

RESEARCH STATEMENT

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My fields of research include experimental economics, political economy and applied economic theory. I have studied the determinants of cooperation in situations of repeated interaction, the effects of democratic institutions on behavior, the composition of the political class and the causes and effects of conflict and violence. A central question underlies and unifies all my work: why does the economic and political performance of societies differ? To answer this, I have looked beyond the incentives provided by formal markets and policies and focused instead on 1) the informal incentives provided by interactions with others (as in infinitely repeated games), 2) how policies are implemented (in particular, how democratic institutions directly affect behavior, not just through the types of policies selected), 3) the determinants of the political class, (given my findings on the importance of democratic institutions), and 4) the determinants and effects of conflict for resources and violence given that societies are not always able to enforce property rights. To study these issues I have used both theoretical and empirical methods based on both experimental and non-experimental data

1 Determinants of cooperation

A central issue in the social sciences is the study of how societies, teams, or groups of people may solve the tension between private incentives that encourage opportunistic behavior and the common good that arises from cooperation. The main contribution of Game Theory to the study of this tension, and its remedies, is the idea that repeated interaction may enable punishment and reward schemes that lead to cooperation. While there is an extensive literature on the theory of infinitely repeated games, empirical evidence on how “the shadow of the future” affects behavior was scarce and inconclusive. In my paper “**Cooperation under the shadow of the future: experimental evidence from infinitely repeated games**” [1] I report a series of experiments that

simulate infinitely repeated prisoners' dilemma games in the lab by having a random continuation rule. I find that the possibility of future interaction modifies players' behavior increasing cooperation: the greater the probability of continuation, the greater the rate of cooperation. But this is not necessarily evidence in support of the theory of infinitely repeated games. It could be the case that subjects cooperate more the higher the expected number of rounds, even when there is a final round and the future casts no shadow. I compare the results from finitely and infinitely repeated games of the same expected length and find that cooperation is greater in the latter, as theory predicts.

After showing that self-enforcing reward and punishment schemes that limit opportunistic behavior are important in practice as well as theory, I moved to address a usual criticism of the theory of infinitely repeated games: that it does not provide sharp predictions because there may be a multiplicity of equilibria. Previous experimental work, including my own, has shown that subjects often fail to coordinate on a specific equilibrium when they play a small number of infinitely repeated games: some attempt to establish cooperative relationships while others defect. But would we see the same thing as subjects gain experience? That is, how would behavior evolve as subjects learn from previous repeated games? Under what conditions would cooperation arise? In **“The Evolution of Cooperation in Infinitely Repeated Games: Experimental Evidence”** [11], with Guillaume Fréchette, we present evidence on the evolution of cooperation as subjects gain experience and show that while high levels of cooperation may arise in infinitely repeated games, the conditions under which this occurs are much more stringent than the sub-game perfect conditions usually considered. These results have important implications for both the application of the theory of infinitely repeated games and theories of equilibrium selection in repeated games.

Interestingly, while this work shows that punishment schemes made possible by the “shadow of the future” do affect behavior, these punishment schemes are not necessarily known to us. It is extremely difficult, if not impossible, to identify the strategies used by subjects from their observed behavior.¹ In **“Strategies Used in Infinitely Repeated Games”** [12], work in progress with Guillaume Fréchette, we propose a new method to determine the strategies used by subjects in infinitely repeated prisoners' dilemma game experiments. The method consists of asking subjects to construct a machine or

¹A strategy is plan specifying the course of action after every possible contingency.

automaton, which specifies behavior as a function of past behavior in the game. Preliminary results show that the method used to identify strategies does not modify their behavior and that the machines they can specify with our method are flexible enough for them to express their strategies. Moreover, we find that under very favorable conditions for cooperation, the most popular strategies are tit-for-tat (start by cooperating, then mimic the last action of the other player) and grim (cooperate until someone defects, then defect forever). This suggests that behind the cooperative relationships that we observed in previous experiments there is a threat of retaliation.

But the fear of future retaliation is not the only determinant of cooperation. Agents including politicians, corporate leaders, priests, and parents, often use moral arguments to affect the behavior of others. To estimate the extent to which moral arguments affect behavior, I explore whether exposure to statements that express a moral standard affect cooperation in **“Do the Right Thing: the effect of moral discourse on cooperation”** [13], work in progress with Ernesto Dal Bó. We present evidence from a series of experiments in which subjects participate in voluntary contribution games and see different messages. We show that observing a message with a moral standard according to Kantian or, alternatively, Utilitarian philosophies results in an increase in contributions above the levels observed for subjects that did not received a message or received a message that advised them to contribute without a moral rationale. Moreover, we find that the effect of the moral messages on contributions is greater when the players have the option of punishing each other after the contribution stage. These results suggest that the use of moral arguments can be an effective way of promoting cooperation.

