Succession rules and leadership rents[*]

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Abstract

Leaders compensate supporters not just for performing their duties but also in order to preempt an overthrow by the same supporters. We show how succession rules affect the power of leaders relative to supporters as well as the resources expended on possible succession struggles. We compare two regimes of leadership succession: the conclave regime and the divide-et-impera regime which differ with respect to the role of supporters of the previous leader once the new leader takes power. The leadership rent is higher and supporters receive a lower compensation in the divide-et-impera regime, as supporters have to fight harder for succession to avoid the grim outcome of loss. Leaders, then, would like to induce the divide-et-impera regime even when every supporter has veto power over his leadership.

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1   Introduction

Any leader depends on supporters to perform his role and stay in power. Supporters are also possible challengers and potential successors to an existing leader. Knights and soldiers who protected their king with their arms could also use these very resources to overthrow and succeed him. Powerful members of the elite or of the inner circe of political parties in democracies lend their power to the current party leader, but sometimes they withdraw their support and try to become the new party leader. Similar relationships exist in private organizations between chief executive officers and other executives and managers lower in a firm's hierachy. To maintain their position, then, leaders have to find the right balance and compensate their supporters sufficiently so that the temptation to overthrow remains low.

In this paper we examine the relationship between the supporters in the process of leadership succession for the stability of an incumbent leader's rule and his leadership rents. We concentrate on outcomes in which the leader is successful in retaining leadership over a long period and compare the roles of two different succession regimes for these outcomes. The two succession regimes that we analyze are the *divide-et-impera* regime and the *conclave* regime.

In the *divide-et-impera* regime, once the leader has been expelled from office, the former supporters will compete for the new leader's position and all losers will also lose their positions as supporters of the new leader. The enactment of "fratricide law" by Ottoman Sultan Mehmed the Conqueror in the Ottoman Empire is a possibly extreme example of divide-et-impera as a succession rule:[1]

> Whichever of my sons inherits the sultan's throne, it behooves
> him to kill his brothers in the interest of the world order. Most

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[1]Mehmed the Conqueror enacted the law after he himself killed all his brothers. Succeeding Sultans continued the practice.

of the jurists have approved this procedure. Let action be taken accordingly.

> (quoted in Babinger, 1978, p.66)

A similar rule governing succession appears during the Mauryan empire in India:[2]

> Not only is [King Ashoka] said to have killed all rival claimants to the throne, notably ninety-nine of his brothers, but also to have paid a visit to hell so that he could construct on earth something similar, equipped with the very latest in instruments of exquisite torture, for all who incurred his displeasure.
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> Keay (2000, pp.90-91)

Less extreme examples in which losing challengers lose at least some of the previous privileges and property have been common. Examples range from the Roman empire with civil war between Octavianus and Augustus following the death of Julius Caesar, with the struggles among other prospective Roman emperors, up to the behavior of many rulers in modern times.

The second type of succession rule we consider is the *conclave* regime. As suggested by its name, this is the principle applied by the Roman Catholic church, in which the conclave of the cardinals elects one of its members as the new pope, and all others who are not elected stay on as cardinals to the new pope. Hence, the two regimes differ with respect to the role of former supporters who fail to become leaders once the old leader is replaced. This is perhaps a more modern, and less brutal, regime of succession that limits the loses of the losers in a succession struggle.

We find that the compensation that is needed to sustain leadership made by the leader is lower if supporters of the former ruler cannot become supporters

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[2]This empire was instituted right about the time of Alexander the Great's death and covered much of northern India. King Ashoka became the first king to promote Buddhism, something which represents a significant turn from his early ruthlesness.

of the successor. Hence, the leader gains if he manages to split up the groups of supporters and installs the divide-et-impera regime.[3] Mehmed the Conqueror's rationale for the fratricide law might well have been "in the interest of world order," as the quote above states. But, as we show in this paper, it was also unlikely to have been against the material interests of the Sultan himself. In particular, we show how such a succession rule induces greater rents to the leader than the more tame alternative, the conclave regime, does.

In the setting we examine, the rents received by the leader depend on how much he would have to compensate (or bribe) his supporters who are also potential challengers. The lower the compensation that has to be paid to them, the higher are the leader's own rents. That compensation can be expected to depend on the alternatives his supporters have, with the main alternative being overthrowing the leader and engaging in a succession struggle against the other members of the group. We describe the succession struggle as a costly contest (see, e.g., Hirshleifer, 1995). The cost of the contest is higher under divide-et-impera than it is under the conclave regime. That property, along with the probability of the very bad outcome of the loss under divide-et-impera, makes that regime not as attractive for challengers and, therefore, the leader does not have to compensate the supporters as much as under the conclave regime.

The two succession rules we examine are extremes that allow for a range of intermediate cases and for gradual shifts over time to occur. The development of the feudal system as discussed by Stephenson (1941) and Bloch (1964,

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[3]The principle or strategy of divide-et-impera, or divide-and-rule, has often been employed in history both by individual rulers towards potential adversaries and by imperial states towards conquered or vassal states. Nowadays autocratic rulers as well as leaders of organizations are sometimes said to employ the same principle or strategy of hierarchical governance. The employment of the strategy is typically associated with the collective action problems that potential challengers might have in allying against the ruler and the instruments of control the ruler might have – bribes, threats, promises, cajoling – in making that problem worse. (For models that examine this aspect of the strategy, see Weingast, 1997, or Acemoglu, Robinson, and Verdier, 2004.) Note that we highlight a different, potentially important aspect of this principle, in the context of leadership succession.

pp. 163-175, and pp. 190-210) illustrates such a gradual shift (although our purpose is not to explaing such a shift). In the early periods of feudalism, the enfeoffment was an act of will in which a newly elected king selected his supporters and endowed them with the economic and military power and duty to support him and defend his kingdom. In this early phase the fief *[feudum]* was not inheritable. It was a promise between two persons that, given the lack of external enforcement, had to be self-enforcing. The fief was a payment for service, and was to be returned if the service was not delivered. In any case, the fief ended with the death of the king or his vassal. In this format, the feudal system was similar to the divide-et-impera regime, except that supporters had a non-zero probability of being re-installed in their position by a subsequent king.

