

CAPM: Capital Asset Pricing Model

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Abstract: *The Capital Asset Pricing Model (CAPM) is one of the most widely used models in finance for evaluating the relationship between risk and expected return. This research focuses on the practical implementation of CAPM using Python-based analytical tools to estimate the risk and return characteristics of selected stocks in comparison with market indices. The project employs libraries such as Pandas, yfinance, and pandas_datareader to collect real-time financial data, while Streamlit is used to design an interactive dashboard for visual representation and analysis. The study calculates essential parameters such as Beta, Alpha, and the coefficient of determination (R^2) through regression analysis between stock returns and market returns. Results indicate that stocks with higher Beta values demonstrate greater volatility compared to the market, aligning with CAPM's theoretical expectations. The dashboard developed allows users to explore these relationships dynamically, making financial analysis more accessible and data-driven. Overall, the study successfully demonstrates how computational tools can be integrated with financial theories to provide practical insights into investment decision-making.*

Keywords: Capital Asset Pricing Model (CAPM), Beta, Risk and Return, Regression Analysis, Financial Modelling, Python, Streamlit, Market Performance, Stock Analysis

