Investing in Whisky: Using Machine Learning to Predict Asset Pricing in Alternative Investments

Project Goals

The global alternative investment space is rapidly evolving, and an emerging area of focus is the investment in fine spirits, particularly whisky. Traditionally a pastime for enthusiasts, whisky collection has become a legitimate form of investment, with a quarter of high-net-worth individuals owning collections that represent on average 2% of their wealth, according to Mitchell (2012). This shift necessitates a comprehensive understanding of long-term price trends in the whisky market, juxtaposed against more traditional investment assets.

The objective of this project is to employ data science and machine learning methods to predict asset pricing trends in the whisky investment market. We aim to collect transaction data from auction houses that specialize in high-end whisky batches and integrate them with contextual data, such as specific vintage weather conditions. The ultimate goal is to build a predictive model that can accurately track and predict the price evolution of whisky as an alternative asset.

Once established, this model could serve as a robust tool for advising high-net-worth individuals on whisky investments, fuel our own investment strategies, or even form the backbone of a startup offering data-driven investment advice.

Methodologies Employed

Our approach to achieving the project's objectives involves the following steps:

Data Collection: We aim to acquire transaction data from various auction houses that specialize in high-end whisky transactions, collecting relevant contextual data, such as weather conditions for specific vintages.

Data Integration: We intend to merge the transaction data with the contextual data, creating a comprehensive dataset that will enable us to analyze whisky price trends from multiple perspectives and dimensions. Contextual data here needs to be considered from a number of perspectives, including objective factors such as weather, brand, vintage and production, as well as competent factors such as ratings, economic situation and demand.

Machine Learning Model Development: We plan to employ machine learning models suitable for time-series forecasting, such as Long Short-Term Memory (LSTM) networks, for the development of our predictive pricing model. These models are well-equipped to accurately capture long-term dependencies in data, making them ideal for price trend prediction.

Progress to Date

Data Collection: We have successfully gathered a wealth of transaction data from multiple auction houses that specialize in high-end whisky transactions. This dataset spans multiple years and includes diverse brands and vintages. Concurrently, we have compiled relevant contextual data, such as specific vintage weather conditions. All these data have been organized and stored in our database. Since the relevant contextual data are diverse, further work is needed to improve and supplement them, and the collection of data on origin, distillery, distillery status, and yield has been completed so far.

Preliminary Analysis: We have conducted an initial statistical analysis of the data, examining the relationships between price and various factors like vintage year and brand. These insights lay a strong foundation for the subsequent development of our machine learning model.

Future Work

Machine Learning Model Development: The next phase involves the construction of our predictive model. We aim to select a machine learning model suitable for time-series data, such as LSTM networks, and train and test it with the collected data. We plan to analyze the model's predictive performance and optimize it for better accuracy.

Model Testing and Optimization: We will conduct rigorous testing of our model to ensure it can accurately predict whisky price trends and provide investment advice for different scenarios. We will also explore ways to apply this predictive model in practical investment strategy formulation to help high-net-worth individuals or startups make informed investment decisions.

We anticipate completing these tasks in the coming months and submitting the final project report by mid-August. We firmly believe that the successful completion of this project will not only enrich our research experience but also potentially pave the way for a new data-driven paradigm in the whisky investment domain.