Bucharest Academy of Economic Studies

Date: 02nd of March, 2026   **NR. REG. 2308/02.03.2026**

ANNOUNCEMENT

The Bucharest University of Economic Studies is organizing a selection and recruitment process for *one* **Phd Researcher 5** within the *„Non-Gaussian self-similar processes: Enhancing mathematical tools and fincial models for capturing complex market dynamics",* - 760243/28.12.2023,, project code no. 194/31.07.2023

The employment offered for this position is part-time, with a maximum of **44** working hours per month, which may be unevenly distributed.

The gross hourly wage for this position is: **57,96** lei per hour.

The individual contract of employment will be concluded for a fixed-term period of time until the **30th of June, 2026**.

A. To participate in the competition, candidates must meet the following general and specific conditions:

1. General conditions:

a) has Romanian citizenship, citizenship of other member states of the European Union, of states belonging to the European Economic Area and/or foreign states as defined by art. 2 lit. a) of GEO 194/12.12.2002 with subsequent amendments and completions, respectively persons who do not have Romanian citizenship, citizenship of another EU member state or citizenship of the Swiss Confederation;

b) has the minimum age regulated by the legal provisions;

c) has full capacity;

d) has a relevant state of health for the position he is applying for.

e) meets the conditions of education and, where appropriate, seniority or other specific conditions by the requirements of the post to be filled;

f) has not been convicted of a crime against humanity, against the State or authority, or of an offence committed in the course of or in connection with the performance of his or her duties which obstructs the course of justice, or forgery or corruption, or of an offence committed with intent which would make him or her incompatible with the performance of his or her duties, unless he or she has been rehabilitated.

2. Specific conditions:

a) level of studies: higher education, completed with a PhD;

b) field of study: mathematics and natural sciences: the field of mathematics;

Skills:

1. **Technical skills:**
   • Understanding of the fundamentals and applications of the stochastic processes, including detailed knowledge of self-similar processes and of the Hermite processes;
   • The ability of analysing and modelling the diverse behaviour of these processes in different contexts, such as price movements in the financial markets;
   • Familiarity with concepts such as fractional Brownian motion, stationary growth and long-term dependence.

2. **Analytical skills:**
   • The ability of analyzing and translating complex data, identifying trends and developing recommendation formulas based on analysis.

3. **Communication skills:**
   • Excellent written and verbal communication skills, to present research results clearly and concisely.

4. **Teamwork:**
   • The ability of effectively working within an interdisciplinary team, collaborating with other researchers to the objectives of the project.

Specific requirements

1. **Foreign Languages:**
   • Advanced knowledge of English (both written and spoken) in order to be able to access and disseminate knowledge from international literature.

2. **Publications and scientifical papers:**
   • The candidates must be able to demonstrate their contributions and publications in the field of statistics, stochastic modelling in finance, risk management, sustainability, international economic relations through reports that are proof of their expertise and independent research capacity.

   • It will be considered an advantage if the candidates show proof of their publications in Non-Gaussian stochastic modelling in mathematical finance in papers that are relevant for the scientific community.

3. **Innovation Capacity:**
   • An innovative attitude and creative thinking to develop new methods and tools.

4. **Research Ethics:**
   • Deep understanding of ethical principles in research and commitment to academic integrity.

5. **Availability for Professional Development:**
   • Availability to participate in conferences, workshops and other forms of continuous professional development.

6. Flexibility and Adaptability:

 • Ability to adapt to project direction changes and to respond to unexpected challenges.

The candidates will have to show proof of a portfolio with their previous projects and scientifical publications that are relevant for the evaluation of quality and relevance of their experience, taking into account the abilities and specific requirements previously mentioned.

B. The selection process will consist of:

1. **Step 1 - Evaluation of selection files**;
2. **Step 2 - Structured interview** (in the situation where at least 2 candidates do not register, the competition committee can decide to simplify the procedure and carry out the selection without conducting the interview);

 • *the date and time of the interview*: to be announced at the same time as the results of the selection files evaluation are published;

 • *the place of the interview*: to be announced at the same time as the results of the selection files evaluation are published,

The tests are eliminatory, the minimum score for each test is 50 points.

C. Topics and bibliography:

The topic is elaborated in order to attract candidates with a deep theoretical understanding and with the ability of applying their knowledge in solving complex probelms in finance, this way opening the path to significant innvations in the field.

1. **Topics:**

 1.1. Deep understanding of stochastic processes: Detailed knowledge of the stochastic process theory.

 1.2. Advanced mathematics:

 Expertise in the stochastic calculus, in the stochastic differential equations, the stochastic functional analysis and the theory of probability. This kind of knowledge is essential for the development and analysis of the complex mathematical models.

