

Global Central Bank Interest Rate Report in Tableau

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ABSTRACT

This project analyzes global central bank interest rate data from 1945 to 2026, covering monetary policy decisions made by central banks across different countries and regions. The dataset includes important information such as country names, policy interest rates, dates, and related economic indicators. By using this data, it becomes easier to study how interest rates have changed over time and compare monetary policies across the world.

The analysis shows that central bank interest rates have changed significantly over the years in response to different economic situations. During periods of high inflation, central banks generally increased interest rates to control rising prices. In contrast, during economic slowdowns, recessions, or financial crises, interest rates were often reduced to support economic growth and encourage spending. These trends demonstrate the important role central banks play in maintaining economic stability.

Comparing different countries reveals that monetary policy approaches vary across regions. Some countries have maintained relatively stable interest rates, while others have experienced larger fluctuations due to economic challenges, political factors, or

global events. The dashboard allows users to compare countries and observe how different central banks responded to similar economic conditions.

The time-based analysis also highlights how monetary policy has evolved through different periods, including post-war recovery, economic expansion, major financial crises, and recent inflationary periods. Interactive Tableau visualizations make it easy to explore specific countries, years, and interest rate movements, helping users better understand global economic trends.

Overall, this project provides valuable insights into long-term interest rate patterns and central bank decisions around the world. It demonstrates how Tableau can transform complex financial data into clear and meaningful visualizations, making the information useful for research, economic analysis, investment planning, and policy evaluation.

Introduction

At the heart of the modern financial system is the central bank interest rate, often called the "price of money." It is the rate at which a country's central bank lends money to commercial banks. Although it may seem like a technical banking concept, it plays a major role in the economy. Central bank rates influence borrowing costs, savings, investments, and the overall flow of money in the financial system [1].

Central banks use interest rates to achieve important goals such as controlling inflation, supporting employment, and maintaining economic stability [2]. When the economy slows down, central banks may lower interest rates to encourage borrowing and spending. When inflation rises too quickly, they may increase rates to reduce spending and keep prices under control. As a result, central banks continuously adjust rates based on economic conditions, global events, and financial market developments.

Changes in interest rates affect the economy through what is known as the monetary policy transmission mechanism. When a central bank raises its policy rate, borrowing becomes more expensive for commercial banks. These higher costs are then passed on to businesses and consumers through higher mortgage rates, loan rates, and credit card

interest rates. Likewise, when rates are reduced, borrowing becomes cheaper, encouraging economic activity and investment.

Interest rates have a direct impact on inflation and economic growth. Higher rates generally reduce consumer spending and business investment, helping to slow inflation [3]. Lower rates, on the other hand, encourage borrowing, spending, and investment, which can support economic growth during periods of economic weakness.

Interest rates also influence savings, investments, and employment. Higher rates encourage people to save because they can earn better returns on deposits and fixed-income investments. At the same time, businesses may reduce expansion plans because borrowing becomes more costly [4]. Lower rates often have the opposite effect, encouraging businesses to invest and hire more workers, which can help reduce unemployment.

In today's connected global economy, interest rate decisions in major economies often affect other countries as well. Policies set by institutions such as the Federal Reserve, European Central Bank, and Bank of Japan can influence capital flows, exchange rates, and investment decisions around the world. For example, when major central banks raise interest rates, investors may move money from emerging markets to developed economies in search of higher and safer returns [5].

To better understand these long-term monetary policy trends, the "Global Central Bank Rates (1945–2026)" dataset provides a detailed historical record of interest rates across 49 countries and monetary unions. Rather than focusing only on current rates, the dataset tracks how central bank policies have evolved over more than 80 years.

The dataset covers a wide range of economies, including major financial centers such as the United States, Euro Area, and United Kingdom, as well as emerging economies like Brazil, India, South Africa, and Argentina. Its long time span captures major economic periods, including the post-World War II recovery, the high-inflation era of the late 1970s and early 1980s, the period known as the Great Moderation, the 2008 global financial crisis, and the inflation surge following the COVID-19 pandemic [1].

The dataset also includes different types of policy rates, such as repo rates, reverse repo rates, discount rates, and other specialized monetary policy instruments used by different countries. This helps ensure accurate comparisons between different central banking systems.

In addition to interest rate data, the dataset contains useful indicators and supporting information. It includes measures such as the spread between a country's policy rate and the U.S. Federal Reserve rate, helping users understand international monetary policy differences. It also identifies whether countries are in rate-hiking or rate-cutting cycles and classifies policy environments as restrictive or accommodative.

