

Labour Behaviour, Basic Income and Social Influence: A Simulation Experiment

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Viability of a BI: Four Dimensions

- Strategic (political coalitions, social movements, policy agenda)
- Institutional (legislative, constitutional, administrative)
- Socio-psychological (public opinion)
- Behavioural (motivations)
 - the “surfer effect” -- we aim to explore its consequences on labour behaviour

Basic Income and Social Dilemmas

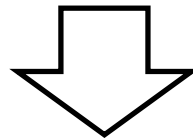
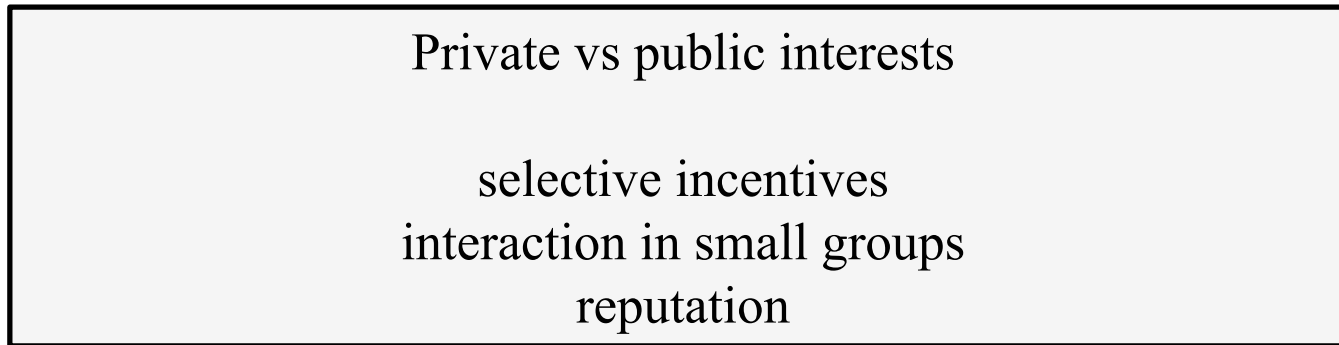
- The provision of a BI can be theorised as a collective action problem

Individuals are better off with the provision of public good, but fall in the trap of selfish rationality – everybody prefers others to make the effort, nobody makes the effort, and the public good is not provided

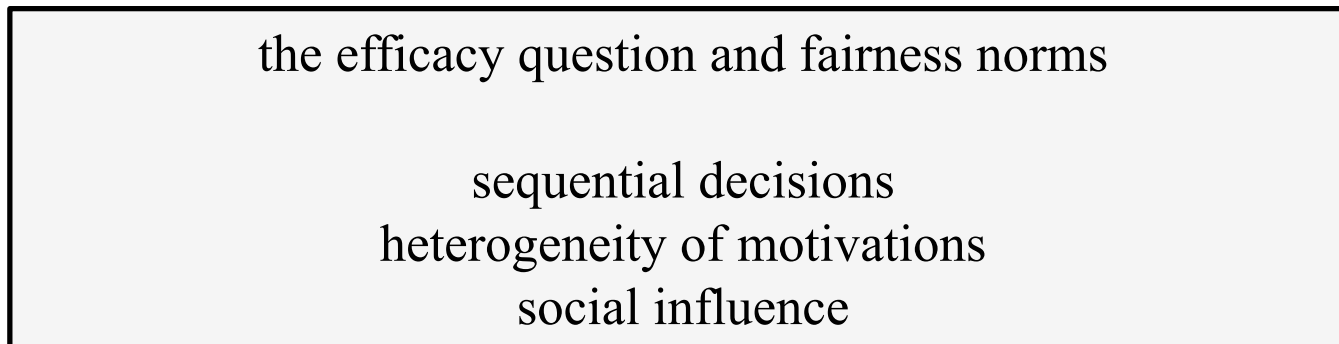
- The policy relevant question is how to solve this dilemma

Theoretical Approaches to CA

Olson's approach (Olson 1965)

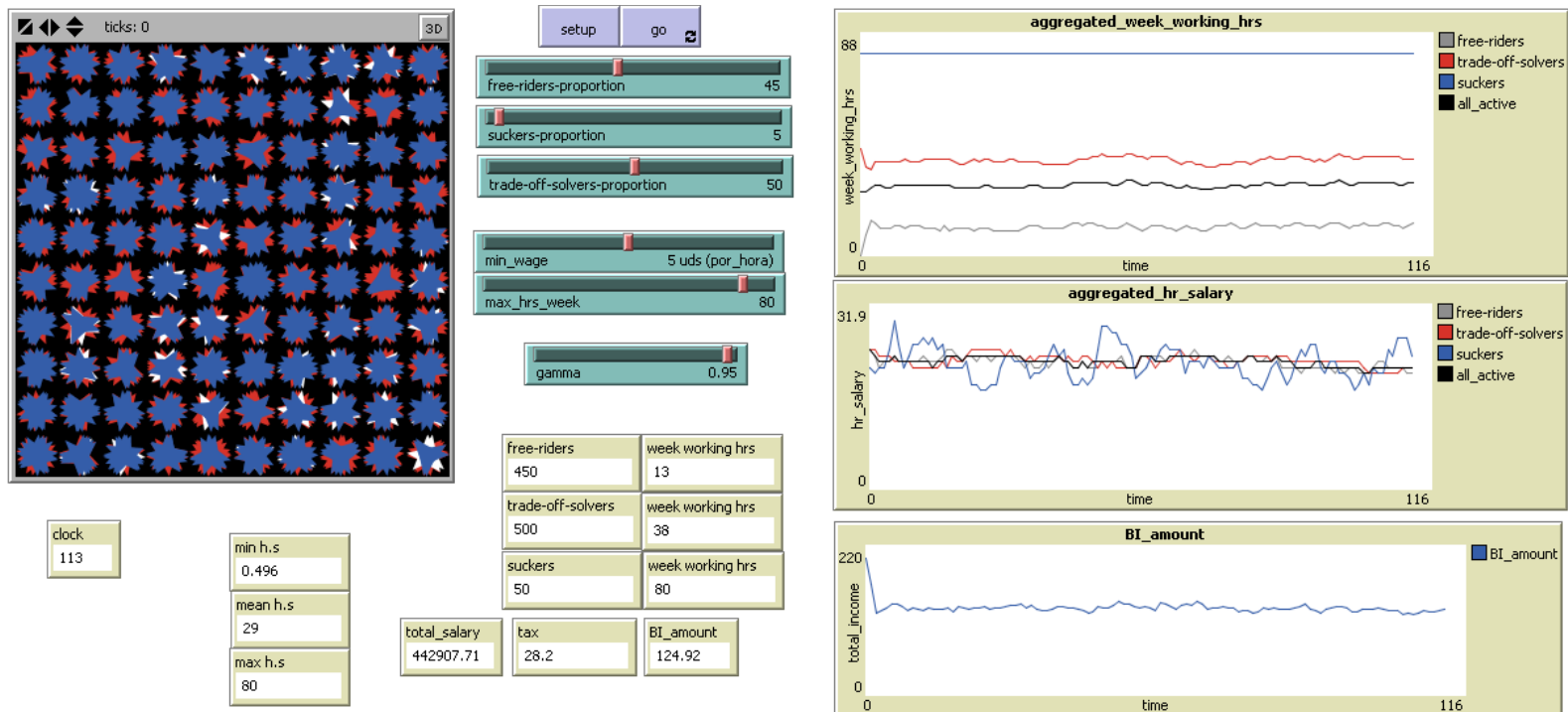


The sociological approach (Macy 1991, Gould 1993)



Why Agent-Based Simulation?

