Exploratory Data Analysis (EDA) Report

Project Title: Economic Trends in Trinidad and Tobago (2001–2024)
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Program: Google Data Analytics Certificate.
Date: 16th December, 2025.

1. Introduction

This exploratory data analysis explores key economic and labour market indicators in Trinidad and Tobago between the years 2001 and 2024, with the aim of identifying trends and relationships between economic performance and employment outcomes over time.

2. Data Overview

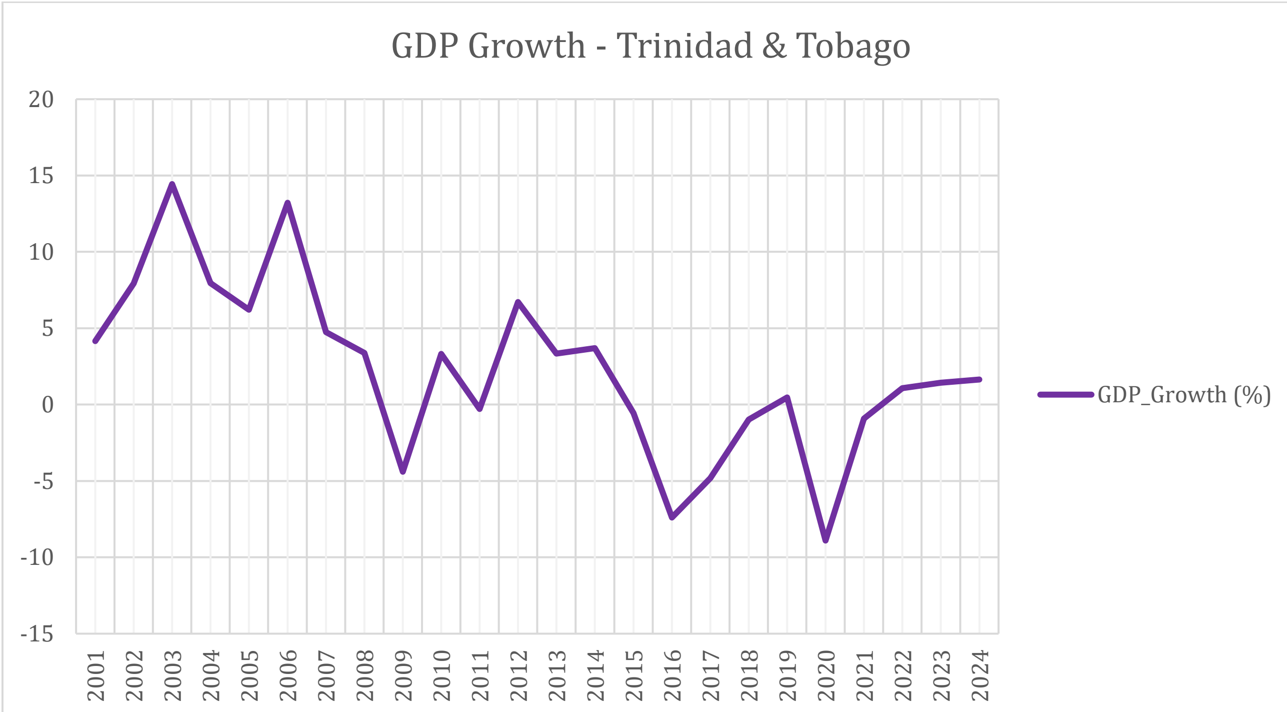
The datasets used contains global annual data observations for GDP growth, inflation rate, and unemployment sourced from the World Bank and filtered to relevant indicators and years for analysis.

3. Data Preparation Summary

The actions taken in the data preparation process involved filtering the global datasets to Trinidad and Tobago specifically, removing any unnecessary data, changing the data format from wide to long, standardizing indicator names, and combining all of the indicators into a single, master dataset.

