Report on Master Thesis

Institute of Economic Studies, Faculty of Social Sciences, Charles University

Student:	**Bc. Tereza Javůrková**
Advisor:	**PhDr. Jiří Kukačka, Ph.D.**
Title of the thesis:	**Gambler’s Fallacy in Investor’s Decision-making**

OVERALL ASSESSMENT (provided in English, Czech, or Slovak):

Short summary
The master thesis by Tereza Javurkova investigates the impact of the behavioral phenomenon known as the Gambler's Fallacy on investors' behavior and profitability in the stock market, aiming to bridge the gap between empirical finance and psychology. The study examines the profitability of different investor types, including those influenced by the perception of distorted probabilities based on the Gambler's Fallacy, through simulation analysis, empirical frequency analysis, and asset pricing factor models. The results indicate that investors affected by the Gambler's Fallacy can achieve statistically higher returns than random investors in both simulated and real markets. The findings suggest that the stock market may not adhere to random walk characteristics and the Efficient Market Hypothesis, thus raising doubts about its efficiency. The thesis also introduces a novel asset pricing approach that aligns with the psychological biases of investors and confirms the profitability of specific trading strategies exploiting these biases. Overall, the study highlights the importance of psychological biases in investors' decision-making and their impact on market dynamics and profitability.

Contribution
Calibrating asset pricing models based on psychological research of human misconceptions about the probabilities of independent events is a very original idea. To the best of my knowledge, such analysis is at the frontier of research in behavioral finance, interconnecting psychological findings and asset pricing.

1. There is only very limited literature about incorporating the psychological knowledge about the Gambler's Fallacy at the level of asset pricing; Tereza thus had to develop a set of analytical approaches herself, only partially inspired by similar literature.
2. The depth of analysis is at the level of a simple research article, and it takes advantage of three distinct analytical approaches under a unified setup yet is still condensed to less than 50 standard thesis template pages.
3. The empirical results are interesting and convincing, contributing to the ongoing debate about the efficiency of stock markets.

Moreover, I have to specifically appreciate Tereza’s honest approach to elaborating the entire work. Tereza spent a whole year working on the thesis; we had regular meetings and discussed the topic intensively, and I believe she learned a lot. The empirical processing of this otherwise narratively attractive topic was indeed non-trivial. Tereza had to explore several dead ends and some ups and downs before we arrived at the current well-designed composition of the work and a very coherent research approach leading to a set of contributive results.

Methods
The thesis covers a range of analytical approaches based on the master-level IES curriculum focused on finance. First, it introduces a methodology to track and quantify the human perception of distorted probabilities of independent events based on the Gambler's Fallacy phenomenon and summarized in several psychological research papers that can be incorporated into asset pricing models. It then develops three distinct analytical approaches utilizing the same simplified rules of investment and the same empirical dataset: a simple simulation-based analysis to study the basic principles, a frequency analysis of "anomalous" patterns in historical empirical data + a breakdown into industrial sectors, and a full-fledged empirical analysis based on the Fama&French factor models' methodology and a rich empirical dataset consisting of the S&P 500 constituents and I/B/E/S 12-month forward EPS estimates. Tereza also briefly introduces the reader to the crucial theoretical concepts on which the methodology is based, namely the Law of Large Numbers, the Central Limit Theorem, and the Random Walk. Finally, as certain approaches proved un-contributive, a proportion of the developed analysis remained unused.

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Literature
The literature review is standardly elaborated and considers both main areas of interest: psychological biases and the efficient market hypothesis. Each subsection is further split into a discussion of the related concepts crucial for the thesis topic. A good selection of the associated research papers, primarily the seminal ones for each topic, is provided to summarize brief history and state-of-the-art. Also, the following Chapter 3 includes an additional section supplementing the content of the literature review. Chapter 2 is written in a "positive manner," meaning that while it demonstrates that the author is familiar with the related literature, it does not go much more profound. It does not provide much of a detailed analysis, compare and contrast approach, or critical assessment. Formally, citations are adequately done using a standard style for economic papers.

Manuscript form
The thesis is written in decent English, standardly structured, and typeset in LaTeX. Most formatting comments from my side are considered in the final version. The bibliography section is complete and well-formatted. Referencing tables and figures is done correctly in the text, the tables are very well designed, and both figures and tables are self-contained. A few nice (mostly) colorful graphics are easy to look through and understand.

Overall evaluation and suggested questions for the discussion during the defense

The assessed thesis well fulfills the IES, Faculty of Social Sciences, Charles University master-level standards. Thus I recommend it for the defense and suggest a grade A.

The results of the Urkund analysis do not indicate significant text similarity with other available sources.

Additional topics for the discussion:
- Based on your results, can you suggest a robust/straightforward trading strategy to use in actual investing practice?
- What are the limitations of the approach employed in the thesis? What other behavioral phenomena/biases could have been studied along with the Gambler's Fallacy to provide a more comprehensive picture of the efficiency of stock markets?

SUMMARY OF POINTS AWARDED *(for details, see below):*

CATEGORY		**POINTS**
Contribution	*(max. 30 points)*	30
Methods	*(max. 30 points)*	29
Literature	*(max. 20 points)*	16
Manuscript Form	*(max. 20 points)*	18
TOTAL POINTS	*(max. 100 points)*	**93**
GRADE	**(A – B – C – D – E – F)**	**A**

NAME OF THE REFEREE: Jiří Kukačka
DATE OF EVALUATION: 14. 6. 2023

Jiri Kukacka
Digitally signed by Jiri Kukacka
Date: 2023.06.14 23:05:20 +02'00'

Referee Signature

EXPLANATION OF CATEGORIES AND SCALE:

CONTRIBUTION: *The author presents original ideas on the topic demonstrating critical thinking and ability to draw conclusions based on the knowledge of relevant theory and empirics. There is a distinct value added of the thesis.*

METHODS: *The tools used are relevant to the research question being investigated, and adequate to the author's level of studies. The thesis topic is comprehensively analyzed.*

LITERATURE REVIEW: *The thesis demonstrates author's full understanding and command of recent literature. The author quotes relevant literature in a proper way.*

MANUSCRIPT FORM: *The thesis is well structured. The student uses appropriate language and style, including academic format for graphs and tables. The text effectively refers to graphs and tables and disposes with a complete bibliography.*

Overall grading:

TOTAL	**GRADE**
91 – 100	**A**
81 - 90	**B**
71 - 80	**C**
61 – 70	**D**
51 – 60	**E**
0 – 50	**F**