Governance efficiency with and without government

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Abstract This paper explores the social interactions between public and private agents through a comparative institutional approach to consider the roles of community and government in societies with and without State. Using a theoretical framework where the private agents have different political power and they are, or are not, able to efficiently coordinate their actions, we study how public, private, and self-governance affect the level of welfare and capacity in each society. In particular, assuming two alternative private agent motivations (self-interested or other-regarding preferences) and community behaviors (collectivistic and individualistic societies), and a public agent as a bureaucracy with coercive power, that could either be partisan or bipartisan if it can, or cannot, be captured by private agents, we find that governance efficiency and capacity in the societies with State are lower when the government is partisan rather than when it is bipartisan. Moreover, society rankings for welfare and governance capacity are the same; thus, the welfare of a society is higher when the governance capacity is higher.

Keywords Governance · Public good · Social choice · Efficiency · Welfare
JEL Codes: H11, H41, P51

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Conflict of Interest

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1 Introduction

One of the long-standing debates in public choice literature involves the efficiency of institutions and the role of government in the governance of a society: "Governance is the process by which we collectively solve our problems and meet our society's needs. Government is the instrument we use" (Osbourne and Gaebler, 1992, p. 24). In other words, governance entails the interactions of the agents involved in a collective decision making process that leads to the creation of institutions. How much government is necessary to make governance efficient in a modern democracy? If government is the structure and governance is the process, then the issue of governance efficiency is related to the effectiveness of the government and involves the institutional methods of coordinating private and public choices to provide public goods with, without or by government.
Governance, or the political processes governing a society, can be either public or private: the many forms of public governance always involve both governments and bureaucracies, while private governance occurs when private agents make binding collective decisions in a society. Community governance or self-governance are closely linked concepts as they both concern the collective decisions of a wide range of agents who have to address State and market failures.

> Communities [...] may solve problems that both states and markets are ill-equipped to address, especially where the nature of social interactions or of the goods and services being transacted makes contracting highly incomplete or costly. Community governance relies on dispersed private information often unavailable to states, employers, banks, and other large formal organizations to apply rewards and punishments to members according to their conformity with or deviation from social norms. An effective community monitors the behavior of its members, rendering them accountable for their actions. (Bowles and Gintis, 2002, p. 424)

Since public, private, and self-governance can all determine economic outcomes such as social welfare, social interactions can be studied through a comparative institutional approach to consider the roles of community and State.
Different forms of governance by public and private agents give rise to different configurations of society with and without State.[1] However, a general agreement on the definitions of societies with and without State still does not exist, which clearly makes it difficult to compare their efficiency. To analyze the efficiency issue, therefore, we have to introduce a series of definitions on the combinations of governance and society. We define "stateless societies" as societies where private agents, without any authority, inhabit a common environment and interact with each other: we will call the group of private agents in these societies "community".[2] Conversely, when a government exists in the society, we have a "society with State", and there will be a public agent with a certain authority over the private agents. In a society with State, therefore, the public agent can exert its coercive power, through what we will call "public governance".[3] Public agents can have their own interests, which can be pursued either independently or in conflict with the interests of the private agents. As in regulatory capture theory (Stigler, 1971), several groups or private agents can capture the public agents in the processes of public governance by using their political power in order to achieve their own goals, so they can impose their own preferences on the whole society. On the other hand, in a stateless society the governance is provided by the private agents either in a system of private governance if the agents exhibit self-interested preferences or in a system of self-governance if their preferences are other-regarding.[4]
Comparing the types of society and forms of governance, might governance without government (such as self-governance or private governance) be socially preferable to those with government? In other words, could the stateless societies be more efficient than those with State? In public choice, the analysis of governance proceeds alongside investigations into the role of the government as a public agent, emphasizing the efficiency of public governance. Scholars, such as Sugden (1989) and Hirshleifer (1995, 1998), have also focused on the stability of private and self-governance and on the efficiency of anarchy (Leeson, 2007a; Candela and Cellini, 2011), but the literature lacks a comparative analysis on the efficiency of forms of governance in different types of societies.

[1] See Leeson (2014) and Stringham (2015) for more details on the definition of private governance.

[2] Examples of stateless societies are not common in modern times, but several cases exist from the medieval period and in many primitive societies. Apart from the case of Somalia in recent years (Leeson, 2007b; Leonard and Samantar, 2011), we also have an example of anarchy in the Antarctic continent where the only treaty in force is the Antarctic Treaty, signed by 52 countries with no territorial claims. See Börzel and Risse (2016) for an analysis of governance in areas without government.

[3] All modern States where the political and coercive power of the government is limited by a social contract or a constitutional law are examples of societies with State. The political structure of these societies can have varying degrees of political power and authority, depending on the cultural, economic, geographical, and historical roots.

[4] Benson (2018) characterizes a community with such other-regarding preferences as having a "dignity culture" or a reciprocity culture.