In parallel with the disintegration of the Carolingian Empire, and in the centuries that followed, the feudal system changed and elements more similar to the conclave regime became stronger. The fiefs became hereditary in the Holy Roman Empire (Bloch 1964, p. 192, pp. 197-199) but the hereditary principle did not apply automatically for the throne. In the very late stage a small group of seven princes formed the electorate. In the 15th and 16th century they chose a new emperor and even sold their votes. Moreover, the new emperor was not in a position to question their future roles as electorate princes and owners of large territories. Notably, this change should go along with a change in the shares in the rent from governance, where the king's share reduced and that of the princes increased.

Our analysis is related to a number of studies which discuss the relationship between leaders and supporters, or incumbent leaders and rival opposition. Most obviously, it is related to the 'logic of political survival' analyzed by Bueno de Mesquita et al. (2003). They focus on a (peaceful) game between two players each of whom would like to become the political leader, and, for this purpose, try to form winning coalitions from the set of supporters. For studying the specific role of 'dividing up the group of supporters' in the

context of leadership we choose a more narrow framework as we consider and compare only two modes describing the process of succession of power and do not consider issues such as the optimal redundancy of power coalitions and coalition formation. On the other hand, we remove the dividing line between players who are, or can become, leaders and the group that can grant power to the leader. Most importantly, we explicitly consider the transaction cost of the struggle for leadership that is looming when the incumbent leader is eliminated, i.e., the explicit and resource wasteful struggle in which a new leader is determined.

Political leaders usually rely on a number of instruments to secure their continued leadership, and rivalry among the supporters is only one among many tools. We concentrate on this instrument and disregard many other mechanisms that are not necessarily mutually exclusive. For instance, we assume that the set of supporters is just sufficient to lend power to the leader, i.e., we give each supporter full veto power. As discussed, e.g., in Bueno de Mesquita et al. (2002, 2003), leaders may rely on redundancy of support and choose supermajorities of supporters, such that each single supporter has no veto power. The benefit of such supermajorities is that it reduces the leader's exposure to the threats of some supporter groups, as it requires alliances among several supporters to remove him from office.[4] The cost of redundancy is that a challenger can overthrow the incumbent by buying the support of a coalition of supporters that is smaller than the supporting group of the incumbent leader. As their analysis shows, this is a complex and interesting matter with far reaching implications and explanatory power, but it is not closely related to

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[4]The rationale for supermajorities has also explored in the context of voting by Groseclose and Snyder (2000). Dal Bo (2000) shows in a related context that an agenda setter who does not face any competition and makes a proposal to, say, $2n+1$ voters can offer contracts to each and every single voter such that he gets unanimous support for whatever policy, whether it is prefered by the voters or not. The idea there is based on supermajorities, and, essentially, making the voters coordinate on an equilibrium by which they all think they cannot influence the outcome and then simply all vote for the equilibrium outcome.

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the mechanics of dividing and ruling that we focus on. Similarly, leaders may try to tie their supporters' own power to that of the leaders, or to make it costly for members of their supporting groups to expel them from leadership, and, indeed, such devices will be useful for the leader and increase his rent as the incumbent leader.[5] However, it will increase clarity and brevity of our analysis if these aspects are disregarded.

Our analysis is also closely related to a number of contributions studying wasteful military conflicts. Azam and Mesnard (2003) analyse the causes for civil war in a setting in which the government (leader) bribes the rival for not challenging his leadership. Azam (2002) also considers the transfers that are needed to prevent a leader and his opposition from entering into a wasteful conflict. The absence of the set of supporters who grant power makes it impossible to study the divide-et-impera principle in his framework. On a broader level our analysis is linked to the literature on efficient contracting in the shadow of potential war. As has been argued forcefully e.g., by Fearon (1995), the major cause of actual violence is incompleteness of contracting. In our context, wasteful conflict can be avoided by an implicit contract in a fully non-cooperative environment. But the payoffs emerging in the actual conflict will then become relevant determinants for the outcome of the payment arrangements. From a structural point of view, our analysis is related to Mehlum and Moene (2002) who study struggles for power as contests and peace treaties as tacit collusion. In our framework the willingness of a supporter to replace the current ruler and to enter into a power struggle is guided by an arbitrage condition in which the supporter weighs the benefits of continued support for the leader against the expected benefits from entering into a struggle for taking

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[5]Mehlum and Moene (2004), for instance, make the point that incumbents may have developed tools to make it more difficult to overthrow them, and argue that this will have both a discouragement effect for challengers, as it is more difficult to overthrow the incumbent ruler, and an encouragement effect, if a successful challenger inherits the incumbency advantage of the previous leader, because the incumbency advantage then increases the prize that the contestants struggle for.

over leadership.

2   The basic setting

Consider a hypothetical country with the following governance structure. The country is ruled by a leader. The leader who is in power at the beginning of a period t is denoted $D(t)$. The leader receives his power from a group $\mathcal{S}(t) \equiv \{s_1(t), ... s_n(t)\}$ of supporters $s_i(t)$, with n a finite number and $n \geq 2$. There is also a set of 'subjects' who constitute the set $\mathcal{K}$. Their number is very large (uncountable). The main purpose of their existence in our context is to constitute a pool of individuals from which the group of supporters can be replenished if, for some reason, this becomes necessary.

The period game.   In each period the following game takes place. The leader makes a (binding) promise about a payment that he will make to each single supporter in the given period, and these promised payments are denoted $a_1(t), ... a_n(t)$. Once this promise is made, each of the supporters makes a decision about whether he will support D's leadership in this period, or not. If all supporters agree, then the leader runs the government machinery and this generates some tax revenue $G(t)$ that is normalized to be constant over all periods and equal to $G(t) \equiv 1$. The payments are made from this revenue. We do not consider where exactly this revenue from governance comes from, and take this amount as given, provided that an uncontested leader and, hence, a functioning government exists in this period. A leader who had the support of the group of members of $\mathcal{S}$ in period t will also continue to be in office at the beginning of period $t + 1$ (if there is such a next period).