sequential decisions
heterogeneity of motivations
social influence



Our Model

The Question

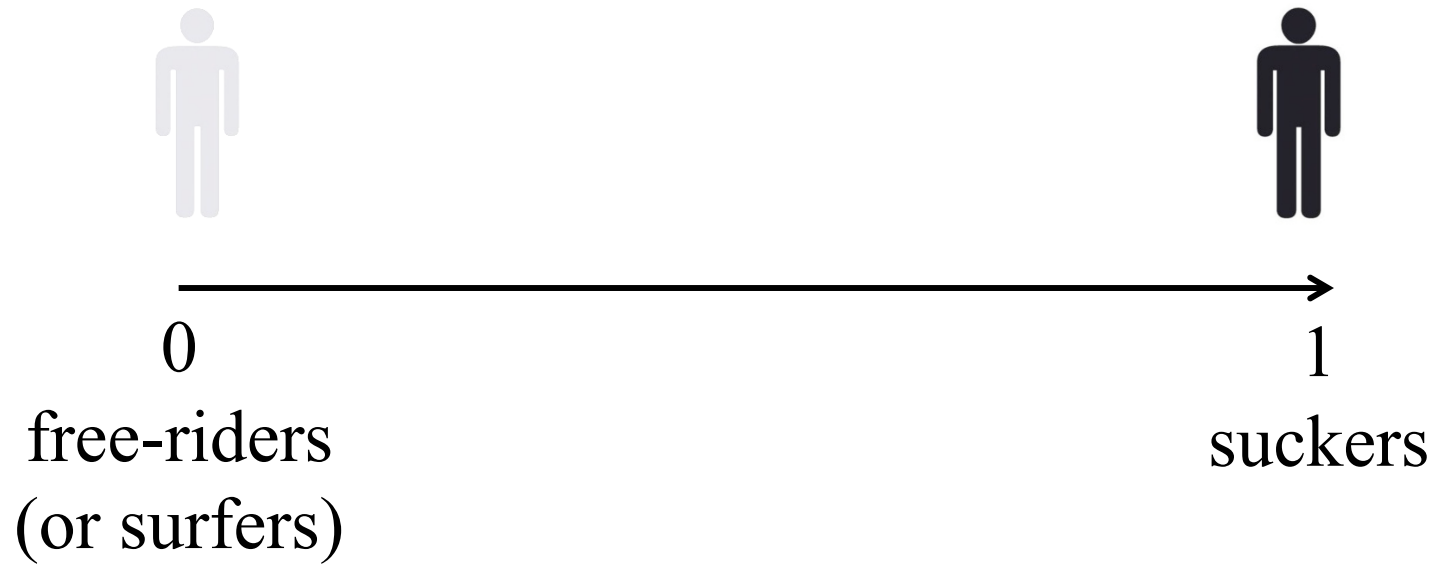
- How would a BI affect labour behaviour in a population of rational actors with different dispositions to work?

The Logic

- Similar to Gould, Roger (1993) “Collective Action and Network Structure”, *American Sociological Review*, 58(2): 182-196
- Our public good is BI, and individual contributions to its provision are measured as the number of hours of paid work

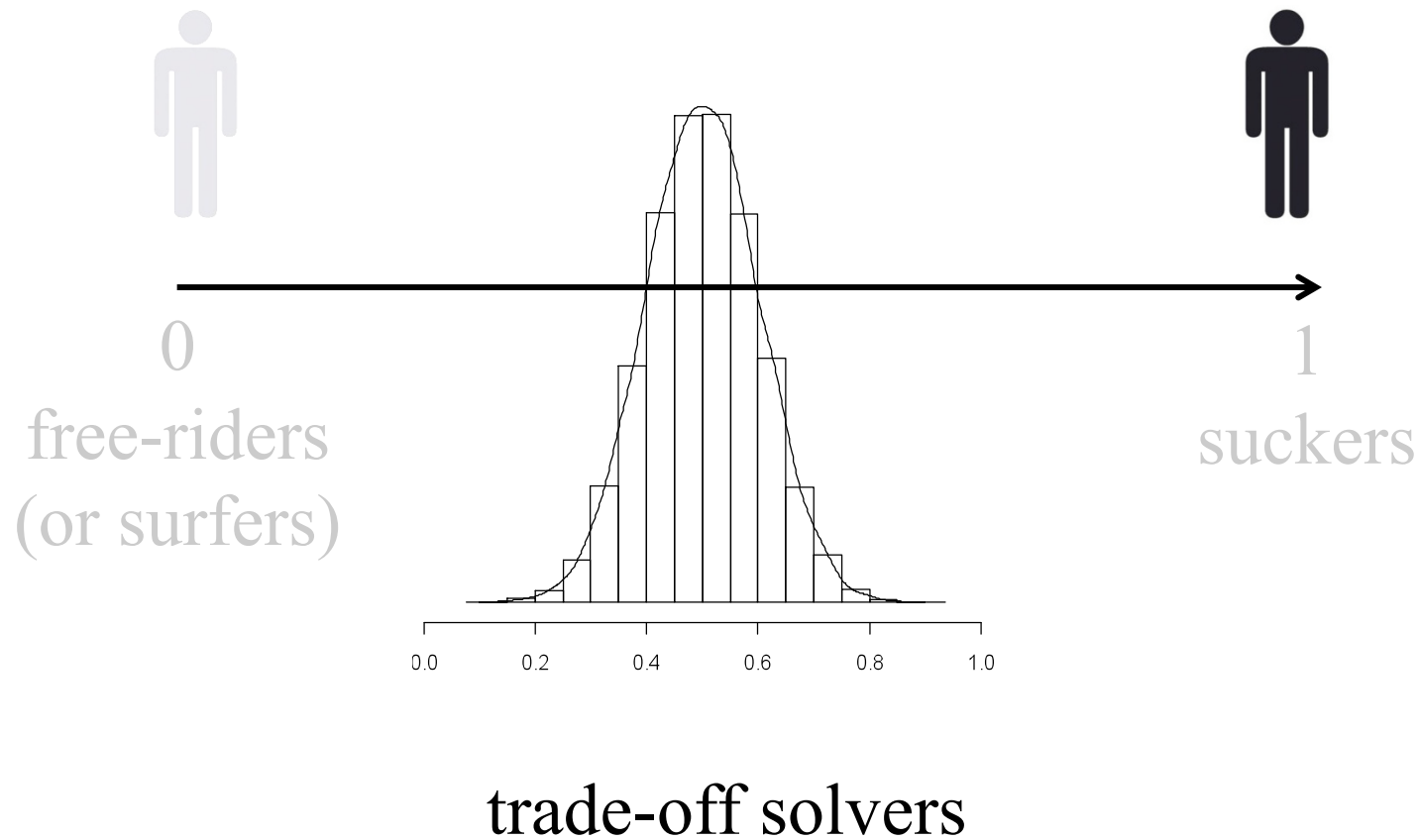
Intrinsic Inclination to Work

Modelled as a parameter



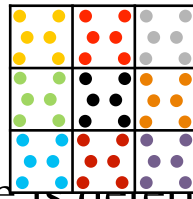
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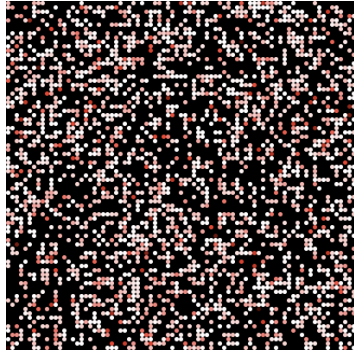
Main Features of the Model

- All agents are heterogeneous in the resources they manage (i.e. salaries) – **some will have to work more than others to reach subsistence levels**
- Agents do not have global knowledge: their group of reference are the agents around them



- The strength of social influence is determined by another parameter that ranges from 0 (no social influence) to 1 (full social influence) – **but only trade-off solvers are influenced by the behaviour of other agents**
- We model social influence using three rules of interdependence: proportionality, convergence to the maximum, and convergence to the minimum

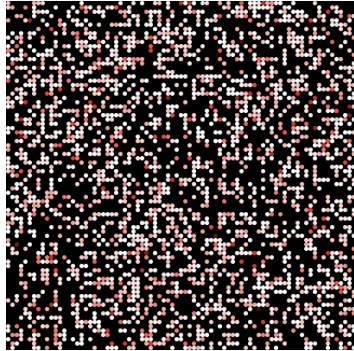
Features of the Simulated Labour Market



Fixed Parameters

- a) Number of agents (1000)
- b) Minimum salary (5 units/hr)
- c) Exponential distribution of salaries (around 20% of agents fall below minimum salary)
- d) Max. hrs. work/week (80)
- e) Subsistence level (200 units)
- f) Intrinsic inclination to work (0 for free-riders, 1 for suckers, and in between for trade-off solvers)

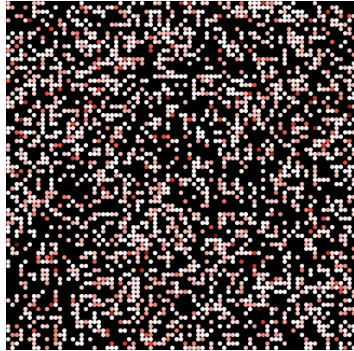
Features of the Simulated Labour Market



Manipulated Parameters

- Population composition
How many free-riders, suckers and trade-off solvers?
- Strength of social influence
None, moderate or full?