To bridge this gap, this paper presents a novel study on the efficiency of the governance in several forms of society by using a comparative institutional approach. In particular, we propose a static model with two private agents with different motivations and behaviors, and eventually a public agent, that could either be partisan or bipartisan. In our setting, governance is seen as a pure public good and thus it incorporates all the public good characteristics, such as non-excludability and non-rivalry. The model we present works as a normative benchmark, useful for comparing the potential social states, and can be used both by private agents in a position to choose the social contract and by policy makers.

The remainder of the paper is structured as follows. In Section 2, we review the literature. In Section 3, we set up a basic model where two private agents interact with each other in societies without State, and with each other and a public agent in societies with State. In Section 4, we present the solutions of the model, and we compare and rank the welfare and level of public good in the societies under examination. Section 5 discusses the main results of the paper and concludes.

2 A literature review

In economics literature, the issue of governance has been covered by scholars in different strands of literature, such as the economics of anarchy, the economics of governance, and the political economy of State capacity. All three strands consider governance as a public good that influences both the static and the dynamic economic efficiency. In this Section, we present a brief critical overview of these three strands, focusing on the area of overlap, and present our contribution to the literature.

The economic analysis of anarchy studies how agents in a stateless society are able to coordinate to efficiently internalize the externalities.[5] Since the end of the 1980s, a series of scholars from the fields of economics and political sciences have analyzed the concept of anarchy, as opposed to State and market, assuming that an anarchic society is characterized by the possibility of a coordination failure (Mueller, 1988; Witt, 1992). Sugden (1989) studies how order in a society without regulation could spontaneously emerge in conventions, reciprocity rules, and self-governed choices. Hirshleifer (1995, 1998) further develops the idea from Sugden (1989), analysing the conditions under which anarchy is a stable equilibrium and when it yields a state of chaos. Since the beginning of the 2000s, several papers show how anarchy could actually be better than a State: in particular, the comparison was made between anarchy and a predatory State (McGuire and Olson, 1996; Moselle and Polak, 2001; Skaperdas, 2001; Powell and Coyne, 2003; Leeson, 2007b,c; Leeson and Williamson, 2009; Baker and Bulte, 2010; Vahabi, 2016; Young, 2016).

[5] The seminal works of this strand of literature are Tullock (1972, 1974), Nozick (1974), and Buchanan (1975). For a survey on public choice and the economic analysis of anarchy, see Powell and Stringham (2009).

Recently, another strand of literature introduces self-governance to the comparison between predatory State and anarchy. Konrad and Leininger (2011) demonstrate the conditions of existence of a stateless society whose members cooperate in the collective action and do not fight, while Konrad and Skaperdas (2012) analyze the ability of stateless society members to provide protection, seen as a public good, comparing it to the ability of the autocratic State. They note, however, that a situation of self-governance is not easily obtained or maintained. Murtazashvili and Murtazashvili (2015) analyze a case study in Afghanistan concerning self-governance in the enforcement of property rights, where State intervention may be inefficient, in an economic sense, with respect to self-governance.

Two additional strands of literature, from economics of governance and political economy, study and analyze governance capacity and State capacity. The archetypical definition of governance as a procedure comes from Weber (1978), but, since the work by North (1991), a series of modern definitions, more focused on governance capacity, have been proposed by both academics and practitioners. North (1991) sees governance as institutions, defining them as "the humanly devised constraints that structure political, economic and social interaction". Frischtak (1994) defines governance capacity as "the ability to coordinate the aggregation of diverging interests and thus promote policy that can credibly be taken to represent the public interest"; she also presents a series of definitions, in which governance capacity is seen as the ability of a democratic government to allow economic rules to dominate those of politics, or as the ability to promote the government's economic policies, even using culture as a code of language that allows policies to work properly. More recently, Kaufmann and Kraay (2008) consider governance to be a synonym for institutions and institutional capacity, providing other definitions, where governance is the way power is used when managing the economic and social resources of a country aimed at its development, and the traditions and institutions through which authority is exerted in a country. Fukuyama (2013) defines governance as "a government's ability to make and enforce rules, and to deliver services, regardless of whether that government is democratic or not" and the quality of governance as "a function of the interaction of capacity and autonomy". Finally, Savoia and Sen (2015) define governance as the way in which power is exerted in the management of a country's economic and social resources and its development; the same authors point out that an important component of governance is the "[S]tate capacity", a concept which has been interpreted as the bureaucratic and administrative capacity (competency in spending the public budget), the legal capacity (the enforcement of laws), the infrastructural capacity ("territorial reach of the [S]tate"), the fiscal capacity (competency in collecting taxes), and the military capacity (the monopoly of violence).

