Module 12 – Master's Thesis

1. Supervisor

Name:	Jürg Fausch (Supervisor) und Moreno Frigg (Co-Supervisor)

2. Erläuterungen zum Themenvorschlag / Proposed Topic

Titel / Title	**Predicting recessions using machine learning**
Kontext / Context	Business cycle forecasting has attracted a great deal of attention in applied econometric work. One strand of the literature has its focus on predicting recessions. Traditional econometric approaches include the use of non-linear models (discrete choice, e.g. logit/probit models). In this context, the probability of a recession is modeled as a linear combination of various predictors. The use of financial market variables like the slope of the yield curve or stock market volatility have been highly promising in this context. More recently, models that rely on machine learning methods have been proposed as an alternative to the traditional employed methods in the field.
Ziele / Goals	The goal of this thesis project is to compare the out-of-sample prediction accuracies of the logit model to machine learning algorithms used in the literature (e.g. decision trees, random forests, support vector machines, k-nearest neighbors). The analysis is supposed to be conducted using US data. • Review the existing literature on the topic. • Develop the appropriate econometric model. • Collect and describe the relevant data to perform the empirical analysis. • Conduct proper econometric analysis and relate the results to the existing literature. • Write the MSc thesis in the form of a scientific paper.
Literature / Links / Attachments	• Puglia, M. & Tucker, A. (2020). Machine Learning, the Treasury Yield Curve and Recession Forecasting. Finance and Economics Diccussion Series 2020-038. Washington: Board of Governors of the Federal Reserve System. • Vrontos, S. D., Galakis, J., & Vrontos, I. D. (2021). Modeling and predicting US recessions using machine learning techniques. International Journal of Forecasting, 37(2), 647-671.

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1. Supervisor

Name:	Jürg Fausch (Supervisor) und Moreno Frigg (Co-Supervisor)

2. Erläuterungen zum Themenvorschlag / Proposed Topic

Titel / Title	**Do yield curve inversions predict recessions?**
Kontext / Context	Inverted yield curves often indicate a recession. Since the 1980s an extensive literature has developed in support of the yield curve as a reliable predictor of recessions, by showing that (i) every U.S. recession since the end of World War II has been preceded by a yield curve inversion and (ii) the yield curve is a leading indicator since it calls recessions up to 18 months before they occur.
Ziele / Goals	The basic aim of this thesis project is to analyze the relationship between yield curve inversions and recessions based on European (or US) data. In this context the authors perform the following tasks: • Review the existing literature on the topic and provide an in-depth literature review. • Collect and describe the relevant data for the empirical part of the project. • Conduct proper econometric analysis and analyze the results in the context of the existing literature. • Write the MSc thesis in the form of a scientific paper.
Literature / Links / Attachments	• Estrella, A., & Hardouvelis, G. A. (1991). The term structure as a predictor of real economic activity. The Journal of Finance, 46(2), 555-576. • Rudebusch, G., & Williams, J., 2009. Forecasting Recessions: The Puzzle of the Enduring Power of the Yield Curve. Journal of Business & Economic Statistics 27 (4), 492–503. • Sabes, D., & Sahuc, J-G. (2023). Do yield curve inversions predict recessions in the euro area? Finance Research Letters 52.

Module 12 – Master's Thesis

1. Supervisor

Name:	Jürg Fausch (Supervisor) und Moreno Frigg (Co-Supervisor)

