

# Abstracts

## BRA Young Research Workshop

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### Spatial analysis applied to stock markets

*Global economic consequences of the financial crisis of 2008 have intensified the need to analyze the links between the various financial markets. The application of spatial analysis in geographically segregated data, makes it possible to take into account relationships between location and function of distance by a weighting matrix, however the literature regarding financial data and spatial analysis is limited.*

*The aim of this paper is to make a descriptive analysis space between the stock markets, where the geographical units used are the countries the United States, Mexico, Argentina, Brazil, Spain, France, Germany, United Kingdom, China, South Korea and Japan . The methods used are the Moran's I, Moran's scatterplot and Local Moran's I. Additionally use of econometric model used is a SAR. To test the results, have been used three types of matrices of distances between markets, geographical distance, bilateral trade and inflation.*

*This analysis is to be determined whether there is a degree of spatial correlation affecting the stock indices. The data were obtained from the World Bank, OECD, yahoo finance and OANDA*

**Estefanía Alaminos**

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### Illiquidity risk behaviour for the Spanish retired people along the rest of their life: pensions and LTC

*The increment in life expectancy in the population aged over 64 can has an impact on the capital needs of a retiree and besides, these needs can change along their retirement life. The probabilities of being disabled increase as people get older and, accordingly, long-term care needs and expenditure are clearly correlated with longevity. The aim of our research is the study of illiquidity risk for a pensioner, taking into account that a change in the costs that the individual has to face, is expected to happen during their retirement. The degree of dependence for the population aged 65 and over increases with age and for this reason, the analysis of its impact on the individual's budget is required, including the effect of receiving support from the public welfare system. By means of a simulation exercise and using Spanish population data, we quantify the risk that a pensioner budget is unable to cover basic needs, this is analysed by age and by gender.*

**Laura Calvet**

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### Hybridizing Machine Learning and Metaheuristics

*Metaheuristics are a set of powerful algorithms designed to solve complex combinatorial optimization problems. Their popularity has been growing during the last decades due to the high number of successful applications in a wide range of fields. However, most of them greatly rely on steps including randomness. A new trend consists in replacing or improving these steps with knowledge extracted from the iterative search process by using machine learning techniques. This talk discusses the main approaches providing relevant references.*

**Jana Döring**

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### Spillover Effects Among Financial

*It was investigated whether and to what extent financial institutions in Germany and the United Kingdom, namely banks, insurances and hedge funds, are exposed to risk transmission from the other types of financial institutions affected by a shock. In order to achieve this, a state-dependent sensitivity value at risk approach is chosen. Further, employing a two-stage quantile regression, in which the regressors are first replaced by instruments, allows differentiating between different states of the financial market (tranquil, normal, volatile). These states are each represented by a quantile. The analysis of the data suggests that hedge funds are the predominant source of risk spillovers, both in Germany and the UK, while they themselves receive very little risk spillovers.*

**Judit Garcia**

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### The Effects of Corruption in a Monetary Union

*Many countries around the world suffer from corruption. In a monetary union, corruption varies from one country to another. It is possible, in an economic sense, corruption in one country may affect another country in a monetary union. We demonstrate that this feature has important implications in a monetary union with two asymmetric countries.*

*Country 1 has a corrupt government while country 2 does not have. Within this framework, we determine under which conditions corruption damages or benefits both countries. We find that corruption in country 1 may have a positive or negative effect on country 2. In particular, when the government of country 1 is more concerned about public spending than output, an increase in corruption damages both countries. In addition, we investigate how country 1 could compensate country 2 for the negative externality.*

**Vicenç Gibert**

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**Towards a multiscale predictive system for the building stock**

*In this talk we will introduce and motivate, on one hand, the use survival analysis techniques in building maintenance and, on the other hand, we will apply this methodology for analyzing a large building stock in order to obtain information for maintenance strategies and/or prevention policies. For the time being, building follow-up is based on inspections, and data coming from building inspections are always censored, due to the fact that, at each inspection time, the event of interest is already happened, or not yet. After the analysis of this type of data, a methodology for estimating durability and hazard functions will be proposed. The possibilities of this proposal will be illustrated with the analysis of all the buildings façades in Hospitalet de Llobregat, the second most important city in population in Catalonia (Spain), together with the discussion on the implementation of a QGIS plugin .*

**Aljoscha Gruler**

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**Applying Simheuristics for smart Waste Management**

*I want to talk about a simheuristic approach (combining Metaheuristics with Monte Carlo Simulation) as a way to optimize urban waste collection. Using this approach, stochastic waste levels can be considered in collection route planning. Furthermore, the methodology allows the inclusion of 'smart' ICT (e.g. volumetric sensors in waste containers) in the route planning process.*

**Luz Parrondo**

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**Earnings Management as a tool of Risk Management**

*The paper provides initial evidence on the effect of Enterprise Risk Management (ERM) on opportunistic accounting decisions. We analyze the effect of implementing an ERM committee (as a proxy for ERM) on subsequent accrual-based and transaction-based earnings management. We find that ERM reduces the use of opportunistic transactions, and has no clear effect on accrual decisions. However, we also find that ERM in companies with either high levels of earnings volatility or low levels of earnings mean, increase the strategic use of accrual-based earnings management to reach targeted levels earnings smoothness. These findings suggest that ERM view sub-optimal transaction decisions as a potential risk for the company, while in the presence of extreme earnings distribution substitutes (or reinforces) risk practices with accrual-based earnings management to meet desirable targets of the earnings smoothness*

**Xavier Piulachs**

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**Joint modelling approach for analyzing the effect of background health status on elderly insureds' mortality risk**

*Health insurance companies accumulate a great wealth of historical longitudinal data on the intensity and type of medical care usage in claims made by policyholders. Moreover, the occurrence of mortality is traditionally monitored. The combination of these two sources of information into a specific policyholder is extremely valuable for quantifying their clients' medical care demand risks. In this regard, joint models for longitudinal and survival data provide an appropriate characterization of the degree of relationship between both approaches. While most joint modelling frameworks would focus on the strength of association between the current value of the biomarker and the risk of death, such relationship may not always be the most informative. It seems logical to take into account not only the current health status, but also the most recent past values, which will be recency-weighted by an appropriate weighting function since historical effects fade over time.*

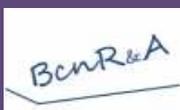
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**Horizontal Cooperation in Logistics Network Configuration. A case to illustrate its potential savings**

*Logistics Network Configuration (LNC) aims to determine the number and size of logistic facilities to be open, the customer allocation to open facilities and the corresponding routes from facilities to customers to guarantee demand satisfaction. Horizontal Cooperation strategies can be implemented during the network design/operation in order to reduce its total cost as well as reducing the environmental impact of the transportation activities. In this paper, we analyze three different scenarios of horizontal cooperation, namely non-cooperative, semi-cooperative and full-cooperative, related to LCN by identifying the associated optimization problems for each scenario. Then, we solve each scenario by means of competitive optimization algorithms and we compare them using different metrics e.g. total cost, usage of vehicles and CO2 emissions.*

**Barcelona Risk Analytics**<https://bcnriskanalytics.wordpress.com/>