However, if one or more than one member of $\mathcal{S}(t)$ decides to disagree with the transfers and objects to the ensuing allocation, this will automatically, and without any cost, remove the current ruler from office. The ruler will simply disappear, for instance, because he will be killed or expelled, and will have

zero payoff for all future periods. The possible governance rent $G(t)$ will also be sacrificed for this period, as there is no leader and, hence, no functioning government in this period. Summarizing,

$$G(t) = \begin{cases} 1 & \text{if all } i \in \mathcal{S}(t) \text{ agree to the payment offer} \\ 0 & \text{if at least one } i \in \mathcal{S}(t) \text{ disagrees.} \end{cases} \quad (1)$$

Moreover, the problem of finding a new leader and establishing a new government must be addressed in the respective period t, if there is such a next period. We assume that the candidates for leadership will be the members of the set $\mathcal{S}(t)$ and a competition will emerge about who becomes the new leader. The new leader will be installed at the beginning of period $t+1$. The mechanism that determines the new leader and the new group of supporters is central to our analysis. Once the struggle for leadership has started, each single member of $\mathcal{S}$ may start exerting influence activities, actively campaign, or engage in civil war activities in trying to become the new leader. The struggle for leadership can take very different forms. But the political economy literature provides a simple and general tool to adequately map such processes. The tool is a contest technology that is described by a contest success function that has been applied and used in the context of various conflict situations[6]: all $i \in \mathcal{S}(t)$ may exert effort $x_i(t) \geq 0$, respectively, and contestant i wins this contest and becomes the new leader with probability

$$p_i(t) = \begin{cases} \frac{(x_i(t))^r}{\sum_{j=1}^{j=n}(x_j(t))^r} & \text{if } \sum_{j=1}^{j=n} x_j(t) > 0 \\ 1/n & \text{otherwise,} \end{cases} \quad (2)$$

where $r \leq 1$ measures the effectiveness of additional effort. For $r = 0$, the succession becomes a pure random mechanism that gives all candidates the

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[6]See, e.g., Tullock (1980) for a first application in the rent-seeking context, Skaperdas (1992) and Hirshleifer (1995) for appropriation contests in anarchy, Skaperdas and Grofman (1995) for campaigning in electoral conflict, Bester and Konrad (2004) for struggles for leadership in the political arena, Farmer and Pecorino (1999) for an analysis of litigation, and Müller and Wärneryd (2001) for applications in the context of corporate governance.

same probability, irrespective of effort. For $r = 1$, (2) describes a mechanism which is known as the lottery contest.[7]

We also have to define the rules how the set $\mathcal{S}$ is replenished as an outcome of appointing a new ruler. We consider a static environment requiring that there are n supporters for keeping a leader in office and enabling him to acquire the period rents. The replenishment rule of $\mathcal{S}$ in case of a leadership change will be central to the analysis in this paper, and we will distinguish between two regimes.

In the *conclave regime* the supporters of the current leader are willing and able to support the new leader as well, even though there was a conflict among them about who will become the new leader. In this regime all former supporters who did not win the contest simply stay on as supporters, and the n-th supporter slot is simply recruited from the set $\mathcal{K}$. The prototype for this succession regime is the governance structure of the Roman Catholic Church that operates once the pope has died: the members of the group of cardinals lobby for being elected. There all remain cardinals once the new pope is elected, and the group of cardinals is replenished by the current pope. As with most leadership structures, however, the redundancy principle is applied by the leader such that no single cardinal can force the pope to retreat. One could perhaps complete the picture, however, by pointing out that a number of popes have had sudden, mysterious, and suspicious deaths, hinting at a possible, but drastic means of withdrawal of support.[8]

The second regime will be called the *divide-et-impera regime*. In this regime the supporters to the incumbent ruler are not on friendly terms with each other. Instead, they are opposed to each other and would actually never be willing to support one of the other supporters if one of them should manage to become

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[7]The lottery contest describes win probabilities that are obtained by the following random mechanism: each unit of a contestant's effort buys one lottery ticket, where all lottery tickets of all contestants are put together and the winning ticket is randomly drawn from them.

[8]As a side remark to this, even in a twentieth century case, the pathology tools available were not used to investigate a mysterious death of a pope.

the new leader. Accordingly, once $n-1$ supporters of the former leader have lost the contest for becoming the new leader, they will also be disposed of by the new leader, and the leader will replenish the required set of supporters with n persons from the set $\mathcal{K}$.

The war between Octavianus and Augustus is an example of a situation in which the *divide-et-impera* principle was in place. It was clear that neither of them was willing to submit to the other and to become a supporter of the other's leadership. The fight could have only one winner and the loser lost everything. As mentioned in the introduction, the succession struggles for most of the Ottoman empire's history is a more systematic example. Each new Sultan would kill all his brothers, including half-brothers, for otherwise they would pose a threat to his leadership. In addition, members of the Sultan's cabinet, including the Grand Vezier (the equivalent of a prime minister), when dismissed would often lose their considerable property and sometimes their lives.

Finally, we need to specify the objective functions of all players. For simplicity, all individuals only care about monetary payoffs, have the same discount factor δ, and their possible contest efforts $x_i(t)$ are also expressed in terms of money of the respective period in which the efforts are made.

The setup is fully non-cooperative. However, we assume that the leader can commit to fulfilling his promise to pay $a_i(t)$ in period t. The precise mechanism behind this commitment will not be analysed here, but much like in non-cooperative bargaining, we assume that, once all players agree in a given period, the payments agreed in this period actually take place, without further quarrels. We rule out cooperative arrangements by which the leader is eliminated and all supporters collude and choose a simple lottery for appointing the successor, because such arrangements need enforcement that is unavailable in this context. For the same reason, bilateral contracts among the individuals in $\mathcal{S}$ who try to negotiate contingent contracts about what will happen if one or other of them wins the contest, or any agreements across periods, are not

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feasible.