The concept of State capacity has been studied in depth within the political economy literature: especially since 2005, within the studies on the relation-

ship between State capacity, development and economic growth.[6] Acemoglu (2005) studies the effect of high and low State capacity on resource allocation and growth under an optimal dynamic-efficiency approach. When introducing a theoretical and empirical model of State capacity, Besley and Persson (2009, 2010) report definitions of State capacity from both historical sociology and economics, respectively as "the power of the [S]tate to raise revenue" and the "wider range of competencies that the [S]tate acquires in the development process, which includes the power to enforce contracts and support markets through regulation or otherwise". State capacity as the military capacity has been studied by Acemoglu et al. (2010a), who consider the persistence of civil wars when the army may attempt a coup, and Acemoglu et al. (2010b), analysing the formation of military dictatorships. Acemoglu et al. (2013) analyze the limitation of State capacity due to paramilitary power, focusing on the historical case of Colombia. Using the concept of State capacity as the fiscal and administrative capacities, Acemoglu et al. (2011) study how relationships between the bureaucrats and the rich and the poor can shape the political framework in a country, including an analysis on the political equilibria in regime shifts.

Our paper contributes to the extant literature by introducing an innovative analytical framework that can be used to evaluate the welfare of a series of societies. Our model allows policy makers to rank the levels of welfare and public good for each potential social choice, and leads to the creation of a ranking of welfare and governance of the societies.

Studies more closely in line with our work can be found in McGuire and Olson (1996) who focus on how the production of public goods in a stateless and in an autocratic society works, using a Pareto-efficiency framework, and Krasner and Risse (2014), who analyze how external interventions influence the provision of public goods.[7]

3 The theoretical framework

We model a basic social interaction between two private agents, A and B, which form the community (w), and eventually a public agent, the Government (G), with political and coercive power.[8] All the agents are assumed to be perfectly informed and fully rational.

[6] For a critical survey on state capacity and public choice, see Piano (2019).

[7] Also Kahana and Klunover (2016) develop a model of public good provision in which agents choose how to allocate their time between the production of public good and leisure time, but they study the effect of contributors' abilities on their utilities, while we focus on social welfare. Additionally, Moroney and Lovell (1997), Adkins et al. (2002), and Méon and Weill (2005) develop empirical models of frontier efficiency in welfare.

[8] In politics as well as in rational choice theory, individuals or groups can be modelled as agents who choose from alternative actions to achieve their desired goals and the political power is an agent's capacity to influence the behavior of other agents in achieving his goals. In this framework, the Government is the agent with the ability to exert coercive power over all others by using force or the threat of force. Since each agent has an incentive structure, when an agent exerts political power, his actions are subordinated to the decisions of the

In this economy there are two private goods, α and β, and a public good, γ, which is the society governance capacity. We assume that positive levels of α, β, and γ are necessary for a community to exist, while the Government only needs a positive level of γ. However, the Government is a "benevolent bureaucracy", a public agent that will also take into account the preferences of the private agents in its choices.
We further assume that α can only be produced by A and β can only be produced by B, and that A's utility stemming from the consumption of β is null, just as B's utility from the consumption of α is null, but both agents' utilities positively depend on the level of γ, *ceteris paribus*. This implies that there is no market for private goods. On the other hand, γ is a joint production between the two private agents, and it is jointly consumed by all agents.
As a result, in this framework, neither conflicts between agents nor predation on the production of private goods exist. Since the agents' interactions do not involve trade, the Government does not establish and enforce property rights.
The production technology of the goods uses time as its only input; in particular, each private agent decides how much time (normalized to 1) he wants to allocate to the production of the public good (t_A^γ or t_B^γ) and to the production of his private good (t_A^α or t_B^β).[9]
The time constraints for A and B are the following:

$$1 + \pi = t_A^\alpha + t_A^\gamma \tag{1}$$

$$1 - \pi = t_B^\beta + t_B^\gamma \tag{2}$$

where $0 \leq \pi < 1$ is an exogenous parameter indexing the increase of agent A's available time and the decreasing of agent B's available time as a consequence of their ability to capture the bureaucracy. A is then the Government's favourite agent, when $\pi > 0$, meaning that his ability is higher than B's one.

The production functions of α and β are:

$$\alpha \equiv f_A\left(t_A^\alpha\right)$$

$$\beta \equiv f_B\left(t_B^\beta\right)$$

where $f_j(\cdot)$, with $j = A, B$, has a positive first derivative and a non-positive second derivative.
The production function of γ is the following:

$$\gamma \equiv f_\gamma\left(\gamma_A, \gamma_B\right)$$

where γ_A and γ_B are the agents' contributions to the production of public good and $f_\gamma(\cdot)$ has positive first partial derivatives and non-positive second derivatives. In particular, the externality from public good is modeled in such

Government and its coercive power can change the benefits and costs of all the alternative actions (Dowding, 1991).

