



**Faculty  
of Business  
and Economics**

**6. 9. 2018, Bedřichov**

doc. Ing. Oldřich Trenz, Ph.D.  
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## **Current state of the GAČR project**

Modelling and simulation of sustainable  
investment decision-making

Mendel  
University  
in Brno



# Project description

- Project solved 2017, 2018, **2019**
- Research centers
  - FBM BUT, prof. Ing. Alena Kocmanová, Ph.D.
  - FBE MENDELU, prof. RNDr. Jiří Hřebíček, CSc. (2017)  
doc. Oldřich Trenz, Ph.D. (2018, 2019)+PhD students and master students
- The project builds on (GACR – Czech Science Foundation) **Measuring Corporate Sustainability in Selected Sectors.**



# Project content

- Application of economic and statistical models to the assessment of trading companies (indexed companies) and mutual funds with ESG rating.
- Comparison of ESG and Non ESG Companies and Funds.
- Creation of an investment support tool for small investors with an emphasis on investment risk diversification.

## Current publications (2019)

- ***Measuring Business Excellence (Dubai 2019)***, Sustainable and Responsible Investment Funds in the International Context.
- ***Ecological Indicators***: Automated Sustainability Assessment System for Small and Medium Enterprises Reporting.
- **MME 2019**, Decision-making support as part of the sustainable investment in unit trust funds.
- **MME 2019**, Analysis of unit trust funds and the creation of a descriptive model, with emphasis on the risk-factor and the return of investments.
- ***Ecological Indicators (special issue)***: Millennials' Awareness and Approach to Social Responsibility and Investment – Case of Czech Republic
- ***Acta MENDELU***: Modelling sustainable investment

## Source data

ESG Mutual Funds × Non ESG Funds

- Performance (1 Month, 6 Months, 1 Year, 3–5–10 Years)
- Synthetic Risk Reward Indicator (SRRI)
- Total Assets
- Time Series of Fund Values
- ESG Rating

# Source data

## ESG Mutual Funds (<https://yoursri.com>; <http://www.morningstar.co.uk>)

yourSRI Search

Funds 98 | Research 1687 | Companies 9047

Disclaimer Countries: Czech Republic (98)

Name	PR	Wgt. Avg. Carbon Intensity <small>100% / Mil revenue</small>	Climetrics	ESG Score	ESG Rating
AG Select Emerging Markets Bond A Acc USD	📄			3.7 ☆	BB
AG World Government Bond A Acc USD	📄			5.8 ☆	A
Amundi Fds Bond Euro Aggregate - AE (C)	📄			5.9 ☆	A
Amundi Fds Bond Euro Corporate - AE (C)	📄	267.3 📉	🌿🌿🌿🌿	6.1 ☆	A
Amundi Fds Bond Euro Government - AE (C)	📄			5.6 ☆	BBB
Amundi Fds Bond Euro High Yield - AE (C)	📄	315.0 📉	🌿🌿🌿🌿	5.4 ☆	BBB

### Performance (2018-09-12)

	EUR
1 Week	-3.24%
1 Month	-7.70%
3 Months	-10.02%
6 Months	-8.60%
Year to Date (YTD)	-6.69%
1 Year	-3.08%
3 Years	5.71%
5 Years	4.17%
since Inception	0.00%

### Aberdeen Global - Asia Pacific Equity Fund A Acc USD | ★★ | Bronze

Compare | Chart Settings

Growth Chart (GBP) 12/09/2018 Detailed View

- Aberdeen Global Asia Pac Eq A Acc USD : 96.0201608
- MSCI AC Asia Pac Ex JPN NR USD : 98.5095864
- Asia-Pacific ex-Japan Equity : 97.6466588
- Asia Pacific Excluding Japan : 98.1451164

12/09/2017 to 12/09/2018

3M 6M 1Y 3Y 5Y 10Y Max

# Project Outputs

- Indexed Publications
- Software to support investment and diversify risk (in progress)
- Application of various models to assess the performance of funds (DEA, Markowitz, SOM – self-organizing neural networks).
- Comparison of performance of ESG and Non ESG funds.
- creation an extensive database of ESG funds data (circa 12 thousand ESG funds in The EU) for further research

