

Peer Review

Review of: "Inequality Emerges from Networks"

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Review of the paper "Inequality Emerges from Networks"

The authors develop a highly stylized network model of firms, where employees (vertices) perform two tasks: an associative task and an adoption task. Network position determines the costs and benefits of these tasks. Firms evolve under selection pressure toward lower-cost structures. Compensation is then assigned either by the work performed (measured by vertex costs) or by centrality measures (betweenness or PageRank). Across all variants, the model generates substantial inequality in compensation – even though all agents are ex ante identical – suggesting that inequality is an intrinsic property of organizational networks rather than solely a reflection of heterogeneous skills.

General comment

This is a very interesting and clearly written paper. Its premise – that inequality can emerge purely from organizational structure – is provocative and well explained. The contribution is primarily conceptual, but it addresses relevant and important topics such as the emergence of inequality and firm structure. I believe the paper has potential for publication, provided the following concerns are addressed.

Comments

1. *Role of modeling choices in driving results.* I am not entirely sure about how much the way the tasks' costs and benefits are modeled, together with the definition of compensation, predetermines the emergence of inequality. For example, in the associative task, costs increase with in-degree, ensuring that bottleneck nodes near the root carry heavier workloads; in the adoption task, benefits increase with in-degree, automatically privileging well-connected nodes. If compensation equals "work performed," inequality is inevitable because networked firms are not stars but involve

bottlenecks. The paper would be stronger if it systematically examined other cost, benefit, and compensation functions.

- How do alternative cost or benefit functions affect the results?
- How do different compensation mechanisms (beyond cost or the two centrality measures) change the inequality levels?

This would clarify whether high Ginis emerge under more general and plausible conditions or are an artifact of the chosen specifications.

2. Results on network structures. The authors mention that “only a few distinct low-cost structures” emerge after evolution, but they do not provide a systematic description of what these structures look like. Figures 2 and 3 are illustrative, but the results would be more convincing if the stable forms were characterized explicitly (e.g., in terms of degree distributions, hierarchy depth, clustering, or prevalence across runs). Moreover, the role of initial conditions is touched upon but not fully explored: how do different seeds or initial network densities shape the structures and the resulting inequality?

3. Dynamics of evolution. Figure 4 shows that inequality fluctuates over time and sometimes decreases before stabilizing. The authors should explain these dynamics more clearly. Why does inequality decline at certain stages? What mechanisms in the evolutionary process produce these dynamics? A more detailed discussion would add depth to the interpretation of the model.

4. Empirical comparisons. The paper usefully compares model results to within-firm Ginis found in the literature. However, the additional comparison to country-level Ginis is less convincing, since the model is about within-firm distributions. I would encourage the authors to emphasize the within-firm comparisons and downplay or drop the country-level ones.

Declarations

Potential competing interests: No potential competing interests to declare.