

1 PHD RESEARCH GRANT IN THE AREA OF COMPUTATIONAL FINANCE

Announcement of Research Grant Competition within the scope of Complementary Support by FCT of Stimulus to the Participation in Marie curie Actions

Applications are open for one research grant in Computational Finance within the scope of Complementary Support by FCT of Stimulus to the Participation in Marie Curie Actions. The Marie Curie Actions Initial Training Networks (ITN), Call: FP7-PEOPLE-2012-ITN, **Multi-ITN - Novel Methods in Computational Finance (STRIKE)**, is developed by Instituto Superior de Economia e Gestão, Technical University of Lisbon (ISEG/UTL) as part of the network including: University of Wuppertal, Comenius University of Bratislava, Polytechnic University of Valencia, University of Rouse, Zittau/Görlitz University of Applied Sciences, Vienna University of Technology, Delft University of Technology, University of Greenwich, University of Würzburg, and University of Antwerp.

The successful candidate will register to read for a PhD in Mathematics Applied to Economics and Management at the Mathematics Department of ISEG, Technical University of Lisbon. Research activities will all be carried out at CEMAPRE - the Centre for Applied Mathematics and Economics and the Mathematics Department of ISEG, Technical University of Lisbon, in close collaboration with the STRIKE network. The fellow will join the STRIKE community, take part in the STRIKE events and will perform an individual research project.

Scientific area: Computational Finance

Admission conditions: The candidates must hold a Master's degree ("Mestrado") in mathematics or a relevant field. Only are eligible researchers who at the time of selection have not yet been awarded the doctoral degree. Experience in quantitative finance is required. To this position applies an institutional mobility rule: the candidate's Master must not have been awarded by the Technical University of Lisbon.

Plan of work: Partial integro-differential equations (PIDEs) appear in finance in option pricing with discontinuous models. These equations generalize the Black-Scholes PDE when the continuous diffusion dynamics for the underlying price is replaced by a Lévy process dynamics (including jumps). The integral operator in the PIDE propagates a possible irregularity of the solution. For many Lévy models (such as Variance Gamma) or for Barrier options, the option price may not be sufficiently regular. This drawback led authors to consider option prices as weak solutions of the PIDEs. Tasks and methodology: problem of existence of weak and viscosity solutions for parabolic PIDEs related with option pricing in financial models based on exponential Lévy processes; efficiency of numerical schemes for solving such PIDEs.

Results: existence of weak and discontinuous viscosity solutions and related comparison principles which allow the construction of appropriate and efficient numerical schemes.

Legislation and applicable regulation: Lei Nº. 40/2004, de 18 de Agosto (Estatuto do Bolseiro de Investigação Científica); Regulamento da Formação Avançada e Qualificação de Recursos Humanos 2010; Apoio Complementar Por Parte da FCT de Estímulo à Participação nas Acções Marie Curie 2012.

Workstation: The candidate will be based at CEMAPRE/ISEG, under the supervision of Prof. Maria do Rosário Grossinho.

Duration of the grant: The position is for twelve months, starting in September 2013, renewable up to a total duration of four years.

Monthly grant: The grant amount is €980 per month, according to FCT regulations (<http://alfa.fct.mctes.pt/apoios/bolsas/valores>). Payments will be made by CEMAPRE by bank transfer.

Selection criteria: The methods of selection are the following: (i) curricular evaluation, (ii) evaluation of the letter of application. Methods (i) and (ii) are evaluated in a scale of 0 to 20 points with weights of 70% and 30%, respectively, in the final evaluation.

Composition of the Jury:

President: MARIA DO ROSÁRIO L. GROSSINHO, ISEG, Technical University of Lisbon
Members: FERNANDO MANUEL R. F. GONÇALVES, ISEG, Technical University of Lisbon
JOÃO MANUEL ESPIGUINHA GUERRA, ISEG, Technical University of Lisbon
MANUEL CIDRAES CASTRO GUERRA, ISEG, Technical University of Lisbon

Form of announcement/notification of the results: The final results of the evaluation will be published on visible and public place at CEMAPRE. Candidates will be ranked according to their final evaluation. The selected candidate will be notified by letter and email.

Application period and procedure: Applications are open from the 15th to the 30th of April 2013. Applications should be formalized by a letter of application sent together with the following documents: detailed Curriculum Vitae, a short summary of the applicant's scientific projects so far, electronic copies of the relevant certificates and diplomas, a proof of proficiency in English and finally two letters of recommendation.

Applications must be delivered to CEMAPRE either by hand during office hours (10-13h and 14-18h), by mail sent to the postal address:

CEMAPRE
Projecto STRIKE
Rua do Quelhas 6
1200-781 Lisboa
Portugal

or by email to the address:

cemapre@iseg.utl.pt