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### Office Contact Information

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### Education:

Ph.D. Candidate in Economics. Universidad Carlos III de Madrid. 2007-present
M.S. in Economic Analysis. Universidad Carlos III de Madrid. 2005-2007
Diploma of Advanced Studies in Economics. Universitat de Barcelona. 2003-2005
B.S. in Economics. Universitat de Barcelona. 1998-2003

### PhD Thesis:

Thesis Title: "**Co-summability**: *From Linear to Non-linear Co-integration*"
Expected Completion Date: June 2011

References:

Josep Lluís Carrión-i-Silvestre
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### Teaching and Research Fields:

Primary fields: Theoretical and Applied Econometrics, Macroeconometrics

Secondary fields: Applied Macroeconomics, Applied Finance

## Teaching Experience:

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| Econometrics II | TA for Jesús Gonzalo at Universidad Carlos III de Madrid. 2005-2010. Undergraduate Level (4th year). |
| Macroeconometrics | TA for Juan J. Dolado and Genaro Sucarrat at Universidad Carlos III de Madrid. 2006-2008. Undergraduate Level (4th year). |
| Econometric Techniques | TA for Jesús Gonzalo at Universidad Carlos III de Madrid. 2010-2011. Undergraduate Level (3rd year). Bologna System. |
| Econometrics I | TA for Abderrahim Taamouti and Miguel Delgado at Universidad Carlos III de Madrid. 2005-2010. Graduate Level (1th year). |
| Computation Techniques | Eviews Course at Universidad Carlos III de Madrid. 2008-2010. Master in Industrial Organization and Markets. |

## Research Experience and Other Employment:

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| 2003-2005 | Research Assistant. AQR (Quantitative Regional Analysis) Research Group. |
| 2003 | Internship "Pasa l'estiu al parq". Parque Científico de Barcelona (PCB). AQR (Quantitative Regional Analysis) Research Group. |
| 2002 | Internship at Town Council in Fraga, Huesca, Spain. Areas: Local Taxes. |
| 2000-2002 | Teaching (Statistics). Asesoria de estudios Sol. Barcelona. |

## Honors, Scholarships, and Fellowships:

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| November 2010 | Selected along with seventeen other young researchers for the European Winter Meetings of the Econometric Society. Rome, Italy |
| August 2010 | World Congress of the Econometric Society Travel Grant. Shanghai, China |
| April 2010 | *James B. Ramsey Award for the best paper in Econometrics* presented by a Ph.D. student at the 18th Annual Symposium of the Society for Non-Linear Dynamics and Econometrics, Novara, Italy |
| 2006 - 2008 | FPU (Formación de Personal Universitario) Scholarship of the Spanish Ministry of Education and Science |
| 2005 - 2006 | Graduate Program Scholarship of the Universidad Carlos III de Madrid |
| 2004 - 2005 | FPI (Formación de Personal Investigador) Scholarship of the Generalitat de Catalunya |
| 2003 - 2004 | Advanced Studies Scholarship of the Universitat de Barcelona |

## Publications:

"*Regime Shifts in Stock-Flow I(2)-I(1) Systems: The Case of US Fiscal Sustainability*", (with Josep Lluís Carrion-i-Silvestre). Journal of Applied Econometrics, forthcoming

In the last two decades, fiscal sustainability has been tested through the use of non-stationary time series analysis. Two different approximations can be found in the literature: first, a univariate approach that has focused on the stochastic properties of the stock of debt and, second, a multivariate one that has focused on the long-run properties of the flows of expenditures and revenues, i.e., in the stochastic properties of the deficit. In this paper we unify these approaches considering the stock–flow system that fiscal variables configure. Our approach involves working in an I(2) stochastic processes framework. Given the possibility of the existence of regime shifts in the sustainability of US deficit that the literature has pointed out, we develop a new statistic that can be applied to test several types of I(2) cointegration and multicointegration relationships allowing for regime shifts. To test for these kinds of changing long-run relationships we propose the use of a residual-based Dickey–Fuller class of statistic that accounts for one structural break. We show that consistent estimates of the break fraction can be obtained through the minimization of the sum of squared residuals when there is I(2) cointegration. The finite sample performance of the proposed statistic is investigated by Monte Carlo simulations. The econometric methodology is applied to assess whether the US fiscal deficit and debt are sustainable.

