Report on **Bachelor / Master Thesis**

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

Student:	Bohdan Hukovych
Advisor:	doc. PhDr. Jozef Barunik, Ph.D.
Title of the thesis:	Technical Analysis Profitability Across Different Classes of Assets

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

Short summary

This thesis provides a comprehensive analysis of the profitability of technical trading rules across four major asset classes—equities, currencies, commodities, and cryptocurrencies—over a ten-year period (2014-2024). The study evaluates 2,870 trading rules using the Model Confidence Set (MCS) procedure and covers both in-sample and out-of-sample periods as well as transaction cost analysis.

Contribution

The author finds that technical trading rules can generate significant risk-unadjusted returns (simply average excess returns) in cryptocurrencies and commodities. However, no trading rule statistically outperforms the buy-and-hold strategy in terms of risk-adjusted performance (Sortino ratio). Additionally, the author documents increases in market efficiency over time, reducing the profitability of technical analysis in equities, currencies, and commodities. Overall, the thesis has a clear contribution to the empirical literature covering technical analysis.

Methods

The author implements 2870 trading rules from four categories - Moving average rules (1000 rules) , Trading range breakout (1200 rules), Moving average convergence divergence (420 rules) and Relative strength index (250 rules).
The author uses the Model Confidence Set approach to determine if any of the trading rules are significantly better. This approach controls for multiple hypothesis testing by evaluating the collection of models instead of going model by model. Empirical results contain an evaluation of in-sample and out-of-sample periods based on the Sortino ratio and excess returns (both with and without transaction costs)

Literature

The Author provides an extensive literature review, covering technical analysis in general as well as its applications in individual asset classes covered in the thesis (equities, foreign exchange, commodities, cryptocurrencies). The whole section is very readable, providing valuable background on the main topic.

Manuscript form

Tables in the text do not fit the width of the text and are unnecessarily wide because almost every column uses full text instead of acronyms.
Another option how to make tables fit better is to round reported values or report in percentage points when possible.
Labels for the x-axis in (Figure 4.1 and subsequent boxplot figures) should cover both boxes (for one asset class) otherwise it is difficult to capture which pairs belong together.
Subsection *Data* belongs more to the section *Empirical results* instead of the section *Methodology* as is in the text.
Apart from the comments above, the thesis is very well written, typeset in LaTeX, and its form in general is on a very high level.

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Overall evaluation and suggested questions for the discussion during the defense

Suggested questions:

- How do you interpret higher out-of-sample profitability of trading rules in commodities (Figure 4.1 and 4.2)? Is it an anomaly or compensation for some risk?
- How exactly does Model Confidence Set address multiple hypotheses testing issue? Where are the limitations of this method?
- You report avg. excess returns and Sortino ratio. How can you tell if two reported values are significantly different from each other? How could you test it? Is there any disadvantage of using Sortino ratio instead of Sharpe ratio in this regard?

In my view, the thesis fulfills the requirements for a bachelor thesis at IES, Faculty of Social Sciences, Charles University, I recommend it for the defense and suggest a grade A.

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

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

CATEGORY		**POINTS**
Contribution	*(max. 30 points)*	30
Methods	*(max. 30 points)*	30
Literature	*(max. 20 points)*	20
Manuscript Form	*(max. 20 points)*	19
TOTAL POINTS	*(max. 100 points)*	99
GRADE	**(A – B – C – D – E – F)**	A

NAME OF THE REFEREE: Martin Hronec

DATE OF EVALUATION: 26.8.2024

Digitally signed:
Martin Hronec, 26.8.2024

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**