

IES FSV PhD Program
Annual Update of the Individual Study Plan
for academic year 2011/2012

(Fill in this form and post it on your web page, and also submit the signed form in print to IES office,)

Student's data

Name	Ladislav Kristoufek
Year of beginning of studies	2009
Form of study	P
Advisor	Mgr. Lukas Vacha, PhD.
Dissertation topic	Fractality and multifractality in finance

Expected progress in dissertation

The dissertation topic is generalized to „Fractality and multifractality in finance“ and will be likely more specific at the end of year three of the studies.

The second dissertation paper „Multifractal height cross-correlation analysis“ is finished and ready to be submitted to a journal.

Work on the third dissertation paper has already started. The paper will focus on a use of fractality and multifractality measures as indicators of financial markets turmoils and critical events. The paper should be finalized till the end of the academic year 2011/2012.

Expected publications

(including submitted and forthcoming papers and other publications)

- Paper „Multifractal height cross-correlation analysis“ is under revision in *Chaos, Solitons & Fractals*. However, this is planned to be withdrawn and shorter version (already prepared) will be send to *Physical Review Letters*. If rejected at *PRL*, the next steps are *Physical Review E* and *European Physical Journal B*.
- Paper „Testing robustness of classical and modified rescaled range analyses under various distributions“, which is now under revision in *Physica A*, will be resubmitted.
- Dissertation research of fractality measures and market turmoils will be presented at Econophysics Colloquium 2011 in Vienna, Austria. The results will be sent to *IES WP Series* or *UTIA Research Report Series*, and later to a Scopus journal (preferably to both Econophysics and Economics journal, in different versions)
- Joint research with Kristyna Ivankova and prof. Vosvrda on connection between isobars of financial series and Hurst exponent has just started. The research will be presented at MME2011 conference, later submitted to *IES WP Series* and finally to a Scopus journal (this will be agreed later as I am not the leading author in this research). Paper more focusing on comparison of isobars measures, Hurst exponent and entropy will be prepared and submitted to a Scopus journal (preferably *Physica A*, or *European Physical Journal B*)
- Joint research with Boril Sopov on volatility return intervals has just started. The basic idea of the research is to show whether various volatility modeling techniques are able to mimic the scaling of the volatility return intervals in the real markets. Further, we shall focus on a possible use of volatility return intervals as a measure of Value-at-Risk.
- Joint research on modeling of time series of agricultural commodities and fuels/biofuels with prof. Janda and prof. Zilberman (UC Berkely) is undergoing and will be extended during a research visit at University of California at Berkeley (as a part of GACR P402/11/0948 solution).
- Possible results can also come from the supervision of the bachelor's and master's theses – research on Ising model extensions for finance; and research on a use of bootstrapping and jackknife in long-range dependence estimation

Expected teaching (code/course name/semester)

Specify your teaching preferences for the following academic year e.g.

SS – 1 seminar (most preferred = microeconomics undergraduate, second most preferred = microeconomics graduate, third most preferred = econometrics undergraduate)

I plan to teach the following:

- JEB105 Statistics (one seminar)
- JEB109 Econometrics I (one seminar + seminar co-ordination)
- JEB110 Econometrics II (one seminar + seminar co-ordination)

Participation on JEB105 Statistics teaching will depend on a possible higher participation on teaching and lecturing in JEB109 and JEB110 (if so, JEB105 would probably have to be left).

Expected attendance of PhD seminars

- NDES (both semesters)

Expected Bc or Mgr exams (code/course name/semester)

none

Expected grant activities

- 3-year GAUK 5183/2010 (118310) grant „Fractality and multi-fractality of financial markets: methods and applications“ (principal investigator)
- 3-year GAUK 76810 grant „Development and Application of Meta-Analytic Methods in Economics“ (co-investigator)
- participation in GACR 402/09/H045 „Nelinearni dynamika v penezni ekonomii a financich. Teorie a empiricke modely“
- 5-year GACR P402/11/0948 grant „Vyvoj analytickeho ramce pro energetickou bezpecnost: Ekonometrie casovych rad, teorie her, meta-analyza a teorie regulace“ (co-investigator)

Other activities

(e.g. stay abroad, attending the series of small and big defences of other students, etc.)

- participation at defenses of other PhD students (at least 50%)
- presentation of research at the following conferences:
 - o Econophysics Colloquium 2011, Vienna, Austria
 - o Computational and Financial Econometrics 2011, London, UK
 - o Mathematical Methods in Economics 2011, Janska Dolina, Slovakia
 - o Other conferences depending on financing in 2012 and the organized conferences
- member of the pedagogical chamber of the Academic Senate of the Faculty of Social Sciences of the Charles University in Prague (AS FSV UK)
- member of study and economic committees of AS FSV UK
- further membership in AS FSV UK depending on the elections results in November 2011 (candidacy planned)
- supervision of 4 bachelor's and 1 master's theses (still upon agreement, up-to-date)

Advisor's statement

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Advisor's signature

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Student's signature