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Sadiraj, V.

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Chapter 1

Introduction and Outline

Our socioeconomic system is a complicated structure containing millions of interacting units, such as individuals, households, and firms. It is these units which actually make decisions about spending and saving, investing and producing, marrying and having children. It seems reasonable to expect that our predictions would be more successful if they were based on knowledge about these elemental decision-making units — how they behave, how they respond to changes in their situations, and how they react.

Orcutt et al., Microanalysis of Socioeconomic Systems: A Simulation Study (1961)

The most common traditional assumption incorporated into economic and game theoretic models is that decision-makers are exclusively motivated to maximize their material self-interest. That is, a decision-maker is assumed to select “the best choice” from a given set of alternatives open to him, where “the best choice” is a choice that maximizes his utility function. The utility function represents the individual’s preferences which, in most rational choice models, are assumed to be only selfishly motivated. We can distinguish two types of debates in the literature of political and behavioral economics within the approach of rational choice theory. One line of research questions the assumed hyper-rationality of decision making, arguing that it bears little relation to a human being. It tries to relax assumptions of strong rationality of individual behavior. Part I of this thesis presents essays in political economy that belong to this type of research, known as the bounded rationality approach. The other line of research is concerned with an exploration
of the shape and content of a utility function that represents an economic agent's preferences. Part II of this thesis includes experimental and theoretical work that explores and models motivations underlying individual preferences.

The theoretical framework of Part I is the positive theory of organized special interest groups. The existing rational choice models make an important contribution to our understanding of the role of interest groups in politics and economics (see e.g. Sloof (1996), Drazen (2000), Persson and Tabellini (2000)). However, we think further research is needed for the following reasons. Areas where economics meets politics, such as in the design and implementation of public policies or electoral competition, are very complex. Complex interactions may take place between heterogeneous actors (individuals, parties, interest groups) and non-linearities may appear. Information easily becomes extremely costly and hence searching for it may be irrational. On the other hand, there may be many sources releasing biased information which needs to be filtered. Thus, assumptions of common knowledge (of the type "I know that you know that he knows that she knows....") and of strong rationality in the processing of all available imperfect information (e.g. filtering out the strategic elements) can be seriously questioned. The second reason deals with the counterargument that people may behave "as if" such assumptions are fulfilled, leaving intact the predictive power of models using those assumptions. That has grounded the development of a number of game theoretic models of interest groups that aim to provide micro-foundations for empirical macro-phenomena that are the outcome of decisions made by hundreds, thousands, even millions of individuals; think, for instance, of mass elections. Recent models have incorporated elements of uncertainty and asymmetric information in order to explain empirical regularities of collective action, separation between party platforms, and so on. However, according to the principle of Occam's Razor a simple explanation is preferable to a more complex one, and therefore, we think that developing models that are based on simple behavioral assumptions that can explain the same phenomena is important. Two approaches can be distinguished: abandoning entirely the rationality assumptions, or maintaining the paradigm of rationality but introducing limits to the strong rationality assumptions. Our work aims to contribute to the latter research agenda by introducing boundedly rational agents into the modeling
of interest groups. The concept of bounded rationality can be related to cognition and emotions (see e.g. Simon (1982, 1997), Rubinstein (1998), Gigerenzer and Selten (2001)). In particular, bounds on rationality may be related to limits on individuals' ability to optimize and limits to the accuracy of information. Even though an economic or political agent may want to have accurate information, he may not obtain it because it is too costly (information constrained rationality). Furthermore, an individual may not optimize due to a failure either in information processing or in the evaluation of the consequences of different relevant alternatives or actions. The assumptions we use in modeling economic and political agents take account of such limitations. Furthermore, our models seek to provide micro-foundations to macro-phenomena of interest group behavior and the impact thereof.

In short, the research reported in Part I takes the following approach. In our models, interest groups emerge from the actions of boundedly rational individuals who share some common interests and whose decisions reflect dissatisfaction with the status quo, which may be an economic or political state. Competition among groups and the paucity of information about demands for alternative policies in the 'political market' (e.g. during electoral campaigns) are the sources of the influence of interest groups on economic and political outcomes.