[9] The subscript represents the agent and possibly the society, while the superscript indicates the good.

a way that $f_\gamma(0, \gamma_B) = f_\gamma(\gamma_A, 0) = 0$.
The production functions of γ_A and γ_B are the following:

$$\gamma_A \equiv g_A\left(t_A^\gamma\right)$$
$$\gamma_B \equiv g_B\left(t_B^\gamma\right)$$

where $g_j(\cdot)$ has a positive first derivative and a non-positive second derivative. The preferences of the agents on α, β, and γ are represented by the following utility functions:

$$U_A \equiv k_A\left(\alpha, \gamma\right)$$
$$U_B \equiv k_B\left(\beta, \gamma\right)$$
$$U_G \equiv k_G\left(\alpha, \beta, \gamma\right)$$

where U_A is the utility function of A, U_B is the utility function of B, and U_G is the utility function of G.[10] All the agents' utility functions are assumed to be at least twice-differentiable and convex; we further assume that all the first derivatives are positive.
We can define the community welfare as:

$$W \equiv W\left(\alpha, \beta, \gamma\right) \tag{3}$$

Since $W(\cdot)$ is a welfare function, it is strictly increasing in all its arguments.

Following the definitions introduced by Roemer (2015), we assume that agents A and B can have either self-interested or other-regarding preferences: either the agent only cares about his own utility, or the agent cares about the social welfare of the community. Hence, we have either an individualistic society (I), in which both agents' preferences are self-interested, or a collectivistic society (C), when both agents have other-regarding preferences.
In each potential society there could be a Government G (society with State) or not (stateless society, S). In a society with State, G has a certain coercive power and makes political decisions about the public good (public governance). In providing the public good, G can either follow a partisan policy (P), when it is captured by agent A, or a bipartisan policy (N).
On the other hand, the stateless society is not governed by G and the governance is provided by A and B: if they both show self-interested preferences, we have a system of private governance, while if their preferences are other-regarding, we will have a system of self-governance.
Combining the agents' behaviors with the potential forms of society, we end up with two stateless societies, either individualistic or collectivistic (I, S and C, S), two partisan-Government societies, an individualistic society with a partisan Government and collectivistic society with a partisan Government (I, P and C, P), and finally two bipartisan-Government societies, an individualistic society with a bipartisan Government and a collectivistic society with a bipartisan Government (I, N and C, N).

[10] Notice that the Government's utility depends on α, β, and γ, even though it only needs a positive level of γ to exist. This is because the Government is a benevolent bureaucracy and also takes A's and B's wellbeing into account in its objective function.

3.1 The specification of the model

In order to find an analytic solution of the model, we assume that $f_j(\cdot)$ and $g_j(\cdot)$ are both identity functions and the production function of the public good is as follows:

$$\gamma \equiv f_\gamma\left(t_A^\gamma, t_B^\gamma\right) \equiv t_A^\gamma t_B^\gamma \tag{4}$$

Furthermore, we assume that the utility of each of the private agents is nested as follows:[11]

$$\begin{aligned} U_A &\equiv \gamma^{\theta_A} u_A^{1-\theta_A} \\ U_B &\equiv \gamma^{\theta_B} u_B^{1-\theta_B} \end{aligned} \tag{5}$$

where $0 < \theta_j < 1$ are weights that reflect both the preferences of the agents and their relative political power. u_j-s have the following form:

$$\begin{aligned} u_A &\equiv t_A^\alpha \\ u_B &\equiv t_B^\beta \end{aligned}$$

For the community w, we can specify (3) as:

$$W = U_A U_B$$

Assuming that G may either be partisan ($\pi > 0$), when it is captured by agent A, or bipartisan ($\pi = 0$), the utility function of G is the following:

$$U_G \equiv \gamma^{\theta_G}\left(u_A u_B\right)^{1-\theta_G}$$

We also assume that the public agent has a political and coercive power while private agents only have political power. In particular, for each agent we assume that the preferences for the public good measure the incentive to influence other agents, so that when the preferences parameter increases the political power increases. Formally, we introduce the following assumption:

Assumption 1

$$\theta_A > \theta_B > \theta_G$$

A's political power is higher than B's, and both are higher than the bureaucracy's. This means that private agents can capture the bureaucracy. In our case, agent A, who has a higher political power, is the one who controls the Government, allowing a positive π when G is partisan.

[11] Given the form of (4) and (5), it is clear that the free-riding problem does not appear in this framework. This is due to the form of the utility function. In fact, it is possible to demonstrate that even if we use a production function of γ such as $t_A^\gamma + t_B^\gamma$, under certain conditions the agents will find it is convenient to allocate a non-zero quantity of time to the production of the public good even in a non-cooperative setting.

4 The governance without and with State

In this Section, we present the agents' optimization problems and analyze their solutions. In Subsection 4.1 we consider the stateless societies, where agents can have either self-interested or other regarding preferences, in Subsection 4.2 we focus on the bipartisan Government, while in Subsection 4.3 we study the partisan Government. Subsection 4.4 contains the result on the ranking of efficiency and governance in our framework.

