Call for a Research fellowship on *Machine learning methods and other new tools for assessing and managing risks associated with the transition to a climate-neutral society* - Università Ca' Foscari Venezia (Italian law 30 December 2010, n.240, art. 22 and subsequent amendments and additions). PRIN 2022-PNRR "JET - Just Energy Transition: stochastic and machine learning methods for the evaluation, mitigation and geographical hedging of involved natural risks (with climate in view)", Project Code P2022XTLM2, CUP H53D23008460001. Call issued by Ca' Foscari University of Venice.

The present document in English is to be considered as a mere summary of the main provisions of the notice of competition which is available in Italian at the following link: http://www.unive.it/data/12137/ The text in Italian is the official text of the notice of competition for all legal intents and purposes and, in the event of non-conformity with the present document, it shall prevail.

Title*: *Machine learning methods and other new tools for assessing and managing risks associated with the transition to a climate-neutral society

- ***funding*** – PRIN 2022-PNRR- "JET - Just Energy Transition: stochastic and machine learning methods for the evaluation, mitigation and geographical hedging of involved natural risks (with climate in view)", Project Code P2022XTLM2, CUP H53D23008460001.
- ***start of the programme*:** The research programme envisages the start of the activity approximately in October2024.
- **SSD:** STAT-04/A
- **GSD:** 13/STAT-04
- ***Duration:*** 13 months
- **Stipend**: The research fellowship amounts to **Euro 32.311,36.=per year**, gross to the recipient, net of the expenses to be sustained by the Provider. The amount may be subject to adjustment in the event of variations in the law
- ***scientific coordinators and tutors***: Prof. Marco Corazza

abstract:

The European Green Deal is the European Commission's growth strategy for the EU economy, representing a significant opportunity to expedite investments in innovation and clean energy technologies. The weather-dependent nature of renewable resources makes producers susceptible to the unpredictability of several natural variables. Modeling and estimating these dynamic fields are challenging and, despite their complexity, are crucial to enable hedging strategies.
In light of this, the research fellow will collaborate to investigate the following aspects:

- The risk-return profile of renewable energy production, utilizing consolidated and innovative methods such as statistical tools, probabilistic approaches, and machine learning (ML) methods. Their use in this research field is in its infancy, so a part of the investigation will involve identifying the most suitable models.
- The proposal of new financial products tailored to support the energy transition. A crucial issue concerning these products is the pricing methods and the calculation of their sensitivities to different risks. Standard approaches would be ineffective, so ad hoc tools based on ML techniques will be explored.

The counterparty credit risk of the new products. They are likely to be traded in over-the-counter markets, therefore illiquid and liable to the latter risk. The research fellow will collaborate to investigate this risk with a model in which spatial effects will be properly modeled, and assess the counterparty credit risk with approaches ML methods and multi-criteria decision analysis methods.

Who can apply

Prospective candidates are expected to hold a master's degree in the subjects of the research, or related disciplines.

Ca' Foscari encourages applications from researchers with positive evaluation in all the criteria in individual proposals such as Marie Skłodowska Curie Actions - Individual Fellowships/ERC Starting Grants/FIRB (Italian Fund for basic research investments)/SIR (Scientific Young Independence Research) or similar.

Researchers having successfully completed Marie Skłodowska Curie Actions - Individual Fellowships/ERC Starting Grants/FIRB (Italian Fund for basic research investments)/SIR (Scientific Young Independence Research) or similar funded projects are warmly encouraged to apply.

Favourite headlines

- the Ph.D. in the subjects of the research;
- completion of attendance at a doctoral program in the subjects of the research, while awaiting the award of the degree;
- be/been the holder of research grant(s) related to the subject of the research;
- specialization diplomas and certificates of attendance at postgraduate specialization courses, obtained both in Italy and abroad, the performance of documented research activities at public and private entities with contracts, scholarships or assignments both in Italy and abroad;

Deadline for submission of applications: by and no later than 2024-09-05, h. 12:00 noon – local time.

