

# Whither Political Economy? Theories, Facts and Issues

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I discuss recent developments in political economy. By focusing on the micro-economic side of the discipline, I present an overview of current research on four of the fundamental institutions of a political economy: voters, politicians, parties and governments. For each of these topics, I discuss some of the salient questions that have been posed and addressed in the literature, present some stylized models and examples, and summarize the main theoretical findings. Furthermore, I describe the available data, review the relevant empirical evidence, and discuss some of the challenges for empirical research in political economy.

KEYWORDS: Microeconomics of political economy, voters, politicians, parties, governments.

## 1. Introduction

Political Economy has undergone a process of dramatic change over the years. This process, which spans over more than two centuries, has helped to define the boundaries of the field's domain, organize its subject matter, and establish an identity for modern political economy.

At the risk of trivializing, it might be useful to summarize some of the steps along the process that has characterized the evolution of the meaning of the term political economy. Starting from the late 1700s, when the work of Adam Smith and David Ricardo played a fundamental role in establishing economics as an autonomous discipline, political economy and economics were for a long time synonymous.<sup>2</sup>

Economics started to organize itself into fields at the beginning of the 20th century. However, while political economy clearly did not fit all of the subject matter of some of

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<sup>2</sup>An indication of the long-lasting lack of separation between political economy and economics is that when in 1892, following the inception of the *Quarterly Journal of Economics* in 1886 and the *Economic Journal* in 1891, the University of Chicago Press also started to publish a general-interest journal in economics, it titled it the *Journal of Political Economy*.

the fields, it did not define a separate field. In fact, it was not until the 1950s that the term political economy started to have a different, more precise meaning, separate from the generic notion that politics and government policy are intimately interrelated. The change of emphasis emerges quite clearly from Buchanan and Tullock (1962) and Downs (1957). At the same time, Arrow (1951) marked the birth of social choice theory, which provided vital impetus for the development of analytical tools to study the (economic and political) outcomes of political processes.<sup>3</sup>

During the last twentyfive years, the systematic study of the interactions between political and economic factors has grown considerably within many fields in economics. At the same time, the increased interest in applications has been paralleled by a surge in theoretical research aimed at developing a common, rigorous language and a coherent class of models to analyze political institutions and outcomes as endogenous, equilibrium phenomena. It is the combination of the outcomes of these efforts that now defines political economy as a field.

As we progress into the 21st century, it seems legitimate at this juncture to try to assess some of the more recent developments in political economy and place them in perspective, with the hope of enhancing our understanding of the directions in which research in the field is moving. Rather than embarking in the impossible task of producing a comprehensive (or even partial) survey of the literature, however, I focus here on a small number of specific issues, and attempt to summarize the state of knowledge of these issues, both from a theoretical and an empirical point of view, as well as present my own take on the subjects.

One of the fundamental premises of political economy is that the actions of governments can be understood only as consequences of the political forces that enable governments to acquire and maintain power. Hence, a large fraction of the existing literature has focused on the role of different political institutions in shaping economic policy and their effects on the economy. This literature, which by and large characterizes the macroeconomic side of political economy, is well documented and surveyed in two recent textbooks by Drazen (2000) and Persson and Tabellini (2000), and I do not touch upon it here.<sup>4</sup>

Another defining feature of current research in political economy is the attempt to fully

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<sup>3</sup>Another important contribution was Black (1958).

<sup>4</sup>See also the recent monographs by Acemoglu and Robinson (2005) and Persson and Tabellini (2005).

integrate political actors and institutions with private decision-makers in a “general equilibrium theory” of the political economy. Much of the recent literature on the microeconomic side of political economy has been devoted to developing models where the set of individuals, their preferences, and the set of available technologies (which include all the technologies that pertain to the political process), are the only primitives, while voters, politicians, political parties, legislatures, interest groups, governments, and, ultimately, policies and constitutions are equilibrium outcomes.<sup>5</sup> While no general theory exists to date where all the variables of interest are simultaneously determined in equilibrium, substantial progress has been made to develop classes of models where each of these variables is treated as endogenous.

In this article, I focus on four of the topics addressed by this literature, which correspond to four of the basic building blocks of political economy. In Section 2, I analyze the behavior of voters. In section 3, I address the issue of endogenous politicians. I discuss the role of political parties in Section 4. In Section 5, I analyze the formation and dissolution of coalition governments. For each of these topics, I identify and discuss some of the salient questions that have been posed and addressed in the literature, present some stylized models and examples, and summarize the main theoretical findings. Furthermore, I describe the available data, review the relevant empirical evidence, and discuss some of the challenges for empirical research in political economy. Concluding remarks are contained in Section 6.<sup>6</sup>

## 2. Voters

Voting is a cornerstone of democracy and citizens’ participation and voting decisions in elections and referenda are fundamental inputs in the political process that shapes the policies adopted by democratic societies. Hence, understanding observed patterns of turnout and voting represents a fundamental step in the understanding of democratic institutions. Also, from a theoretical standpoint, voters are the most fundamental component of political economy models. Different assumptions about their behavior are bound to have important consequences on the implications of these models and, more generally, on the equilibrium

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<sup>5</sup>Austen-Smith and Banks (1999, 2005) provide systematic accounts of the social-choice and game-theoretic foundations of this literature, respectively.

<sup>6</sup>For an extended version of the survey, which also includes an expanded list of references, see Merlo (2005). For a recent monograph that analyzes the role of special interest groups, a topic I do not cover here, see Grossman and Helpman (2001).

interpretation of the behavior of politicians, parties and governments they may induce.

These considerations raise the following two fundamental questions: (i) Why do citizens vote (or abstain from voting)? (ii) How do voters vote? In the remainder of this section, I address each of these two questions in turn.

## 2.1 Turnout

As pointed out in the Introduction, much of what is new in political economy is the application of modern methods of economic theory to problems that have been addressed for a long time. The issue of understanding citizens' participation in elections is one of these problems.<sup>7</sup> There is considerable cross-section and time-series variation in turnout both within and across countries, as well as within and across types of elections (e.g., Blais (2000)). By and large, the fractions of eligible voters who participate or abstain in any election at any time in any modern democracy are both significant.<sup>8</sup> Also, participation and abstention rates are in general not uniform in the population of eligible voters, but appear to be correlated with several demographic characteristics, such as, for example, age, education, gender and race (e.g., Wolfinger and Rosenstone (1980)). Moreover, participation rates tend to increase with the importance of the election.<sup>9</sup> These are some of the most salient observations that emerge from the data.<sup>10</sup>

Can political economy explain these observations? The starting point of theoretical research on voter turnout is represented by the “calculus of voting” framework, originally formulated by Downs (1957) and later developed by Tullock (1967) and Riker and Ordeshook (1968). According to this framework, given a citizenry of size  $N$  facing an election  $e$  where there are two alternatives (e.g., two candidates or two policy proposals), citizen  $i \in N$  votes in the election if  $p_i^e B_i^e + D_i^e \geq C_i^e$  and abstains otherwise. Here,  $p_i^e$  is the probability that

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<sup>7</sup>Henceforth, I use the word election to refer to any situation where eligible voters are asked to express their opinion through voting. This also includes referenda.

<sup>8</sup>In general, while various penalties for failing to vote exist in some countries, they tend to be rather minimal and abstention is a noticeable phenomenon even where voting is compulsory (see, e.g., Blais (2000)).

<sup>9</sup>For example, turnout is generally higher in national than in local elections and referenda, and in presidential elections than elections for other public offices (see, e.g., Blais (2000)).

<sup>10</sup>Official records of voter participation in elections are available at the aggregate level for most countries. Survey data at the individual level are also available for a limited number of countries, including Australia, Canada, the U.K. and the U.S.

citizen  $i$ 's vote decides the election (i.e., her vote is pivotal),  $B_i^e$  is the indirect benefit to citizen  $i$  associated with inducing her desired electoral outcome,  $D_i^e$  is the direct benefit from voting in election  $e$ , which includes any benefit citizen  $i$  may derive from fulfilling her civic duty of voting, and  $C_i^e$  is citizen  $i$ 's cost of voting in election  $e$ . The terms  $p_i^e B_i^e$  and  $D_i^e$  are often referred to as capturing the instrumental (or investment) and expressive (or consumption) value of voting, respectively.

In the original formulation of the model,  $B_i^e$ ,  $D_i^e$  and  $C_i^e$  are specified as fundamental components of a citizen's preferences and are therefore treated as primitives. Also, as long as the size of the electorate  $N$  is large,  $p_i^e$  is typically thought of as being virtually equal to zero, thus making the term  $p_i^e B_i^e$  negligible. Hence, to the extent that the unobservable  $D_i^e$  and  $C_i^e$  are heterogeneous in the citizenry and correlated with observable demographic characteristics, and their distributions (possibly conditional on location and election specific characteristics) differ across citizenries and elections, the model can potentially account for the patterns observed in the data. At the same time, however, since differences in behavior are mechanically induced by differences in preferences (which are both exogenous and unobservable), the model fails to provide a theory that can explain the evidence.

In light of this failure, most of the recent theoretical research on voter turnout has been focused on developing models where  $p_i^e$ ,  $D_i^e$  and  $C_i^e$  are endogenous variables, derived in equilibrium from more fundamental primitives. It is useful to divide these models in three groups, depending on whether their main objective is to endogenize  $p_i^e$ ,  $D_i^e$  or  $C_i^e$ , respectively. Pivotal-voter models (e.g., Borgers (2004), Ledyard (1984) and Palfrey and Rosenthal (1983, 1985)), endogenize the probability that a citizen's vote is decisive. Ethical-voter models (e.g., Coate and Conlin (2004), Feddersen and Sandroni (2002) and Harsanyi (1980)), endogenize the concept of civic-duty. Uncertain-voter models (e.g., Degan and Merlo (2004), Feddersen and Pesendorfer (1996, 1999) and Matsusaka (1995)), endogenize a component of the cost of voting. For each class of models I present a simple example that illustrates the main intuition and I discuss their general implications for interpreting the empirical evidence.<sup>11</sup>

*Pivotal-voter models:* Consider the following example based on Borgers (2004) and Palfrey and Rosenthal (1985). A society has to decide between two alternatives,  $a$  and  $b$ , in an

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<sup>11</sup>For recent surveys see, e.g., Aldrich (1993), Dhillon and Peralta (2002) and Feddersen (2004).

election  $e$ . There are  $N$  citizens, where  $N$  is large but finite, indexed by  $i \in \{1, \dots, N\}$ . The citizenry is divided between supporters of  $a$  and supporters of  $b$ , where each citizen knows the alternative she supports. Each citizen is either a supporter of  $a$  or  $b$  with equal probability. This is known by all citizens. However, citizens do not know the number of supporters of each alternative. If alternative  $j \in \{a, b\}$  is implemented, each supporter of  $j$  receives a utility benefit equal to 1 while each supporter of the other alternative incurs a utility loss equal to  $-1$ . Citizens decide whether to vote or abstain. If they choose to vote, they vote in favor of the alternative they support. Voting is costly and citizens do not derive any direct benefit from voting (i.e.,  $D_i^e = 0$  for all  $i \in \{1, \dots, N\}$ ). Voting costs are distributed in the citizenry according to a uniform distribution on the support  $[0, 1]$ . Each citizen  $i$  only knows her own voting cost  $C_i^e$  and the distribution of voting costs in the population.

Since the probability  $p_i^e$  that citizen  $i$ 's vote decides the election depends on the endogenous composition of the electorate, this situation describes a game of incomplete information, where the choice of participating is a strategic decision. Given the number of citizens who participate in the election, the alternative  $j \in \{a, b\}$  that receives a majority of the votes is implemented. In the event of a tie, each alternative is implemented with probability  $1/2$ .

In the environment described here, the only motivation for voting is the possibility of affecting the electoral outcome. Since many citizens share the same preferences for one alternative over the other, and the electoral outcome is a public good, individuals may have an incentive to free-ride and abstain. On the other hand, there is an element of competition due to the fact that different groups of citizens prefer different alternatives. The existence of such conflict provides an incentive for people to participate in the election. The combination of these two opposing forces determines the equilibrium turnout and electoral outcome.

Following the literature we look for a symmetric Bayesian-Nash Equilibrium of the game, in which all citizens use the same cutoff strategy (i.e., each citizen votes only if her voting cost is below some critical level). Let  $C^*$  denote the equilibrium cutoff level. To characterize  $C^*$ , consider the decision of a generic citizen  $i$  and let  $v$  be the ex ante probability, before learning  $C_i^e$ , with which any individual votes given the equilibrium strategy. Suppose the remaining  $N - 1$  citizens are playing according to the equilibrium strategy, and let  $\sigma$  denote the number of individuals other than  $i$  who choose to vote. Note that the distribution of the

random variable  $\sigma$  is binomial with parameters  $N - 1$  and  $v$ , and since in equilibrium  $v = \Pr\{C_i^e \leq C^*\} = C^*$ , when the other  $N - 1$  citizens are playing according to the equilibrium strategy, for any  $s \in \{0, \dots, N - 1\}$ ,  $\Pr\{\sigma = s\} = \binom{N-1}{s} (C^*)^s (1 - C^*)^{N-1-s}$ .

Let  $p_i^e(C^*)$  be the probability that citizen  $i$ 's vote is pivotal. Since alternative  $j \in \{a, b\}$  is implemented for sure if a majority of the voters supports it and is implemented with probability  $1/2$  in the event of a tie, citizen  $i$ 's vote is pivotal only if either her preferred alternative is behind by one vote or the number of votes for each alternative is equal. In either case, citizen  $i$ 's vote increases her expected utility by 1. In no other circumstance, will her vote affect the electoral outcome and, consequently, her expected utility. Hence,  $p_i^e(C^*)$  is the probability that the number of votes for  $i$ 's preferred alternative minus the number of votes for the other alternative is either  $-1$  or  $0$ , and  $i$ 's expected benefit of voting is  $p_i^e(C^*) B_i^e = p_i^e(C^*)$ . Since citizen  $i$  will want to vote only if  $p_i^e B_i^e$  exceeds her cost of voting  $C_i^e$ , we have that in equilibrium  $p_i^e(C^*) = C^*$ .

