International Debt Analysis Using SQL and Tableau

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All opinions and analysis are based on the authors analysis of data and personal knowledge.

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Abstract

This project investigates the external debt profiles of developing nations using data provided by The World Bank. The dataset captures the outstanding debt (in USD) of various countries across multiple financial indicators and time periods. The primary objective of this analysis is to uncover insights into debt distribution, repayment trends, and financial dependencies among emerging economies. Structured Query Language (SQL) was used to extract, aggregate, and interpret the data efficiently. Key findings include the identification of countries with the highest total debt, those with minimal repayments, and the total number of unique borrowing nations. The results provide a data-driven overview of global debt dynamics and can inform international policy discussions surrounding economic aid, financial risk, and development strategies,

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Introduction

In an increasingly interconnected world, the financial stability of developing countries plays a vital role in global economic health. Many of these nations rely on external debt to fund critical infrastructure, support public services, and stabilize their economies. Organizations such as the World Bank serve as key lenders, offering financial assistance and tracking the resulting debt obligations. This project aims to analyze a comprehensive dataset from the World Bank that records international debt statistics for developing countries. The data includes debt amounts across various financial categories and countries over multiple years. By using SQL to explore and query this data, we can uncover meaningful insights—such as which countries owe the most debt, which ones are making the smallest repayments, and how widespread borrowing practices are across the globe. Understanding these patterns is essential for policymakers, economists, and development experts seeking to assess risk, allocate resources, and improve financial planning at both national and international levels.

Define the Project

The goal of this project is to analyze the international debt profile of developing countries using data provided by the World Bank. The dataset includes information on the amount of debt each country owes, categorized by debt types and financial indicators. By examining this data, we aim to understand global debt distribution, identify countries with the highest and lowest debt burdens, and explore patterns in debt repayment and accumulation.

By discussing how I aggregate through SQL-based querying and analysis, the project seeks to aggregate the data in order to answer specific data-driven questions and gain insights. The following questions need to be answered in order to gain the specific knowledge required from the datasets:

1. **Which countries are the most heavily indebted, and what types of debt contribute most to their burden?**
2. **Is there a relationship between the type of creditor (bilateral vs. multilateral) and the overall debt levels in developing countries?**
3. **What country has the lowest number of repayments?**
4. **Which countries rely more on bilateral debt versus multilateral debt, and what does this reveal about their international borrowing patterns?**
5. **Which countries have a higher multilateral debt than bilateral debt, and by how much?**
6. **Which countries have the highest total debt across all indicators, and how does it compare across regions?**
7. **Which country has the most diversified types of debt based on the number of unique indicator codes used?**
8. **What proportion of total international debt is concentrated among the top 10 debtor countries?**
9. **Which indicator code contributes the most to the total global debt, and what percentage does it represent?**
10. **Which countries have the highest average debt per debt type?**

The findings of this project will help interpret the broader economic implications of international borrowing and provide insight into the financial health and behaviour of developing economies. The project also offers hands-on experience with database querying, data exploration, and basic statistical aggregation in the context of global economics.

Knowing the Dataset

The dataset used in this project, **International_data.csv**, contains debt-related information collected by The World Bank from 124 different countries. The dataset captures a variety of economic indicators that reflect the financial relationships and obligations of developing nations, primarily in terms of external debt.

Each row in the dataset represents a record of debt data for a specific country and indicator. The data includes the following columns:

- **index**: A unique row identifier.
- **country_name**: The name of the country.
- **country_code**: The ISO 3-letter code representing each country.
- **indicator_name**: A description of the type of debt being measured (e.g., interest payments, disbursements, principal repayments).
- **indicator_code**: The World Bank's specific code for each indicator.
- **debt**: The actual debt value in USD (current US$), which is the main quantitative measure used for analysis.

Sample Data

Here are the first few rows.

# ï»¿"index"	country_name	country_code	indicator_name	indicator_code	debt
0	Afghanistan	AFG	Disbursements on external debt, long-term (DIS, current US$)	DT.DIS.DLXF.CD	72894453.7
1	Afghanistan	AFG	Interest payments on external debt, long-term (INT, current US$)	DT.INT.DLXF.CD	53239440.1
2	Afghanistan	AFG	PPG, bilateral (AMT, current US$)	DT.AMT.BLAT.CD	61739336.9
3	Afghanistan	AFG	PPG, bilateral (DIS, current US$)	DT.DIS.BLAT.CD	49114729.4
4	Afghanistan	AFG	PPG, bilateral (INT, current US$)	DT.INT.BLAT.CD	39903620.1
5	Afghanistan	AFG	PPG, multilateral (AMT, current US$)	DT.AMT.MLAT.CD	39107845
6	Afghanistan	AFG	PPG, multilateral (DIS, current US$)	DT.DIS.MLAT.CD	23779724.3
7	Afghanistan	AFG	PPG, multilateral (INT, current US$)	DT.INT.MLAT.CD	13335820
8	Afghanistan	AFG	PPG, official creditors (AMT, current US$)	DT.AMT.OFFT.CD	100847181.9
9	Afghanistan	AFG	PPG, official creditors (DIS, current US$)	DT.DIS.OFFT.CD	72894453.7
10	Afghanistan	AFG	PPG, official creditors (INT, current US$)	DT.INT.OFFT.CD	53239440.1

