Do Juntas Lead to Personal Rule?

Daron Acemoglu   Georgy Egorov   Konstantin Sonin[*]

January 2009

Although almost half of the world's population lives under nondemocratic regimes, the questions of how policy decisions are made and how power changes hands in nondemocracies have received relatively little attention in the political economy literature. A popular view, forcefully articulated by Gordon Tullock (1987), is that because there are no strong institutions ensuring consensus and regulating the election and succession of leaders, nondemocratic regimes rapidly degenerate into *personal rule*, where a single dictator dominates every aspect of decision-making. Tullock writes: "Empirically the Junta characteristically shrinks to one man..." (p. 144) and continues to explain this as the result of dynamic interactions among the members of the junta. He suggests that there will typically be an accumulation of power by one of the junta members. If this upstart member succeeds, he becomes the sole ruler. If he fails, he is eliminated by the other members of the junta. This process continues until one member is standing. Tullock thus concludes: "It can be seen that this process would tend over time to lead the junta into becoming just one man through the gradual exclusion of individuals who had failed in plotting or the success of an individual who had not." (p. 145)

Tullock's account, like that of many others, implicitly recognizes that politics in nondemocratic and weakly-institutionalized societies should be conceptualized as one of the dynamic coalition formation—there are no rules that ensure orderly transitions of power and no checks against some members of the ruling coalition eliminating or sidelining others. However, formal models of dynamic coalition formation in nondemocratic societies have not been developed until recently.

In this paper, we draw on our work on dynamic coalition formation (Daron Acemoglu, Georgy Egorov and Konstantin Sonin, 2008a) and investigate Tullock's conjecture formally.

Our game-theoretic analysis leads to the opposite of Tullock's conjecture. In particular, provided that players are sufficiently forward-looking, juntas do not dynamically converge to personal rule. On the contrary, relatively large juntas may emerge and persist as ruling coalitions for a very simple and intuitive reason: the absence of strong institutions not only enables some junta members to eliminate others, but also implies that current members cannot make credible commitments and in particular cannot refrain from engaging in further rounds of elimination. Consequently, some of the members of the junta recognize that elimination of a subset of the members will change the balance of power within the junta and thus make their own future elimination more likely.

As an example, consider a three-person junta. Two members capable of eliminating the third will be unwilling to do so because the weaker of them anticipates that he is the next one to be eliminated. Thus, the original three-person junta can persist as a stable ruling coalition. If the initial junta consists of more than three members, some of them may be eliminated. In this case, there may be a tendency to eliminate stronger members.

This simple game-theoretic force, ignored by Tullock's discussion, is not only intuitive, but has a variety of other implications, which are also surprising in light of Tullock's conjecture. First, in contrast to Tullock's suggestion that members of juntas will invest in their power in order to be the ultimate winner in the inevitable power contest, we show that junta members may try to reduce (rather than increase) their powers in order to be part of the ultimate ruling coalition. Second, if we compare the formation of the ruling coalition under weak and strong institutions (nondemocracies and democracies), again in stark contrast to Tullock's conjecture, we find that the ruling coalition is always larger (not smaller) in the former, rather than in the latter. In particular, in democracies, the minimum winning coalition (as conjectured by William H. Riker, 1962) forms, whereas the stable ruling coalition in nondemocracy is greater. Finally, we also show that Tullock's reasoning is confirmed when players are sufficiently "myopic" (have low discount factors).

Our approach in this paper builds on and extends our previous work, Acemoglu, Egorov and Sonin (2008a). In particular, we use an infinite-horizon model, where players receive payoffs in each period, whereas our earlier paper considered a finite-horizon model with the payoffs realized at the end (the main results here are proved using ideas similar to our more recent work, Acemoglu, Egorov and Sonin, 2008b). Furthermore, the framework we propose here is sufficiently general to nest simple versions of David Baron and John Ferejohn's (1989) approach to coalitional bargaining in legislatures, and this enables us to contrast the results of dynamic coalition formation in nondemocratic and democratic societies. In addition to the papers mentioned here, there is a large literature on coalition formation that uses tools from cooperative game theory and an emerging literature on noncooperative dynamic coalition formation (e.g., Matthew Jackson and Boaz Moselle, 2002, Debraj Ray, 2008). How our approach differs from these papers is discussed in Acemoglu, Egorov and Sonin (2008a, b).

