Revisit lead-lag relation between stocks and bonds from the ETF perspective

Keywords: Market Efficiency, ETF, Stocks, Bonds, Data Science, Feature Selection

Project description

The relationship between stock and corporate bond markets has been a topic of interest for researchers and investors (Gebhardt et al., 2005). While previous studies have examined the lead-lag relation between these markets, there is still much to be learned about the process of price discovery across liquid and illiquid asset markets. Recent studies have shown that ETFs can help improve the price efficiency of corporate bonds by providing a liquid and transparent market for these securities (Glosten et al., 2021). Hao et al. (2022) find that the stock market can predict the returns of corporate bond ETFs.

The objective of this project is to investigate the dynamic relationship between stock and corporate bond markets using exchange-traded funds (ETFs). To this end, the students will start by designing and implementing an automatic data collection tool using various techniques (e.g., AutoIt) to extract the necessary holdings information for each ETF from the MorningStar platform. This tool will allow efficient and systematic retrieval of data, ensuring a comprehensive coverage of ETFs for analysis. Once the holdings data is collected, the students will preprocess and clean the data to ensure its quality and consistency. To select individual stocks with superior predictive power, the students will utilize machine learning algorithms. They will explore various feature selection methods, such as filter-based approaches (e.g., correlation analysis, statistical tests) and wrapper methods (e.g., forward selection, backward elimination). These techniques will help identify the stocks that exhibit strong influence on bond ETF returns and contribute significantly to the predictive power of the stock portfolio. In the end, the students will compare the predictive power of this portfolio to that of a randomly formed stock portfolio and analyze the implications of the findings for investors and market efficiency.
What we are looking for

- Strong analytical and project management skills
- Determination and passion for your areas of expertise
- IT skills required for the IDP
- Interest to learn something about finance, in particular ETF market, fixed income.
- 1 or 2 persons

What we offer

- Knowledge in quantitative finance, corporate finance and corporate governance
- Kick-off session including introduction to relevant finance and/or business topics
- Experience with IDPs
- Open dialogue and support
- Access to prime capital markets databases (Bloomberg, Datastream, Thomson Reuters, etc)
- Potential for publication and/or evaluation of future use cases
- Both single and group projects are possible

Interested?

Please send an e-mail with CV, academic transcript and your preference for this project to zihan.gong@tum.de.

Questions?

In case of any (e.g. topic related) questions, please contact Zihan Gong (zihan.gong@tum.de).

Reference