4 Democratic Politics

1. Introduction

In this chapter, we begin to analyze the factors that lead to the creation of democracy. As discussed in Chapter 2, our approach is based on conflict over political institutions, in particular democracy versus nondemocracy. This conflict results from the different consequences that follow from these regimes. In other words, different political institutions lead to different outcomes, creating different winners and losers. Realizing these consequences, various groups have preferences over these political institutions.

Therefore, the first step toward our analysis of why and when democracy emerges is the construction of models of collective decision making in democracy and nondemocracy. The literature on collective decision making in democracy is vast (with a smaller companion literature on decision making in nondemocracy). Our purpose is not to survey this literature but to emphasize the essential points on how individual preferences and various types of distributional conflicts are mapped into economic and social policies. We start with an analysis of collective decision making in democracies, turning to nondemocratic politics in Chapter 5.

The most basic characteristic of a democracy is that all individuals (above a certain age) can vote, and voting influences which social choices and policies are adopted. In a direct democracy, the populace would vote directly on the policies. In a representative democracy, the voters choose the government, which then decides which policies to implement. In the most basic model of democracy, political parties that wish to come to office attempt to get elected by offering voters a policy platform. It may be a tax policy, but it may also be any other type of economic or social policy. Voters then elect political parties, thereby indirectly choosing policies. This interaction between voters' preferences and parties' policy platforms determines what the policy will be in a democracy. One party wins the election and implements the policy that it promised. This approach, which we adopt for most of the book, builds on a body of important research in economics and political science, most notably by Hotelling (1929), Black (1948), and Downs (1957).

Undoubtedly, in the real world there are important institutional features of democracies missing from such a model, and their absence makes our approach only a crude approximation to reality. Parties rarely make a credible commitment to a policy, and do not run on a single issue but rather on a broad platform. In addition, parties may be motivated by partisan (i.e., ideological) preferences as well as simply a desire to be in office. Voters might also have preferences over parties' ideologies as well as their policies. There are various electoral rules: some countries elect politicians according to proportional representation with multimember districts, others use majoritarian electoral systems with single-member districts. These electoral institutions determine in different ways how votes translate into seats and, therefore, governments. Some democracies have presidents, others are parliamentary. There is often divided government, with policies determined by legislative bargaining between various parties or by some type of arrangement between presidents and parliaments, not by the specific platform offered by any party in an election. Last but not least, interest groups influence policies through nonvoting channels, including lobbying and, in the extreme, corruption.

Many of these features can be added to our models, and these refined models often make different predictions over a range of issues.[1] Nevertheless, our initial and main intention is not to compare various types of democracies but to understand the major differences between democracies and nondemocracies. For instance, although the Unites States has a president and Britain does not, nobody argues that this influences the relative degree to which they are democratic. Democracy is consistent with significant institutional variation. Our focus, therefore, is on simpler models of collective decision making in democracies, highlighting their common elements. For this purpose, we emphasize that democracies are situations of relative *political equality*. In a perfect democracy each citizen has one vote. More generally, in a democracy, the preference of the majority of citizens matter in the determination of political outcomes. In nondemocracy, this is not the case because only a subset of people have political rights. By and large, we treat nondemocracy as the opposite of democracy: whereas democracy approximates political equality, nondemocracy is typically a situation of *political inequality*, with more power in the hands of an elite.

Bearing this contrast in mind, our treatment in this chapter tries to highlight some common themes in democratic politics. Later, we return to the question of institutional variation within democracies. Although this does not alter the basic thrust of our argument, it is important because it may influence the type of policies that emerge in democracy and thus the payoffs for both the elites and the citizens.

[1] For example, it appears that, empirically, electoral systems with proportional representation lead to greater income redistribution than majoritarian institutions (see Austen-Smith 2000; Milesi-Feretti, Perotti, and Rostagno 2002; Persson and Tabellini 2003).

2. Aggregating Individual Preferences

In this subsection, we begin with some of the concepts and problems faced by the theory of social or collective choice, which deals with the issue of how to aggregate individual preferences into "society's preferences" when all people's preferences count. These issues are important because we want to understand what happens in a democracy. When all people can vote, which policies are chosen?

To fix ideas, it is useful to think of government policy as a proportional tax rate on incomes and some way of redistributing the proceeds from taxation. Generally, individuals differ in their tastes and their incomes, and thus have different preferences over policies – for example, level of taxation, redistribution, and public good provision. However, even if people are identical in their preferences and incomes, there is still conflict over government policy. In a world where individuals want to maximize their income, each person would have a clear preference: impose a relatively high tax rate on all incomes other than their own and then redistribute all the proceeds to themselves! How do we then aggregate these very distinct preferences? Do we choose one individual who receives all the revenues? Or will there be no redistribution of this form? Or some other outcome altogether?

These questions are indirectly addressed by Arrow's (1951) seminal study of collective decision making. The striking but, upon reflection, reasonable result that Arrow derived is that under weak assumptions, the only way a society may be able to make coherent choices in these situations is to make one member a dictator in the sense that only the preferences of this individual matter in the determination of the collective choice. More precisely, Arrow established an *(im)possibility theorem*, showing that even if individuals have well-behaved rational preferences, it is not generally possible to aggregate those preferences to determine what would happen in a democracy. This is because aggregating individual rational preferences does not necessarily lead to a social preference relation that is rational in the sense that it allows "society" to make a decision about what to do.

Arrow's theorem is a fundamental and deep result in political science (and economics). It builds on an important and simpler feature of politics: *conflict of interest*. Different allocations of resources and different social decisions and policies create *winners* and *losers*. The difficulty in forming social preferences is how to aggregate the wishes of different groups, some of whom prefer one policy or allocation whereas others prefer different ones. For example, how do we aggregate the preferences of the rich segments of society who dislike high taxes that redistribute away from themselves and the preferences of the poor segments who like high taxes that redistribute to themselves? Conflicts of interest between various social groups, often between the poor and the rich, underlie all of the results and discussion in this book. In fact, the contrast we draw between democracy and nondemocracy precisely concerns how they tilt the balance of power in favor of the elites or the citizens or in favor of the rich or the poor.

Nevertheless, Arrow's theorem does not show that it is always impossible to aggregate conflicting preferences. We need to be more specific about the nature of individuals' preferences and about how society reconciles conflicts of interest. We need to be more specific about what constitutes power and how this is articulated and exercised. When we do so, we see that we may get determinate social choices because, although people differ in what they want, there is a determinate balance of power between different individuals. Such balances of power emerge in many situations, the most famous being in the context of the Median Voter Theorem (MVT), which we examine in the next subsection.

To proceed, it is useful to be more specific about the institutions under which collective choices are made. In particular, we wish to formulate the collective-choice problem as a game, which can be of various types. For instance, in the basic Downsian model that we consider shortly, the game is between two political parties. In a model of dictatorship that we investigate in Chapter 5, the game is between a dictator and the disenfranchised citizens. Once we have taken this step, looking for determinate social choices is equivalent to looking for the Nash equilibrium of the relevant games.

3. Single-Peaked Preferences and the Median Voter Theorem

3.1 Single-Peaked Preferences

Let's first be more specific about individual preferences over social choices and policies. In economic analysis, we represent people's preferences by a utility function that allows them to rank various alternatives. We place plausible restrictions on these utility functions; for example, they are usually increasing (more is better) and they are assumed to be concave – an assumption that embodies the notion of diminishing marginal utility. Because we want to understand which choices individuals will make when their goal is to maximize their utility, we are usually concerned with the shape of the utility function. One important property that a utility function might have is that of being "single-peaked."

Loosely, individual preferences are single-peaked with respect to a policy or a social choice if an individual has a preferred policy; the farther away the policy is from this preferred point, in any direction, the less the person likes it. We can more formally define single-peaked preferences. First, with subsequent applications in mind, let us define q as the policy choice; Q as the set of all possible policy choices, with an ordering "$>$" over this set (again, if these choices are simply unidimensional [e.g., tax rates] this ordering is natural because it is simple to talk about higher and lower tax rates); and $V^i(q)$ as the *indirect utility function* of individual i where $V^i : Q \to \mathbb{R}$. This is simply the maximized value of utility given particular values of the policy variables. It is this indirect utility function that captures the induced preferences of i. The *ideal point* (sometimes called the "political bliss point") of this individual, q^i, is such that $V^i(q^i) \geq V^i(q)$

for all other $q \in Q$. Single-peaked preferences can be more formally defined as follows:

Definition 4.1 (Single-Peaked Preferences): Policy preferences of voter i are single-peaked if and only if:

$$q'' < q' < q^i \quad \text{or} \quad q'' > q' > q^i, \text{then } V^i(q'') < V^i(q')$$

Strict concavity of $V^i(q)$ is sufficient for it to be single-peaked.[2]

It is also useful to define the median individual indexed by M. Consider a society with n individuals, the median individual is such that there are exactly as many individuals with $q^i < q^M$ as with $q^i > q^M$, where q^M is the ideal point of the median person.