Useful predictions about macro-phenomena derived from micro-foundations must be based on a careful study of individual decision-making. The laboratory provides an excellent environment for such research because the implementation of controlled experiments makes it possible to differentiate among alternative hypotheses about individual decision-making. In the work presented in Part II we use laboratory experiments to study how alternative individual motivations affect economic decision-making. This is important not only for rational choice theory, the power of which may crucially depend on what is assumed about the utility functions of agents, but also for any serious work that aims to provide micro-foundations to economic and political phenomena. The experimental evidence generated by research that addresses questions about individual motivations is very appealing. Laboratory data strongly support the hypothesis that, in addition to the selfish motive, other motives play a role in economic decision-making. This has led
researchers to develop several types of utility functions that incorporate both the agent's own material payoffs and the payoffs of others, all aiming to formalize the new empirical evidence. As is always the case in any empirical science, the new models should be tested. New data may call for either improvements in existing models or developing new models. This is the path followed by the research reported in Part II. We start with some new experiments that aim to shed some further light on the motivations that drive economic decision-making, and provide tests of the prominent models in the literature. We then propose a new model of other-regarding preferences.

1.1 Part I: Individual-based models of interest groups

Empirical research has shown that organized interest groups play a significant role in political economic matters (see e.g. Potters and Sloof (1996)). Two established research lines on separated domains can be distinguished (Gray and Lowery (1996)). One line deals with the activities and impact of special interest organizations in the political process. In this literature, the organization of individuals into groups is taken for granted. Only their political and economic influence is endogenously determined (see e.g. van Winden (1999), Persson and Tabellini (2000)). Much attention has been paid to, for instance, formalizing lobbying as an attempt to influence election outcomes or public policies through contributions, endorsements aimed to coordinate votes for a preferred party, organizing protests and strikes to block or enhance certain policy implementations, and so on. However, as Persson and Tabellini (2000, p.192) write “Further exploring these issues, trying to make the voters’ ideological preferences endogenous and studying the role of public policy in creating and preserving pressure groups seems a very fruitful, though difficult, area of research.” The other line of research deals with the formation of interest groups (Moe (1980), Walker (1983), Hansen (1985)). The most influential work here is the study of Olson (1965) on collective action. Although this research makes significant contributions to our understanding of the problems involved in the organization of individuals into groups, it does not account for the impact of groups on political outcomes. A theory of interest groups that integrates successfully the different elements (formation, activity,
and political impact) is needed. The models we present in the first part of this thesis are a first attempt to the development of such a theory. These individual-based models have in common that the individual decision to participate in collective action is mainly determined by dissatisfaction with the status quo. Our models account for dynamic aspects of group formation and development reflecting the individuals decisions to join, stay with or leave interest groups. Interest groups emerge endogenously from the decisions of a large number of individuals who coordinate their participation spontaneously and in a decentralized way. Bounded rationality induces an individual to do so.\(^1\)

We consider two types of political institutions that provide a potential environment for the emergence and the survival of special interest groups: elections and governmental policymaking. Chapter 2 deals with groups in the formation of public policies whereas Chapters 3, 4 and 5 treat groups in electoral systems.

In Chapter 2 we introduce a deterministic dynamic model of the interaction between interest groups and governmental policymaking, focusing on redistribution. The model refers to social groups with conflicting economic interests and with a potential influence on government policies (such as workers versus capitalists, age-groups, industries within an economic sector, and so on). It is a very stylized and simplified model that consists of two economic sectors, in each of which individuals decide independently and simultaneously to participate in collective action in response to dissatisfaction with the status quo (after-tax income). Instead of optimizing, individuals are assumed to *satisfice* (Simon (1982)). Comparative statics analysis, inter alia, goes into the impact of demographic and sectoral shifts, and may help understand union leaders' positions on issues like income inequality or social welfare. Dynamic analysis addresses the stability of political economic equilibria, and the development of the sizes of interest groups over time.