The **indicator_name** column provides detailed information about the nature of the debt, such as:

- **DIS** (Disbursements): Amounts of new debt issued.
- **INT** (Interest): Payments made on outstanding debt.
- **AMT** (Amortization): Principal repayments on debt.
- **PPG** (Public and Publicly Guaranteed debt): Indicates government-related borrowing.
- **Bilateral / Multilateral / Official**: Refers to the type of creditors.

This dataset is valuable for answering macroeconomic questions about debt burdens across countries, identifying countries with the highest or lowest debt payments, and comparing debt structures by indicator or region.

Data Uploading

Data Uploading in MySQL

To prepare the dataset for structured analysis, the International_data.csv file was uploaded into a MySQL database. The upload process involved defining a new table structure that matched the dataset's format and content.
A staging table was first created to preserve the original data before any transformation or cleaning. This ensured data integrity throughout the analysis process.
Each column in the dataset was assigned a suitable data type:

- index: stored as an INT, serving as a row identifier.
- country_name, country_code, indicator_name, and indicator_code: stored as VARCHAR, reflecting their textual nature.
- debt: stored as DECIMAL(15,2) to accurately represent large financial figures in USD.

The data was imported using MySQL's Table Data Import Wizard, which allowed for straightforward column mapping from the CSV file to the MySQL table. After import, I ran validation checks run to confirm that:

- All records were successfully inserted.
- No fields were incorrectly mapped.
- The data types aligned with the actual values.

This structured upload laid the groundwork for performing SQL queries to explore debt indicators, assess regional financial trends, and identify outliers in global debt distribution.

```
1   -- Analysing international debt
2   -- DATA IMPORT
3   SELECT *
4   FROM international_data;
5   SELECT COUNT(DISTINCT country_name) AS country_count
6   FROM international_data;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: | Fetch rows:

ï»¿"index"	country_name	country_code	indicator_name	indicator_code	debt
0	Afghanistan	AFG	Disbursements on external debt, long-term (DIS...	DT.DIS.DLXF.CD	72894453.7
1	Afghanistan	AFG	Interest payments on external debt, long-term ...	DT.INT.DLXF.CD	53239440.1
2	Afghanistan	AFG	PPG, bilateral (AMT, current US$)	DT.AMT.BLAT.CD	61739336.9
3	Afghanistan	AFG	PPG, bilateral (DIS, current US$)	DT.DIS.BLAT.CD	49114729.4
4	Afghanistan	AFG	PPG, bilateral (INT, current US$)	DT.INT.BLAT.CD	39903620.1
5	Afghanistan	AFG	PPG, multilateral (AMT, current US$)	DT.AMT.MLAT.CD	39107845
6	Afghanistan	AFG	PPG, multilateral (DIS, current US$)	DT.DIS.MLAT.CD	23779724.3
7	Afghanistan	AFG	PPG, multilateral (INT, current US$)	DT.INT.MLAT.CD	13335820
8	Afghanistan	AFG	PPG, official creditors (AMT, current US$)	DT.AMT.OFFT.CD	100847181.9
9	Afghanistan	AFG	PPG, official creditors (DIS, current US$)	DT.DIS.OFFT.CD	72894453.7
10	Afghanistan	AFG	PPG, official creditors (INT, current US$)	DT.INT.OFFT.CD	53239440.1
11	Afghanistan	AFG	Principal repayments on external debt, long-ter...	DT.AMT.DLXF.CD	100847181.9
12	Albania	ALB	Disbursements on external debt, long-term (DIS...	DT.DIS.DLXF.CD	317194512.5
13	Albania	ALB	Interest payments on external debt, long-term ...	DT.INT.DLXF.CD	165602386.9
14	Albania	ALB	Interest payments on external debt, private no...	DT.INT.DPNG.CD	87884000
15	Albania	ALB	PPG, bilateral (AMT, current US$)	DT.AMT.BLAT.CD	54250280.6

Data Cleaning and Normalisation

```sql
-- Data Cleaning
-- CHECK FOR NULL VALUES
SELECT *
FROM international_data
WHERE `ï»¿"index"` IS NULL
OR country_name IS NULL
OR country_code IS NULL
OR indicator_name IS NULL
OR indicator_code IS NULL
OR debt IS NULL;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