4. Exploratory Data Analysis Findings

4.1 GDP Growth Trends

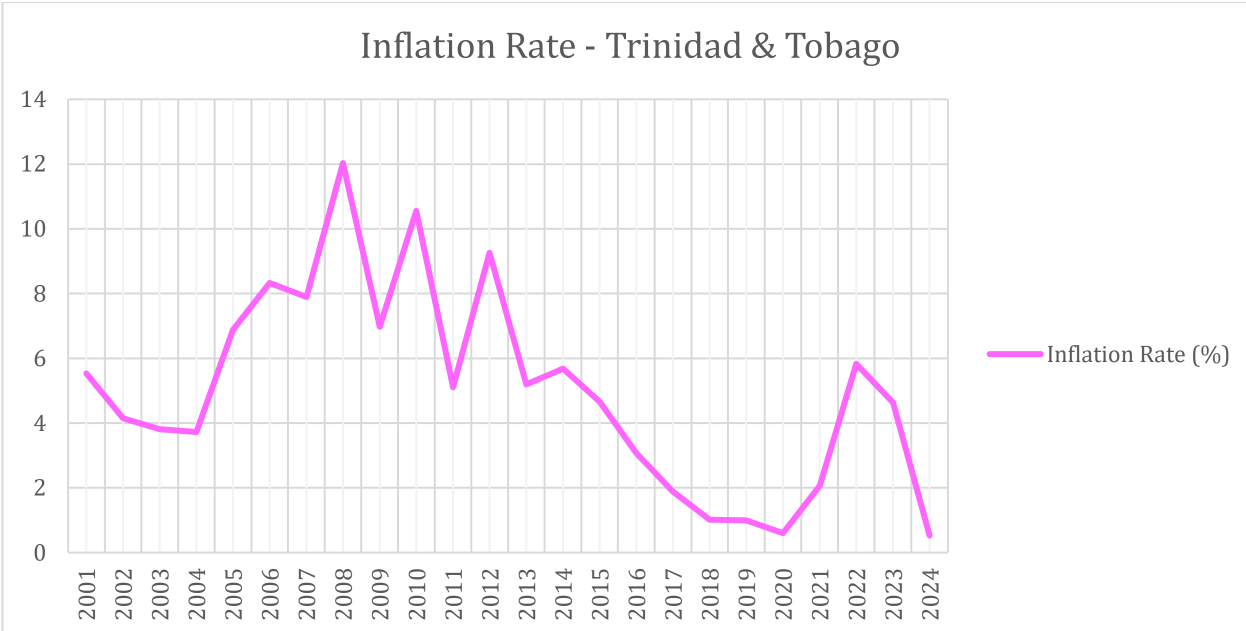


GDP growth within Trinidad and Tobago between 2001 and 2024 shows high volatility. Growth peaked between the years 2003 and 2006, followed by increased fluctuation and an average downward trend in subsequent years. Notable GDP troughs are observed in 2009, 2016, and 2020, with the latter two representing the lowest GDP rates in the period analysed.

Despite evident economic recoveries, GDP growth appears to reach progressively deeper contractions which suggests increasing economic vulnerability over time. These fluctuations may be partly due to changes in energy prices as Trinidad and Tobago's economy is heavily dependent on its oil and gas sector, making it particularly vulnerable to external commodity shocks. As such, this highlights the importance of economic diversification to reduce exposure to external oil and gas shocks.

Furthermore, the massive decline in GDP in the year 2020 can be attributed partly to the COVID-19 pandemic resulting in a severe recession before its steady incline between 2021 and 2022.

4.2 Inflation Rate Trends

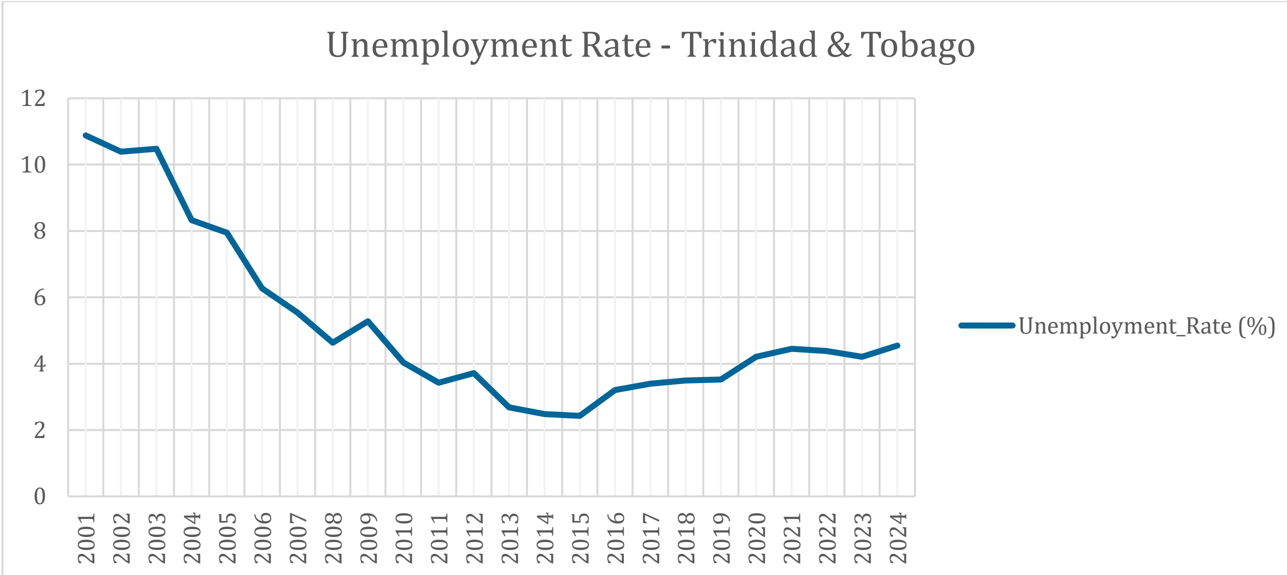


Inflation rate trends in Trinidad and Tobago shows periods of considerably high fluctuations, followed by extended phases of stability. Shown in the above line chart, between 2007 and 2013, volatility was at its highest with several sharp increases and declines occurring over a short span of time. From 2014 to 2020, inflation rate stabilized into a steady decline reaching relatively low levels and indicating a period of subdued price pressure.

