Project Progress Report 4

Week Ending: February 16, 2025

## Project Overview

The project aims to compare traditional financial models, such as CAPM and its extensions, with machine learning models for equity valuation. The primary objective is to assess the predictive accuracy of these models using identical datasets and factor inputs while analyzing performance variations across industry sectors. This week, significant progress was made in factor development, data processing, and model implementation.

## Progress Made This Week

**Factor and Model Function Creation**  
- Completed coding for all factor computation functions, ensuring flexibility in defining portfolio breakpoints.  
- Finalized implementation of traditional financial models, including CAPM, Black CAPM, Fama-French models, Carhart Four-Factor Model, Q-Factor Model, ICAPM, CCAPM, and the Stochastic Discount Factor Model.  
- Developed functions to calculate rolling betas for factors over dynamic windows.

## Next Steps

- Download the full dataset required for analysis.  
- Use created factor computation and model functions to generate results for all traditional models.  
- Begin writing and testing the code for machine learning models.

This week marked the completion of all fundamental function implementations. The next phase will focus on applying these functions to the dataset and transitioning into machine learning model development.

I transferred most of the functions I have created into the Jupyter notebook. I have begun setting up a GitHub repository for the project, which will provide a clear and organized layout, allowing for easy examination of the codebase and workflow in the future.