

Project 3 Proposal

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TSX vs Canada's Macroeconomic Indicators

Selecting a Topic:

A comparative analysis of the stock market (TSX) and Canada's macroeconomic indicators, for the fiscal years (Jan 2020 - 2024 present).

Finding a Dataset

Data will be collected from reputable sources, possibly including:

- <https://tradingeconomics.com/>
- <https://www.bankofcanada.ca/>
- <https://www.alphavantage.co/>

Finding Inspiration

The inspiration behind our chosen topic is sparked by recent events in the Canadian market. Consumers have expressed their outrage with the heightened prices of goods and services, and this is deeply affected by different factors such as inflation, unemployment etc.. The Canadian dollar currently sunk below 0.72 cents to the US dollar, thus outlining the decrease of our currency standing (Financial Post, 2024). These events have influenced commodity prices, interest rates, unemployment rates, and fiscal policy, therefore it is imperative we understand the relationships at play, and how to account for them.

<https://financialpost.com/news/economy/canadian-dollar-trading-lows-not-seen-years>

Sketching Your Ideal Visuals

Visualising the performance of stock market indices such as the TSX or S&P 500 against Canada's macroeconomic indicators, to show the correlation between financial/stock market data and Canada's macroeconomic performance, over the past few years.

Technologies Used:

Python:

Pandas

Numpy

Matplotlib

Sci.py

Requests (API)

JavaScript

D3.js

Chart.js

Plotly.js

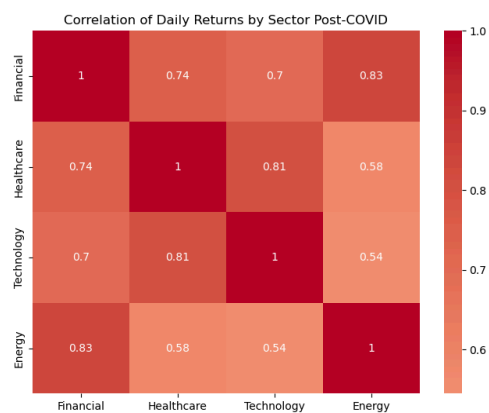
Research Questions :

Q1) What correlations can be identified between the performance of the TSX and the available macroeconomic indicators?

Visualization Ideas:

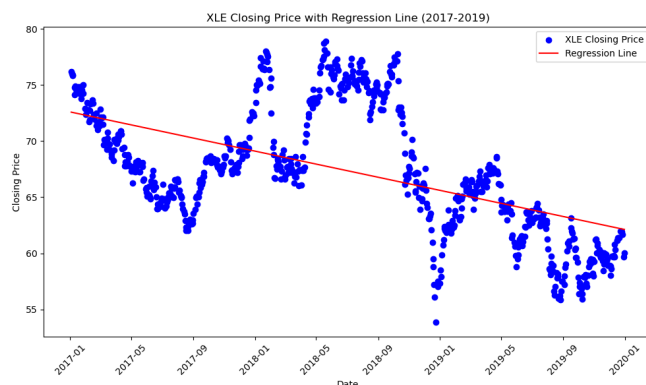
1. Correlation Heatmap:

- Show correlations between macroeconomic indicators and TSX indices (TTEN, TTFS, etc.).
- **Tool:** Seaborn or Plotly in Python.
- Example: Highlight strong positive or negative correlations.



2. Scatterplots:

- Use scatterplots to visualize relationships between specific indicators (e.g., inflation vs. TSX performance).
- **Tool:** Matplotlib or Plotly.



3. Time Series Overlay:

- Overlay TSX performance with macroeconomic indicators to observe trends over time.

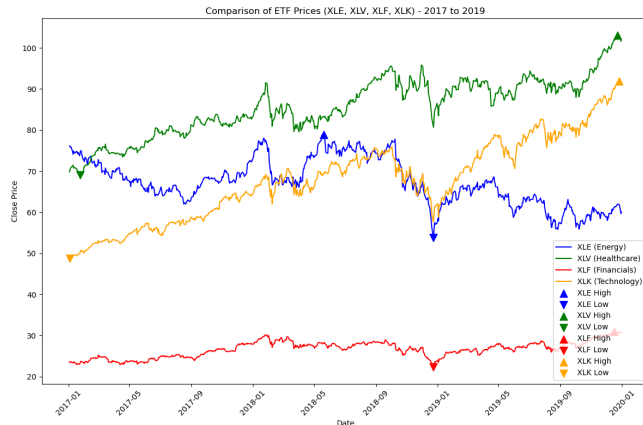
- **Tool:** Dual-axis line chart with Plotly or Matplotlib.