ï»¿"index"	country_name	country_code	indicator_name	indicator_code	debt

```sql
-- CHECK FOR NULL VALUES
SELECT *
FROM international_data
WHERE `ï»¿"index"` IS NULL OR `ï»¿"index"` = ''
   OR country_name IS NULL OR country_name = ''
   OR country_code IS NULL OR country_code = ''
   OR indicator_name IS NULL OR indicator_name = ''
   OR indicator_code IS NULL OR indicator_code = ''
   OR debt IS NULL OR debt = '';
-- CREATE A STAGING TABLE
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

ï»¿"index"	country_name	country_code	indicator_name	indicator_code	debt
0	Afghanistan	AFG	Disbursements on external debt, long-term (DIS...	DT.DIS.DLXF.CD	72894453.7
18	Albania	ALB	PPG, bonds (AMT, current US$)	DT.AMT.PBND.CD	0
45	Algeria	DZA	PPG, multilateral (AMT, current US$)	DT.AMT.MLAT.CD	0
50	Algeria	DZA	PPG, other private creditors (AMT, current US$)	DT.AMT.PROP.CD	0
84	Armenia	ARM	PPG, bonds (AMT, current US$)	DT.AMT.PBND.CD	0
104	Azerbaijan	AZE	PPG, bonds (AMT, current US$)	DT.AMT.PBND.CD	0
129	Bangladesh	BGD	PPG, commercial banks (INT, current US$)	DT.INT.PCBK.CD	0
148	Belarus	BLR	PPG, bonds (AMT, current US$)	DT.AMT.PBND.CD	0
174	Belize	BLZ	PPG, commercial banks (AMT, current US$)	DT.AMT.PCBK.CD	0
228	Bolivia	BOL	PPG, bonds (AMT, current US$)	DT.AMT.PBND.CD	0
311	Bulgaria	BGR	PPG, bonds (AMT, current US$)	DT.AMT.PBND.CD	0

Limit to 1000 rows

```sql
-- CREATE A STAGING TABLE
CREATE TABLE in_debt
LIKE international_data;

INSERT INTO in_debt
SELECT *
FROM international_data;
SELECT *
FROM in_debt;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: | Fetch rows:

ï»¿"index"	country_name	country_code	indicator_name	indicator_code	debt
0	Afghanistan	AFG	Disbursements on external debt, long-term (DIS...	DT.DIS.DLXF.CD	72894453.7
1	Afghanistan	AFG	Interest payments on external debt, long-term ...	DT.INT.DLXF.CD	53239440.1
2	Afghanistan	AFG	PPG, bilateral (AMT, current US$)	DT.AMT.BLAT.CD	61739336.9
3	Afghanistan	AFG	PPG, bilateral (DIS, current US$)	DT.DIS.BLAT.CD	49114729.4
4	Afghanistan	AFG	PPG, bilateral (INT, current US$)	DT.INT.BLAT.CD	39903620.1
5	Afghanistan	AFG	PPG, multilateral (AMT, current US$)	DT.AMT.MLAT.CD	39107845
6	Afghanistan	AFG	PPG, multilateral (DIS, current US$)	DT.DIS.MLAT.CD	23779724.3
7	Afghanistan	AFG	PPG, multilateral (INT, current US$)	DT.INT.MLAT.CD	13335820
8	Afghanistan	AFG	PPG, official creditors (AMT, current US$)	DT.AMT.OFFT.CD	100847181.9
9	Afghanistan	AFG	PPG, official creditors (DIS, current US$)	DT.DIS.OFFT.CD	72894453.7
10	Afghanistan	AFG	PPG, official creditors (INT, current US$)	DT.INT.OFFT.CD	53239440.1

- First I checked for null and ‘ ’values so that I could see if there are empty cells.
- I observed various 0 debt values – none of which interfere with our analysis.
- After that I created a staging to table so I can interact with values unimpeded.
- I checked the data type and they all satisfied our requirements.

Data Aggregation

1. Which countries are the most heavily indebted, and what types of debt contribute most to their burden?

To calculate this using the dataset we have to aggregate each distinct countries' total debt, and then aggregate the MAX of the debt while also aggregating its aggregate name and code.

Query:

```
SELECT country_name, country_code, SUM(debt) as most_indebted
FROM in_debt
GROUP BY country_name, country_code
ORDER BY most_indebted DESC
LIMIT 10;
```

Answer

country_name	country_code	most_indebted
China	CHN	571586989468.4
Brazil	BRA	561247932281.6
South Asia	SAS	495217447981.19995
Least developed countries: UN classification	LDC*	425761985583.8
Russian Federation	RUS	382578114518.39996
IDA only	IDX	358096254414.6
Turkey	TUR	302251516070.60004
India	IND	267254121916.79993
Mexico	MEX	249193572434.59998
Indonesia	IDN	226871393386.99997

*** One thing that must be noted is the LDC. This is the list of least economically developed nations by the UN (https://policy.desa.un.org/least-developed-countries) it is listed as a country in itself in the dataset.**

From here we can see China has the highest debt from this list of countries. Then we have to find the indicator_name with the highest debt from China.