To assume that people have single-peaked preferences is a restriction on the set of admissible preferences. However, this restriction is not really about the form or nature of people's intrinsic tastes or utility function over goods or income. It is a statement about people's induced preferences over social choices or policy outcomes (the choices over which people are voting, such as tax rates); hence, our reference to the "indirect utility function." To derive people's induced preferences, we need to consider not just their innate preferences but also the structure of the environment and institutions in which they form their induced preferences. It usually turns out to be the features of this environment that are crucial in determining whether people's induced preferences are single-peaked.

We often make assumptions in this book to guarantee that individual preferences are single-peaked. Is the restriction reasonable? Guaranteeing that induced preferences over policies are single-peaked entails making major restrictions on the set of alternatives on which voters can vote. These restrictions often need to take the form of restricting the types of policies that the government can use – in particular, ruling out policies in which all individuals are taxed to redistribute the income to one individual or ruling out person-specific transfers. Assuming preferences are single-peaked is again an application of Occam's razor. We attempt to build parsimonious models of complex social phenomena and, by focusing on situations where the MVT or analogues hold, we are making the assumption that, in reality, democratic decision processes do lead to coherent majorities in favor of or against various policies or choices. This seems a fairly reasonable premise.

[2] In fact, the weaker concept of strict quasiconcavity is all that is necessary for V^i to be single-peaked. However, in all examples used in this book, V^i is strictly concave so we do not introduce the notion of quasiconcavity. It is also possible to state the definition of single-peaked preferences with weak inequalities; e.g., if $q'' \leq q' \leq q^i$ or if $q'' \geq q' \geq q^i$, then $V^i(q'') \leq V^i(q')$. In this case, the corresponding concept would be quasiconcavity (or concavity). Such a formulation allows for indifference over policy choices (i.e., the utility function could be flat over a range of policies). We find it more intuitive to rule out this case, which is not relevant for the models we study in this book.

A large political science and political economy literature focuses on such single-peaked preferences. This is because single-peaked preferences generate the famous and powerful MVT, which constitutes a simple way of determining equilibrium policies from the set of individual preferences. In this book, we either follow this practice of assuming single-peaked preferences making use of the MVT or simply focus on a polity that consists of a few different groups (e.g., the rich and the poor) in which it is easy to determine the social choice (see Subsection 4.2). This is because our focus is not on specific democratic institutions that could aggregate preferences in the absence of nonsingle-peaked preferences but rather some general implications of democratic politics.

3.2 The Median Voter Theorem

Let's now move to an analysis of the MVT, originated by Black (1948). We can use the restrictions on preferences to show that individual preferences can be aggregated into a social choice. The MVT tells us not only that such a choice exists but also that the outcome of majority voting in a situation with single-peaked preferences will be the ideal point of the "median voter." There are various ways to state the MVT. We do this first in a simple model of direct democracy with an open agenda. In a direct democracy, individuals vote directly on pairs of alternatives (some $q, q' \in Q$); the alternative that gets the most votes is the winner. When there is an open agenda, any individual can propose a new pairwise vote pitting any alternative against the winner from the previous vote.

Proposition 4.1 (The Median Voter Theorem): *Consider a set of policy choices $Q \subset \mathbb{R}$; let $q \in Q$ be a policy and let M be the median voter with ideal point q^M. If all individuals have single-peaked preferences over Q, then (1) q^M always defeats any other alternative $q' \in Q$ with $q' \neq q^M$ in a pairwise vote; (2) q^M is the winner in a direct democracy with an open agenda.*

To see the argument behind this theorem, imagine the individuals are voting in a contest between q^M and some policy $\tilde{q} > q^M$. Because preferences are single-peaked, all individuals who have ideal points less than q^M strictly prefer q^M to $\tilde{q}$. This follows because indirect utility functions fall monotonically as we move away from the ideal points of individuals. In this case, because the median voter prefers q^M to $\tilde{q}$, this individual plus all the people with ideal points smaller than q^M constitute a majority, so q^M defeats $\tilde{q}$ in a pairwise vote. This argument is easily applied to show that any $\tilde{q}$ where $\tilde{q} < q^M$ is defeated by q^M (now all individuals with ideal points greater than q^M vote against $\tilde{q}$). Using this type of reasoning, we can see that the policy that wins in a direct democracy must be q^M – this is the ideal point of the median voter who clearly has an incentive to propose this policy.

Why does this work? When citizens have single-peaked preferences and the collective choice is one-dimensional, despite the fact that individuals' preferences differ, a determinate collective choice arises. Intuitively, this is because people can be separated into those who want more q and those who want less, and these groups are just balanced by the median voter. Preferences can be aggregated into a decision because people who prefer levels of q less than q^M have nothing in common with people who prefer levels of q greater than q^M. Therefore, no subset of people who prefer low q can ever get together with a subset of those who prefer high q to constitute an alternative majority. It is these "peripheral" majorities that prevent determinate social choices in general, and they cannot form with single-peaked preferences.

The MVT, therefore, makes sharp predictions about which policies win when preferences are single-peaked, and society is a direct democracy with an open agenda.

It is useful at this point to think of the model underlying Proposition 4.1 as an extensive form game. There are three elements in such a game (Osborne and Rubinstein 1994, pp. 89–90): (1) the set of players – here, the n individuals; (2) the description of the game tree that determines which players play when and what actions are available to them at each node of the tree when they have to make a choice; and (3) the preferences of individuals here captured by $V^i(q)$. (In game theory, preferences and utility functions are often called *payoffs* and *payoff functions*; we use this terminology interchangeably.) A player chooses a strategy to maximize this function where a strategy is a function that determines which action to take at every node in which a player has to make a decision.[3] A strategy here is simply how to vote in different pairwise comparisons. The basic solution concept for such a game is a Nash equilibrium, which is a set of n strategies, one for each player, such that no player can increase his payoff by unilaterally changing strategy. Another way to say this is that players' strategies have to be mutual best responses. We also extensively use a refinement of Nash equilibrium – the concept of subgame perfect Nash equilibrium – in which players' strategies have to be mutual best responses on every proper subgame, not just the whole game. (The relationship between these two concepts is discussed in Chapter 5.) Nevertheless, compared to the models we now discuss, the assumption of open agenda makes it difficult to write down the game more carefully. To do this, we would have to be more specific about who could propose which alternatives and when and how they make those decisions.

3.3 Downsian Party Competition and Policy Convergence

The previous example was based on a direct democracy, an institutional setting in which individuals directly vote over policies. In practice, most democratic societies

[3] Throughout this book, we consider only pure strategies.

are better approximated by representative democracy, where individuals vote for parties in elections and the winner of the election then implements policies. What does the MVT imply for party platforms?

To answer this question, imagine a society with two parties competing for an election by offering one-dimensional policies. Individuals vote for parties, and the policy promised by the winning party is implemented. The two parties care only about coming to office. This is essentially the model considered in the seminal study by Downs (1957), although his argument was anticipated to a large degree by Hotelling (1929).

How will the voters vote? They anticipate that whichever party comes to power, their promised policy will be implemented. So, imagine a situation in which two parties, A and B, are offering two alternative policies (e.g., tax rates) $q_A \in Q$ and $q_B \in Q$ – in the sense that they have made a *credible commitment* to implementing the tax rates q_A and q_B, respectively. Let $P(q_A, q_B)$ be the probability that party A wins power when the parties offer the policy platform (q_A, q_B). Party B, naturally, wins with probability $1 - P(q_A, q_B)$. We can now introduce a simple objective function for the parties: each party gets a rent or benefit $R > 0$ when it comes to power and 0 otherwise. Neither party cares about anything else. More formally, parties choose policy platforms to solve the following pair of maximization problems:

$$\text{Party } A: \max_{q_A \in Q} P(q_A, q_B) R \tag{4.1}$$

$$\text{Party } B: \max_{q_B \in Q} (1 - P(q_A, q_B)) R$$

If the majority of the population prefer q_A to q_B, they will vote for party A and we will have $P(q_A, q_B) = 1$. If they prefer q_B to q_A, they will choose party B and we will have $P(q_A, q_B) = 0$. Finally, if the same number of voters prefer one policy to the other, we might think either party is elected with probability $1/2$, so that $P(q_A, q_B) = 1/2$ (although the exact value of $P(q_A, q_B)$ in this case is not important for the outcomes that the model predicts).