To compute the equilibrium we need to know the function  $p_i^e(C^*)$ , where we know that  $p_i^e(0) = 1$  and  $p_i^e(1) = 0$ . Let  $\pi_i^e(s)$  denote the probability that voter  $i$  is pivotal conditional on the number of other voters being  $s$ . Note that  $\pi_i^e(0) = 1$  and  $\pi_i^e(1) = 1/2$ . In general, if  $s \geq 1$  and  $s$  is odd, then citizen  $i$ 's vote is pivotal only if the number of other votes for her preferred alternative is  $(s - 1)/2$  and the number of votes for the other alternative is  $(s + 1)/2$ . This event occurs with probability  $\pi_i^e(s) = \binom{s}{(s-1)/2} (1/2)^s$ , which is non-increasing in  $s$ . Since  $p_i^e(C^*) = \sum_{s=0}^{N-1} \Pr\{\sigma = s\} \pi_i^e(s)$ , it follows that  $p_i^e(C^*)$  is strictly decreasing in  $C^*$ . Hence, there exists a unique  $C^* \in (0, 1)$  such that  $p_i^e(C^*) = C^*$ .

While a closed form expression for  $C^*$  as a function of  $N$  cannot be derived,  $C^*$  can easily be computed numerically for different values of  $N$ . For example, for  $N$  equal to 100, 500, and 5000, these calculations yield values of  $C^*$  equal to 0.18, 0.11, and 0.05, respectively, and as  $N \rightarrow \infty$ ,  $C^* \rightarrow 0$ . Hence, positive turnout occurs in equilibrium. However, as the size of the electorate becomes large, turnout decreases and in the limit everybody abstains.

While these results were obtained in the context of a very specific example, they extend to more general environments and are typical of pivotal-voter models. Hence, pivotal-voter models can in principle explain positive levels of participation in elections, but only when the number of eligible voters is relatively small. For large electorates, on the other hand,

extending the calculus of voting framework by making  $p_i^e$  endogenous in a game-theoretic environment fails to provide a theory that can explain the empirical observations.

Empirical research has attempted to establish whether, holding everything else constant, voter turnout increases with the expected closeness of an election, which relates to the probability of being pivotal.<sup>12</sup> By and large, evidence based on individual-level data shows that this is not the case in large elections (e.g., Ferejohn and Fiorina (1975), Kirchgaessner and Schulz (2005), and Matsusaka and Palda (1993)). Regardless of whether or not one believes that this is a robust empirical finding, however, this is hardly a “test” of pivotal-voter models. Coate, Conlin and Moro (2004), on the other hand, directly address the question of whether this class of models can explain voter participation in small-scale elections. Their analysis, which is based on the structural estimation of a pivotal-voter model using data on local referenda in Texas, shows that while the model is capable of predicting observed levels of turnout quite well, at the same time it predicts closer electoral outcomes than they are in the data. In other words, the only way the theory behind pivotal-voter models can explain actual turnout, is if elections are very close, which makes their outcome very uncertain and hence individual votes more likely to be pivotal. These circumstances, however, are not consistent with what is observed in reality, thus leading to a rejection of this class of models as useful tools to interpret the evidence.

*Ethical-voter models:* Consider the following example based on Coate and Conlin (2004). For consistency of exposition, I use a formulation similar to that of the previous example. A society has to decide between two alternatives,  $a$  and  $b$ , in an election  $e$ . There is a continuum of citizens of measure one, where  $i$  denotes a generic citizen. The citizenry is divided between supporters of  $a$  and supporters of  $b$ , where each citizen knows the alternative she supports, but does not know the actual fraction of supporters of each alternative in the population. From the point of view of a generic citizen  $i$ , the fraction of citizens who support alternative  $a$  is the realization of a random variable  $\mu$  which has a uniform distribution on the support  $[0, 1]$ . Hence, the expected fraction of citizens supporting each alternative is equal to  $1/2$ . If alternative  $j \in \{a, b\}$  is implemented, each supporter of  $j$  receives a utility benefit equal to 1 while each supporter of the other alternative incurs a utility loss equal to  $-1$ .

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<sup>12</sup>See, e.g., Matsusaka and Palda (1999) for a survey.

Citizens have to decide whether to vote or abstain. If they choose to vote, they vote in favor of the alternative they support. Voting is costly and voting costs are distributed in the citizenry according to a uniform distribution on the support  $[0, 1]$ . Each citizen  $i$  only knows her own voting cost  $C_i^e$  and the distribution of voting costs in the population. The electoral outcome is determined by majority rule, where alternative  $a$  is implemented if the fraction of votes in favor of  $a$  exceeds the fraction of votes in favor of  $b$ .<sup>13</sup>

Citizens are ethical, in the sense that they are “group rule-utilitarians,” where a group is defined by which alternative a citizen prefers. More precisely, individuals follow the voting rule that, if followed by everybody else in their group, would maximize their group’s aggregate utility. Hence, each group’s optimal voting rule specifies a critical voting cost such that all individuals in the group whose voting cost is below the critical level should vote.

Let  $C_a$  and  $C_b$  denote the critical voting costs for the supporters of  $a$  and  $b$ , respectively. If citizen  $i$  is a supporter of alternative  $j \in \{a, b\}$ , she votes if  $C_i^e < C_j$  and abstains otherwise. Hence, the ex ante probability, before learning  $C_i^e$ , that a generic supporter of alternative  $j$  votes is  $\Pr\{C_i^e < C_j\} = C_j$  and her expected voting cost is equal to  $C_j^2/2$ . Alternative  $a$  is therefore implemented if  $\mu C_a > (1 - \mu) C_b$ , or equivalently  $\mu > C_b / (C_a + C_b)$ .

In the environment described here, since there is a continuum of voters, no single vote can ever be pivotal (i.e.,  $p_i^e B_i^e = 0$  for all  $i$ ). Hence, the only motivation for voting is to fulfill one’s civic duty to “do the right thing.” The contribution of ethical-voter models is to make this notion precise and characterize equilibrium voter turnout in game-theoretic environments where citizens are rule-utilitarians.<sup>14</sup> In particular, the key innovation of this class of models is to assume that each citizen has an action (i.e., either to participate or to abstain) that is optimal for her to take on ethical grounds, and receives an additional payoff from taking this action. Moreover, what is the ethical thing to do for each citizen is not predetermined, but is instead endogenously derived as an equilibrium outcome of a game.

In the context of the example, an equilibrium is given by a pair of critical costs,  $C_a^*$  and  $C_b^*$  such that, for each  $j, j' = a, b, j' \neq j$ ,  $C_j^*$  maximizes the aggregate expected utility of the group of supporters of alternative  $j$  given  $C_{j'}$ . To characterize the equilibrium, note that

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<sup>13</sup>Since there is a continuum of voters, ties are a measure zero event and can therefore be ignored.

<sup>14</sup>For a general discussion of rule-utilitarianism, see Feddersen and Sandroni (2002) and Harsanyi (1980).

the aggregate expected utility of the group of citizens who support alternative  $a$  is given by  $U_a(C_a, C_b) = 1/2 - [C_b/(C_a + C_b)]^2 - C_a^2/4$ . Similarly, the aggregate expected utility of the group of citizens who support alternative  $b$  is given by  $U_b(C_a, C_b) = 2C_b/(C_a + C_b) - 1/2 - [C_b/(C_a + C_b)]^2 - C_b^2/4$ . It follows that there exists a unique pair of interior equilibrium levels of voting costs  $C_a^* = C_b^* = C^* = \sqrt{2}/2 = 0.71$ , such that each citizen votes if her voting cost is below  $C^*$  and abstains otherwise. Hence, while a significant fraction of the population of eligible voters abstains in equilibrium, voter turnout may be substantial.

The main logic illustrated in the simple example also holds in more general environments, where different specifications of the benefits citizens derive from various alternatives, the distribution of the fraction of citizens who support them, and the distribution of voting costs in the population generate interesting additional predictions. For instance, if in the example we replace the assumption that the fraction  $\mu$  of citizens who support alternative  $a$  has a uniform distribution, with the alternative assumption that the density function of  $\mu$  is equal to  $2\mu$  (which implies that the expected fraction of citizens supporting alternative  $a$  is equal to  $2/3$  instead of  $1/2$ ), we obtain that the equilibrium critical costs are  $C_a^* = 0.68$  and  $C_b^* = 0.85$ . Hence, equilibrium turnout is higher among the “minority” (i.e., the group with the smaller expected number of supporters).

These considerations suggest that ethical-voter models provide a promising framework to confront the empirical evidence. Not only do they provide a theory that can explain observed patterns of voter turnout, but they also place additional restrictions on the data that make the theory falsifiable (from a Popperian perspective). An excellent example of using this theory as a way to impose discipline on an empirical investigation of voter turnout in local referenda is the article by Coate and Conlin (2004), who specify a group rule-utilitarian model and structurally estimate it using data on local liquor referenda in Texas. Their analysis shows that the estimated model is capable of reproducing all of the important features of the data well and generates interesting implications for the interpretation of the evidence.

*Uncertain-voter models:* Consider the following example based on Degan and Merlo (2004). As in the two previous examples, a society has to decide between two alternatives,  $a$  and  $b$ , in an election  $e$ . To simplify exposition, it is convenient to formulate this example in a spatial context, where alternatives correspond to positions on a unidimensional

ideological space (e.g., the liberal-conservative ideological spectrum),  $[-1, 1]$ . In particular, alternatives  $a$  and  $b$  are a pair of random variables which take values  $(y_a, y_b) \in Y = Y_a \times Y_b$ , where  $Y_a = \{-1/2, -1/4, 0\}$  and  $Y_b = \{0, 1/4, 1/2\}$ . The joint distribution of  $(a, b)$ ,  $P = \{p(y_a, y_b)\}_{(y_a, y_b) \in Y}$ , is such that  $p(0, 0) = 0$  and  $p(y_a, y_b) = 1/8$  for all  $(y_a, y_b) \neq (0, 0)$ .

There is a continuum of citizens of measure one, where  $i$  denotes a generic citizen. Each citizen has a preferred ideology, or ideal point,  $y_i \in [-1, 1]$ , and evaluates alternative ideologies  $y \in [-1, 1]$  according to the payoff function  $u_i(y) = -(y_i - y)^2$ . The distribution of preferred ideologies in the citizenry is uniform on the support  $[-1, 1]$ .

Citizens have to decide whether to vote or abstain, and if they vote, which alternative to support. Each citizen  $i$  derives a direct benefit from voting by fulfilling her civic duty,  $D_i^e$ . These benefits are distributed in the citizenry according to a uniform distribution on the support  $[0, 1]$ . Citizens do not know the realization  $(y_a, y_b)$  of the pair of alternatives  $(a, b)$ , but only know the distribution  $P$ . Clearly, because citizens are uncertain about the alternatives in the election, they may make “voting mistakes” or, equivalently, vote for the “wrong alternative.” This is what makes voting potentially costly in this framework.

Let  $C_i(a) = \sum_{(y_a, y_b) \in Y} 1\{u_i(y_a) < u_i(y_b)\} [(u_i(y_b) - u_i(y_a))p(y_a, y_b)]$  be the (expected) cost for citizen  $i$  of voting for alternative  $a$ , where  $1\{\cdot\}$  is an indicator function that takes the value one if the expression within braces is true and zero otherwise. This cost corresponds to the expected utility loss for citizen  $i$  if she were to vote for candidate  $a$  in states of the world where the realizations  $(y_a, y_b)$  are such that she should instead vote for  $b$ . Analogously,  $C_i(b)$  is the (expected) cost for citizen  $i$  of voting for alternative  $b$ .

Like in the previous example, since in the environment described here there is a continuum of voters, no single vote can ever be pivotal (i.e.,  $p_i^e B_i^e = 0$  for all  $i$ ).<sup>15</sup> Hence, the only trade-off that is relevant in a citizen’s decision to participate in an election is the comparison of the costs and benefits of voting. In uncertain-voter models, the emphasis is on deriving the cost of voting endogenously. In particular, voting may be costly because of citizens’ uncertainty (or lack of information) about the alternatives they are facing in an election, which may lead them to make mistakes they may regret. The extent to which voting is costly for different

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<sup>15</sup>In other uncertain-voter models, e.g., Feddersen and Pesendorfer (1996, 1999), voters may be pivotal. However, my primary objective here is to isolate the distinctive characteristic of each class of models.

citizens, and hence their propensity to participate in elections, will in general depend on their ideological preferences relative to the distribution of the possible alternatives they may be facing, as well as their degree of uncertainty.

Following Degan and Merlo (2004), the decision problem of each citizen can be formulated as a two-stage optimization problem, where in the first stage the citizen decides whether or not to participate in the election and, in the second stage, she decides who to vote for (conditional on voting). To solve this problem we work backwards, starting from the last stage. In the second stage, citizen  $i$ 's optimal voting rule is  $v_i^*(y_i) = a$  if  $C_i(b) > C_i(a)$ ,  $v_i^*(y_i) = b$  if  $C_i(b) < C_i(a)$ , and in the event that  $C_i(b) = C_i(a)$  citizen  $i$  randomizes between the two alternatives with equal probability. Here,  $v_i^*(\cdot) = j$  indicates that if citizen  $i$  were to vote, she would vote for alternative  $j \in \{a, b\}$ . Using the expressions for  $C_i(a)$  and  $C_i(b)$ , and the definition of  $Y$  and  $P$ , we obtain that  $C_i(b) - C_i(a) = -9y_i/8$ , which implies that  $C_i(b) < C_i(a)$  if and only if  $y_i > 0$ . Hence,  $v_i^*(y_i) = a$  if  $y_i < 0$ ,  $v_i^*(y_i) = b$  if  $y_i > 0$ , and citizens with ideal points equal to zero randomize.