Section I describes the environment and presents our main results. Section II characterizes the equilibrium under democratic institutions and contrasts it with the results for nondemocracies. Section III concludes.

I. Model and Nondemocratic Equilibrium

We consider an infinite-horizon dynamic game among n individuals forming the set of potential rulers (initial junta members in a nondemocracy or members of the legislature in a democracy). The set of individuals is denoted by N. Each $i \in N$ is endowed with political power $\gamma_i > 0$. In weakly-institutionalized environments, this may represent the extent of individual i military power ("guns"). In any period there is a (non-empty) ruling coalition, denoted by $X_t \subset N$. This ruling coalition is determined by "voting" at $t - 1$ (for $t \geq 1$),

and we set $X_0 = N$. In what follows, for any coalition $X \subset N$ we write:

$$\gamma_X \equiv \sum_{i \in X} \gamma_i.$$

The procedure for determining the ruling coalition is as follows. At each t, members of the ruling coalition X_t are recognized as agenda-setters according to a fixed sequence (potentially depending on X_t). When player i becomes the agenda-setter, he proposes an alternative coalition $A_{t,i} \subset N$. All individuals who are entitled to do so vote for or against $A_{t,i}$. Voting is assumed to be sequential. Neither the sequence in which agenda-centers are ordered, nor the sequence in which players vote plays any role in our results. Alternative $A_{t,i}$ becomes the next ruling coalition, i.e., $X_{t+1} = A_{t,i}$, if and only if it receives an absolute majority of the available "*weighted votes*," where votes are weighted by the power of each member of the junta, so that an individual with a greater γ_i has proportionately more votes. If the proposal $A_{t,i}$ does not receive an absolute majority, then the next agenda-setter nominates a proposal and so on. In case no proposal is accepted, $X_{t+1} = X_t$.

The difference between democratic and nondemocratic societies is captured by the set of players that are entitled to vote. For nondemocracies, consistent with Tullock's discussion, we assume that once a particular member of the junta is eliminated, he no longer has any say in future power negotiations and votes. In other words, at time t only members of the current junta, X_t, participate in voting. This implies that we can write the set of winning coalitions as

$$\mathcal{W}_{X_t}^{\text{nondemocracy}} = \{Y \subset X_t : \gamma_Y > \gamma_{X_t \setminus Y}\}.$$

This set contains all subsets Y of X_t such that the weighted votes of the members of Y are strictly greater than the weighted votes of other members of X_t (i.e., the members of the complementary set, $X_t \setminus Y$); thus, if the members of such a subset Y vote in favor of a proposal $A_{t,i}$, it will be accepted. We describe winning coalitions in a democracy in the

4

next section.

The preferences (for each $i \in N$) consist of two parts. The first is utility from power,

$$U_{i,t}^{+} = (1 - \beta) \, \mathbb{E}_t \sum_{\tau=t}^{\infty} \beta^{\tau-t} \frac{\gamma_i}{\gamma_{X_t}} \mathbf{I}_{i \in X_\tau}.$$

Here $\beta \in (0,1)$ is the discount factor common across all individuals, $\mathbf{I}_{i \in X_\tau}$ is the indicator function for individual i being a member of the ruling coalition at time t, and $\mathbb{E}_t$ denotes expectations at time t. The term γ_i/γ_{X_t} represents the power of the individual relative to other ruling coalition members. It can be motivated by the division of a unit size pie among the coalition members in proportion to their power. The important implication of this functional form is that each player obtains greater utility when the power of the ruling coalition is smaller. Therefore, each prefers to be a member of a smaller ruling coalition.[1]

In addition, each player incurs a disutility of $\varepsilon > 0$ whenever there is a transition (ε can be arbitrarily small but does not vanish as $\beta \to 1$). This may be because reorganization of the ruling coalition involves some nontrivial costs. Thus this component of utility is written as

$$U_{i,t}^{-} = -\varepsilon \mathbb{E}_t \sum_{\tau=t}^{\infty} \beta^{\tau-t} \mathbf{I}_{X_\tau \neq X_{\tau-1}}.$$

The total utility of individual $i \in N$ is $U_{i,t} = U_{i,t}^{+} + U_{i,t}^{-}$.

