Financial Data Management & Analysis

Fin 557

Group Project Presentation

Team Members

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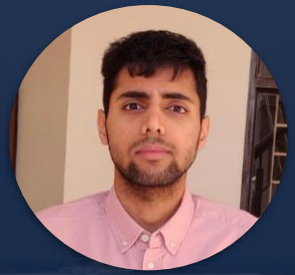

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Agenda

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2. Data Source, Exploration, and Preparation
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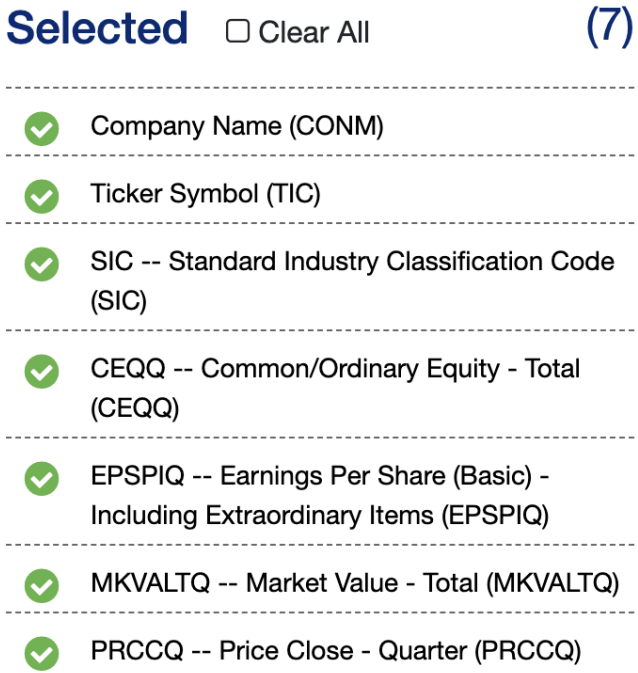
Project Introduction: Stock Valuation Across Industries

Our team is interested in developing an investment strategy by analyzing the performance of stocks across different industries. To achieve this, we have sampled 10 companies from each of 5 industries and assessed whether each stock is undervalued, fairly valued, or overvalued relative to other stocks. Our goal is to identify the most undervalued stocks across all industries and create a portfolio of them for investment purposes. To conduct our analysis, we plan to employ fundamental analysis, which involves evaluating financial statements, economic indicators, and other relevant quantitative and qualitative data.

Data Source

For our project, we utilized the Wharton Research Data Services (WRDS) platform to compile annual and quarterly data spanning from January 2010 to April 2023 for a total of 50 companies across 5 sectors. To extract the necessary data, we followed a standardized workflow which involved accessing

WRDS -> Get Data -> Compustat - Capital IQ -> North American -> Fundamentals Quarterly



Research Objective

The main objective of this project is to construct an optimal investment portfolio by analyzing the performance of 50 companies across 5 distinct industries, with 10 representative stocks sampled from each industry. Our aim is to employ a rigorous analytical approach to identify the most promising investment opportunities and construct a diversified portfolio that maximizes returns while minimizing risk. By carefully evaluating key financial and economic indicators, we aim to develop a well-informed and data-driven investment strategy that can deliver sustainable long-term growth.

Methodology

To analyze the performance of the 50 stocks in our sample, we divided them into three groups based on their average Price-to-Book (PB) ratios over a three-year period from 2015 to 2017. We then calculated the average returns of all companies in each group over a five-year period spanning from 2018 to 2022.

Furthermore, we examined the distribution of stocks across industries within each group and calculated the average returns of each industry for each group over the same five-year period. This allowed us to identify patterns and trends in the performance of stocks within and across industries and to develop a more comprehensive understanding of the factors that drive returns in different market sectors.

By using this analytical approach, we aimed to gain valuable insights into the performance of the stocks in our sample and to inform our investment decisions with a data-driven and evidence-based approach.