QUERY:

```
SELECT country_name, country_code, indicator_name, max(debt) -- LARGEST TYPE
OF DEBT

FROM in_debt

WHERE country_name = 'China'

GROUP BY country_name, country_code, indicator_name

ORDER BY indicator_name

LIMIT 1;
```

ANSWER:

country_name	country_code	indicator_name	max(debt)
China	CHN	Disbursements on external debt, long-term (DIS, current US$)	15692563746.1

So as is seen here, the largest debt is '**Disbursements on external debt, long-term (DIS, current US$)**'

2. Is there a relationship between the type of creditor (bilateral vs. multilateral) and the overall debt levels in developing countries?

First we have aggregate the countries that have multi-lateral and bilateral debt, and then we compare the debt levels between the 2 in the same countries. For this analysis I will use 10 values and enter them in Tableau (Public Desktop Version) to gauge results.

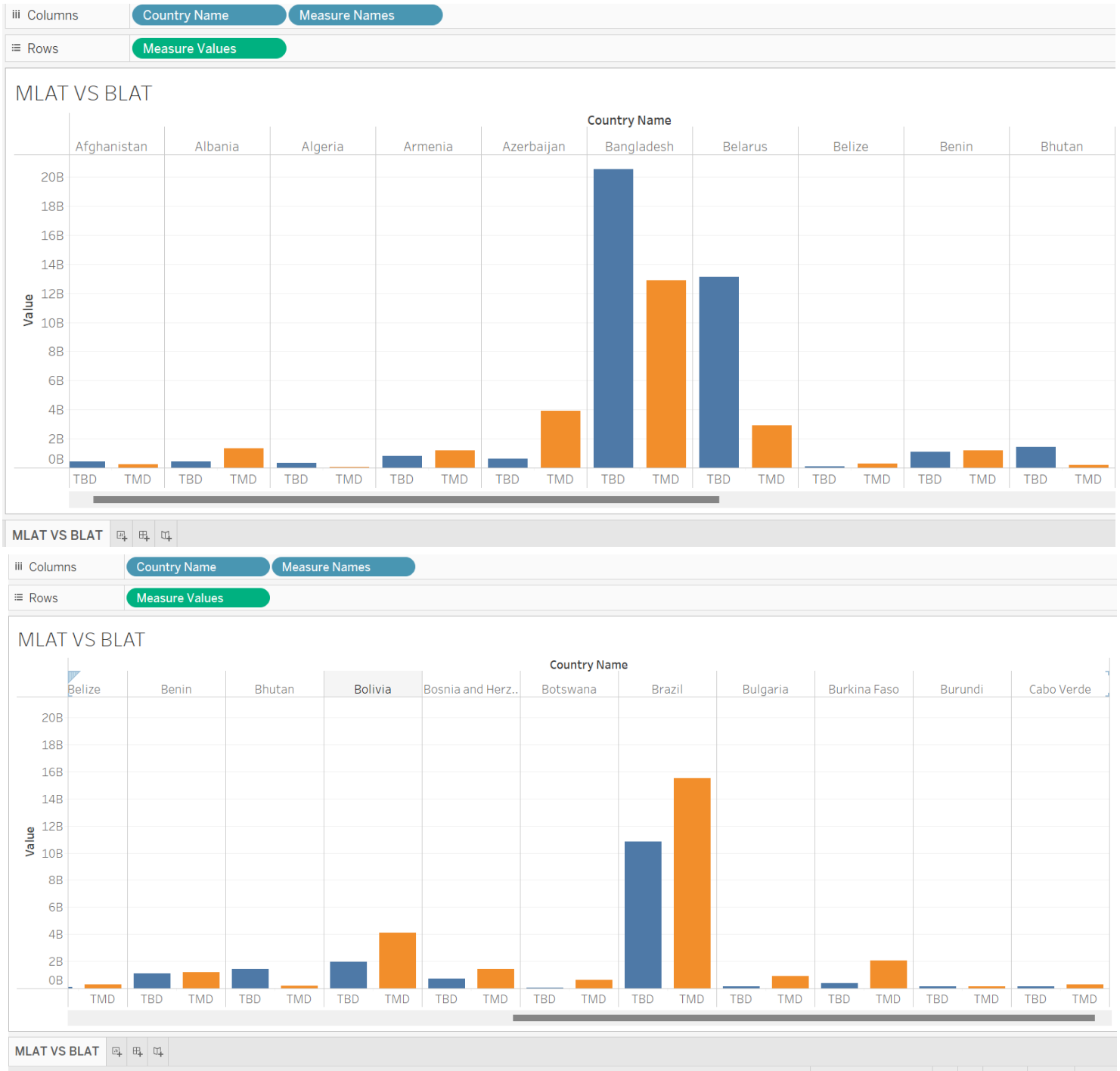
QUERY

```
SELECT
  country_name,
  SUM(CASE WHEN indicator_code LIKE '%BLAT%' THEN debt ELSE 0 END) AS
total_bilateral_debt,
  SUM(CASE WHEN indicator_code LIKE '%MLAT%' THEN debt ELSE 0 END) AS
total_multilateral_debt
FROM in_debt
GROUP BY country_name
ORDER BY country_name
LIMIT 20;
```