This structure of period play repeats for T periods, with period T being the last and final period.[9]

The final period. Apart from the different histories that lead to the last period T, this period has the same structure for both the divide-et-impera regime and for the conclave regime. It consists of a simple cake-eating problem: the current leader $D(T)$ offers some division of the cake $\mathbf{a}(T) \equiv (a_1(T), ... a_n(T), 1 - \sum_{i=1}^{i=n} a_i(T))$ in which $1 - \sum_{i=1}^{i=n} a_i(T)$ is the leader's own share, and the supporters simultaneously and independently decide whether to accept or reject this offer. Note that the set of all feasible $\mathbf{a}$ is the simplex σ^{n+1}, i.e., the set of all vectors with all components being non-negative and adding up to 1.

The independence of the supporters' choices, together with the fact that unanimity is required for $\mathbf{a}$ to be accepted, generates a whole continuum of equilibria:

Proposition 1 *In both the conclave regime and the divide-et-impera regime any vector $\mathbf{a} \in \sigma^{n+1}$ is a subgame perfect equilibrium allocation in the last period T.*

Proof. For a proof we show that any particular $\mathbf{a} \in \sigma^{n+1}$ can be supported as an equilibrium by appropriate beliefs. Note that supporter i may base his decision to accept or reject the payment offer not only on the basis of the component a_i, but on the basis of the full vector $\mathbf{a}$, and on the basis of his beliefs about other supporters' decisions. Let players have the following beliefs about the behavior of others: (i) the leader thinks that at least one supporter will reject any $\mathbf{a}' \neq \mathbf{a}$ but that all supporters will accept $\mathbf{a}$. (ii) each follower thinks that at least one other follower will object to any vector $\mathbf{a}' \neq \mathbf{a}$, but

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[9]One could also consider games with infinite horizon. Note, however, that we have a set of players that is finite in each period but potentially infinite over time, which creates some technical problems.

that all other supporters will agree to **a**. Now consider the optimal replies, given these beliefs.

Consider first supporter i in the acceptance/rejection stage. If **a** is offered, given the beliefs of the behavior of others, i expects to be pivotal, and will receive a_i if he accepts and 0 if he rejects. Hence, to accept is an optimal reply, and it is even strictly better than to reject if $a_i > 0$. Hence, given these beliefs, an offer **a** will be accepted. If $\mathbf{a}' \neq \mathbf{a}$ is offered, i expects that at least one other supporter will not agree to the payments offered. But as stated in (1), this reduces i's payoff to zero, no matter whether i is willing to agree to the payments vector $\mathbf{a}'$ or not. Given this indifference, i may well choose to reject $\mathbf{a}'$ as well.

If all supporters follow this behavior, all followers will unanimously agree to **a** but unanimously reject $\mathbf{a}' \neq \mathbf{a}$, and this confirms the beliefs in (i) and (ii) above.

We turn now to the leader. Given his beliefs about the acceptance/rejection subgame among supporters for given offers, the leader anticipates that **a** will be accepted if offered, and any $\mathbf{a}' \neq \mathbf{a}$ will be rejected. Accordingly, the leader's payoff is equal to $1 - \sum_{i=1}^{i=n} a_i(T)$ if he offers **a**, and zero otherwise. Hence, unless $\sum_{i=1}^{i=n} a_i(T) > 1$ for this offer **a**, the leader's optimal choice is to offer this **a**. ■

What makes the problem in Proposition 1 different from the standard ultimatum game and yields these equilibria is that several, not just one, players must simultaneously agree to an offer. This generates a coordination problem among the supporters and a set of equilibrium outcomes is supported that is similar to undesirable voting equilibria in which the least preferred candidate may win: if the leader offers the "wrong" vector of payments, the supporters may think that other supporters will challenge the leader. But then, their own decision whether to challenge the leader becomes a matter of indifference to them, and they may as well refuse the payment and challenge the leader. Hence, for payment vectors offered other than the "right" vector, there will

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be an equilibrium where all will challenge the payment vector that is offered, and this, in turn, is sufficient for the leader not to offer such other payment vectors.

Note that the unanimity requirement for acceptance of the payment offer is not crucial for the result in Proposition 1, and can be replaced, for instance, by a simple majority requirement. Further, each supporter may decide only on the payment offered to him, not on the whole payment vector. The argument in Proposition 1 holds even if each supporter observes only coordinate a_i of the payment offer that goes to this supporter. In this case, the beliefs about what other supporters are offered and the beliefs about how they react to these offers triggers the equilibrium in which all but the "right" payment offers are rejected. Hence, the mechanism supporting the equilibria in Proposition 1 is quite general.

Proposition 1 characterizes a large set of subgame perfect equilibria in the last period. Note, however, that none of the players can choose which equilibrium is chosen, as the equilibrium is determined by the players' beliefs about their co-players' behavior. For what follows, we will assume that the players in period T coordinate on an equilibrium in which

$$a_1(T) = ... = a_n(T) = \alpha > 0 \text{ and } n\alpha < 1. \tag{3}$$

The property $\alpha > 0$ is crucial for our analysis, whereas the absolute level of α is not.

As $\alpha = 0$ is also an equilibrium, the focus on the equilibrium in (3) needs some discussion. It needs emphasis here that the equilibria with $\alpha > 0$ are indeed subgame perfect equilibria. But, in addition, they also have some appeal, and for a number of reasons. First, α can be considered as a smallest possible unit. If there is a smallest positive unit, then the outcome with payment offers equal to this smallest possible unit is very plausible even in the absence of the coordination problem that generates the equilibria with $\alpha > 0$ as in Proposition 1: the leader may give the supporters strict incentives by which each strictly prefers acceptance compared to rejecting the payment offer. Second,

and related, α could be some exogenous institutionally required minimum remuneration for supporters or some genuine benefit of being a member of the supporter group that cannot be withdrawn by the leader, so that offers below α are infeasible. If this minimum is sufficiently small, it is never a binding constraint, except for the last period. Third, in a broader context, it is well-known that, even in the ultimatum game, an extreme offer of zero is rarely observed, even in the final period, and many reasons have been put forward for this outcome.[10] Fourth, as we think of the governance game as a repeated game with many periods, we do not want the end-game effect dominate what happens in much earlier periods. We will focus on the stationary equilibrium that emerges in the limit case in which T is very large, and, only for the equilibria with $\alpha > 0$ in the final period, does the stationary equilibrium outcome resemble the infinite horizon outcome and is independent of the end game effect.

