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Political actors playing games: Theory and experiments

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Chapter 1

Introduction

Throughout the world, governments dominate the economic scene. Their spending determines whether full employment prevails; their taxes influence countless decisions, their policies control international trade; and their domestic regulations extend into almost every economic act.

Anthony Downs, *An Economic Theory of Democracy* (1957)

Our daily lives are strongly influenced by government activities. As expressed by the above quote this influence is especially strong with respect to economic activities. For instance, government regulations constrain our behavior and tax policies profoundly affect the incentives we face. Given the importance of government policies in explaining economic behavior, understanding how government policies come about and what shapes them is equally essential for explaining economic outcomes.

Since various political actors have an influence on government policies, it is necessary to consider the behavior of distinct political actors and how they interact. In this thesis I consider three political actors: Chapter 2 focuses on voters who through their behavior determine the distribution of power. In chapters 3 and 4, I consider the behavior of candidates, who will influence how voters behave in the election. Chapter 5 considers how legislators in parliament arrive at laws through bargaining.

Just like any economic actor's behavior, also the behavior of political actors strongly depends on the constraints under which they operate. The most relevant constraints political actors face originate from the institutional rules of the political system. Therefore, following the tradition of the political economy literature,¹ the main question this thesis addresses is: How do the rules of the political system affect the behavior of the political actors that influence government policies?

The aim of this thesis is to extend our understanding of various political institutions. Chapter 2 considers the effect of mandatory and voluntary voting on voter behavior. Chapters 3 and 4 analyze the difference in candidate behavior between plurality voting and

¹ See chapter 1 in Drazen (2000) for a discussion of how the definition of the field changed over time and what the term 'political economy' means today.

proportional representation, with chapter 3 paying special attention to the role of coalition governments. Chapter 5 investigates the effect of asymmetric bargaining environments on behavior.

This thesis analyzes the different actors' behavior by combining insights from game-theoretic models and controlled laboratory experiments. The theory contributes to understanding behavior in three main ways: First, the game-theoretic models capture the strategic interactions between the political actors and allow us to understand the equilibrium outcome of these interactions. For instance, in chapter 5 this analysis reveals that due to the interdependence of strategies, changes in parameters can have subtle and unintuitive effects on behavior. Second, using models makes it necessary to identify the essential mechanisms and parameters for the question at hand thereby clarifying causal relationships. And third, the structured analysis of theoretical models makes it possible to derive clear predictions for behavior.

The controlled laboratory experiments build on the theoretical analysis and complement it. Experiments have the advantage that they allow a measurement of causal processes that is not possible with observational field data. Contrary to empirical data, which are rife with confounding factors, in the laboratory the experimenter can implement *ceteris paribus* variations to isolate the effects one is interested in. These advantages of the experimental method have led to a sharp increase in the use of experiments in political science (Druckman et al., 2006) and the political economy literature (Palfrey, 2012). The experimental method is especially useful when investigating the role of institutions since in the field institutions are highly endogenous and have co-evolved with behavior. Another reason for using experiments is to 'speak to the theorist' (Roth, 1988), i.e. to test the degree to which a formal model is able to achieve its goal of explaining behavior. The advantage of laboratory experiments compared to field data is that in the laboratory all the underlying parameters are known and it is therefore possible to derive clear predictions that can subsequently be compared to the behavior observed.

The conversation between theory and experiments not only runs from theory to experiments, but also the other way. If we observe systematic deviations from the theory we can use these to adapt our theories. One example is found in chapter 5, which shows that subjects have problems comprehending the subtle effect of asymmetric bargaining institutions and deviate from the theory in systematic ways. If in future work this deviation proves to be robust a next step would be to develop a model of bargaining that takes into account the heuristics observed in the laboratory. An example of such a new theoretical concept motivated by experimental research is the quantal response equilibrium (QRE: McKelvey and Palfrey, 1995). This equilibrium concept takes into account that people make mistakes and therefore do not always play a best-response (as prescribed by the Nash equilibrium) but often play a 'better-response', i.e. better choices are made more often than worse choice. Given that QRE is better able to capture noisy decision-making in the laboratory, this concept is used in all the chapters that consider experimental data.

1.1 Overview

In this section I will briefly describe the research questions, methodology and main results of each chapter. Chapter 2 deals with voter behavior, chapters 3 and 4 consider candidate behavior and chapter 5 analyzes bargaining behavior.

