

Report on Bachelor Thesis

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

Student:	Martin Řanda
Advisor:	Mgr. Petr Polák MSc. Ph.D.
Title of the thesis:	Evaluating the predictability of virtual exchange rates using daily data

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

This is an excellent thesis, and I perfectly enjoyed reading it. The topic is highly original as similar attempts at our Institute date more than a decade back to Skuhrovec (2009). The author analyses predictability of the USD/virtual coins exchange rate in a virtual world (game) using the VAR methodology. While the real-world exchange rates tend to be generally unpredictable, the author concludes that his model exhibits some predictability power in the virtual world environment which contradicts the consensus known as the "exchange rate unpredictability puzzle." The main suggested explanation is the lack of complexity of the virtual space and a potential impact of the developers' control.

Contribution

While the author concludes the thesis findings as a technically "successful yet disappointing outcome," I strongly tend to like it, and to my mind, its contribution is significant. Not only is the approach completely novel (only a handful of papers exist, and none seems to utilize standard econometric modeling tools to tackle this issue), and the careful and high-quality elaboration of the research question make the presented findings credible and, therefore, usable in further research. I also highly appreciate the fiat/virtual exchange rate estimation using the data from the „black market“ using web-scraped data. The author summarizes several other contributions of his research which I fully support: the virtual economies have a high research potential as they generate loads of data about human economic behavior and also offer the potential for economic experiments completely unfeasible in the real world. At the same moment, its functioning is very realistic and comparable to the physical world, and so are the in-game economic decisions of the players, especially if interconnected with payments in a fiat currency.

Methods

The methodology is 100% perfectly theoretically described, well explained, and thoroughly elaborated. It really persuaded me that the author understands the details of his analysis and is confident in his conclusions. It undoubtedly surpasses the IES bachelor-level curriculum and could have been almost directly used for a diploma thesis. To document the level of detail on one single example, although the focus is on VAR estimation and resulting short-run forecasting, the potential cointegration relationship is extra tested via the Johansen approach as well as the Engle-Granger procedure, both being also well explained and theoretically summarized in Appendix, although not actually needed.

The only unclear methodological detail in my mind which the author might want to explain during the defense is why some standard macroeconomic variables are actually not being used in the structure of VAR. The point is that the key variable of the analysis is the exchange rate which is the fraction of USD/virtual coins. So it has its virtual part, represented by two utilized variables (virtual price index and player population). Still, it also has its USD part, which is not represented. If the exchange rate goes down, it might mean that the value of virtual coins goes up and that the value of USD goes down. It seems to me, however, that the presented methodology somewhat implicitly assumes the value of

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USD as stable, which is not true in reality. Is this an issue or not? And if yes, what consequences might that bring? I will be happy if proven wrong about my doubt during the defense.

An additional methodological question would relate to the apparent weekly seasonality of the data vs. the continuous 24/7 operation of the game. The data are perhaps dated by the Korean time, and my intuitive understanding is that players' activity increases over the weekend. But Sunday in South Korea might mean Monday in other parts of the world, and players' Monday activity might differ significantly. Is this important/taken into account for/in the analysis?

Literature

The literature section presents a rather comprehensive selection of the related research. It provides the reader with state-of-the-art of exchange rate predictability and a valuable „introduction“ to virtual economies with important links to the real economy or economics as a scientific discipline. Some references are repeatedly used, which I can understand as the topic is very original, and the author admits that especially the literature regarding forecasting virtual exchange rates is scarce. Finally, citations are done properly using a standard style for economic papers. Related to the next section, I only do not understand why the sources mentioned in the Acknowledgments are not contained in the main text. At least Skuhrovec (2009) or Prusa (2010) would fit there well, to my mind.

Manuscript form

The thesis is written in perfect English and typeset in LaTeX. The bibliography section seems complete and well-formatted. The only issue I have never experienced before is referencing within the Acknowledgments section, which is never used in the main text. Moreover, referencing tables and figures is done correctly in the text, the tables are reasonably labeled and described, and the figures are self-contained (with a minor exception: Figure 5.1). The graphics are excellent, easy to look through and understand. The thesis is standardly structured, and the reading was more than enjoyable; many thanks!

Overall evaluation and suggested questions for the discussion during the defense

In my opinion, the assessed thesis undoubtedly surpasses the IES, Faculty of Social Sciences, Charles University bachelor level standards. Thus I can confidently recommend it for the defense and suggest the grade A (excellent).

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

An additional topic for the discussion:

- The span of the analysis completely overlaps with the worldwide onset of the COVID-19 pandemic. The impact is clearly observable, e.g., in Fig. 4.1 and 4.2, where one can detect a considerable growth of all model variables during March 2020 around the COVID crash. The influx of players due to lockdowns and home-office policies can be hypothesized to lead to increases in the price index and the exchange rate and markedly influence the structure of the studied virtual economy. The author might want to discuss the potential consequences of this apparent fact, which is never discussed in the text.

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

CATEGORY	POINTS
Contribution (max. 30 points)	27
Methods (max. 30 points)	30
Literature (max. 20 points)	19
Manuscript Form (max. 20 points)	20
TOTAL POINTS (max. 100 points)	96
GRADE (A – B – C – D – E – F)	A

NAME OF THE REFEREE: Jiří Kukačka

DATE OF EVALUATION: 27. 5. 2021

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