International Microsimulation Association

EDITORIAL

Editorial

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The Spring issue of the International Journal of Microsimulation is composed by five articles, of which the first four present work on dynamic microsimulation, and the last one focuses on a micro-macro linkage between a static tax-benefit model and a CGE.

The first article ("Local Natural Capital Influences on the Spatial Distribution of Farm Incomes", by Dilovar Haydarov, Cathal O'Donoghue, Mary Ryan, and Chaosheng Zhang), adds variables on natural capital to a farm spatial microsimulation model, SMILE. The argument is that farm incomes are going to vary spatially as a result of different aspects of natural capital (e.g., soil condition, forage areas, temperature, rainfall, etc). They then use an income generation model that includes natural capital, alongside physical capital and human capital, to augment the geospatial microsimulation model. The results do show that natural capital has an impact on incomes, and in the direction expected: areas with lower levels of natural capital have reduced incomes compared to the model without a natural capital adjustment.

The second article ("The Italian Treasury Dynamic Microsimulation Model (T-DYMM): Data, Structure and Baseline Results", by Riccardo Conti, Michele Bavaro, Stefano Boscolo, Elena Fabrizi, Chiara Puccioni and Simone Tedeschi), describes the dynamic model developed at the Italian Treasury (T-DYMM). The article is highly commendable as it is one of the rare descriptions of models developed by Government departments. This helps reducing the opacity of models with high potential due to their access to administrative data, but which remain proprietary and not shared with the public.

The third article ("Dynamic Microsimulations of Regional Income Inequalities in Germany", by Jana Emmenegger and Monika Obersneider), develops an income module for the MikroSim model that accounts for specific migrant groups, with a regional disaggregation. This goes beyond more standard analyses that look at the migrant population only at a national level. More specifically, the paper analyses the evolution of the gender and migrant wage gaps over a 20-year horizon in 402 German districts. The authors find that one of the main drivers in income inequality for both women and migrants is heterogeneity in working hours, but they also find persistent differences in the evolution of the income gaps between East and West Germany, and between urban and rural areas. They conclude that the ability to simulate spatially differentiated outcomes is important for designing appropriate policies to address income inequality.

The last two articles turn to (static) tax-benefit modelling. The article by Hassan Eini-Zinab and Hananeh Sadeghi ("Population-Based Simulation of COVID-19 Outbreak in Iran: Comparison of Different Policy Options") compares different counterfactual policies aimed at containing the Covid-19 outbreak in Iran. The model is based on census data, and extends a SEIR (susceptible – exposed, infected – removed) approach to include socio-economic, demographic and geographical characteristics.

Finally, the article by Ludmila Fadejeva, Konstantins Benkovskis, Anna Zasova and Anna Pluta ("Keeping the Best of Two Worlds: Linking CGE and Microsimulation Models for Policy Analysis") presents an iterative top-down bottom-up procedure for linking the static tax-benefit model EUROMOD to a CGE, with an application to Latvia. The model is particularly important due the popularity of EUROMOD, potentially paving the way for applications to more EU settings.

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Suggestions for further reading

A simple accounting exercise using Google Scholar gives some indication of where the field of microsimulation is developing more rapidly. Of more than 40 articles returned after searching for 'microsimulation', published in academic journals thus far in 2024, the vast majority is either in health, or traffic and transportation (17 and 19 hits respectively). Energy, labour and demography have only one hit each, and two articles referred to tax-benefit modelling. While the IJM intercepts a small but important subset of health microsimulation, we barely have any presence in traffic and transportation. This reflects a deliberate choice of the journal to focus on social sciences rather than engineering. However, integrated spatial models where interactions between agents – from labour supply and demand to contagion and epidemics dynamics – happen based on multi-layered networks of relations between agents and physical places, including transport networks, represent one of the frontiers in microsimulation modelling. Multi-layered networks have received some attention in the context of analyses of the 2008-2009 financial crisis, but have yet to find their way into standard modelling practice. ***Bookstaber (2017)*** book *The end of Theory* offers an insightful analysis of how the multi-layered network structure of financial institutions paved the way to the financial collapse of 2008-2009. The book also offers a compelling view of the complexity approach to Economics, and argues in favour of agent-based modelling as *the* methodology of choice for economic modelling. I will return to the relationship between agent-based modelling and microsimulation in future Editorials.

References

Bookstaber R. 2017. *The End of Theory: Financial Crises, the Failure of Economics, and the Sweep of Human Interaction*. Princeton University Press. 240. DOI: https://doi.org/10.1515/9781400884964