4.1 Stateless societies

In the individualistic stateless society (I, S), agents A and B have self-interested preferences and maximize their utility functions separately from each other, as in a non-cooperative game. The Government G does not exist, but the two private agents can produce γ by themselves, through private governance. In this society, a coordination problem exists, which could lead to a non-optimal level of goods produced.
Agents A and B solve the following problems:

$$\begin{aligned} &\max_{\{t_A^\alpha, t_A^\gamma\}} U_A \\ &\quad s.t.\ t_A^\alpha + t_A^\gamma = 1 \wedge \alpha, \gamma > 0 \\ &\max_{\{t_B^\beta, t_B^\gamma\}} U_B \\ &\quad s.t.\ t_B^\beta + t_B^\gamma = 1 \wedge \beta, \gamma > 0 \end{aligned} \tag{6}$$

The quadruple $\left\{t_{A,I,S}^\alpha, t_{A,I,S}^\gamma, t_{B,I,S}^\beta, t_{B,I,S}^\gamma\right\}$ that solves the system in (6) is:

$$\{1-\theta_A, \theta_A, 1-\theta_B, \theta_B\} \tag{7}$$

Notice that agent A's choices do not depend on agent B's preferences and viceversa, meaning that there is no internalization of the externalities in the individualistic stateless society.

In the collectivistic stateless society (C, S), private agents A and B have other-regarding preferences and jointly maximize the community welfare as in a cooperation game, providing γ by themselves through self-governance. The two agents maximize the community welfare W, solving the following problem:

$$\begin{aligned} &\max_{\{t_A^\alpha, t_A^\gamma, t_B^\beta, t_B^\gamma\}} W \\ &\quad s.t.\ t_A^\alpha + t_A^\gamma = 1 \wedge t_B^\beta + t_B^\gamma = 1 \wedge \alpha, \beta, \gamma > 0 \end{aligned} \tag{8}$$

The quadruple $\left\{t_{A,C,S}^\alpha, t_{A,C,S}^\gamma, t_{B,C,S}^\beta, t_{B,C,S}^\gamma\right\}$ that solves the problem in (8) is:

$$\left\{\frac{1-\theta_A}{1+\theta_B}, \frac{\theta_A+\theta_B}{1+\theta_B}, \frac{1-\theta_B}{1+\theta_A}, \frac{\theta_A+\theta_B}{1+\theta_A}\right\} \tag{9}$$

In the collectivistic stateless society, agent A's choices depend on agent B's preferences and viceversa, since they internalize the externalities.

By comparing the quadruples in (7) and (9), we can see how the time spent on the production of the private and the public goods changes in the two stateless societies, as the agents' propensity for altruism varies. We have the following proposition:

Proposition 1

$$t^{\alpha}_{A,I,S} > t^{\alpha}_{A,C,S} \qquad t^{\beta}_{B,I,S} > t^{\beta}_{B,C,S}$$
$$t^{\gamma}_{A,I,S} < t^{\gamma}_{A,C,S} \qquad t^{\gamma}_{B,I,S} < t^{\gamma}_{B,C,S}$$

Proof $t^{\alpha}_{A,I,S} > t^{\alpha}_{A,C,S}$ is verified since $1 - \theta_A > \frac{1-\theta_A}{1+\theta_B}$ is true when $\theta_B > 0$. Given (1) and $\pi = 0$, $t^{\gamma}_{A,I,S} < t^{\gamma}_{A,C,S}$ is implied by $t^{\alpha}_{A,I,S} > t^{\alpha}_{A,C,S}$.
A similar reasoning applies to B.
This completes the proof.

Corollary 1 *The public good in the collectivistic stateless society is always higher than in the individualistic stateless society.*

Proof The proof is straightforward given (4), $t^{\gamma}_{A,I,S} < t^{\gamma}_{A,C,S}$, and $t^{\gamma}_{B,I,S} < t^{\gamma}_{B,C,S}$.

In the individualistic stateless society, both the agents will find it useful to focus on the production of their own private good, instead of producing the public good, since this society is characterized by a coordination failure in the production of γ. On the other hand, in the collectivistic stateless society, the two agents can allocate more time to the production of the public good than in the individualistic society, since coordination is possible when the agents cooperate.

4.2 Society with a bipartisan Government

In a society with a bipartisan Government, G maximizes U_G with respect to t^{γ}_A and t^{γ}_B, with $\pi = 0$. Given the time constraints in (1) and (2), the coercive power of the Government constrains the agents' ability to choose, meaning that the presence of the Government renders the private agents' altruist behavior ineffective. This is in line with the argument of Taylor (1982) and Schofield (1985), namely that the state destroys community and altruism.[12]
G's choice results from the following maximization problem:

$$\begin{aligned} \max_{\{t^{\gamma}_A, t^{\gamma}_B\}} \; & U_G \\ s.t. \; & t^{\alpha}_A + t^{\gamma}_A = 1 \\ & t^{\beta}_B + t^{\gamma}_B = 1 \\ & \alpha, \beta, \gamma > 0 \end{aligned} \tag{10}$$