"*Testing for multicointegration in panel data with common factors*", (with Josep Lluís Carrion-i-Silvestre). Oxford Bulletin of Economics and Statistics, Vol. 68, No. S1, pp. 721-739, December 2006

This paper addresses the concept of multicointegration in a panel data framework and builds upon the panel data cointegration procedures developed in Pedroni [*Econometric Theory* (2004), Vol. 20, pp. 597–625]. When individuals are either cross-section independent, or cross-section dependence can be removed by cross-section demeaning, our approach can be applied to the wider framework of mixed $I(2)$ and $I(1)$ stochastic processes. The paper also deals with the issue of cross-section dependence using approximate common-factor models. Finite sample performance is investigated through Monte Carlo simulations. Finally, we illustrate the use of the procedure investigating an inventories, sales and production relationship for a panel of US industries.

**Research Papers:**

"*Summability of Stochastic Processes: A Generalization of Integration and Co-integration valid for Non-linear Processes*" (**Job Market Paper**) *James B. Ramsey Award*

The order of integration is valid to characterize linear processes; but it is not appropriate for non-linear worlds. We propose the concept of summability (a re-scaled partial sum of the process being $O_p(1)$) to handle non-linearities. The paper shows that this new concept, $S(\delta)$: (i) generalizes $I(\delta)$; (ii) measures the degree of persistence as well as of the evolution of the variance; (iii) controls the balancedness of non-linear regressions; (iv) co-summability represents a generalization of co-integration for non-linear processes. To make this concept empirically applicable asymptotic properties of estimation and inference methods for the degree of summability, $\delta$, are provided. The finite sample performance of these methods is analyzed via a Monte Carlo experiment. The paper finishes with the estimation of the degree of summability for the Nelson-Plosser extended database.

"*Co-Summability: From Linear to Non-linear Co-integration*", with Jesús Gonzalo

Co-integration yielded a theoretical basis and an empirical strategy to study linear equilibrium relationships. Nevertheless, it is not suitable to analyze non-linear relations such as asymmetric responses to policy interventions, multiplicity of equilibria, transition between regimes or even log-linearized equilibria. In this paper, a theoretical and empirical framework to study these types of non-linearities is developed by means of co-summability: a generalization of co-integration theory valid for non-linear relationships.

Co-summability is built upon the concept order of summability introduced in Berenguer-Rico and Gonzalo (2010) and conceived to deal with non-linear transformations of persistent processes. Theoretically, a co-summable relationship is balanced --the order of summability of the endogenous variable is equal to the highest order of summability among the regressors-- and describes a long run relationship that can be non-linear. To check empirically for these type of equilibria, tests for balancedness and co-summability are designed. The finite sample performance of both tests, studied through Monte Carlo simulations, is satisfactory to propose their use in practice.

Finally, to show the empirical strength our proposal, asymmetric monetary policy reaction functions arising from non-linear Phillips curves are studied through the lens of co-summability.

"*Threshold Impatient Investors: Long Run Implications for Asset Pricing*", Master Thesis.

This paper studies the long run implications on asset pricing of the presence of threshold impatient investors in the economy. Using the consumption based capital asset pricing model, a threshold present value model is derived from the optimizing behavior of a representative investor. Then, a threshold long run relationship between prices and dividends à la Campbell and Shiller is found. This non-linear long run relationship is empirically studied using co-summability theory and U.S. stock market data.

**Research Paper(s) in Progress**

"What Changes Persistence of Economic Time Series? A Threshold Approach", with Heiko Rachinger

**Conference Presentations**

· European Winter Meetings of the Econometric Society. Rome, Italy. November 2010.

· NBER-NSF Time Series Conference, Duke University, USA. October 2010.

· 10th World Congress of the Econometric Society, Shanghai, China. August 2010.

· 2nd UC3M-LSE Workshop on Econometrics, Madrid, Spain. April 2010.

· 18th Annual Symposium of the SNDE, Novara, Italy. April 2010.

· XXXIV Simposio de Análisis Económico, Valencia, Spain. December 2009.

· 1st UC3M-LSE Workshop on Econometrics, Madrid, Spain. March 2009.

· ENTER Jamboree. UCL. London, England. February 2009.

· Econometric Game. Second place. Amsterdam, Holland. April 2007.

· Econometric Society European Meetings. Vienna, Austria. August 2006.

· Unit Roots and Cointegration Testing. Faro, Portugal. August 2005.

· VIII Encuentro de Economía Aplicada. Murcia, Spain. June 2005.

· Frontiers in Time Series Analysis. Olbia, Italy. May 2005.

**Professional Activities**

Referee for Bulletin of Economic Research