



Università
Ca' Foscari
Venezia

**Dipartimento
di Economia**



IV EDITION - CALL FOR SELECTION OF N. 12 VERA INTERNSHIP GRANTS AT THE DEPARTMENT OF ECONOMICS - A.A 2019/2020

Art. 1 – Scope

1.1 The Department of Economics, within the new Center VERA (*Venice center in Economic and Risk Analytics for public policies*), offers students enrolled in its Master's Degree Courses internship projects to promote the development of professional and research skills useful for their orientation and subsequent labor market integration.

1.2 Twelve grants are available. The maximum duration of the internship periods will be 4 months and a commitment of about 300 hours that will be agreed with the tutor of the project. The internships will take place between July and December 2020. The total funding for each internship will be € 1.843,31 (gross salary). Each internship project, including specific objectives, required knowledge and skills as well as the intern tutors, is described in Annex A, which is an integral part of this call.

1.3 The internship will take place at the Department of Economics. Due to the COVID-19 emergency, internships can take place remotely, working from home.

1.4 On request of the student, the internship activity can be validated as the compulsory internship to acquire university credits planned in the Department of Economics Master's degree program to which the student is enrolled.

Art. 2 – Admission requirements

2.1 The call is reserved for students regularly enrolled in the Department of Economics Master's Degree Courses.

2.2 If students already receive a grant economically incompatible with the grant of the present call, they can apply and, if the merit requirements are met, they can decide to carry out the internship project renouncing the grant. The total numbers of internships cannot exceed 14 (12 with grants and 2 without grants), therefore, the acceptance of internship applications "without grant" should be subject to the compliance of such limits.

2.3 These requirements must be met by the deadline indicated in the following art.3. Please note that the student status must be held also at the moment of grant acceptance and on the start date of the internship.

Art. 3 – Applications

3.1 Applications must be submitted no later than **6th July 2020 at 12.00** by one of the following procedures:

- a) sending to the following Address of Certified Electronic Mail (CEM): protocollo@pec.unive.it. Please consider that the message can only be sent by another Certified Electronic Mailbox; the application sent by a non Certified mailbox cannot be considered valid. Documents must be attached in PDF format only;
- b) sending by ordinary e-mail to the following address: centro.vera@unive.it. Documents must be attached in PDF format only;

3.2 The application form must include also the following documents:

- Dated and signed Curriculum vitae
- Self certification of exams taken (marks and numbers of university credits – *CFU, Crediti Formativi Universitari*) as well as the weighted average exam marks
- Motivation letter, using the format attached to this announcement
- Scanned copy of a valid ID document.

3.3 Applications received after the deadline or applications received through other procedures, or unsigned applications will not be considered valid.

3.4 The University is not responsible for any failure to receive communications due to incorrect or incomplete indication of address by the applicant or to the lack of or the untimely communication of change of address, as well as possible postal mistakes not attributable to the fault of the administration itself.

Art. 4 – Commission and selection of applicants

4.1 A commission appointed by Decree of the Department Director will evaluate the candidates on the basis of their qualifications and motivation letters.

4.2 In a preliminary session, the Commission will define the evaluation criteria and the scoring rules for the professional and academic curriculum vitae and for the motivation letter, as well as the minimum threshold for grant eligibility.

4.3 The ranking list will be formulated on the basis of the following criteria:

- weighted average exam marks;
- numbers of University credits (*CFU, Crediti Formativi Universitari*);
- evaluation of the Curriculum Vitae;
- evaluation of the motivation letter that should set out in particular the student's interests, the coherence between academic background and the activities and objectives of the internship projects, as well as the preferential qualifications/skills and knowledge required for each project (See Annex A).

4.4 Applications from candidates that were beneficiaries of the VERA grant in the previous call will be accepted but in the selection procedure priority will be given to candidates that never received the VERA grant.

4.3 The following applications will be excluded from evaluation:

- Applications which do not comply with the admission requirements of the announcement
- Applications which do not comply with the instructions indicated in art.3

Art. 5 –Ranking list

5.1 At the end of the evaluation process, the Commission will draw up a ranking list in order of decreasing scores of each candidate.