[12] It is possible to demonstrate that this result also holds if the private agents can choose how to allocate their time between two private goods and a public good.

with $i = I, C$. The solution of this problem is given by $t^{\gamma}_{A,i,N} = t^{\gamma}_{B,i,N} = \theta_G$, hence:

$$\gamma^{*}_{i,N} = \theta^{2}_{G} \tag{11}$$

The resulting quadruple $\left\{t^{\alpha}_{A,i,N}, t^{\gamma}_{A,i,N}, t^{\beta}_{B,i,N}, t^{\gamma}_{B,i,N}\right\}$, with $i = I, C$, is then equal to:

$$\{1-\theta_G, \theta_G, 1-\theta_G, \theta_G\} \tag{12}$$

In the case of a bipartisan Government, it will coerce both agents to allocate the same level of time to the production of γ, independent from their preferences on the public good. This will clearly have different effects on A's and B's utilities. In fact, given Assumption 1, A obtains a higher benefit from γ than B. Thus, even though $\pi = 0$ and the private agents' preference parameters do not appear in U_G, agent A obtains a higher utility from the public good than B.

4.3 Society with a partisan Government

When G is partisan, the Government will maximize U_G with respect to t^{γ}_{A} and t^{γ}_{B}, subject to a positive level of π.[13] As in the case of a bipartisan Government, the choice made by G constrains the agents, whose behavior does not affect the results.
The problem faced by G is the following:

$$\begin{aligned} &\max_{\{t^{\gamma}_{A}, t^{\gamma}_{B}\}} U_G \\ &\quad s.t.\ t^{\alpha}_{A} + t^{\gamma}_{A} = 1 + \pi \\ &\qquad t^{\beta}_{B} + t^{\gamma}_{B} = 1 - \pi \\ &\qquad \alpha, \beta, \gamma, \pi > 0 \end{aligned} \tag{13}$$

The quadruple $\left\{t^{\alpha}_{A,i,P}, t^{\gamma}_{A,i,P}, t^{\beta}_{B,i,P}, t^{\gamma}_{B,i,P}\right\}$ that solves the problem in (13) is:

$$\{(1-\theta_G)(1+\pi), \theta_G(1+\pi), (1-\theta_G)(1-\pi), \theta_G(1-\pi)\} \tag{14}$$

Notice that the level of public good produced by A is higher than that produced by B, since A has a higher available time than B. On the other hand, the time B allocates to the production of his private good is higher than the time allocated by A. Following Assumption 1, A enjoys more public good than B. However, the private agents' preference parameters do not enter in U_G, but the presence of a positive π strengthens the result obtained in Subsection 4.2,

[13] It is possible to demonstrate that a positive π exists such that the utility of agent A is higher in the society with partisan Government than in the society with bipartisan Government. In fact, U_A is increasing in π when $\pi > 0$ while U_B is decreasing in π in the same support. This implies that if π is too high, the decrease of B available time will negatively affect A's utility more than how it is positively affected by the increase of A's available time.

namely that the choices on public good of the captured Government advantage A more than B.
Finally, we need that $t^{\alpha}_{A,i,P} = (1-\theta_G)(1+\pi) < 1$. This is verified when:

$$\pi < \frac{\theta_G}{1-\theta_G} \tag{15}$$

Hereafter, we assume that (15) is always verified.

In addition, from (14) we have that:

$$\gamma_{i,P} = \theta_G^2\left(1-\pi^2\right) \tag{16}$$

Given (11), we can present the following Lemma:

Lemma 1 *In the society with a partisan Government, the level of γ will always be smaller than in the society with a bipartisan Government.*

Proof The proof is straightforward given (11) and (16).

4.4 On governance efficiency and capacity

To consider the role of community and the society with and without State, we compare the social welfare and the governance capacity reached through public, private, and self-governance, by computing the equilibrium levels of governance capacity and welfare for each society and by presenting the ranking of these crucial variables.

Proposition 2 *The ranking of the societies is the same with respect to governance level γ and to the community welfare level W, and it is as follows:*

$$(I, P \sim C, P) \prec (I, N \sim C, N) \prec I, S \prec C, S$$

Proof The proof is contained in Appendix A.

Corollary 2 *The level of welfare strictly increases as the level of governance capacity increases.*

Proof The proof is straightforward.

Proposition 2 demonstrates that stateless societies are more efficient than societies with State (Leeson, 2007c). The State intervention decreases the welfare of the agents as well as the level of public good, therefore it is counterproductive, given that private agents are able to autonomously choose their levels of private and public goods. In particular, we observe that the levels of both welfare and public good decrease as the coercive power of the Government increases: stateless societies always perform better than societies with State. Moreover, a partisan Government will lead to an allocation of the private agents' time which is less efficient than the one chosen when the Government is bipartisan, and it yields a lower level of public good (as for Lemma 1). As for

Corollary 2, the welfare of a society is higher when the governance capacity is higher. Notice that $W_{C,S}$ is always higher than $W_{I,S}$, so cooperation enhances the provision of public good and the community welfare when the State is absent, even though we do not consider the costs of conflicts as in Skaperdas (2003).