3   The conclave regime

We first consider the conclave regime, solving for the equilibrium in period $T-1$, and then backwards. The coordination problem between the supporters in any given period will generally cause multiple equilibria.

Proposition 2 *Suppose players anticipate that the equilibrium in period T will be described as in Proposition 1, with $\alpha > 0$. Then*

$$a_1(T-1) = ... = a_n(T-1) = a_{T-1}^C = \frac{n - r(n-1)}{n^2}\delta(1 - (n+1)\alpha) \qquad (4)$$

characterizes the lowest feasible transfers in period $(T-1)$ in a subgame perfect equilibrium in which no leadership contest occurs.

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[10]For a number of survey references and preference based theories for this behavior see, e.g., Bolton and Ockenfels (1999) and Fehr and Schmidt (1999). Of course, strictly adopting their preference assumptions would also have implications for the equilibrium outcomes in the periods $T - k$.

Proof. Suppose all $j \neq i$ do not challenge the leader, so that i is pivotal. Compare supporter i's payoff from accepting or rejecting the offer. If i accepts this offer, then i's payoff is

$$a_i(T-1) + \delta\alpha. \tag{5}$$

If i rejects the offer, i receives 0 in period $T-1$ and enters into the contest for leadership in that period. Accordingly, i's payoff is

$$-x_i + \frac{(x_i)^r}{\sum_{h=1}^{h=n}(x_h)^r}\delta[(1-n\alpha)-\alpha] + \delta\alpha \tag{6}$$

where $\delta[(1-n\alpha)-\alpha]$ is the present value of the difference between the leader's and a supporter's income in period T, which is the 'prize' in the leadership contest in period $T-1$, and $\delta\alpha$ is the present value of what the supporter receives in period T if he does not win the leadership contest in period $T-1$.

All supporters choose their own effort x_i to maximize (6) simultaneously, and the equilibrium efforts can be derived from the first-order conditions[11] for maximization of (6) that require

$$\frac{r(x_i)^{r-1}\left(\sum_{h=1}^{h=n}(x_h)^r - (x_i)^r\right)}{\left(\sum_{h=1}^{h=n}(x_h)^r\right)^2}\delta[(1-n\alpha)-\alpha] = 1.$$

Using symmetry, solving for the equilibrium efforts and inserting these in (6) yields payoffs from challenging the leader as

$$\frac{n-r(n-1)}{n^2}\delta[(1-n\alpha)-\alpha] + \delta\alpha. \tag{7}$$

Setting (5) and (7) equal and solving for $a_i(T-1)$ yields a_{T-1}^C as in (4). ∎

Recursively we can determine a_{T-k}^C, assuming that the subgame perfect equilibrium in any continuation game between the current leader and supporters or their respective replacements is characterized by a series of payment

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[11]Szidarovszky and Okuguchi (1997) analyse this contest structure more generally and show that the equilibrium is unique. For symmetry and $r \leq 1$, the equilibrium is characterized by the first-order conditions.

offers $(a^C_{T-k+1}, ... a^C_{T-1}, a^C_T)$ with $a^C_T = \alpha$, and unanimous acceptance of these offers. The condition that makes a supporter in period $T - k$ just indifferent to whether to accept or to reject an offer of size a^C_{T-k} is

$$a^C_{T-k} + \sum_{j=1}^{k} \delta^j a^C_{T-k+j} = 0 + \frac{n - r(n-1)}{n^2} \sum_{j=1}^{k} \delta^j [(1-(n+1)a^C_{T-k+j}] + \sum_{j=1}^{k} \delta^j a^C_{T-k+j}$$

which reduces to

$$a^C_{T-k} = \frac{n - r(n-1)}{n^2} \sum_{j=1}^{k} \delta^j [(1 - (n+1)a^C_{T-k+j}]. \tag{8}$$

For large $k \to \infty$, this value converges to

$$a^C = \frac{n - r(n-1)}{n^2 + \delta n - \delta n^2 r + \delta r} \delta. \tag{9}$$

We define a^C as the *stationary-state-payment* in the conclave regime. Note that it no longer depends on the absolute level of a^C_T.

We could have established a^C also as a Markov perfect equilibrium of an infinitely repeated game.[12] However, the multiplicity of equilibria which can be supported as Markov perfect equilibria makes this less useful. In contrast, the argument that started from a finite horizon framework establishes this payment offer as the lowest payment that can be supported as a subgame perfect equilibrium without actual leadership contest. For this reason we use a^C_{T-1} and a^C to consider the comparative static properties of this lowest-transfers equilibrium and to use it as a benchmark case for comparing it with the respective lowest-transfers equilibrium in the divide-et-impera regime.

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[12] Consider an infinite sequence of periods. Suppose that all supporters at a given period believe that all other supporters will accept a payment offer in any period if, and only if, this offer is a^C in that period, but that at least one supporter will challenge the leader in this period and in all future periods if a different transfer is offered. For these beliefs, the incumbent leader will never deviate from offering a^C, and all incumbent supporters will always accept a^C; a different transfer will never be chosen, and a subgame perfect equilibrium is established.

Proposition 3 *In the equilibrium that is characterized in proposition 2, the leader's share in the total rent in period $T - 1$ is increasing in n. Further, $lim_{n \to \infty}(1 - na^C) = \frac{1-\delta}{1-\delta r}$.*

Proof. The leader's net share in the governance rent in period $T - 1$ is $1 - na_{T-1}^C = 1-(1-r\frac{n-1}{n})(1-(n+1)\alpha)$. Hence, $\frac{\partial}{\partial n}(1-na_{T-1}^C) = \frac{r(1-\alpha)+\alpha n^2(1-r)}{n^2}\delta > 0$. Moreover, using (9) and taking limits, $\lim_{n \to \infty}(1 - na^C) = \frac{1-\delta}{1-\delta r}$. ■

The size of the set $\mathcal{S}$ is an important determinant for the leader's share in the total rent, but the discount factor and the effectiveness of contest effort also matter. As regards period $T-1$, the leader benefits from an increase in the set of supporters. However, considering the steady-state value, the comparative statics are not monotonic everywhere.