Combined with geographic, demographic, and historical information, this dataset provides a strong foundation for economic research and financial analysis. It helps researchers, investors, students, and policymakers study long-term trends, compare monetary policies across countries, evaluate central bank decisions, and better understand how global financial systems have evolved over time.

Literature survey

Marco Reis et al. explored how an ideal central bank could be designed from scratch without the political and historical limitations that affect many existing institutions [6]. The study explains that a central bank should have a clear objective, proper resources, and well-defined responsibilities. Reis argued that maintaining price stability should be the main long-term goal of a central bank. He also suggested that targeting the overall price level could be more effective than traditional inflation targeting in reducing economic fluctuations. The paper supports giving central banks a dual mandate that includes both price stability and economic growth, while also discussing whether financial stability should become a third official objective. In addition, the study highlights the importance of decision-making through diverse committees, maintaining independence from government influence, and ensuring accountability through transparency and clear communication.

Marco Arnone et al. examined the global trend toward greater central bank independence between the late 1980s and 2003 [7]. Their research shows that central banks around the world gained more political and economic freedom during this period, which helped reduce inflation. The authors found that successful central banks generally focus on price stability, limit government borrowing from the central bank, and protect policymakers from political pressure. While developed countries continue to lead in this area, many developing nations have also made significant progress in strengthening central bank independence.

Morten Bech and Aytok Malkhozov et al. studied the introduction of negative interest rates by several central banks in Europe and Japan as a way to stimulate economic growth [8]. The authors explain that this policy is unusual because interest rates are normally above zero. Their findings show that negative rates have largely worked as expected in banking and money markets, although the effects have not fully reached ordinary savings accounts. The study concludes that while the policy has been effective so far, its long-term impact remains uncertain.

Michael Woodford et al. discussed the growing importance of transparency in central banking [9]. The author argues that when central banks clearly communicate their goals and future plans, businesses, consumers, and financial markets can make better decisions. This improves the effectiveness of monetary policy. Although some people worry that too much information could create confusion, Woodford concludes that transparency generally leads to more stable and predictable economic outcomes.

Marco Arnone and Davide Romelli et al. investigated whether central bank independence actually contributes to lower inflation [10]. By analyzing legal reforms over several decades, the authors found that increasing the independence of central banks generally helps control inflation and improve economic stability. They also note that results can vary depending on how independence is measured. Overall, the study confirms that giving central banks greater freedom often leads to positive economic outcomes.

Glenn D. Rudebusch and John C. Williams et al. argued that central banks should publicly share their forecasts for future interest rates [11]. The authors explain that economic decisions depend heavily on expectations about the future. By providing interest rate projections, central banks can reduce uncertainty and help financial markets better understand future policy actions. This improved communication makes monetary policy more effective.

Jens H. E. Christensen, Jose A. Lopez, and Glenn D. Rudebusch et al. examined whether the liquidity support provided by central banks during the 2007 financial crisis helped reduce borrowing costs between banks [12]. Using a financial model, the researchers found that these emergency liquidity programs successfully lowered interbank borrowing rates. Their findings suggest that central bank intervention during financial crises can help stabilize financial markets and support the banking system.

Kathryn M. Dominguez et al. studied how central bank interventions in foreign exchange markets affected the volatility of the dollar-mark and dollar-yen exchange rates between 1977 and 1994 [13]. The research found that these interventions often increased exchange rate volatility instead of reducing it. The effect was particularly strong when interventions were not publicly announced. Although some interventions in the mid-1980s helped stabilize currency markets, the study concludes that most interventions created additional uncertainty.

Christopher Crowe and Ellen E. Meade et al. examined how central banks have changed their governance and leadership structures over the past two decades [14]. The authors found that many countries have increased central bank independence and improved transparency. These changes have generally contributed to better economic performance and more stable inflation. The study concludes that modern central banking is moving toward more open and committee-based decision-making systems that are accountable to the public.

Thomas A. Lubik and Frank Schorfheide et al. investigated whether central banks in small open economies such as Australia, Canada, New Zealand, and the United Kingdom adjust interest rates in response to exchange rate movements [15]. Their

analysis found that the Bank of Canada and the Bank of England do take exchange rates into account when setting monetary policy, while the central banks of Australia and New Zealand focus mainly on inflation and economic output. The study concludes that even though many central banks claim not to target exchange rates directly, their policy decisions often show that exchange rate stability remains an important consideration [15].

