



Thesis Evaluation Report

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Title:	Measuring high-frequency phase shifts between stock markets
Opponent	Jiří Novák

Summary

The thesis uses wavelet analysis to analyze interdependencies between developed and developing markets. The author suggests that the *“thesis contributes to the literature by examining noisy financial time series on highest frequencies and shows relevance of the method on simulated signals with high degree of noise”* ... whatever that means.

Evaluation

General

I believe the thesis represents a typical example of purely method-driven work. This is quite obvious even from the mere fact that the methodology chapter is the longest of all the chapters (26 pages, relative to 17 for the empirical results, and mere 7 (!) for literature review). It is extremely hard for me to see value in such work. First, I have not found any general research question specified by the author (see below for details). In my opinion, this is the most fundamental criterion for evaluating thesis quality. Second, it is not at all clear to me how the author wants to contribute to our understanding of financial markets. His findings are either trivial (e.g. the correlation between FTSE100 and DAX) or hardly generalizable to other settings (see below). Third, the author shows only limited awareness of prior research. He makes little effort to connect his work to prior research and to explain how the thesis builds on the literature and how it extends it. Fourth, I find the writing style quite negligent (see below). Hence, the thesis feels like an aimless data-mining exercise when sophisticated techniques are used to estimate correlations between five randomly selected markets. I am afraid, I have doubts whether such theses should be defended...

Contribution

It is not clear to me what research question the author analyzes. On page 2 he specifies three bullet points (!) with questions, e.g. *“Are FTSE100 and DAX highly correlated and in phase?”*. Notwithstanding the fact that the answer to this question is rather trivial it is quite unclear how answering such a question can further our understanding of financial market. Hence, it is very hard to assess what the authors aims to achieve with his analysis.

In the introduction the author refers to research of market comovements as an important input to evaluating the effectiveness of international diversification: “*Later, co-movement of stock market indices came under study to reveal possibilities of international diversification (e.g. Ansoff (1957), Grubel (1968), Makridakis & Wheelwright (1974)).*” (p. 1). I can agree that from the perspective of risk diversification studying co-movements is relevant.

Nevertheless, just a few paragraphs later the author states: “*We contribute to existing literature in several ways. We examine relative phases on highest frequencies, where the tendencies are not uncoverable by methods which have enough power for lower ones, on data which, as far as the author is aware, were not examined by other researchers. Furthermore we demonstrate that such alteration does not change the significance of observed lags in phase. We also employ more methods and cross-valuate the results with all parts of wavelet analysis to seek the explanation of the results.*” (p. 2). I cannot imagine how studying relative phases on highest frequencies on five randomly selected markets can inform investors about the changing benefits of diversification.

Literature

I find the literature review rather superficial. The author mentions several studies of market comovements, but the way the literature review makes an impression that the author acquired only rather basic understanding of some of the relevant literature. The following sentence makes an impression that even after having reviewed the literature the author is unsure about the main conclusion of the relevant literature: “*Up until 1990, as far as the author is aware, showed lower comovements and thus higher potential benefit of diversification and risk management.*” (p. 1).

The authors also frequently makes statements that refer to the literature without providing specific references supporting the claims, e.g. “*In later periods researchers observed increasing correlation among indices.*” (p. 1). “*Some works even found comovements among markets be that high that presence of inter-day arbitrage were rare.*” (p. 1).

Methodology

Even though the author shows great fascination in numbers and sophisticated methods, from my point of view sophisticated methods are useful only as long as they allow us to demonstrate some novel insights or avoid making erroneous inferences. I do not think one needs sophisticated methods to answer the question “*Are FTSE100 and DAX highly correlated and in phase?*” A simple correlation measure would do. I do not think that the thesis demonstrates the need or superiority of the sophisticated measures. Thus, I consider their use a waste of energy and time...

Style

The thesis violates several academic writing conventions. The individual paragraphs are often not self-contained and they are sometimes not well connected to one another. The author uses bulleted text (e.g. p. 2). Relevant references are missing in the text referring to research findings. The tables lack explanatory notes. The Literature Review is labeled “*Related Works*”. Some of the language formulations are hard to understand. The text is written negligently.

To demonstrate, consider the very first sentence of the abstract: “*Thesis investigates frequency-related phase relationships among returns of five major 5-minute European stock market indexes and compares relative phases on high frequencies, with focus on dynamics between developed and developing stock markets from 2008 to 2015 using.*” It is too long and relates to a number of issues. One needs to read it several times to be able to guess what the author wants to say. It is imprecise (“5-

minute” is a characteristic of data not the stock market indices). It lacks a definite article “the” or the work “this” in the beginning. The word “*using*” should not be included at the end...

Awarded Points and Grade

Contribution (max 30)	12
Methods (max 30)	22
Literature (max 20)	13
Form (max 20)	14
Total (max 100)	61
Grade (A – B – C – D – E – F)	D

Referee’s Signature

January 8, 2019

Evaluation Date

Jiří Novák

Referee’s Name

Grading 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
91 – 100	A
81 – 90	B
71 – 80	C
61 – 70	D
51 – 60	E
0 – 50	F