# Juan Carlos Ruiz-Garcia

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## Curriculum Vitae

## Employment

### University of Balearic Islands (UIB)

Visiting Research Associate (investigador colaborador), Department of Applied Economics – 2021/Present

### University of Cambridge

Cambridge-INET Institute Postdoctoral Research Associate, Faculty of Economics – 2020/21

### Majorca's Chamber of Commerce

Economic analyst, Department of Studies and Publications – 2009/11

## Education

PhD. in Economics and Government, Center for Monetary and Financial Studies CEMFI (cum laude) – 2020

MPhil. in Economics and Finance, CEMFI (Final Grade: A) – 2015

B.A. in Economics (Finance speciality), Universitat de les Illes Balears UIB (with Honors) – 2009

## Research Fields

Primary: Macroeconomics

Secondary: Industrial Organization (Firm Dynamics) and Development Economics

## Research

### Working Papers

*Financial Frictions, Firm Dynamics and the Aggregate Economy: Insights from Richer Productivity Processes*
Janeway Institute Working Paper JIWP2103 doi: 10.17863/CAM.74481
https://www.inet.econ.cam.ac.uk/research-papers/jiwp-abstracts?wp=2103

How do financial frictions affect firm dynamics, allocation of resources across firms, and aggregate productivity and output? Is the nature of productivity shocks that firms face essential for evaluating the effects of financial frictions? To answer these questions, I first use a comprehensive dataset of Spanish firms from 1999 to 2014 to

estimate and characterize the firms' productivity dynamics. I find that the productivity process is non-linear, as persistence and shock variability depend on past productivity. Furthermore, productivity shocks are non-Gaussian. These dynamics are at odds with those implied by the standard AR(1) process commonly used in the firm dynamics literature. I then build a model of firm dynamics with financial frictions in which productivity shocks are non-linear and non-Gaussian. The model is consistent with a host of evidence on firm dynamics, financial frictions, and firms' financial behavior. In the model Economy, financial frictions affect the firms' life cycle. Without financial frictions, the size gap between an entrant firm and an old one would be reduced by three fourths. Furthermore, profit accumulation, which allows firms to overcome financial frictions, is slow, and it only speeds up when firms are mature. As a consequence, the average exit firm is smaller than it would be without financial frictions. The aggregate effects of financial frictions are significant. They result in misallocation of capital and reduce aggregate productivity by 16%. This figure is only 8% if productivity dynamics evolve according to a standard AR(1) representation. The general equilibrium forces amplify the positive effects of removing financial frictions. Capital deepening and more firms operating in the Economy boost total output, consumption, and wages by around 50%.

*Non-Linear Productivity and Investment Dynamics*

with Giulio Fella – Queen Mary U. of London, Julio Gálvez – Bank of Spain, Beatriz González – Bank of Spain, and Tatsuro Senga – Queen Mary U. of London

The nature of productivity shocks is a central feature of models with heterogeneous-firm dynamics. Using firm-level data from Spain, we show that the observed productivity dynamics differ from those implied by the canonical, linear AR(1) representation with normally-distributed shocks. We document the presence of non-linear persistence and conditional skewness in the productivity evolution. Motivated by this, we estimate a flexible stochastic process for productivity that allows for these features and compare its implications with the canonical one. We find that the flexible model fits the productivity data much better. We also estimate non-parametric, semi-reduced form empirical investment functions and find that the two processes imply very different investment responses to productivity shocks. Those estimated under the flexible process fit much better the relationship between investment and productivity in the data. Finally, we embed both the non-linear and the canonical process in a structural partial equilibrium investment model and estimate capital adjustment costs under both specifications. The model estimated under the non-linear process gives closer to the data investment dynamics and has very different implications for the relative importance of fixed versus quadratic adjustment costs.

## Work in Progress

*Allocation Efficiency over the Firms' Life Cycle*

This paper asks how the allocation of resources, mainly capital and labor, evolves as firms age. In a given period, region, and industry, we observe that some firms grow while others reduce their size; some firms enter while others exit. This growth/decline and firm entry/exit dynamics imply an enormous reallocation of resources across production units. In this paper, I show that the allocation of capital and labor improves over the firms' life cycle. The reallocation of resources among continuing firms rather than selection, the exit of firms with a poor allocation, mainly drives the result. The improvement in the allocation of resources over the firms' life cycle is large and accounts for 1/5th of total misallocation in the Spanish Economy. A counterfactual exercise where the capital and labor allocation for young firms is as efficient as for old ones yields a 20% aggregate productivity gain.

*Endogenous Non-Linear Productivity Dynamics in a Standard Firm Dynamics Model*

with Borja Petit – CUNEF

Productivity dynamics differ from a standard AR(1) process. First, they are non-linear: productivity persistence and shock variability depend on past productivity. Second, productivity shocks are non-Gaussian: the asymmetry of the shocks' realization and probability of having large shocks depend on the previous productivity level. This

paper asks if the firm investment in innovation can rationalize the productivity process observed in the data; and how productivity dynamics are endogenously affected by distortions and policies, such as size-dependent policies, financial frictions or firing costs. We extend the standard firm dynamics model introducing endogenous productivity dynamics. Our methodology does not add a computational burden to the standard firm dynamics model as it delivers closed-form solutions for the innovation decision. In the model Economy, firms can choose through an investment decision the distribution of productivity shocks at a cost proportional to the deviation from a benchmark distribution. We calibrate the model to the Spanish Economy and show that our extension can reconcile the firms' productivity dynamics while keeping the model tractable. To illustrate the relevance of accounting for endogenous non-linear productivity dynamics, we quantify the effects of different frictions and policies using our calibrated model.