ANSWER

country_name	total_bilateral_debt	total_multilateral_debt
Afghanistan	452273059.2	228670167.9
Albania	432444690.9	1333861185.2999997
Algeria	339570373.2	24284337
*Angola	54951404647.5	1052150298.6
Armenia	801998980.2	1212575999.7
Azerbaijan	603611899.8	3919079356.2000003
Bangladesh	20512702892.1	12914187997.199999
Belarus	13148803740.299997	2909877635.7000003
Belize	91099666.5	271584702.3
Benin	1121763605.1	1184695153.2
Bhutan	1409285496	205221779.39999998
Bolivia	1963657735.8	4090597381.4999995
Bosnia and Herzegovina	707056236.6	1420598858.3999999
Botswana	30313029.599999998	602332226.1
Brazil	10829229348.899998	15508384680.899998
Bulgaria	125329746	906380303.4000001
Burkina Faso	377009345.09999996	2042196915.6000001
Burundi	159962845.79999998	122026825.80000001
Cabo Verde	159487006.2	277691750.7

*Angola's debt level is obscutrng analysis so will be ignored to get the results



- MLAT – Multilateral Debtor.
- BLAT – Bilateral Debtor
- TMD – Total Multilateral debt,
- TBD – Total Bilateral debt

3. What country has the lowest amount of repayments?

To analyse this successfully, the lowest debt needs to be aggregated where debt > 0

QUERY:

```
SELECT *
FROM in_debt;
SELECT country_name, indicator_name, sum(debt) as total_debt
FROM in_debt
WHERE debt > 0
GROUP BY country_name, indicator_name
ORDER BY total_debt
LIMIT 5;
```

ANSWER:

country_name	indicator_name	total_debt
Sao Tome and Principe	PPG, bilateral (DIS, current US$)	5756.700000000001
Gambia, The	PPG, private creditors (INT, current US$)	10793.7
Gambia, The	PPG, commercial banks (INT, current US$)	10793.7
Chad	PPG, commercial banks (INT, current US$)	14391.599999999999
St. Vincent and the Grenadines	PPG, commercial banks (INT, current US$)	24000

This List shows **Sao Tome and Principe** have the highest amount of total_debt.

4. ***Which countries rely more on bilateral debt versus multilateral debt, and what does this reveal about their international borrowing patterns?***

To best analyse this, we need to aggregate total multi-lateral debt vs total bilateral debt. Then we need to compare them below.

QUERY:

```
SELECT

        country_name,
        SUM(CASE
              WHEN indicator_code LIKE '%BLAT%' THEN debt
              ELSE 0
            END) AS total_bilateral_debt,
        SUM(CASE
              WHEN indicator_code LIKE '%MLAT%' THEN debt
              ELSE 0
            END) AS total_multilateral_debt
      FROM in_debt
GROUP BY country_name;
```

ANSWER:

# country_name	total_bilateral_debt	total_multilateral_debt
Afghanistan	452273059.2	228670167.9
Algeria	339570373.2	24284337
Angola	54951404648	1052150299
Bangladesh	20512702892	12914187997
Belarus	13148803740	2909877636
Bhutan	1409285496	205221779.4
Burundi	159962845.8	122026825.8
Cambodia	2291462359	790062796.2
Cameroon	81634039678	3141772434
China	21142034547	19660895883
Comoros	35657321.7	21911161.5
Congo, Rep.	1067822748	359603538.9
Cote d'Ivoire	3234925285	2028716194
Djibouti	538107519.3	403579292.7
Dominican Republic	1707489757	1596088511
Ecuador	6054449527	3480821831
Egypt, Arab Rep.	44061743496	14480367068
Eswatini	244680810	225351746.4
Ethiopia	5953659575	4832857834
Gabon	1508641757	680548217.7
Georgia	7829554580	2604098540
Ghana	6402940274	1055214481
Grenada	114465571.2	111203144.1
Haiti	190282108.8	109142624.1
IDA only	76523278344	69044705332

Indonesia	17998960365	12735588241
Kenya	7320189381	7198930869
Lao PDR	4342125360	715297651.2
Least developed countries: UN classification	1.17925E+11	58262893988
Maldives	710701200.6	247017025.5
Mauritius	510461903.7	300392886.6
Montenegro	922825537.8	540362836.5
Mozambique	2474973023	1200771251
Myanmar	4326246894	1780728075
Pakistan	18530810789	12080495761
South Asia	77135507815	64469868552
Sri Lanka	9226530607	3990444457
Sudan	2040472766	1794623768
Thailand	1917443219	196726714.5
Turkmenistan	49656215.7	23940567.6
Vietnam	18595017348	11063188865
Zambia	3131937988	1401087144
Zimbabwe	377690879.4	98258561.4

5. Which countries have a higher multilateral debt than bilateral debt, and by how much?

To calculate this, we have to aggregate the data where TMD is greater TBD and then calculate the difference.