2. Erläuterungen zum Themenvorschlag / Proposed Topic

Titel / Title	**Understanding and predicting flows of actively managed mutual funds**
Kontext / Context	Accurate forecasting of investor flows is of particular importance for managers to adequately control fund liquidity. Moreover, manager fees are usually paid as a percentage of a fund's AuM which is directly related to investor flows. Due to this, it is desirable to investigate to which performance metric (i.e., excess returns, Sharpe ratio, CAPM-alpha, among others) future flows show the most pronounced sensitivity. By using a large set of predictor variables, machine learning algorithms, that are able to handle non-linearities and interactions, are probably well-suited to estimate future fund flows accurately.
Ziele / Goals	The main aim of this thesis project is to investigate whether machine learning algorithms are able to predict mutual fund flows in the US market. • Review the existing literature on the topic and provide an in-depth literature review. • Collect and describe the relevant data for the empirical part of the project. • Conduct proper econometric analysis and analyze the results in the context of the existing literature. • Write the MSc thesis in the form of a scientific paper
Literature / Links / Attachments	**Machine Learning:** • DeMiguel, V., Gil-Bazo, J., Nogales, F. J., & AP Santos, A. (2021). Can machine learning help to select portfolios of mutual funds?. *Can Machine Learning Help to Select Portfolios of Mutual Funds*. • Kaniel, R., Lin, Z., Pelger, M., & Van Nieuwerburgh, S. (2023). Machine-learning the skill of mutual fund managers. *Journal of Financial Economics*, *150*(1), 94-138. **Fund Flows:** • Chevalier, J., & Ellison, G. (1997). Risk taking by mutual funds as a response to incentives. *Journal of Political Economy, 105*(6), 1167-1200. • Sirri, E. R., & Tufano, P. (1998). Costly search and mutual fund flows. *The Journal of Finance, 53*(5), 1589-1622.

Module 12 – Master's Thesis

1. Supervisor

Name:	Jürg Fausch (Supervisor) und Moreno Frigg (Co-Supervisor)

2. Erläuterungen zum Themenvorschlag / Proposed Topic

Titel / Title	**Luck vs. skill in the mutual fund market – Evidence from Europe**
Kontext / Context	Identifying mutual funds that "beat the market" is one of the oldest and most challenging problems in financial economics. The efficient market hypothesis implies that actively and passively managed funds can be expected to earn the market return before cost, but passively managed funds do so at lower cost. Most of the empirical evidence using US data confirms this claim. However, the empirical evidence based on European data is rather scarce
Ziele / Goals	The basic aim of this thesis project is to analyse whether outperforming funds exist, and this outperformance is due to luck or skill. In this context the author performs the following tasks: • Review the existing literature on the topic and provide an in-depth literature review. • Collect and describe the relevant data for the empirical part of the project. • Conduct proper econometric analysis and analyze the results in the context of the existing literature. • Write the MSc thesis in the form of a scientific paper
Literature / Links / Attachments	• Cremers, Martijn, Miguel A. Ferreira, Pedro Matos and Laura Starks (2016): Indexing and active fund management: International evidence, Journal of Financial Economics, 120, pp. 539-560. • Harvey, C. R., & Liu, Y. (2022). Luck versus Skill in the Cross Section of Mutual Fund Returns: Reexamining the Evidence. The Journal of Finance, 77(3), 1921-1966. • Huang, H., Jiang, L., Leng, X., & Peng, L. (2023). Bootstrap analysis of mutual fund performance. Journal of Econometrics, 235(1), 239-255.

Module 12 – Master's Thesis

1. Supervisor

Name:	Jürg Fausch (Supervisor) und Karsten Döhnert (Co-Supervisor)

2. Erläuterungen zum Themenvorschlag / Proposed Topic

Titel / Title	**The time varying effect of monetary policy on stock returns**
Kontext / Context	Previous research finds that a monetary policy surprise strongly impacts the stock market. However, given many structural changes in recent decades, both in the conduct of monetary policy and in the operation of financial markets, this relationship might not have been a stable one.
Ziele / Goals	The basic aim of this thesis project is to analyse the impact of monetary policy surprises on the stock market using US or European data over time. In this context the author performs the following tasks: • Review the existing literature on the topic and provide an in-depth literature review. • Collect and describe the relevant data for the empirical part of the project. • Conduct proper econometric analysis and analyze the results in the context of the existing literature. • Write the MSc thesis in the form of a scientific paper.
Literature / Links / Attachments	• Bernanke, B. S., & Kuttner, K. N. (2005). What explains the stock market's reaction to Federal Reserve policy? The Journal of Finance, 60(3), 1221-1257. • Jansen, D. W., & Zervou, A. (2017). The time varying effect of monetary policy on stock returns. Economics Letters, 160, 54-58.