

# MONIKA AVILA MÁRQUEZ

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## Contact Information

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## Fields

Research: Econometric theory for panel data, use of machine learning methods to estimate econometric models.  
Teaching: Panel Data Econometrics, Generalized Linear Models, Econometrics, Statistics.

## Education

Ph.D. in Econometrics (with congratulations of the jury), University of Geneva 2022  
Dissertation: Contributions in the areas of three dimensional panel data and the use of machine learning to estimate econometric models.  
Supervisor: Prof. Jaya Krishnakumar.  
Committee: Prof. Stefan Sperlich (Chair), Prof. Aleksey Tetenov, Prof. Jeffrey Wooldridge.

Msc. Economics, (Highest Honors) University of Geneva 2016  
Orientation: Econometrics

B.A., Economics, (Highest Honors) University Juan Misael Saracho 2008

## Fellowships & Awards

Subside Tremplin, University of Geneva 2020-2021  
Société Académique de Genève 2018  
Scholarship Simon I. Patiño 2014-2016

## Professional Experience

Intern Department of Statistics, International Labour Organization 2016  
Statistical analysis of Mexican labour data.  
Skill mismatch measurement in Mexican labour market.  
Development of efficient data analysis tool for labour and migration data of Arab countries.

Sovereign Risk Analyst, Central Bank of Bolivia 2012-2014  
Sovereign risk assessment of the foreign exchange reserves investments.  
Development of the early warning system.  
Use of Bloomberg for news monitoring, assets monitoring, risk monitoring.

## Teaching Experience

Teaching Assistant, University of Geneva 2016-present  
Graduate Level: Advanced Econometrics, Microeconomics II.  
Undergraduate Level: Development Economics, Econometrics, Introduction to Econometrics, Introduction to Statistics.

## Research Experience

Research Assistant, Prof. Jaya Krishnakumar, University of Geneva 2016-present

## Seminar Presentations

University of Cologne 2022  
University of Zurich 2022  
Örebro University 2022  
Universidad EAFIT 2022

University of Gothenburg	2022
Universitat de les Illes Balears	2022

### Conference Presentations

European Winter Meeting of the Econometric Society	2021
Bolivian Conference on Development Economics	2021
26th International Panel Data Conference	2021
25th International Panel Data Conference	2019
Swiss Economist Meeting	2018
NY Econometrics Camp	2018
Swiss Young Economist Meeting	2018
23th International Panel Data Conference	2017

### Refereeing

Journal of Human Development and Capability Association.

### Job Market Paper

#### “Identification and Estimation of Dynamic Heterogeneous Unbalanced Panel Data Models with Clustering”

*Abstract:* This paper investigates the identification and estimation of dynamic heterogeneous linear models for unbalanced panel data with known clustering structure and short time dimension (greater than or equal to 3). For this purpose, I use a linear multidimensional panel data model with additive cluster fixed effects and a mixed coefficient structure composed of cluster specific fixed effects and random cluster-individual-time specific effects. For estimation of the mean coefficients, I propose a Mean Cluster-FGLS estimator and a Mean Cluster-OLS estimator. In order to make feasible the GLS estimation of the cluster specific parameters, I introduce a ridge estimator of the variance-covariance matrix of the model. The Mean Cluster estimators are consistent when: i) the number of clusters is fixed, the proportion of observed clusters is equal to 1 and the number of individuals per cluster grows to infinity or when ii) the number of clusters grows at a slower rate than the growth rate of the number individuals per cluster. In addition, I present two extensions of the baseline model. In the first one, I allow for cluster-individual specific fixed effects instead of cluster additive fixed effects. In this setting, I propose a Hierarchical Bayes estimator that takes into account the problem of unknown initial conditions. In the second extension, I allow for cross sectional dependence by including common factors. For estimation of this model, I propose the Mean Cluster estimator using the time demeaned variables. As an empirical application, I present the estimation of a value-added model of learning.

### Publications

#### “Random Coefficients Models” with Jaya Krishnakumar and László Balázsi

*Matyas L. (eds) The Econometrics of Multi-dimensional Panels. Advanced Studies in Theoretical and Applied Econometrics, vol 50. Springer*

*Brief abstract:* This chapter deals with specification, estimation and inference within the framework of a random coefficient model in presence of higher dimensional panel data. Most of the chapter is concerned with a three dimensional setting with an extension to higher dimensions at the end. We discuss several estimation methods, starting with the GLS made feasible by a new procedure for the estimation of the variance-covariance components as well as an extension of the MINQUE approach for this setting. We also derive the full Maximum Likelihood and a Restricted Maximum Likelihood involving the maximization of the log-likelihood in a subset of the parameter space for an independent estimation of the variance-covariance elements. Furthermore, we design specification tests that allow to determine if the response coefficients are constant or varying. Additionally, we present different extensions of the linear model including unbalanced panels, correlated random components and correlation of the stochastic elements with the regressors. Finally, the chapter ends with brief discussions of non-linear and higher dimensional extensions as well as a simulation experiment comparing the performance the above methods in a finite sample setting.

### Other papers

#### “Identification and estimation of triangular simultaneous equations models with or without exclusion restrictions: A Machine Learning Approach” with Jaya Krishnakumar

*Brief abstract:* This paper investigate different identification strategies for triangular simultaneous equations models without exclusion restrictions. We present different identification strategies and exploit machine learning techniques for estimation.

<b>Courses</b>	Advances in Financial Time Series Modeling, Study Center Gerzensee	2021
	Recent Advances in Bayesian Macroeconometrics, Study Center Gerzensee	2019
	Numerical Methods, Study Center Gerzensee	2019
	Bayesian Econometrics, World Trade Institute	2018
	The identification of structural shocks in dynamic models, HEC Lausanne	2018

**Computer Skills** Matlab, Python, R, Stata, SQL, LATEX, common Windows text processing, spreadsheet, and presentation software, Bloomberg.

**Languages** English (fluent), French (fluent), Spanish (native).

**References**

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