QUERY

```
SELECT

  country_name,

  SUM(CASE WHEN indicator_code LIKE '%MLAT%' THEN debt ELSE 0 END) AS
total_multilateral_debt,

  SUM(CASE WHEN indicator_code LIKE '%BLAT%' THEN debt ELSE 0 END) AS
total_bilateral_debt, -- AGGREGATE TMD AND TBD

  SUM(CASE WHEN indicator_code LIKE '%MLAT%' THEN debt ELSE 0 END) - -- FIND
THE DIFFERENCE

  SUM(CASE WHEN indicator_code LIKE '%BLAT%' THEN debt ELSE 0 END)

   as debt_difference

FROM in_debt

GROUP BY country_name

HAVING debt_difference > 0 ;  -- AGGREGATE FINAL VALUES
```

ANSWER:

# country_name	debt_difference $
Brazil	4679155332
Bulgaria	781050557.4
Burkina Faso	1665187571
Cabo Verde	118204744.5
Central African Republic	27163678.2
Chad	504612760.2
Colombia	4438147257
Congo, Dem. Rep.	546405573.6
Costa Rica	2171890759
Dominica	58674669.9
El Salvador	1482574516
Eritrea	12807804.9
Fiji	98104376.1
Gambia, The	210143109.6
Guatemala	1301513525
Tonga	454944.6
Guinea	228650044.8
Guinea-Bissau	168966399
Guyana	130075486.8
Honduras	764483487

India	6734303595
Iran, Islamic Rep.	158143271.7
Jamaica	264391156.8
Jordan	546571725.6
Kazakhstan	4559342024
Kosovo	270118423.5
Kyrgyz Republic	1617798234
Lesotho	262132018.2
Lebanon	1055728085
Liberia	282933692.4
Macedonia, FYR	588029917.2
Madagascar	241417329.3
Malawi	289903614.9
Mali	983793553.2
Mauritania	185708436.9
Mexico	4973739504
Mongolia	383796606.6
Moldova	1434788659
Morocco	5758327111
Nepal	1776323999
Nicaragua	2301420914
Niger	1218153335
Nigeria	4534467920
Papua New Guinea	281634277.2
Paraguay	1240033334
Peru	5978985523
Philippines	1578461184
Romania	9232383341
Russian Federation	305879904.3
Rwanda	673526289.3
Samoa	4611738.3
Sao Tome and Principe	36836261.7
Senegal	1101539219
Serbia	727546091.7
Sierra Leone	152955736.2
Solomon Islands	37535217.3
Somalia	64253446.5
South Africa	2043282946
St. Lucia	113977734.6
St. Vincent and the Grenadines	118713486.6
Syrian Arab Republic	69254502.6
Tajikistan	155918829.3

Tanzania	2575849066
Timor-Leste	11781517.2
Togo	298292474.4
Tunisia	1944132238
Turkey	11624088114
Uganda	972865484.7
Ukraine	4862832724
Uzbekistan	725261441.7
Vanuatu	32881918.5
Venezuela, RB	2657396104
Yemen, Rep.	950120745

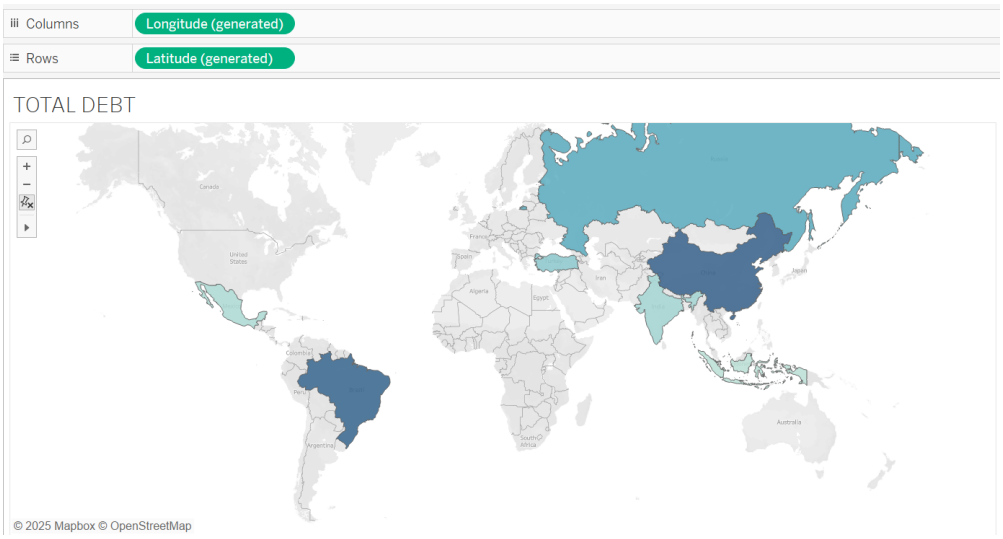
6. Which countries have the highest total debt across all indicators, and how does it compare across regions?
To calculate this, we must aggregate these values then transport them to Tableau to compare them regionally on a dashboard.