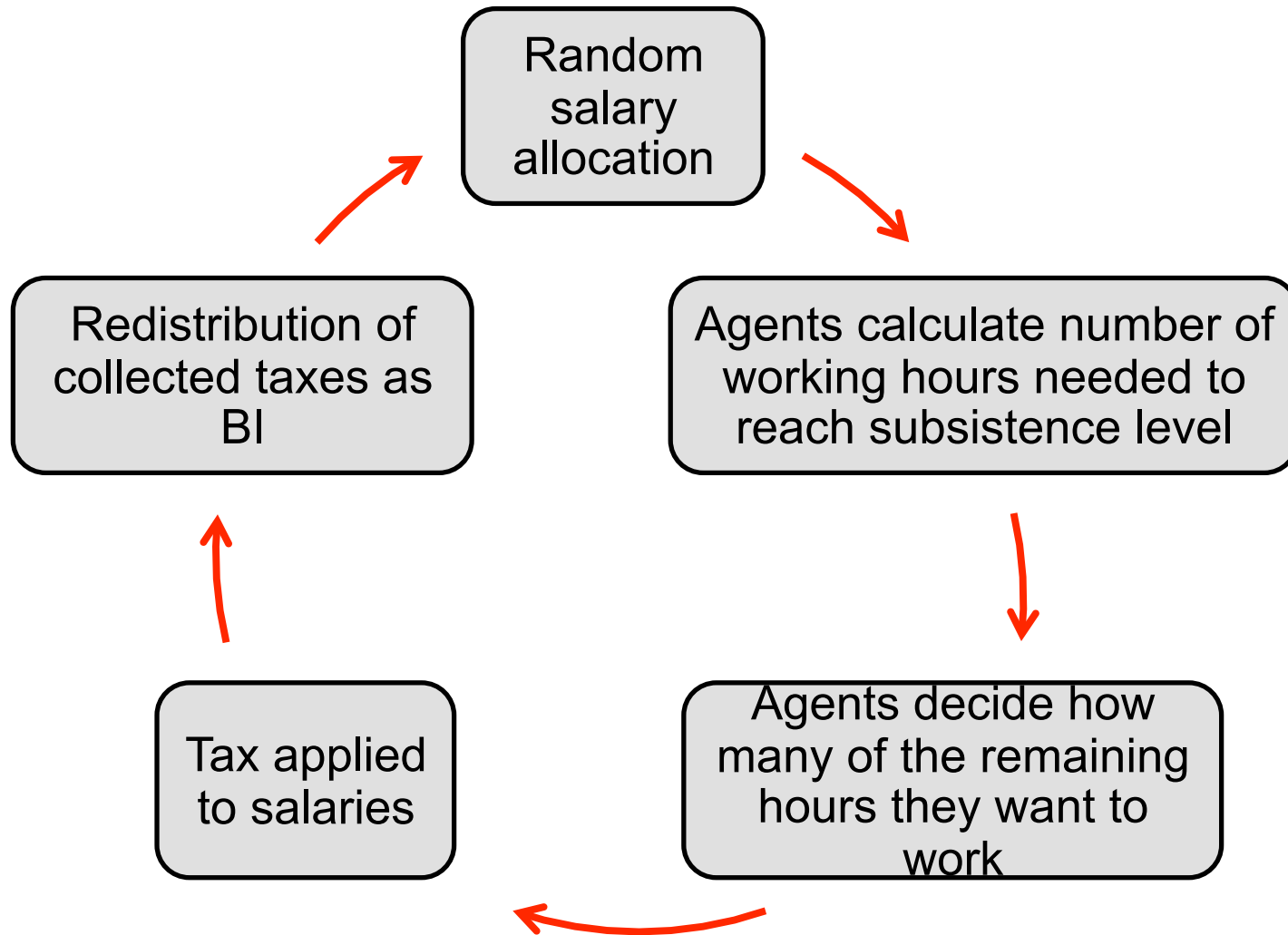
Features of the Simulated Labour Market



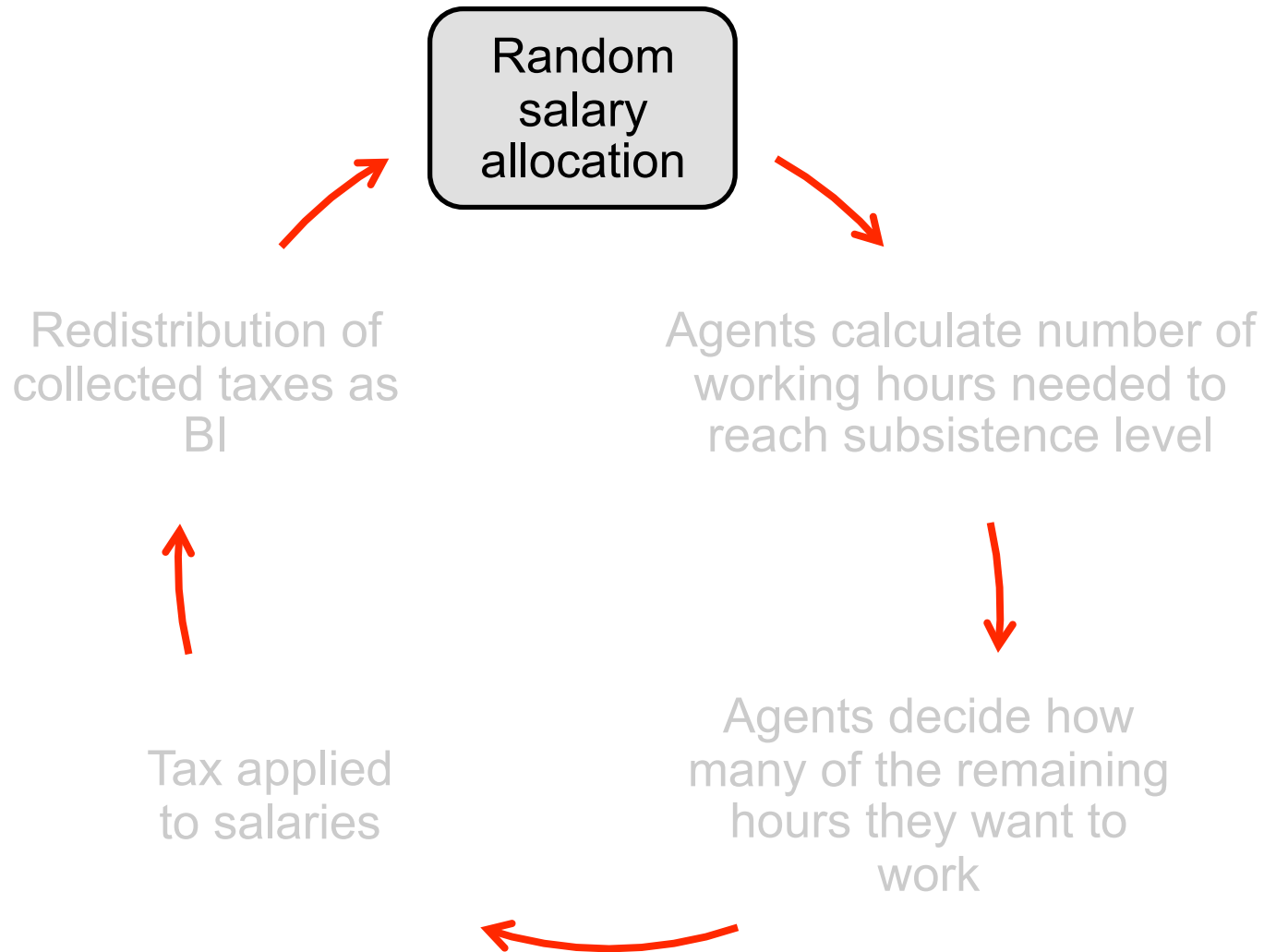
Outcome Variables

- Total number of hours contributed to the labour market
- Amount of BI received by agents