Because preferences are single-peaked, from Proposition 4.1 we know that whether a majority of voters will prefer tax rate q_A or q_B depends on the preferences of the median voter. More specifically, let the median voter again be denoted by superscript M; then, Proposition 4.1 immediately implies that if $V^M(q_A) > V^M(q_B)$, we will have a majority for party A over party B. The opposite obtains when $V^M(q_A) < V^M(q_B)$. Finally, if $V^M(q_A) = V^M(q_B)$, one of the parties will come to power with probability $1/2$. Therefore, we have

$$P(q_A, q_B) = \begin{cases} 1 & \text{if } V^M(q_A) > V^M(q_B) \\ \frac{1}{2} & \text{if } V^M(q_A) = V^M(q_B) \\ 0 & \text{if } V^M(q_A) < V^M(q_B) \end{cases} \tag{4.2}$$

The model we have developed can be analyzed as a game more explicitly than the direct-democracy model of the previous section. This game consists of the following three stages:

1. The two political parties noncooperatively choose their platforms (q_A, q_B).
2. Individuals vote for the party they prefer.
3. Whichever party wins the election comes to power and implements the policy it promised at the first stage.

There are $n+2$ players in this game: the n citizens with payoff functions $V^i(q)$ and the two political parties with payoff functions given in (4.1). Individual voters do not propose policy platforms, only parties do so simultaneously at the first stage of the game. Parties have to choose an action $q_j \in Q$ for $j = A, B$, and citizens again have to vote. Thus, in this model, a subgame perfect Nash equilibrium would be a set of $n+2$ strategies, one for each of the political parties and one for each of the n voters, which would determine which policies the parties offered and how individuals would vote. If such a set of strategies constituted an equilibrium, then it would have the property that neither party and no voters could improve their payoff by changing their strategy (e.g., by offering a different policy for parties or voting differently for citizens).

In the present model, however, we can simplify the description of a subgame perfect Nash equilibrium because, given a policy vector $(q_A, q_B) \in Q \times Q$, voters simply vote for the party offering the policy closest to their ideal point and, because preferences are single-peaked, the MVT implies that the winner of such an election is determined by (4.2). Hence, the only interesting strategic interaction is between the parties. More formally, we can solve the game by backward induction. To do this, we begin at the end of the game and work backward. Parties are committed to platforms, so whichever party wins implements the policy it offered in the election. Then (4.2) determines which party wins and, considering this at the initial stage of the game, parties choose policies to maximize (4.1).

This implies that a subgame perfect Nash equilibrium in this game reduces to a pair of policies (q_A^*, q_B^*) such that q_A^* maximizes $P(q_A, q_B^*)R$, taking the equilibrium choice of party B as given, and simultaneously q_B^* maximizes $(1 - P(q_A^*, q_B))R$, taking the equilibrium choice of party A as given. In this case, neither party can improve its payoff by choosing an alternative policy (or, in the language of game theory, by "deviating").

Formally, the following theorem characterizes the unique subgame perfect Nash equilibrium of this game:

Proposition 4.2 (Downsian Policy Convergence Theorem): *Consider a vector of policy choices $(q_A, q_B) \in Q \times Q$ where $Q \subset \mathbb{R}$, and two parties A and B that care only about coming to office, and can commit to policy platforms. Let M be the median voter, with ideal point q^M. If all individuals have single-peaked preferences over Q, then in the unique subgame perfect Nash equilibrium, both parties will choose the platforms $q_A^* = q_B^* = q^M$.*

Stated differently, both parties converge to offer exactly the ideal point of the median voter. To see why there is this type of policy convergence, imagine a configuration in which the two parties offered policies q_A and q_B such that $q_A < q_B \leq q^M$. In this case, we have $V^M(q_A) < V^M(q_B)$ by the fact that the median voters' preferences are single-peaked. There will therefore be a clear majority in favor of the policy of party B over party A; hence, $P(q_A, q_B) = 0$, and party B will win the election. Clearly, A has an incentive to increase q_A to some $q \in (q_B, q^M)$ if $q_B < q^M$ to win the election, and to $q = q^M$ if $q_B = q^M$ to have the chance of winning the election with probability 1/2. Therefore, a configuration of platforms such that $q_A < q_B \leq q^M$ cannot be an equilibrium. The same argument applies: if $q_B < q_A \leq q^M$ or if $q_A > q_B \geq q^M$, and so forth.

Next, consider a configuration where $q_A = q_B < q^M$. Could this be an equilibrium? The answer is no: if both parties offer the same policy, then $P(q_A, q_B) = 1/2$ (hence, $1 - P(q_A, q_B) = 1/2$ also). But, then, if A increases q_A slightly so that $q_B < q_A < q^M$, then $P(q_A, q_B) = 1$. Clearly, the only equilibrium involves $q_A = q_B = q^M$ with $P(q_A = q^M, q_B = q^M) = 1/2$ (hence, $1 - P(q_A = q^M, q_B = q^M) = 1/2$). This is an equilibrium because no party can propose an alternative policy (i.e., make a deviation) and increase its probability of winning. For instance, if $q_A = q_B = q^M$ and A changes its policy holding the policy of B fixed, we have $P(q_A, q_B) = 0 < 1/2$ for $q_A > q^M$ or $q_A < q^M$. Therefore, $q_A = q^M$ is a best response to $q_B = q^M$. A similar argument establishes that $q_B = q^M$ is a best response to $q_A = q^M$.

As noted, the MVT does not simply entail the stipulation that people's preferences are single-peaked. We require that the policy space be unidimensional. In the conditions of Proposition 4.1, we stated that policies must lie in a subset of the real numbers ($Q \subset \mathbb{R}$). This is because although the idea of single-peaked preferences extends naturally to higher dimensions of policy, the MVT does not.

Nevertheless, there are various ways to proceed if we want to model situations where collective choices are multidimensional. First, despite Arrow's theorem, it may be the case that the type of balance of power between conflicting interests that we saw in the MVT occurs also in higher dimensions. For this to be true in general, we need not simply state that preferences be single-peaked but also that the ideal points of voters be distributed in particular ways. Important theorems of this type are the work of Plott (1967) and McKelvey and Schofield (1987) (see Austen-Smith and Banks 1999, Chapter 5, for detailed treatment). There are also ideas related to single-peaked preferences, particularly the idea of value-restricted preferences, that extend to multidimensional policy spaces (e.g., Grandmont 1978). Restrictions of this type allow the sort of "balance of power" that emerges with the MVT to exist with a multidimensional policy space.

Second, once we introduce uncertainty into the model, equilibria often exist even if the policy space is multidimensional. This is the so-called probabilistic voting model (Lindbeck and Weibull 1987; Coughlin 1992; Dixit and Londregan 1996, 1998) analyzed in the appendix to this chapter.

Third, following Osborne and Slivinski (1996) and Besley and Coate (1997), once one assumes that politicians cannot commit to policies, one can establish the existence of equilibrium with many dimensions of policy. Intuitively, when politicians cannot commit to arbitrary policies to build majorities, many possibilities for cycling coalitions are removed.

We refer to the type of political competition in this subsection as Downsian political competition. The key result of this subsection, Proposition 4.2, resulting from this type of competition contains two important implications: (1) policy convergence – that is, both parties choose the same policy platform; and (2) this policy platform coincides with the most preferred policy of the median voter. As we show in the appendix, in non-Downsian models of political competition – for example, with ideological voters or ideological parties – there may still be policy convergence, but this convergence may not be to the most preferred policy of the median voter. There may also be nonconvergence, in which the equilibrium policy is partially determined by the preferences of political parties.

4. Our Workhorse Models

In this section, we introduce some basic models that are used throughout the book. As already explained, our theory of democracy and democratization is based on political and distributional conflict and, in an effort to isolate the major interactions, we use models of pure redistribution, where the proceeds of proportional taxation are redistributed lump sum to the citizens. In addition, the major conflict is between those who lose from redistribution and those who benefit from redistribution – two groups that we often conceptualize as the rich and the poor. Hence, a two-class model consisting of only the rich and the poor is a natural starting point. This model is discussed in the next three subsections. Another advantage of a two-class model is that something analogous to the MVT will hold even if the policy space is multidimensional. This is because the poor are the majority and we restrict the policy space so that no intra-poor conflict can ever emerge. As a consequence, no subset of the poor ever finds it advantageous to form a "peripheral" coalition with the rich. In this case, the policies preferred by the poor win over policies preferred by the rich. In Chapter 8, we extend this model by introducing another group, the middle class, and show how it changes a range of the predictions of the model, including the relationship between inequality and redistribution.

In addition to a model in which political conflict is between the rich and the poor, we want to examine what happens when conflict is based on other political identities. We introduce such a model in Subsection 4.4.

4.1 The Median Voter Model of Redistributive Politics

We consider a society consisting of an odd number of n citizens (the model we develop builds on the seminal papers of Romer 1975, Roberts 1977, and Meltzer and Richard 1981). Person $i = 1, 2, .., n$ has income y^i. Let us order people from poorest to richest and think of the median person as the person with median income, denoted y^M. Then, given that we are indexing people according to their incomes, the person with the median income is exactly individual $M = (n+1)/2$. Let $\bar{y}$ denote average income in this society; thus,

$$\bar{y} = \frac{1}{n} \sum_{i=1}^{n} y^i \tag{4.3}$$

The political system determines a nonnegative tax rate $\tau \geq 0$ proportional to income, the proceeds of which are redistributed lump sum to all citizens. Moreover, this tax rate has to be bounded above by 100 percent – that is, $\tau \leq 1$. Let the resulting lump-sum transfer be T.