In chapter 2 (which is joint work with Arthur Schram), *A Simultaneous Analysis of Turnout and Voting under Proportional Representation – Theory and Experiments*, we address the question whether a voter's turnout decision and her selection of a party (or candidate) interact. Specifically, we consider whether an extreme vote is more likely to be observed when voting is voluntary than in systems of compulsory voting and how the voluntary or mandatory nature of turnout affect strategic voting.²

Even though voting has been studied for a long time up to now such questions have mostly been ignored and instead much of the literature has focused on either analyzing the determinants of a voter's turnout decision or on trying to explain her party choice. We argue that this might miss important dynamics, especially in a system of proportional representation that gives rise to incentives for strategic voting. To address this potential interaction effect we present a theoretical model of voting in a system of proportional representation and complement this with data from a controlled laboratory experiment.

Our theoretical analysis predicts three effects. First, a *Polarization Effect*: Voters who cast a vote are more likely to vote for an extreme party when there is a possibility to abstain than when voting is mandatory. The mechanism underlying this effect is that voluntary voting reduces the extent of strategic voting by the more extreme voters. The intuition is related to the fact that extremist voters are more likely to cast a vote (the second effect). As a consequence, the election becomes more of a run-off between the extreme parties than in the mandatory voting case. In turn, this reduces the expected benefit from voting strategically for a more moderate party. We denote the second effect, that extremist voters are more likely to turn out, as the *Extremist Effect*. The intuition here is that there is more at stake for extreme voters because the worst-case scenario (the other extreme winning the election) is worse than for centrist voters. The third effect is the *Turnout Effect*: voters are more likely to vote when the polarization of party positions increases. Here, the reason is that increased differences across parties put more at stake in the elections for all voters.

We test these theoretical predictions using a laboratory experiments that in a between-subjects design varies the polarization of party positions and whether voting is mandatory or voluntary. Our experimental results provide support for the predictions, though only weak support is found for the *Polarization Effect* of voluntary voting when the parties are relatively close. The observed turnout rates exhibit the predicted feature that polarization boosts turnout and extreme voters are more likely to vote than centrist voters. This latter difference is not as pronounced as theoretically expected because centrist voters turn out substantially more often than predicted.

² Strategic voting is defined as abandoning the most preferred party to favorably influence the election outcome.

Obviously, the results from the laboratory experiment cannot give a definitive answer as to whether these effects are also present in the field. We therefore complement the experimental data with three empirical exercises that each address one of the three effects. To identify the *Polarization Effect* we make use of the fact that both the Netherlands and Belgium used to have mandatory voting and that both abolished it (Netherlands in 1970) or stopped enforcing the penalty for abstaining (Belgium in 2003). Given the similarity of these countries in terms of political system and political views, we compare the extent of extreme voting between the two countries in the two elections following the policy change in one. As predicted by our model, we find that polarization increases dramatically in the country that abolished compulsory voting while no substantial change is observed in the comparison country. Using data from the Comparative Study of Election Systems, the Eurobarometer and the Dutch Election Study we also find the predicted pattern that more extreme voters have higher turnout rates. Furthermore, a case study of the Netherlands shows a positive correlation between the polarization of the party system and turnout rates.

Given that theory, laboratory data and empirical evidence all provide supportive evidence for the interaction effects between party choice and turnout, we conclude that they are to be reckoned with when studying voter behavior.

In chapters 3 and 4, I turn my attention to candidate behavior. Since, similar to the case of voter behavior studied in chapter 2, an interaction effect might exist between a candidate's entry decision and her policy choice I use the citizen-candidate paradigm (Osborne and Slivinsky, 1996, Besley and Coate, 1997) to study candidate behavior. This paradigm makes it possible to study entry and policy choice simultaneously by assuming that citizens have fixed positions in the policy space (which are common knowledge) and each citizen can run for office. It is obvious that this model can be used to analyze entry behavior but by investigating where in the policy space the entrants are located I can also gain insights into the policy choice, for instance how polarized entrants' positions will be in equilibrium.

In chapter 3, *Plurality Voting versus Proportional Representation in the Citizen-Candidate Model: The Role of Coalitions*, I address the question how the number of candidates and their polarization varies between plurality voting and proportional representation. The main contribution of the chapter is to investigate how the difference between the electoral systems depends on the details of modelling proportional representation. Up to now the standard approach in the literature has been to model government policy in a system of proportional representation as the weighted average of all candidates' policy positions. I argue that this misses one of the defining characteristics of proportional representation, the presence of coalition governments. Therefore, I introduce a model of proportional representation with coalition formation where only the members of the government coalition have an influence on the policy and the members of the coalition proportionally share the office rents.