This voting rule implies a cost for citizen  $i$  of participating in election  $e$ ,  $C_i^e(y_i) = C_i(v_i^*(y_i))$ . Hence, in the first stage, citizen  $i$ 's optimal participation rule is such that she participates if  $C_i^e(\cdot) < D_i^e$  and abstains otherwise. To calculate the voting costs note that for each possible realization  $(y_a, y_b)$  of  $(a, b)$ , given the optimal voting rules of all citizens, we can determine if a citizen would be making a mistake or not if she were to vote, and calculate the cost associated with the mistake. If  $(y_a, y_b) = (-1/2, 0)$ , the cost is positive only for citizens with  $-1/4 < y_i < 0$ , and is equal to  $1/4 + y_i$ ; if  $(y_a, y_b) = (-1/2, 1/4)$ , it is positive only for citizens with  $-1/8 < y_i < 0$ , and is equal to  $3/16 + (3/2)y_i$ ; if  $(y_a, y_b) = (-1/4, 0)$ , it is positive only for citizens with  $-1/8 < y_i < 0$ , and is equal to  $1/16 + y_i/2$ . In all these cases, some citizens would vote for  $a$  but should instead vote for  $b$ . The cost calculations for the remaining four possible realizations of  $(a, b)$  are the same except that they apply to citizens with positive ideal points (who could sometime be making mistakes by voting for  $b$  when they should instead vote for  $a$ ). Hence, we obtain that if  $y_i \in [-1, -1/4] \cup [1/4, 1]$ ,  $C_i^e(y_i) = 0$ ; if  $y_i \in (-1/4, -1/8) \cup (1/8, 1/4)$ ,  $C_i^e(y_i) = (1 - 4|y_i|)/32$ ; and if  $y_i \in [-1/8, 1/8]$ ,  $C_i^e(y_i) = (1 - 6|y_i|)/16$ . Since citizens participate in the election if  $C_i^e(\cdot) < D_i^e$  and abstain otherwise, we have that while citizens with relatively extreme ideal points always participate,

all other groups of citizens abstain to various degrees. In particular, the more “moderate” a citizen, the higher the probability she will abstain.

Once again the results derived in this simple example generalize to more complicated environments, and uncertain-voter models offer a valid alternative to ethical-voter models as useful tools for interpreting the empirical evidence. In fact, the class of uncertain-voter models provides theoretical explanations for much of the evidence on voter turnout, relates it to fundamentals, such as information and ideology, and places additional restrictions on the data that can be used to validate the models. Degan and Merlo (2004), for example, propose an uncertain-voter model to explain observed patterns of turnout and voting in U.S. presidential and congressional elections. They structurally estimate the model using individual-level data for the 2000 elections, and use the estimated model to evaluate the effects of counterfactual experiments on electoral outcomes. Their analysis implies a relationship between information and turnout (since uninformed citizens are more likely to make “voting mistakes” and hence have larger expected costs of voting, they abstain more than informed citizens), which can be quantified and related to demographic characteristics. It also provides an explanation for the fact that, in every presidential election year, we always observe more abstention in congressional elections than in the presidential election. Their estimates imply that the average cost of voting in the presidential election is always smaller than in a congressional election, due to the fact that, in general, there is more information, and hence less uncertainty, about presidential candidates than congressional candidates.

## 2.2 Voting

The second fundamental issue I address in this section has to do with the way voters vote. In particular, I am interested in the way the political economy literature has addressed the question of whether citizens vote “sincerely” or “strategically.” In order to even understand this question, we have to start by defining what sincere and strategic behavior mean in the context of voting. Consider a situation where a society of size  $N$  is facing an election  $e$  where there are  $M \geq 2$  alternatives and each citizen  $i = 1, \dots, N$  has a strict preference ranking of these alternatives. Putting aside the issue of abstention (e.g., think of a situation where  $D_i^e > C_i^e$  for all  $i \in \{1, \dots, N\}$ ), citizens vote sincerely if they cast their vote in favor of the alternative they most prefer, independently of what other citizens do. They vote strategically

if their voting decision is a best-response to what other citizens do.

Clearly, the notion of strategic voting is intimately related to the endogenous probability that a vote is decisive, and the characterization of the equilibria of a voting game depends on the voting rule which is used to determine the outcome of the election and on the equilibrium concept which is chosen to solve the game. Both of these aspects have been extensively addressed in the literature and I will not discuss them here.<sup>16</sup> Instead, I will briefly discuss the restrictions that sincere and strategic voting place on the data and their implications for interpreting the empirical evidence.

In the context of the situation described above, if we consider a single, isolated election where there are only two alternatives, sincere and strategic voting are equivalent, since voting sincerely is the unique undominated decision for each citizen. In other words, since sincere and strategic voting induce the same voting profiles, and hence the same outcomes, they are observationally equivalent. This implies that there are no restrictions coming from the theory that allow a researcher to use only data on how voters vote in a single election where there are only two alternatives to discriminate among alternative models. In such context, identification must rely on additional data. Also, the issue of model validation should not be addressed solely on the basis of within-sample fit, but should also rely on the comparison of the relative out-of-sample performance of alternative models.

The equivalence between sincere and strategic voting, however, breaks down as soon as there are more than two alternatives. In fact, this is in general true even when we consider elections with only two alternatives, but where either the same election is repeated through time (e.g., presidential elections in the U.S.), or there are multiple simultaneous elections that are interrelated (e.g., presidential and congressional elections in the U.S.). In all of these situations, strategic considerations are likely to induce voters to vote differently than what would be predicted by sincere behavior, and may lead to different electoral outcomes. In principle, different theories may therefore impose different restrictions on the data, which can then be used to provide discipline in assessing the empirical relevance of various models.

By and large, however, strategic-voting models have multiple equilibria, and their predictions often differ (sometimes dramatically) across equilibria. In fact, the set of Nash equilibria

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<sup>16</sup>See, e.g., Austen-Smith and Banks (2005) and the references therein.

of a voting game may include virtually all possible voting profiles and electoral outcomes. The multiplicity is more severe the larger the size of the electorate and is a common feature of large voting games regardless of the solution concept that is used. Moreover, as already pointed out with respect to the issue of abstention, the probability that a voter is pivotal becomes minuscule in large electorates, thus making strategic calculations less relevant. These considerations impose serious challenges on the use of strategic-voting models to explain the empirical evidence and severely limit the possibility of taking them to the data. Sincere-voting models, on the other hand, are typically very tractable and tend to generate sharp predictions that can be compared with the data. In order to evaluate the limitations of sincere-voting models, it seems therefore useful to try to assess the extent to which sincere-voting models may fail to explain certain aspects of the data

To address this issue, I present here a simple calculation, related to the work by Degan and Merlo (2006), aimed at assessing empirically the extent to which sincere voting can account for observed patterns of voting in an environment where strategic voting is typically thought of as being necessary to explain the evidence. Consider the situation faced by U.S. voters in a presidential election year, where presidential and congressional elections occur simultaneously. A prominent feature that emerges from the data is that often people vote a “split ticket” (i.e., they vote for candidates of different parties for President and for Congress). In particular, in the eight presidential election years between 1972 and 2000, the percentage of voters who split their ticket varies between 16% in 2000 and 27% in 1980.<sup>17</sup>

The sizeable presence of split-ticket voting in the data has been interpreted by many as direct evidence of strategic voting, and has led to the development of strategic-voting models that can explain some of the aggregate stylized facts (e.g., Alesina and Rosenthal (1995, 1996) and Chari, Jones and Marimon (1997)). However, before embracing the notion that in order to explain split-ticket voting one needs to resort to strategic voting, it is useful to ask whether this observed phenomenon can also be explained as the natural outcome of the aggregation of individual decisions of citizens with heterogeneous ideological preferences.

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<sup>17</sup>The data comes from the American National Election Studies which contain individual-level information on how people vote in presidential and congressional elections for a representative (cross-section) sample of the American voting-age population.

In other words, to what extent can sincere voting account for split-ticket voting?

To answer this question, note that while the presidential election is nation-wide (i.e., all citizens face the same set of candidates regardless of where they reside), congressional elections are held at the district level (i.e., citizens residing in different congressional districts face different sets of candidates).<sup>18</sup> Suppose that the positions of all candidates can be represented as points in the unidimensional ideological space  $[-1, 1]$ , and that citizens have single-peaked (Euclidean) preferences over this space, with the peaks representing their ideal points. Hence, it is in principle possible that candidates' positions are such that some voters in some districts have ideal points that are closer to the candidate representing one party in one election and at the same time to the candidate representing the other party in the other election. Some citizens may therefore sincerely vote for the Republican candidate for President and the Democratic candidate for Congress or vice versa.

This argument is illustrated in Figure 1 for arbitrary candidates' positions in two hypothetical districts, where  $D_H$  ( $R_H$ ) and  $D_P$  ( $R_P$ ) are the positions of the Democratic (Republican) candidate running for a House seat and the Presidency, respectively, and  $DD$ ,  $DR$ ,  $RD$ , and  $RR$  are the possible voting profiles (where the first element refers to the vote in the presidential election and the second to the vote in the congressional election). Note that for any configuration of candidates' positions in a district, sincere voting is consistent with only three of the four possible voting profiles (except for a measure zero event where the voters are indifferent between two profiles). Hence, sincere voting can fail to account for some (and possibly all) of the instances of split-ticket voting observed in the data.

To perform this calculation I use two sources of data: the American National Election Studies (NES) and the Poole and Rosenthal NOMINATE Common Space Scores. For each presidential election year, in addition to the individual voting decisions in presidential and congressional elections of a representative sample of the voting age population, the NES contains information on the congressional district where each individual resides, the iden-

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<sup>18</sup>Consistent with the existing literature on split-ticket voting, I restrict attention to House elections, which are held every election year for every district. Hence, each citizen faces both a presidential election as well as a House election. Senate elections, on the other hand, are staggered and only about a third of all states have a Senate election in any given election year.

tivity of the Democratic and the Republican candidate competing for election in his or her congressional district, and whether any of the candidates is an incumbent in that district. Using data on roll call voting by each member of Congress and support to roll call votes by each President, Poole and Rosenthal (1997) developed a methodology to estimate the positions of all politicians who ever served either as Presidents or members of Congress, on the liberal-conservative ideological space  $[-1, 1]$ . These estimates, called NOMINATE scores, are comparable across politicians and across time.

Given the two data sets, I match each voter in the NES sample for each presidential election year with the positions of the candidates running in his or her congressional district that year. If one of the two candidates is an incumbent, I assume that his position is known and given by his NOMINATE score. For challengers, on the other hand, I assume that their positions are not known, but are drawn from populations of potential candidates whose distributions are known and given by the empirical distributions of the NOMINATE scores for Democratic and Republican members of Congress. I allow these distributions to differ across U.S. regions. In addition, in each presidential election all voters face the same set of candidates and I assume that their positions are known and given by their NOMINATE scores. For each presidential election year between 1972 and 2000, I then calculate whether the observed voting profile of each voter is consistent with sincere voting. Since straight-ticket voting is always consistent with sincere voting, I only need to calculate the fraction of split-ticket voting that can be explained by sincere voting.

The results of this calculation indicate that sincere voting can explain nearly all of the individual-level observations. In particular, in six of the eight presidential election years considered, sincere voting can account for over 95% of split-ticket voting. Its worst “failures” are the inability of accounting for 2% and 3% of the observations (i.e., 9% of the 27% and 20% of the 17% of voters who split their ticket), in 1980 and 1996, respectively. As “errors” of this magnitude are within the margin of tolerance when one allows for sampling (or measurement) error, I conclude that a compelling case cannot be made on empirical grounds to dismiss a sincere-voting interpretation of split-ticket voting in favor of more complicated explanations that rely on strategic voting.

More generally, I believe that strategic-voting models provide a coherent analytical frame-

work to understand the potential effects of strategic interactions among citizens in a political economy, and their importance should not be evaluated solely on the basis of their empirical performance. On the other hand, sincere-voting models, while perhaps less sophisticated, often provide a useful theoretical guide to analyze the data and interpret the evidence, and their empirical performance should be assessed first, before resorting to more sophisticated, but often less tractable, models.

### 3. Politicians

The very existence and functioning of representative democracy, where citizens delegate policy-making to elected representatives, hinge on the presence of politicians. In his famous 1918 lecture entitled *Politics as a Vocation*, Max Weber writes:

“Politics, just as economic pursuits, may be a man’s avocation or his vocation. [...] There are two ways of making politics one’s vocation: Either one lives ‘for’ politics or one lives ‘off’ politics. [...] He who lives ‘for’ politics makes politics his life, in an internal sense. Either he enjoys the naked possession of the power he exerts, or he nourishes his inner balance and self-feeling by the consciousness that his life has meaning in the service of a ‘cause.’ [...] He who strives to make politics a permanent source of income lives ‘off’ politics as a vocation.” [from Gerth and Mills (1946, pp. 83-84)]

The view expressed by Weber is indicative of the way in which early research in political economy approached the study of politicians. By taking the existence of politicians as given (i.e., by treating them as a primitive), the main objective of this literature has been for a long time that of addressing the following question: What are the motivations of politicians?

Starting with Downs (1957), a long tradition in political economy builds on the assumption that the main objective of politicians is to win an election. Within this framework, known as the “downsian” paradigm, (office-concerned) opportunistic candidates shape their policy platforms to please the (policy-concerned) electorate, so as to maximize their probability of winning and collect the rents of public office. Several authors have challenged this view by proposing alternative theories where politicians are assumed to be policy-motivated (e.g., Alesina (1988), Hibbs (1977) and Wittman (1977, 1983)). Within this framework, known as

the “partisan” paradigm, candidates choose their policy platforms by trading-off their policy preferences with their desire to win the election in order to affect policy outcomes.<sup>19</sup>

A major turning point in the literature occurred when researchers started to challenge the basic assumption that the set of political candidates competing for public office is exogenous. This challenge defines most of the current political economy research on this topic and has generated an alternative approach to the study of politicians known as the “citizen-candidate” paradigm (e.g., Besley and Coate (1997) and Osborne and Slivinski (1996)). This framework removes the artificial distinction between citizens and politicians prevalent in the other approaches, by recognizing that elected officials are selected by the citizenry from those citizens who choose to become politicians and run for election in the first place. By doing so, this approach makes the question of what are the motivations of politicians moot. Since politicians are citizens, their preferences can no longer be specified in an ad hoc fashion, separately from the specification of the preferences of voters. In other words, the preferences of elected politicians must be represented in the citizenry. At the same time, the citizen-candidate framework poses two new important questions: (i) Who chooses to become a politician? (ii) What are the returns to an individual from becoming a politician?