5.2 The ranking list will be published on the web site of the VERA Center, Vera Academy section, at the following web address: <https://www.unive.it/pag/35192/>, after 14 July 2020.

Art. 6 - Assignment of grants

6.1 At the end of the evaluation process, the Secretariat of the Department of Economics will notify the selected candidates, communicating the starting date of the internship grant.

6.2 The Winners will have to send their acceptance (via e-mail to the following address: centro.vera@unive.it) within 5 days from notification. If a candidate turns down a grant, it will be assigned to the candidate ranked next.

6.3 Grants will be paid in one single instalment at the end of the internship after the submission of the final report approved by the academic tutor.

6.4 The assignment of Internship grants is subject to the possession of student status at the beginning of the internship period.

Art. 7 – Obligations for winners

7.1 Winning students, with the support of the “company” and academic tutors, **must**, as a condition of the grant, agree to carry out the approved procedures to set up their internship, to prepare training projects and all the related administrative procedures.

Art 8 - Incompatibility

8.1 The present grant can be received in conjunction with any other grants except in case of express incompatibility specified by applicable law, Regulations of the University and other specific calls in which the candidates participated (See Art. 2.2)

Art. 9 – Cross-reference

9.1 For any relevant matters not mentioned in the call, reference is made to the current University Regulation for the assignment of grants, study awards and incentives to students to sustain enrollment for courses and other specific learning activities.

Art. 10– Person in charge of the procedure

10.1 The person in charge of the selection procedure, within Law n.241/1990, is the Secretary of the Department of Economics, Ing. Silvia Lovatti. For further information concerning the selection procedure, please send an e-mail to centro.vera@unive.it

Art.11 – Processing and protection of personal data

11.1. Personal data sent by the candidates with the application forms will be processed according to national and European legislation (Italian Legislative Decree n. 196/2003 and Regulation EU 2016/679). For further information <https://www.unive.it/pag/36610/> .

Department Director
Prof. Monica Billio

Person in charge of the procedure
Ing. Silvia Lovatti

ANNEX A

1. INVESTING IN WASTEWATER REUSE UNDER UNCERTAINTY: A REAL-OPTIONS APPROACH

PROJECT DESCRIPTION:

The fellow will support a research project using stochastic dynamic programming to evaluate i) the net economic benefit of an investment in a water reclamation system ii) the need and impact of public subsidies incentivizing investment in a water reclamation system. The fellow will be asked to collect data relative to water prices in Europe. S/he will then test their consistency with respect to specific stochastic processes that are assumed to illustrate their diffusion. Further, in order to calibrate the theoretical model set up by the applicants, s/he will be asked to collect data relative to the installation costs of the targeted reclamation technology and to the system maintenance costs. Once calibrated the model using the collected data, the fellow is expected to execute the final numerical exercise relative to the optimal investment choice.

PREFERENTIAL QUALIFICATIONS/SKILLS TO SPECIFY IN THE LETTER OF MOTIVATION:

Solid knowledge of Econometric and Statistical Methods. In addition, familiarity with the theory of option's pricing would be appreciated.
Practical ability in the use of i) a calculus software such as Matlab or Maple and ii) an econometric software such as STATA, E-Views or SPSS.

TUTOR: Luca Di Corato, Carlo Giupponi (estimated start date: 1 October 2020)

2. RENEWABLE ENERGY AND AGRICULTURE

PROJECT DESCRIPTION:

Two strategic objectives are at the base of the growing interest in renewable energy: to contribute to reducing energy dependency and counteract the effects of climate change.

In agriculture, there are other reasons. First of all, the sustainability of the agricultural development model: agro-energies represent a necessity for the sustainability of the European production model. On the other hand, they are an opportunity for the integration of incomes in agriculture, especially during periods of stagnation or reduction in commodity prices, avoiding abandonment phenomena.

The research assistance activity will follow the following phases:

1. Update of the bibliography previously collected and reworking of synthesis schemes on: a) renewable and non-renewable energy sources; b) relations between renewable sources and the agricultural sector;
2. Reconnaissance of any "new" sources and data on renewable energy sources in terms of production and consumption;
3. In-depth analysis of the methods used in the literature for the processing of the collected data mentioned in the previous point;
4. Identification of the most appropriate method(s) for analysing and describing the relationship between renewable energy and the agricultural sector;
5. Construction and analyses of a case study.