Material

This dataset is much more than a simple spreadsheet of numbers. It provides a detailed record of how countries around the world have managed their economies through changes in interest rates over time. Covering the period from January 1945 to early 2026, the dataset contains 24,454 records and 43 dimensions. It tracks the monetary policy decisions of 49 countries, offering valuable insights into how governments and central banks have responded to inflation, economic growth, financial crises, and other major economic challenges.

At the center of the dataset is the `policy_rate_pct` field, which records the official interest rate set by each central bank. However, the dataset goes beyond simply listing interest rates. It also captures how rates change over time through fields such as `rate_change_bps` and `rate_change_direction`, showing whether rates were increased, decreased, or left unchanged. In addition, the dataset highlights the influence of the United States by including variables such as `fed_rate` and `spread_vs_fed_bps`, allowing users to compare other countries' interest rates with those of the U.S. Federal Reserve and understand global monetary policy relationships.

The dataset also includes detailed geographic and institutional information. Each record is linked to a specific country and contains data such as population, capital city, currency, continent, region, and subregion. It identifies the `central_bank` responsible for setting the interest rate and records the `source_institution` and `data_source`, ensuring that the information is reliable and can be traced back to its original source.

Another important feature of the dataset is its ability to place interest rate decisions within major economic events and historical periods. It includes indicators for significant global events such as the Global Financial Crisis (`gfc_period`), the COVID-19 pandemic (`covid_period`), and the global interest rate hiking cycle of 2022–2023 (`hike_cycle_2022_23`). These indicators help users understand how central banks reacted during important economic periods. The dataset also provides rolling averages over three-month and twelve-month periods, along with flags that identify when a country reached an all-time high or all-time low interest rate.

To ensure accuracy and reliability, the dataset includes several quality-control features. Information such as `dataset_version`, retrieval dates, and build timestamps helps maintain transparency and allows the data to be reproduced and verified. Additionally, the `row_completeness_pct` field measures how complete each record is, giving users confidence in the quality of the data they are analyzing.

Overall, this dataset serves as a comprehensive resource for studying global monetary policy. By combining historical interest rate data with geographic, institutional, and economic context, it helps researchers, students, policymakers, and investors better understand how central banks have shaped economic outcomes around the world over the past eight decades.

Method

Using Tableau to visualize this dataset makes it much easier to understand and explore the large amount of information it contains. Tableau's drag-and-drop interface allows users to create interactive visualizations without requiring advanced programming skills. The first step is to connect the dataset and ensure that the date fields are recognized correctly as dates and that country names are assigned geographic roles. Once the data is prepared, Tableau can be used to create a world map that displays interest rates across different countries. By placing countries on the map and using policy rates as the color measure, users can quickly see which countries had higher or lower interest rates during a selected period.

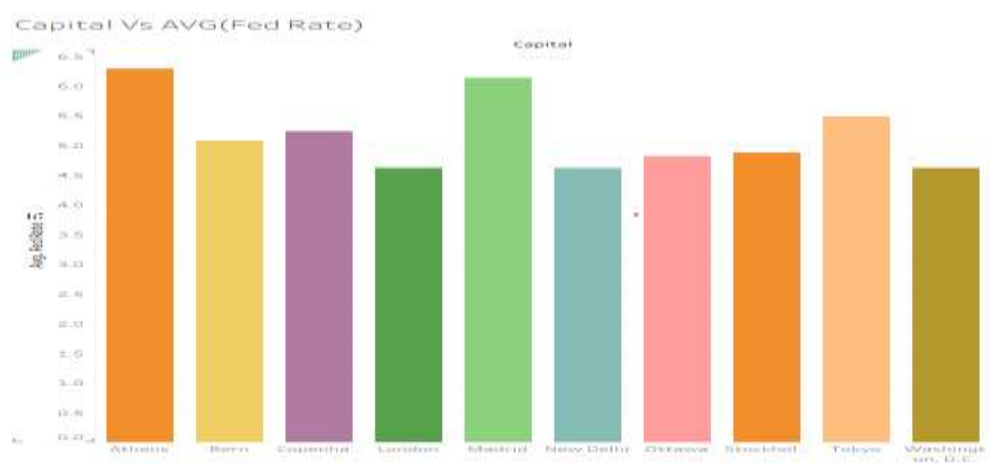
Tableau is especially useful for analyzing changes over time. By placing the date field on the horizontal axis and policy rates on the vertical axis, users can create line charts that show how interest rates have changed over the years. These charts make it easier to identify trends, economic cycles, and major policy changes. Additional features such as color coding can be used to show whether interest rates were increasing, decreasing, or remaining unchanged during specific periods.