In light of these considerations, in the remainder of this section I first illustrate the logic of the citizen-candidate approach by presenting a simple example and discussing the implications of different assumptions about voters’ behavior. I then address the empirical question of what are the returns to an individual from being a politician.<sup>20</sup>

### 3.1 The Citizen-Candidate Framework

Consider the following example based on Besley and Coate (1997) and Osborne and Slivinski (1996). A society has to elect a representative to implement a policy  $y$  in the unidimensional policy space  $Y = [-1, 1]$ . There is a large, finite number of citizens, indexed by  $i \in \{1, \dots, N\}$ , which, for expositional convenience, can be approximated by a continuum of measure one.<sup>21</sup> Citizens evaluate alternative policies  $y \in [-1, 1]$  and monetary payoffs  $z \in \mathbb{R}$  according to the indirect utility function  $U_i(y, z) = u_i(y) + z$ , where  $u_i(y) = -(y_i - y)^2$

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<sup>19</sup>For a description of the two paradigms see, e.g., chapters 3 and 5 in Persson and Tabellini (2000).

<sup>20</sup>Another important line of research which is not considered here concerns the behavior of elected politicians and the extent to which voters can discipline them. See, e.g., Besley (2005) for a survey.

<sup>21</sup>In particular, the probability that each vote is pivotal is not zero, although potentially very small.

and  $y_i \in [-1, 1]$  denotes citizen  $i$ 's most preferred policy. The distribution of ideal points in the citizenry, which is common knowledge, is uniform on the support  $[-1, 1]$ .

Citizens decide whether to become candidates in the election. Running for public office entails a cost  $C \in (0, 1/6]$ . After all citizens have made their entry decision, the ideal point of each candidate is observed by all citizens. Since candidates cannot commit in advance to a policy, a candidate's ideal point represents the policy he would implement if elected. Given the set of candidates, all citizens vote for one of them. The candidate who wins a plurality of the votes is elected and implements his most preferred policy. In addition, the elected politician receives a payoff  $B \in [2C/3, 2C)$ , which represents the rents from holding public office. In the event of a tie, a random draw among the tying candidates selects the winner. If nobody runs as a candidate every citizen gets a utility of  $-1$ . If a generic citizen  $i$  chooses to run for election, his payoff is equal to  $B - C$  if he is elected and  $-(y_i - y_j)^2 - C$  if another citizen  $j$  is elected. If, on the other hand, he chooses not to run, his payoff is equal to  $-(y_i - y_j)^2$  if a citizen  $j$  is elected, or  $-1$  in the event that no citizen runs for election.

I distinguish between two cases that correspond to two alternative assumptions about the behavior of voters. In the first case, citizens are assumed to vote sincerely (i.e., each citizen votes for his most preferred candidate, and if there are  $k$  candidates all with the same ideal point  $y$  each of these candidates receives a fraction  $1/k$  of the votes of all citizens whose ideal points are closer to  $y$  than to the ideal points of any other candidate). In the second case, citizens vote strategically (i.e., each citizen's voting strategy is a best response to the voting strategies of all other citizens, and no citizen uses weakly dominated voting strategies).<sup>22</sup>

While the model admits equilibria with different number of candidates, I focus on equilibria where only two citizens run for election.<sup>23</sup> Before considering the characterization of two-candidate equilibria in each of the two cases, recall that sincere and strategic voting are equivalent when there are only two alternatives. This implies that in all equilibria with two candidates, each citizen votes for his most preferred candidate (regardless of whether out of equilibrium voters vote sincerely or strategically). Since running for election is costly,

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<sup>22</sup>The first case is considered by Osborne and Slivinski (1996), the second by Besley and Coate (1997).

<sup>23</sup>In this example, there are also equilibria where only one candidate runs unopposed. Equilibria with more than two candidates do not exist here, although they are possible in more general formulations.

it is also true that in any equilibrium no citizen ever runs unless either he has a positive probability of winning, or he affects the electoral outcome by running (regardless of the number of equilibrium candidates). The combination of these two results implies that in all two-candidate equilibria, each candidate must win with equal probability and, therefore, the ideal points of the citizens who run as candidates must be symmetric around the median of the distribution of ideal points in the citizenry, 0. It follows that, in all two-candidate equilibria, the ideal points of candidates, and hence the two possible policy outcomes, are described by a vector  $(-y^*, y^*)$ . Also, any difference in the properties of two-candidate equilibria between the model with sincere voting and the one with strategic voting arises from differences in the out-of-equilibrium behavior of voters. In particular, in order to characterize two-candidate equilibria we must consider the deviation where a third citizen may decide to run as candidate, and the voters' response to this deviation is different in the two cases.

*Sincere voting:* The set of two-candidate equilibria is such that  $y^* \in [\sqrt{(2C - B/4)}, 2/3]$ . To see that this is the case, note that the lower bound on  $y^*$  is given by the fact that each candidate must find it optimal to run and win with probability 1/2, rather than let their opponent run uncontested and win for sure. Since running is costly, for a citizen to run, it must be that the ideal point of the other citizen running is far enough from his own ideal point. Otherwise, he may prefer to delegate the policy choice to his opponent. If a citizen with ideal point  $y^*$  runs against a citizen with ideal point  $-y^*$ , his payoff is equal to  $-2y^{*2} + B/2 - C$ , while if he does not run and let his opponent win, his payoff is equal to  $-4y^{*2}$ . Hence, in equilibrium, it must be that  $y^* \geq \sqrt{(2C - B)/4}$ .

The upper bound on  $y^*$  derives from the fact that in all two-candidate equilibria each candidate must win with positive probability (in fact, with probability 1/2). This requires that the ideal points of the two candidates cannot be too far apart from each other. Otherwise, a citizen with the median ideal point would find it profitable to run and win the election for sure. In fact, if a citizen with ideal point equal to 0 enters and wins, his payoff is equal to  $B - C$ . If, on the other hand, he does not run against the pair of candidates with ideal points  $(-y^*, y^*)$ , his payoff is equal to  $-y^{*2}$ . Hence, since  $y^* \geq \sqrt{(2C - B)/4}$ , and  $B \in [2C/3, 2C]$ , it is always true that  $-y^{*2} \leq B - C$ , which implies that the citizen with median ideal point would always want to run if he could be sure of victory. However, if he

were a sure loser, it would never be profitable for him to run (since he would not affect the policy outcome and would have to pay the cost of running).<sup>24</sup>

Hence, the upper bound on  $y^*$  is derived by finding the value  $\bar{y}$  such that a candidate with ideal point equal to 0 would receive 1/3 of the votes if he were to run against a pair of candidates with ideal points  $(-\bar{y}, \bar{y})$ . Since the density of ideal points in the citizenry is uniform on the support  $[-1, 1]$ , this condition implies that  $\bar{y} = 2/3$ . Finally, note that if a citizen with ideal point equal to 0 were to run against a pair of candidates with ideal points  $(-2/3, 2/3)$ , the outcome of the election would be a three-way tie. Since the citizen would find it profitable to run, it follows that  $y^* < 2/3$ .<sup>25</sup>

*Strategic voting:* The set of two-candidate equilibria is such that  $y^* \in [\sqrt{(2C - B)/4}, 1]$ . The lower bound on  $y^*$  is obtained from the same argument that was used above, which does not depend on how citizens vote. In order to explain why, if citizens vote strategically, it is also an equilibrium for two citizens with ideal points  $(-y^*, y^*)$  such that  $y^* \in [\bar{y}, 1]$  to run, consider the following argument. Suppose that  $y^* = \bar{y}$ , and consider the possible deviation where a citizen with ideal point equal to 0 decides to run as a candidate. Would enough citizens strategically vote for the new candidate to make it profitable for him to run? Not necessarily. In fact, recall that with only two candidates, the voting population splits their vote 50/50 between the two candidates with ideal points  $(-\bar{y}, \bar{y})$  and each voter votes for the candidate he most prefers. Then, if no citizen uses weakly dominated voting strategies, it is a Nash equilibrium for the voters to continue to split their vote 50/50 between the two candidates with ideal points  $(-\bar{y}, \bar{y})$ . In this equilibrium, the candidate with ideal point 0 does not receive any vote and hence chooses not to run, thus supporting the two-candidate equilibrium where  $y^* = \bar{y}$ . To see that this is the case, note that it is a weakly dominated strategy for any citizen whose ideal point is closer to 0 than to either  $-\bar{y}$  or  $\bar{y}$  to switch his vote and vote for the candidate with ideal point 0 instead (which is what sincere voting would prescribe). By doing so, since the ideal point of such switching voter must be between  $-\bar{y}$

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<sup>24</sup>Note that it is also true that no other citizen with ideal point between  $-y^*$  and  $y^*$  would want to run as a sure loser. In fact, if his ideal point is closer to  $y^*$  ( $-y^*$ ), his decision to run would induce the policy outcome  $-y^*$  ( $y^*$ ), which is always worse for him than the lottery between  $-y^*$  and  $y^*$ .

<sup>25</sup>Note that the payoff from running is equal to  $B/3 - C - 8/27$ , which, for all  $C \in (0, 1/6]$  and  $B \in [2C/3, 2C)$ , is always larger than the payoff from staying out,  $-4/9$ .

and  $\bar{y}$ , the voter would change the electoral outcome against the candidate he was supporting before the switch, and would therefore be worse off.<sup>26</sup> Clearly, no citizen with ideal point outside the interval  $(-\bar{y}, \bar{y})$  would want to switch his vote either. Similar arguments also apply for all  $y^* \in [\bar{y}, 1]$ .

While citizens with relatively extreme ideal points cannot be elected (and therefore never run), if citizens vote sincerely, a situation where two candidates whose policy preferences are at the opposite ends of the spectrum compete for election may be an equilibrium if citizens vote strategically. The set of two-candidate equilibria under sincere and strategic voting, however, also share some common features. In particular, to the extent that running for office is costly, no two candidates will share the same ideal point, and the higher the cost relative to the benefit the larger the minimum distance between the two candidates.

The simple parametric example considered here illustrates some of the appealing features of the citizen-candidate framework. By treating electoral candidates as endogenous equilibrium objects, citizen-candidate models provide useful theoretical foundations for addressing the question of who becomes a politician. In particular, the “type” of citizens who choose to run for public office in equilibrium, and hence the characteristics of elected representatives, are a function of the relative costs and benefits of becoming a politician, as well as the preferences of the citizenry. While in the original specification proposed by Besley and Coate (1997) and Osborne and Slivinski (1996) citizens only differ with respect to their policy preferences, the basic structure can also be extended to richer environments which encompass additional dimensions of heterogeneity (e.g., Caselli and Morelli (2004) and Messner and Polborn (2004)). More generally, the citizen-candidate framework represents a useful analytical tool that is both flexible and tractable, and can be generalized to address a number of interesting issues in political economy.<sup>27</sup>

### 3.2 Private Returns to Political Experience

The previous discussion highlighted the importance of the relative costs and benefits

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<sup>26</sup>The “weak” qualifier derives from the fact that all citizens with ideal point equal to 0 are indifferent between  $-\bar{y}$  and  $\bar{y}$  and would therefore remain indifferent after breaking the tie.

<sup>27</sup>These issues include lobbying (e.g., Besley and Coate (2001) and Felli and Merlo (2004)), parties (e.g., Levy (2004) and Morelli (2004)), coalition governments (e.g., Bandyopadhyay and Oak (2004)), and inefficient public policy (e.g., Besley and Coate (1998)).

of electoral success to analyze the incentives of politicians. The benefits of public office include both instantaneous payoffs, which are realized upon electoral success, as well as future payoffs, which accrue over time and depend on current and future decisions. Also, these payoffs have a monetary, observable component (e.g., the salary while in office or future wages in other occupations), and a non-pecuniary, unobservable component (e.g., the benefit from participating in the policy-making process and possibly affecting policy outcomes).

In order to focus attention on the dynamic aspects of the career decisions of politicians, consider the situation faced by an elected representative in his first term in office. At the risk of oversimplifying, consider a simple example where the horizon of the dynamic decision problem is two periods. In the first period, the politician has to decide whether to run for reelection. In the second and last period, if he is still in office, in addition to rerunning for his office the politician has also the opportunity of running for a higher office. If the politician leaves politics (either voluntarily or via electoral defeat), he works in the private sector.

The political office currently occupied by the politician pays a per-period salary  $S$  and generates a per-period benefit  $B$ . Moreover, if the politician is successful in implementing his most preferred policy, he receives an additional benefit  $P$ . Similarly, the payoffs in the higher office are  $S' > S$ ,  $B' > B$ , and  $P' > P$ . The cost of running for election,  $C$ , is normalized to zero. Private sector wages increase with political experience. Let  $e \in \{1, 2\}$  denote an individual's political experience (i.e., the number of periods he has served in a political office), and  $W_e$  his per-period wage in the private sector, where  $S < B + S < W_1 < B' + S' < W_2 < B + S + P < B' + S' + P' = 2(B + S + P)$ , and  $(W_2 - W_1) > (W_1 - (B + S))$ . Suppose there is no discounting.

Politicians differ with respect to their electoral skills, which affect their probability of winning an election. Let  $j \in \{b, g\}$  denote the individual's electoral type,  $\pi_j$  his probability of being reelected, and  $\pi'_j$  his probability of winning an electoral bid for higher office, where  $0 = \pi'_b < \pi_b = 1/2 = \pi'_g < \pi_g = 1$ . Politicians also differ with respect to their policy skills, which affect their probability of successfully implementing their most preferred policy. Let  $k \in \{l, h\}$  denote the individual's policy type and  $p_k$  the per-period probability of implementing his most preferred policy while in office, where  $0 = p_l < p_h = 1$ . Hence, there are four possible types of politicians denoted by  $\tau = (j, k) \in \{(b, l), (b, h), (g, l), (g, h)\}$ .