A notable shift occurs after 2020, however, inflation sharply increased and this is likely attributed to the COVID-19 pandemic and its associated economic implications and disruptions, including supply chain constraints and changes in consumer demand. Although inflation begins to moderate once again after this period, between 2022 to 2024, the post-pandemic spike highlights the sensitivity of domestic price levels to global economic shocks.

This volatility only draws special attention to the importance of adaptive pricing and cost-management strategies for businesses, from small to large, operating in periods of economic uncertainty.

4.3 Unemployment Rate Trends



Unemployment rates in Trinidad and Tobago between 2001 and 2024 shows relatively low volatility, as compared to GDP growth and inflation. The data shows an evident downward trend from the early 2000s, with unemployment peaking around 2001 and declining steadily through the late 2000s and early 2010s. This period shows gradual improvements in labour market conditions rather than abrupt changes.

From approximately 2015 and onward, unemployment stabilized at lower rates, followed by a modest increase in the years surrounding 2020, likely reflecting labour market responses to broader economic disruptions such as, once again, the COVID-19 pandemic. Unlike GDP growth, which reacts quickly to economic shocks, changes in unemployment appear more gradual, highlighting the lagged nature of labour market adjustments.

4.4 Cross-Indicator Observations

Examined together, GDP growth, inflation and unemployment trends in Trinidad and Tobago reveal how economic shocks affect the economy as a whole. GDP growth has the most rapid response rate to external disruptions, exhibiting sharp contractions during periods such as 2008-2009, the mid 2010s downturn and the 2020 COVID-19 pandemic. These declines each reflect sudden reductions in economic output and investment.

Secondly, inflation, which is also greatly affected by global events, displays more of a cyclical and delayed response as compared to GDP growth. Periods of declining GDP are not always accompanied by immediate inflationary pressure; instead, inflation spikes tended to emerge during recovery phases or periods of supply-side disruption (as observed after 2020). This suggests that price levels in Trinidad and Tobago are influenced by both domestic conditions and external cost shocks.

Unemployment on the other hand demonstrates the slowest response rate out of the three indicators. Changes in labour market conditions appeared to lag behind shifts in GDP growth, with unemployment rates adjusting gradually and over an extended period rather than abruptly. Even during significant economy troughs, increases in unemployment occur over an extended period, indicating delayed workforce adjustments.

All in all, these patterns suggest that economic shocks first impact output, followed by price adjustments, and eventually labour market outcomes. This sequential relationship highlights the importance of forward-looking economic and workforce planning, as the full impact of declines may not be immediately visible in employment data.

5. Key Insights Summary

- GDP growth in Trinidad and Tobago exhibits high volatility, with sharp contractions occurring during major global and sector-specific shocks, including the 2008-2009 financial crisis, the mid 2010s decline, and the 2020 COVID-19 pandemic.
- Inflation demonstrated cyclical behaviour comparatively, with periods of relative stability interrupted by short-term spikes, following major economic disruptions.
- Unemployment showed the lowest levels of volatility and adjusted more gradually over time, indicating a lagged response to changes in economic conditions compared to the other two aforementioned indicators.
- Collectively, the indicators suggest a clear sequence in which economic output is affected first, followed by price adjustments, and finally labour market responses.

6. Conclusion & Business Implications

The findings from this analysis in particular draws attention to and highlights the sensitivity of Trinidad and Tobago's economy to external shocks, especially those related to global energy markets and worldwide economic disruptions. The volatility observed in GDP growth underscores the risks associated with heavy reliance on the oil and gas sector, while inflation and unemployment trends reveal delayed but persistent impacts on costs and labour conditions.

For businesses, the importance of flexible strategic planning is emphasized especially during periods of economic uncertainty. Small and large organisations may benefit from adopting adaptive pricing strategies, careful investment planning, and effective and proactive workforce management to account for delayed labour market responses following economic downturns. From a broader perspective, the results reinforce the value of economic diversification and long-term resilience planning to avoid and reduce exposure to future external shocks.

7. Limitations

This analytical project is subject to several limitations.

- The data is recorded at an annual frequency, which may obscure short-term fluctuations and intra-year dynamics.

- Secondly, the dataset focuses on a limited set of macroeconomic indicators and does not incorporate additional variables like wage growth, sector-specific employment, government policy interventions, or exchange rate movements.
- Finally, while observable trends suggest relationships between the indicators, the analysis is descriptive in nature and does not establish causal relationships.

8. References

World Bank