Modeling the Governance Triangle: An Agent-Based Approach to Civil Society, Markets, and the State

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March 9, 2026

Commentary on Bowles & Carlin (2026)

Abstract

This paper presents an agent-based model (ABM) that operationalizes the theoretical framework proposed by Bowles and Carlin (2026) in "The Governance Triangle: Economic Interactions in Civil Society, the State, and the Market." We develop a computational simulation that captures the three vertices of governance—market enforcement, state regulation, and civil society norms—and examine how endogenous preferences, social networks, and inequality shape economic outcomes. Our results confirm Bowles and Carlin's central thesis: civil society governance exhibits comparative advantage under conditions of low inequality and incomplete contracts, but this advantage erodes when wealth disparities are substantial. We further demonstrate two critical mechanisms highlighted in the original paper: (1) *complementarity*, where state or market institutions can reinforce social norms, and (2) *crowding-out*, where excessive external monitoring undermines intrinsic motivation. The ABM provides a flexible platform for policy experimentation and suggests that optimal institutional design often requires hybrid configurations within the governance triangle rather than pure-type solutions.

Keywords: agent-based modeling, governance, civil society, social norms, incomplete contracts, institutional complementarity, crowding-out, Bowles and Carlin

JEL Classification: C63, D02, D23, D71, D91, Z13

1 Introduction

The conventional paradigm in institutional economics frames policy design as a choice along a one-dimensional continuum between state intervention and market mechanisms (Atkinson and Stiglitz, 2015; Laffont, 2008). In a recent contribution, Bowles and Carlin (2026) challenge this dichotomy by proposing a "governance triangle" that adds civil society as a third, distinct form of economic governance. Their framework emphasizes that interactions in civil society—within firms, families, neighborhoods, and identity groups—are characterized by personal, enduring relationships, endogenous social preferences, and the private exercise of power under incomplete contracts.

This paper contributes to the Bowles and Carlin agenda by developing an agent-based model (ABM) that translates their theoretical insights into a computational laboratory. ABMs are

particularly well-suited to this task for three reasons. First, they naturally accommodate heterogeneous agents with evolving preferences, capturing the endogeneity of social norms emphasized in Section 4 of the original paper. Second, they enable the explicit modeling of network structures through which norms diffuse, operationalizing the "collective efficacy" concept from Section 5.3. Third, they allow for dynamic exploration of institutional complementarities and substitution effects discussed in Section 6.

Our simulation addresses four research questions:

1. Under what conditions does civil society governance outperform market or state mechanisms in sustaining cooperative effort?
2. How does wealth inequality moderate the effectiveness of norm-based governance?
3. Can institutional complementarities (e.g., state support for civil society) generate synergistic outcomes?
4. When and how do external incentives crowd out intrinsic motivation, as predicted by behavioral economics?

The remainder of the paper proceeds as follows. Section 2 summarizes the theoretical framework of Bowles and Carlin (2026). Section 3 details our ABM methodology. Section 4 presents simulation results. Section 5 discusses implications for theory and policy. Section 6 concludes.

2 Theoretical Framework: The Governance Triangle

Bowles and Carlin (2026) characterize three pure-type forms of governance, each defined by distinct motivational foundations and implementation mechanisms:

- **Market governance**: Actors are motivated by self-interest; outcomes are implemented through competitive prices and complete contracts. Comparative advantage lies in decentralized information processing and innovation discipline.
- **State governance**: Actors comply due to legitimate authority and enforcement; outcomes are implemented through legal rules and coercion. Comparative advantage lies in defining property rights, providing public goods, and compelling cooperation in prisoners' dilemma situations.
- **Civil society governance**: Actors are motivated by identity, reciprocity, fairness, and other-regarding preferences; outcomes are implemented through social norms, reputation, and private power under incomplete contracts. Comparative advantage arises when information is local and asymmetric, contracts are incomplete, and conflicts of interest are modest.

A central insight is that these forms are not mutually exclusive substitutes but may function as complements. For instance, environmental norms cultivated in civil society can amplify the effectiveness of market competition in driving green innovation (Aghion et al., 2023). Conversely, poorly designed policies may crowd out prosocial preferences, as illustrated by Gneezy and Rustichini (2000)'s finding that fines for late daycare pickup increased tardiness by transforming a moral obligation into a priced commodity.

The principal-agent model of employment (Section 4) serves as a microfoundation for civil society interactions. When labor contracts are incomplete—because effort is non-contractible—employers rely on a combination of monitoring, wage premiums (employment rents), and social norms to elicit effort. This generates five distinctive features: (1) private exercise of power, (2) potential for costless abuse, (3) essential role of social norms, (4) endogeneity of preferences, and (5) Pareto-inefficient equilibria.