To analyze the politician's dynamic optimization problem, consider first the decision he faces in the last period (i.e.,  $t = 2$ ). If the politician decides to run for reelection, his expected payoff is equal to  $\pi_j(S + B + p_k P) + (1 - \pi_j)W_2$ , while if he runs for higher office it is equal to  $\pi'_j(S' + B' + p_k P') + (1 - \pi'_j)W_2$ , and to  $W_2$  if he decides to voluntarily leave office. Clearly, the politician's optimal decision depends on his type  $\tau$ . If  $\tau = (g, h)$  the politician runs for higher office, if  $\tau = (b, h)$  he runs for reelection, and if  $\tau = (b, l)$  or  $\tau = (g, l)$  he exits politics. Let  $V_2(\tau)$  denote the expected continuation payoff of an individual of type  $\tau$  given his optimal period-2 decision. We have that  $V_2(g, h) = (S' + B' + P')/2 + W_2/2$ ,  $V_2(b, h) = (S + B + P)/2 + W_2/2$ , and  $V_2(b, l) = V_2(g, l) = W_2$ . Consider now the decision problem of the politician when  $t = 1$ . His expected payoff is equal to  $\pi_j(S + B + p_k P + V_2(\tau)) + (1 - \pi_j)2W_1$  if he runs for reelection, and  $2W_1$  if he exits. Hence, the politician always runs for reelection, independently of his type. Let  $V_1(\tau)$  denote the expected payoff of an individual of type  $\tau$  at the time of his election to public office given his optimal period-1 decision. We have that  $V_1(g, h) = (S + B + P) + (S' + B' + P')/2 + W_2/2$ ,  $V_1(b, h) = 3(S + B + P)/4 + W_2/4 + W_1$ ,  $V_1(b, l) = (S + B + W_2)/2 + W_1$ , and  $V_1(g, l) = S + B + W_2$ . It may therefore be optimal for a politician to remain in a particular office for a while and then either attempt to get elected to a higher office or leave politics altogether.

As illustrated in this example, current and future benefits from public office are likely to affect the behavior of politicians. The effects will in general depend on the relative magnitudes of the various components of the returns to an individual from a career in politics. Also, different components are likely to affect different politicians in different ways, depending on their (observable and unobservable) characteristics. These considerations suggest that in order to improve our understanding of the career decisions of politicians it is important to quantify the private returns to political experience.

This empirical question is the focus of the work by Diermeier, Keane and Merlo (2005), who specify a dynamic model of career decisions of a member of the U.S. Congress, and estimate this model using a newly collected data set that contains detailed information on all members of Congress in the post-war period. A novel feature of the data is that it incorporates information about post-congressional employment and earnings when members exit Congress, which allows them to estimate the returns to congressional experience in post-

congressional employment. The framework they propose also allows estimation of the relative importance of the utility politicians derive from being in office and the monetary returns to a career in Congress. Using data on important legislative achievements by members of Congress, they relate part of the non-pecuniary rewards from serving in Congress to the desire for policy accomplishments. Using the estimated model, they also investigate the extent to which politicians' career choices respond to wage incentives.

As in the simple example above, the model of Diermeier, Keane and Merlo (2005) takes into account that the decision of a member of Congress to seek reelection is likely to depend not only on current payoffs, which in turn depend on the probability of winning today, but also on the option value of holding the seat. This option value may depend, among other things, on the probability of being named to a committee, as well as the probability of winning a bid for higher office in the future (e.g., a member of the House may run for a seat in the Senate). Their empirical framework also incorporates politicians' unobserved heterogeneity (both with respect to their electoral ability and policy effectiveness), and observed characteristics (e.g., their age, education and family background, party affiliation, and prior political experience), into the analysis of their career choices.

For the purpose of the discussion here, there are two main empirical findings of Diermeier, Keane and Merlo (2005). First, congressional experience significantly increases post-congressional wages in the private sector. In particular, holding everything else constant, winning reelection in the House (Senate) for the first time increases post-congressional wages in the private sector by 4.4% (16.7%). However, the marginal effect of congressional experience on post-congressional wages diminishes quite rapidly with additional experience, and the average effect of an additional term in the House (Senate) is equal to 2.4% (5.2%). Second, the non-pecuniary rewards from being in Congress are rather large (especially in the Senate). General non-pecuniary rewards amount to over \$200,000 per year for a senator and about \$30,000 per year for a representative (in 1995 dollars).<sup>28</sup> In addition, non-pecuniary rewards from an important legislative accomplishment are comparable for representatives and senators, and quite large (i.e., about \$350,000 and \$400,000, respectively). These findings suggest that policy motivations and benefits of office play important roles in the career

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<sup>28</sup>The average annual salary of a member of Congress in 1995 dollars over the period 1947-1994 is \$120,378.

decisions of politicians. In particular, monetary returns alone (i.e., wages in Congress and post-congressional payoffs), cannot explain the observed behavior of politicians, and the effect of the congressional salary on their behavior is quite modest.

#### 4. Parties

Political parties represent another fundamental institution of representative democracy, and have long been recognized as key players by the political economy literature (see, e.g., Downs (1957)). However, the question “what is a party?” in political economy is as difficult and elusive as the question “what is a firm?” in industrial organization. The boundaries between political parties and interest groups or other citizens’ organizations, for example, are rather blurry, and it is conceptually difficult to discriminate among alternative definitions of parties. It should therefore not be surprising that not much progress has been made to date to provide a compelling answer to this important question. In fact, as compared to the other topics discussed here, the study of political parties as endogenous equilibrium institutions is still in its infancy.

Most of the recent political economy literature on parties has tried to “unbundle” these institutions by focusing on specific purposes parties serve, thus providing alternative (complementary) rationales for their existence. Among all the possible purposes of parties that have been considered in the literature, I focus here on two that are closely related to the topics of the previous sections. These are the choice of policy platforms (e.g., Levy (2004), Morelli (2004) and Testa (2004)), and the selection of politicians and the choice of electoral candidates (e.g., Caillaud and Tirole (2002), Carrillo and Mariotti (2001), Mattozzi and Merlo (2005a, 2005b) and Snyder and Ting (2002)).<sup>29</sup> For each of these issues, I present a simple example based on a model drawn from the literature to illustrate possible ways of modelling the role of parties. Since it is not clear what kind of empirical evidence is most relevant to study political parties, I do not attempt here to relate theoretical and empirical research on this topic, or to emphasize specific features of the data.<sup>30</sup>

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<sup>29</sup>Other functions performed by parties include the mobilization of voters (e.g., Shachar and Nalebuff (1999)), the organization and coordination of electoral campaigns (e.g., Osborne and Tourky (2004)), the formation of bargaining coalitions in the legislature (e.g., Jackson and Moselle (2002)), and disciplining the behavior of elected representatives (e.g., Harrington (1992)).

<sup>30</sup>Most of the empirical literature on parties has tried to assess whether parties affect the roll call voting

## 4.1 Choice of Policy Platforms

At a basic level, parties are groups of politicians. While members of the same party are more likely to share similar views than members of different parties, these groups are by no means homogeneous. Hence, a legitimate question is whether parties matter, in the ex ante sense of imposing some discipline on the policy platforms of their representatives, or their existence can simply be rationalized as an ex post agglomeration of like-minded politicians.

In order to explore this issue, consider the following example taken from Levy (2004). A society has to elect a representative to implement a policy  $y = (y_1, y_2)$  in the two-dimensional policy space  $Y = Y_1 \times Y_2$ ,  $Y_1 = Y_2 = [-1, 1]$ . There is a continuum of citizens of mass one divided into three separate groups of equal size, where  $j \in \{a, b, c\}$  denotes a generic group of citizens. All citizens within the same group have the same preferences, and citizens in group  $j \in \{a, b, c\}$  evaluate alternative policies according to the indirect utility function  $u_j(y) = -(y_1^j - y_1)^2 - (y_2^j - y_2)^2$ , where  $y^j = (y_1^j, y_2^j) \in Y$  denotes group  $j$ 's most preferred policy, or ideal point, and  $y^a = (-1, -1)$ ,  $y^b = (1, 1)$ , and  $y^c = (-1, 1)$ . One citizen in each group is a politician, and let  $j \in \{a, b, c\}$  also denote the politician from group  $j$ . The three politicians are organized into parties, and the five possible party configurations are:  $(\{a\}, \{b\}, \{c\})$  (which denotes that each politician is in a separate party),  $(\{a, b\}, \{c\})$  (which denotes that politicians  $a$  and  $b$  are in the same party, while politician  $c$  is in a separate party),  $(\{a\}, \{b, c\})$ ,  $(\{a, c\}, \{b\})$ , and  $(\{a, b, c\})$ .

Parties choose whether or not to compete in the election and, if so, which policy platform to propose. Decisions within each party are made by unanimity rule. If all the members of a party are indifferent between running and not running, the party does not run. If a party competes in the election a partisan politician runs as its representative. Since there are no direct benefits from holding office and, if elected, a politician implements his party's platform, the choice of the party's representative is inconsequential.

The set of policy platforms a party can propose is represented by its Pareto set (i.e., the 

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behavior of senators and representatives in the U.S. Congress (see, e.g., Cox and McCubbins (1993) and Poole and Rosenthal (1997)). Stylized facts about political parties concern for the most part their relative number across different political systems (see, e.g., Lijphart (1999)). There is also a large theoretical literature on the equilibrium number of parties, which I do not consider here. See, e.g., Cox (1997) for an overview.

set of feasible policies that are efficient from the point of view of the party). Hence, the role of parties here is to expand the set of policies politicians can offer when they run for office. Recall that in the citizen-candidate framework, politicians cannot commit to implement any policy other than their ideal point. In this environment, on the other hand, parties can commit to implement any policy, as long as it is efficient for its members (and hence enforceable after the election). Let  $k \in \{\{a\}, \{b\}, \{c\}, \{a, b\}, \{a, c\}, \{b, c\}, \{a, b, c\}\}$  denote a generic party and  $P^k$  its Pareto set. We have that  $P^{\{a\}} = (-1, -1)$ ,  $P^{\{b\}} = (1, 1)$ ,  $P^{\{c\}} = (-1, 1)$ ,  $P^{\{a, b\}} = \{(y_1, y_2) : y_1 = y_2 \in [-1, 1]\}$ ,  $P^{\{a, c\}} = \{(-1, y_2) : y_2 \in [-1, 1]\}$ ,  $P^{\{b, c\}} = \{(y_1, 1) : y_1 \in [-1, 1]\}$ , and  $P^{\{a, b, c\}} = \{(y_1, y_2) : y_1, y_2 \in [-1, 1], y_1 \geq y_2\}$ . Given the set of parties running for election and their policy platforms, citizens vote sincerely (i.e., they vote for the platform they most prefer, and if they are indifferent they vote for the party of their politician). The platform that receives the largest number of votes is then implemented.

Following Levy (2004), the equilibrium characterization proceeds in two steps: (i) for any given party configuration, solve for the pure-strategy Nash equilibria of the platform game and determine which policy platforms are implemented; (ii) derive the set of equilibrium party configurations, where a party configuration is an equilibrium if it is stable (i.e., it is such that no politician, or group of politicians wants to quit its party and form a smaller one, thus inducing a different equilibrium policy outcome).

*Equilibrium platforms:* Consider party configuration  $(\{a\}, \{b\}, \{c\})$ . If party  $\{j\}$ ,  $j \in \{a, b, c\}$ , runs its policy platform is  $y^j$ . The citizens in group  $a$  strictly prefer  $y^c$  to  $y^b$ , and similarly, the citizens in group  $b$  strictly prefer  $y^c$  to  $y^a$ . In equilibrium, the politician in party  $\{c\}$  runs unopposed and the policy platform  $(-1, 1)$  is implemented. Next, consider party configuration  $(\{a, b\}, \{c\})$ . If party  $\{a, b\}$  runs it can offer policy platforms in the set  $\{(y_1, y_2) : y_1 = y_2 \in [-1, 1]\}$ , while if party  $\{c\}$  runs its policy platform is  $(-1, 1)$ . If party  $\{a, b\}$  offers a policy platform  $(y, y)$  such that  $y \in [-1, \sqrt{2}-1)$ , the citizens in group  $a$  strictly prefer such policy to  $(-1, 1)$ , and if it offers a policy platform  $(y, y)$  such that  $y \in (1-\sqrt{2}, 1]$ , the citizens in group  $b$  strictly prefer such policy to  $(-1, 1)$ . In equilibrium, one of the two politicians in party  $\{a, b\}$  runs unopposed and offers a policy platform  $y \in (1-\sqrt{2}, \sqrt{2}-1)$ , which is implemented. Suppose now that the party configuration is  $(\{a, c\}, \{b\})$ . If party  $\{a, c\}$  offers any policy platform in its Pareto set  $\{(-1, y_2) : y_2 \in [-1, 1]\}$ , the citizens in

groups  $a$  and  $c$  strictly prefer such policy to  $(1, 1)$  (the preference is weak for citizens in groups  $c$  if  $y_2 = -1$ ). In equilibrium, one of the two politicians in party  $\{a, c\}$  runs unopposed and offers a policy platform  $(-1, y_2)$ , where  $y_2 \in [-1, 1]$ , which is implemented. Similarly, if the party configuration is  $(\{b, c\}, \{a\})$ , in equilibrium one of the two politicians in party  $\{b, c\}$  runs unopposed and offers a policy platform  $(y_1, 1)$ , where  $y_1 \in [-1, 1]$ , which is implemented. Finally, if the only party is  $\{a, b, c\}$ , then any policy platform in  $P^{\{a,b,c\}}$  can be offered and implemented in equilibrium.