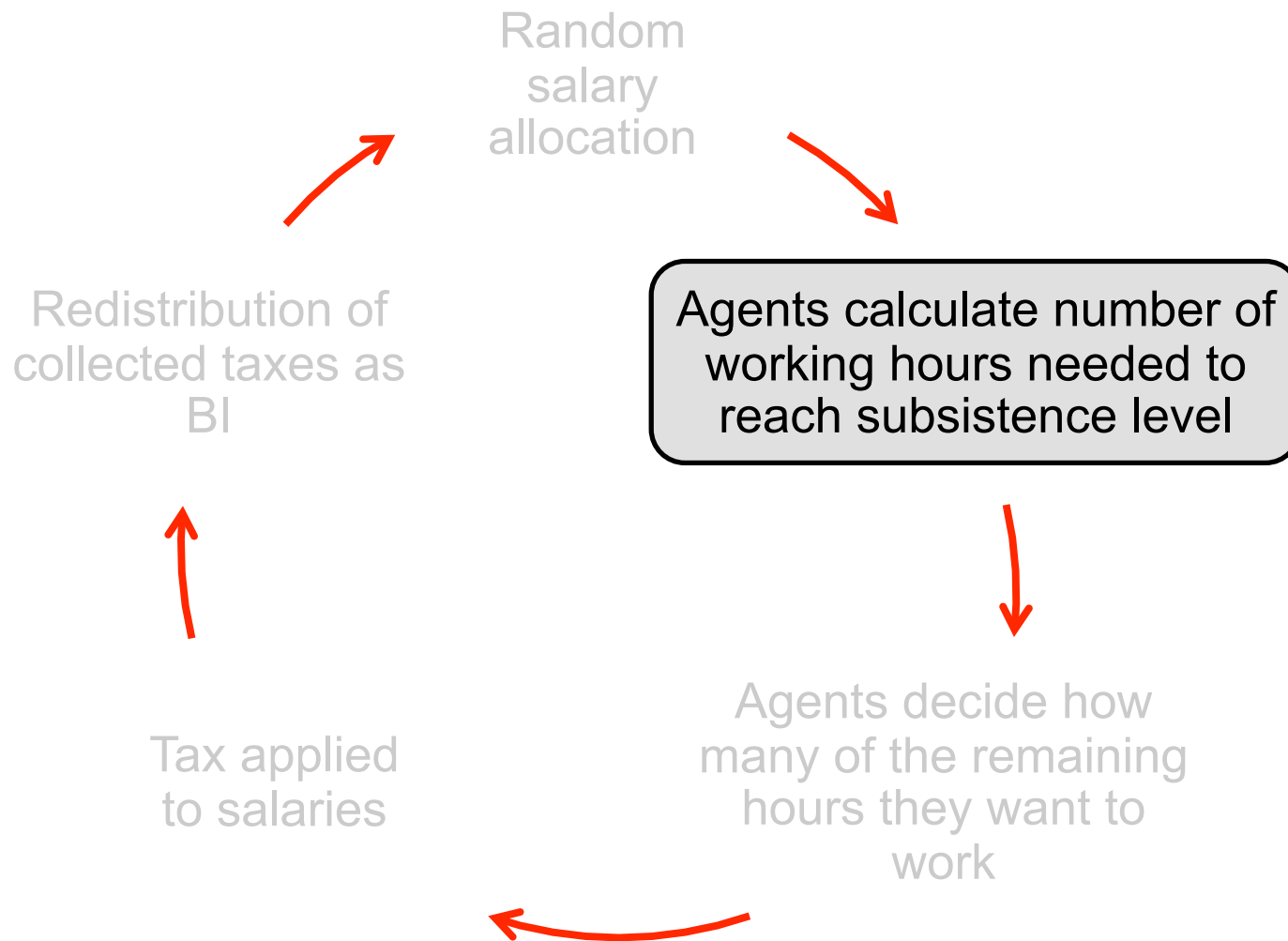
The Dynamics of the Model



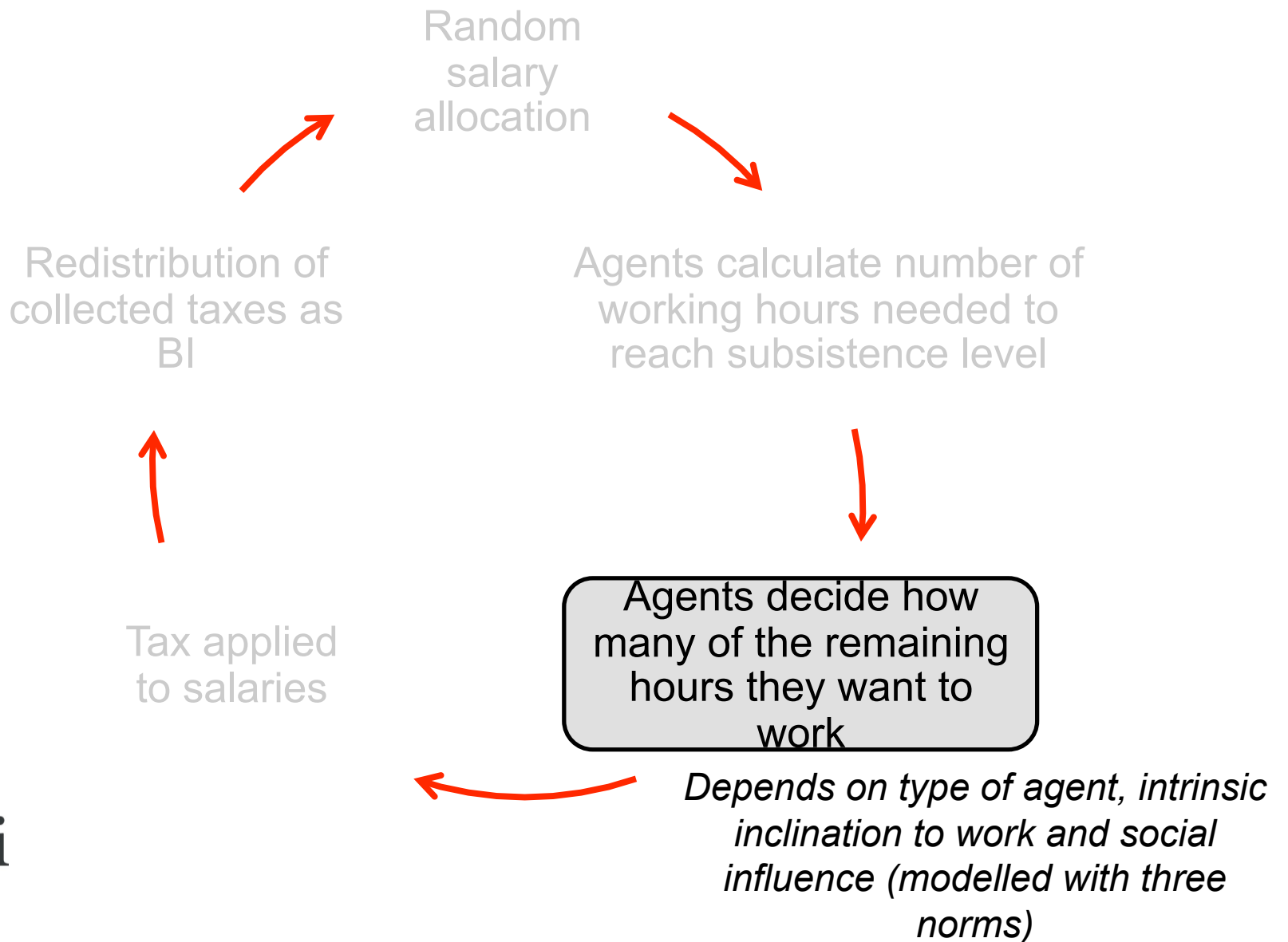
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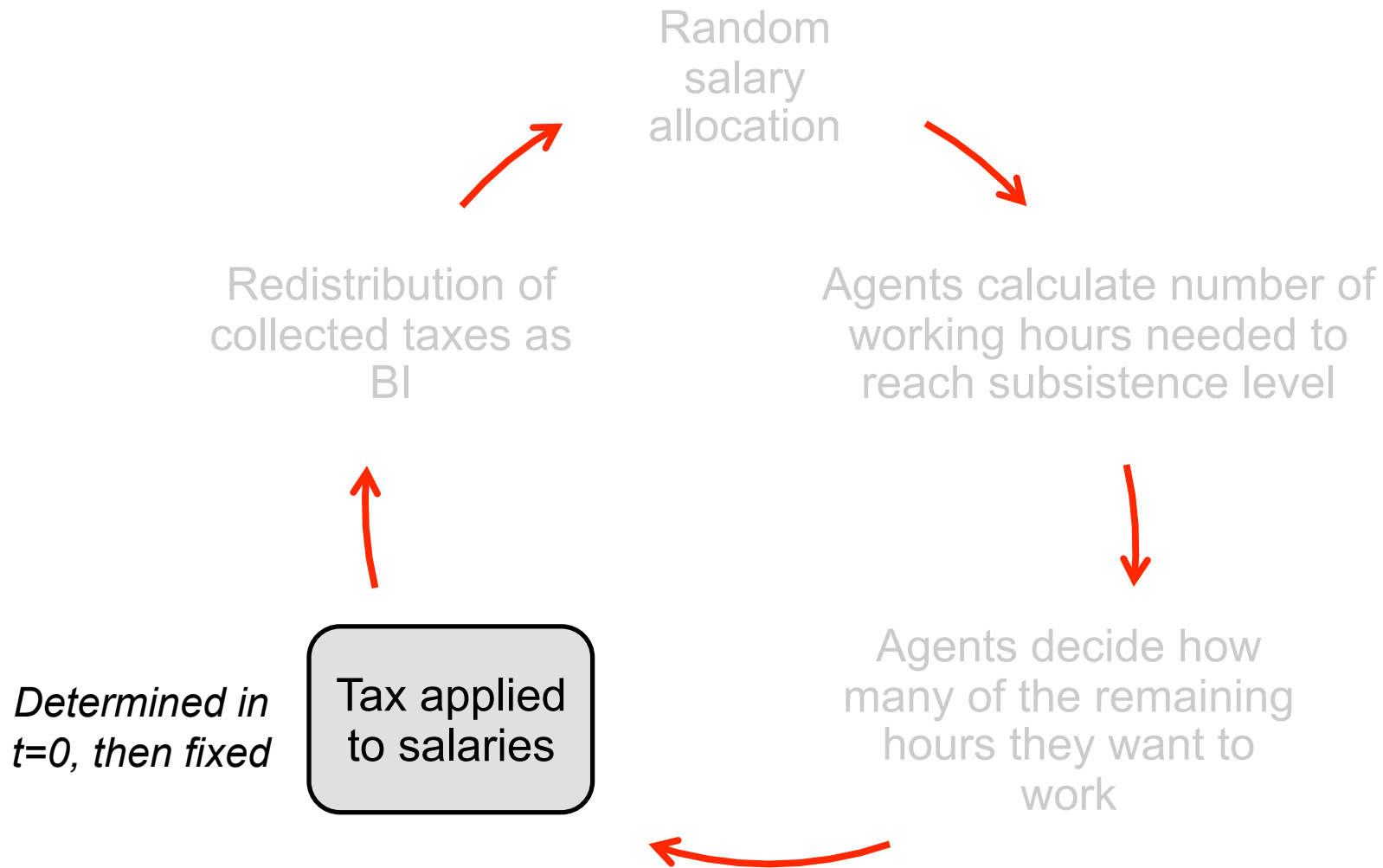
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