The timing of events within each period can be summarized as follows. The game starts with ruling coalition $X_0 = N$. At each $t \geq 0$:

1. The first agenda-setter i from the ruling coalition X_t proposes an alternative $A_{t,i} \subset N$.

2. All players, sequentially, cast a vote *yes* or *no*. If the set of those who voted *yes*, Y, is a winning coalition, i.e., $Y \in \mathcal{W}_{X_t}^{\text{nondemocracy}}$, then $X_{t+1} = A_{t,i}$.

3. If Y is not a winning coalition, then the game proceeds to stage 1 with the next agenda-setter. If all members of X_t already made their proposals in period t, then $X_{t+1} = X_t$.

Throughout we focus on Markov Perfect Equilibria (MPE) in pure strategies. To simplify

the exposition, we also impose the following assumption throughout.

Assumption Political powers $\{\gamma_i\}_{i \in N}$ are *generic* in the sense that if $X, Y \subset N$ and $X \neq Y$, then $\gamma_X \neq \gamma_Y$.

This assumption holds generically, i.e., for almost all $\{\gamma_i\}_{i \in N}$. An immediate implication is that all players have different powers: $\gamma_i \neq \gamma_j$, unless $i = j$. The next proposition shows that in this game there always exists an "essentially" unique pure-strategy MPE and provides a characterization of this equilibrium. We then illustrate the content of this proposition using a series of examples.

Proposition 1. Consider the above-described game. Then for any $\varepsilon > 0$ sufficiently small, there exists $\bar{\beta} \in (0, 1)$ such that for any $\beta > \bar{\beta}$, there exists an MPE in pure strategies. This MPE is essentially unique: in any pure-strategy MPE there is a single transition to the stable ruling coalition $\phi(N)$, which takes place in the first period. The mapping ϕ that determines the unique stable ruling coalition is defined as follows:

$$\phi(X) = \arg\min_{Y \in \{Z \subset N: \ \gamma_Z < \gamma_X; \ \gamma_Z > \gamma_{X \backslash Z}; \ \phi(Z) = Z\} \cup \{X\}} \gamma_Y.$$

The proof of Proposition 1 uses a modification of the arguments used in proving Theorem 2 in Acemoglu, Egorov and Sonin (2008b). There, we also show why the introduction of the transaction cost $\varepsilon > 0$ is important to ensure existence and uniqueness.

The key feature of this equilibrium is the unique stable ruling coalition given by $\phi(N)$. The definition of the mapping ϕ looks involved at first, particularly since ϕ appears both on the left and the right hand side. Nevertheless, this mapping can be computed inductively and in most cases, very straightforwardly. In particular, for any singleton $\{i\}$, we have $\phi(\{i\}) = \{i\}$, and then we can consider sets of the form $\{i, j\}$ (with $\gamma_i > \gamma_j$ without loss of any generality) and conclude that $\phi(\{i, j\}) = \{i\}$. But then for any $\{i, j, k\}$ such that no player is by himself more powerful than the other two, we have $\phi(\{i, j, k\}) = \{i, j, k\}$.

6

Proceeding in this fashion, we can compute ϕ for any initial coalition. The next example illustrates this.

The main economic insight of the proposition is encapsulated by the term $\{Z \subset N: \gamma_Z > \gamma_{X \setminus Z}; \phi(Z) = Z\}$: a particular ruling coalition is made stable when its subsets that are powerful enough to eliminate other members are themselves unstable.

Example 1. *(Stability of Three-Person Juntas)* Consider an initial junta consisting of three players, with powers 3, 4 and 5. Clearly, no single individual can eliminate the other two. But any two-person subset can eliminate the third, and given the preferences described above, all players prefer being members of a two-person junta than a three-person junta. Suppose that 3 and 4 eliminate 5. But then $X = \{3, 4\}$, and in the continuation game, when 4 is selected as the agenda-setter, he will propose $\{4\}$ and eliminate 3. Since β is sufficiently large, this is less attractive for player 3 than the initial coalition $\{3, 4, 5\}$, and thus if player 4 proposes $\{3, 4\}$, both players 3 and 5 will vote against it. A similar reasoning also establishes why $\{3, 5\}$ and $\{4, 5\}$ will not receive support and thus the initial junta $\{3, 4, 5\}$ persists forever. Tullock's reasoning here would have suggested a process of elimination that leads to the personal rule of either 4 or 5. We show in Proposition 3 below that this is the outcome when players are "myopic".