The limit result for the steady-state value suggests that, for $r < 1$, even if the number of supporters becomes very large, making it very unlikely that each of them can become the successor to the incumbent leader, the leader still needs to pay some fraction of the governance rent to the supporters. Only if $r = 1$, the sum of what the leader has to pay to the group of supporters for their support becomes zero. The logic of this result is as follows. If very many supporters are competitors for becoming the new leader, their contest will dissipate a considerable share of the rent. For $r = 1$, it is known that the whole rent is dissipated if the number of contestants is very large (Tullock 1980). Hence, they do not gain anything from entering into a struggle for leadership, not even as a group: one of them will win leadership, but the aggregate contest resources they spend in the struggle approximate, and in the limit, are equal to the rent from leadership. Accordingly, it is better to depend on many than to depend on a few, particularly if the supporters anticipate competition between them if they were to abandon the current leader.

The choice of n is not endogenized here. One countervailing effect that is not considered here is that it becomes a difficult practical matter to have a very large set of supporters each of which is pivotal. Once supporters are not

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pivotal, other aspects come into play, such as the possibility of the formation of subgroups which are pivotal as a subgroup. In the political context of existing regimes, n is often governed by some constitutional rules. For instance, in the Roman Catholic Church, the pope needs the permission of the cardinals if he wants to enlarge their group.[13] Proposition 3 gives a possible reason for this constitutional rule and suggests that compensation must be paid to the existing group for agreeing to an enlargement.

4   The divide-et-impera regime

Consider now the alternative regime in which the supporters of the incumbent leader are unwilling or unable to support this leader's successor. These supporters may also remove the incumbent leader, and will then enter into a contest for who becomes his successor. Their incentives to do this are different in this regime, and this will lead to different payments to the supporters which they are willing to accept.

Proposition 4 *Suppose that all players anticipate that the equilibrium in period T will be described as in Proposition 1, with $\alpha > 0$. Then*

$$a_1^D(T-1) = ... = a_n^D(T-1) = \frac{n - r(n-1)}{n^2}\delta[1 - n\alpha] - \delta\alpha \equiv a_{T-1}^D \quad (10)$$

characterizes the lowest feasible tranfers in period $T-1$ in a subgame perfect equilibrium in which no leadership contest in period $T-1$ occurs.

Proof. Compare supporter i's payoff from accepting or rejecting the offer, given that all other supporters accept the offer. If i accepts the offer then i's payoff is given as in (5). If i rejects the offer, i receives 0 in period $T-1$ and a contest for leadership takes place among the members of $\mathcal{S}$ in this period. The present value of the prize of winning the contest in this case is $\delta[1 - n\alpha]$,

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[13]We are grateful to Nuno Garoupa for pointing this out to us.

which is the difference between what the leader in period T receives according to Proposition 1, and what i receives in period T if i does not win the contest, which is zero. Hence, applying the results on the Tullock contest between n symmetric contestants for a prize of this size, the expected payoff net of contest effort is $\frac{n-(n-1)r}{n^2}$ times the present value $\delta[1 - n\alpha]$ of winning the leadership contest. Equalization of the two payoffs yields

$$a_{T-1}^D + \delta\alpha = \frac{n - (n-1)r}{n^2} \delta[1 - n\alpha]. \tag{11}$$

This yields the equilibrium payment offer a_{T-1}^D as in (10). ∎

Consider now the smallest equilibrium transfers a_{T-k}^D in previous periods $T-k$ that constitute a subgame perfect equilibrium if the incumbent leader and all players in $\mathcal{S}$ and $\mathcal{K}$ consider $(a_{T-k+1}^D, ..., a_{T-1}^D, a_T^D)$ with $a_T^D = \alpha$ as the sequence of equilibrium transfers in the subsequent periods. This recursive procedure yields

$$a_{T-k}^D + \sum_{j=1}^{k} \delta^j a_{T-k+j}^D = 0 + \frac{n - (n-1)r}{n^2} \sum_{j=1}^{k} \delta^j[1 - na_{T-k+j}^D]. \tag{12}$$

For large $k \to \infty$ this value converges to

$$a^D = \frac{\delta n - \delta nr + \delta r}{n^2 + \delta rn + \delta n^2 - \delta n^2 r}. \tag{13}$$

and we define this value as the *stationary-state-payment* in the divide-et-impera regime.

Consider the comparative statics of the equilibrium transfers in period $T-1$ and in the stationary state.

Proposition 5 *In the subgame perfect equilibrium that is characterized in Proposition 4, the leader's share in the total rent in period $T-1$ increases in n and the leader's steady-state share increases in n. For $T \to \infty$, for $n \to \infty$ the leader keeps the full governance rent if $r = 1$.*

Proof. Note that $1 - na_{T-1}^D = 1 - \frac{n-r(n-1)}{n}\delta(1-n\alpha) + n\delta\alpha$. Accordingly, the first derivative of this share with respect to n yields $\frac{\partial(1-na_{T-1}^D)}{\partial n} = \delta(2\alpha - r\alpha + \frac{r}{n^2})$, which is positive. For the stationary-state payment note that $1 - na^D = \frac{n}{\delta n+n-\delta rn+\delta r}$, and $\frac{\partial}{\partial n}\left(\frac{n}{\delta n+n-\delta rn+\delta r}\right) = \frac{r\delta}{(-\delta n-n+\delta rn-\delta r)^2} > 0$. Hence, $1 - na^D$ monotonically increases in r, and converges towards $\frac{1}{1+\delta(1-r)}$ for $n \to \infty$. $\blacksquare$

Intuitively, two effects increase the leadership rent if the number of supporters increases. First, if the incumbent leader is challenged, all incumbent successors lose their rent as supporters, and only one of them becomes the new leader. The probability of becoming the new leader is smaller for each successor if the number of current supporters is higher. Hence, because $n - 1$ supporters lose all rents if the incumbent leader is challenged, they, as a group, lose some rent if they challenge the leader. However, this effect is not sufficient for the aggregate share of the governance rent to be reduced to zero. This can be seen most clearly for the case $r = 0$, i.e., if the successorship is simply at random. In this case, the share in the rent that must be paid to the group of supporters is $\frac{\delta}{1+\delta} > 0$ if this group is very large.

