

Opponent's Report on Dissertation Thesis

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Title of the Thesis:	Essays on Tail Risks, Asymmetries, and Cross-Section of Asset Returns
Type of Defense:	DEFENSE
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Opponent:	Mattia Bevilacqua PhD (University of Liverpool Management School)

Address the following questions in your report, please:

- a) Can you recognize an original contribution of the author?
- b) Is the thesis based on relevant references?
- c) Is the thesis defensible at your home institution or another respected institution where you gave lectures?
- d) Do the results of the thesis allow their publication in a respected economic journal?
- e) Are there any additional major comments on what should be improved?
- f) What is your overall assessment of the thesis? (a) I recommend the thesis for defense without substantial changes, (b) the thesis can be defended after revision indicated in my comments, (c) not-defensible in this form.

(Note: The report should be at least 2 pages long.)

Please see the report in the PDF file attached.

Date:	
Opponent's Signature:	
Opponent's Affiliation:	Mattia Bevilacqua PhD (University of Liverpool Management School)

Review report on *Essays on Tail Risks, Asymmetries, and
Cross-Section of Asset Returns*

Mattia Bevilacqua*

University of Liverpool Management School

Dissertation Thesis by Matěj Nevrla,
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1 Introduction

I am grateful to the author for thoroughly addressing and incorporating the feedback from my pre-defense report. The dissertation has significantly improved, benefiting from the insights provided by myself and the other examiners. Next, I will respond to and reinforce the points specified in the guidelines for the opponent's report. Furthermore, I will discuss how the author has responded to my specific comments, highlighting the improvements reflected in the dissertation.

a) *Can you recognize an original contribution of the author?*

This dissertation presents a remarkably clear message and makes a significant contribution to both empirical and theoretical aspects of asset pricing literature. The originality of the contribution is especially outstanding for a PhD candidate, as evidenced by the publication and submission status of some of the chapters included in this work. Additionally, the author has developed and made available some R packages, which not only demonstrate practical application but also pave the way for substantial citation potential. In response to one of my comments, the author has notably outlined the conferences, workshops, and seminars where individual chapters were presented, demonstrating a strong commitment and proactive involvement in the academic community at a high level. Lastly, also after the amendments, I confirm that the thesis is polished, professional, and exceptionally well-written.

b) *Is the thesis based on relevant references?*

The thesis touch upon relevant and recent references in the area of empirical and theoretical asset pricing, as well as financial econometrics literature. In one of my comments below, I suggested some ways to better summarize this important linkage between the presented chapters and the existing relevant studies. The author has diligently and thoroughly addressed this point providing an excellent literature review section in the introductory chapter.

c) *Is the thesis defensible at your home institution or another respected institution where you gave lectures?*

As I mentioned before, I believe that the thesis would be highly competitive at any academic institution in Europe and beyond. I extend my sincere congratulations to the candidate in this regard. Furthermore, the candidate's active participation in presenting the work at international conferences and workshops has significantly enhanced the visibility and relevance of this research.

d) *Do the results of the thesis allow their publication in a respected economic journal?*

I believe that the results of the thesis are indeed publishable in top journals in economic and finance. The author already managed to publish his first chapter in a very well respected journal in financial econometrics; the author is also been going through a revision process in a top finance journal for his second chapter. These outcomes clearly highlights the value of the work for a broad finance and economics audience, particularly within the asset pricing literature. Additionally, I believe that with some minor changes, the last chapter has the potential to be published in a top journal in finance. The feedback received from the examiners regarding this chapter has already steered it in that direction.

e) *Are there any additional major comments on what should be improved?*

Below are my comments on the thesis pre-defence. These comments mainly focused on the presentation and structure of the thesis, and represent overall minor suggestions. In what follows, I discuss them in more details, highlighting how the author has succeed to address them.

f) *What is your overall assessment of the thesis? (a) I recommend the thesis for defense without substantial changes, (b) the thesis can be defended after revision indicated in my comments, (c) not-defendable in this form.*

My overall assessment of the thesis is a) I recommend the thesis for defense without substantial changes. Thus, I recommend this version of the thesis for the defense.

2 A few comments

I here report my pre-defense comments (in italics) followed by comments on how the author has addressed/tackled them, one-by-one (where applicable).

