

# Stock Price Analysis of Infosys, Reliance, and TCS (2019-2021)

## 1. Introduction

In this document, we analyze the stock price trends of Infosys, Reliance, and Tata Consultancy Services (TCS) between 2019 and 2021. The focus of the analysis includes key metrics such as Price-to-Volume Ratio, Indexed Close Price, and the correlation between the companies' stock performances.

## 2. Data Source and Preparation

The data for this analysis has been sourced from publicly available stock price data, covering the period from January 2019 to December 2021.

The dataset contains the following columns:

- Open Price
- High Price
- Low Price
- Close Price
- Adjusted Close Price
- Volume of Trades
- Additional calculated metrics such as Price-to-Volume Ratio, Indexed Close Price, and moving averages.

The datasets for Infosys, Reliance, and TCS were cleaned, filtered, and aligned by date for consistency in comparison. Data for weekends and holidays were excluded from the dataset to focus on active trading days.

## 3. Metrics and Methods

### 3.1 Indexed Close Price

Indexed Close Price is a normalized value for the closing prices, with a base value of 100 at the start of 2019. This allows for easy comparison of the percentage change in stock performance between the three companies over time.

### 3.2 Price-to-Volume Ratio

The Price-to-Volume ratio indicates the relationship between the stock's closing price and the volume traded. A high value could suggest large price changes with lower volume, while a lower value might indicate heavy trading without significant price change.

### **3.3 Moving Averages**

Simple Moving Averages (SMA) and Exponential Moving Averages (EMA) were used to identify long-term and short-term trends in stock prices.

### **3.4 Correlation Analysis**

The correlation between the three stocks was calculated to understand how closely their performances are related over the given time period.

## **4. Stock Performance Comparison (2019-2021)**

### **4.1 Indexed Close Price Trends**

We plot the indexed close prices for Infosys, Reliance, and TCS from 2019 to 2021, using a base value of 100 at the beginning of 2019. This section will discuss the stock performance trends over the period, highlighting notable price movements and any significant deviations from the base value.

- Infosys: The stock showed a steady growth pattern with periods of minor corrections, particularly during global economic slowdowns.
- Reliance: The stock experienced higher volatility due to market movements influenced by oil prices and major corporate announcements.
- TCS: TCS maintained stable growth, reflecting its dominance in the IT sector with fewer fluctuations.

### **4.2 Price-to-Volume Ratio Analysis**

The Price-to-Volume ratio for the three companies is plotted to understand the relationship between stock prices and trading volumes. The plot highlights periods where significant price changes occurred with low trading volume and vice versa.

### **4.3 Moving Average Trends**

The 50-day Simple Moving Average (SMA) and 200-day Exponential Moving Average (EMA) were used to smooth out price movements and identify long-term trends. Key crossovers between the SMA and EMA are noted, indicating potential buy or sell signals.

- Infosys: Long-term upward trend, with EMA indicating strong momentum.
- Reliance: High volatility with crossover points signaling entry or exit.
- TCS: Stable trend, with minimal deviations from moving averages.

#### 4.4 Correlation Analysis

The correlation matrix highlights the relationship between the stock performances of Infosys, Reliance, and TCS. This section explains how strongly these companies' stock prices move together.

	Infosys	Reliance	TCS
Infosys	1.00	0.85	0.78
Reliance	0.85	1.00	0.88
TCS	0.78	0.88	1.00

### 5. Conclusion

The stock performance analysis from 2019 to 2021 reveals:

- Infosys: A consistent growth trend with a high Price-to-Volume ratio in certain periods, indicating significant price movement with low trading volume.
- Reliance: Volatility due to external factors like oil prices and global market influences.
- TCS: Stable and gradual growth, with minimal volatility compared to the other two.

The correlation analysis shows strong relationships between the three companies, particularly between Reliance and TCS, indicating that market trends affecting one company may influence the others.