The increase in n has a second effect. The contest for successorship becomes more wasteful if the number of potential successors becomes larger. Accordingly, what has to be granted to the group for not replacing the leader becomes smaller and smaller as the group size of $\mathcal{S}$ increases. The limit result in Proposition 5 is also interesting. If effort in the contest for leadership succession is sufficiently effective (i.e., if $r = 1$), the leader receives the full governance rent in the equilibrium and does not have to share it with his supporters. Again, the rivalry among potential successors and the contest between them if the question of successorship emerges reduces what the incumbent must pay to his supporters to secure his regime.

5 Comparing the two regimes

There is a continuum of equilibria in both regimes. So which equilibria should be compared? In the analysis we have selected equilibria in period $T - 1$ in which the leader stays in power and makes the smallest feasible payments to the supporters. The equilibria also correspond with each other in the sense that their continuation games in period T are perfectly identical. Hence, the only material difference between the two equilibria in period $T - 1$ is the difference in succession rules as regards the supporters who fail to win the leadership contest. This makes the two equilibria comparable and we may ask which regime yields a larger rent to the incumbent leader. As a similar reasoning also applies to the construction of the stationary state payments, and we may also compare a^C and a^D. The outcome of such a comparison is stated as

Proposition 6 *A comparison of the two regimes yields:*

$$1 - na_{T-1}^D > 1 - na_{T-1}^C$$

and

$$1 - na^D > 1 - na^C.$$

Proof. A comparison between a_{T-1}^C and a_{T-1}^D yields that $a_{T-1}^D < a_{T-1}^C$ if

$$\frac{\delta(n - r(n-1))}{n^2}(1 - n\alpha) - \delta\alpha < \frac{\delta(n - r(n-1))}{n^2}(1 - n\alpha - \alpha) \qquad (14)$$

which is true for all $n > 1$. Further, a comparison between a^D and a^C using (9) and (13) yields that $a^D < a^C$ if

$$\frac{\delta n - \delta r(n-1)}{n^2 + \delta n^2 + \delta rn - \delta n^2 r} < \frac{\delta n - \delta r(n-1)}{n^2 + \delta n - \delta n^2 r + \delta r} \qquad (15)$$

which holds as both denominators are strictly positive and the denominator of the left-hand side is bigger than the denominator of the right hand side if $(\delta n + \delta r)(n - 1) > 0$, which is true for all $n > 1$. ■

Proposition 6 states a result that may seem counter-intuitive, but has a simple intuition. Although the position as leader is more attractive in the divide-et-impera regime than in the conclave regime, the supporters in the divide-et-impera regime are willing to delay the option of becoming a leader and to continue their support for a smaller compensation than in the conclave regime. The intuition for this result is as follows. In each regime the leader has to pay the supporters for their continued support, where the alternative to continued support is the choice of a new leader from the set of current supporters. This alternative is more attractive in the conclave regime than in the divide-et-impera regime. In the conclave regime, the fall-back position of all supporters in the struggle to become the new leader is to stay on as supporters of the new leader. What is at stake for each of them in the struggle for leadership is smaller in the conclave regime, and fewer resources are wasted in the struggle for leadership.

This implies that the replacement of the current leader by one of the current supporters is attractive to them, and, in turn, the payments that make them willing to continue to support the current leader are high. In the divide-et-impera regime, the supporters get less as a group from replacing the leader. The leadership position may involve a higher leadership rent in the divide-et-impera regime, but current supporters lose the rent of being a supporter, and in the aggregate they gain less than in the conclave regime. Moreover, because it makes a much larger difference for a player in the divide-et-impera regime whether he wins or loses the struggle for leadership, the amount of resources wasted in this leadership struggle is larger in the divide-et-impera regime. Both of these aspects make the divide-et-impera regime less attractive for discontinuing the support for the incumbent leader, and the payment offers that are acceptable for the incumbent supporters are therefore lower.

Note that the difference in (14) and in (15) vanish for $\alpha = 0$. This is clearly an end-game effect and highlights the importance of proposition 1 and the focus on an equilibrium in period T with $\alpha > 0$.
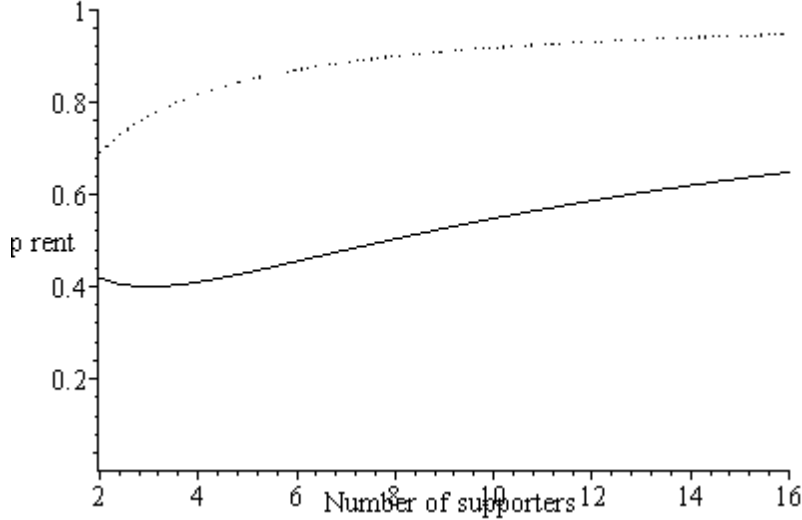
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Figure 1: Leadership rent $1 - na$ net of payments to the supporters in the equilibrium for the two regimes for $r = 1$. The dotted line depicts the *divide-et-impera* regimefor $\delta = 0.9$ as functions of the size n of the group $\mathcal{S}$ of supporters.