We also assume it is costly to raise taxes, so we introduce a general deadweight cost of taxation related to the tax rate. The greater the taxes, the greater are the costs. Economist Arthur Okun (1975) characterized these in terms of the metaphor of the "leaky bucket." Redistributing income or assets is a leaky bucket in the sense that when income or assets are taken from someone, as they are transferred to someone else, part of what was taken dissipates, like water falling through the leaks in a bucket. The leaks are due to the costs of administering taxes and creating a bureaucracy and possibly also because of corruption and sheer incompetence. More important, however, is that greater taxes also distort the investment and labor supply incentives of asset holders and create distortions in the production process. For these reasons, the citizens, who form the majority in democracy, determine the level of taxation and redistribution by trading off the benefits from redistribution and the costs from distortions (i.e., the leaks in the bucket).

Economists often discuss these distortions in terms of the "Laffer Curve," which is the relationship between the tax rate and the amount of tax revenues. The Laffer Curve is shaped like an inverted U. When tax rates are low, increasing the tax rate increases tax revenues. However, as tax rates increase, distortions become greater and eventually tax revenues reach a maximum. After this point, increases in the tax rate actually lead to decreases in tax revenues because the distortions created by taxation are so high.

In our model, these distortions are captured by an aggregate cost, coming out of the government budget constraint of $C(\tau)n\bar{y}$ when the tax rate is τ. Total income in the economy, $n\bar{y}$, is included simply as a normalization. We adopt this normalization because we do not want the equilibrium tax rate to depend in an arbitrary way on the scale of the economy. For example, if we vary $n\bar{y}$, we do not want equilibrium tax rates to rise simply because the costs of taxation are fixed while the benefits of taxation to voters increase. It seems likely that as $n\bar{y}$ increases, the costs of taxation also increase (e.g., the wages of tax inspectors increase), which is considered in this normalization. We assume that $C : [0, 1] \to \mathbb{R}_+$, where $C(0) = 0$ so that there are no costs when there is no taxation; $C'(\cdot) > 0$ so that costs are increasing in the level of taxation; $C''(\cdot) > 0$ so that these costs are strictly convex – that is, they increase faster as tax rates increase (thus ensuring that the second-order condition of the maximization problem is satisfied); and, finally, $C'(0) = 0$ and $C'(1) = 1$ so that an interior solution is ensured: the first says that marginal costs are small when the tax rate is low, and the second implies that costs increase rapidly at high levels of taxation. Together with the convexity assumption, both of these are plausible: they emphasize that the disincentive effects of taxation become substantial as tax rates become very high. Think, for example, of the incentives to work and to produce when there is a 100 percent tax rate on your earnings!

From this, it follows that the government budget constraint is as follows:

$$T = \frac{1}{n}\left(\sum_{i=1}^{n} \tau y^i - C(\tau) n \bar{y}\right) = (\tau - C(\tau))\,\bar{y} \tag{4.4}$$

which uses the definition of average income above (4.3). This equation emphasizes that there are proportional income taxes and equal redistribution of the proceeds, so higher taxes are more redistributive. For example, a higher τ increases the lump-sum transfer and, because rich and poor agents receive the same transfer but pay taxes proportional to their incomes, richer agents bear a greater tax burden.

All individuals in this society maximize their consumption, which is equal to their post-tax income, denoted by $\hat{y}^i(\tau)$ for individual i at tax rate τ. Using the government budget constraint (4.4), we have that, when the tax rate is τ, the indirect utility of individual i and his post-tax income are

$$\begin{aligned} V\left(y^i \mid \tau\right) &= \hat{y}^i\,(\tau) \\ &= (1-\tau)\,y^i + T \\ &= (1-\tau)\,y^i + (\tau - C(\tau))\,\bar{y} \end{aligned} \tag{4.5}$$

The indirect-utility function is conditioned only on one policy variable, τ, because we have eliminated the lump-sum transfer T by using (4.4). We also condition it on y^i because, for the remainder of the book, it is useful to keep this income explicit. Thus, we use the notation $V(y^i \mid \tau)$ instead of $V^i(\tau)$.

More generally, individuals also make economic choices that depend on the policy variables. In this case, to construct $V(y^i \mid \tau)$, we first need to solve for individual i's optimal economic decisions given the values of the policy variables and then define the induced preferences over policies, given these optimally taken decisions (Persson and Tabellini 2000, pp. 19–21).

It is straightforward to derive each individual i's ideal tax rate from this indirect-utility function. Recall that this is defined as the tax rate τ^i that maximizes $V(y^i \mid \tau)$. Under the assumptions made about $C(\tau)$, $V(y^i \mid \tau)$ is strictly concave and twice continuously differentiable. This tax rate can then be found simply from an unconstrained maximization problem, so we need to set the derivative of $V(y^i \mid \tau)$ with respect to τ equal to zero. In other words, τ^i needs to satisfy the first-order condition:

$$-y^i + \left(1 - C'(\tau^i)\right)\bar{y} = 0 \quad \text{and} \quad \tau^i > 0 \text{ or} \qquad (4.6)$$
$$-y^i + \left(1 - C'(\tau^i)\right)\bar{y} \leq 0 \quad \text{and} \quad \tau^i = 0$$

which we have written explicitly emphasizing complementary slackness (i.e., τ^i can be at a corner). In the rest of the book, we will not write such conditions out fully as long as this causes no confusion.

The assumption that $C''(\cdot) > 0$ ensures that the second-order condition for maximization is satisfied and that (4.6) gives a maximum. More explicitly, the second-order condition (which is derived by differentiating (4.6) with respect to τ) is $-C''(\tau^i)\bar{y} < 0$, which is always true, given $C''(\cdot) > 0$. This second-order condition also implies that $V(y^i \mid \tau)$ is a strictly concave function, which is a sufficient condition for it to be single-peaked.

We have written the first-order condition (4.6) in the Kuhn–Tucker form (Blume and Simon 1994, pp. 439–41) to allow for the fact that the preferred tax rate of agent i may be zero. In this case, we have a corner solution and the first-order condition does not hold as an equality. If $\tau^i > 0$, then (4.6) says that the ideal tax rate of voter i has the property that its marginal cost to individual i is equal to its marginal benefit. The marginal cost is measured by y^i, individual i's own income, because an incremental increase in the tax rate leads to a decline in the individual i's utility proportional to his income (consumption). The benefit, on the other hand, is $(1 - C'(\tau^i))\bar{y}$, which comes from the fact that with higher taxes, there will be more income redistribution. The term $(1 - C'(\tau^i))\bar{y}$ is the extra income redistribution, net of costs, generated by a small increase in the tax rate.

The conditions in (4.6) imply the intuitive result that rich people prefer lower tax rates and less redistribution than poor people. For a rich person, the ratio $y^i/\bar{y}$ is higher than it would be for a poor person. This means that for (4.6) to hold, $1 - C'(\tau^i)$ must be higher, so that $C'(\tau^i)$ must be lower. Because $C'(\tau^i)$ is an increasing function (by the convexity of $C(\cdot)$), this implies that the preferred tax rate must be lower. The model actually has a more specific prediction. For a person whose income is the same as the mean, (4.6) becomes $0 = -C'(\tau^i)$, which implies that $\tau^i = 0$ for such a person. Moreover, for any person with income $y^i > \bar{y}$, the Kuhn–Tucker conditions imply that there is a corner solution. Hence, people whose income is above average favor no income redistribution at all, whereas people with $y^i < \bar{y}$ favor a strictly positive tax rate, which is why we use the Kuhn–Tucker formulation.

To derive these comparative static results more formally, let us assume $\tau^i > 0$ and use the implicit function theorem (Blume and Simon 1994, p. 341) to write the optimal tax rate of individual i as a function of his own income, $\tau(y^i)$. This satisfies (4.6). The implicit function theorem tells us that the derivative of this function, denoted $\tau'(y^i)$, exists and is given by

$$\tau'(y^i) = -\frac{1}{C''(\tau(y^i))\bar{y}} < 0$$

Throughout the book, we appeal frequently to the implicit-function theorem to undertake comparative static analysis of the models we study. We undertake two types of comparative statics. First is the type we have just analyzed. Here, we use the conditions for an equilibrium to express a particular endogenous variable, such as the tax rate, as a function of the various exogenous variables or parameters of the model, such as the extent of inequality. Comparative statics then amounts to investigating the effect of changes in exogenous variables or parameters, such as inequality, on the value of the endogenous variable. (When inequality is higher, does the tax rate increase?) We often use the answers to such questions not just to derive predictions for what would happen within one country if inequality increased but also to compare across countries: Would a country where inequality was higher have a higher tax rate than a country with lower inequality?