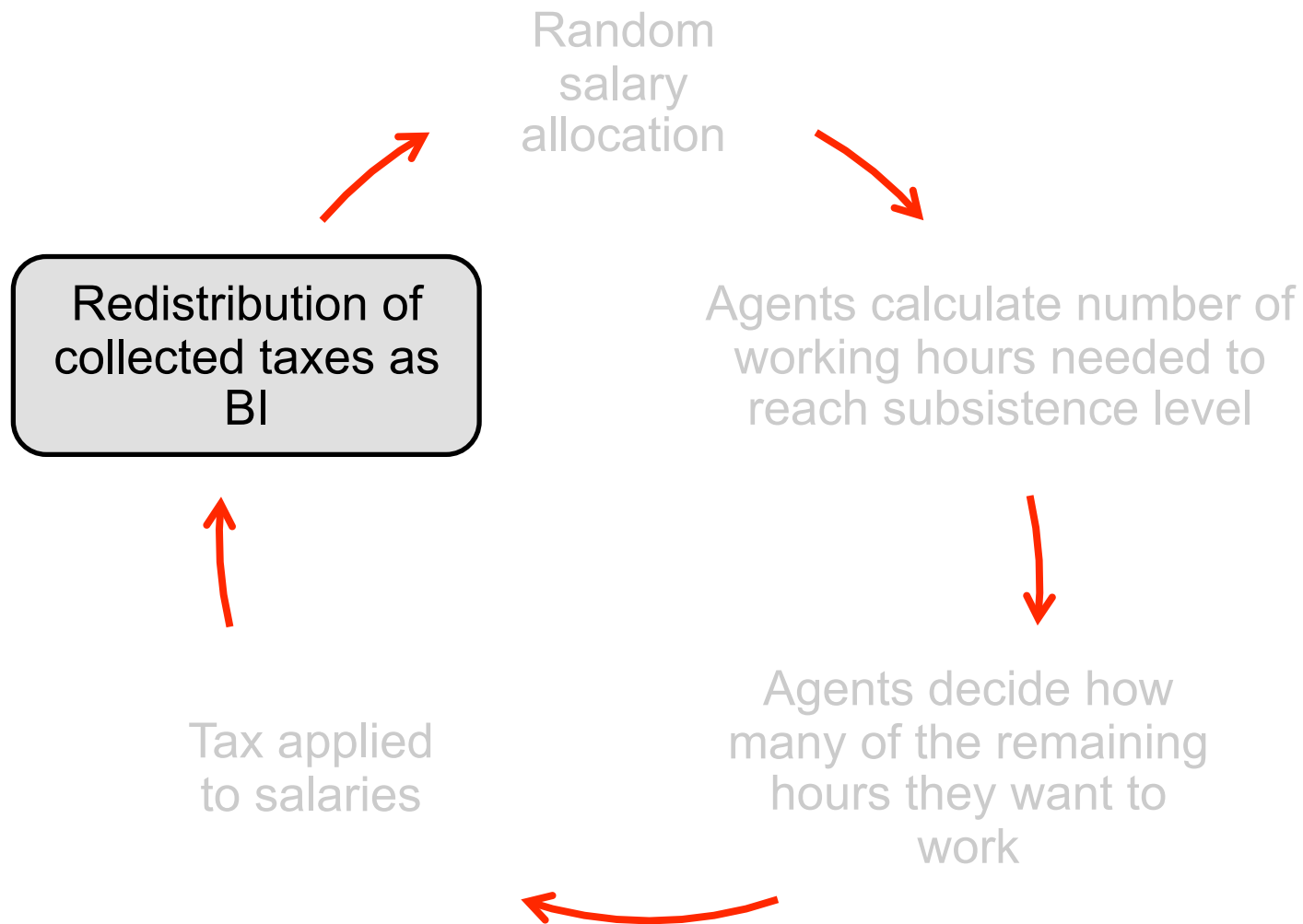
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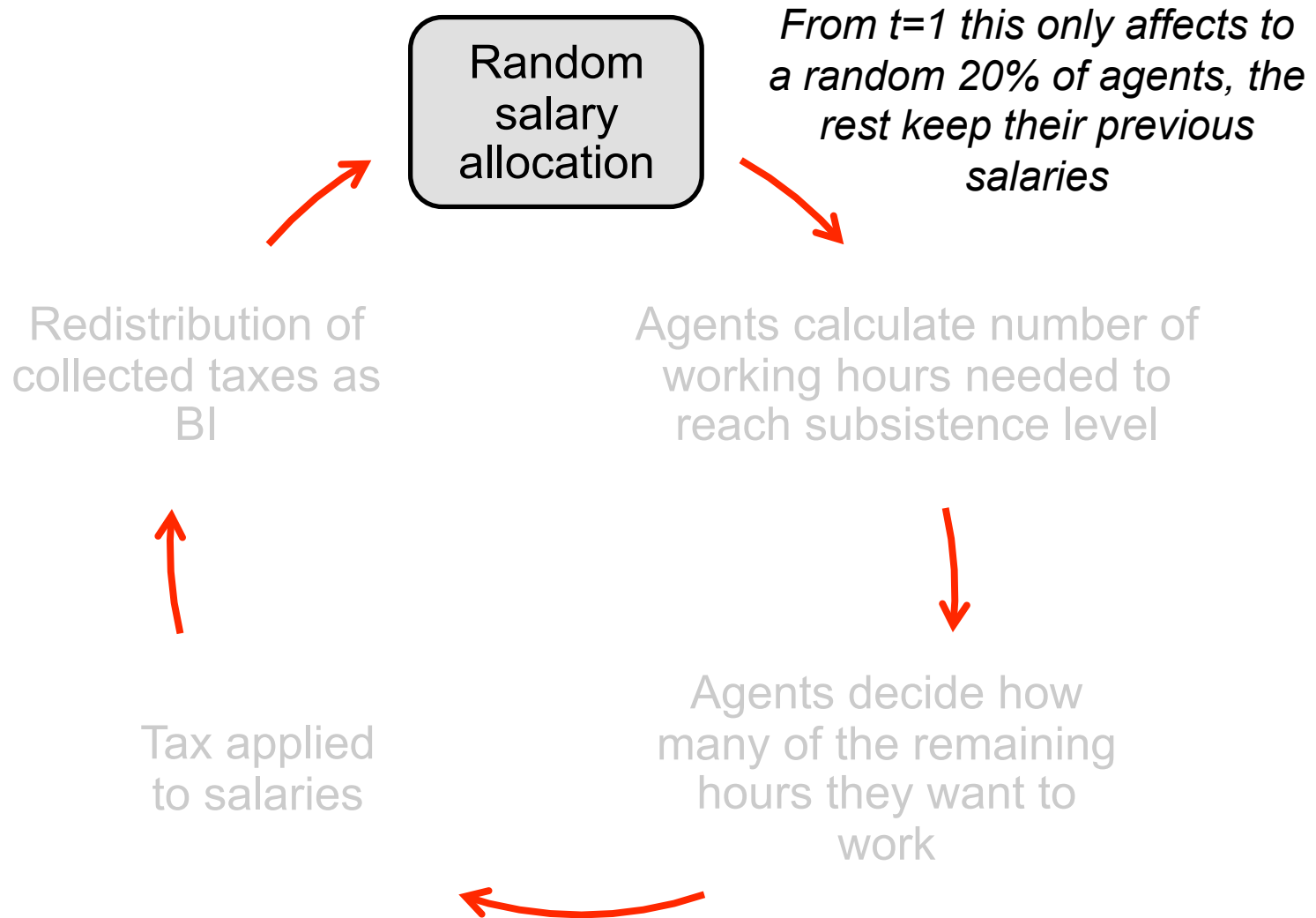
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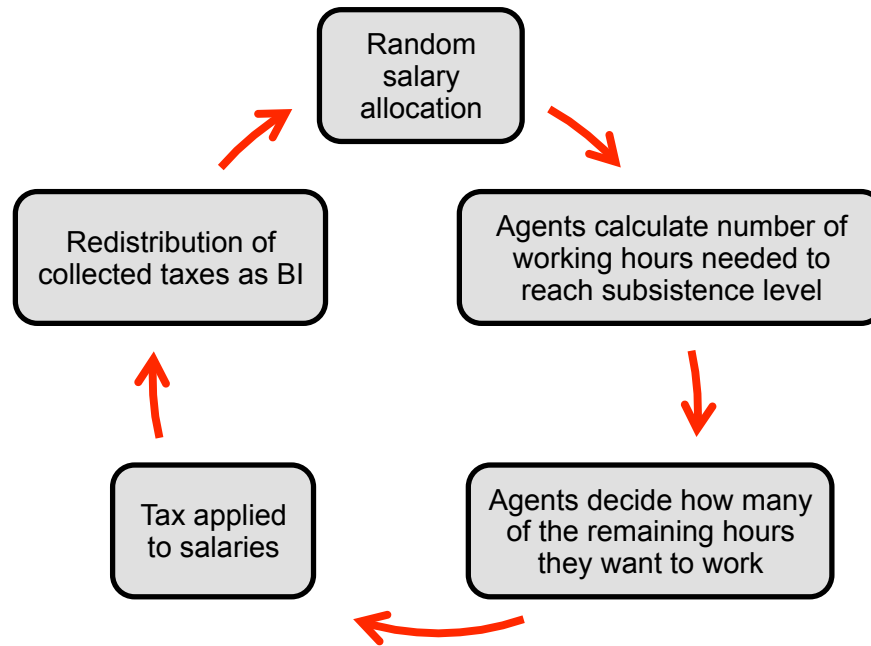