*Equilibrium party configurations:* Party configuration  $(\{a\}, \{b\}, \{c\})$  is stable by definition. Party configuration  $(\{a, b\}, \{c\})$  is stable, since neither politician  $a$  nor politician  $b$  can gain by leaving party  $\{a, b\}$  and forming their own parties; the break-up of the party would in fact lead to the policy outcome  $(-1, 1)$ . Party configurations  $(\{a, c\}, \{b\})$  and  $(\{b, c\}, \{a\})$  are stable only if the platform that is offered is  $(-1, 1)$ ; otherwise, in either case politician  $c$  would find it profitable to leave its party and form his own party, thus inducing the policy outcome  $(-1, 1)$ . Finally, party configuration  $\{a, b, c\}$  is stable only if the platform that is offered is  $(0, 0)$ , which is the only platform that prevents either politicians  $a$  and  $b$  to form a party together or  $c$  to form his own party (note that  $(0, 0)$  is the platform in the set of equilibrium policies of party  $\{a, b\}$  that maximizes the utility of politician  $c$ ).

The main conclusion we draw from this insightful example (which extends to the general environment considered by Levy (2004)), is that parties may matter. By imposing discipline on the policy platforms that are offered by their politicians in an election, parties may affect equilibrium policy outcomes. In particular, the partisan policy platforms that are implemented may differ from any of the ideal points of the politicians, which are the only possible policy outcomes in the absence of parties.

## 4.2 Selection of Politicians

Another important function played by political parties is the selection of candidates for a variety of public offices. This function interacts in interesting ways with the voters' desire to have the best possible politicians in office, and with the career ambitions of individuals who want to become politicians. There are several important aspects of this interaction. One aspect is that since parties may have several opportunities to interact with individuals with political aspirations before they run for office, they may have more information about

the political skills of potential politicians than voters, who can only observe the political skills of politicians after they are in office. A second aspect is that since politicians are typically “under the spotlight,” receiving the attention of the media and a variety of citizens’ organizations, they may have relatively better chances to display their sector-specific skills than people working in other sectors. Finally, to the extent that political skills may also be valuable outside the political sector (either directly, or because they are correlated with other skills), politicians may eventually decide to leave politics to work in another sector.

In order to investigate these issues, consider the following example based on Mattozzi and Merlo (2005a). A political economy has two sectors: a market sector and a political sector. In every period  $t = 0, 1, \dots$  a large, finite number of citizens is born, which, for convenience of exposition, can be approximated by a continuum of measure one. Individuals live for two periods, and are heterogeneous with respect to their market ability  $m$  and their political skills  $p$ . Let  $m \in \{l, h\}$ , where  $m = l$  ( $m = h$ ) denotes an individual with low (high) market ability. Three fourths of the population have high market ability with probability  $1/4$  and have no political skills, that is  $p = 0$ . The remaining one fourth of the population is heterogeneous with respect to their political skills  $p \in [0, 1]$ , which are distributed according to a uniform distribution. The probability of being high market ability is positively correlated with political skills and is equal to  $\pi(p) = 1/4 + p/2$ . Each individual only knows his own political skills, and does not know his market ability. Also,  $\pi(p)$  and the distribution of political skills in the citizenry are common knowledge.

In the first period of life, an individual can either work in the market sector or be a politician. If an individual becomes a politician, his political skills become publicly observable. Politicians may also remain in the political sector during their second period of life, or work in the market sector. If an individual works in the market sector, during his first period of employment his market ability is revealed with probability  $1/2$ . Individuals make their career decisions to maximize their earnings.

The market sector is perfectly competitive, and  $W_l = 0$  and  $W_h = 1$  denote the competitive market wage rates associated with each ability level. The political sector is characterized by a single political office that pays a politician a per-period salary  $S \in (1/5, 1/4)$ . While in office, a politician with political skills  $p$  performs a public service which generates a public

benefit  $B(p) = p$ . Hence, politicians with higher political skills generate higher benefits, and are thus more desirable from the point of view of the voters. If in a period the political office remains vacant, then no benefit is generated that period.

There is an infinitely-lived political party that in each period when the political office is vacant can nominate a candidate. The political mechanism that determines the appointment and possible re-appointment of a politician is as follows. If no politician is in office, then at the beginning of the period all individuals born in that period decide whether or not to apply to become a partisan politician. The party then observes the political skills of a randomly drawn individual from the pool of applicants, and decides whether to nominate him for the political office, or reject him and forgo the opportunity of nominating somebody in that period. A party's nominee is either approved or not approved by the voters according to majority rule. Only individuals in their second period of life vote. If a party's nominee is approved by a majority of the voters, he is then in office for that period, while all other individuals work in the market sector. If, on the other hand, the party's nominee does not receive the approval of a majority of the voters, or the party does not propose a nomination, then all individuals in their first period of life decide whether or not to run for the political office as independents. A random draw then determines who will be in office for that period. If nobody runs, the political office remains vacant for a period.

If a politician is in office, at the beginning of the period the voters decide by majority rule whether or not to confirm the incumbent for a second term. If the incumbent is not confirmed, all individuals born in that period decide whether or not to run for the political office as independents. If instead the incumbent is confirmed by the voters, he decides whether to remain in the political office for a second term, or leave politics and work in the market sector. If he chooses to remain in office, all other individuals work in the market sector. If he chooses to work in the market sector, the political office becomes vacant and the party can then propose a new nominee for the political office in that period.

In his second term in office, a politician with political skills  $p$  generates private benefits denoted by  $z(p) = \sqrt{p}/2$ . If the incumbent is a partisan, these benefits are shared between the party and the politician in office. The politician's share  $\tau$  is equal to the minimum between his potential wage in the market sector net of the political salary and the entire

benefit, while the party appropriates the rent  $z(p) - \tau$ . If instead the incumbent politician is an independent, his earnings in his second term in office are equal to  $S + z(p)$ . Let  $\delta \geq 1/2$  be the party's discount factor, and normalize the individuals' discount factor to 1.

Following Mattozzi and Merlo (2005a), under a weak-monotonicity restriction on the out-of-equilibrium beliefs of voters, the model has a unique Markov Perfect Equilibrium. In equilibrium, there exist two levels of political skills,  $p^* = 11/8 - 4S$  and  $p'' = 2S + \sqrt{2S - 1/4}$ ,  $0 < p^* < (1+p^*)/2 < p'' < 1$ , such that only individuals with political skills  $p \in [(1 + p^*)/2, 1]$  apply to become partisan politicians, and the party always nominates an applicant for the political office. If given an opportunity, all individuals with political skills  $p \geq p^*$  would run for office as independents. Partisan nominees are always approved by the voters to a first term in office and confirmed to a second term. All partisan politicians with political skills  $p \in [(1 + p^*), p'']$  spend their entire life working in the political sector (i.e., they are career politicians), while if  $p \in (p'', 1]$  they eventually leave politics to work in the market sector (i.e., they have political careers). An illustration of the equilibrium is depicted in Figure 2, where CP denotes career politicians and PC political careers.

To see that this is an equilibrium, first note that if an individual works in the market sector, his first-period wage is based on the expected market ability in the population, since neither his market ability nor his political skills are observable. In the second period of employment, on the other hand, an individual's expected wage depends on his expected market ability, since his market ability, which is correlated with his (privately known) political skills, is revealed with some probability. If, instead, an individual is a politician in his first period of life, his potential second-period wage in the market sector depends on his expected market ability conditional on his political skills (which, because of his experience in the political sector, become publicly known). This potential market wage also determines a politician's second-period earnings if he remains in office for a second term.

It follows that the cost for an individual of becoming a politician is equal to the difference between the first-period market wage that is forgone by not working in the market sector and the political salary,  $5/16 - S$ . The return is equal to the (possibly) higher earnings in the second period after political skills are revealed (regardless of whether the higher earnings are realized by staying in politics or working in the market sector),  $p/4 - 1/32$ . While the cost

does not depend on an individual's political skills, the return is increasing in his political skills. Hence, for individuals with relatively low political skills (i.e.,  $p < p^* = 11/8 - 4S$ ), the cost of becoming a politician is higher than the return, so that they prefer to work in the market sector. On the other hand, individuals with higher political skills would want to become politicians. Furthermore, an incumbent politician with political skills  $p$  would be willing to remain in office for a second term rather than leave politics and work in the market sector only if  $S + \sqrt{p}/2 \geq 1/4 + p/2$ , which implies that  $p \in [p', p'']$ , where  $p' = 2S - \sqrt{2S - 1/4}$ ,  $p'' = 2S + \sqrt{2S - 1/4}$ , and  $0 < p' < p^* < p'' < 1$ . Individuals with political skills between  $p'$  and  $p''$  are also the only ones who could potentially generate rents for the party, if they were to become partisan politicians and be confirmed in office.

Since  $p^*$  represents the lower bound on the political skills of individuals who would want to become politicians, it pins down the “outside option” available to the voters if they choose not to approve a partisan nominee and appoint an independent politician instead. In particular, it implies that the voters never confirm an incumbent with political skills below  $(1 + p^*)/2$  to a second term in office. Since politicians are valuable to the party only if they are approved and confirmed by the voters, it follows that the party is only willing to nominate individuals with political skills  $p \geq (1 + p^*)/2$ . Partisan nominees with political skills  $p \in [(1 + p^*), p'']$  are valuable to the party because in their second term in office they generate rents for the party. If their political skills are above  $p''$ , in spite of the fact that they do not generate any rents for the party, they are valuable because they allow the party to maintain control of the political office. Hence, individuals with relatively high political skills use the party to reveal them and obtain high market wages. At the same time, the party is willing to nominate them since they enhance the party's reputation with the voters.

Note that as  $S$  increases, politics becomes relatively more attractive an option for all levels of political skills, thus lowering the quality of the worst potential politician,  $p^*$ . At the same time, the party can retain relatively better politicians, since the amount it has to pay to keep them in office for each level of political skills is lower. This increases the quality of the best career politician,  $p''$ , and decreases the proportion of politicians who have political careers. Hence, an increase in the political salary decreases the average quality of politicians, but increases the average quality of career politicians and decreases turnover in office.

This example highlights several interesting insights that also extend to the more general environments considered by Mattozzi and Merlo (2005a). In equilibrium, not everybody who would want to become a politician does so. In particular, the party prevents individuals with low political skills from becoming politicians. Also, not everybody who becomes a politician remains in politics throughout his working life. Politicians with relatively better political skills may eventually leave politics to work in the market sector, although career politicians are still better than average. Finally, monetary incentives and other features of the political-economic environment affect the quality of politicians and their careers.

The mechanism behind these results is the equilibrium interaction between the voters, the party, and the political aspirations of individuals. Voters want the best politicians in office. The party wants politicians who generate rents. In equilibrium, the party and the voters compromise. The party discards individuals with low political skills who would want to become politicians and could generate rents for the party, and supports the nomination of politicians with high political skills who do not generate any rents. In exchange, the voters always approve the party's nominees and confirm in office incumbent politicians who, although relatively mediocre, generate rents for the party. By preventing individuals with low political skills from becoming politicians, the party fulfills a screening function that is valuable to the voters. Hence, the voters are willing to trust the party in selecting politicians.

Since politicians with better political skills have better employment prospects in the market sector, they are relatively expensive for the party to keep in the political sector. The fact that relatively better politicians may leave politics to work in the market sector is not a concern for the voters, since they at least get high quality politicians in office for some time. Although these politicians do not generate rents, the fact that they leave politics is also not an issue for the party, since they too serve a valuable purpose for maintaining its reputation. When they voluntarily leave politics, given the party's track record, the voters are willing to replace them with other partisan nominees, thus allowing the party to maintain control of the public office, which generates expected rents in the future. This provides a rationale for the existence of political parties and their survival through time.

## 5. Governments

The last topic I consider concerns the executive, or government, which is ultimately

responsible for implementing policy. Like each of the previous topics, the government represents a fundamental institution of democracy, and has always been at the forefront of research in political economy. Also, like with the analyses of politicians and parties, the major turning point that characterizes the current approach to the analysis of government in the political economy literature was defined by addressing the issue of its endogeneity.

In presidential democracy, the executive (i.e., the President) is directly elected by the citizens. Hence, the analysis of the government as an endogenous equilibrium institution is derivative of the analyses of voters, politicians, and parties. In parliamentary democracy, on the other hand, the executive (i.e., the cabinet) derives its mandate from and is responsible to the legislature. This implies that who forms the government is not determined by an election alone, but is the outcome of a negotiation among the elected members of the legislature. Furthermore, it implies that the government may terminate at any time before the end of a parliamentary term if it loses the confidence of the legislature.

Given these considerations, most of the modern political economy literature on the endogenous formation and dissolution of governments focuses on parliamentary democracy, and views governments as equilibrium outcomes of a multilateral bargaining game among the parties represented in parliament.<sup>31</sup> Some of the models only focus on government formation (e.g., Austen-Smith and Banks (1988), Bandyopadhyay and Oak (2004), Baron (1991, 1993), Baron and Diermeier (2001), Baron and Ferejohn (1989), Eraslan (2002), and Persson, Roland and Tabellini (2003)). Others consider environments where the composition and the stability of coalition governments are both determined in equilibrium (e.g., Baron (1998), Diermeier, Eraslan and Merlo (2002, 2003), Diermeier and Feddersen (1998), Diermeier and Merlo (2000), Laver and Shepsle (1996), Lupia and Strom (1995), and Merlo (1997)).<sup>32</sup>

Multiparty parliamentary democracy is the predominant regime in Western Europe, and a number of interesting observations emerge from data on governments in West European countries in the post-war period (e.g., Diermeier, Eraslan and Merlo (2003), Laver and

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<sup>31</sup>For an early attempt to formalize this idea, see Riker (1962).

<sup>32</sup>In Austen-Smith and Banks (1988), Bandyopadhyay and Oak (2004), Baron and Diermeier (2001), and Persson, Roland and Tabellini (2003), voters are the only primitive, while representatives, parties and governments are all equilibrium outcomes. All other models treat parties as primitives.

