

Report on Bachelor Thesis

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

Student:	Jan Tůma
Advisor:	Mgr. Petr Polák, MSc., Ph.D.
Title of the thesis:	Sustainable Finance in the Digital Age: An Analysis of Cryptocurrencies and CBDCs

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

Please provide a short summary of the thesis, your assessment of each of the four key categories, and an overall evaluation and suggested questions for the discussion. The minimum length of the report is 300 words.

Short summary

In his thesis, Jan Tůma addresses the complex and timely topic of digital currencies, focusing specifically on cryptocurrencies and Central Bank Digital Currencies (CBDCs). The author seeks to provide a comprehensive guide to these digital assets, particularly emphasizing their environmental impacts. The thesis is structured into two main parts: the first examines the environmental aspects and sustainability of digital currencies, while the second delves into a broader comparative analysis of their technological, economic, and regulatory features.

Contribution

The thesis makes a contribution to the existing literature by combining environmental concerns with a broader analysis of digital currencies. The environmental focus is particularly relevant in the current context of increasing scrutiny over the sustainability of financial systems. However, the contribution could be enhanced by a more in-depth discussion of how the findings impact the broader field of sustainable finance.

Methods

The methods section is adequately described, focusing on hypothesis testing and comparative analysis. The thesis tests three hypotheses related to Bitcoin's energy consumption, hash rate, and consensus mechanisms. The methods used to gather and analyze data, could benefit from more detail, particularly initial dataset description. Different forms of aggregating data (moving average) could be also used as robustness checks.

Literature

The work with the literature is proper and follows academic standards, when working with primary sources. The literature review is thorough, covering key studies on the environmental impact of cryptocurrencies and the role of sustainable finance. The author successfully identifies gaps in the existing literature, which sets the stage for the thesis's research questions. However, the review could be strengthened by including more recent studies on energy consumption of cryptocurrencies e.g. Gellersdörfer et al. (2020).

Manuscript form

The thesis is easy to read and theoretical part is very nicely organized and guides the reader through several aspects of cryptocurrencies. However, the study refers mostly to the benefits of cryptocurrencies and does not provide much of the criticism or other perspective. The thesis could also benefit from more visual dataset description and moving chapter "4 before empirical part".

Overall evaluation and suggested questions for the discussion during the defense

The empirical part of the thesis focuses on the energy consumption and cryptocurrencies, but it could be done in more detail. The thesis uses very simple approach, which is fine, but moves quickly out of the topic. For a better grade the analysis should be more thorough and with attempt to make better conclusions. E.g. forecasting part could provide some insights into possible future. One could also focus whether there is some level of energy prices that would make Bitcoin to move from PoW to PoS mechanism due to high transaction costs. That would then help to put the topic more towards

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the sustainable finance. Student could do more work on just the electricity consumption, it would be also nice to compare Bitcon and Ethereum for the time Ethereum worked with PoW.

During the defense the student should focus mainly on the presenting the findings of the thesis and put them more in the context of existing research. Student should also discuss how his findings should be used when designing CBDCs.

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

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 D.

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

CATEGORY	POINTS
<i>Contribution (max. 30 points)</i>	20
<i>Methods (max. 30 points)</i>	15
<i>Literature (max. 20 points)</i>	15
<i>Manuscript Form (max. 20 points)</i>	15
TOTAL POINTS (max. 100 points)	65
GRADE (A – B – C – D – E – F)	D

NAME OF THE REFEREE: Petr Polák

DATE OF EVALUATION: 26. 8. 2024

Digitally signed (26. 8. 2024)
Petr Polák

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