Another advantage of Tableau is its ability to combine multiple visualizations into a single interactive dashboard. A dashboard can include a world map, line charts showing interest rate trends, and bar charts displaying interest rate changes. Interactive filters such as country selectors, date ranges, and economic event categories allow users to explore the data in greater detail. For example, a user can select a specific region, choose a time period such as the 2008 Global Financial Crisis or the COVID-19 pandemic, and instantly see how interest rates changed during that period.

Overall, Tableau provides a powerful and user-friendly platform for analyzing global central bank interest rate data. Its interactive visualizations help users identify patterns, compare countries, study historical trends, and gain a better understanding of monetary policy decisions across different regions and time periods.

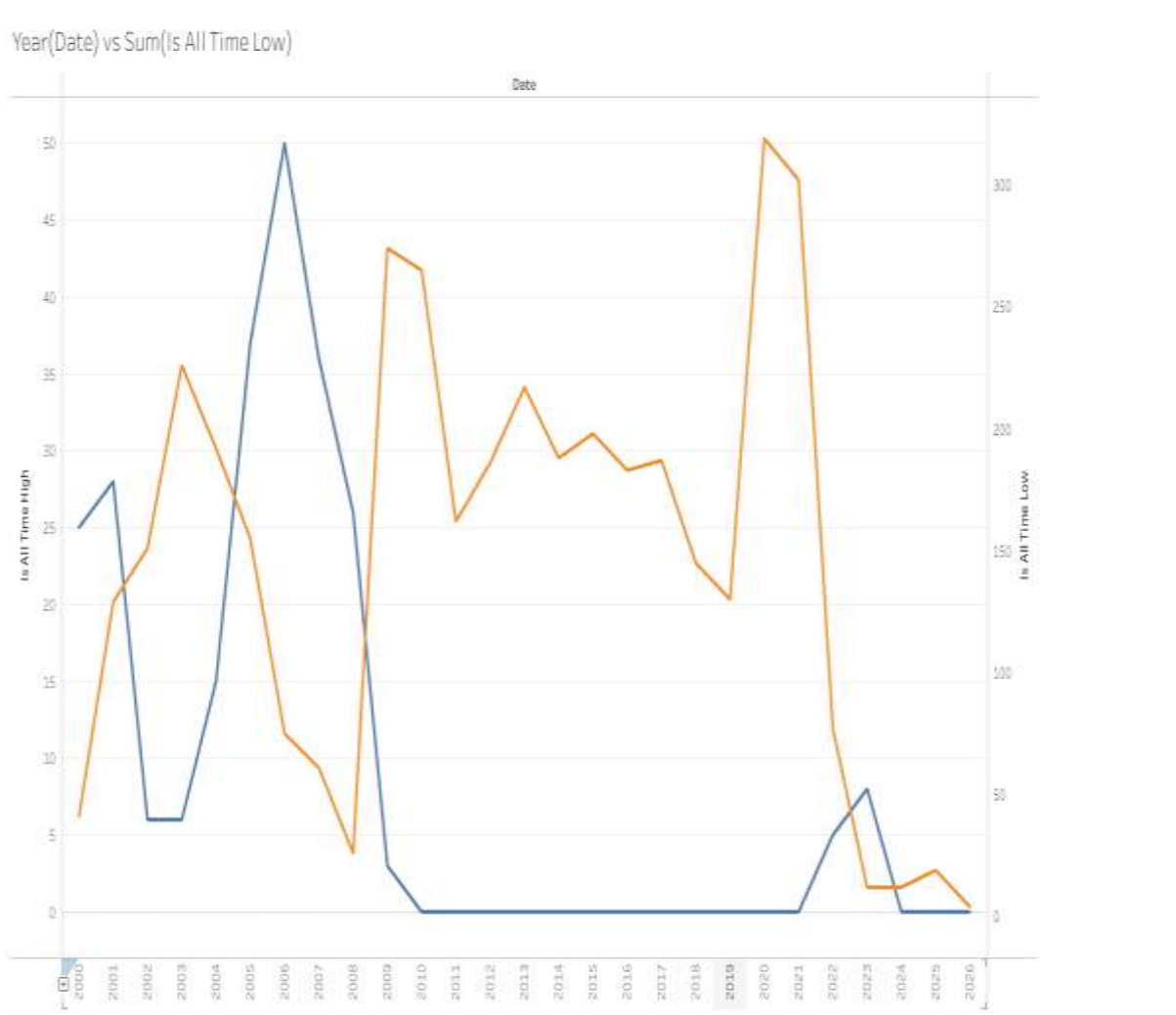
Data analytics and visualization:

1.Capital Vs AVG (Fed Rate)



The bar graph compares the average capital values against the Federal Rate across different cities. Athens and Madrid have the highest values, both exceeding 6.0, indicating stronger average rates compared to the other cities. Cities such as Tokyo, Copenhagen, and Stockholm fall in the middle range, showing moderate values. On the other hand, London, New Delhi, and Washington, D.C. record the lowest values in the comparison. Overall, the differences between cities are not very large, as most values are grouped between 4.5 and 6.5, suggesting a relatively balanced distribution across the selected locations.

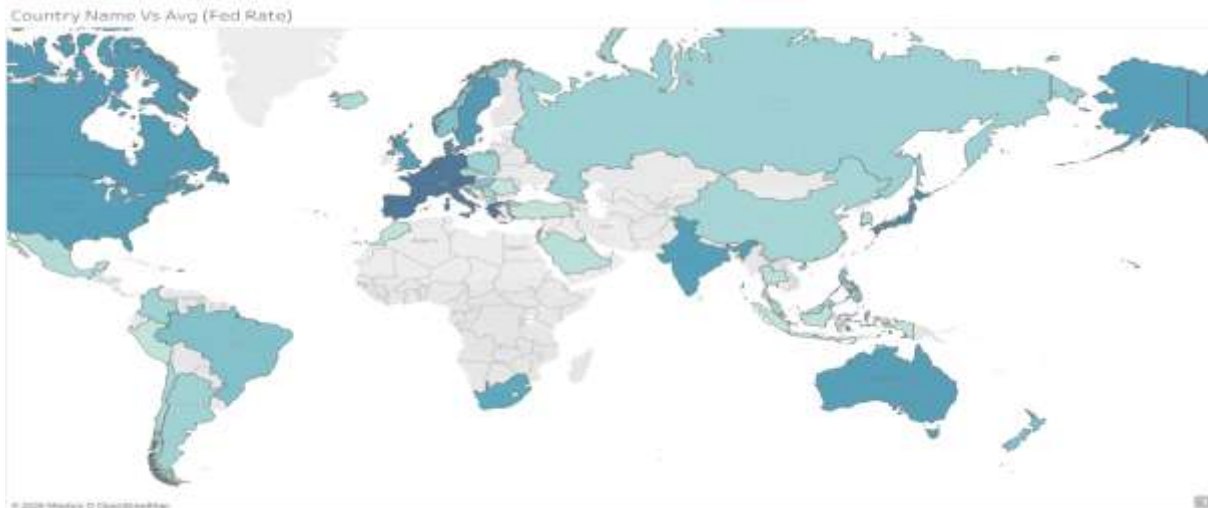
2. Year Vs Sum (Is All Time low)



The graph illustrates the yearly trend of all-time low interest rates and shows how monetary policy has changed over different periods. Interest rates were generally higher during the earlier years of the dataset and gradually declined over time. A noticeable

increase can be seen around 2020–2021, reflecting the economic uncertainty and policy responses during that period. After this spike, interest rates dropped sharply in the following years. Overall, the chart highlights the changing strategies of central banks and how interest rates have been adjusted in response to different economic conditions and global events.