Schofield (1990), Muller and Strom (2000), and Woldendorp, Keman and Budge (2000)). Since several parties typically compete and win seats in parliamentary elections, single-party majority governments (where one party controls the majority of parliament and hence forms the government), are extremely rare. Coalition governments are instead the norm, and minority (i.e., coalitions that control less than 50% of the parliamentary seats), minimum-winning (i.e., coalitions that control at least 50% of parliament and are such that each party in the coalition is essential to retain majority status), and surplus governments (i.e., coalitions that control more than 50% of parliament and are such that there is at least one party in the coalition which is not necessary to have majority status), are all prevalent in the data. Governments frequently terminate before the end of the legislature, and reshuffles (i.e., a situation where a government is replaced by an identical coalition, but with a different allocation of cabinet positions), are a common phenomenon. Moreover, minority governments are, on average, less stable than either minimum-winning or surplus governments.

These general features are common across West European parliamentary democracies. Countries differ, however, with respect to the specific rules in their constitutions that prescribe how their governments form and terminate. They also differ systematically with respect to the observed duration of their government formation processes, the type (i.e., minority, minimum-winning, or surplus) and size of the government coalitions that result from these processes, and the relative durability of their governments. For example, in some countries like Denmark minority governments are virtually the norm, while in Germany they are a rare occurrence. Also, surplus governments are rather frequent in Finland, while they never occur in Sweden. Similarly, governments in Italy are notoriously unstable, while Dutch governments frequently last the entire legislative period

These observations raise the following important questions: (i) Can political economy explain the evidence? (ii) What determines the composition and stability of coalition governments? (iii) Can institutional differences account for observed differences in government outcomes? In order to answer these questions, recent developments in political economy have relied on a structural approach. This approach consists of specifying bargaining models of government formation and dissolution, structurally estimating these models, assessing their ability to account for key features of the data, and then simulating the estimated models

to conduct counterfactual experiments of comparative constitutional design (e.g., Diermeier, Eraslan and Merlo (2002, 2003) and Merlo (1997)). This approach allows us to interpret important features of the data as equilibrium phenomena and to quantify the equilibrium responses of government outcomes to changes in the institutional environment.<sup>33</sup>

To illustrate some of the key features and implications of the class of models that have been proposed in the literature, consider a simple example based on Diermeier and Merlo (2000). A parliament has to form a government to implement a policy  $y = (y_1, y_2)$  in the two-dimensional policy space  $\mathbb{R}^2$ . There are three parties,  $N = \{a, b, c\}$ , and two periods,  $t = 1, 2$ . Each party  $i \in N$  evaluates alternative policies  $y \in \mathbb{R}^2$  and distributive benefits  $z \in \mathbb{R}$  according to the (per-period) payoff function  $U_i(y, z) = u_i(y) + z$ , where  $u_i(y) = -(y_1^i - y_1)^2 - (y_2^i - y_2)^2$  and  $y^i = (y_1^i, y_2^i) \in \mathbb{R}^2$  denotes party  $i$ 's most preferred policy, or ideal point, where  $y^a = (0, 0)$ ,  $y^b = (1, 0)$ , and  $y^c = (1/2, \sqrt{3}/2)$ . Distributive benefits can either be government posts other than cabinet ministries that can be allocated to all parties, or ministerial positions that can only be allocated to government parties. Aggregate transfers are normalized to 0 in each period (i.e.,  $z_a + z_b + z_c = 0$ ), and parties discount future payoffs with a common discount factor  $\delta \in [0, 1]$ . Each party  $i \in \{a, b, c\}$  controls a fraction  $\pi_i$  of parliamentary seats, where  $\pi_a = 5/11$ ,  $\pi_b = \pi_c = 3/11$ .

In period  $t = 1$  there is a default policy  $q \in \{y^a, y^b, y^c\}$  which is implemented if no government forms in that period. If  $q = y^i$ ,  $i$  is the party favored by the the default policy. At the beginning of the period party  $a$  is the “formateur” (i.e., the party in charge of conducting negotiations to form the government).<sup>34</sup> The formateur chooses the proto-coalition  $D \in \Delta_a = \{\{a\}, \{a, b\}, \{a, c\}, \{a, b, c\}\}$ , where  $D$  represents the set of parties that agree to talk to each other about forming a government together. Then  $D$  selects a set of non-negative transfers to parties outside the proto-coalition,  $T(D, q) = (T_j(D, q))_{j \in N \setminus D} \in \mathbb{R}_+^{|N \setminus D|}$ , which are payments to non-coalition parties that may be necessary to sustain the proposed government coalition. Given  $D$  and  $T$ , the parliament votes to approve the formateur’s proposal under majority rule. If the proposal is defeated, the default policy is implemented and each party  $i \in N$  receives a period-1 payoff of  $U_i(q, 0)$ . If the formateur’s proposal is

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<sup>33</sup>See Diermeier, Eraslan and Merlo (2006) for an overview.

<sup>34</sup>For an empirical investigation of formateur selection see, e.g., Diermeier and Merlo (2004).

accepted, the members of  $D$  bargain over a policy  $y(D, q) \in \mathbb{R}^2$  and benefits to coalition members  $B(D, q) = (B_j(D, q))_{j \in D} \in \mathbb{R}^{|D|}$ . The bargaining procedure takes no real time and is such that for as long as no agreement is reached, each party in  $D$  is independently selected to make a proposal with probability  $1/|D|$ . An agreement entails unanimous approval of the proto-coalition members. If the members of  $D$  do not reach an agreement on a common policy and vector of transfers, then the government formation attempt fails and each party  $i \in N$  receives a period-1 payoff of  $U_i(q, 0)$ . If instead an agreement is reached, then  $D$  forms the government and each party  $i \in D$  receives a period-1 payoff of  $U_i(y(D, q), B_i(D, q))$ , while each party  $j \notin D$  receives a period-1 payoff of  $U_j(y(D, q), T_j(D, q))$ .

At the beginning of period  $t = 2$  a new default policy  $q' \in \{y^a, y^b, y^c\}$  is realized with probabilities  $(1/3, 1/3, 1/3)$ . If a government formed in period 1, then after observing  $q'$  the incumbent government can renegotiate its agreement. Renegotiation is similar to government formation, except for the fact that the coalition is fixed and given by the incumbent government  $D$ . Hence, first the government may choose a set of period-2 transfers to the parties outside the government coalition,  $T'(D, q') = (T'_j(D, q'))_{j \in N \setminus D} \in \mathbb{R}_+^{|N \setminus D|}$ . Given  $T'(D, q')$ , a vote is then taken to determine whether the incumbent government retains the confidence of a parliamentary majority to continue its mandate. If the government retains the confidence of the parliament, it then bargains over a policy  $y'(D, q')$  and benefits to its members  $B(D, q') = (B'_j(D, q'))_{j \in D} \in \mathbb{R}^{|D|}$  for period 2. If an agreement is reached, then  $D$  continues as a government and period-2 payoffs to the parties are determined as a function of  $y'(D, q')$ ,  $B'(D, q')$  and  $T'(D, q')$ . If  $D$  fails to reach an agreement or loses the confidence of the parliament, then  $D$  terminates. If the incumbent government terminates or no government formed in period 1, then a new government formation process begins in period 2 with the selection of a formateur  $k \in \{a, b, c\}$ , where the probability each party  $i$  is chosen to be the formateur is equal to  $\pi_i$ . Like in period 1, the outcome of the government formation process determines the period-2 payoffs to the parties. In particular, if a government  $D' \in \Delta_k$  forms, then each party  $i \in D'$  receives a period-2 payoff of  $U_i(y'(D', q'), B'_i(D', q'))$  while each party  $j \notin D'$  receives a period-2 payoff of  $U_j(y'(D', q'), T'_j(D', q'))$ . If instead no government forms, then each party  $i \in N$  receives a period-2 payoff of  $U_i(q', 0)$ .

Following Diermeier and Merlo (2000), we characterize the unique subgame perfect equi-

librium of the game using backward induction. Suppose first that a new government formation process begins in period  $t = 2$  and  $D'$  is chosen as the proto-coalition. Then  $D'$  forms the government, which implements policy  $y'(D', q') = \sum_{i \in D'} y^i / |D'|$ , and equilibrium benefits and transfers are equal to  $B'_i(D', q') = -\sum_{j \in D', j \neq i} u_j(q') / |D'| + (|D'| - 1)u_i(q') / |D'|$ ,  $i \in D'$ , and  $T'_j(D', q') = 0$ ,  $j \in N \setminus D'$ . To see that this is the case, note that if  $D'$  contains either 2 or 3 parties (i.e., it is a majority), it does not need any support from outside the coalition to be approved by parliament. Hence,  $T'_j(D', q') = 0$ . If instead  $D'$  contains only one party (i.e., it is a minority), it may need the support of another party to be approved by parliament. But in this case the formateur party would want to implement its most preferred policy, and since the locations of the three parties' ideal points are symmetric, and the payoff function  $u_i(y)$  has circular indifference curves, there will always be at least a party other than the formateur who is indifferent between the default policy  $q'$  and the policy most preferred by the formateur, and hence will be willing to support a minority government for free. It follows that  $T'_j(D', q') = 0$  for all  $D'$  and  $q'$ .

Next, note that efficient bargaining within the proto-coalition implies that the policy chosen is the one that maximizes the sum of the payoffs of the parties in the coalition. Given the quadratic specification of  $u_i(y)$  this policy is given by the average of the ideal points of the parties in the coalition, independent of the default policy  $q'$ . Since in the event of disagreement the policy outcome is  $q'$ , the default policy affects however the allocation of benefits. In particular, the “cake” that is available for distribution to the proto-coalition is equal to the sum of the differences in the payoffs of the parties within the coalition evaluated at  $y'(D', q')$  and  $q'$ ,  $C(D', q') = \sum_{i \in D'} [u_i(y'(D', q')) - u_i(q')]$ . This represents the total increment in the payoffs of the coalition partners from implementing the optimal policy  $y'(D', q')$  rather than  $q'$ . Given the structure of the bargaining game, the parties within the proto-coalition unanimously agree to a split of the cake where each party receives a fraction  $1/|D'|$ . Hence, each party  $i \in D'$  receives a payoff equal to  $u_i(q') + C(D', q') / |D'|$ , or equivalently,  $u_i(y'(D', q')) + B'_i(D', q')$ , where  $y'(D', q')$  and  $B'_i(D', q')$  are given in the expressions above. It follows that for all  $q' \in \{y^a, y^b, y^c\}$ ,  $y'(\{a\}, q') = (0, 0)$ ,  $y'(\{b\}, q') = (1, 0)$ ,  $y'(\{c\}, q') = (1/2, \sqrt{3}/2)$ ,  $y'(\{a, b\}, q') = (1/2, 0)$ ,  $y'(\{a, c\}, q') = (1/4, \sqrt{3}/4)$ ,  $y'(\{b, c\}, q') = (3/4, \sqrt{3}/4)$ , and  $y'(\{a, b, c\}, q') = (1/2, \sqrt{3}/6)$ . Moreover, for

$q' = y^i$  and  $i, j, l \in \{a, b, c\}$ ,  $i \neq j \neq l$ ,  $C(\{i\}, y^i) = 0$ ,  $C(\{j\}, y^i) = C(\{l\}, y^i) = 1$ ,  $C(\{i, j\}, y^i) = C(\{i, l\}, y^i) = 1/2$ ,  $C(\{j, l\}, y^i) = 3/2$ , and  $C(\{a, b, c\}, y^i) = 1$ .

The formateur party  $k$  then chooses the proto-coalition that maximizes its payoff. Since each party  $i \in D'$  receives a payoff equal to  $u_i(q') + C(D', q')/|D'|$  and  $u_i(y^i) = 0$  and  $u_i(y^j) = -1$ , for all  $i, j \in \{a, b, c\}$ ,  $i \neq j$ , it follows that if  $q' = y^k$ , then  $k$  chooses  $D' = \{a, b, c\}$ , while if  $q' \neq y^k$ , then  $k$  chooses  $D' = \{k\}$ . This implies that the payoff to the formateur party  $k$  is equal to  $1/3$  if  $q' = y^k$  and  $0$  if  $q' \neq y^k$  while the payoff to a party  $i$  that is not the formateur is equal to  $-1$  if  $q' \neq y^k$  and  $-2/3$  if  $q' = y^k$ . Let  $V_i(q')$  denote party  $i$ 's expected continuation payoff if a new government needs to be formed in period 2 when the default policy is  $q'$ . Note that, for all  $i, j \in \{a, b, c\}$ ,  $i \neq j$ ,  $V_i(y^i) = 4\pi_i/3 - 1$  and  $V_i(y^j) = \pi_i + \pi_j/3 - 1$ . This implies that if  $q' = y^a$ ,  $V_a(y^a) = -13/33$  and  $V_b(y^a) = V_c(y^a) = -19/33$ , while if  $q' \neq y^a$ ,  $V_a(q') = -5/11$  and  $V_b(q') = V_c(q') = -7/11$ .

