

Report on Bachelor Thesis

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

Student:	Samuel Maroš Kožuch
Advisor:	doc. PhDr. Ladislav Křištofek, Ph.D.
Title of the thesis:	Using the log-periodic power-law model to detect bubbles in stock market

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

Please provide your assessment of each of the following four categories. The minimum length of the report is 300 words.

Contribution

The topic of the thesis is very interesting and important – can the financial market crashes be predicted? The topical literature is rather wide and the thesis focuses on a specific model – log-periodic power-law (LPPL) – which is well theoretically founded and it has been widely applied to many different markets. As such, the contribution of the thesis towards new results is relatively limited and there are not many novelties in the thesis. However, the model has been shown to perform quite well in fitting the price behavior of the selected markets. What I see as the biggest weakness is the pure in-sample towards the crash predictions here. Even though the estimation could be problematic and cumbersome in general (it is), seeing how the estimated critical time evolves in time would give a much broader picture than a simple in-sample fitting. The trouble is that in the in-sample analysis, it is not easy to say whether the model performs well or not (R^2 is not a good measure for log-prices). In the similar way, the model can simply work due to the selection bias, i.e. if we know that there was a crash, we estimate the model and it gets it; but what about the periods of no crashes? Are there false positives?

Methods

Methodology is covered in a sufficient detail, yet not being superfluous. As mentioned in the text, the biggest issue of the LPPL method is the estimation and it needs to be said that it is still an outstanding issue that Sornette and colleagues (namely Filimonov and current doctoral students and post-docs at ETH) still work on. In this sense, the author needed to be creative and come up with a specific way how to approach the non-linear least squares estimation. The methodological limitations of in-sample vs. out-of-sample are described in the previous section.

Literature

Literature is covered sufficiently. As the topic is based mainly on the book of Didier Sornette “Why the stock markets crash?” and connected paper of prof. Sornette and his colleagues, it is relatively easy to follow the main stream of the literature. However, the author also covered the results of derived papers, which is always helpful.

Manuscript form

The thesis is well organized and logically written, even though the non-numbered section might be quite unorthodox (appetite’s choice, though). From my perspective, the figures could have been given more work and specifically the captions which are often not informative enough, i.e. they could have been more descriptive (even more so for not-so-mainstream topic).

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

CATEGORY	POINTS
<i>Contribution</i> (max. 30 points)	18
<i>Methods</i> (max. 30 points)	25
<i>Literature</i> (max. 20 points)	20
<i>Manuscript Form</i> (max. 20 points)	18
TOTAL POINTS (max. 100 points)	81
GRADE (1 – 2 – 3 – 4)	1

NAME OF THE REFEREE: doc. PhDr. Ladislav Krištofek, Ph.D.

DATE OF EVALUATION: 5.6.2017



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EXPLANATION OF CATEGORIES AND SCALE:

LITERATURE REVIEW: *The thesis demonstrates author's full understanding and command of recent literature. The author quotes relevant literature in a proper way.*

Strong Average Weak
20 10 0

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.*

Strong Average Weak
30 15 0

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.*

Strong Average Weak
30 15 0

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.*

Strong Average Weak
20 10 0

Overall grading:

TOTAL POINTS	GRADE		
81 – 100	1	= excellent	= výborně
61 – 80	2	= good	= velmi dobře
41 – 60	3	= satisfactory	= dobře
0 – 40	4	= fail	= nedoporučuji k obhajobě