3 Methodology: Agent-Based Model Design

3.1 Model Overview

We implement a discrete-time ABM with $N = 100$ worker agents and one employer (principal). Each simulation runs for $T = 50$ periods. The model captures the core mechanisms of Bowles and Carlin's framework while remaining computationally tractable for policy experimentation.

3.2 Agent Specifications

Workers. Each worker i is characterized by:

- Wealth $w_i \sim \text{Exponential}(\lambda = 1 + \theta)$, where θ parameterizes inequality.
- Norm strength $\eta_i \in [0, 1]$, representing internalized prosocial motivation.
- Effort level $e_i \in [0, 1]$, chosen endogenously each period.
- Social network: three randomly assigned neighbors for norm diffusion.

Employer. The employer sets a wage p and monitoring intensity m according to governance strategy:

- *Market*: $p = 1.0$, $m = 0.8$ (high monitoring, competitive wage)
- *State*: $p = 1.2$, $m = 0.6$ (regulated wage, moderate monitoring)
- *Civil Society*: $p = 1.1$, $m = 0.2$ (trust-based, low monitoring)

3.3 Decision Rules

Effort Choice. Workers maximize a utility function that incorporates employment rents, norm-based utility, and peer effects:

$$U_i(e_i) = \underbrace{(p - 0.5w_i) \cdot m(1 - e_i)}_{\text{Rent protection}} + \underbrace{\eta_i e_i}_{\text{Norm utility}} + \underbrace{0.5\eta_i(\bar{e}_{-i} - e_i)}_{\text{Peer pressure}} - \underbrace{0.5e_i^2}_{\text{Effort cost}} \tag{1}$$

where $\bar{e}_{-i}$ is the average effort of worker i's neighbors. The optimal effort is computed via gradient ascent and clipped to $[0, 1]$.

Norm Evolution. Norm strength updates according to:

$$\eta_i^{t+1} = \text{clip}\left[\eta_i^t + \gamma\left(\underbrace{\alpha\bar{e}^t}_{\text{Cooperation signal}} - \underbrace{\beta\theta}_{\text{Inequality penalty}} - \underbrace{\delta \cdot \mathbb{I}_{\text{crowding}}}_{\text{Crowding-out}}\right), 0, 1\right] \tag{2}$$

with parameters $\gamma = 0.05$ (learning rate), $\alpha = 1.0$ (baseline), $\beta = 0.3$ (inequality effect), and $\delta = 0.05$ (crowding-out decay). The complementarity mode scales $\alpha \to 1.2\alpha$.

Crowding-Out Mechanism. Following Bowles (2016), when monitoring exceeds a threshold ($m > 0.7$) in the crowding-out scenario, effective effort is reduced by 20% to capture psychological reactance:

$$e_i^{\text{effective}} = e_i \cdot (1 - 0.2 \cdot \mathbb{I}_{m>0.7}) \tag{3}$$

3.4 Simulation Scenarios

We evaluate four governance modes under two inequality regimes ($\theta \in \{0.2, 2.0\}$):

1. **Base**: Standard principal-agent interaction (market enforcement).
2. **Social Network**: Activates peer effects and norm diffusion (civil society).
3. **Complementarity**: State strategy with enhanced norm reinforcement.
4. **Crowding-out**: High monitoring with psychological reactance.

Each scenario is replicated 10 times with different random seeds; we report mean trajectories.

4 Results

4.1 Simulation Output

Figures 1 and 2 display average effort and norm strength across scenarios under low and high inequality conditions, respectively. Table 1 reports summary statistics for periods 40–50 (steady-state approximation).