Consider now the renegotiation problem faced by an incumbent government  $D$  after the realization of  $q'$ . Recall that since party  $a$  is the formateur in period 1, it must be the case that  $D \in \Delta_a = \{\{a\}, \{a, b\}, \{a, c\}, \{a, b, c\}\}$ . Since renegotiation is similar to proto-coalition bargaining, except that failure to reach agreement leads to an expected payoff of  $V_i(q')$  instead of  $u_i(q')$ , it follows that if the incumbent government  $D$  is a majority (i.e.,  $D \neq \{a\}$ ), then  $D$  remains in power in period 2 and implements policy  $y'(D, q')$  equal to the average of the ideal points of the parties in the government coalition. The expression for the benefits to the coalition partners is also similar to the one derived above, but where  $V_i(q')$  replaces  $u_i(q')$ , and transfers to parties outside the government coalition are equal to zero. If instead  $D = \{a\}$  (i.e., it is a minority government), then if  $q' = y^a$  the government terminates; while if  $q' \neq y^a$  the minority government remains in power with the external support of one of the other parties, implements policy  $y^a$ , and makes a transfer equal to  $4/11$  with equal probability either to party  $b$  or to party  $c$  (and no transfer to the other party). The result follows immediately from the fact that if  $q' = y^a$ , the payoff gain to party  $a$  from staying in power is equal to  $13/33$  and either one of the other parties would need a transfer of  $14/33$  to support the government; while if  $q' \neq y^a$  the payoff gain to party  $a$  from staying in power is equal to  $5/11$  and either one of the other parties would only need a transfer of  $4/11$  to support the government. Let  $V'_i(D)$  be party  $i$ 's expected

continuation payoff at the beginning of period 2, prior to the realization of  $q'$ , if government  $D$  is in power. Since each realization of  $q'$  is equally likely, we have that for party  $a$ ,  $V'_a(\{a\}) = -37/99$ ,  $V'_a(\{a, b\}) = V'_a(\{a, c\}) = -7/44$ , and  $V'_a(\{a, b, c\}) = -7/33$ . Similarly, for parties  $i, j \in \{b, c\}$ ,  $i \neq j$ ,  $V'_i(\{a\}) = -73/99$ ,  $V'_i(\{a, i\}) = -15/44$ ,  $V'_i(\{a, j\}) = -3/4$ , and  $V'_i(\{a, b, c\}) = -13/33$ .

The last step of the equilibrium characterization involves solving for  $D$ . Since proto-coalition bargaining in period  $t = 1$  is similar to the bargaining problems analyzed before, if  $D$  is chosen as the proto-coalition it forms the government. If  $D$  is a majority (i.e.,  $D \neq \{a\}$ ), then again it implements policy  $y(D, q)$  equal to the average of the ideal points of the parties in the proto-coalition. The expression for the benefits to the coalition partners is also the same as the one derived above, except that  $u_i(q)$  replaces  $u_i(q')$ , and transfers to parties outside the government coalition are equal to zero. If, on the other hand,  $D = \{a\}$  (i.e., it is a minority), then it implements policy  $y^a$ , and makes a transfer equal to  $\delta(4/33)$  to the party that is not favored by the default policy  $q$  (or, if neither party is favored, to either party with equal probability), in order to obtain its external support. This result follows from the fact that if both parties were to vote against  $D = \{a\}$ , then  $q$  would be implemented in period 1, and a new government negotiation would follow in period 2 yielding the party that is not favored by the default policy  $q$  an expected payoff equal to  $-1 - 61\delta/99$ , as opposed to  $-1 - 73\delta/99$ . These calculations imply that if  $q = y^a$ , the payoffs to the formateur party  $a$  from choosing each possible proto-coalition  $D$ ,  $W_a(D; q = y^a)$ , are equal to  $W_a(\{a\}; q = y^a) = -49\delta/99$ ,  $W_a(\{a, b\}; q = y^a) = W_a(\{a, c\}; q = y^a) = 1/4 - 7\delta/44$ , and  $W_a(\{a, b, c\}; q = y^a) = 1/3 - 7\delta/33$ . Similarly, if  $q = y^i$ ,  $i, j \in \{a, b\}$ ,  $i \neq j$ , these payoffs are equal to  $W_a(\{a\}; q = y^i) = -49\delta/99$ ,  $W_a(\{a, i\}; q = y^i) = -3/4 - 7\delta/44$ ,  $W_a(\{a, j\}; q = y^i) = -1/4 - 7\delta/44$ , and  $W_a(\{a, b, c\}; q = y^i) = -2/3 - 7\delta/33$ .

Given the default policy  $q$ , the formateur party  $a$  chooses the government that maximizes its payoff. Hence, if  $q = y^a$ , the government that forms in period 1 is the surplus coalition  $\{a, b, c\}$ , which remains in power for two periods. If, on the other hand  $q \neq y^a$ , then if  $\delta < 3/4$ , the minority government  $\{a\}$  forms in period 1 and terminates in period 2 with probability  $1/3$ ; while if  $\delta > 3/4$  the government that forms in period 1 is the minimum-winning coalition between party  $a$  and the other party that is not favored by  $q$ . If it forms,

the minimum-winning government lasts until the end of the second period. Regardless of whether the surplus or the minimum-winning government forms in period 1, in period 2 majority coalitions reshuffle the allocation of distributive benefits to their members with probability  $1/3$  (i.e., when  $q' \neq q$ ), but do not change their policy.

Several interesting implications emerge from this example. Minority, minimum-winning and surplus governments can all form in equilibrium. Furthermore, the stability and the relative occurrence of different types of governments are closely related. When choosing a government coalition, a formateur faces a fundamental trade-off between “control” and “durability”. On the one hand, relatively larger coalitions may be associated with longer expected durations and hence relatively larger cakes. On the other hand, because of proto-coalition bargaining, by including additional parties in its coalition the formateur party would receive a smaller share of the cake, and share the power to choose policy. The equilibrium coalition choice, and hence the stability of government, depend on the terms of this trade-off, which in general will depend on characteristics of the environment where government negotiations take place. Since the choice of the government coalition is endogenous, changes in the institutional environment are likely to induce an “equilibrium replacement effect,” where governments that are optimally chosen in equilibrium in a particular environment, may be replaced by different coalitions in response to changes in the underlying environment. These implications also extend to the more general (and more realistic) models estimated by Diermeier, Eraslan and Merlo (2002, 2003) using data from nine West European countries over the period 1947-1999. Their empirical analysis accounts for all the empirical regularities summarized above and interprets them in the context of an equilibrium framework which fits the data well. Moreover, it assesses the propensity of different political systems to generate government coalitions of different types, sizes and durations, and quantifies the effects of constitutional features on government outcomes.

## 6. Conclusions

In this article, I have focused on some of the recent developments that have characterized research in political economy from a microeconomic perspective over the last twenty years. In spite of the obvious differences due to the specific nature of each topic, there is a key element of commonality in this research which has contributed to define modern political

economy as a field. It is the use of a common language (a consistent set of analytical tools), and a coherent class of models that allow us to analyze political institutions and outcomes as endogenous, equilibrium phenomena.

The path traced by the work of a large number of economists and political scientists over more than two centuries started from a situation where political institutions could not fit in the precise definition of an economy. Since voters, politicians, parties, bureaucrats, interest groups, governments were not considered as part of the primitives that describe an economy, these scholars made them primitives of a political economy. Much of the research in this area over the last fifty years has been devoted to taking the analysis of political institutions to a deeper, more fundamental level. This path has led to a more precise notion of what the primitives of a political economy are, and how to model political institutions as endogenous objects which depend on such primitives.

This does not mean that the field of political economy has reached maturity or the status of “normal science.” In fact, much effort is currently being devoted to confront the difficult challenges that arise from the notion that constitutions and the rules of democracy are themselves equilibrium phenomena. But the set of tools developed in the recent past for the specific purpose of analyzing political institutions can only help to push the discipline further in this exciting direction.

The fundamental notion that political institutions are endogenous, also raises an important challenge for empirical research in economics. Empirical work in several fields of economics constantly relies on differences in institutions as providing a fundamental source of exogenous variation to address many different questions with important policy implications. Recognizing that political institutions are equilibrium outcomes may severely limit the usefulness of several common approaches to empirical research. However, theoretical developments in political economy provide a better understanding of the equilibrium relationships between primitives and institutions, and offer important insights for analyzing the data and interpreting what we observe. These developments will hopefully prove beneficial to further empirical research on these important topics.

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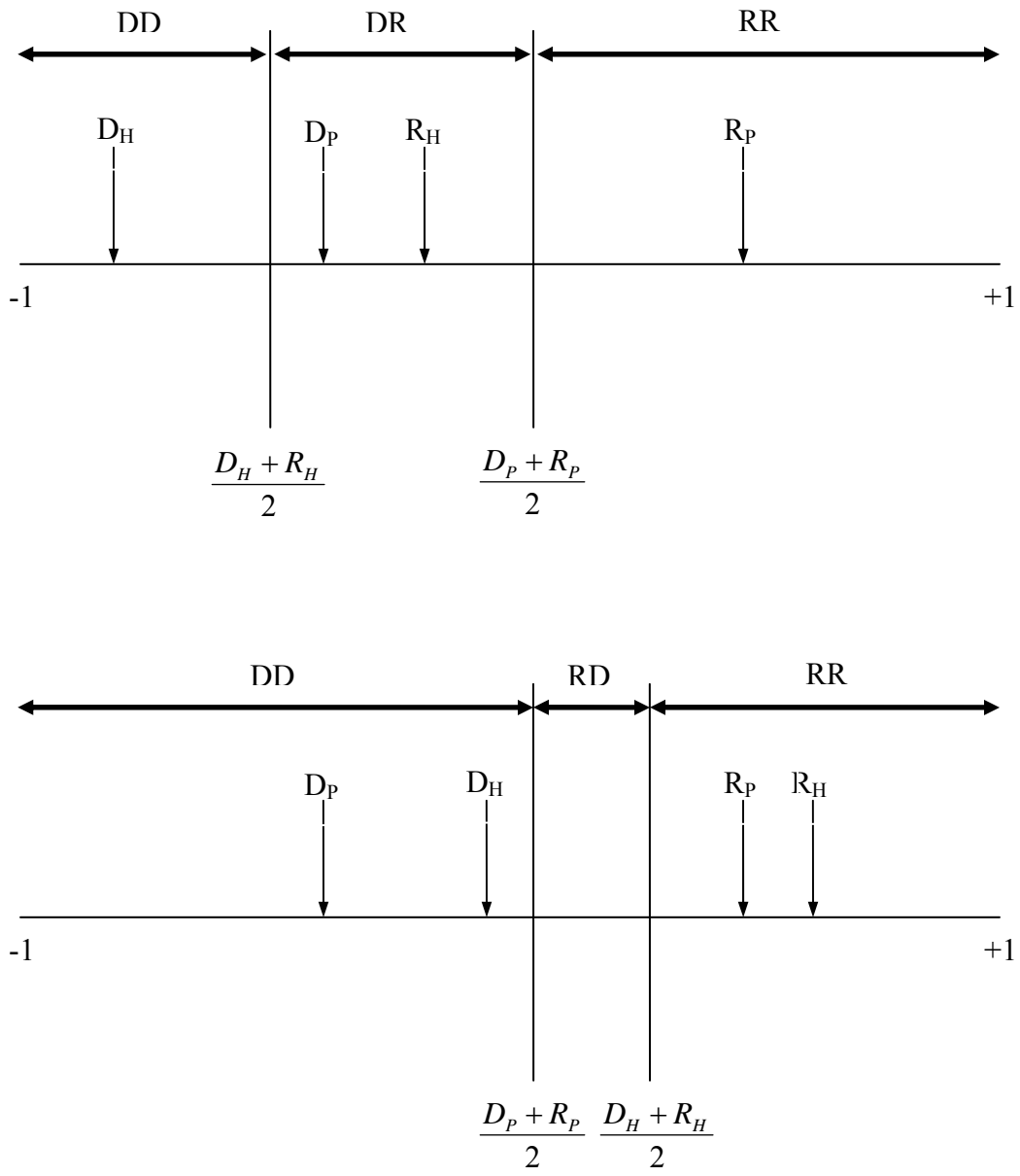


FIGURE 1—Sincere split-ticket voting

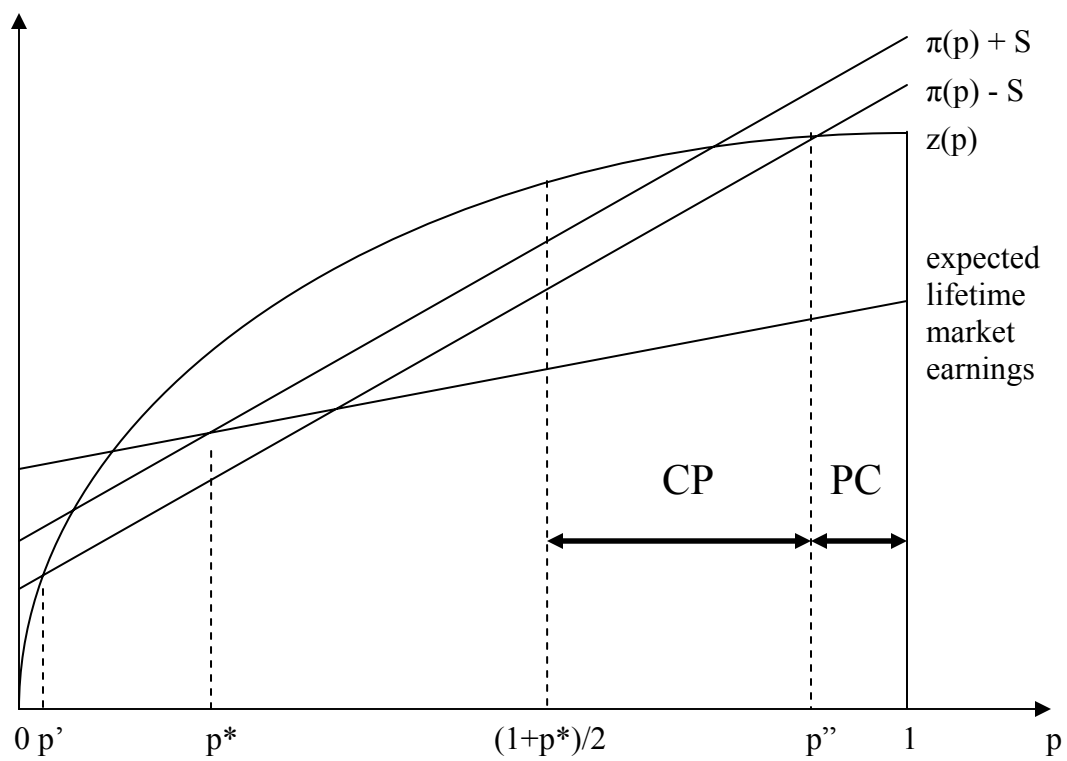


FIGURE 2—Selection and careers of politicians