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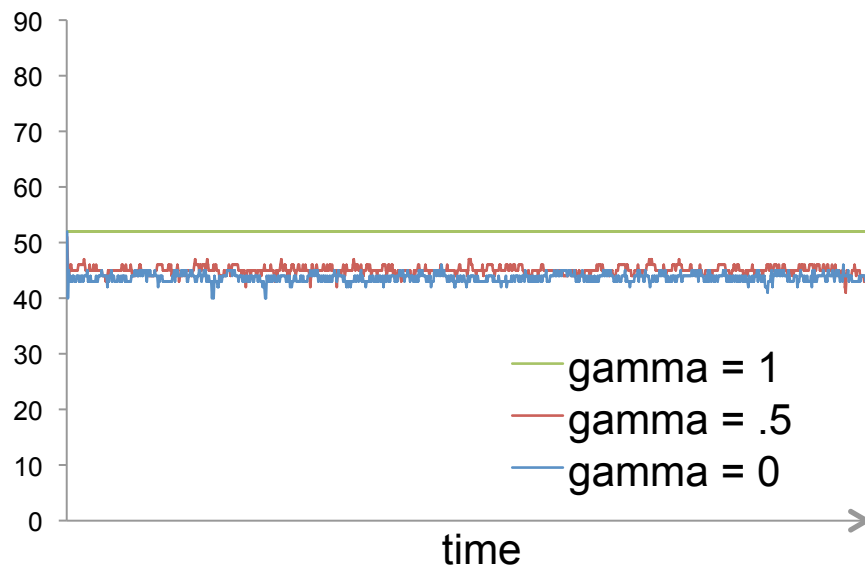
Endogenous vs exogenous BI -- feedback loop



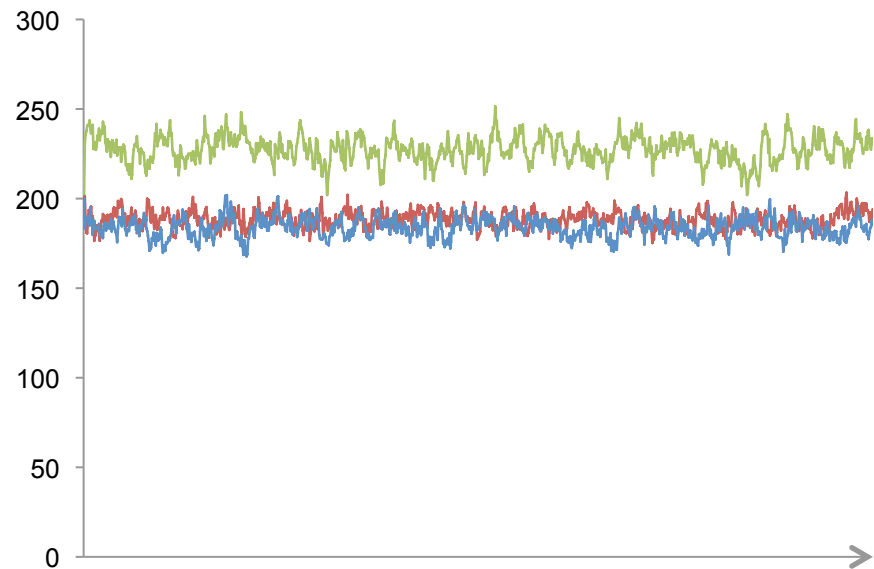
Results

If All Agents are Trade-Off Solvers...