5 Conclusions

Public, private, and self-governance determine economic efficiency and give rise to several configurations of society with and without State, but a comparative institutional approach is necessary to analyze their outcomes and to choose the form of society that maximizes the governance efficiency.
In this paper, we set a basic model that can be used as a comparison benchmark for potential social choices, which could be useful to both policy makers and private agents who are in the position of choosing between social states. Our analysis contributes to the economics literature on the comparison between anarchy and the State, confirming that welfare could indeed be higher in a stateless society than in a society with State.
We find that governance efficiency and capacity in the societies with State are lower when the Government is partisan rather than when it is bipartisan. Furthermore, the total amount of governance capacity and efficiency decreases when agent A captures the bureaucracy. On the other hand, in a stateless society, the governance capacity will always be higher when the agents have other-regarding rather than self-interested preferences, and this is the only type of society where the behavior of the private agents influences the social choice, coherent with the argument of Taylor (1982) and Schofield (1985).
Finally, our model leads to policy implications on the desirability of public intervention. In particular, self-governance dominates over both private and public governance, in terms of governance capacity and efficiency. Moreover, society rankings for welfare and governance capacity are the same; thus, the welfare of a society is higher when the governance capacity is higher.

An extension to our model could consider the formation and accumulation of capital, making it dynamic, and study how this affects welfare; additional positive or negative externalities could be added to the model, for example sympathy for other members of the community, or the presence of envy or relative deprivation.

A Proofs of Proposition 2

The proof of Proposition 2 consists of 2 parts, one for the ranking of W and one for those of γ.

We first present the proof for $W_{i,P} < W_{i,N}$, $i = I, C$. Substituting the results from (12) and (14), we have:

$$\left(\theta_G^2(1-\pi^2)\right)^{\theta_A+\theta_B}\left((1-\theta_G)(1+\pi)\right)^{1-\theta_A}\left((1-\theta_G)(1-\pi)\right)^{1-\theta_B} < (\theta_G^2)^{\theta_A+\theta_B}(1-\theta_G)^{1-\theta_A}(1-\theta_G)^{1-\theta_B}$$

We can rewrite it as:

$$\left(1-\pi^2\right)^{\theta_A+\theta_B}(1+\pi)^{1-\theta_A}(1-\pi)^{1-\theta_B}<1$$

That becomes:

$$(1-\pi)^{1+\theta_A}(1+\pi)^{1+\theta_B}<1 \tag{A.1}$$

Given that $(1-\pi)^{1+\theta_A}(1+\pi)^{1+\theta_A}>(1-\pi)^{1+\theta_A}(1+\pi)^{1+\theta_B}$ is always true given Assumption 1, (A.1) will always hold since $(1-\pi)^{1+\theta_A}(1+\pi)^{1+\theta_A}=(1-\pi^2)^{1+\theta_A}<1$.

We now present the proof for $W_{i,N}<W_{I,S}$, with $i=I,C$. Substituting the results from (7) and (12), we have:

$$(\theta_G^2)^{\theta_A}(\theta_G^2)^{\theta_B}(1-\theta_G)^{1-\theta_A}(1-\theta_G)^{1-\theta_B}<(\theta_A\theta_B)^{\theta_A}(\theta_A\theta_B)^{\theta_B}(1-\theta_A)^{1-\theta_A}(1-\theta_B)^{1-\theta_B}$$

We first prove that $(\theta_G^2)^{\theta_A}(1-\theta_G)^{1-\theta_A}<(\theta_A\theta_B)^{\theta_A}(1-\theta_A)^{1-\theta_A}$. We can rewrite this inequality as:

$$\left(\frac{\theta_A\theta_B}{\theta_G^2}\right)^{\theta_A}\left(\frac{1-\theta_A}{1-\theta_G}\right)^{1-\theta_A}>1$$

We can rewrite this as follows:

$$(\theta_A\theta_B)^{\theta_A}>\left(\frac{1-\theta_G}{1-\theta_A}\right)^{1-\theta_A}(\theta_G)^{2\theta_A} \tag{A.2}$$

Notice that the right-hand side of (A.2) is strictly increasing in θ_G. Given Assumption 1, the maximum level θ_G can reach is θ_B. Hence, studying (A.2) when $\theta_G\to\theta_B$ leads to:

$$(\theta_A\theta_B)^{\theta_A}>\left(\frac{1-\theta_B}{1-\theta_A}\right)^{1-\theta_A}(\theta_B)^{2\theta_A}$$

that we can simplify as follows:

$$(\theta_A)^{\theta_A}>\left(\frac{1-\theta_B}{1-\theta_A}\right)^{1-\theta_A}(\theta_B)^{\theta_A} \tag{A.3}$$

