

Report on Bachelor Thesis

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

Student:	Kristýna Coufalová
Advisor:	PhDr. Jiří Kukačka, Ph.D.
Title of the thesis:	Prospect Theory in the Cryptocurrency Market

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

Short summary

Following a common perception that participants in the cryptocurrency market are less rational than their “colleagues” in the standard financial markets and thus more prone to various behavioral biases, Kristýna, in her bachelor thesis, examines the applicability of the cumulative prospect theory to explain future returns in the cryptocurrency market. The analysis concludes that cryptocurrencies with high cumulative prospect theory value earn low subsequent returns, while those with low cumulative prospect theory value earn high subsequent returns. The weighting function component of the prospect theory function is identified as a significant contributor to abnormal returns. Thus, one can exploit trading strategies based on the potential profitability of investing in cryptocurrencies with low prospect theory values. The study further finds that the cumulative prospect theory value function produces comparative abnormal portfolio returns regardless of whether asset returns are measured in decimal or percentage form.

Although we had a few consultations over the whole period of the works, the thesis was finalized and actually written at the last minute, during the last two weeks before the deadline, which essentially prevented the final corrections and sufficient control on my part.

Contribution

Implications of the prospect theory have been studied in standard financial markets in the past. Thus, the main economic contribution lies in examining cumulative prospect theory's potential in the cryptocurrency market, for which only very limited recent literature exists. By exploring aspects of a different evaluation of utility from gains and losses, the thesis aims to enhance understanding of investment behavior in the crypto market and contribute to developing investment/trading strategies based on prospect theory.

The thesis examines two main hypotheses, both of which I have certain reservations about:

Hypothesis 1: is vaguely motivated by an assumption that some investors in the cryptocurrency market evaluate their investments solely based "just by looking at cryptocurrencies' price charts which they evaluate by cumulative prospect theory." While it makes a narrative sense, providing scientifically reliable evidence supporting this assumption is challenging.

Hypotheses 2: is based on a contradiction between historical research on the prospect theory, which was standardly based on monetary values (e.g., USD 100), while in finance, one standardly works with percentage returns (0.01 vs. 1%). While the current literature is inconclusive in this respect, and it certainly makes sense to check the robustness, I strongly doubt this rather technical detail deserves to be presented as almost the most important conclusion of the thesis. I will be happy if Kristýna when Christina convinces the committee otherwise.

Kristýna also constructed a well-designed dataset of the 200 most capitalized cryptocurrencies and gained proficiency in working with data which she clearly demonstrates in Chapter 4. Importantly, the portfolio sorting is updated monthly to prevent survivorship and hindsight bias.

Methods

The thesis combines the methodological framework of the prospect theory with standard asset pricing (decile-sorting) and financial econometric approaches (CAPM and linear “factor” models). It is generally the strong aspect of the thesis. Due to the dynamically updated dataset, Kristýna decided on simple linear regression analysis instead of fixed effect or panel data analysis, as discussed in the literature. Unfortunately, the time constraints did not allow for the appropriate elaboration of standard econometric tests of important OLS assumptions, nor were robust standard errors applied by default. The thesis only minimalistically discusses potential econometric issues (large VIF) or statistical assumptions related to the chosen methodology.

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Another potential methodological aspect, to which I again have certain reservations, is the weighting and value function parameterization. Aside from the benchmark set of parameters based on a seminal work by Tversky & Kahneman (1992), Kristýna further suggests a “blend” of parameters based on an approximate mean of estimated values from several other studies. A methodological consistency of such a set of parameters is at least questionable.

Literature

The literature section provides a selection of some important papers. It is divided into four topical areas, but especially 2.3 is inappropriately technically focused on methodology and not on the literature review. Citations are appropriately done using a standard style for economic papers.

Manuscript form

The thesis is written in reasonable English and typeset in LaTeX. The thesis structure is complicated and reflects the lack of time to proofread the text. The introduction is unnecessarily lengthy and partially replaces the literature review. The methodology of the work is scattered in chapters 2, 3, and 5. However, most formatting comments on details from my side are considered in the final version. The bibliography section is complete and well-formatted. Moreover, referencing tables and figures is done correctly in the text; the tables are well-labeled and described. The simple monochromatic graphics are easy to look through and understand.

Overall evaluation and suggested questions for the discussion during the defense

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

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

Additional topics for the discussion:

- To support the results and validity of the OLS regressions, what standard econometric tests should have been elaborated?
- An easy-to-implement modification would be computing the robust standard errors. Why considering robust standard errors might be crucial? Can you elaborate more on this idea?

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

CATEGORY	POINTS
<i>Contribution</i> (max. 30 points)	20
<i>Methods</i> (max. 30 points)	24
<i>Literature</i> (max. 20 points)	13
<i>Manuscript Form</i> (max. 20 points)	15
TOTAL POINTS (max. 100 points)	72
GRADE (A – B – C – D – E – F)	C

NAME OF THE REFEREE: Jiří Kukačka

DATE OF EVALUATION: 31. 5. 2023

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