*Macroeconomics of Poverty*

with Nezih Guner – CEMFI, Diego Restuccia – U. Toronto, and Guillaume Vandenbroucke – FED St. Louis

The elimination of poverty is the number one item in the United Nations' sustainable development goals. About 10% of the world population lives in extreme poverty with less than 1.9$ a day, and nearly half of the world population has less than 5.5$ a day. While the poverty rates decline significantly with GDP per capita, there are significant differences across countries with a similar GDP per capita level. What accounts for cross-country differences in poverty rates? Who are the poor? Along which economic and social dimensions do they differ from more affluent households? To answer these questions, we compile and harmonize household surveys for 61 countries from 1960 to 2015. The surveys cover almost the entire spectrum of the world GDP per capita distribution. We find that households in poor countries work predominantly in agriculture, have lower educational attainment, and work more. These patterns also hold within a country except for hours worked. Households at the bottom of the income distribution are more likely to be in agriculture, have lower education, but supply less labor. We then build a model with heterogeneous agents that can provide a structural interpretation of these facts, both within and across countries. In the model, individuals decide on education, labor supply, and the economic sector they work. We use the model as a quantitative laboratory to understand the factors behind poverty and evaluate policies aimed to reduce it.

# Academic Experience

## Instructor

Firm Dynamics and Aggregate Productivity, U. of Naples Federico II (PhD. level) – 2020/21

Main Topics: Stylized Facts of Firm Dynamics, Static Model, Dynamic Model, Entrepreneurship, Endogenous Productivity

Guest Lecture on Firm Dynamics and Financial Frictions, U. of Cambridge (PhD. level) – 2020/21

## Teaching Assistant

Macroeconomics I, CEMFI (graduate level) – 2018/19

Main Topics: Neoclassical Growth Models, Consumption, OLG, Firms, Money

Professor: Josep Pijoan-Mas

Student's Evaluation: 4.8 out of 5

Macroeconomics I, CEMFI (graduate level) – 2017/18

Main Topics: Neoclassical Growth Models, Consumption, OLG, Macro-Development

Professors: Margarida Duarte (University of Toronto) and Diego Restuccia (University of Toronto)

Student's Evaluation: 4.1 out of 5

### Research Assistant

Prof. Samuel Bentolila, CEMFI – 2019/20

Prof. Nezih Guner, CEMFI – 2016/20

Prof. Paula Bustos, CEMFI – 2015/16

Prof. Enrique Sentana, CEMFI – 2014

## Supervision

Anna Exall – U. of Cambridge. Undergraduate Dissertation: *"Unequal Inequality in Europe: The sources of inequality in Developed Economies"*

## Refereeing

EJ – Economic Journal

BEJM – The B.E. Journal of Macroeconomics

SERIEs – Journal of the Spanish Economic Association

## Other Academic Activities

Co-organizer of the mini-conference *"From Firms to the Aggregate Economy: The Role of Financial Frictions"* – Institutions: U. of Cambridge, Cambridge INET, and Centre for Macroeconomics

Speakers: Nicholas Bloom – Stanford U., Sara Moreira – Northwestern U., and Adriano A. Rampini – Duke U.

Co-organizer of the mini-conference *"Recent Trends in the Aggregate Economy from a Firm Perspective: What do we know?"* – Institutions: U. of Cambridge, Cambridge INET, and Centre for Macroeconomics

Speakers: Marc J. Melitz – Harvard U., Burcu Eyigungor – FED Philadelphia, and Andrew G. Atkeson – UCLA

## Grants and Awards

PhD. and MPhil. Scholarship, CEMFI – 2013/19

Economía y Competitividad (María de Maeztu Programme for Units of Excellence in R&D, MDM-2016-0684) – 2018/19

European Research Council under the European Union's Seventh Research Framework Programme (ERC Advanced Grant agreement 269868 SPYKES – PI: Prof. Diego Puga, CEMFI) – 2015/16

Jaume Serra Crespí Award, Rotary Club Palma and UIB – 2009

Best Student Performance of Economics and Business Department, Agrupación Cadenas Hoteleras and UIB – 2008

Best Student Performance of Economics Degree, Fundació Sa Nostra and UIB – 2007

## Other Skills

**Languages** – Spanish (Native), English (Fluent), Catalan (Native)

**Software** – Latex, Matlab, Stata

## References

**Nezih Guner**, CEMFI (advisor) – nezih.guner@cemfi.es

**Josep Pijoan-Mas**, CEMFI – pijoan@cemfi.es

**Diego Restuccia**, University of Toronto – diego.restuccia@utoronto.ca

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