 1.3. Theory and foundations of the self-similar stochastic processes:

 The fundamental theory of the self-similar stochastic processes, with an emphasis on the defining characteristics of these processes, such as self-similarity and statistical independence on scaling. The analysis of the fractional Brownian motion as a primary example and the introduction of the Hermite processes as Non-Gaussian extensions,

 1.4. Modeling and Analysis of the Hermite processes:

 And in-depth study of the Hermite processes, including their mathematical derivation, statistical properties and applicability in the modelling financial data. Discussion of estimation and simulation methods for these processes.

1.5. Applications of the Stochastic Processes in Finance:

Exploring how can the self-similar stochastic processes and the Hermite processes be used to model the volatility of the financial market, how can they asset price movements and financial risk. The analysis of the advantages and limitations of these models compared to the traditional Gaussian approaches.

1.6. Development of the new financial models based on the Hermite processes:
proposing and developing new financial models in order to integrate the Hermite processes and capture the complex dynamics and the long-term dependence observed in real financial data.

2. Bibliography:
2.1. Books:

Fractals and scaling in finance
Mandelbrot, Benoit B.
Sel. Works B. B. Mandelbrot
Springer-Verlag, New York, 1997, x+551 pp.
ISBN: 0-387-98363-5

MR2502480 - Option pricing in fractional Brownian markets
Rostek, Stefan
Lecture Notes in Econom. and Math. Systems, 622
Springer-Verlag, Berlin, 2009, xiv+137 pp.
ISBN: 978-3-642-00330-1

MR4485442 - Continuous time processes for finance—switching, self-exciting, fractional and other recent dynamics
Hainaut, Donatien
Bocconi Springer Ser., 12
Springer, Cham; Bocconi University Press, [place of publication not identified], 2022, xviii+345 pp.
ISBN: 978-3-031-06360-2; 978-3-031-06361-9

MR1422250 - Introduction to stochastic calculus applied to finance
Lamberton, Damien; Lapeyre, Bernard
Chapman & Hall, London, 1996, xii+185 pp.
ISBN: 978-1-58488-626-6

Non-Gaussian selfsimilar stochastic processes
Tudor, Ciprian
SpringerBriefs Probab. Math. Stat.
Springer, Cham, 2023, xii+101 pp.
ISBN: 978-3-031-33771-0; 978-3-031-33772-7

Normal approximations with Malliavin calculus
Nourdin, Ivan; Peccati, Giovanni
Cambridge Tracts in Math., 192
Cambridge University Press, Cambridge, 2012, xiv+239 pp.
ISBN: 978-1-107-01777-1

Long-range dependence and self-similarity
Pipiras, Vladas; Taqqu, Murad S.
Camb. Ser. Stat. Probab. Math., [45]
Cambridge University Press, Cambridge, 2017, xxiii+668 pp.
ISBN: 978-1-107-03946-9

2.2. Articles:

MR4028644 - Pricing derivatives in Hermite markets
Stoyanov, Stoyan V.; Rachev, Svetlozar T.; Mittnik, Stefan; Fabozzi, Frank J.
Int. J. Theor. Appl. Finance **22** (2019), no. **6**, 1950031, 27 pp.

MR4577885 - Volatility is rough
Gatheral, J.; Jaisson, T.; Rosenbaum, M.
World Sci. Lect. Notes Finance, **6**
World Scientific Publishing Co. Pte. Ltd., Hackensack, NJ, 2023, 127–172.

Fractional Brownian motion with zero Hurst parameter: a rough volatility viewpoint
Neuman, Eyal; Rosenbaum, Mathieu
Electron. Commun. Probab. **23** (2018), Paper No. 61, 12 pp.

MR4698114 - Short-Time Asymptotics for Non-Self-Similar Stochastic Volatility Models
Giorgio, Giacomo; Pacchiarotti, Barbara; Pigato, Paolo
Appl. Math. Finance **30** (2023), no. **3**, 123–152.

Local volatility under rough volatility
Bourgey, Florian; De Marco, Stefano; Friz, Peter K.; Pigato, Paolo
Math. Finance **33** (2023), no. **4**, 1119–1145.

Markovian approximations of stochastic Volterra equations with the fractional kernel
Bayer, Christian; Breneis, Simon
Quant. Finance **23** (2023), no. **1**, 53–70.

Stationary Heston model: calibration and pricing of exotics using product recursive quantization
Lemaire, Vincent; Montes, Thibaut; Pagès, Gilles
Quant. Finance **22** (2022), no. **4**, 611–629.

Fractional stochastic volatility correction to CEV implied volatility
Kim, Hyun-Gyoon; Kwon, Se-Jin; Kim, Jeong-Hoon Quant. Finance **21** (2021), no. **4**, 565–574.

