Bachelor Seminar Econometrics: Topics

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Chair of Quantitative Methods in Economics and Finance

Calendar Anomalies

- **Task**:
  - Anomalies in financial markets can be observed when securities do not follow the efficient market hypothesis. If such anomalies appear in the form of seasonal movements we call them calendar effects. Some popular calendar effects are the weekend, the holiday and the turn of the month effects.
  - Describe and review the calendar effects mentioned above.
  - Investigate and compare the anomalies in different markets or over different asset classes.
- **Basic Literature**:
  - Thaler, R. H. (1987). Anomalies: Weekend, Holiday, turn of the month and Intraday Effect. *Journal of Economic Perspectives, 1*(2), 169-177.

The January Effect

- **Task**:
  - When investigating anomalies in financial markets, an interesting seasonal movement called the January Effect can occur. This effect refers to a predictably different behavior of stock prices in January compared to other months.
  - Describe and review the January effect.
  - Empirical investigation of the January effect for asset markets.
- **Basic Literature**:
  - Keim, D. B. (1983): Size-related anomalies and stock return seasonality: Further empirical evidence. *Journal of Financial Economics, 12*(1), 13-32.
  - Keim, D. B. (1985): Dividend yields and stock returns: Implications of abnormal January returns. *Journal of Financial Economics, 14*(3), 473-489.
  - Thaler, R. H. (1987): Anomalies: The January effect. *Journal of Economic Perspectives, 1*(1), 197-201.

Best of Two Strategy

- **Task**:
  - Instead of having to decide whether to invest in stocks or bonds, the Best-of-two strategy allows to invest in the better asset class retrospectively.
  - Validate the strategy with the help of real data.
- **Basic Literature**:
  - Dichtl, Schlenger (2003), Aktien oder Renten? - Das Langfristpotentzial der Best of Two-Strategie, *Die Bank.*

Testing the CAPM

- **Task**:
  - The Capital Asset Pricing Model (CAPM) states that stocks with higher betas should have higher returns on average.
  - Test this prediction empirically using return data.
- **Basic Literature**:
  - Jensen, M. C., Black, F., & Scholes, M. S. (1972). The capital asset pricing model: Some empirical tests. *Michael C. Jensen, STUDIES IN THE THEORY OF CAPITAL MARKETS, Praeger Publishers Inc., 1972*.

Estimating Beta

- **Task**:
  - Vasicek presents the theory that the classcial OLS regression might not lead to an effcient beta estimate, given the knowledge of the cross-sectional distribution of betas.
  - Implement the Bayesian procedure of Vasicek for a set of stocks and compare it to classical estimates.
- **Basic Literature**:
  - Vasicek, O.A. (1973). A Note on Using Cross-Sectional Information in Bayesian Estimation of Security Betas. *Journal of Finance, 28*, 1233-1239.
  - Klemkosky, R.C. and Martin, J.D. (1975). The Adjustment of Beta Forecasts. *Journal of Finance, 30*, 1123-1128.

Forecast Investment Strategies

- **Task**:
  - Several economic organizations regularly publish forecasts (i.e. ZEW) of economic activity. First describe the forecast measures and the method.
  - Use these forecast to forecast market returns and evaluate the predictability using statistical and economic tools.
- **Basic Literature**:
  - Gordon, L. & Tanner, J. E. (1991). Economic Forecast Evaluation: Profits vs. the conventional error Measures. *The American Economic Review, 81*(3), 580–590.
  - Clemen, R. T. & Winkler, R. L. (1986). Combining Economic Forecasts. *Journal of Business & Economic Statistics, 4*(1), 39–46.
  - Stephen, K. McNees (1978). The 'Rationality' of Economic Forecasts. *The American Economic Review, 68*(2), 301–305.

A Simple Monte Carlo Application

- **Task**:
  - In the introductory statistics courses, the properties of the estimation and forecasting procedures are theoretically examined in the simple linear regression model.
  - The aim of your investigation is to illustrate these theoretical results with the help of a simple Monte Carlo study.
  - For this purpose, the empirical distributions of estimation and forecasting functions are to be compared with the theoretical distribution on the basis of a rolling window estimation on simulated data.
- **Basic Literature**:
  - Ligges, U. (2008). Programmieren mit R. Statistik und ihre Anwendungen. Springer, Berlin, Heidelberg.
  - Cramer, E., Kamps, U. (2017). Grundlagen der Wahrscheinlichkeitsrechnung und Statistik. Springer-Lehrbuch. Springer Spektrum, Berlin, Heidelberg.

Structural Change Tests

- **Task**:
  - Parameters in (for example, linear) models cannot always be assumed do remain constant over time. Occasionally, external influences and measures give rise to the hypothesis of a change in certain model parameters.
  - So-called structural change tests are suitable for testing such hypotheses.
  - The application of such tests is to be illustrated by the example of the dependence of fuel prices on the price of crude oil (and the type of fuel).
- **Basic Literature**:
  - Ligges, U. (2008). Programmieren mit R. Statistik und ihre Anwendungen. Springer, Berlin, Heidelberg.
  - Zeileis, A., Leisch, F., Hornik, K., Kleiber, C. (2002). strucchange: An R Package for Testing for Structural Change in Linear Regression Models. *Journal of Statistical Software, 7*(2), 1–38.