PREFERENTIAL QUALIFICATIONS/SKILLS TO SPECIFY IN THE LETTER OF MOTIVATION:

- Have passed the following exams:
 1. An exam of advanced statistics or econometrics at second degree level
 2. An exam of advanced quantitative methods for economics or finance at second degree level
 3. An exam among the following: Commodity Markets, International Trade of Commodities, Economics of Rural Development, Economia e Gestione dell'Azienda Agraria e Agroindustriale;
- Advanced knowledge of Excel (including the use of filters, tables and graphs) and familiarity with R or Stata or Matlab

TUTOR: Antonella Basso, Maria Bruna Zolin (estimated start date: July 2020)

3. NATURAL RESOURCES AND TERRITORIAL SUSTAINABILITY

PROJECT DESCRIPTION:

In an increasingly frequent way, climate changes consequences, exacerbating the concerns of different regions and countries as an example within the European Union, require a deeper knowledge of existing local natural resources, of their strengths and weakness.

The aim of the research work is the reconstruction of the cognitive framework at different territorial levels through indicators (environmental, social, economic), necessary for identifying suitable sustainable strategies in a bottom-up perspective.

The research activity is developed in different steps:

1. updating of the existing bibliography on natural resources and construction of a summary scheme;
2. updating of databases and collection of existing data of natural resources in different territorial areas;
3. critical analysis of the methods used in the literature for the processing of the collected data (see the previous step);
4. identification of new methods for processing the collected data and application hypotheses.

PREFERENTIAL QUALIFICATIONS/SKILLS TO SPECIFY IN THE LETTER OF MOTIVATION:

Have passed at least one of the exams of the list: Commodity Markets, International Trade of Commodities, Economics of Rural Development, Economia e Gestione dell'Azienda Agraria e Agroindustriale

and have passed at least one of the exams of the list: Optimization, Mathematical Models for Decision Making, Laboratorio sulle Scelte, Econometria, Laboratorio di Econometria, Econometrics, Nonlinear Models and Financial Econometrics.

Advanced knowledge of Excel, knowledge of R or Matlab language and of territorial or primary sector issues.

TUTOR: Paola Ferretti, Bruna Zolin (estimated start date: July 2020)

4. FINANCIAL INNOVATION AND MARKET INTEGRITY: A THEORETICAL FRAMEWORK TO REVOLUTIONISE GOVERNANCE AND REDUCE GLOBAL CORRUPTION

PROJECT DESCRIPTION:

Over the past few years the financial sector has undergone a structural change. New providers who combine digital technologies with financial services in an innovative manner (so-called fintechs) have been increasingly entering financial markets and taking over established financial intermediaries' economic functions or parts of their value chain. From Google Wallet and iPay to BitCoin and decentralised ledger technologies, all these innovations have been a "wake-up call" to deal with the aspects of a new "era" of financial services and market players. Up until now, however, very little attention has been paid on whether and how technology-enabled financial innovation can be deployed to fight corruption and foster market integrity. The objective of this project is to gain a more robust understanding of the policy implication that flow from technology-enabled financial innovations vis-à-vis anti-corruption regulatory objectives.

By building upon a rich foundation of interdisciplinary literature that spans law, finance, economics and sociology, this study aims to provide a theoretical framework that adequately accounts for the nature and pace of financial innovation while attempting to mapping out the potential advantages in curbing corruption. Disruptive innovation brings about market and/or structural impact upon society. The architecture of society itself has indeed confronted technological change. New technologies and actors caused a rapid expansion of what Lawrence Lessig referred to as "architecture"—the code, protocols, platforms and structures that determine how economic actors behave and how policy- and law- makers react—and thus raising a number of legal and societal issues that must be carefully considered. By contextualising fintech against a governance landscape that is multi-faceted and de-centred, the study intends to get a better understanding of how regulators should approach the opportunities stemming from technological advancement.