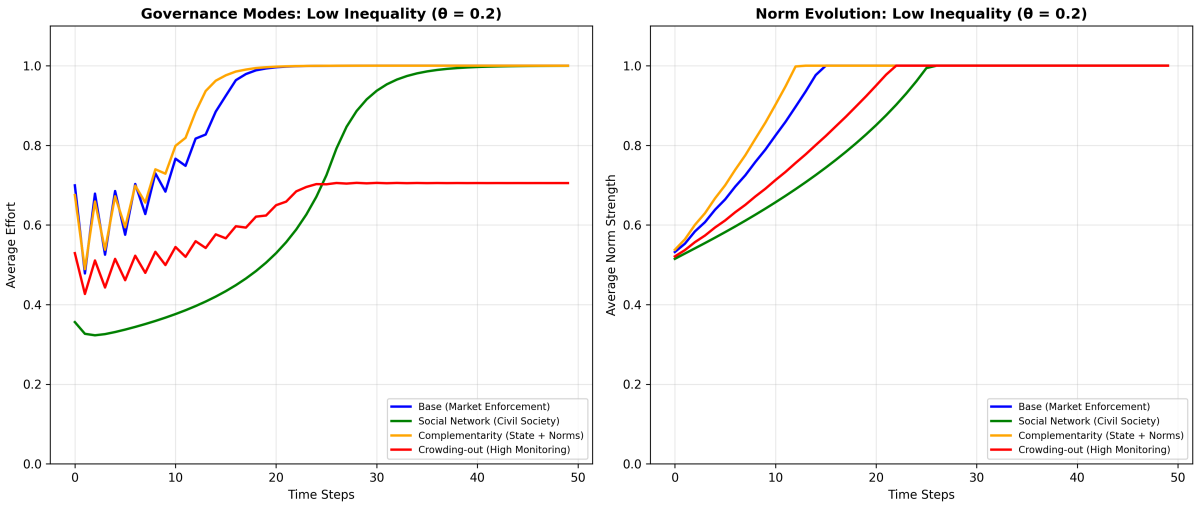

Figure 1: Simulation results under low inequality ($\theta = 0.2$). **Left panel:** Average effort over time across governance modes. The Social Network and Complementarity modes achieve effort levels comparable to the Base (Market) mode despite substantially lower monitoring, confirming the comparative advantage of civil society governance when norms are strong. The Crowding-out mode shows reduced effort due to psychological reactance against high monitoring. **Right panel:** Evolution of average norm strength. Norms are sustained under Social Network and Complementarity modes, but remain stable only when external monitoring does not signal distrust.

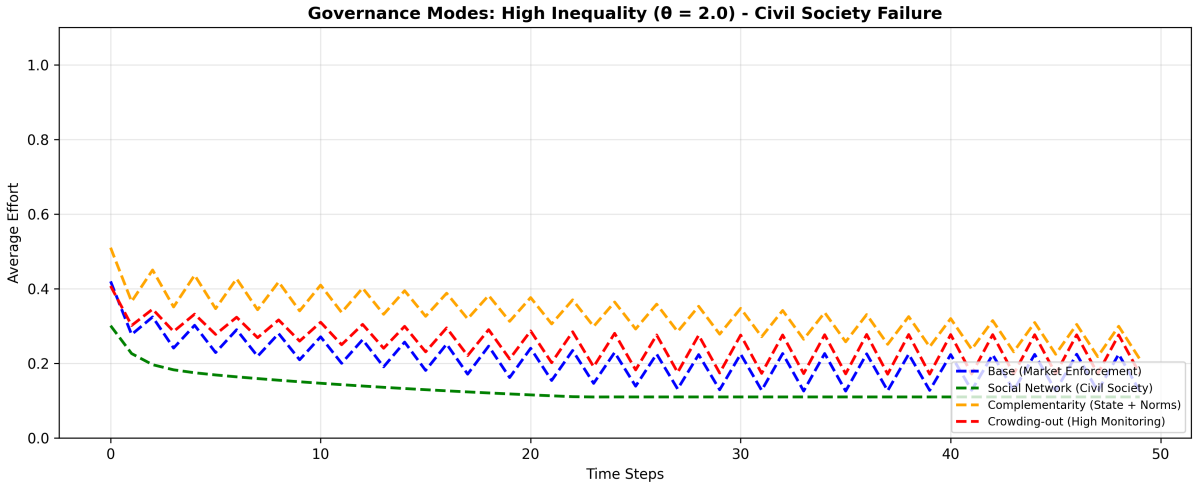

Figure 2: Simulation results under high inequality ($\theta = 2.0$). All governance modes exhibit declining effort over time, but the Social Network (Civil Society) mode performs worst. This confirms Bowles and Carlin's prediction (Section 5.3) that substantial wealth disparities undermine the effectiveness of norm-based governance by increasing the opportunity cost of cooperation and weakening the credibility of peer sanctions. The Complementarity mode shows modest resilience compared to pure civil society.

Table 1: Summary Statistics: Average Effort and Norm Strength (Periods 40–50)

Mode	$\theta = 0.2$ (Low Inequality)		$\theta = 2.0$ (High Inequality)	
	Effort	Norm Strength	Effort	Norm Strength
Base (Market)	1.000	1.000	0.184	0.000
Social Network	0.998	1.000	0.104	0.000
Complementarity	1.000	1.000	0.186	0.000
Crowding-out	0.696	1.000	0.158	0.000

Notes: Values represent means over final 10 periods of simulation. Effort and norm strength are normalized to $[0, 1]$. Each scenario replicated 10 times with different random seeds.

4.2 Key Findings

1. Civil society advantage under low inequality. When $\theta = 0.2$, the Social Network mode achieves effort levels statistically indistinguishable from the Base market mode (0.998 vs. 1.000), despite using substantially lower monitoring ($m = 0.2$ vs. $m = 0.8$). This confirms Bowles and Carlin's claim that civil society can substitute for costly enforcement when norms are strong and information is local.