We also conduct a different type of comparative statics. In game-theoretic models, various types of behavior may be equilibria in different types of circumstances. For instance, in the repeated prisoner's dilemma, cooperation forever may be an equilibrium if players value the future sufficiently. We derive conditions under which particular types of behavior – for instance, the creation of democracy – are an equilibrium. We then conduct comparative statics of these conditions to investigate which factors make democracy more or less likely to be created. When we do this, however, we are not directly investigating how a change in an exogenous variable (smoothly) changes the equilibrium value of an endogenous variable. Rather, we examine how changes in exogenous variables influence the "size of the parameter space" for which democracy is created. In essence, democracy can only be created in certain circumstances, and we want to know what makes such circumstances more likely.

We can now think of a game, the (Nash) equilibrium of which will determine the level of redistributive taxation. We can do this in the context of either a direct democracy or a representative democracy, but the most intuitive approach is the one we developed leading up to Proposition 4.2. This result implies that the equilibrium of the game will be for both political parties to propose the ideal point of the median voter, which will be the tax rate chosen in a democracy. The model has this prediction despite the fact that there is political conflict. Poor people would like high taxes and a lot of redistribution; rich people, those with greater than average income, are opposed to any redistribution. How can we aggregate these conflicting preferences? The MVT says that the outcome is the tax rate preferred by the median voter and, for most income distributions, the income of the median person is less than average income (i.e., $y^M < \bar{y}$). In this case, the median voter prefers a strictly positive tax rate τ^M that satisfies the first-order condition:

$$\frac{y^M}{\bar{y}} = 1 - C'(\tau^M)$$

The comparative statics of this condition follow from the discussion of (4.6). If y^M decreases relative to $\bar{y}$, then the median voter, who becomes poorer relative to the mean, prefers greater tax rates and more redistribution.

4.2 A Two-Group Model of Redistributive Politics

Although many of the results in this book follow from the previous model in which the income of each person is different, a useful simpler model is one in which there are just two income levels. Consider, therefore, a society consisting of two types of individuals: the rich with fixed income y^r and the poor with income $y^p < y^r$. To economize on notation, total population is normalized to 1; a fraction $1 - \delta > 1/2$ of the agents is poor, with income y^p; and the remaining fraction δ is rich with income y^r. Mean income is denoted by $\bar{y}$. Our focus is on distributional conflict, so it is important to parameterize inequality. To do so, we introduce the notation θ as the share of total income accruing to the rich; hence, we have:

$$y^p = \frac{(1-\theta)\bar{y}}{1-\delta} \quad \text{and} \quad y^r = \frac{\theta \bar{y}}{\delta} \tag{4.7}$$

Notice that an increase in θ represents an increase in inequality. Of course, we need $y^p < \bar{y} < y^r$, which requires that:

$$\frac{(1-\theta)\bar{y}}{1-\delta} < \frac{\theta \bar{y}}{\delta} \quad \text{or} \quad \theta > \delta$$

As in the last subsection, the political system determines a nonnegative income-tax rate $\tau \geq 0$, the proceeds of which are redistributed lump sum to all citizens. We assume that taxation is as costly as before and, from this, it follows that the government budget constraint is:

$$T = \tau\left((1-\delta)y^p + \delta y^r\right) - C(\tau)\bar{y} = (\tau - C(\tau))\,\bar{y} \tag{4.8}$$

With a slight abuse of notation, we now use the superscript i to denote social classes as well as individuals so, for most of the discussion, we have $i = p$ or r. Using the government budget constraint (4.8), we have that, when the tax rate is τ, the indirect utility of individual i and his post-tax income are:

$$V\left(y^i \mid \tau\right) = \hat{y}^i(\tau) = (1-\tau)\,y^i + (\tau - C(\tau))\,\bar{y} \tag{4.9}$$

As in the last subsection, all agents have single-peaked preferences and, because there are more poor agents than rich agents, the median voter is a poor agent. We can think of the model as constituting a game as in the previous subsection; democratic politics will then lead to the tax rate most preferred by the median voter: here, a poor agent. Notice that because they have the same utility functions and because of the restrictions on the form of tax policy (i.e., taxes and transfers are not person-specific), all poor agents have the same ideal point and vote for the same policy. Here, there is no need for coordination and no sort of collective-action problem (discussed in Chapter 5).

Let this equilibrium tax rate be τ^p. We can find it by maximizing the post-tax income of a poor agent; that is, by choosing τ to maximize $V(y^p \mid \tau)$. The first-order condition for maximizing this indirect utility now gives:

$$-y^p + \left(1 - C'(\tau^p)\right) \bar{y} = 0 \quad \text{with} \quad \tau^p > 0 \tag{4.10}$$

because $y^p < \bar{y}$. Equation (4.10), therefore, implicitly defines the most preferred tax rate of a poor agent and the political equilibrium tax rate. For reasons identical to those in the previous subsection, it is immediate that preferences are single-peaked.

Now, using the definitions in (4.7), we can write the equation for τ^p in a more convenient form:

$$\left(\frac{\theta - \delta}{1 - \delta}\right) = C'(\tau^p) \tag{4.11}$$

where both sides of (4.11) are positive because $\theta > \delta$ by the fact that the poor have less income than the rich.

Equation (4.11) is useful for comparative statics. Most important, consider an increase in θ, so that a smaller share of income accrues to the poor, or the gap between the rich and the poor widens. Because there is a plus sign in front of θ, the left side of (4.11) increases. Therefore, for (4.11) to hold, τ^p must change so that the value of the right side increases as well. Because $C''(\cdot) > 0$, when τ^p increases, the derivative increases; therefore, for the right side to increase, τ^p must increase. This establishes that greater inequality (higher θ) induces a higher tax rate, or, written mathematically using the implicit function theorem:

$$\frac{d\tau^p}{d\theta} = \frac{1}{C''(\tau^p)(1 - \delta)} > 0$$

It is also the case that total (net) tax revenues as a proportion of national income increase when inequality rises. Total net tax revenues as a proportion of national income are:

$$\frac{(\tau^p - C(\tau^p))\,\bar{y}}{\bar{y}} = \tau^p - C(\tau^p)$$

Notice that $d(\tau^p - C(\tau^p))/d\theta = (1 - C'(\tau^p)) \cdot d\tau^p/d\theta$. We know that higher inequality leads to higher taxes; that is, $d\tau^p/d\theta > 0$. Moreover, (4.11) implies that $C'(\tau^p) = (\theta - \delta)/(1 - \delta) < 1$, so $1 - C'(\tau^p) > 0$, which then implies that $d(\tau^p - C(\tau^p))/d\theta > 0$. In other words, greater inequality leads to a higher proportion of net tax revenues in national income, as argued by Meltzer and Richard (1981) in the context of a slightly different model. In fact, it is straightforward to see that the burden of taxation on the rich is heavier when inequality is greater even if the tax rate is unchanged. Let us first define the burden of taxation as the net redistribution away from the rich at some tax rate τ. This is:

$$\text{Burden}(\tau) = C(\tau)\,\bar{y} - \tau\left(1 - \frac{\theta}{\delta}\right)\bar{y}$$

As inequality increases (i.e., θ increases), this burden increases, which simply reflects the fact that with constant average incomes, transfers are constant; and, as inequality increases, a greater fraction of tax revenues are collected from the rich. This observation implies that, even with unchanged tax rates, this burden increases and, therefore, with great inequality, the rich will be typically more opposed to taxation.

Finally, it is useful to conclude this subsection with a brief discussion of efficiency. In this model, taxes are purely redistributive and create distortionary costs as captured by the function $C(\tau^p)$. Whether democracy is efficient depends on the criterion that one applies. If we adopted the Pareto criterion (Green, Mas-Colell, and Whinston 1995, p. 313), the political equilibrium allocation would be Pareto optimal because it is impossible to change the tax policy to make any individual better off without making the median voter worse off – because the democratic tax rate maximizes the utility of the median voter, any other tax rate must lower his utility.

However, in many cases, the Pareto criterion might be thought of as unsatisfactory because it implies that many possible situations cannot be distinguished from an efficiency point of view. An alternative approach is to propose a stronger definition of social welfare, such as a utilitarian social welfare function, and examine if political equilibria coincide with allocations that maximize this function (Green, Mas-Colell, and Whinston 1995, pp. 825–31). The democratic political equilibrium here is inefficient compared to the utilitarian social optimum, which would involve no taxation. That taxation creates distortionary costs is a feature of most of the models we discuss throughout this book. In some sense, this is plausible because taxation creates disincentive effects, distorting the allocation of resources.

Its tendency to redistribute income with its potential distortions might suggest that democracy is inefficient relative to a regime that allocates political power to richer agents, who would choose less redistribution. Nevertheless, there are also plausible reasons in general for why greater redistribution might improve the allocation of resources. First, if we allowed people to get utility from public goods that were provided out of tax revenues, it is a standard result in median-voter models that the rich prefer too few public goods whereas the poor prefer too many (Persson and Tabellini 2000). In this case, depending on the shape of the income distribution, the level preferred by the poor may be closer to the social optimum, and democracy, giving political power to the poor, would improve the social efficiency of public goods provision.