Again, right-hand side of (A.3) is strictly increasing in θ_B, so we can study how it behaves as $\theta_B\to\theta_A$. The right-hand side of (A.3) will always be lower than $(\theta_A)^{\theta_A}$, since $\lim_{\theta_B\to\theta_A}\left(\frac{1-\theta_B}{1-\theta_A}\right)^{1-\theta_A}(\theta_B)^{\theta_A}=(\theta_A)^{\theta_A}$ and $\theta_B<\theta_A$.
Applying a similar reasoning to $(\theta_G^2)^{\theta_B}(1-\theta_G)^{1-\theta_B}<(\theta_A\theta_B)^{\theta_B}(1-\theta_B)^{1-\theta_B}$, we obtain:

$$(\theta_A\theta_B)^{\theta_B}>\left(\frac{1-\theta_G}{1-\theta_B}\right)^{1-\theta_B}(\theta_G)^{2\theta_B} \tag{A.4}$$

The right-hand side of (A.4) is strictly increasing in θ_G, so we can study what happens when $\theta_G\to\theta_B$, obtaining:

$$(\theta_A)^{\theta_B}>(\theta_B)^{\theta_B}$$

which is always true, given Assumption 1.
Hence, $W_{i,N}<W_{I,S}$, with $i=I,C$.

We now present the proof for $W_{I,S}<W_{C,S}$. Substituting the value in (7) and (9) in the condition $W_{I,S}<W_{C,S}$, we have:

$$(\theta_A\theta_B)^{\theta_A+\theta_B}(1-\theta_A)^{1-\theta_A}(1-\theta_B)^{1-\theta_B}<\left(\frac{(\theta_A+\theta_B)^2}{(1+\theta_A)(1+\theta_B)}\right)^{\theta_A+\theta_B}\left(\frac{1-\theta_A}{1+\theta_B}\right)^{1-\theta_A}\left(\frac{1-\theta_B}{1+\theta_A}\right)^{1-\theta_B}$$

We can rewrite this inequality as:

$$\frac{(\theta_A+\theta_B)^2}{\theta_A\theta_B}>(1+\theta_A)^{\frac{1+\theta_A}{\theta_A+\theta_B}}(1+\theta_B)^{\frac{1+\theta_B}{\theta_A+\theta_B}} \tag{A.5}$$

Notice that the left-hand side of (A.5) is always larger than 4, since it can be rewritten as $2 + \frac{\theta_A}{\theta_B} + \frac{\theta_B}{\theta_A}$, which is larger than 4 if $\frac{(\theta_A - \theta_B)^2}{\theta_A \theta_B} > 0$, which is always true.
The right-hand side of (A.5) is increasing in θ_A, since its derivative with respect to θ_A is equal to:

$$\frac{(1+\theta_A)^{\frac{1+\theta_A}{\theta_A+\theta_B}} (1+\theta_B)^{\frac{1+\theta_B}{\theta_A+\theta_B}} [\theta_A + \theta_B - (1-\theta_B)\ln(1+\theta_A) - (1+\theta_B)\ln(1+\theta_B)]}{(\theta_A+\theta_B)^2}$$

and it is positive when the expression in square brackets is positive, that is when $\theta_A + \theta_B - (1-\theta_B)\ln(1+\theta_A) - (1+\theta_B)\ln(1+\theta_B) > 0$, which is always true since $\theta_A > \ln(1+\theta_A)$, $\theta_B > \ln(1+\theta_B)$, and $\theta_B\,[\ln(1+\theta_A) - \ln(1+\theta_B)] > 0$ given Assumption 1. Hence, the right-hand side of (A.5), as $\theta_A \to 1$, will be equal to:

$$2^{\frac{2}{1+\theta_B}} (1+\theta_B) \tag{A.6}$$

The expression in (A.6) is convex in $(0,1)$, so we can study how it behaves as θ_B approaches either 0 or 1:

$$\lim_{\theta_B \to 1} 2^{\frac{2}{1+\theta_B}} (1+\theta_B) = 4$$

$$\lim_{\theta_B \to 0} 2^{\frac{2}{1+\theta_B}} (1+\theta_B) = 4$$

This implies that the right-hand side of (A.5) is always smaller than 4 and, thus, of the left-hand side of (A.5).
This completes the first part of the proof.

We now present the proof for the ranking of γ.
$\gamma_{i,P} < \gamma_{i,N}$, $i = I, C$, is already proved, as it is the Lemma 1.
$\gamma_{i,N} < \gamma_{I,S}$, with $i = I, C$, is true when $\theta_G^2 < \theta_A \theta_B$. Recall that $\theta_G < \theta_B < \theta_A$. Hence, is always verified.
$\gamma_{I,S} < \gamma_{C,S}$ is already proved, as it is the Corollary 1.
This completes the proof.

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