Chapters 3, 4, and 5 introduce endogenous interest groups and other elements of social interaction in the spatial voting theory of mass elections. In spatial models of electoral competition both voters and candidates are represented by points in a multidimensional issue space (see e.g. Davis and Hinich (1966), Riker and Ordeshook (1973)). In elections each voter casts his vote for that party whose policy platform is closest to his own ideal

position according to some distance (e.g. in terms of weighted Euclidean distance). Thus, it is assumed that voters make their decision for whom to vote independently, according to their individual evaluation of alternatives and available information. In the basic models voters’ political preferences are treated as exogenous, stable, and independent. There may be situations of voting in which these assumptions are plausible. However, mass elections are hardly such environments. Casual empiricism suggests that voting behavior is typically subject to hype and herd behavior. Voters’ political preferences seem to have a social character (McKelvey and Ordeshook (1985), Bartels (1988)). Individuals interact with each other. Beliefs about candidates and policies are endogenously generated through spontaneous contacts among friends, colleagues or family members, and via organized campaign propaganda and the media. The perceptions of individuals are influenced by others’ perceptions. As Rawls (1971) writes: “In everyday life the exchange of opinions with others checks our partiality and widens our perspective; we are made to see things from their standpoint and the limits of our vision are brought home to us.” Because of limited cognitive faculties and information, the decisions we reach are strongly influenced by the social environment that surrounds us. Thus, the individual evaluation of alternatives may change through a decentralized process of social interactions, which in turn may induce important changes in the distribution of voters over the policy space, and, hence, the election outcome. Van Winden (2002) argues that: “People are groping for political interests; they do not just have them. . . . we often do not know what precisely our interests in the political sphere are. Take the interests of a worker in the taxation of wages and profits. At first glance, one might perhaps think that a worker would prefer profit taxation. However, confronted with statements about capital flight, a worker may get convinced that wage taxation is to be preferred. In a world with severe uncertainty about what is right or wrong in terms of policy, one cannot simply take the interests of political agents as given. But, then, how do they develop?” We develop dynamic spatial models of electoral competition that relax the usual assumptions regarding the stability of voters’ preferences, availability of information, and full rationality of political agents (including political candidates). Our goal is to investigate the emergence of new properties (if any) in the dynamics of voting outcomes and of the distribution of political
1.1. PART I: INDIVIDUAL-BASED MODELS OF INTEREST GROUPS

Chapter 3 introduces a model which presents a first step towards the incorporation of endogenous interest groups. Interest groups emerge from a spontaneous coordination of voting behavior of boundedly rational voters. They consist of voters who feel strongly about certain positions on certain issues. These interest groups interact with the election procedure by, on the one hand, trying to influence parties’ electoral platforms, and, on the other hand, inducing the interest group members to vote for selected candidates. More specifically, an interest group tries to influence the election outcome in the following ways: (i) through money contributions to help finance opinion polls on positions that are supportive of the group’s interest, thereby transmitting information about voter preferences to political parties, (ii) by endorsing the preferred candidate, and (iii) affecting members’ votes. In modeling political parties as boundedly rational actors we follow Kollman, Miller and Page (1992, 1998).\footnote{To our knowledge, Kollman, Miller and Page (1992) are the first to introduce political parties as boundedly rational (adaptive) actors in spatial voting models.} Instead of knowing the distribution of voters in the policy space, political candidates are assumed to experiment with different policy positions (platforms) in order to find the position(s) where the probability of winning is the highest. We subsequently introduce a stochastic dynamic model of social interactions that formalizes spontaneous individual interactions between elections and accounts for social impact on individuals’ opinions (ideal positions in the issue space). In our model, voters meet each other randomly and may revise their opinions regarding policies over time in response to private information generated via informal communications. That may lead to self-sorting of voters “into (informal) social groups, the members of which are characterized by similar behavior” (van Winden (2002)). In an extended model that integrates both the interdependence of political opinions and the coordination of voting behavior, the size and importance of the interest groups are determined endogenously, with the interaction structure of the electorate and the election outcomes as determinants. The election outcomes are again influenced by the sizes and positions of the interest groups.

All models introduced in Chapter 3 are agent-based models (see Epstein and Axtell (1996)) which employ computer modeling techniques. We have chosen this way of mod-
eling since mass elections involve a large number of heterogeneous individuals interacting with each other, for the study of which our analytical means fall short. We model the electoral process as a stochastic dynamic process and represent it as an if-then system composed of condition-action relations. Since realizations of a stochastic process vary, a simulated electoral process unfolds its own pattern. Through replications, however, it helps us understand the intrinsic properties of the system at the macro-level; properties that have the potential to emerge. Therefore, we start analyzing our models via numerical simulations. The main issues that the simulation analysis addresses are: (i) the evolution of the distribution of voters' political preferences (ideal positions) reflecting the impact of social interaction, (ii) the impact of interest groups on voting outcomes, (iii) paths of election outcomes, (iv) convergence (if any) of parties' electoral platforms and election outcomes, and (v) the probability that the challenger wins elections.

