

ZUKOWA®

Student Project 2023

Task List and Literature

Task overview:

Task consists of analyzing and evaluating performance of 10 companies belonging to gaming and streaming industries listed on S&P500 index starting from beginning of 2013 until the beginning of 2023. This first part of the analysis consists of doing descriptive statistics, visualization and in general familiarizing with data which should include:

- Data collection from yahoo finance or other sources that contain stock price variables such as opening price, close price, high and low prices and adjusted closing prices on the daily interval.
- Data structuring into data frames with appropriate format and if needed, converting the variables into appropriate types.
- Doing basic descriptive statistics such as mean, median, skewness and kurtosis on prices.
- Calculating log returns of prices and assessing them on a daily, weekly, monthly, and yearly basis.
- Calculating yearly volatility using standard deviation of log returns.
- Visualizing both returns and raw prices on graphs and charts.
- On visual plots introducing moving averages on raw prices with windows 5, 21, and 63 for weekly, monthly, and quarterly averages respectively.
- Using all the gathered information from descriptive measures, returns and moving averages, rating companies based on price levels of their stocks.
- Based on visual plots, volatility and returns rating companies by their volatility from least to most volatile ones.
- Using Sharpe Ratio on a yearly basis to determine return to volatility ratio of companies and visualizing it on a plot.
- Writing a short and concise report that should include information about these companies and their performance based on gathered evidence.

Literature:

The following list contains some helpful literature and links that cover some statistical, programming and financial fundamentals that should prove useful in analysis of the companies:

- *Hands-On Machine Learning with Scikit-Learn and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems.*

This is a practical guide to machine learning using the Python libraries Scikit-Learn and TensorFlow. The book covers a wide range of topics, from data preprocessing to deep learning, with detailed code examples and exercises.

- *Python for Data Analysis*

This is a comprehensive guide that teaches readers how to use Python for data analysis tasks, such as data cleaning, transformation, visualization, and machine learning basics. The book covers a wide range of Python libraries, including Pandas, NumPy, Matplotlib, and Scikit-Learn.

- *Think Stats*

This is a book that introduces statistical analysis to people with little or no background in statistics. The book covers topics such as probability, descriptive statistics, hypothesis testing, correlation, regression, and Bayesian statistics, using Python as the programming language.

- *Learning R: A Step-by-Step Function Guide to Data Analysis*

This is a comprehensive guide that provides a hands-on introduction to data analysis using the R programming language. The book covers topics such as data manipulation,

visualization, statistical analysis, and machine learning using R's built-in functions and packages.

- *Hands-on Programming with R*

This is a practical guide that teaches readers how to program in R, a popular language for data analysis and statistical computing. The book covers topics such as data structures, control structures, functions, object-oriented programming, debugging, and profiling in R programming language.

- *Microsoft Excel Data Analysis and Business Modeling*

This is a book that provides a comprehensive guide to data analysis and business modeling using Microsoft Excel. The book covers topics such as data preparation, statistical analysis, forecasting, optimization, and simulation using Excel's built-in tools and add-ins.

- *Statistical Analysis of Financial Data in R*

This is a comprehensive book that teaches readers how to perform statistical analysis and modeling of financial data using R. The book covers topics such as time series analysis, volatility modeling, risk management, and portfolio optimization using R's built-in functions and packages.

- *Python for Finance: Mastering Data-Driven Finance*

This is a book that teaches readers how to use Python for financial analysis and modeling. The book covers topics such as data acquisition, data cleaning, visualization, statistical analysis, time series analysis, and machine learning in finance.