An Agent Based Approach to Analyzing the Effect of the 2009 Government Stimulus Package on the Labor Market

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Research Question:
‣ What would have happened to the labor market if the government had chosen a different combination of stimuli in 2009?
‣ In 2009 the government cut taxes, provided jobs, increased unemployment benefits, and increased small business support
‣ If instead the government only did one of the above, how would it have affected labor market recovery?

Agent-Based Modeling:
‣ Agent-Based Modeling allows for numerical analysis of non-closed form problems
‣ Traditional economic modeling assumes the participating agents are homogenous
‣ Agent-Based Modeling allows the user to create a set of heterogeneous agents and have them interact in a simulation

Methods:
‣ The sample Guildford Labor Market model from “Agent-Based Modelling in Economics” [1] is used as starter code. The starting model has been implemented in NetLogo [2].
‣ Make adjustments to the model to better represent the 2008 U.S. economy. For example, create a new breed of agents to represent the category of student and alter the transition rates that exist at the time the model is setup.
‣ Calibrate the model to create an accurate simulation of the 2008 labor market
‣ Simulate the effects of the 2009 government stimulus package and recalibrate the model. For example, add in tax rate as a factor in the creation of vacancies by employers and grow the employer agent government.
‣ Targeted simulation experiments to explore alternative policy options and analyze the results

Figure 1. A three dimensional representation of an agent based model [1]

Figure 2. Flows in & out of the Guildford Labor Market [1]

References