TSX Factors and Analysis

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Introduction

Background

The Toronto Stock Exchange (TSX) facilitates the transactions of shares of different types of securities. It functions to provide investors with liquidity and issuers with access to raise capital. There are approximately 1600 listings on the TSX, with the vast majority of which being Canadian issuers (TSX, 2020). The combined market capitalization of these 1600 listings is $3 trillion.

Issuers from a variety of sectors are present, including consumer products, technology, metals and financial services. Furthermore, these securities may be a corporation equity or an exchange traded product (ETP), such as exchange traded funds (ETFs) or real estate investment trusts (REITs). ETPs comprise of almost half (45.86%) of the listings on the TSX (TSX, 2020).

Any given security's price is influenced by a myriad of factors. Some factors include the security's fundamental data, industry strength, investor sentiment, float, inflation, liquidity, supply & demand and the overall economy. This project seeks to aggregate and analyze data relevant to the pricing of TSX securities.

Thesis

The pricing of securities on the TSX is influenced by underlying metrics, including economical and fundamental data. By performing an analysis and understanding these factors, investors may estimate future trends.

Methodology

Data Aggregation

Data is aggregated to provide a holistic view of the factors and state of the stock market. Indices with real time, automatically updated, data is viewable in excel where statistical analysis and charting is completed. Furthermore, a similar analysis is done on economic indicators (i.e. GDP, unemployment rate, etc.), as well as specific values of index constituents. Data is aggregated through web queries in Excel and Python.

Charting

Excel charts that update based on the data may be viewed. The user may modify the charts; however, by default there are charts that display data in line graph and scatter plot format. Charting helps analyze the effect factors have on a security's current and historical pricing. Furthermore, charts exist for 10 economic indicators including GDP, unemployment rate and inflation.

Furthermore, for each index, a scatter plot was generated with a linear regression equation. The correlation of determination and standard error of estimate values were then calculated.

Index	Regression Equation	Coefficient of Correlation	Coefficient of Determination
TSX60	y= -0.03042x + 1358.8891	-0.5403	0.2919
TSX/S&P	y= - 0.03318x+ 1481.1944	-0.5365	0.2879
TSX/S&P Energy	y= -0.0308x + 1359.36234	-0.6834	0.4670
TSX/S&P Real Estate	y = -0.2044x + 9152.3808	-0.4200	0.1764
TSX/S&P Technology	y = 0.0043x -160.9716	0.0785	0.0062
TSX/S&P Consumer Staples	y = -0.0382x + 1736.4483	-0.5026	0.2526

Table 4: Regression equation, correlation and coefficient of determination for each index.

Data Set 4: Economic

The same analysis was conducted on the values of 10 economic indicators. These indicators were:

- National Population of Canada
- CPI
- USD/CAD Currency Conversion Rate
- Gasoline
- Unemployment
- GDP Growth
- Retail Sales
- New Home Price Index (Property and Land)
- Median National Income of Canada
- National Trade Balance of Canada

Each economic indicator was analyzed with a five-number summary initially. The interquartile range and box plot were then generated, followed by a calculation of the maximum and minimum non-outlier values.