- **Motivation and linkage:** *the introduction could be enhanced by a discussion about the main motivation behind the chosen topic in general and of how the candidate developed these three exemplary ideas. Some “glue” between the chapters would strengthen the overall discussion and contribution of the thesis. The author mentioned that a unifying thread in the presented research is the understanding of various deviations from traditional asset pricing models that impose simplifying assumptions that are not met in the data. Expanding upon this statement would help the reader to draw clearer connections between each chapter.*

The author has significantly improved the introduction by adding more discussion on the motivation of the work. This section is very useful for specialist and non-specialist readers as it motivates the analyses presented by linking them to the shortcomings of traditional asset pricing models. It is also beneficial to the reader as it provides general unifying ideas that link all three chapters together.

- **Literature review:** *the candidate states that the thesis focuses on asset pricing questions, with a special emphasis on non-linear risks. Specifically, the first paper focuses on the link between stock return and a (downside) risk factor. The second paper investigates the pricing implications of a quantile factor model applied to the dynamics of the cross-sectional quantiles of stock returns, that is relating asset returns to exposures to common movements that affect all assets in the market. The last paper regards systematic asymmetric risk measures and their relation to the linear factor models, applying dimension reduction techniques from the machine learning toolbox. Including a concise and brief general literature review section that presents key articles from each of these areas would be highly beneficial. Some of the main literature strands to include span the relationship between stock returns and (downside) risk, tail risks and asymmetric risk measures, the use of machine learning in asset pricing, common risk and common factors in asset pricing, characteristics and (non-linear) factors, etc. This suggestion aims to elaborate and compile what the author briefly mentions in each chapter. This section could either be integrated into the introduction or presented as a standalone section.*

The author has significantly expanded the introductory chapter by adding a literature review section focusing on significant recent developments in the related strands of literature.

- **Chapter 4:** *a few comments on Chapter 4 which are mainly in the direction of better motivating the ARM-IPCA model to combine the ARMs as opposed to naive approaches or to unilateral adoption of ARMs.*

1. *A brief explanation to interpret the varying patterns of significance in the coefficients of measures when comparing the results from using the entire universe of stocks against the results obtained by excluding penny stocks, as shown in Tables 4.2 and 4.3 can be added. Are some of these measures more sensitive to penny stocks/volatile returns? This discussion could encompass also subsection 4.3.5.*

The author has added a brief explanation of the varying significances of the ARMs with relation to their risk premia across all- and no-penny-stock datasets in Subsection 4.2.4.

2. *How do we interpret $htcr$'s coefficients compared to the others in Table 4.2?*

Thanks for explaining this in details.

3. *Any relevant reference you are following for the managed portfolio scheme in subsection 4.2.4?*

Thanks for clarifying this point.

4. *A few lines/footnote to discuss some robustness checks to validate that the naive combination approach is not affected by different initial (moving) periods or lasso/ridge parameters estimation.*

The author has added short footnotes clarifying this point and discuss the robustness of the results.

5. *The subsequent implementation of the ARM-IPCA, along with all the validating tests, particularly in relation to momentum and other factors, is, in my opinion, robust and convincing. Consequently, this chapter could represent a highly significant contribution to the literature on ARMs and asset pricing.*

- **Conclusion:** *Given that the conclusions of the individual chapters are relatively brief, the author could consider adding a final Conclusion chapter. This chapter could concisely summarize the results of the papers, discuss how they interconnect, and briefly propose potential direction for further research. For instance, building on the insights from the last chapter, an possible extension could involve exploring the ARM-IPCA results when the relationship between ARMs and stock returns is conditional on whether the market (or stocks variance/tail risk) is below or above its mean. Some implications of the thesis findings for portfolio and risk managers can also be briefly discussed in this section.*

The author has successfully extended the conclusions of Chapters 3 and 4, following also suggestions by other examiners, by including direction for future research. In Chapter 4, the authors has also provided a more detailed discussion regarding the main results. Finally, I thank the author for having added a conclusion chapter summarizing the main ideas and results of the thesis.

3 Minor comments

- *Thinking of treating the papers as chapters by moving all the references, some repeating, and appendices at the end of the thesis. This approach could streamline the thesis and improve its readability and coherence. Please disregard this point if the candidates' guidelines for thesis writing state otherwise.*

I fully understand the author's decision on keeping the chapter-specific lists of references and appendices as this is a standard in the author's Institution. Thanks for clarifying.

- *The author has detailed the publication status and journal submissions of some of the chapters. It would also be beneficial to include information about the conferences, workshops, and seminar presentations in parts of the thesis. This is particularly relevant given the author's proactive engagement in presenting this work at prestigious international events, as I previously mentioned.*

The author has successfully included, for each chapter, a list of conferences, workshops, and seminars where the specific work was presented and discussed.

Overall, I extend my thanks to the author for addressing all of my comments. I also wish to reiterate my gratitude and congratulate the author for his exceptional work.