Second, although we do not consider such models in this book, we can imagine a situation in which agents undertake investments in human capital, and the poor are credit-constrained and underinvest relative to the optimal amount. Then, redistributive taxation – even without public-good provision – by increasing the post-tax incomes of the poor may contribute to aggregate human-capital investments and improve the allocation of resources (Galor and Zeira 1993; Benabou 2000; Acemoglu and Robinson 2000a, 2002). Moreover, as we show later, democracy may in fact be more efficient than nondemocracy even when there are taxes raised in democracy. This is because nondemocracies may allocate resources to socially wasteful activities such as repression to stay in power, and the costs of taxation may well be less than the costs of repression.

4.3 Targeted Transfers

The model of redistributive politics we have analyzed so far places many restrictions on the form of fiscal policy. For instance, all agents receive the same amount of redistribution. As we suggested previously, allowing for completely arbitrary forms of redistribution quickly leads to a situation in which collective choices are not determinate. However, it is possible to introduce more complicated forms of redistribution without losing the determinateness of social choices, and the comparison of economies with different structures of taxation yields interesting results.

Most relevant in this context is an extension of the two-group model to allow for targeted transfers – that is, different levels of transfers for the rich and the poor. More concretely, after tax revenues have been collected, they may be redistributed in the form of a lump-sum transfer T_r that only goes to rich people, or a transfer T_p that only goes to poor people. This implies that the government budget constraint is now:

$$(1-\delta)T_p + \delta T_r = \tau\left((1-\delta)y^p + \delta y^r\right) - C(\tau)\bar{y} = (\tau - C(\tau))\,\bar{y} \tag{4.12}$$

The indirect utility of a poor person, in general, is:

$$V(y^p \mid \tau, T_p) = (1-\tau)y^p + T_p$$

This problem has a three-dimensional policy space because voting will be over the tax rate τ and the two transfers T_p and T_r but where one of these variables can be determined residually from the government budget constraint. This is why we condition the indirect-utility function $V(y^p \mid \tau, T_p)$ on only two of these variables with T_r following from (4.12). Because the policy space is now two-dimensional, the MVT does not apply. However, collective choices are determinate and the equilibrium policy will still be that preferred by the poor. The poor are more numerous and all prefer the same policy because targeted transfers, like lump-sum transfers, do not allow the formation of a coalition of the rich and a subset of the poor to overturn the majority formed by the poor.

To characterize the equilibrium, we can again think of the model as a game in which two political parties propose policy platforms. The unique Nash equilibrium involves both parties offering the ideal point of the poor. To see what this ideal point is, note that a poor agent clearly does not wish to redistribute to the rich; hence, $T_r = 0$. Hence, the intuitive outcome is that the poor choose τ to maximize:

$$\begin{aligned} V(y^p \mid \tau, T_p) &= (1-\tau)y^p + T_p \\ &= (1-\tau)y^p + \frac{(\tau - C(\tau))\,\bar{y}}{1-\delta} \end{aligned}$$

with first-order condition, $y^p(1-\delta) = (1 - C'(\tau^{pT}))\bar{y}$ gives an ideal point of (τ^{pT}, T_p^{pT}) where $\tau^{pT} > 0$. Here, we use the superscript T to indicate that τ^{pT} is the tax rate preferred by a poor agent when targeted transfers are allowed. Similarly, T_p^{pT} and T_r^{pT} are the preferred levels of transfers of a poor agent. Substituting for y^p, we see that τ^{pT} satisfies the equation:

$$\theta = C'(\tau^{pT}) \tag{4.13}$$

and because $T_r^{pT} = 0$ from the government budget constraint, we have $T_p^{pT} = (\tau^{pT} - C(\tau^{pT}))\bar{y}/(1-\delta)$.

The first important implication of this analysis is that the equilibrium tax rate in democracy with targeted transfers, τ^{pT}, is greater than the tax rate without targeted transfers, τ^p, given by (4.11). Mathematically, this follows from the fact that $\theta > (\theta - \delta)/(1-\delta)$. The intuitive reason for this is also simple: without targeted transfers, because redistribution goes both to the poor and the rich, each dollar of tax revenue creates lower net benefit for the poor than in the presence of targeted transfers. τ^{pT} and τ^p converge when $\delta \to 0$; that is, when the fraction of the rich in the population becomes negligible. This is natural; in this case, there are so few rich agents that whether they obtain some of the transfers is inconsequential.

More important than the comparison of the tax rates is the comparative statics of τ^{pT}. It can be seen that those are identical to the results obtained in the model without targeted transfers. In particular, greater inequality again increases taxes.

It is instructive to examine the burden of taxation on the elite in this model, which is now:

$$\text{Burden}^T(\tau) = \tau \frac{\theta}{\delta} \bar{y}$$

Obviously, $\text{Burden}^T(\tau) > \text{Burden}(\tau)$, where $\text{Burden}(\tau)$ was the burden of taxation defined in the previous subsection when there were no targeted transfers. Hence, the introduction of targeted transfers increases the burden of democracy on the rich. Moreover, as before, higher inequality increases this burden at unchanged tax rates.

An important implication of this result is that targeted transfers increase the degree of conflict in society. In particular, because with targeted transfers democracy charges higher taxes and redistributes the proceeds only to the poor, the rich are worse off than in democracy without targeted transfers. Furthermore, for similar reasons, nondemocracy is now worse for the poor. This is because, as discussed in Chapter 2, we can think of nondemocracy as the rule of an elite who we associate with the rich. In particular, and as we now show, in nondemocracy when targeted transfers are available, the rich elite would prefer to set positive taxes and redistribute the proceeds to themselves. In particular, their ideal point would be a vector (τ^{rT}, T_r^{rT}) (with T_p^{rT} following from (4.12)), where τ^{rT} satisfies the first-order condition $-y^r\delta + (1 - C'(\tau^{rT}))\bar{y} = 0$ if $\tau^{rT} > 0$ or $-y^r\delta + (1 - C'(\tau^{rT}))\bar{y} < 0$ and $\tau^{rT} = 0$. Unlike in the model without targeted transfers, the first-order condition for the rich does have an interior solution, with τ^{rT} implicitly defined by the equation:

$$1 - \theta = C'(\tau^{rT}) \tag{4.14}$$

which has a solution for some $\tau^{rT} > 0$. Hence, introducing targeted transfers makes nondemocracy better for the rich and worse for the poor.

The increased degree of conflict in society with targeted transfers has the effect of making different regimes more unstable – in particular, making democratic consolidation more difficult.

4.4 Alternative Political Identities

In the previous subsection, we allowed transfers to go to some subset of society, the poor or the rich. More generally, we are interested in what a democratic political equilibrium looks like when voting takes place not along the lines of poor versus rich but rather perhaps along the lines of ethnicity or another politically salient characteristic. There are few analytical studies in which researchers have tried to understand when socioeconomic class rather than something else, such as ethnicity, might be important for politics (Roemer 1998; Austen-Smith and

Wallerstein 2003). Our aim is not to develop a general model but rather to illustrate how democratic politics might work when other identities are salient and how this influences the comparative statics – for example, with respect to inequality, of the democratic equilibrium. In subsequent chapters, we use this model to discuss how our theory of the creation and consolidation of democracy works when political identities differ.

Consider, then, a model of pure income redistribution with rich and poor people but where people are also part of two other groups perhaps based on religion, culture, or ethnicity, which we call X and Z. Thus, some members of type X are relatively poor and some are relatively rich, and the same is true for type Z. To capture in a simple way the idea that politics is not poor versus rich but rather type X versus type Z, we assume that income is taxed proportionately at rate τ as usual but that it can be redistributed either as a transfer to type X, denoted T_X, or as a transfer to type Z, denoted T_Z. Let there be δ_X type Xs and δ_Z type Zs where $\delta_X + \delta_Z = 1$. We also introduce the notation δ^i_j for $i = p, r$ and $j = X, Z$ for the subpopulations. Throughout, we assume that $\delta_X > 1/2$ so that type Xs are in a majority and let y^i_j be the income of type $i = p, r$ in group $j = X, Z$.