Example 2. *(Elimination of the Strong)* Let us next consider an initial junta consisting of four players with powers, 3, 4, 5 and 7.5. With a similar reasoning, $\{3, 4, 5\}$ is stable. Now if one of these three players proposes $\{3, 4, 5\}$ (i.e., eliminating 7.5), all three will accept this. It can also be verified that no winning coalition including 7.5 is stable. Thus, in this case the essentially unique MPE will involve the elimination of player 7.5.

Example 3. *(The Desire to Be Weak)* Tullock's argument suggests that players may wish to build up their power in order to succeed in the inevitable power struggle. Consider the previous example and suppose that player 7.5 can increase or decrease his power by any

amount $g \in [-4, 4]$ (provided that his choice does not violate the genericity assumption). Even increasing his power by 4 to 11.5 does not change the above conclusion. Yet if he reduces his power to $\gamma \in (4, 5)$, the stable ruling coalition changes and now includes this player as well as 3 and 4. Therefore, this example illustrates that it may be beneficial for players to reduce their power ("guns").

We end this section with two additional results (proofs again omitted). The first generalizes Proposition 1, showing that similar results apply even if players who are eliminated can never be brought back (i.e., they are "killed"). It can be verified that the conclusions of the three examples discussed above are unchanged under this scenario. The second shows how the results change when individuals have low discount factors and act "myopically".

Proposition 2. Consider the above-described game, except that only alternatives $A \subset X_t$ are admissible. Then the conclusions of Proposition 1 apply except that the mapping ϕ is given by

$$\phi(X) = \arg \min_{Y \in \{Z \subset X: \ Z \neq X; \ \gamma_Z > \gamma_{X \setminus Z}; \ \phi(Z) = Z\} \cup \{X\}} \gamma_Y.$$

Proposition 3. Consider the above-described game with $\varepsilon > 0$ sufficiently small, and suppose that β is also sufficiently close to 0. Then in any MPE the stable ruling coalition (which emerges as $t \to \infty$) is a singleton.

Example 4. *(Myopic Equilibrium)* Consider again the example with three players, 3, 4, 5, but with β close to 0 as in Proposition 3. Then on the equilibrium path either player 3 or 4 will propose coalition $\{3, 4\}$, and both of them will support it. If player 5 is the first to make a proposal, and proposes a different coalition (say, $\{3, 5\}$), both 3 or 4 will reject this proposal: 4 will reject it because he is not a member of it and 3 will reject it anticipating that coalition $\{3, 4\}$, which he prefers, will be proposed and accepted later during this period. In the continuation game, player 4 will eliminate 3 as soon as he becomes the agenda-setter, and the stable ruling coalition is a singleton, $\{4\}$.

8

II.   Democratic Equilibrium

We now modify the decision-making procedure in the game described in the previous section so that the process of decision-making approximates that of coalition formation in democracies.[3] Our modeling is motivated by the formation of coalitions in legislatures such as the U.S. Congress. Specifically, we assume that the set of winning coalitions is now

$$\mathcal{W}_{X_t}^{\text{democracy}} = \{Y \subset N : \gamma_Y > \gamma_{N \backslash Y}\}.$$

This differs from $\mathcal{W}_{X_t}^{\text{nondemocracy}}$ in that a proposal needs to receive an absolute majority of votes of all players (in the set N) rather than from those in the current ruling coalition, because individuals in a legislature that are not part of the government coalition continue to have a vote. The timing of events and payoffs are unchanged. The following proposition characterizes the (essentially unique) MPE under these "democratic" institutions.

Proposition 4. Consider the above-described game with democratic institutions. Then for any $\varepsilon > 0$ sufficiently small, there exist $0 < \tilde{\beta} \leq \hat{\beta} < 1$ such that for any $\beta > \hat{\beta}$ or any $\beta < \tilde{\beta}$, there exists an MPE in pure strategies. This MPE is essentially unique: in any pure strategy MPE there is a single transition to the minimum winning coalition $\tilde{\phi}(N)$, which takes place in the first period. The minimum winning coalition is given by

$$\tilde{\phi}(N) = \arg\min_{Y \in \{Z \subset N; \; \gamma_Z > \gamma_{N \backslash Z}\}} \gamma_Y.$$

This proposition shows that the structure of the MPE is similar to those in Propositions 1 and 2 except that the stable ruling coalition now corresponds to the minimum winning coalition. The minimum winning coalition can form now because there is no threat of a subset thereof trying to sideline other members, since such an attempt will be blocked with the help of the players that are not in the minimum winning coalition.