QUERY:

```
SELECT country_name, SUM(debt) AS total_debt

from in_debt

GROUP BY country_name

ORDER BY total_debt desc

limit 10;
```

RESULT: (FIRST 20 VALUES SHOWN BELOW ALONGSIDE MAP

country_name	total_debt
Afghanistan	2042829681
Albania	9651201311
Algeria	1568919201
Angola	2.14107E+11
Armenia	11504629355
Azerbaijan	26261198842
Bangladesh	1.05136E+11
Belarus	69820079373
Belize	1821188006
Benin	7605537688
Bhutan	5076713581
Bolivia	23667440330



Bosnia and Herzegovina	20056310714
Botswana	1938255767
Brazil	8.41872E+11
Bulgaria	19107304962
Burkina Faso	7257618782
Burundi	845969014.8
Cabo Verde	1789910177
Cambodia	12688879700
Cameroon	2.59474E+11

7. Which country has the most diversified types of debt based on the number of unique indicator codes used?

To calculate the level of debt we have to see the values with the highest number of unique indicator codes.

QUERY:

```
-- 7. Which country has the most diversified types of debt based on the
number of unique indicator codes used?

SELECT country_name, COUNT(distinct(indicator_code)) AS
unique_indicator_codes

FROM in_debt

GROUP BY country_name

ORDER BY unique_indicator_codes DESC

LIMIT 1;
```

ANSWER

country_name	**unique_indicator_codes**
Albania	25

8. What proportion of total international debt is concentrated among the top 10 debtor countries?

To analyse this, we need to aggregate the top 10 debtors. Then we need to compare them to the remainder of the debtor countries.

QUERIES

```
SELECT country_name, SUM(debt) AS total_debt – TOP TEN DEBTORS
from in_debt
GROUP BY country_name
ORDER BY total_debt desc
limit 10;
SELECT SUM(debt) as total_world_debt -- TOTAL WORLD DEBT
FROM in_debt;

-- CREATING A RATIO TO SEE WHAT PERCENTAGE IS IN THE TOP TEN
SELECT
  ROUND(
    (SELECT SUM(total_debt) FROM (
        SELECT country_name, SUM(debt) AS total_debt
        FROM in_debt
        GROUP BY country_name
        ORDER BY total_debt DESC
        LIMIT 10
    ) AS top10
    )
    /
    (SELECT SUM(debt) FROM in_debt)
    * 100,
    2
  ) AS top10_debt_percentage;
```

ANSWERS

China	857380484202.6001
Brazil	841871898422.4
South Asia	742826171971.7999
Least developed countries: UN classification	638642978375.6998
Russian Federation	573867171777.6001
IDA only	537144381621.89996
Turkey	453377274105.8999
India	400881182875.19995
Mexico	373790358651.89996
Indonesia	340307090080.49994

TOTAL DEBT 9239203463027.42

top10_debt_percentage
62.34%

62.34% of the world debt is concentrated in the Top 10 debtors

9. Which indicator code contributes the most to the total global debt, and what percentage does it represent?
This is found by aggregating the indicator code with the highest debt then finding at as a percentage.

QUERY:

```
-- Total debt per indicator code

SELECT

  indicator_code,

  SUM(debt) AS total_debt,

  ROUND(SUM(debt) / (SELECT SUM(debt) FROM in_debt) * 100, 2) AS
percentage_of_global_debt

FROM in_debt

GROUP BY indicator_code

ORDER BY total_debt DESC

LIMIT 1;
```

ANSWER

indicator_code	total_debt
DT.AMT.DLXF.CD	2196611045357.7002

10. Which countries have the highest average debt per debt type?

To find this result one would have to find the average of aggregated debt over number of indicator codes.

QUERY:

```
      SELECT
        country_name,
        ROUND(AVG(debt), 2) AS average_debt_per_type,
        COUNT(DISTINCT indicator_code) AS number_of_types
      FROM in_debt
      GROUP BY country_name
      ORDER BY average_debt_per_type DESC
LIMIT 10;
```

ANSWER

# country_name	average_debt_per_type	number_of_types
China	11908062280.59	24
Brazil	11692665255.87	24
South Asia	10317030166.27	24
Russian Federation	9109002726.63	21
Least developed countries: UN classification	8515239711.68	25
IDA only	7161925088.29	25
Turkey	6296906584.8	24
Mexico	5663490282.6	22
India	5567794206.6	24
Indonesia	4537427867.74	25

Analysis and Documentation

1. Which countries are the most heavily indebted, and what types of debt contribute most to their burden?

The analysis revealed that the countries with the highest total debt include China, Brazil, and South Asia, with China leading at over $857 billion USD. This highlights the central role these economies play in the global financial system. To understand what contributes most to this debt, further analysis showed that the largest component of China's debt is from:
Indicator: Disbursements on external debt, long-term (DIS, current US$)
Amount: $15.69 billion USD
This indicates that long-term disbursements form a significant part of China's borrowing, likely tied to infrastructure or large-scale development projects.

