**Industry Trajectory Analysis**

The initial intent of this project was to understand how market forces affect companies’ behaviors within a given industry. The continued recurrence of the same highly connected companies implied the market forces that governed these few companies in turn govern their respective industries. Through the PCA reduction of several variables the graphs constructed had given great insight into how these forces can sway even the largest companies over the years.

The second phase of the project is too look at different dimensionality reduction algorithms and observe whether or not they provide better insights. Additionally, instead of looking at absolute values as features, the approach chosen is too look at financial ratios. Financial ratio analysis is critical to understand financial statements, identify trends over time, and measure the overall financial state of any business.

Versatility and Usefulness

Financial ratios act as lagging indicators in identifying positive and negative trends and also provides ways to compare the financial state of a business against other businesses not only within the industry but also against other businesses in different industries.

The following type of ratios frequently used are:

* ***Liquidity ratios***
* ***Asset turnover ratios***
* ***Financial leverage ratios***
* ***Profitability ratios***
* ***Dividend policy ratios***

**I. Liquidity Ratios**

Liquidity ratios provide information about the firm’s ability to meet its short-term financial obligations.

* Current ratio: Current Asset / Current Liability
* Quick ratio: (Current Asset – Inventory) / Current Liability

**II. Asset Turnover Ratios**

Asset turnover ratios indicate how efficiently a firm utilize its assets

* Receivables Turnover: Credit Sales / Account Receivable
* Collection period: 365 / Receivables Turnover
  + Average period credit sales are converted into cash
* Inventory Turnover: Cost of goods sold / Average Inventory
* Inventory period: 365/ Inventory Turnover
  + How quickly a company is able to sell its inventory

**III. Financial Leverage Ratios**

Financial leverage ratios provide an indication of the long-term solvency of a firm; in other words, they measure the extent to which the firm is using long term debt.

* Debt ratio: Total debt / Total Asset
* Debt to equity ratio: Total debt / Total equity
* Interest Coverage: EBIT / Interest expense
  + This ratio indicates how well the firm’s earnings (before interest and taxes) can cover interest payments on its debt.

**IV. Profitability Ratios**

Profitability ratios offer different measures of the success of the firm at generating profits.

* Gross Margin: (Sales - Cost of goods sold) / Sales
* Net Profit Margin: Net Income / Sales
* Return on Assets: Net Income / Total Assets
  + A measure of how effectively a firm’s assets are being used to generate profits
* Return on Equity: Net Income / Shareholder Equity
  + A measure of the profits earned for each dollar invested in the firm’s stock.

**V. Dividend Policy Ratios**

The dividend policy ratios provide insight into the dividend policy of the firm and the prospect of future growth.

* Dividend Yield: Dividend Per Share / Share Price
* Payout Ratio: Dividends Per Share / Earnings Per Share