WARNING! Please note that the University is closed for the summer period from 10th to 17th August 2024. We strongly recommend that you DO NOT send applications for participation that must be received during the closing period indicated

How to apply:

Candidates should submit:

1. The application form;
2. A motivation letter (max 1 page) along with their CV in European format, duly dated and signed, both to enclosed as a one single.pdf file. (http://www.unive.it/pag/28830)
3. A copy of a valid identity document (either Identity Card or Passport);
4. If available, Evaluation Summary Reports of Marie Skłodowska Curie Actions - Individual Fellowships/ ERC Starting Grants/FIRB (Italian Fund for basic research investments)/SIR (Scientific Young Independence Research) individual proposals having passed all the evaluation thresholds;
5. If available, Doctoral degree ;
6. Declaration on availability to held the interview in remote (https://www.unive.it/pag/28830) to be send via email at the following address: simar@unive.it:
7. If available, Details of Marie Skłodowska Curie Actions - Individual Fellowships, ERC Starting Grants, FIRB (Italian Fund for basic research investments)/ SIR Scientific Young Independence

Research funded projects;

8. All documents, qualifications and publications relevant for the selection procedure (please, see the notice http://www.unive.it/data/28825/).

All the schemes of the quoted documentation are available on the website http://www.unive.it/pag/28830.

Incomplete applications will be rejected

How to submit your application

Applications should be submitted by the online procedure, available on the notice webpage http://www.unive.it/data/28825/

Or submit here:

https://apps.unive.it/domandeconcorso-en/accesso/dec-corazza-prin-pnrr-29072024

by inserting their Italian Tax Code. Foreign citizens not yet in possesion of the Italian Tax Code can use the following link https://apps.unive.it/utils/cf to obtain a temporary one and be able to proceed with the request.

The candidate, after the uploading, will receive a submission number and an e-mail acknowledging receipt of his/her application.

The candidate if necessary could access the procedures for updating any data and materials by the link provided by the e-mail, in any case any updates must be made no later than the deadline **2024-09-05, h. 12:00 noon – local time.**

If the deadline is on Saturday or on holidays, the deadline is extended to the first working day thereafter.

Please note:

- The candidate can contact the University for any support until 24 hours prior to the deadline.
- In case of an high number of applications and / or weight of the materials loaded by the candidates the system might become slower, Therefore it is suggested not to start the process close to the deadline;
- The University does not take on responsibility for wrong or late communication of addresses, nor for any communication problem not depending on the University.

Evaluation

Up to 100 points, specifically:

For qualifications, publications and possible tests, from 0 to 60;

For interview, from 0 to 40.

Selection procedure

The selection will take into account the cross-cutting priorities of the PNRR in relation to generational, gender and territorial equal opportunities

The interview will held in remote only. Further details on how to connect online will published on the web page alongside the convocation notice.

The interviews will take place telematically between **2024-09-16, from 2.00 PM.**

The short-list of the candidates admitted to the interview and the exact date of the interview, or any postponement, will be published on the University's webpage on **2024-09-11** (http://www.unive.it/data/28899/).

Interview Topics

The interview, which will be held telematically, on the following subjects:

- Quantitative finance; Methods and techniques of Machine Learning;
- Mathematical and statistical methods for finance;
- Elements of coding and familiarity with one or both of the following software development environments: Matlab, Python.

During the interview, knowledge of ENGLISH will be assessed.

The recruitment will be sensitive to the cross-cutting priorities of the PNRR in relation to generational, gender and territorial equality of opportunity

Scientific products

The research fellow, at the end of his/her activity must also provide the department with the following scientific products:

- A technical report written in English concerning the state of the art in the research topics to be investigated during the fellowship.
- All software codes developed in Matlab and/or Python environments and/or in any other environment for conducting the research activities required for the fellowship.
- All datasets and databases constructed for the purpose of carrying out the research activities required for the fellowship.
- Collaboration in the drafting of at least two scientific articles, written in English, of a qualitative level suitable for submission to qualified international scientific journals.

Information and contacts

Candidates may find further details about the application process and the research project in the official call published on the following webpage http://www.unive.it/data/28825/

For further information please contact: Segreteria Amministrativa del Dipartimento di Economia, phone number: 041-2349173; e-mail: simar@unive.i