In line with the aforementioned methods and techniques, the core research question(s) might be formulated as follow:

- How can technology-enabled financial innovations (fintechs) be used to revolutionise governance and reduce global corruption?
- What kind of market failures should policy- and law-makers cope with?

- Which financial technologies are to be deployed for anti-corruption purposes?
- How will financial innovation affect the regulatory objectives relating to market integrity?
- Which legal tools could be employed to deal with the identified market failures and the prevailing competitive driving forces?

PREFERENTIAL QUALIFICATIONS/SKILLS TO SPECIFY IN THE LETTER OF MOTIVATION:

Excellent command of EN, ability to conduct research in the areas of law and economics, ability to apply legal and economic knowledge, theories and models for the testing or the development of policies for firms, organizations, or governmental bodies.

TUTOR: Andrea Minto (estimated start date: July 2020)

5. THE GENDER GAP AND THE ITALIAN MATHEMATICAL OLYMPIAD

PROJECT DESCRIPTION:

The student will support a research project aiming to analyse the causes of women's lower representation in the STEM field. The project will include the preparation and analysis of a dataset containing the data collected in a field experiment run during the current year at the "Math Olympics" an annual Math competition organized in several Italian high schools.

The student will be asked to manage a dataset containing the answers given by about 10.000 students to an on-line Qualtrics questionnaire, according to the guidelines given by the research team. The dataset needs also to be merged with another dataset so experience in managing data and a good knowledge of Stata is required.

PREFERENTIAL QUALIFICATIONS/SKILLS TO SPECIFY IN THE LETTER OF MOTIVATION:

Experience in managing dataset of medium dimension (i.e. 10.000 units) is important. A very good knowledge of Stata is required. Having familiarity with the functioning of a randomized field experiment is a plus.

TUTOR: Valeria Maggian (estimated start date: July 2020)

6. BEHAVIORAL INVESTIGATION OF SOCIALLY RESPONSIBLE AND GREEN INVESTMENTS

PROJECT DESCRIPTION:

Given the growing importance of green and socially responsible investments (ESG: environmental, social, governance), it is important to investigate investors' motivations for social and environmental sustainability issues, particularly for investments in mutual funds and pension funds.

Moreover it is important that this investigation is carried out, in addition to the standard finance point of view, also through the lens of behavioural finance.

To this aim, the student will have to help:

- Administer online questionnaires to a large number of private and institutional investors;
- Administer questionnaires focused on managers who manage funds;
- Update and complete the contact list for fund managers and institutional investors;
- Check response consistency and analyze the results.

PREFERENTIAL QUALIFICATIONS/SKILLS TO SPECIFY IN THE LETTER OF MOTIVATION:

- Have passed the following exams:
 1. An exam of advanced statistics or econometrics at second degree level
 2. An exam of advanced quantitative methods for economics or finance at second degree level
- Advanced knowledge of Excel (including the use of filters, tables and graphs) and familiarity with R or Stata or Matlab

TUTOR: Martina Nardon, Antonella Basso (estimated start date: September/October 2020)

7. HIGH PERFORMANCE COMPUTING SYSTEMS AND PARALLEL COMPUTING IN ECONOMICS, FINANCE AND INSURANCE

PROJECT DESCRIPTION:

Academia and industry are actively developing new technologies and approaches for dealing with large scale and complex computational problems. In this respect, high performance computing systems (HPC) have

become an essential ingredient in many academic areas of economics, finance and insurance. The project intends to investigate the advantages of using parallelization strategies in computationally demanding numerical problems.

The aim of the research is:

- to review the literature on the use of HPC in datascience and mathematics for economic and financial problems;
- to update and review the guide to HPC and parallel computing in MATLAB and R written in a previous research project of the VERA Center.
- to write a report and to implement in MATLAB (or R and Python) parallel computing algorithms with special focus on at least one of the following topic: Artificial Intelligence, Artificial Neural Networks, Deep Learning, Least Square Monte Carlo per l'Option Pricing;

Keywords: HPC, parallel computing, numerical techniques.

PREFERENTIAL QUALIFICATIONS/SKILLS TO SPECIFY IN THE LETTER OF MOTIVATION

Knowledge of statistical inference methods and programming in MATLAB, or alternatively R or Python; having received very good grades in at least one of the following fields: mathematics, statistics and econometrics.