The overdamped generalized Langevin equation with Hermite noise
Tudor, Ciprian A.
Fract. Calc. Appl. Anal. **26** (2023), no. **3**, 1082–1103.

Generalized Wiener-Hermite integrals and rough non-Gaussian Ornstein-Uhlenbeck process

Assaad, Obayda; Diez, Charles-Phillipe; Tudor, Ciprian A.
Stochastics **95** (2023), no. 2, 191–210.

Integration questions related to fractional Brownian motion
Pipiras, Vladas; Taqqu, Murad S.
Probab. Theory Related Fields **118** (2000), no. 2, 251–291.

Central limit theorems for multiple stochastic integrals and Malliavin calculus
Nualart, D.; Ortiz-Latorre, S.
Stochastic Process. Appl. **118** (2008), no. 4, 614–628.

Quadratic variation and drift parameter estimation for the stochastic wave equation with space-time white noise
Assaad, Obayda; Gamain, Julie; Tudor, Ciprian A.
Stoch. Dyn. **22** (2022), no. 7, Paper No. 2240014, 25 pp.

Analysis of the Rosenblatt process
Tudor, Ciprian A.
ESAIM Probab. Stat. **12** (2008), 230–257.

Variations and estimators for self-similarity parameters via Malliavin calculus
Tudor, Ciprian A.; Viens, Frederi G.
Ann. Probab. **37** (2009), no. 6, 2093–2134.

The linear stochastic heat equation with Hermite noise
Slaoui, Meryem; Tudor, C. A.
Infin. Dimens. Anal. Quantum Probab. Relat. Top. **22** (2019), no. 3, 1950022, 23 pp.

Asymptotic expansion for vector-valued sequences of random variables with focus on Wiener chaos
Tudor, Ciprian A.; Yoshida, Nakahiro
Stochastic Process. Appl. **129** (2019), no. 9, 3499–3526.

Behavior of the Hermite sheet with respect to the Hurst index
Araya, Héctor; Tudor, Ciprian A.
Stochastic Process. Appl. **129** (2019), no. 7, 2582–2605.

D. Contents of the competition file:

1. A record of the enclosed documents
2. Application for the recruitment and selection process addressed to the Rector of ASE;
3. Copy of the identity document or any other document attesting the identity, according to the law, as the case may be;
4. Copy of marriage certificate or proof of name change, if the candidate changed his name (proof of name change);
5. The criminal record or a self-declaration that it has no criminal record that makes it incompatible with the position for which it is applying;
6. Medical certificate attesting the appropriate health status issued no more than 6 months prior to the selection by the family doctor of the candidate or by the competent medical

units, or the declaration on its own responsibility, with the obligation to fill in the selection file with the medical certificate at the latest by the date of the first test of the recruitment and selection process, if applicable

7. Declaration on own responsibility if the candidate has or does not have a husband/wife or relatives and affines, up to the III-th degree inclusively, who are employees of the Academy of Economic Studies of Bucharest in a position of leadership, control, authority with the post taken out for selection and not the post, to which they apply, is not in a position of leadership, control, authority with husband/wife or relatives, up to and including III degree, employees of the University;

8. Statement for the processing of personal data;

9. Curriculum vitae in European format (www.cveuropean.ro/cv-online.html) – signed and dated on each page;

10. Copies of documents that certify the completed level of education and any other additional documents that attest to the completion of specializations, as well as copies of documents certify the fulfilment of the specific conditions required for the position, as outlined in Chapter A, point 2.

E. **Contact information:**

The selection files are to be submitted on the **10th of March, 2026**, **by 16h00**, at the ASE Registrar's Office, in the "Ion Angelescu" Building, Bastille Fall, ground floor, room 0016, or online using the email addresses of the contact people below.

Contact:
-For information regarding the responsibilities of the position being applied for: fondurieuropene@ase.ro
-For information regarding the recruitment and selection process: dru@ase.ro
-Contact person: cristina.padure@ase.ro

F. **The calendar of the selection process:**

No. crt.	ACTIVITY	Date
1.	Posting the announcement	02.03.2026
2.	Submitting the candidates' competition files at the ASE Registrar's Office	10.03.2026
3.	Selection of application files by the members of the competition committee	11.03.2026 - 12.03.2026
4.	Publication of the results of the selection of the application files	13.03.2026

5.	Submission of appeals regarding the results of the selection of application files	16.03.2026
6.	Publication of the results of the appeals	17.03.2026
7.	Interview	18.03.2026
8.	Communication of the results after the interview	19.03.2026
9.	Submission of appeals regarding the interview results	20.03.2026
10.	Publication of the results of the appeal	23.03.2026
11.	Publication of the final results	23.03.2026
12.	Appointment to the position	After approval from the Board of Trustees