3. Country Vs Avg (Fed Rate)



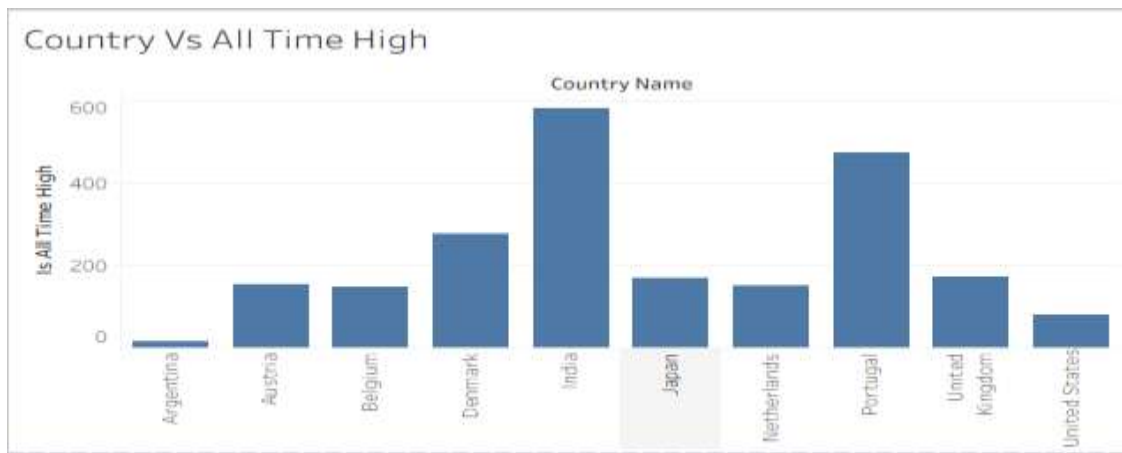
This method is called as ToolTip, in this one sheet is connected to the other sheet with the tooltip. After connected, we can see the two different data like Country and Avg(Fed Rate).

4.

Country Name	Central Bank	
Argentina	Bancó Central de la Repúb..	2
Australia	Reserve Bank of Australia	133
Belgium	Nationale Bank van België	22
Denmark	Danmarks Nationalbank	140
India	Reserve Bank of India	70
Japan	Bank of Japan	124
Netherlands	De Nederlandsche Bank	132
Portugal	Banco de Portugal	247
United Kingdom	Bank of England	198
United States	Federal Reserve	111

The table compares different countries, their central banks, and their recorded all-time low values. Portugal has the highest value at 247, followed by the United Kingdom with 198 and Denmark with 140. Countries such as Australia, the Netherlands, and Japan fall in the middle range, showing moderate values. India and Belgium have relatively lower figures, while Argentina records the lowest value at just 2. Overall, the table shows considerable differences in all-time low values across countries, reflecting the varying monetary policies and economic conditions experienced by different central banks over time.

5.



Country Name vs Central Bank Vs All Time Low

Country Name	Central Bank	Value
Argentina	Banco Central de la Repúb...	2
Australia	Reserve Bank of Australia	133
Belgium	Nationale Bank van België	22
Denmark	Danmarks Nationalbank	140