Data Manipulation

To prepare our data for analysis, we constructed several variables by applying established financial formulas and data extraction techniques. These included:

- Outstanding: calculated by dividing the total market value by the stock price
- PB_ratio: calculated by dividing the market capitalization by the book value of equity
- Year: extracted from the DATADATE field to provide a year variable for analysis
- Quarter: extracted from the DATADATE field to provide a quarter variable for analysis
- Stock_group: defined as either "value stocks" or "growth stocks" based on their PB ratio, with the remaining stocks classified as "general stocks"

Data Manipulation

Next, we applied various data manipulation techniques to the raw data to refine it for analysis. These included:

- Filtering the data to only include observations from 2015 to 2017
- Calculating the average PB ratio over this three-year period
- Defining value and growth stocks as those in the bottom 25% and top 25% of PB ratio, respectively, with the rest classified as general stocks
- Filtering the data to only include observations from 2018 to 2022
- Merging the stock_group and stock price (after 2017) by company name
- Calculating the mean return of all companies in each group over the 5-year period

By employing these data manipulation techniques, we were able to construct a robust dataset that allowed us to analyze the performance of our sample stocks across multiple dimensions and identify key trends and patterns in the data.

Result

Growth stock had the highest return (**0.69**) over the past five years, while **value stock** had the lowest return (**0.27**) of the three groups. This result does not meet our expectations.

The MEANS Procedure

Analysis Variable : ret						
stock_group	N Obs	N	Mean	Std Dev	Minimum	Maximum
general stock	23	23	0.3933174	0.5601166	-0.4925115	1.6275885
growth stock	13	13	0.6933160	1.1253475	-0.9419625	3.7284477
value stock	13	13	0.2740693	0.3809828	-0.3299259	0.9902176

Result

On the industry level:

- The retail sector boasts the highest number of growth stocks (5), while the **finance** sector has the highest number of value stocks (7).

stock_group	Sector	stock_number
general stock	Healthcare	7
general stock	Energy	5
general stock	Technology	5
general stock	Ratail	5
general stock	Finance	1
growth stock	Ratail	5
growth stock	Healthcare	3
growth stock	Technology	3
growth stock	Finance	2
value stock	Finance	7
value stock	Energy	5
value stock	Technology	1

Result

On the industry level:

- However, the **healthcare** industry demonstrated the highest return ratio(**0.87**) among all sectors,
- providing further evidence of the pandemic's significant impact on the stock market.

The MEANS Procedure

Analysis Variable : ret						
Sector	N Obs	N	Mean	Std Dev	Minimum	Maximum
Energy	10	10	0.3188949	0.3685617	-0.1747453	0.9902176
Finance	10	10	0.2996820	0.4260455	-0.3299259	0.9852135
Healthcare	10	10	0.8725559	1.1009737	0.0113213	3.7284477
Ratail	10	10	0.4125792	0.7871251	-0.9419625	1.8247774
Technology	10	10	0.3410446	0.6297978	-0.4925115	1.6275885

Conclusion and Takeaways

Our analysis revealed several notable trends and patterns in the performance of value and growth stocks over the past five years. Contrary to conventional wisdom, growth stocks have outperformed value stocks in recent years, possibly due to the impact of the COVID-19 pandemic on the market.

It is worth noting that the retail sector had a higher proportion of growth stocks than value stocks, while the finance sector had more value stocks than growth stocks. However, the healthcare industry demonstrated the highest return ratio among all sectors, providing further evidence of the pandemic's significant impact on the stock market.

Overall, these findings underscore the importance of taking a nuanced and data-driven approach to investment decision-making, as relying solely on traditional market wisdom may not always yield the best results in rapidly evolving market conditions.

Source Links

https://wrds-www.wharton.upenn.edu/pages/get-data/compustat-capital-iq-standard-poors/compustat/north-america-daily/fundamentals-quarterly/

https://finance.yahoo.com/screener/predefined/undervalued_growth_stocks/

Work Allocation

Data Gathering and Preparation: Pratik and Amin

Data Manipulation and Analysis: Tzu-Mien, Tung-Han, and Xiying

Presentation: Hinduja, Gurpratap

Report: Entire team

Thank You

Q&A