Q2.Does FX volatility affect TSX performance?

Visualization Ideas:

1. **Line Chart Comparison:**

- Plot exchange rates alongside TSX indices over time.
- Highlight significant shifts in the exchange rate and corresponding TSX reactions.



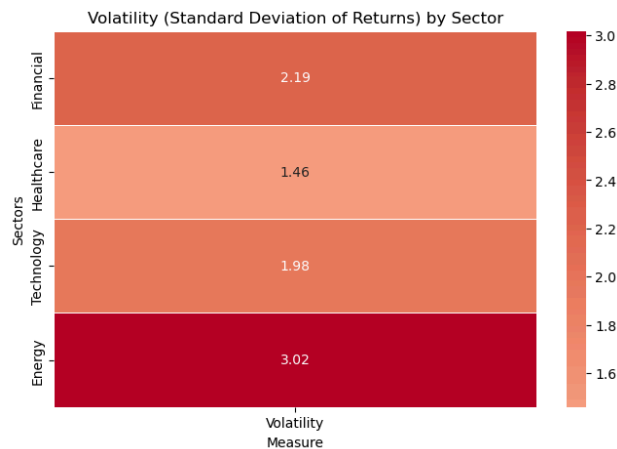
2. **Scatterplot:**

- Show the relationship between FX volatility and TSX sector performance

3. **Volatility Chart:**

- Calculate the rolling standard deviation of CAD/USD rates and compare with TSX sector volatility.

- **Tool:** Matplotlib or Pandas.

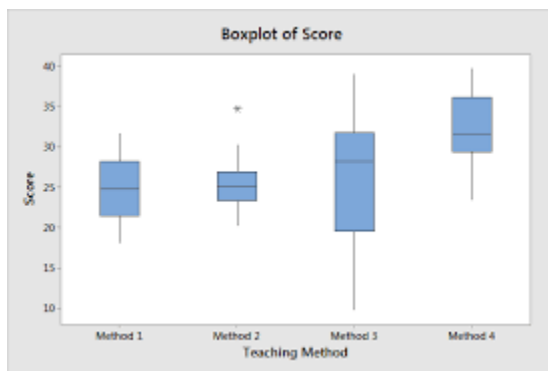


Q3. Which sectors of the TSX have shown the most resilience or volatility in response to changes in macroeconomic indicators?

Visualization Ideas:

1. **Box Plot:**

- Compare sector-wise volatility (e.g., standard deviation of returns) to identify the most stable and volatile sectors.
- **Tool:** Seaborn or Matplotlib.

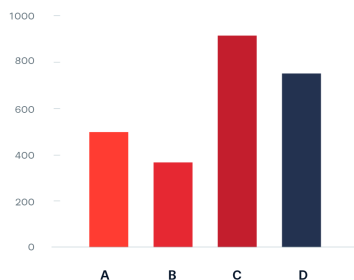


2. **Sector Performance Heatmap:**

- Highlight sector performance during key economic events (e.g., interest rate hikes or COVID-19).

3. **Bar Chart:**

- Show average sector returns during macroeconomic upswings or downturns.



Guiding Questions for Discussion and Conclusion:

Q4. Which macroeconomic indicator has the strongest predictive power for TSX fluctuations?

Q5. How have macroeconomic shocks (COVID-19 for example) impacted Canada's economy and TSX, in comparison to other countries?

Ethical Considerations

We will ensure that our dataset is extracted from credible sources and that the information be presented in an accurate unbiased manner. The project also aims to address any gaps in the literature and disclose any limitations.

Conclusion

Through our analysis of the Canadian stock market and how different macroeconomic indicators influence it, we can highlight useful trends in public policy or investment strategies. Our project aims to present the information in an accurate and comprehensive manner, using different data visualisation techniques, to improve the general public's understanding of our economy and the different components regulating it.