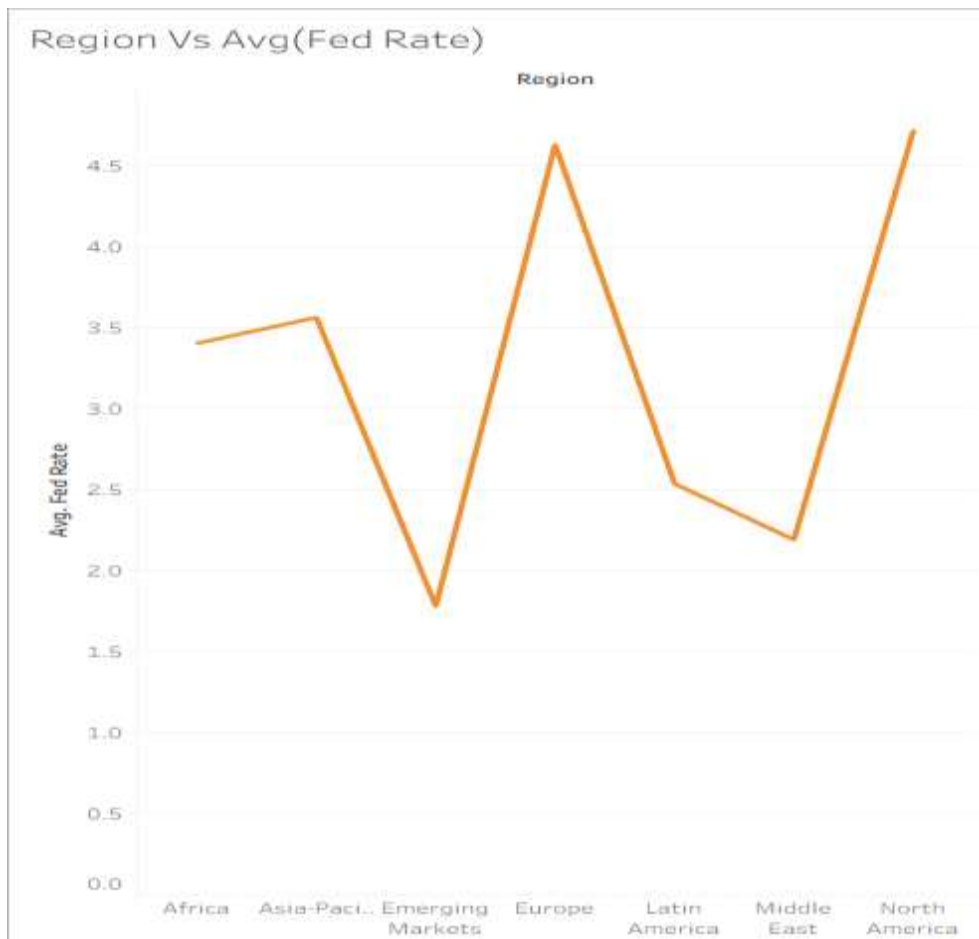
Country Vs All Time Low



This dashboard compares countries based on their all-time high and all-time low central bank rates. The top bar chart shows that India and Portugal have some of the highest

all-time rates, while countries like Argentina and the United States have relatively lower values. The middle table highlights central banks alongside their corresponding low rates for selected countries. The bottom chart visualizes all-time low rates, where Portugal and the United Kingdom stand out with higher values compared to others.

6.

