

Advisor's Report on Dissertation Thesis

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Title of the Thesis:	Essays in Financial Econometrics
Type of Defense:	DEFENSE
Date of Pre-Defense:	October 21, 2015

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) Do the results of the thesis allow their publication in a respected economic journal?
- d) Are there any additional major comments on what should be improved?
- e) Were the comments raised at the pre-defense, addressed in the dissertation submitted to the regular defense?
- f) What is your overall assessment of the thesis? (a) I recommend the thesis to be defended without major changes; (b) The thesis is not defensible.

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

Content of the Report:

The thesis under review is a collection of three papers presenting an original contribution to the field of financial econometrics. Unifying theme of the three papers is modeling of general nonlinear dependence structures between financial time series, while Krenar focuses on the modeling of dependence in the points of the returns distribution instead of moment's expectations as is commonly done in the literature. Hence, Krenar contributes to the literature by proposing new modeling strategies in different situations, and improves our understanding of the dependence in financial and commodity markets. Proper understanding of the dependence between assets is a crucial ingredient of portfolio and risk management, and has been addressed by many researchers in past decades. Although lot of effort has been made, literature still lacks consensus on how to measure the dependence structures, mainly due to their nonlinear nature. Moreover, most of the literature focuses on the moment's expectations, and ignores the dependence in quantiles of the joint distributions. With this respect, Krenar makes an original contribution to the field, and I expect publication of the papers in the relevant journals for this literature (note that first paper has been published already by highly ranked Energy Economics journal, the second one is resubmitted to Studies in Nonlinear Dynamics & Econometrics).

All three research projects of Krenar stemmed from the need of appropriate methodology for understanding nonlinear dependence structures in the distribution of financial time series. I will briefly summarize the contribution of the papers in the following paragraphs.

In the first paper, Krenar proposes a new empirical model to capture time-varying joint distribution of oil and stocks. This empirical model is then translated to conditional diversification benefits from one of the broadly used pair in the diversification of risk. In this work, Krenar makes two main contributions. First, he proposes a new econometric model for the time-varying joint distribution of asset returns. The model is based on coupling high frequency data with time-varying copula functions, and novel data driven estimation framework of Creal et. al. (2013) based on the score updating instead of traditional maximum likelihood estimation. Second, Krenar uses the model to provide important economic discussion about diversification benefits and their proper measurement.

In the second paper, Krenar proposes a novel model to capture the conditional quantiles of returns using nonlinear copula quantile regressions, generalizing the previous contribution in this field by Zikes and Barunik (2015) forthcoming in Journal of Financial Econometrics. The work is important economically particularly because it provides a natural way of modeling conditional Value-at-Risk (being quantile of the return distribution) within very general nonlinear regression framework.

In the last paper, Krenar addresses an important problem of systemic risk, and estimate risk contribution of one asset on other individual assets (or possibly market) returns, again utilizing novel quantile copula regression framework.

In conclusion, the thesis proposes new important modeling strategies based on the state of the art knowledge, which moves the frontiers in the applied financial econometrics research, as they allow us to improve our understanding of the market behavior in an important way, focusing on the joint distributions instead of moment expectations. The work is original, it is done rigorously. Hence my overall assessment of the thesis is (a) the thesis can be defended without substantial changes, conditional on finishing the last paper of the thesis.

Date:	February 11, 2016
Advisor's Signature:	
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