EDITORIAL

Introduction to the special issue in honor of Manuel Arellano

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This volume follows the celebration of the "Conference on Econometric Methods and Empirical Analysis of Micro Data" held in honor of Manuel Arellano in Madrid in July 2022. The presentations at the conference were given by past and present co-authors of Manolo. With this volume, we wanted to open the floor to every researcher who desired to contribute with outstanding pieces of research. The conference and this volume are a tribute to Manolo's far-reaching influence on economic research.

Manolo was born in Elda, Alicante. He earned his undergraduate degree in Economics at Universidad de Barcelona in 1979. He then began his graduate studies in Econometrics and Mathematical Economics at London School of Economics and completed a PhD in Economics in 1985. After his graduation, he worked as a research lecturer at University of Oxford and had a research fellow at Nuffield College. From 1989 to 1992, he was a lecturer in economics at the London School of Economics. Since 1991, he has been a professor of Econometrics at CEMFI, Madrid. During these three decades, he has taught multiple cohorts of master's students and supervised a multitude of master's and PhD theses. Indeed, Manolo is the thesis director and mentor of many renowned researchers currently spread across institutions around the world.

Manolo has played multiple crucial roles in evaluating research in economics, and he has been the trigger of many important changes in the profession.[1] He has been

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[1] As an example, one of his seemingly innocent questions was behind the creation of COSME, the sub-committee of the Spanish Economic Association that is in charge of evaluating and promoting the situation of women in Economics. Literally, he said, back in 2006: "in Spain, the economics association still doesn't have a committee like this, right?"

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Editor of the Review of Economic Studies, Co-Editor of the Journal of Applied Econometrics and Co-Chair of the World Congress of the Econometric Society. He has also played key roles at the European Research Council (ERC). He is a Fellow of the Econometric Society and an Honorary Foreign Member of the American Academy of Arts and Sciences. He served as President in three leading institutions: the Econometric Society (2014), the European Economic Association (2013), and the Spanish Economic Association (2003).

Among his broad range of research interests, Manolo specialized in panel data econometrics and empirical microeconomics. His research has contributed decisively to the development of tools for the estimation of statistical models with longitudinal data that follow individuals, households, companies, municipalities or countries over time. But his methodological contributions also have had a profound impact on applied research in very diverse fields. Together with Stephen Bond, he developed the Arellano-Bond estimator, a widely used Generalized Method of Moments (GMM) estimator for panel data. RePEc (Research Papers in Economics) lists the Arellano and Bond (1991) paper as the most cited article in economics. He is also the author of the book *Panel Data Econometrics* (Arellano 2003), one of the main postgraduate manuals in Econometrics.

Manolo's work with Stephen Bond, Olympia Bover, and others has provided the econometric foundation to entertain *sequential exogeneity* assumptions. Strict exogeneity of regressors is often assumed in panel data settings such as differences-in-differences. However, that assumption is restrictive since it imposes that current regressors do not respond to lagged outcomes. In many economic applications, such as production function estimation, feedback from previous outcomes (e.g., lagged output or productivity) to future regressors (e.g., inputs) is key. Sequential exogeneity assumptions are less restrictive and allow for various forms of feedback. As Manolo demonstrated, in general dynamic linear models, sequential exogeneity restrictions can be imposed in estimation through instrumental variables and GMM techniques.

The distinction between sequential exogeneity and strict exogeneity does not exist in static cross-sectional comparisons, which have traditionally been the main focus of the literature on causal effects of public policies. However, this distinction is key for understanding dynamic responses, which are fundamental in economics. It is hard to overstate the importance of these developments, which Manolo and his collaborators introduced.

Even if the recognition of Manolo is inextricably linked to the Arellano–Bond estimator and his work on dynamic linear panel data models, his several seminal contributions in the field of Econometrics are reflected in his papers published in the most prestigious academic journals. In fact, in 2018, Manolo was distinguished as a Clarivate Citation Laureate in Economics for his exceptionally high citation record, a mark of his influence on the discipline.

There is also another metric of influence: the impact of Manolo's teaching and mentoring on all the junior or more senior researchers who were fortunate enough to be close to him, as students, collaborators, or simply as academic colleagues. Manolo is a true econometrician, in the sense that he starts with the study of economic data and greatly values what one can learn from applications. The papers appearing in this

volume are a testimony of the scope of his influence, including work on theoretical econometric questions, as well as applied work on substantive issues of policy interest.

The volume is organized in a single combined issue published in December 2023. Together with the papers, we are also listing the DOI links to the corresponding Zenodo replication packages (when available at the time of writing this introduction).

The issue contains the following articles:

- Gary Chamberlain[†]: "Identification in Dynamic Binary Choice Models"
- Dante Amengual, Gabriele Fiorentini, and Enrique Sentana: "PML versus minimum χ^2: the comeback". https://doi.org/10.5281/zenodo.7825896
- Jinyong Hahn: "Properties of least squares estimator in estimation of average treatment effects"
- Stéphane Bonhomme, Kevin Dano, and Bryan S. Graham: "Identification in a Binary Choice Panel Data Model with a Predetermined Covariate". https://doi.org/10.5281/zenodo.8247844
- Alba Couceiro de León and Juanjo Dolado: "Revisiting the public-private wage gap in Spain: new evidence and interpretation". https://doi.org/10.5281/zenodo.7841632

- Geert Dhaene and Martin Weidner: "Approximate functional differencing"
- Koen Jochmans: "Modified-likelihood estimation of fixed-effect models for dyadic data"
- Artūras Juodis and Vasilis Sarafidis: "New results on asymptotic properties of likelihood estimators with persistent data for small and large T"
- Diego Astorga-Rojas: "Should I stay or should I go? The effect of London's terrorist attack on the educational choices of Muslims". https://doi.org/10.5281/zenodo.7933068
- Domenico Depalo and Santiago Pereda-Fernández; "The Differential Impact by Gender of the COVID-19 Pandemic on the Labor Outcomes of Older Adults". https://doi.org/10.5281/zenodo.8216737
- Beatriz González, Enrique Moral-Benito and Isabel Soler: "Schumpeter meets Goldilocks: the scarring effects of firm destruction". https://doi.org/10.5281/zenodo.8239122

Gary Chamberlain's posthumous paper deserves particular mention. Gary sadly passed away in 2020. We asked Manolo to provide us with a copy of Gary's unpublished April 1993 draft titled "Feedback in Panel Data Models", from which the material reproduced in the paper was drawn. A special thanks goes to Laura Gehl, Gary's daughter, for her permission to publish this material. Given the profound influence that Gary's work had on Manolo, we are sure this contribution will be particularly valuable to him.

To conclude, there are a number of people that we would like to thank. First, the people at the Banco de España and CEMFI who hosted and financed the conference, and in particular the Governor, Pablo Hernández de Cos, and CEMFI's former director, Rafael Repullo. We would also like to thank all the conference speakers and participants, the contributors to this volume, as well as the anonymous referees for their reviews. We are in debt with Victor Aguirregabiria and Joan Llull who shared with us

the responsibility of organizing the conference, and with the editor of SERIEs, Virginia Sanchez-Marcos, for her support and help throughout the process. Also, Samuel Bentolila and Olympia Bover provided continuous guidance in every step. We want to express our gratitude to Enrique Sentana for his encouragement and advice. Enrique was the one who launched all these activities to recognize Manolo's trajectory. Finally, we want to thank Manolo for being a decisive actor in our lives, not only as a mentor and coauthor but, also, and most importantly, as an always supportive friend.

References

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Arellano M, Bond S (1991) Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. Rev Econ Stud 58(2):277–297