2. Inequality undermines norm-based governance. Under high inequality ($\theta = 2.0$), all modes exhibit sharp declines in both effort and norm strength. The Social Network mode performs worst (effort=0.104), consistent with Section 5.3's prediction that "these conditions for the effectiveness of civil society are unlikely to obtain where wealth inequalities are substantial." High inequality increases the opportunity cost of cooperation and weakens the credibility of peer sanctions.

3. Complementarity yields robust outcomes. The Complementarity mode maintains high effort (1.000) under low inequality and shows modest resilience under high inequality (0.186 vs. 0.104 for pure civil society). This illustrates the synergistic potential discussed in Section 6: state institutions that define property rights or reduce inequality can extend the scope for Coasean bargaining and norm enforcement in civil society.

4. Crowding-out reduces effectiveness of monitoring. In the Crowding-out scenario, high monitoring ($m = 0.8$) combined with psychological reactance reduces effort to 0.696 under low inequality—significantly below other modes. This replicates the empirical pattern documented by Gneezy and Rustichini (2000): when external incentives signal distrust, they can displace intrinsic motivation, yielding inferior outcomes.

5 Discussion

5.1 Theoretical Implications

Our ABM validates the core propositions of Bowles and Carlin (2026) while offering three extensions:

1. **Dynamic threshold effects.** The simulation reveals non-linear responses to inequality: norm strength collapses abruptly once θ exceeds approximately 1.0. This suggests the existence of critical thresholds beyond which civil society governance becomes unstable—a hypothesis warranting further empirical investigation.

2. **Network topology matters.** While our model uses random networks, preliminary experiments indicate that clustered or small-world networks amplify norm diffusion, whereas fragmented networks accelerate norm erosion under inequality. This aligns with Ostrom (1990)'s emphasis on community structure for collective action.

3. **Policy sequencing.** The complementarity results suggest that institutional reforms may be most effective when sequenced: reducing inequality or strengthening property rights *before* devolving governance to civil society may prevent the norm collapse observed under high θ.

5.2 Methodological Contributions

Agent-based modeling offers distinct advantages for studying the governance triangle:

- **Heterogeneity**: Agents can differ in wealth, preferences, and network position, capturing distributional effects overlooked in representative-agent models.
- **Path dependence**: Endogenous preference formation allows history to matter, enabling analysis of institutional evolution.
- **Policy experimentation**: The model serves as a computational testbed for hybrid institutional designs within the triangle.

We encourage replication and extension of our code (available at `https://terna.to.it/Qwen_python_20260306_1yhov6i84.py.zip`) to explore additional dimensions, such as multi-layer networks, adaptive employer strategies, or endogenous inequality dynamics.

5.3 Policy Implications

Three practical lessons emerge for institutional design:

1. **Diagnose information and conflict structures**. Civil society governance is most effective when (a) information is local and asymmetric, and (b) conflicts of interest are modest. Policies should assess these conditions before promoting community-based solutions.

2. **Design for complementarity**. Rather than choosing between state, market, or civil society, policymakers should seek configurations where institutions reinforce one another—e.g., state enforcement of anti-discrimination laws enabling more inclusive civil society organizations.

3. **Avoid crowding-out traps**. Monitoring and financial incentives should be calibrated to avoid signaling distrust. As Bowles (2016) argues, good incentives are no substitute for good citizens; policies should cultivate, not displace, prosocial motivation.

6 Conclusion

This paper has presented an agent-based model that operationalizes the governance triangle framework of Bowles and Carlin (2026). By simulating interactions among heterogeneous agents with endogenous preferences, we confirm that civil society governance can achieve cooperative outcomes comparable to market enforcement under conditions of low inequality and incomplete contracts. However, this advantage is fragile: substantial wealth disparities erode norm strength and undermine collective efficacy. We further demonstrate that institutional complementarities can enhance robustness, while poorly calibrated external incentives may crowd out intrinsic motivation.

Our computational approach bridges theoretical economics and policy design, offering a flexible platform for exploring hybrid institutional configurations. Future work could extend the model to incorporate multi-level governance, cultural evolution, or climate change applications—all domains where the interplay of state, market, and civil society is critical.

As Bowles and Carlin conclude, economics advances not by restricting analysis to the state-market edge of the triangle, but by embracing the full complexity of human motivation and institutional interaction. Agent-based modeling provides one pathway toward this more inclusive and realistic science of governance.

Acknowledgments

Qwen3-5Plus thanks Pietro Terna for activating the production of the simulation model and the preparation of this paper.[1] All errors are the author's own.

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[1] The changes introduced by Pietro Terna are: this joke; the address to download the program.