# Project Outputs

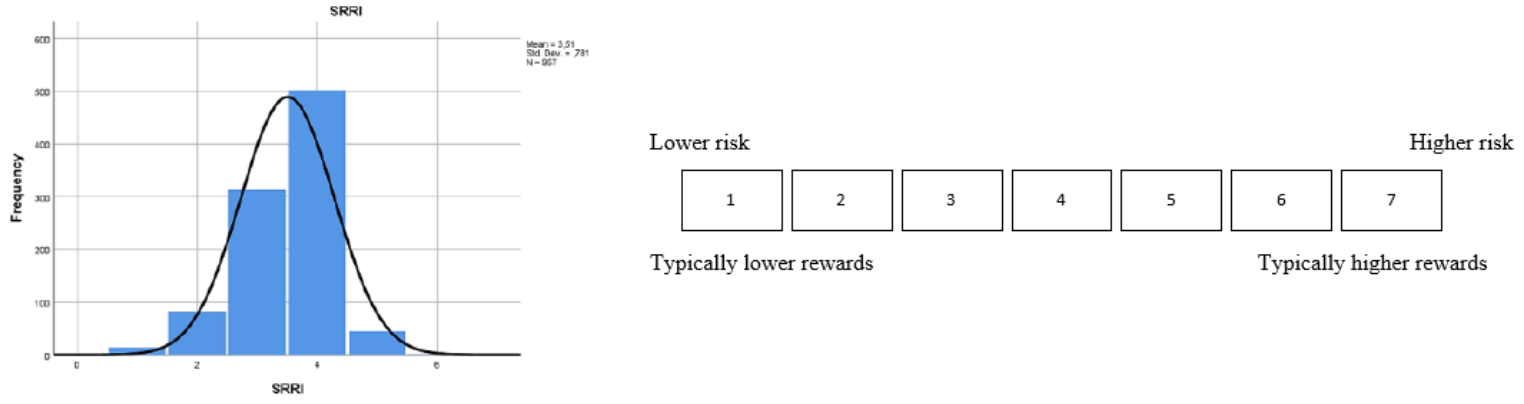


Figure The risk-factor course – the SRRI (EU) indicator

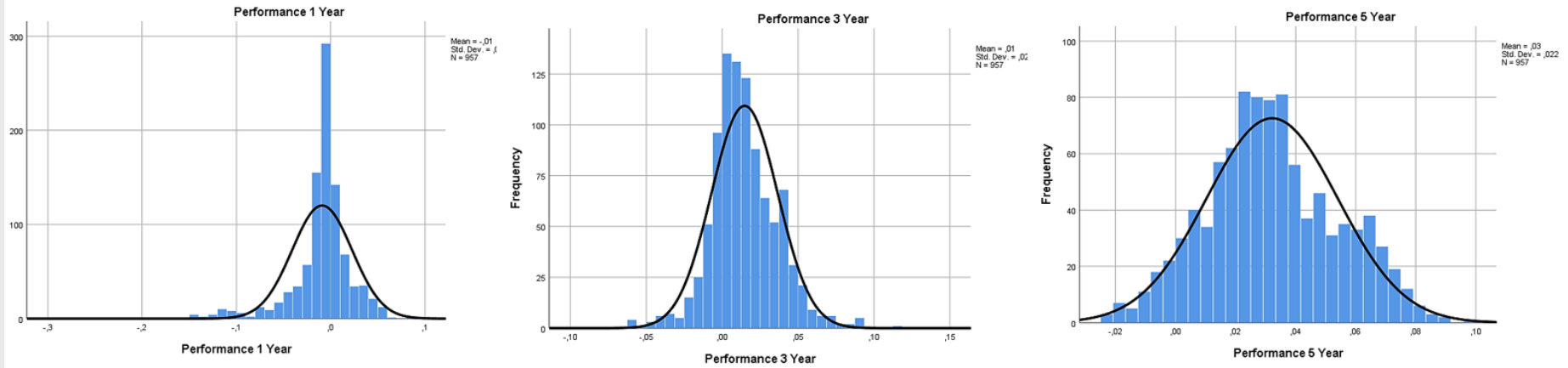
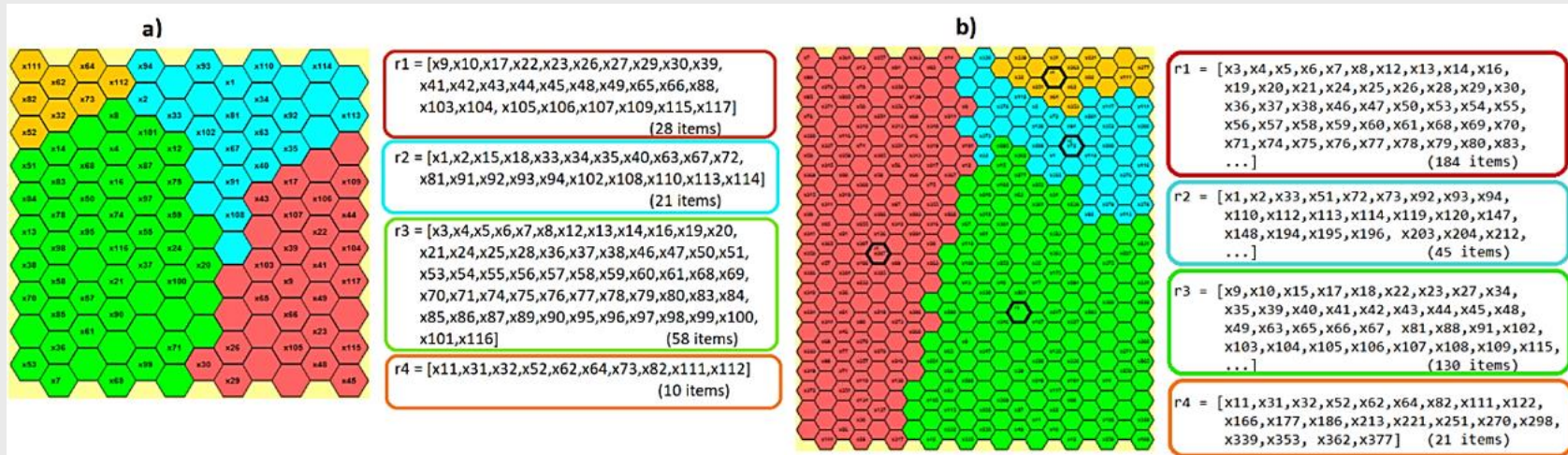
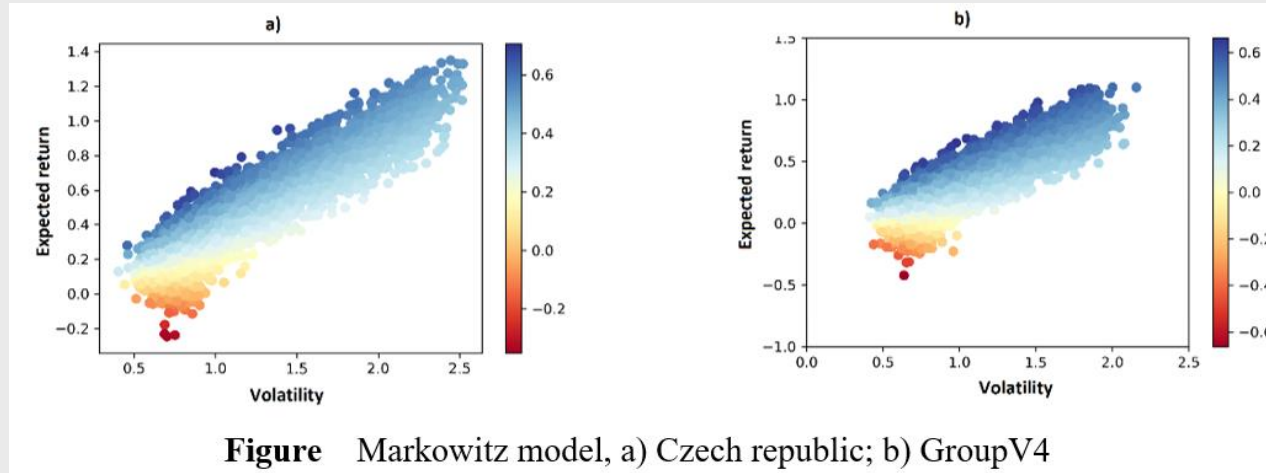


Figure Evaluation of funds' performance after 1, 3 and 5 years (EU)



# Project Outputs



## Project Outputs

- ESG funds are beneficial (supported) investment for two or more years.
- The created software will support small investors for personal portfolio selection and analysis.
- The **Markowitz model** is designated for conservative investors who prefer higher returns and lower risk.
- The most suitable method appears to be, for funds selection, **self-organizing neural networks**, where we are using the principle of proximity when assessing the input parameters and their subsequent classification into groups.

***Thank you for your attention***