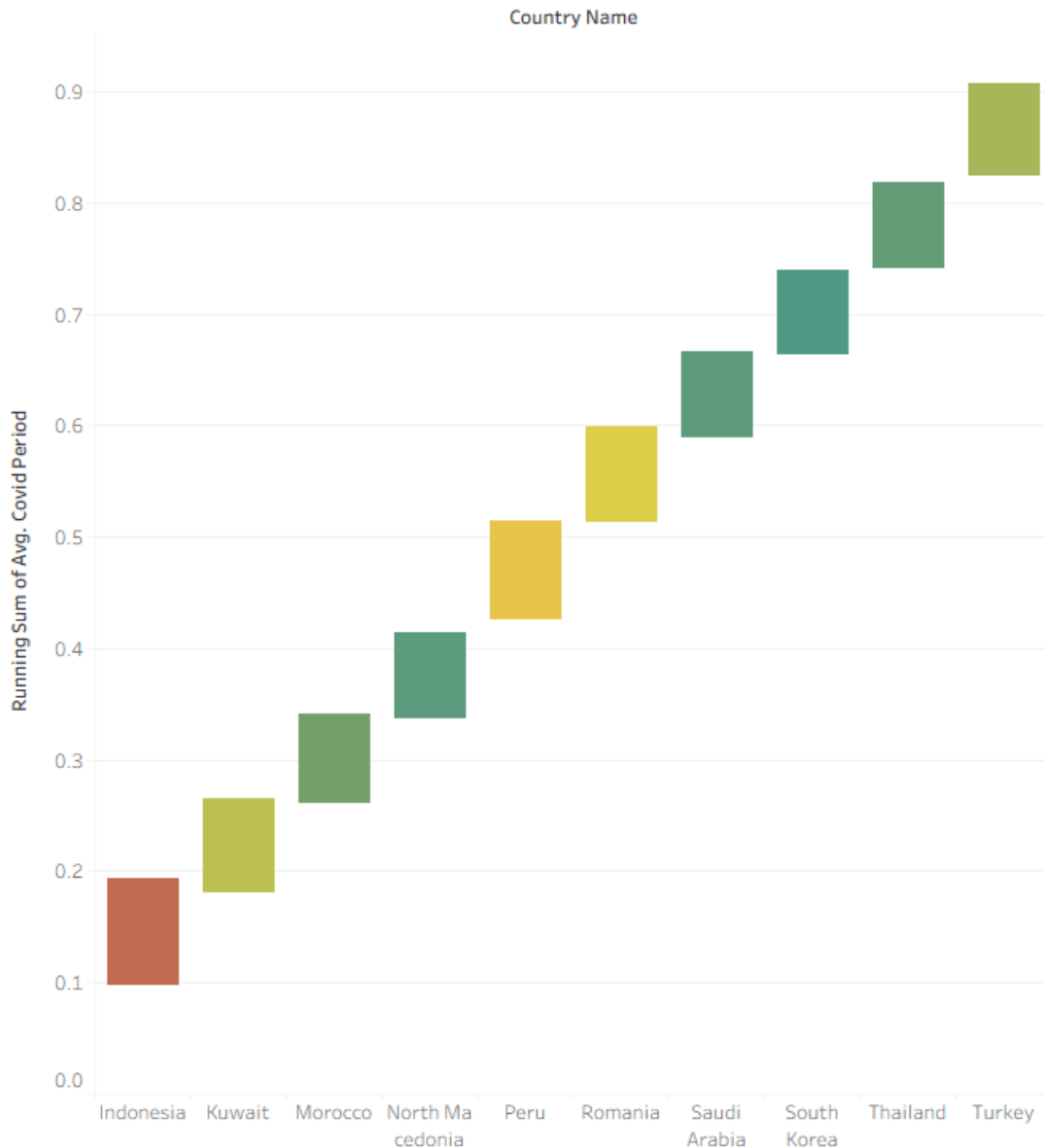


The graph compares the average Federal Rate across different regions of the world. North America records the highest average rate, with Europe following closely behind. Africa and the Asia-Pacific region show moderate rates, indicating a balanced position compared to the other regions. Latin America and the Middle East have slightly lower average rates, while Emerging Markets record the lowest average Federal Rate among all regions. Overall, the chart shows noticeable differences between regions, reflecting

the varying economic conditions and monetary policy approaches followed around the world.

7.

Country Name Vs Covid Period



The waterfall chart shows the average Fed rates across different countries during the COVID period in a step-by-step way. It starts with Indonesia, which has the lowest value, and then slowly increases as we move through countries like Kuwait, Morocco, and North Macedonia. Countries like Peru and Romania are in the middle, showing moderate average rates. Toward the end, the values rise more, with Saudi Arabia, South

Korea, Thailand, and Turkey showing the highest contributions. Overall, the chart shows a gradual increase in average Fed rates across these countries during the COVID period.

8.



The funnel chart shows the average Fed rates across different continents, ranked from highest to lowest. Europe is at the top with the highest average rate, around 4.70. After that, the values slowly decrease as we move down the list. Some continents fall in the middle with moderate rates, mostly in the 3 to 4 range. South America is at the lower end, with the lowest average rate. Overall, the chart shows a clear drop in average Fed rates as we move from higher to lower-ranked continents.

Discussions:

This project on Global Central Bank Interest Rate Trends and Monetary Policy Analysis gives a clear picture of how interest rates have changed in different countries from 1945 to 2026. Using Tableau dashboards, the data was studied by looking at interest rates, time periods, and country-wise trends to find important patterns in central bank

decisions around the world. The interactive visuals made it easy to explore changes over time.

The analysis shows that interest rates are not the same everywhere or every time. In some periods, rates were high when countries were dealing with inflation. In other times, especially during recessions or crises, many countries lowered rates to support economic growth.

Over the decades, interest rates have gone up and down many times, mainly because of major global events like financial crises, inflation, and economic slowdowns. At times, central banks increased rates sharply to control inflation, while in other periods they kept rates very low to help recovery.

When comparing countries, it is clear that each one follows different monetary policies based on its own economic situation. Some countries kept their rates quite stable, while others showed more ups and downs. This shows how local conditions strongly influence central bank decisions.

Overall, using Tableau tools like line charts, dual-axis graphs, and interactive filters helped make the data easier to understand. It also shows how data visualization can turn complex financial information into simple insights that are useful for studying the economy and making better decisions.

Conclusion

This project shows how Tableau can be used to study global central bank interest rate data and turn complex financial information into clear and useful insights. Using tools like line charts, dual-axis charts, dashboards, filters, and interactive tooltips, the analysis helped identify key patterns in interest rate changes, monetary policy decisions, and long-term economic trends across different countries and regions.

The study found that interest rates have changed a lot over time. These changes reflect how central banks respond to different situations like inflation, economic growth, recessions, and financial crises. In some periods, rates were increased to control

inflation, while in other times they were lowered to support economic growth and recovery.

Looking at different time periods, the data clearly shows ups and downs in interest rates across decades, mainly due to major global economic events and changes in policy approaches. When comparing countries, it is clear that each central bank follows its own strategy based on its economic conditions, inflation levels, and development needs.

This project is useful for economists, researchers, policymakers, investors, and students because it helps them understand how interest rates have changed over time and how they affect the economy. The interactive dashboard also makes it easier to explore and compare data from different countries and time periods.

Overall, this project shows that tools like Tableau are very helpful for understanding financial data. They make complex information easier to read and help identify important trends and policy changes quickly. This approach can also be improved further by adding more economic indicators and using predictive analysis for better future insights.

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