc resulting in increase.
- **Bangladesh**, their loan started after the independence in the year 1971. Before that they were East Pakistan. In 1975, the country withdrew a large loan as a result of the **1974 famine**, which was caused by **severe floods** that devastated the staple crop, **rice**. The country highly relied on foreign aids. Another big increase happened in the year **1994**, this was taken for **infrastructure development**, a big chunk was for **river related infrastructure**.
- **Pakistan**, there are 5 big loans that were taken. In **1964** they took a big loan, attributing to **16% of its economy**, mainly for the purpose of **highways and railways**. In **1982**, it was for **agriculture** sector. In **1997**, for **banking** and infrastructure development. The years of **2004 & 2005** were devastating for the country, struck with 2 high magnitude **Earthquakes of 5.7 and 7.6** respectively, causing for relief funds. In **2012**, they took some big loans for all their **sectors, infrastructure, education, health**, even for **governance improvement**. The years 2019 & 2020 as discussed in the GDP section, were caused by many factors, closely related to the country's **history of economic instability**. **Sustaining on bailouts and external funds**.

- When comparing the top 3 economies in South Asia, India has the most amount of loans, but Pakistan's loan is 16% of its economy. Bangladesh's loan is close to nothing.
- Link to detailed excel worksheet, containing data about the above discussed.  
*Excel* → [LINK](#)
- Visualizations:  
*Tableau* → [LINK](#)

## CONCLUSION:

The economic trajectories of the top South Asian economies, i.e. India, Bangladesh, and Pakistan.

- India stands out as the region's economic powerhouse, with a GDP far surpassing all its neighbours combined. Despite facing significant downturns in 1966 & 1991 (due to currency devaluation) and in 2020 (from the global pandemic), India's overall growth since 2000 has been robust and sustained. The country's ability to rebound from crises and maintain steady development highlights its expanding economic base and effective policy making.
- Bangladesh has demonstrated remarkable progress, overtaking Pakistan as South Asia's second-largest economy in 2019. Its GDP growth has been linear and consistent, reflecting successful economic reforms, exports, and social development. While the country faced severe setbacks in the 1970s due to war, famine, and political instability, its reliance on foreign aid and infrastructure investments helped lay the groundwork for its current economic stability.
- Pakistan remains the third-largest economy in the region but has experienced more gradual and volatile growth. The country's economic history is marked by frequent external shocks, political instability, and reliance on foreign loans and bailouts. Major downturns have often coincided with natural disasters, structural weaknesses, and fiscal crises. Notably, Pakistan's loan burden is high relative to its GDP, reflecting ongoing challenges in achieving sustainable growth and financial independence.

### Other Insights:

- While India has the largest absolute volume of loans, Pakistan's debt is proportionally much higher, reaching up to 16% of its GDP, showcasing its vulnerabilities. In contrast, Bangladesh has managed to keep its loan burden relatively low.
- The ability of these economies to recover from shocks, whether due to war, famine, devaluation, or global crises. This has been shaped by their policy responses, external support, and structural reforms. Bangladesh's steady rise, India's rapid post-2000 expansion, and Pakistan's periodic recoveries all reflect the interplay between domestic policy choices and external economic conditions.

### Recommendations:

Although the economies of all three countries are growing, their status as neighbouring nations means they exert considerable influence on one another. However, political stability, effective governance, collaborating on related matters and prudent debt management remain critical to sustaining growth and avoiding future crises. This analysis highlights the importance of sound economic management, stability, and strategic investment for long-term prosperity in the region.