

(BL173/2021-IST-ID)

Research Studentships (Master or Integrated Master students)

Applications are open for one Research Studentship(s), within the framework of project/R&D institution (title of the project/R&D institution's name), PTDC/EGE-ECO/30535/2017, financed by national funds through FCT/MCTES (PIDDAC), under the following conditions:

Scientific Area: Probability and Statistics

Admission Requirements: *To be enrolled at an integrated master or a master.*

Workplan: This project is focused on the analysis of risk-based allocation models for portfolio optimization, these being the minimum variance portfolio, the equal contribution risk portfolio and the maximum diversification portfolio. Additionally, Adversarial Multi-Armed Bandits methodologies are also used, where each arm corresponds to each of the three portfolio optimization models mentioned, in order to find out if these can achieve better results than each individual portfolio optimisation strategy. Furthermore, for each of these methodologies, the impact of the estimation of covariance matrices through the use of classical and robust methods will also be studied. To help in the decision making process, a Hidden Markov Model will be used as an indicator of the market state. Finally, each model will be tested in a multi-period environment, where in which period the asset's portfolio weights will be reallocated, while taking into consideration the proportional costs of buying and selling an asset.

As a final product, a paper should be written and submitted to a journal.

Legislation and Regulations: Statute of Scientific Research Fellow, approved by Law nr. 40/2004, of August 18, as worded by Decree-Law nr. 123/2019, of August 28; FCT Regulation for Research Studentships and Fellowships, available on <https://www.fct.pt/apoios/bolsas/docs/RegulamentoBolsasFCT2019.pdf> and <https://dre.pt/application/file/a/127230968>.

Workplace: The work will be developed at CEMAT of IST, under the scientific supervision of Cláudia Nunes Philippart.

Duration: The research fellowship(s) will have the duration of 3 months. It's expected to begin in December/2021, and it is not renewable.

Monthly maintenance allowance: According to the values for Research Fellowships awarded by FCT in Portugal (<http://www.fct.pt/apoios/bolsas/valores>), the amount of the monthly maintenance allowance is € 835,98 being the payment method an option of the Fellow by Wire Transfer/Check.

Selection methods: The selection methods will be the following: *Curriculum evaluation*, with the respective weight of 100%.

Composition of the selection Jury: Cláudia Nunes Philippart, Rosário Oliveira and Conceição Amado.

Announcement/ notification of the results: The final evaluation results will be communicated to all applicants by email.

Application deadline and formalization: The call is open from 12 until 25 November 2021.

It is mandatory to formalize applications with the submission of the following documents: i) B1 Form – Fellowship application (<https://ist-id.pt/concursos/bolsas/>); ii) *Curriculum Vitae*; iii) academic degree certificate, where applicable; iv) proof of enrollment at an academic degree course (Master, Integrated Master); v) motivation letter;

Applications must be submitted to the email: cnunes@math.tecnico.ulisboa.pt