avg week working hrs

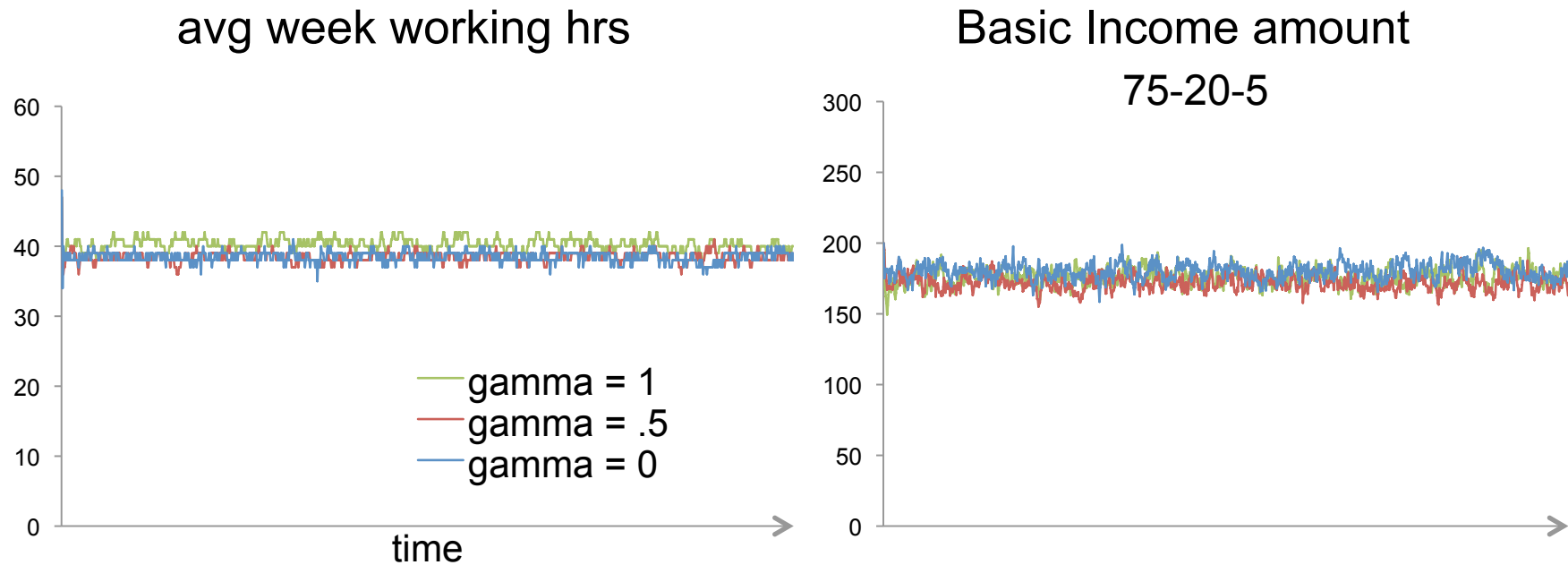


Basic Income amount



With full social influence (gamma = 1), agents work about 25% more and receive a BI about 20% higher.

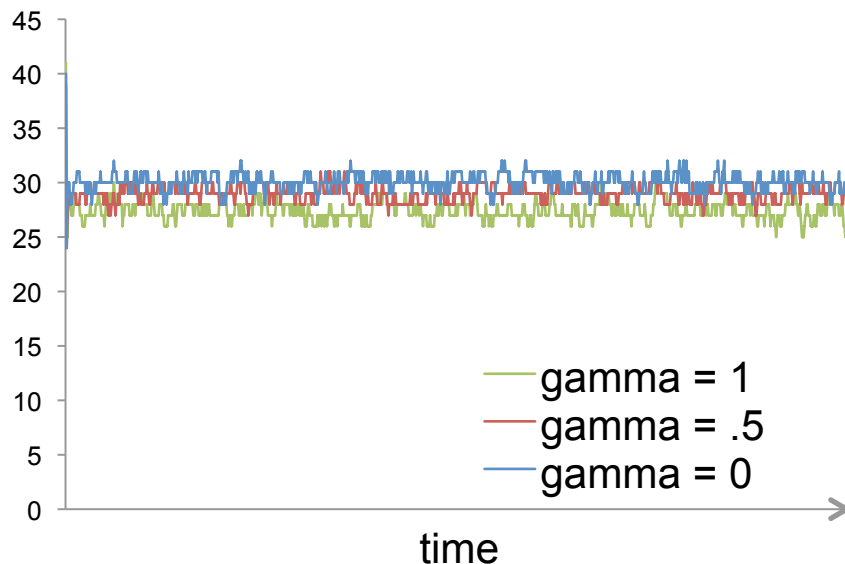
If 20% Are Free-Riders and 5% Suckers...



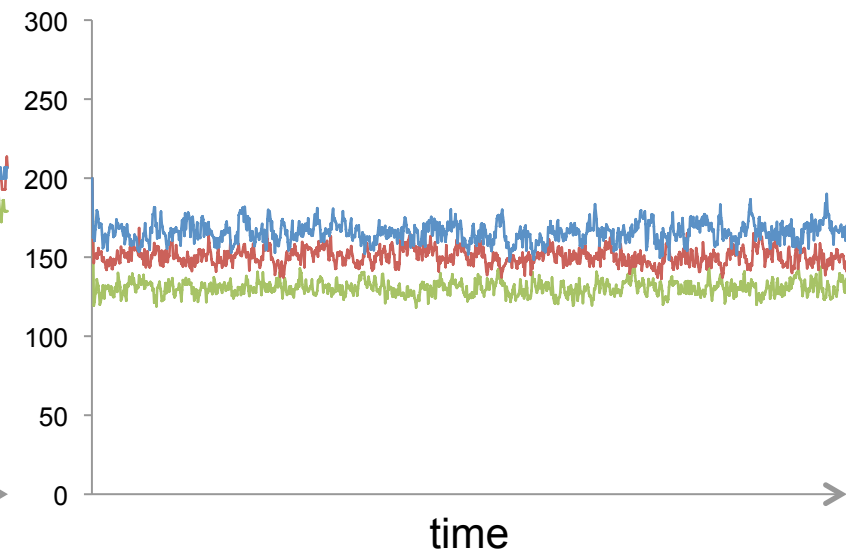
Social influence still has a (slight) positive influence on number of hours contributed, but overall agents work now about 22% less and receive a BI about 23% lower

If 45% Are Free-Riders and 5% Suckers...

