

Matteo Richiardi

Provisional outline and reading list

Course on “A stochastic process approach to agent-based modelling and simulation”

Max Planck Institute for Demographic Research (MPIDR), Rostock

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This version: August 27, 2015

Friday, October 23

9.00-12.00 Lecture: Calibration, estimation and validation of agent-based models

1. What is estimation: comparing the model with the data.
2. “Comparing apples with apples”: properties of the model and properties of the data.
3. Calibration and estimation.
4. Simulated minimum distance in AB models.
5. Bayesian inference in AB models.
6. Approximate Bayesian Computing in AB models.

14.00-17.00 Computer lab: Calibration, estimation and validation of agent-based models

1. A simple sample model (Netlogo).
2. Understanding model behaviour.
3. The data
4. A Simulated Moments estimator.
5. An ABC estimator.

Reading List

1. Baragatti M, Pudlo P (2014). An overview on Approximate Bayesian computation. *ESAIM Proc* 44: 291-299.
2. Grazzini J, Richiardi M (2015). Consistent Estimation of Agent-Based Models by Simulated Minimum Distance. *Journal of Economic Dynamics and Control* 51: 148-165.
3. Grazzini J, Richiardi M, Sella L (2012). Small sample bias in MSM estimation of agent-based models. In: Teglio A, Alfarano S, Camacho-Cuena E, Ginés-Vilar M (eds). *Managing Market Complexity. The Approach of Artificial Economics*. Springer, Lecture Notes in Economics and Mathematical Systems, 662, Berlin.
4. Marin J-M, Pudlo P, Robert CP, Ryder RJ (2012). Approximate Bayesian computational methods. *Stat Comput* 22:1167–1180.
5. Tsionas M, Grazzini J, Richiardi M (2015). Bayesian Inference in Ergodic Agent-Based Models. Mimeo.