
Editorial

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Biographical notes: Giovanni Cerulli is a Research Director at IRCrES-CNR, Research Institute on Sustainable Economic Growth, National Research Council of Italy, unit of Rome. His research interest is in applied econometrics, with a special focus on causal inference, program evaluation, and machine learning applied to various fields of the social and epidemiological sciences. He has developed original causal inference models, such as dose-response and treatment models with social interaction providing Stata implementation. He has developed around 20 Stata commands for casual inference and machine learning working on Stata/Python/R integration for this purpose. He is the author of the book *Econometric Evaluation of Socio-Economic Programs: Theory and Applications* (Springer, 2015). He has published his papers in several quality scientific journals, and is currently the Editor-in-Chief of the *International Journal of Computational Economics and Econometrics*.

Lucio Morettini is Researcher at the National Research Council of Italy, Research Institute on Sustainable Economic Growth (IRCRES – CNR). His research focuses on higher education policy, research evaluation and impact assessment, high skilled workers' career dynamics, analysis of new emerging actors on higher education scenario, cooperation between research institutions and companies in the production of new knowledge and analysis of the innovation and growth strategies of small and medium-sized enterprises. He published and served as referee in several international journals and has participated in several European and Italian national projects.

This special issue on 'Computational and statistical modelling for tackling the emergence of the COVID-19 pandemic' collects some of the contributions presented during the 2020 International WebWorkshop on Computational Economics and Econometrics.

The WebWorkshop was organised to replace the 8th edition of the International Workshop on Computational Economics and Econometrics (IWcee), cancelled due to the COVID-19 pandemic, and was created to preserve the continuity of the IWcee and to provide the reference community with a meeting point where presenting and comparing the contributions of economists and statisticians with the aim of tackling COVID-19's health emergency also from a social point of view.

The content of this special issue reflects the moment of emergency. The works are dedicated to the need of finding indicators of the pandemic trend in commonly used data, and evaluating the immediate reaction of the markets and public decision-makers to this

epochal event. The intent was to quickly define tools that could provide elements of clarity in a situation never faced before.

In 'The management of COVID-19 epidemic: estimate of the actual infected population, impact of social distancing and directions for an efficient testing strategy. The case of Italy', Brogi, Guardabascio and Barcaroli offer a model to estimate the total number of actual infected people among the population at national and regional level using the lethality rate as calculus base, to bridge the gap established by the number of cases officially reported during the so-called 'first wave' of the COVID-19 epidemic (21 February–10 April 2020). They use the discrepancies between the estimated population and official data on new daily cases to estimate the effectiveness of the restrictive measures and the efficiency of tracing, even suggesting limits on the optimal number of tests to limit the restrictions to the population.

In 'Socio-economic and demographic factors influencing the spatial spread of COVID-19 in the USA', Baum and Henry analyse population-adjusted confirmed case rates based on daily changes at the US county level in COVID-19 confirmed case counts during the early months of the pandemic (March 1, 2020 to May 23, 2020) to assess dependence between neighbouring counties and quantify the overall spatial effect of socio-economic and demographic factors on the prevalence of COVID-19 such as gender, race, ethnicity, population density, pollution, health and income conditions.

In 'An integrated K-means-GP approach for US stock fund diversification and its impact due to COVID-19', Sharma, Hota and Awasthi present research work that explores the potential of goal planning (GP) and the K-means algorithm as an integrated K-means-GP approach to fund diversification, where K-means is used to create groups of actions in based on their performance. Specifically, this analysis presents a comparative study between different scenarios on the returns of equity funds in 30 stocks of DOW30 in the years 2017–2018, 2018–2019 and 2019–2020 in which the performance of the K-mean-GP approach is assessed with respect the GP approach for the diversification of equity funds; COVID-19 influenced post diversification returns but the results were not always negative.

In 'Non-parametric Bayesian updating and windowing with kernel density and the kudzu algorithm', Grant presents an analysis of non-parametric updating, using a previous posterior sample as a new prior sample, an element of improvement of the approach of updating parameter estimates and predictions as more data arrive, an important attraction for people adopting Bayesian methods, and essential in big data settings. Streaming data can be analysed in a moving window of time by subtracting old posterior samples with appropriate weights. Three forms of kernel density are evaluated, a sampling importance resampling implementation, and a novel algorithm called kudzu, which smooths density estimation trees. Methods are tested for distortion of illustrative prior distributions, long-run performance in a low-dimensional simulation study, and feasibility with a realistically large and fast dataset of taxi journeys.

In 'COVID-19 pandemic and the economy: sentiment analysis on Twitter data', Fano and Toschi analyse data from Twitter posts identifying emerging patterns related to COVID-19 and to evaluate the economic sentiment of users during the pandemic. They present an economic Twitter index (ETI) based on over two million tweets containing both term coronavirus and an economic keyword that is able to nowcast the state of economic sentiment related to real-world events that is correlated to standard economic indicators.

In ‘Searching for the peak: Google Trends and the first COVID-19 wave in Italy’, Brunori, Resce and Serlenga present a tool to monitor COVID-19 diffusion in order to go beyond difficulties related to difficulties of collect data of official statistics. They use information from Google Trends to predict the evolution of the epidemic, estimating a dynamic heterogeneous panel. This analysis is useful to predict number of patients admitted to the intensive care units, number of deaths and excess mortality in Italian regions.

In ‘Evaluating the efficiency of fiscal responses to COVID-19 pandemic in the OECD countries: a two-stage data envelopment analysis approach’, El Husseiny and Badawy present an analysis on relative technical efficiency (TE) of the fiscal stimulus packages introduced by the governments of 38 OECD countries in response to COVID-19 pandemic, using a two-stage data envelopment analysis (DEA) approach. By comparing the economic effort and the effects on growth and unemployment, results show a potential inefficiency of fiscal packages in many countries. In particular, this inefficiency regards measures of general government final consumption expenditure, indicating routes for implementing more efficient measures with longer lasting effects in cases of large-scale crises such as the COVID-19 pandemic.