avg week working hrs

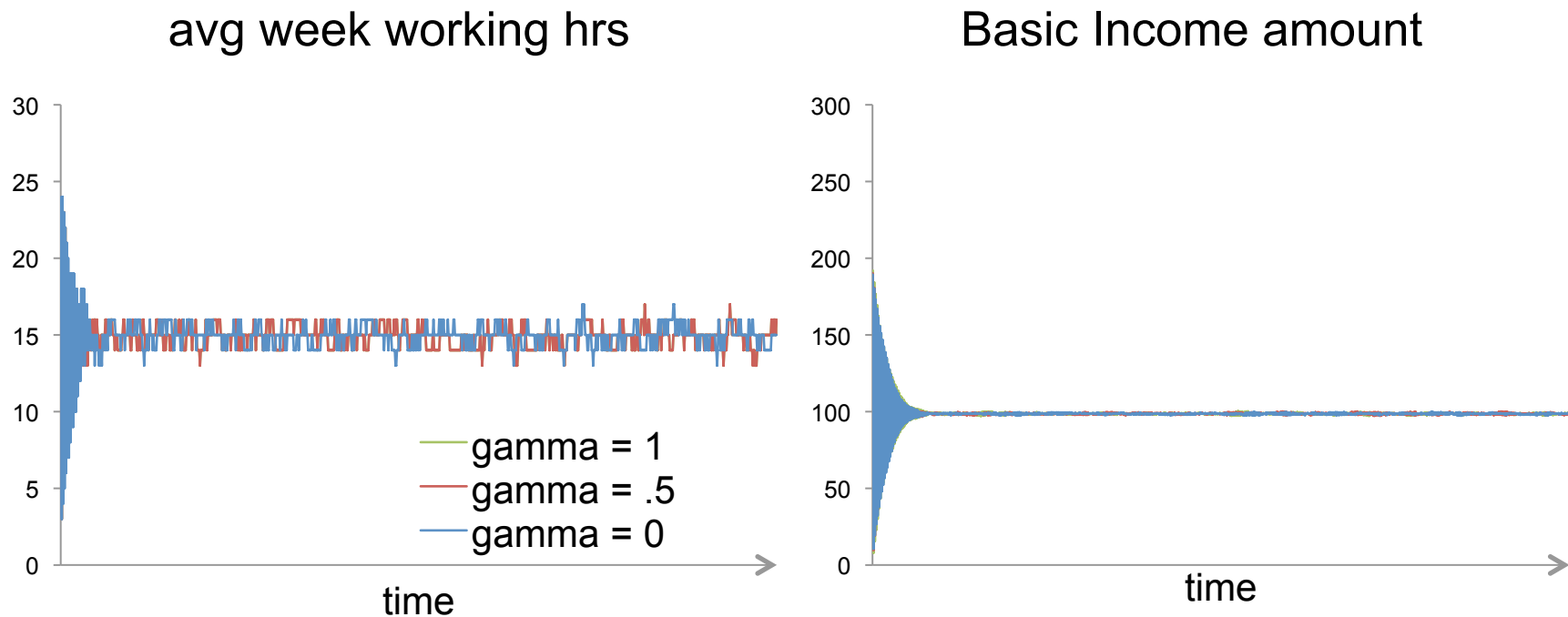


Basic Income amount



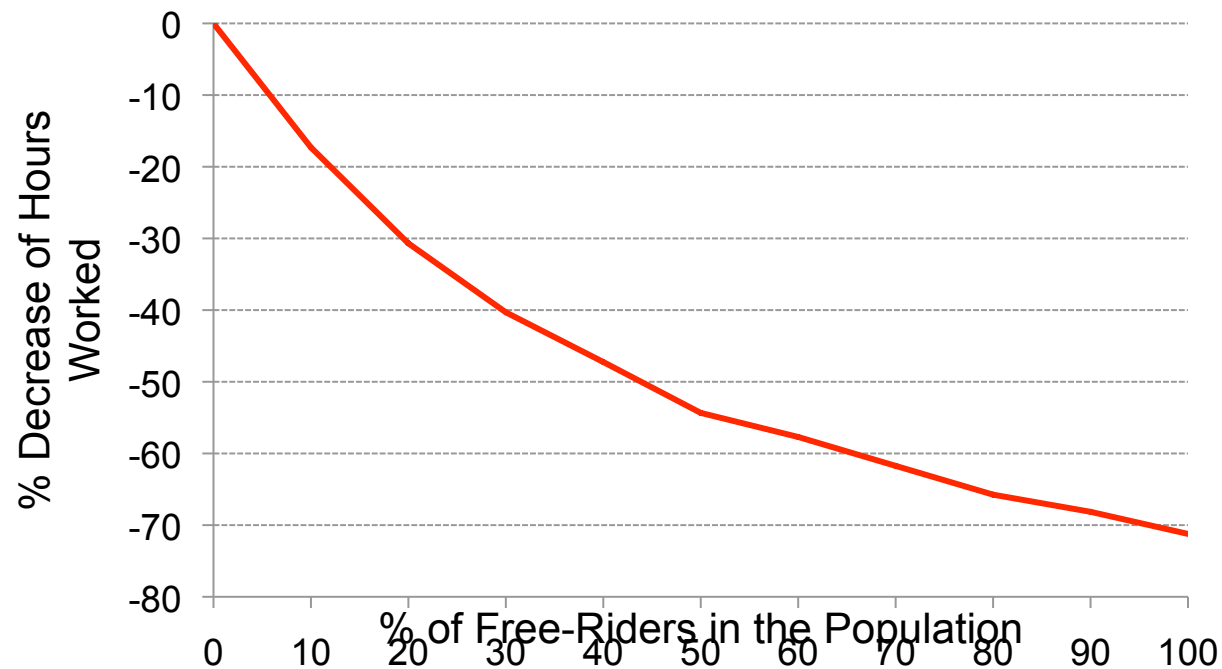
Social influence has now the opposite effect: free-riders make trade-off solvers work about 50% less; agents receive a BI about 44% lower

If All Agents are Free-Riders...



Social influence does not make a difference. Agents only work what is necessary to reach the subsistence level. They adjust their behaviour to fund a BI that allows them to work the minimum hours. This BI is about 43% of what trade-off solvers received in conditions of full social influence

The Impact of Free-Riders (full social influence)



The first 10% increase of free-riders in the population implies a 17% decrease in number of worked hours – the influence of free-riders decreases with their relative number because they still have to reach subsistence

levels!

The Impact of Suckers (full social influence)

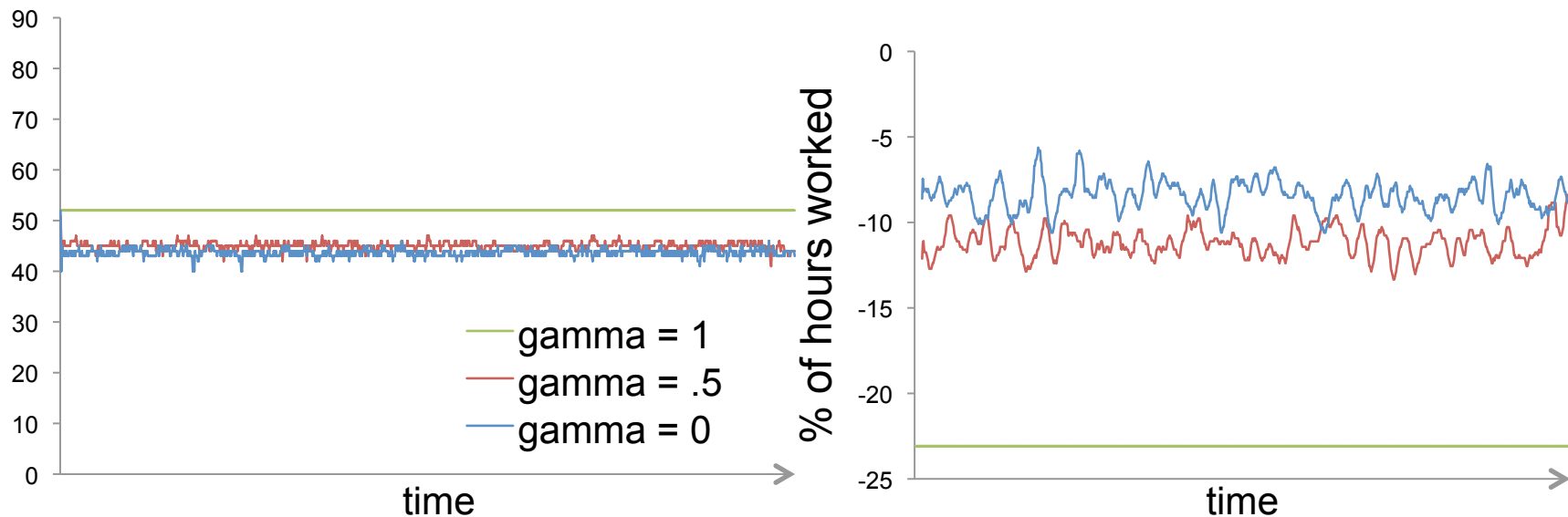


The first 10% increase of suckers in the population implies a 30% increase in number of worked hours. The ceiling of their influence is determined by the parameter specifying the maximum hours agents can work per week

The Importance of Making BI Amount Conditional on Working Behaviour

all trade-off solvers
endogenous BI

all trade-off solvers
exogenous BI



If the amount of BI is independent of working behaviour (exogenous and equal to subsistence level), agents work about 23% less time with full social influence and about 7% less without influence

Conclusions

- How much a BI might impact on labour behaviour depends on our assumptions on
 - (a) The stability of people's preferences (fixed or interdependent)
 - (b) Their relative weight in the population
- If we assume agents heterogeneous in their predisposition to work, and susceptible to be influenced by others (as in the form of the proportionality norm), **introducing a BI does not necessarily imply working less**

Conclusions

- Even when all agents are free-riders, the model stabilises with a ‘partial BI’ – agents adapt their behaviour to maximise the unconditional benefits whilst minimising number of hours worked
- Similar results apply when agents manage global knowledge

Debate

- How far can we take experiments like this?
- Can we calibrate it empirically?
 - Can we determine the right population composition (in terms predispositions to work) using empirical data?
- How do exercises like this contribute to the theoretical debate on the feasibility of a BI?