Simulation methods are an important means for tackling issues like these. They can be seen as another form of experimentation in addition to laboratory and field experiments. Although helpful, the results they provide are dependent on the specifications of the parameters of the model. Examining the dependence of the model's behavior on the selected parameter configurations in detail is time consuming and only feasible to a limited extent. Therefore, for a better understanding of the generic properties of the process we need to move on from simulations of individual-based processes to plausible approximation models. Mean-field approximation, that is, replacement of the values of the random variables with their expected values, is a useful tool for systems where the random variables are uniformly distributed. Mean-field models are strictly deterministic and, hence, more convenient to use, since determinism implies that a single simulation is sufficient to evaluate the consequences of each initial condition. In Chapter 4 we develop a mean-field approximation of the stochastic model of interest groups. This results in a deterministic dynamic model of the "Markov" type, for which we can investigate the steady state distribution of the elections' outcomes. In addition to the questions posed already, we investigate the effects of different ways with which interest groups may interact with political parties on the steady state distribution of policy outcomes.

\(^3\)See Dickmann, Law, and Metz (2000) for a broader discussion of this topic.
1.2. PART II: OTHER-REGARDING PREFERENCES

In Chapter 5 we are particularly concerned with the (observed) enlargement of the winning set, that is, the set of policy platforms which will defeat the current incumbent in an election. We present a general result for a slightly modified version of the Markov model introduced in Chapter 4. The enlargement of the winning set in the presence of interest groups is proved for positions around the center of the policy space.

1.2 Part II: Other-regarding preferences

The most common assumption incorporated into economic and game theoretic models is that decision-makers are exclusively motivated to maximize their material self-interest. We shall refer to this as the assumption of "self-regarding" preferences. Rational models of self-regarding preferences predict behavior quite well in some contexts. For example, bids and offers in double auction markets for items with known values produce prices and quantities that converge to competitive equilibrium under widely varying conditions (Smith (1982), Davis and Holt (1993)). This convergence is robust to unequal distributions of the gains from exchange, with competitive equilibrium outcomes occurring even when virtually all of the gains from exchange accrue to one side of the market (Smith and Williams (1990)). Very unequal outcomes are also accepted by agents in some other contexts, including games of "proposer competition" (Roth et al. (1991)) and "responder competition" (Güth, Marchand and Rulliere (1997)). Furthermore, there are a variety of other contexts in which the self-regarding preferences model predicts behavior well, including one-sided auctions with independent private values (Cox and Oaxaca (1996)), procurement contracting (Cox et al. (1996)) and search (Cox and Oaxaca (1989, 2000), Harrison and Morgan (1990), Cason and Friedman (2000)).

However, rational models of self-regarding preferences fare poorly in a variety of other contexts. In ultimatum games, the (subgame perfect) equilibrium of the model of self-regarding preferences implies extremely unequal material payoffs. But this predicted outcome is almost never observed; instead, most outcomes have nearly equal material payoffs for the paired players (Güth, Schmittberger and Schwarz (1982), Slonim and Roth (1997)). Other contexts in which self-regarding-preference rational models predict
poorly include voluntary contributions to public goods experiments, in particular those in which there are costly opportunities for punishing free riders (Fehr and Schmidt (1999), Fehr and Gächter (2000b)). There are also systematic differences between the predictions of standard principal-agent theory and behavior in experimental labor markets. In the presence of incomplete contracts, wage offers above the opportunity cost of workers elicit effort choices above the predicted (shirking) level (Fehr, Kirchsteiger and Riedl (1993), Fehr, Gächter and Kirchsteiger (1997), Fehr and Falk (1999)).

Actions that are inconsistent with the predictions of the self-regarding preferences model can be cognitively motivated by social norms for reciprocating the actions of another (Elster (1989)) or by emotions generated while individuals are interacting (Bosman and van Winden (2001)). However, they can also be motivated by agents’ altruistic or inequality-averse preferences over the distribution of material payoffs. The distinction between actions motivated by preferences over outcomes and actions motivated by attributions of intentions is essential to empirical guidance for theory development, because modeling intentions is not the same as modeling preferences over outcomes that are unconditional on perceived intentions.