I have also addressed the issue of the determinants of cooperation in infinitely repeated games at a more theoretical level. In **“Tacit Collusion under Interest Rate Fluctuations”** [4] I study how fluctuations of the interest rate affect collusion among firms to charge prices above marginal cost. Changes in the interest rate affect how much firms discount future profits; that is, it affects their discount factor. I find that collusion depends not only on the level of the discount factor but also, and more surprisingly, on its volatility. Collusive profits and prices increase with a higher discount factor, but decrease with its volatility. These results have important implications for empirical studies of collusion, the role that collusion may play in economic cycles, and the study

of cooperation in repeated games.

Finally, I contribute to the important literature on how social norms encourage cooperation in repeated games played by groups in which players are not always paired with the same person in **“Social Norms, Cooperation and Inequality”** [3]. Social norms are defined as rules of behavior that may depend on what others, including people that the player has never met, have done. Most of this literature examines the conditions under which groups may establish social norms to support outcomes like the ones that can be supported in typical repeated games with fixed pairings. The main contribution of my paper is to show that social norms can support not only those outcomes found in a normal repeated game but also additional outcomes, including those that involve extreme inequality. The key to this result is that some players may use the enforcement provided by social norms to their own advantage.

2 Democratic Institutions

While the previous papers address the issue of how the environment (in terms of payoffs and probability of future interaction) affect behavior, the way in which we reach a given environment may also affect behavior. That is, not only do policies and social norms affect behavior, but the way in which they are adopted may have an additional impact. In **“Institutions and Behavior: Experimental Evidence on the Effects of Democracy”** [9], with Andrew Foster and Louis Putterman, we study whether democratic institutions may affect behavior beyond their impact on the choice of policy. We present results from a novel experiment on the effect of a policy designed to encourage cooperation in a prisoner’s dilemma game. We find that the effect of this policy on the level of cooperation is greater when it was chosen democratically by the subjects than when it was exogenously imposed. In contrast to previous literature, our experimental design allows us to control for selection effects that arise from the fact that people who prefer a particular outcome will be more likely to both vote for policies that help to implement that outcome and to choose that outcome regardless of the policy in place. Thus one may observe a different relationship between policies and individual behaviors under democracy even if the event of voting has no effect on behavior. Our finding implies that democratic institutions may affect behavior beyond its impact on

the choice of policies. More generally, our findings have implications for empirical studies of treatment effects in other contexts: the effect of a treatment can differ depending on whether it is endogenous or exogenous.

In “**Understanding the Direct Effect of Democracy**” [14], work in progress with Andrew Foster and Louis Putterman, we propose a new experiment that will help us understand the mechanism behind the direct effect of democracy identified in the previous paper. One hypothesis is that a democratic choice of the policy affects behavior because it reveals to the subjects that a large share of players voted for the policy and this may affect behavior. We refer to this as the “information hypothesis.” A second hypothesis is that it is the endogeneity itself which affects behavior. Knowing that the policy was a decision of the group may directly affect subjects’ behavior, if for example, it strengthens the establishment of a cooperative social norm. We call this second hypothesis the “intrinsic endogeneity effect.” We will run a series of experiments that allow us to distinguish these two hypotheses: information vs. intrinsic endogeneity.

The last paper in this research agenda consists of an experiment to study whether democratic institutions affect behavior by allowing people to participate in the process even when this participation does not influence the final decision. Participation may affect behavior by making people think about the pros and cons of different policies or simply by affecting their beliefs about others’ response to policies. This will address theories that state that political participation is intrinsically beneficial.

3 The Political Class

Given the importance of democratic institutions, it is important to understand the characteristics and qualities of the politicians running these institutions. Political dynasties have long been present in democracies, raising concerns that this inequality in the distribution of political power may reflect imperfections in democratic representation. However, the persistence of political elites may simply reflect differences in ability or political vocation across families and not their entrenchment in power. In “**Political Dynasties**” [7], with Ernesto Dal Bó and Jason Snyder, we show that dynastic prevalence in the Congress of the United States is high compared to other occupations and that political dynasties do not merely reflect permanent differences in family character-

istics. On the contrary, using two instrumental variable techniques we find that political power is self-perpetuating: legislators who hold power for longer become more likely to have relatives entering Congress in the future. Thus, in politics, power begets power, underscoring the importance of dynamic effects in the composition of the political class. In this way, our paper expands the study of the transmission of income inequality to a new dimension: the transmission of political inequality.

