

Report on Bachelor / Master Thesis

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

Student:	Jan Kubal
Advisor:	doc. PhDr. Křištofek Ladislav, Ph.D.
Title of the thesis:	Exploring the relationship between Bitcoin price and the network's hashrate

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

Short summary

The thesis contributes to the empirical literature of understanding the cryptocurrencies and the connection between Bitcoin as a wealth transfer protocol and its price. It estimates two-stage model of four endogenous equations and extensively discusses the results and their meaning.

The work is well written and author demonstrates a very good understanding of the current literature and its scope which he is extending.

Contribution

The thesis builds on current literature well and explores new insights into this interesting problem. Hashrate over time of the Bitcoin network can be thought of as a direct cost of stealing the whole currency. That makes it an essential feature of the whole Bitcoin economy and thus important to understand and study. The work is meticulous particularly the literature review and methodology parts. Methodologically it connects the current money supply wild ride to the recent surge in crypto.

Methods

Unlike some other theses at the institute, this one sticks with a single model, which is the pillar of the work. The theory behind it is well described in textbooks, yet the model's use is well described and motivated and in my opinion overall meets a high technical standard at the institute.

What strikes me, however, is the main result that the Bitcoin price does not have a significant effect on the hashrate. Not only it should hold intuitively, as the miners receive reward for securing the network and pay the USD, as the thesis says. It is also already shown in the literature, for instance in the work of the thesis's advisor. Hence, I would expect a more detailed discussion into whether it is a methodological shortcoming, the monthly granularity due to the M2 supply time series. This seems very unlikely to me.

Apart from some minor comments on the blockchain itself and the way the transactions work, I take issue with some of the parts of the results description. The author very often mentions along lines of "expectations we not clear, both beta directions are sensible". This, in my opinion undermines the work a bit, you either have a clear hypothesis and therefore expectation of the effect's direction, or you are discovering. Yet in the case of the effect of price on the google searches, I do not really see why that would make sense to be negative?

Literature

Chapter 2 presents the current strands of relevant literature. It covers a large volume of publications and subtopics, yet it reads very well and is very informative. Since the thesis is quite long by itself, I might leave out the sections on the ecological side of Bitcoin, but I understand that it has been a hot topic in the industry recently. Still it connects very well to the overall text. The work references a good chunk of relevant literature and references in the text are appropriately formatted.

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Manuscript form

The text is logical, well organized and concisely written. The manuscript itself attains a high academic quality and the outputs are well readable.

Overall evaluation and suggested questions for the discussion during the defense

Overall, I enjoyed reading the thesis and it shows a great deal of diligent work on the part of the student.

Suggested questions for a defense:

- Did you estimate the model on lower granularity of the data without the money supply, and/or Google trend variables? I think you can get weekly data for that. Did you get the same result?
- Did you somehow process the data to mitigate possible issues with estimation? Regarding the scales of the data? Did it come up as an issue?
- Did you take into account the on-chain transactions which happen within exchanges themselves? How do you reckon it would change

- One last tip I think would be useful if you would like to carry on with this topic, are statistics about miners behavior on the blockchain, as we can easily track newly minted coins and their journey across the network. Check out <https://cryptoquant.com/overview/btc-miner-flows>

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 B

The results of the Urkund 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)	25
Methods (max. 30 points)	20
Literature (max. 20 points)	20
Manuscript Form (max. 20 points)	20
TOTAL POINTS (max. 100 points)	85
GRADE (A – B – C – D – E – F)	B

NAME OF THE REFEREE: Jan Šíla

DATE OF EVALUATION: 30.8.2021

Digitálně podepsáno (30.8.2021):
Jan Šíla

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