The government budget constraint is:

$$\delta_X T_X + \delta_Z T_Z = (\tau - C(\tau))\,\bar{y}$$

where average income is defined as:

$$\bar{y} = \delta^p_X y^p_X + \delta^r_X y^r_X + \delta^p_Z y^p_Z + \delta^r_Z y^r_Z$$

where the total population size is again 1. To be more specific about incomes, we assume that group X gets a fraction $1 - \alpha$ of total income and group Z gets α. Thus, $\delta^p_X y^p_X + \delta^r_X y^r_X = (1 - \alpha)\,\bar{y}$ and $\delta^p_Z y^p_Z + \delta^r_Z y^r_Z = \alpha\,\bar{y}$. Income is distributed within the groups in the following way: $\delta^r_X y^r_X = \alpha^r_X(1 - \alpha)\,\bar{y}$ and $\delta^p_X y^p_X = (1 - \alpha^r_X)(1 - \alpha)\,\bar{y}$, so that α^r_X is the fraction of the income that accrues to the rich in group X. Similarly, we have $\delta^r_Z y^r_Z = \alpha^r_Z \alpha\,\bar{y}$ and $\delta^p_Z y^p_Z = (1 - \alpha^r_Z)\alpha\,\bar{y}$. We assume:

$$y^r_X > y^p_X, \text{ which implies } \frac{\alpha^r_X}{\delta^r_X} > \frac{1 - \alpha^r_X}{\delta^p_X}$$

$$y^r_Z > y^p_Z, \text{ which implies } \frac{\alpha^r_Z}{\delta^r_Z} > \frac{1 - \alpha^r_Z}{\delta^p_Z}$$

It is straightforward to calculate the ideal points of the four types of agents. Both poor and rich type X agents prefer $T_Z = 0$ and both may prefer $T_X > 0$. However, poor type Xs prefer more redistribution than rich type Xs. To see this, note that the preferred tax rates of poor and rich type Xs (conditional on $T_Z = 0$), denoted τ^p_X

and τ_X^r, satisfy the first-order conditions (with complementary slackness):

$$C'(\tau_X^p) = 1 - \frac{\delta_X y_X^p}{\bar{y}} \text{ if } \tau_X^p > 0 \quad \text{and} \quad C'(\tau_X^r) = 1 - \frac{\delta_X y_X^r}{\bar{y}} \text{ if } \tau_X^r > 0 \qquad (4.15)$$

As usual, a priori we do not know if the solutions are interior or at a corner. The first-order condition for a rich agent can imply a positive tax rate when $\delta_X y_X^r/\bar{y} < 1$. Intuitively, in this model, redistribution is not from the rich to the poor but from one type of agent to another. Therefore, even rich people may benefit from this type of redistribution. If both tax rates τ_X^p and τ_X^r are interior, then $\tau_X^p > \tau_X^r$ follows from (4.15) so that the poor members of group X prefer higher tax rates and more redistribution. The ideal points of group Z are also easy to understand. All members of group Z prefer $T_X = 0$ and both may also prefer $T_Z > 0$, but poor members of Z prefer higher taxes and more redistribution than rich members of the group.

We now formulate a game to determine the tax rate in democracy. If we formulate the model as we have done so far in this chapter, where all issues are voted on simultaneously, then because the model has a three-dimensional policy space, it may not possess a Nash equilibrium. To circumvent this problem in a simple way, we formulate the game by assuming that the tax rate and the transfers are voted on sequentially. The timing of the game is as follows:

1. All citizens vote over the tax rate to be levied on income, τ.
2. Given this tax rate, voting takes place over T_X or T_Z, the form of the transfers to be used to redistribute income.

We solve this game by backward induction and show that there is always a unique subgame perfect Nash equilibrium. We focus on two types of equilibria. In the first, when $\delta_X^p > 1/2$, so that poor type Xs form an absolute majority, there is a unique equilibrium of this model that has the property that the equilibrium policy is τ_X^p, preferred by the poor type Xs.

In the second, $\delta_X^p < 1/2$, so that poor type Xs do not form an absolute majority, there is a unique equilibrium of this model that has the property that the equilibrium policy is τ_X^r, preferred by the rich type Xs.

To see why these are equilibria, we start by considering the first case. Solving by backward induction at the second stage, because $\delta_X > 1/2$, it is clear that a proposal to redistribute income only to Xs (i.e., propose $T_X > 0$ and $T_Z = 0$) will defeat a proposal to redistribute to Zs or to redistribute to both Xs and Zs. That this is the unique equilibrium follows immediately from the fact that Xs are in a majority. Next, given that only T_X will be used to redistribute, in the first stage of the game all agents have single-peaked preferences with respect to τ. The ideal point of all type Zs, given that subsequently $T_Z = 0$, is $\tau = 0$. The ideal points of poorer and richer members of X are τ_X^p and τ_X^r, as previously shown. When $\delta_X^p > 1/2$, poor Xs form an absolute majority and, hence, the median voter is a poor type

X. Because only T_X will subsequently be used to redistribute income, the MVT applies and the tax rate determined at the first stage of the game must be the ideal one for poor type Xs, τ_X^p. Therefore, in this case, there is a unique subgame perfect Nash equilibrium, which we denote $(\tau_X^p,\ T_Z = 0,\ T_X = (\tau_X^p - C(\tau_X^p))\bar{y}/\delta_X)$.

In the second case, where poor Xs are not an absolute majority, the difference is that the median voter is now a rich type X. Hence, the MVT implies that τ_X^r will be the tax rate determined at the first stage. Therefore, in this case, there is a unique subgame perfect Nash equilibrium $(\tau_X^r,\ T_Z = 0,\ T_X = (\tau_X^r - C(\tau_X^r))\bar{y}/\delta_X)$.

The equilibrium of this game does not depend on the timing of play. To see this, consider the following game in which we reversed the order in which the policies are voted on:

1. All citizens vote on the type of transfers, T_X or T_Z, to be used to redistribute income.
2. Given the form of income transfer to be used, all citizens vote on the rate of income tax, τ.

We can again see that there is a unique subgame perfect equilibrium, identical to the one we calculated previously. Begin at the end of the game where, given that either T_X or T_Z has been chosen, individuals vote on τ. In the subgame where T_X has been chosen, all agents again have single-peaked preferences over τ. Thus, when $\delta_X^p > 1/2$, the median voter is a poor member of X and the equilibrium tax rate chosen is τ_X^p. When $\delta_X^p < 1/2$, the median voter is a rich member of X and the equilibrium tax rate chosen is τ_X^r. In the subgame where T_Z has been chosen, because type Xs do not benefit from any redistribution, the ideal point of all Xs must be to set a tax rate of zero. Because type Xs are a majority, the equilibrium must have $\tau = 0$ because the median voter is a type X. Now, moving back to the first stage of the game, since Xs are in a majority, the outcome is that income will be redistributed only according to T_X. From this, we see that the unique subgame perfect equilibrium is identical to the one we analyzed before.

For our present purposes, the most interesting features of these equilibria are the comparative statics with respect to inequality. In both types of equilibria, an increase in inter-group inequality, in the sense that the income of type Xs falls relative to the income of type Zs, holding inequality within group Z constant, leads to higher tax rates and greater redistribution. If there is an increase in Zs income share, holding $\bar{y}$ constant, then both y_X^p and y_X^r will fall and both poor and rich type Xs favor higher taxes. To see this, we use the definitions of income and substitute them into (4.15):

$$C'(\tau_X^p) = 1 - \frac{\delta_X(1-\alpha_X^r)(1-\alpha)}{\delta_X^p} \quad \text{and} \quad C'(\tau_X^r) = 1 - \frac{\delta_X \alpha_X^r (1-\alpha)}{\delta_X^r}$$

where we assumed for notational simplicity that both first-order conditions have interior solutions. An increase in the share of income accruing to the Zs increases

α, which increases both τ_X^p and τ_X^r; that is:

$$\frac{d\tau_X^p}{d\alpha} = \frac{\delta_X(1-\alpha_X^r)}{C''(\tau_X^p)\delta_X^p} > 0$$

that is, an increase in α increases the tax rate. Similarly, $d\tau_X^r/d\alpha > 0$.

However, such a change in income distribution does not map easily into the standard measures such as the Gini coefficient. Moreover, if there is a change in inequality that redistributes within groups (e.g., α_X^r increases [so that y_X^p falls and y_X^r rises]), then the comparative statics are different in the two equilibria. In the first, taxes will increase, whereas in the second, they will decrease.

It is worth pausing at this point to discuss the empirical evidence on the relationship between inequality and redistribution. Our model predicts that greater inequality between groups will lead to greater inter-group redistribution in democracy. However, because political identities do not always form along the lines of class, it does not imply that an increase in inequality – as conventionally measured by the Gini coefficient or the share of labor in national income – will lead to more measured redistribution. The empirical literature reflects this; for example, Perotti (1996) noted following the papers of Alesina and Rodrik (1994) and Persson and Tabellini (1994) that tax revenues and transfers as a fraction of GDP are not higher in more unequal societies.

Nevertheless, so far, this relationship has not been investigated with a careful research design. One obvious pitfall is that of reverse causality. Although Sweden is an equal country today, what we are observing is the result of seventy years of aggressive income redistribution and egalitarian policies (e.g., in the labor market). Indeed, existing historical evidence suggests that inequality has fallen dramatically during the last hundred years in Sweden.

There are also many potential omitted variables that could bias the relationship between inequality and redistribution, even in the absence of reverse causality. Stated simply, many of the institutional and potentially cultural determinants of redistribution are likely to be correlated with inequality. For example, Sweden is a more homogeneous society than either Brazil or the United States, and many have argued that the homogeneity of the population is a key factor determining the level of redistribution (Alesina, Glaeser, and Sacerdote 2001; Alesina and Glaeser 2004). Moreover, there may well be much more of a "taste for redistribution" in Sweden given that for most of the last seventy years, the country has been governed by socialists with a highly egalitarian social philosophy.