Example 5. *(Minimum Winning Coalition)* Consider again the example with 3, 4 and 5. The minimum winning coalition is $\{3, 4\}$. As opposed to the dynamics in nondemocratic societies, this minimum winning coalition will form because 3 is secure in his position. In particular, suppose that 4 proposes $\{4\}$. This will be opposed by both 3 (who does not wish to be sidelined) and 5 (who dislikes transitions because of ε cost).

An immediate implication of this example is that the ruling coalition under nondemocracy is a superset of the ruling coalition under democracy. This is somewhat paradoxical, since it implies that ruling coalitions under nondemocracies are more "inclusive". This result should be interpreted with caution as the initial set of potential rulers will be less inclusive in many nondemocratic societies. It is also worth noting that the stable ruling coalition under nondemocracy is not always a superset of that under democracy. Nevertheless, the sum of powers of these coalitions can be ranked as shown in the next corollary.

Corollary 1. *Consider the above-described game and let $\phi(N)$ and $\tilde{\phi}(N)$ denote the stable ruling coalitions under nondemocracy and democracy, respectively. Then $\gamma_{\phi(N)} \geq \gamma_{\tilde{\phi}(N)}$, with strict inequality whenever $\phi(N) \neq \tilde{\phi}(N)$.*

III.   Concluding Remarks

A popular view, clearly articulated by Tullock (1987), is that because there are no strong institutions regulating the election and succession of leaders and constraining them, non-democratic regimes will rapidly degenerate into personal rule. In practice, however, most nondemocracies do not correspond to personal rule and are governed by a junta of military or civil leaders. Using a dynamic game of coalition formation, we explained why Tullock's reasoning does not apply in dynamic environments and why the equilibrium is likely to involve multi-member juntas. The absence of strong institutions not only enables some junta members to eliminate others, but also implies that current members cannot make credible

commitments. In particular, they cannot refrain from engaging in further rounds of elimination. As a consequence, in general any two members of a three-person junta will be unwilling to eliminate the third member and increase their power, because one of them anticipates that he will be the next one to be eliminated. Therefore, the original three-person junta can be stable. If the initial junta consists of more than three members, some of these initial members may be eliminated, and in fact, there may be a tendency to eliminate stronger members. In this case, junta members might voluntarily relinquish their guns and reduce their power in order to become weak enough to be a part of the stable ruling coalition. We also showed that the forces highlighted by our dynamic model make ruling coalitions in nondemocracies typically more inclusive than those in democratic equilibria.

This short paper is part of a broader agenda of investigating how power is allocated, exercised and changes hands in nondemocracies, which still rule almost half of the world's population. Further analysis of politics in nondemocracies and other weakly-institutionalized societies is important for understanding both when and why these societies fail to pursue growth-enhancing policies and when and how they will transition towards democracy.

Footnotes

[1]Acemoglu, Egorov and Sonin (2008a) consider a class of more general preferences with this feature. All of the results in this paper can be generalized to this class of preferences.

[2]In particular, we need that $\varepsilon < \min_{i \in N, X \neq Y} \gamma_i \cdot \left| \gamma_X^{-1} - \gamma_Y^{-1} \right|$.

[3]Naturally, the nature and distribution of political power will differ between democratic and nondemocratic societies. Here we compare two societies with the same distribution of γ's to highlight the implications of the differences in the structure of winning coalitions in democracies and nondemocracies.

References

Acemoglu, Daron, Georgy Egorov, and Konstantin Sonin (2008a) "Coalition Formation in Non-Democracies," *Review of Economic Studies*, 75(4): 987-1009.

Acemoglu, Daron, Georgy Egorov, and Konstantin Sonin (2008b) "Dynamics and Stability of Constitutions, Coalitions, and Clubs" NBER Working Paper 14239.

Baron, David and John Ferejohn (1989) "Bargaining in Legislatures," *American Political Science Review* 83: 1181-1206.

Jackson, Matthew and Boaz Moselle (2002) "Coalition and Party Formation in a Legislative Voting Game" *Journal of Economic Theory* 103: 49-87.

Ray, Debraj (2008) *A Game-Theoretic Perspective on Coalition Formation*, Oxford University Press.

Riker, William H. (1962) *The Theory of Political Coalitions*, Yale University Press.

Tullock, Gordon (1987) *Autocracy*, Kluwer Academic Publishers.