TUTOR: Antonella Basso, Roberto Casarin (estimated start date: between July and October 2020)

8. RANDOM FOREST AND PROBABILISTIC FORECASTS IN PREDICTIVE MODELLING

PROJECT DESCRIPTION:

Predictive models are often required to give probabilistic forecasts, which provide more information than point forecasts about the realizations of a response variable in the future or under some prefigured scenarios. When large sets of observations are available, machine learning methods, such as random trees and random forests, can be used to cope with the high dimensionality and to define flexible predictive models. The aims of the research are:

- providing a review of random tree and random forest methods used in large dataset;
- extending, these methods and possibly coupling them with the Bayesian statistical paradigm, in order to generate probabilistic forecasts on multiple-horizon and/or on multivariate models;
- writing the code and develop an application in the domain of economics or social sciences;
- writing a final report where methods and results are presented and discussed.

PREFERENTIAL QUALIFICATIONS/SKILLS TO SPECIFY IN THE LETTER OF MOTIVATION:

Knowledge of statistical inference methods and programming in R or alternatively MATLAB or Python; having received very good grades in the exams of statistics and econometrics.

TUTOR: Stefano Tonellato, Roberto Casarin (estimated start date: September 2020)

9. PORTFOLIO COMPETITION AND MARKET SELECTION WITH FINITE TIME HORIZON

PROJECT DESCRIPTION:

The aim of the project is to simulate the performance of a risky securities market in a context in which investors have finite horizon, heterogeneous risk preferences, and different probabilistic models for assessing future scenarios. The solution of the problem is known only in implicit form and requires the use of computational tools for its characterization in explicit form. The latter allows to verify if, as it happens in models with infinite horizon, the selection process depends only on individual probabilistic models and not on risk preferences. The candidate will be asked to familiarize himself with the reference literature (both with finite time horizon and with infinite time horizon) and to write the code that allows to solve the implicit problem and to visualize the results. The results of the internship can be used as a basis for a degree thesis.

PREFERENTIAL QUALIFICATIONS/SKILLS TO SPECIFY IN THE LETTER OF MOTIVATION:

Having passed an exam of Probability/Econometrics. Being familiar with Matlab or a similar programming language.

TUTOR: Pietro Dindo (estimated start date: July 2020)

10. ACADEMIC PERFORMANCE OF INTERNATIONAL STUDENTS ENROLLED IN THE BACHELOR'S DEGREE PROGRAM IN ECONOMICS AND BUSINESS RUN BY THE CA' FOSCARI UNIVERSITY OF VENICE

PROJECT DESCRIPTION:

The aim of the project is to organize a dataset suited to carry out empirical analyses aimed at assessing how the academic performance of international students enrolled in the Bachelor's degree program in Economics and Business varies with their individual characteristics, such as their country of origin and their previous studies, and how it compares with the performance of non-international students enrolled in the same bachelor's degree program. The analysis will be based on completely anonymized data provided by the administrative offices of Ca' Foscari. The results of the project will be useful to understand the prevailing characteristics of the international students enrolled in Economics and Business in order to implement effective programs to sustain their stay at Ca' Foscari. The Research Assistant can use this dataset to develop a master thesis on the topics of the project under the supervision of the professors involved.

PREFERENTIAL QUALIFICATIONS/SKILLS TO SPECIFY IN THE LETTER OF MOTIVATION:

No particular requirements are needed. However, previous experience with econometric software is particularly useful and taken into account in the candidates' evaluation.

TUTOR: Danilo Cavapozzi, Pietro Dindo (estimated start date: October 2020)

11. MANAGERIAL EXPOSURE TO FIRM RISK AND CORPORATE POLICIES

PROJECT DESCRIPTION:

This project aims to study the interaction between the riskiness of corporate policies implemented by the management, managerial compensation, and the managers choice to alter their exposure to firm risk. The latter choice crucially hinges on two factors: the manager's risk preferences and his/her personal portfolio diversification with respect to the firm.

The student will be thus involved in the collection and the analysis of data on the individual hedging choices of managers starting from annual reports of US public companies.