I then derive the Nash equilibria for the case of purely policy-motivated and purely office-motivated (i.e. 'Downsian') candidates. The theoretical analysis leads to three main results. First, taking the coalitions associated with proportional representation into account leads –

compared to ignoring coalitions—to candidate positions that are less polarized. This implies that the common criticism of proportional representation leading to high polarization has less bite once we take into account the incentives associated with coalition formation. Second, for the case without coalition formation, I do find that plurality voting leads to more centrist outcomes than proportional representation. This is in line with the hypothesis put forth by Cox (1990) that proportional representation leads to more polarized outcomes. Third, for the classical case of Downsian candidates, I find that proportional representation with coalitions is more conducive to multi-candidate equilibria than proportional representation without coalitions or plurality voting.

In chapter 4, *Plurality Voting versus Proportional Representation in the Citizen-Candidate Model: An Experiment*, I address the question of the difference in candidate behavior between plurality voting and proportional representation using a controlled laboratory experiment. In the laboratory I implement the citizen-candidate model with five potential candidates that are equally spaced along a one-dimensional policy space and vary the electoral system and the costs of running for office in a between-subject design employing a partner matching.

Theory predicts an (intuitive) cost effect, where higher costs of running for office reduce the number of entrants. Furthermore, when the costs of running for office are low proportional representation is predicted to lead to more entry while with high costs no such difference is expected. This makes it possible to investigate whether more entry under proportional representation is an equilibrium phenomenon or simply due to some heuristic. If it were based on a heuristic (such as entering to influence the policy, without regard for payoffs) then the difference should appear independently of costs.

The results from the experiment are broadly in line with the theory and I observe the predicted comparative statics effect for the electoral system and the costs of running for office. At the same time the data exhibit substantial over-entry compared to the Nash equilibrium predictions, which is a common finding in experiments on entry and contest games. The over-entry might be explained by a joy of winning effect, i.e. a non-monetary benefit from winning the election.

Combining the findings from chapters 3 and 4 gives rise to two main conclusions. First, the citizen-candidate paradigm is supported by experimental evidence, which strengthens confidence in the usefulness of this approach. Second, if we want to analyze the effects of proportional representation we have to accept the challenge of incorporating coalition formation and the associated incentives into our models. An obvious follow-up building on these two conclusions would be to add the model of proportional representation with coalitions presented in chapter 3 to the experimental framework of chapter 4.

In joint work with Harold Houba, chapter 5, *Bargaining in the Presence of Condorcet Cycles: The Role of Asymmetries*, investigates the role of asymmetries in strategic bargaining. We focus on the case where no Condorcet winner, i.e. an alternative that beats any other alternative in a pair-wise vote, exists, since otherwise the Condorcet winner is very likely to be implemented irrespective of the details of the bargaining institution. We

analyze the situation using the strategic bargaining model by Baron & Ferejohn (1989), where in each bargaining round one player is randomly chosen to make a proposal that the other players then vote on.

Building on work by Herings and Houba (2010), who theoretically analyze a very similar game, we set up a controlled laboratory experiment in which three players have to choose which of three options to implement. In a between-subjects design we vary whether the options are symmetric or whether one player gets a higher payoff from her best option than the other two players. The second parameter we vary is the probability that a given player will be able to make a proposal. We contrast the symmetric situation where all players are equally likely to be the proposer to the situation where one player has a lower probability of being the proposer.

From the experiment two main results arise: First, subjects are underexploiting their bargaining power and accept proposals too often, which might be caused by subjects' risk aversion. The second main result is that for asymmetric probabilities we observe systematic deviations from the model predictions. In comparison, subjects' change in behavior when going from symmetric to asymmetric alternatives is more in line with the theory when probabilities are symmetric. The systematic deviations for asymmetric probabilities not only arise relative to the risk-neutral Nash equilibrium but also when a quantal response equilibrium –with risk-aversion and noise parameters estimated using the experimental data– is used as the theoretical benchmark. We therefore conclude that subjects have a harder time understanding the strategic implications of asymmetric recognition probabilities than asymmetric payoffs and rely on heuristics when dealing with such asymmetric recognition. One such heuristic that is consistent with the data would be that subjects equate the probability of being the proposer with a player's bargaining power.