We have followed the study of the transmission of political power with an assessment of its possible channels. The evidence we provide suggests that dynastic politicians may inherit a form of political capital that is especially useful at the local level as opposed to talent or drive. This political capital could consist of contacts with the party machine and name recognition. In “**Political Dynasties: the value of last names?**” [15], work in progress with Ernesto Dal Bó and Jason Snyder, we study whether name recognition plays a role in the transmission of political power. Using similar instrumental variable techniques as in the previous paper we find, surprisingly, that last names do not seem to play an important role in the transmission of political power: holding power for longer has a similar effect on the probability of having a relative entering Congress in the future regardless of whether they share the last name. This suggests that connections with the party machine may play a more important role than name recognition in the transmission of political power.

I have also addressed the issue of the determinants of the composition of the political class at a more theoretical level. In particular, in “**Plata o Plomo?: Bribes and Threats in a Theory of Political Influence**” [2], with Ernesto Dal Bó and Rafael Di Tella, I have studied how the use of both bribes and threats by pressure groups to influence politicians may affect the pool of citizens willing to enter public office. This may affect the quality of political institutions and, in turn, policies affecting economic performance. I discuss this work, and other work dealing with conflict and violence in the next section.

4 Conflict and Violence

In “**Plata o Plomo?: Bribes and Threats in a Theory of Political Influence**” [2], with Ernesto Dal Bó and Rafael Di Tella, we present a model in which groups

attempt to influence policies using both bribes (*plata*, Spanish for silver) and the threat of punishment (*plomo*, Spanish for lead). This model yields predictions that cannot emerge from a traditional model where only bribes are used. The use of punishment lowers the returns from public office and reduces the incentives of high-ability citizens to enter public life. Cheaper threats and more resources subject to official discretion are associated with more frequent corruption and less able politicians. This model yields the prediction that violence in a country is correlated with corruption and worse politicians. Moreover, the possibility of punishment changes the nature of the influence game, so that even cheaper bribes can lower the quality of public officials. Protecting officials from accusations of corruption (immunity) will decrease the frequency of corruption if the judiciary is weak and may increase the quality of politicians.

In **“Bribes, punishment and judicial immunity”** [6], with Ernesto Dal Bó and Rafael Di Tella, we provide evidence of the correlation between violence and corruption across countries, supporting the prediction of this model.

In the third paper of this research agenda, **“Reputation When Threats and Transfers Are Available”** [5], with Ernesto Dal Bó and Rafael Di Tella, we study the credibility in the use of threats by a pressure group (the long run player) seeking to affect the decisions of a finite series of public officials (the short run players) using both transfers and threats. On the theoretical side, the contribution is to show that the existence of transfers allows the long run player to profit from her reputation more easily than without transfers. We provide the first analysis of the famous chain store paradox with transfers. On the applied side, the contribution is to show the connections between lobbying and extortion and settling the legal debate on the convicted non-payor problem.

In other work on conflict and violence we study how economic shocks and policies affect the intensity of violence and conflict. There exists an extensive literature studying conflict over resources that is not solved through markets because of imperfectly enforced property rights. A shortcoming of many papers in this literature is that the models are not easily comparable with standard models used by economists. Instead, in **“Workers, Warriors and Criminals: Social Conflict in General Equilibrium”** [10], with Ernesto Dal Bó, we incorporate conflict into canonical models of trade and study how economic shocks and policies affect the intensity of conflict. We show that incorporating

conflict not only drastically affects the normative results from standard trade theory but also explains various stylized facts regarding crime and civil wars. We show that not all shocks that could make society richer reduce conflict: positive shocks to labor intensive industries diminish conflict, while positive shocks to capital intensive industries increase it. The key requirement is that conflict activities be more labor intensive than the economy. Our theory is consistent with observed patterns of conflict, such as the positive association between crime and inequality, and the curse of natural resources. Incorporating appropriation into a canonic general equilibrium model affects what policies may be deemed desirable: in order to reduce conflict and generate Pareto-improvements policy must be distortionary, while reforms that appear efficiency-enhancing under the unrealistic assumption of perfect property rights may backfire.

Conflict and violence also occur within households. In fact, three quarters of all violence against women is perpetrated by domestic partners with important negative health and economic effects. As such, it is important to understand the determinants of domestic violence and the effect of policies. In **“Love, Hate and Murder: Commitment Devices in Violent Relationship”** [8], with Anna Aizer, we examine the high degree of cyclicity that characterizes many violent relationships: women who are the victims of domestic violence often leave and return to their partners multiple times. To explain this we develop a model of time-inconsistent preferences in the context of domestic violence. This time inconsistency generates a demand for commitment. We present supporting evidence that women in violent relationships display time-inconsistent preferences by examining their demand for commitment devices. We find that “no-drop” policies – which compel the prosecutor to continue with prosecution even if the victim expresses a desire to drop the charges – result in an increase in reporting. Surprisingly, no-drop policies also result in a decrease in the number of men murdered by intimates, suggesting that some women in violent relationships move away from an extreme type of commitment device when a less costly one is offered. This work contributes to the growing non-experimental empirical literature showing evidence of time inconsistency and demand for commitments.

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