PREFERENTIAL QUALIFICATIONS/SKILLS TO SPECIFY IN THE LETTER OF MOTIVATION:

- Being fluent in English
- Basic knowledge of microeconometrics, microeconomics, corporate finance and accounting
- Microsoft Office and ideally also Stata

TUTOR: Stefano Colonnello (estimated start date: September 2020)

12. PORTFOLIO SELECTION PROBLEMS IN PRESENCE OF HEAVY-TAILED STOCK RETURNS AND THEIR SOLUTIONS THROUGH METAHEURISTICS

PROJECT DESCRIPTION:

Recently, financial markets have been at the center of some global crises. This led to heavy-tailed stock return distributions. In this context, it is not possible to use the standard model of portfolio selection (PS). That said, first the Apprentice will have:

- To carry out a bibliographic research on recent PS models in presence of heavy tails (HTs);
- To collaborate in the development of this PS model.

Usually, such problems do not admit exact solvers, neither analytical nor numerical. So, the use of metaheuristics (MH) has spread. In the second part of the project, the Apprentice will have:

- To carry out a bibliographic research on ME for the solution of PS problems;
- To collaborate in implementing in Matlab environment of at least a MH to solve a PS problem in presence of HTs;

- To apply the software code so developed to real financial markets and to compare the results with those coming from appropriately chosen benchmark PS problems.

PREFERENTIAL QUALIFICATIONS/SKILLS TO SPECIFY IN THE LETTER OF MOTIVATION:

- Having passed with a good assessment at least one exam in which financial portfolio selection has been studied;
- Being familiar with programming and with the use of the environment Matlab or, in the alternative, with similar software environments.

Further indication:

- Being familiar with data download from providers of financial services and with their management (cleaning, reconstruction...).

TUTOR: Marco Corazza (estimated start date: July 2020)

13. LARGE SCALE LAND DEALS IN AFRICA: SEALING A DEAL UNDER UNCERTAINTY

PROJECT DESCRIPTION:

The research fellow will support a research project using stochastic dynamic programming and bargaining theory to study i) the definition of a contract for the large-scale acquisition / lease of farmland in Africa ii) the value of the agricultural project to be developed on the contract is sealed iii) the impact of taxes and subsidies on foreign direct investment in this context.

The research fellow will be asked to provide a review of the economic literature on the subject and to collect the data useful for the definition of a case study through which the predictions of the developed theoretical model can be illustrated. For some data, such as output and input prices, the fellow must test their consistency with respect to specific stochastic processes that, in the model, are assumed to illustrate their diffusion. Once calibrated the model using the collected data, the fellow is expected to perform simulations and check the sensitivity of the model's predictions to variations in the value of the parameters.

PREFERENTIAL QUALIFICATIONS/SKILLS TO SPECIFY IN THE LETTER OF MOTIVATION:

Solid knowledge of Econometric and Statistical Methods. In addition, familiarity with the theory of option's pricing would be appreciated. Practical ability in the use of i) a calculus software such as Matlab or Maple and ii) an econometric software such as STATA, E-Views or SPSS.

TUTOR: Luca Di Corato (estimated start date: October 2020)

14. BIG DATA ANALYTICS FOR FORECASTING TOURISM FLOWS

PROJECT DESCRIPTION:

Accurate tourist flow forecasting is always the most important issue in tourism industry. The availability of big data (such as Tripadvisor data) allows for improving destination management organization's decision support. The aim of the research is:

- To review the literature on the use of big data and social media-generated big data, for decision support in the tourism sector;
- to build a database with high-frequency turistic flows, incoming and outgoing.
- to extract and analyze social media-generated big data following various methods such as network analysis tools.
- to forecast tourism's flows by applying time series models to the media-generated data.
- to write a final report where methods and results are presented and discussed.

PREFERENTIAL QUALIFICATIONS/SKILLS TO SPECIFY IN THE LETTER OF MOTIVATION:

Knowledge of statistical inference methods and programming in R or alternatively MATLAB or Python; having received very good grades in the exams of statistics and econometrics.

TUTOR: Nicola Camatti, Roberto Casarin (estimated start date: September 2020)