



NAEC Innovation Lab Workshop
New Perspectives on the labour market: Policy applications using ABM
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WORKSIM

AN ABM MODEL TO STUDY LABOUR MARKETS

Discussion

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Literature on labour market segmentation assumes agents are fully rational

- Requires optimisation algorithms to solve the agents decision problem;
- Some simplifications imposed to find an analytical solution;
- Numerical methods allow for increasingly complex models;
- Recent work:
 - Kettemann, Kramarz and Zweimüller (2017); Fialho (2017); Guglielminotti and Nur (2016); Cahuc, Charlot and Malherbert (2016); Bertron and Garibaldi (2012); Tealdi (2012); Caggege and Cuñat (2008).



Relying on bounded rationality, *WorkSim* can accommodate a very complex environment

➤ Individuals

- Heterogeneous workers. Interactions within households;
- Multiple states: inactive, unemployed, employed without searching or searching on-the-job while employed.
- Different types of human capital changing over time (general, occupational and job-specific);

➤ Firms

- Firms with multiple jobs face idiosyncratic demand shocks. Multiple occupations. Jobs with different characteristics (hours worked, amenities, etc.) and requirements of human capital;
- Incomplete information about workers' productivity and potential for screening;
- Detailed institutions and features of the labour law



With a more realistic environment, *WorkSim* opens up new possibilities for policy analysis

- With multiple jobs, fixed-term contracts can function as buffer when firms face uncertain future demand;
- Model can generate a mix of contract types – changing over time - within the same firm;
- It can also generate a distribution of fixed-term contract durations. Can analyse contracts of very short duration;
- Generates flows between multiple states, endogenous share of fixed-term contracts in new hires and total employment.



Additional complexity also raises questions

- **Identifying essential parameters.** What parameters are crucial? Are there parameters with little role?
- **Ensuring robustness**
 - How sensitive are the simulation results to each parameter?
 - How sensitive are the results to the chosen distributions and stochastic processes when initialising the simulation?
- **Focused narrative.** Are there mechanisms more important than others?
- **Incorporating potentially missing (and relevant) effects**
 - For e.g. firm choosing contract type depending on worker productivity? Complementarity between worker and firm? Wage differential across contracts? Differences in training?



Bridging divides between potentially complementary approaches

- ABMs of the labour market:
 - More realistic;
 - Analyse detailed features of institutions and labour law;
 - Investigate several outcomes simultaneously.

- Analytical models of the labour market:
 - Disentangle between two or a few mechanisms;
 - Enhance understanding of one precise channel;
 - Provide a narrative for one observed phenomenon.