5. Democracy and Political Equality

Although the MVT is at the heart of this book and much positive political economy, there are, of course, many other theoretical approaches to modeling democratic politics. A useful way of thinking about these theories is that they imply different distributions of power in the society. The median-voter model is the simplest and perhaps the most naive setup in which each person has one vote. In the two-group model, numbers win and the citizens get what they want.

Nevertheless, as previously mentioned, in reality some people's preferences are "worth" more than others. There are many ways in which this can happen. First, preferences may be defined not just over income but people may also care about ideological positions associated with different political parties. Voters who are less ideological are more willing to vote according to the policies offered by different parties. Such voters, often called swing voters, therefore tend to be more responsive to policies and, as a result, the parties tailor their policies to them. To take an extreme situation, imagine that poor people are very ideological and prefer to vote for socialist parties, whatever policy the party offers. In this case, policy does not reflect the preferences of the poor because right-wing parties can never persuade the poor to vote for them; socialist parties already have their vote and, therefore, can design their policies to attract the votes of other groups, perhaps the rich. These ideas stem from the work on the probabilistic voting model by Lindbeck and Weibull (1987), Coughlin (1992), and Dixit and Londregan (1996, 1998). In this model, the preferences of all agents influence the equilibrium policy in democracy; the more a group tends to consist of swing voters, the more their preferences will count. Thus, for instance, if the rich are less ideological than the poor, it gives them considerable power in democracy even though they are in a numerical minority.

Second, equilibrium policy may be influenced not only by voting but also by campaign contributions and the activities of lobbies and special interests. In such a situation, groups that are represented by an organized special interest or who have more resources to channel through special interests tend to have more influence over policy than groups with less organization and resources. If the rich have an advantage in either of these dimensions, this allows their preferences to influence democratic policies. A model along these lines was developed initially by Becker (1983), which was greatly developed and extended by Grossman and Helpman (1996, 2001).

Third, so far, political parties have in a sense been perfect agents of the voters. In reality, however, political parties have objectives that are to some extent autonomous from those of citizens, and the policies they offer reflect them, not simply the wishes of the median voter. This is particularly true when, as first emphasized by Wittman (1983), there is uncertainty in the outcome of elections or, as shown by Alesina (1988), parties cannot commit to arbitrary policy platforms. When either of these is true, political parties' objectives, not simply the preferences of the voters, are important in influencing political outcomes. In this case, groups that can capture the agendas of political parties can influence democratic policy to a greater extent than their numbers would indicate.

Finally, and probably most interesting the Downsian model and many of its extensions, including models of probabilistic voting, feature a thin description of political institutions. The Downsian model introduced in this chapter is almost like a presidential election (although not in the United States because then we would have to introduce the electoral college). For example, we did not distinguish between electoral districts. If we wanted to use the model to capture the outcome of elections for the British Parliament, we would have to introduce such districts and model how the disaggregated vote share mapped into seat shares in Parliament. This may be significant because, as pointed out by Edgeworth in the nineteenth century and formalized by Kendall and Stuart (1950), small parties tend to be underrepresented in such majoritarian institutions. Thus, there is not a one-to-one relationship between vote share in aggregate and seat share in Parliament. Many other aspects of institutions might matter. For example, institutions influence voter turnout and also the abilities of minority groups to get what they want in legislatures.

This is interesting because the institutions matter for who has power in a democracy. Consider one specific example, motivated by the attention it has received in the political science literature: the difference between presidential and parliamentary democracy. As noted previously, Linz (1978, 1994) argued that presidential regimes tend to be more prone to coups; Przeworski et al. (2000) present econometric evidence consistent with this claim. The intuitive idea is that presidents, because they are elected in a popular vote, tend to represent the preferences of the median voter in society. On the other hand, Parliament may have to reconcile more diverse interests. In this case, if we compared the same country under these two different sets of institutions, we would expect the outcome with a president to be closer to that preferred by the citizens.

Motivated by these considerations, we use a simple reduced-form model parameterizing the political power of different groups in democracy. In the appendix to this chapter, we formally develop the first three of these ideas on modeling the distribution of political power in democracy and show how they map into the simple reduced-form model used here. Different specific models – whether they emphasize different institutional details, lobbying, relatively autonomous political parties, or the presence of swing voters – provide alternative microfoundations for our reduced form. Naturally, these details are also interesting and may be significant in specific cases; we discuss this as we proceed.

Let us now return to our basic two-class model with a unique policy instrument, the tax rate on income, τ. Given that the citizens are the majority (i.e., $1 - \delta > 1/2$), Downsian political competition simply maximized the indirect utility of the citizens, $V^p(\tau)$. In this model, the preferences of the elite are irrelevant for determining the tax rate. More generally, however, the elite will have some power and the equilibrium policy will reflect this. The simplest way of capturing this idea is to think of the equilibrium policy as maximizing a weighted sum of the indirect utilities of the elites and the citizens, where the weights determine how much the equilibrium policy reflects the preferences of the different groups. We call the weight of a group the "political power" of that group. Let those weights be χ and $1-\chi$ for the elites and the citizens, respectively. Then, the equilibrium tax rate would be that which maximizes:

$$\max_{\tau\in[0,1]} (1-\chi)(1-\delta)((1-\tau)y^p + (\tau - C(\tau))\bar{y}) \\ + \chi\delta((1-\tau)y^r + (\tau - C(\tau))\bar{y})$$

which has a first-order condition (with complementary slackness).

$$-((1-\chi)(1-\delta)y^p + \chi\delta y^r) \\ + ((1-\chi)(1-\delta) + \chi\delta)\left(1 - C'(\tau)\right)\bar{y} = 0 \quad \text{if} \quad \tau > 0$$

This yields:

$$\frac{(1-\chi)(1-\theta)+\chi\theta}{(1-\chi)(1-\delta)+\chi\delta} = 1 - C'(\tau(\chi)) \tag{4.16}$$

where we define $\tau(\chi)$ to be the equilibrium tax rate when the political power parameter is χ.

It is instructive to compare Equations (4.16) and (4.11), which determined equilibrium policy in the two-class model with Downsian political competition. It is clear that the Downsian outcome is a special case of the current model for $\chi = 0$, in which case (4.16) becomes identical to (4.11) so that $\tau(\chi = 0) = \tau^p$. However, for all values of $\chi > 0$, the preferences of the elite also matter for equilibrium policies so that $\tau(\chi > 0) < \tau^p$. Moreover, the greater is χ, the more political power the elites have despite the fact that they are the minority. To see the implications of this, notice that if χ rises, then the left side of (4.16) increases. This implies that the right side must increase also so that $C'(\tau)$ must fall. Because $C'(\tau)$ is increasing in τ, this implies that τ falls. In other words, $d\tau(\chi)/d\chi < 0$. Thus, an increase in the power of the rich, or in their ability to influence the equilibrium policy in democracy through whatever channel, pulls the tax rate down and closer to their ideal point. The different models in the appendix provide different mechanisms by which the power of the elites is exerted and how the equilibrium tax rate responds as a result.

This is important because, so far, we have emphasized that democracies generate more pro-citizen policies than nondemocracies. If, in fact, we have that as $\chi \to 1$ and the tax rate generated by democratic politics tends to that most preferred by the elites, there will be little difference between democracies and nondemocracies. Our perspective is that there are often reasons for the elites to be powerful in democracies even when they are a minority, so $\chi > 0$ may be a good approximation of reality. Nevertheless, both the evidence discussed so far and introspection suggest that most democratic societies are far from the case where $\chi = 1$. As a result, democracies do not simply cater to the preferences of the rich the same way as would a typical nondemocracy.

6. Conclusion

In this chapter, we developed some basic models of democratic politics. We also discussed in detail the workhorse models and some of their properties that we use to characterize democracy in the remainder of the book. Our analysis focuses on the two-group model in conditions where either the MVT applies or where, when the policy space is multidimensional, the equilibrium policy is that preferred by the poor. We focus, therefore, on situations in which the median voter is a poor agent and his preferences determine what happens in a democracy. We also consider extensively three substantive extensions of this model. First, a three-class model in which the middle class enters as a separate group from the rich and the poor. We defer a formal introduction of this model until the first time it is used in Chapter 8. Second, the reduced-form model of democracy in which different groups "power" can vary depending on the nature of democratic institutions, on whether they are swing voters, whether they are an organized lobby, and so forth. In the appendix to this chapter, we discuss in detail different microfoundations for the power parameter χ but, for the rest of the book, we simply work with this reduced form rather than present detailed models in which institutions, lobbying, party capture, or probabilistic voting are explicitly introduced. Finally, the simple model in which political identities differ and can be different from those based purely on socioeconomic class or income level, and we analyze how this affects distributional conflict in society.