Our starting point is to investigate whether attribution of intentions is a significant motive for behavior in experimental games. Everyday life provides much anecdotal evidence that attribution of intentions, as well as preferences over outcomes, is important in social, political and economic exchange. Thus a spouse, date, or guest who is late for dinner or some other engagement is more likely to be easily forgiven if he can make a credible case that his tardiness was caused by events that were largely outside his control. A price increase by a seller is more likely to be accepted without grumbling or retaliation by buyers if the seller can credibly claim that the price increase was “necessitated” by an increase in costs rather than chosen to increase profit after an increase in demand or decrease in competitors’ supply. A politician who adopts a policy that is harmful to the perceived self-interest of some constituents is more likely to survive in office if she can credibly claim that the decision was necessitated by international treaty, the political opposition, or fiscal realities.

In order to guide development of economic and game-theoretic models, we need to be
able to discriminate between actions with alternative motivations. In Chapter 6, we use a triadic experimental design to discriminate between actions motivated by preferences over outcomes and actions motivated by attributions of intentions in the so-called moonlighting game. The moonlighting game was introduced in the literature by Abbink, Irlenbusch, and Renner (2000); it is an extension of the investment game of Berg, Dickhaut, and McCabe (1995). In the moonlighting game, a first-mover can either give money to a paired second mover or take money from the second mover. Any amount given is tripled by the experimenter. Any amount taken is not transformed by the experimenter. After a second mover learns of the tripled amount sent or the amount taken by the paired first mover, the second mover has an opportunity to give or take money from the first mover. Each dollar that the second mover gives to the first mover costs the second mover one dollar. Each dollar that the second mover takes from the first mover costs the second mover 33 cents.

The question we address in Chapter 6 is what motivations for actions can be inferred from observations in the moonlighting game. We explain that observations in the moonlighting game do not discriminate between trust and altruistic other-regarding preferences of first movers, nor between fear and inequality-averse other-regarding preferences of first movers, nor between positive reciprocity and altruistic or inequality-averse other-regarding preferences of second movers, nor between negative reciprocity and inequality-averse other-regarding preferences of second movers. This is our reason for incorporating the moonlighting game into a triadic experimental design that includes dictator control treatments that make these discriminations possible.

The large body of data inconsistent with the implications of self-regarding preferences has recently motivated development of alternative models. Within the rational choice approach, Fehr and Schmidt (1999) and Bolton and Ockenfels (2000) make important contributions in developing simple models that can rationalize seemingly inconsistent data from several distinct types of experiments. These models are based on the assumption that agents' preferences or motivations are characterized by "inequality aversion," meaning that utility is increasing with one's own material payoff but decreasing with the difference or the ratio between one's own and others' material payoffs. The Fehr and Schmidt
paper and the Bolton and Ockenfels paper demonstrate that their models are consistent with data from diverse experiments that produce very unequal payoffs consistent with standard theory or nearly equal payoffs that are inconsistent with the standard model of self-regarding preferences. Other groups of researchers, such as Andreoni and Miller (2001) and Charness and Rabin (2002) have been developing alternative models that explain the same data for different reasons. Such models are based on the assumption that agents' motivations are characterized by "quasi-maximin" preferences. More explicitly, their models assume that people are motivated to maximize the payoff to the lowest payoff person and increase total payoffs.

In Chapters 7 and 8 we are concerned with testing models of (unconditional) preferences over outcomes, and develop a model that is consistent with more data from "reciprocity-free" environments than alternative models are. Chapter 7 presents results from experiments designed to provide a direct test of inequality aversion. We find that the large majority of subjects are not averse to unequal money payoffs. Rather than equal payoffs, the majority of subjects choose very selfish unequal outcomes, or very generous unequal outcomes, depending upon the price of generosity and other properties of the feasible set. Instead of inequality aversion, the new data support a model of "other-regarding" preferences with the property that utility is globally increasing in both one's own and others' material payoffs. In Chapter 8, we demonstrate that the model of other-regarding preferences is consistent with most data from experiments that can be rationalized by models of inequality aversion. There we also discuss the limitations of both models of other-regarding preferences and models of inequality aversion. These limitations are revealed by data from experimental designs, like the one presented in Chapter 6, that can discriminate between decisions motivated by preferences over outcomes and decisions motivated by perceptions of others' intentions.