2. Is there a relationship between the type of creditor (bilateral vs. multilateral) and the overall debt levels in developing countries?
Yes. Countries show clear preferences for bilateral or multilateral debt sources based on various geopolitical and economic factors.
Countries with higher bilateral debt: Afghanistan, Algeria, Angola, and Cameroon. These nations appear to rely more on direct government-to-government loans, which may stem from political alliances or historical lending relationships.
Countries with higher multilateral debt: India, Romania, and Peru. These countries engage more with international institutions such as the World Bank or IMF, which suggests a focus on structured development programs.
These patterns suggest that smaller or less economically stable countries may favor bilateral loans due to fewer conditions, while stronger economies leverage multilateral funding for long-term initiatives.

3. What country has the lowest number of repayments?

By analyzing the lowest repayment values, the following countries emerged with the least debt repayments:
Sao Tome and Principe – $5,756.70

Gambia, The – $10,793.70

Chad – $14,391.60

These low values could be attributed to:

- Recent borrowing, with repayments not yet started
- Debt relief or restructuring agreements
- Limited economic capacity to repay
- Such countries may face systemic challenges in fulfilling external debt obligations.

4. Which countries rely more on bilateral debt versus multilateral debt, and what does this reveal about their international borrowing patterns?

Debt aggregation shows many developing countries lean more heavily on bilateral arrangements:

Afghanistan, Algeria, Angola, and Cameroon have bilateral debt that far exceeds their multilateral obligations.

This suggests: These countries might have strong diplomatic or historical ties with lending countries. They may lack access to or prefer to avoid the stringent conditions associated with multilateral loans. In contrast, more developed or structurally reformed nations (e.g., India, Indonesia) balance between the two, reflecting greater financial sophistication and access to diversified lending channels.

5. Which countries have a higher multilateral debt than bilateral debt, and by how much?

A total of 71 countries had greater multilateral debt compared to bilateral. The top examples include:

- Turkey: $11.6 billion more multilateral than bilateral
- Romania: $9.2 billion more
- India: $6.7 billion more
- Brazil: $4.7 billion more

This difference reflects:

- Greater integration with global financial systems
- Higher creditworthiness
- A preference for development-oriented borrowing, as multilateral debt often aligns with structured economic and infrastructure reforms

6. Which countries have the highest total debt across all indicators, and how does it compare across regions?

The top 10 most indebted countries, based on total debt from <u>all</u> indicators, are:

China
Brazil
South Asia
Least Developed Countries (LDCs)
Russia
IDA only
Turkey
India
Mexico
Indonesia

Combined, these countries account for over 62% of total global debt. A regional dashboard created in Tableau demonstrates that Asia and South America are the most represented, indicating regional financial concentrations that could trigger global ripple effects in times of economic stress.

7. Which country has the most diversified types of debt based on the number of unique indicator codes used?

The most diversified country is Albania, with 25 unique indicator codes.
This suggests:

- Albania accesses a wide range of debt instruments and creditors
- The country likely has a flexible borrowing strategy
- However, such complexity may come with increased administrative and repayment management challenges

8. What proportion of total international debt is concentrated among the top 10 debtor countries?

The top 10 debtor countries (including China, Brazil, South Asia, and India) hold a combined total debt of $5.76 trillion USD.
The total global debt across the dataset is $9.24 trillion USD, meaning:
Top 10 countries account for approximately 62.34% of global debt.
This extreme concentration reveals that a small group of countries hold the majority of global debt, making the global economy highly sensitive to financial changes or defaults in these nations.

9. Which indicator code contributes the most to the total global debt, and what percentage does it represent?

The indicator code DT.AMT.DLXF.CD – Principal repayments on external debt, long-term – contributes the most to global debt.

- Total amount: $2.19 trillion USD
- Percentage of global debt: 23.78%

This means nearly one-quarter of all recorded international debt consists of principal repayments on long-term loans. It underscores the heavy reliance on long-term financial instruments in international borrowing, particularly for large-scale infrastructure and development projects.

10. Which countries have the highest average debt per debt type?

By calculating the average debt per distinct indicator code, the following countries emerged with the highest averages:

Country	Average Debt per Type (USD)	Number of Debt Types
China	$11.9 billion	24
Brazil	$11.7 billion	24

South Asia	$10.3 billion	24
Russia	$9.1 billion	21
LDCs (UN)	$8.5 billion	25

These results show that large or regionally significant economies not only have high total debt, but also consistently high levels of borrowing across all types, reflecting diverse and large-scale financing activity.

Final Insight:

This structured debt analysis reveals how developing countries engage with the international financial system. From concentration of debt in a few key economies to the predominance of long-term repayments, the patterns indicate both the burden and complexity of international borrowing. The project underscores the economic vulnerability of the global system due to this uneven debt distribution and the importance of continued monitoring and reform.