The effect of the regime for the size of the leadership rent is illustrated in Figure 1 for the stationary state values of payments in which the share $(1 - na^D)$ and $(1 - na^C)$ is depicted for different n for three values of δ for $r = 1$. The figure reveals a considerable leadership rent for the incumbent leader in both regimes, typically larger than half of the total government rent or more, but the rent is much larger in the divide-et-impera regime (the dotted line) and approaches almost 100 percent very quickly. The figure also shows the non-monotonicity of the conclave regime (solid line) for some intermediate value of n. An increase in δ will generally shift both curves downward, as it compounds the value of the sacrificed option for becoming a leader in the struggle for leadership relative to the value of the current payment offer.

It is also interesting to consider the relevance of the values of this stationary state. Figure 2 illustrates the paths of a^C_{T-k} and a^D_{T-k} for $k = \infty$ and for the last
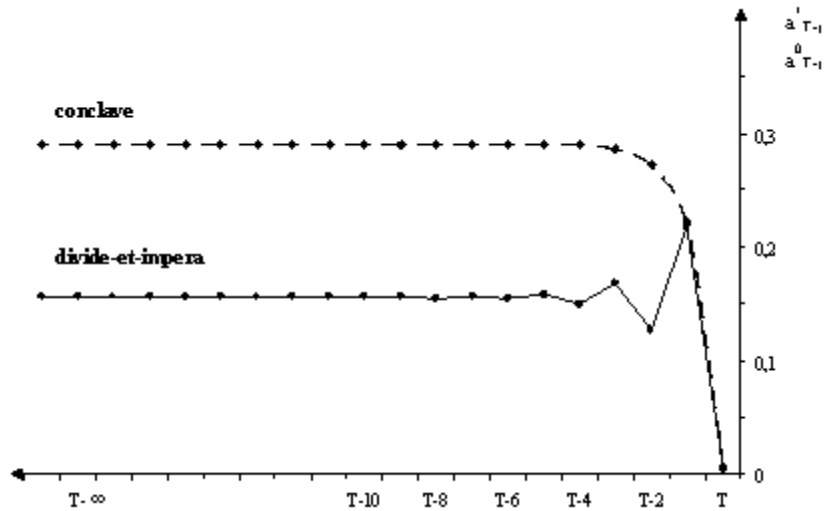
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Figure 2: Stationary state and final periods for $r = 1$, $\alpha = .005$, $n = 2$ and $\delta = .9$.

eleven periods, i.e., for $k = 10, 9, ..., 0$ for a discount factor $\delta = 0.9$, for $r = 1$ and for a payment offer in the final round of $\alpha = 0.005$ and $n = 2$. Convergence towards the stationary state occurs fairly quickly, and the stationary state value is a much better predictor even for $T - 2$ or $T - 1$ than the terminal payment offer α.

6   The possibility of influence

Thus far we have examined the two regimes in two separate games in which each regime is expected by all participants to prevail with certainty in all future periods. What occurs when the participants are uncertain about the regime that will prevail in the future? And, if there is uncertainty, what if the leader could influence it in his favor? We deal with these two questions next.

For simplicity we will examine only the last two periods, T and $T - 1$,

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of the finite-period game. In the last period T, by Proposition 1 it does not matter which regime is expected to prevail by the players. There are multiple equilibria with the same possible outcomes regardless of regime. Then, the same range of equilibria would exist regardless of the combinations of (non-generate) beliefs held by the players regarding which regime would prevail in that last period. In period $T-1$, though, we can expect beliefs to matter. In particular, suppose that all players believe that the divide-et-impera regime were to prevail with probability $P \in [0,1]$ and, therefore, that the conclave regime would prevail with probability $1-P$. Furthermore, suppose that these priors are common knowledge and that all players expect the equilibrium in the last period T to entail a payment $\alpha > 0$ by the leader (whoever that leader is). In period $T-1$, the expected payoff of player i in the event of a leadership contest would then be as follows:

$$P[-x_i + \frac{(x_i)^r}{\sum_{h=1}^{h=n}(x_h)^r}\delta(1-n\alpha)] + (1-P)\{-x_i + \frac{(x_i)^r}{\sum_{h=1}^{h=n}(x_h)^r}\delta[(1-n\alpha)-\alpha] + \delta\alpha\}$$
(16)

The first-order conditions for maximizing (16) again can be used to determine the unique symmetric equilibrium efforts as

$$x_i = \frac{r(n-1)}{n^2}(\delta(1-n\alpha) - (1-P)\delta\alpha).$$
(17)

Inserting (17) back into (16) yields the expected equilibrium payoff for player i if the leader $D(T-1)$ is challenged as

$$\delta\frac{n-r(n-1)}{n^2}[1 - n\alpha + (1-P)\alpha] + \delta\alpha.$$
(18)

If, instead, all players including i accept the amounts offered, i receives

$$a_{T-1} + \delta\alpha.$$

The lowest a_{T-1} that i is willing to accept is, therefore,

$$a_{T-1}^P \equiv \delta\frac{n-r(n-1)}{n^2}[1 - n\alpha + (1-P)\alpha].$$

Note that α_{T-1}^P is decreasing in the prior the players have about the probability that the succession struggle would follow the rules of the divide-et-impera regime. Furthermore, α_{T-1}^P is greater than the payment α_{T-1}^D the leader would have to make under the divide-et-impera regime (see (10)) and smaller than α_{T-1}^C, the payment under the conclave regime (see (4)). Of course, when $P = 0$, $\alpha_{T-1}^P = \alpha_{T-1}^C$ and when $P = 1$, $\alpha_{T-1}^P = \alpha_{T-1}^D$. We have therefore shown the following Proposition.

Proposition 7 *Suppose players anticipate that the equilibrium in period T will be described as in Proposition 1, with $\alpha > 0$. Furthermore, suppose they have a prior $P \in [0, 1]$ concerning the likelihood of the divide-et-impera regime. Then,*

$$a_1^P(T-1) = ... = a_n^P(T-1) = a_{T-1}^P = \frac{\delta(n - r(n-1))}{n^2}[1 - n\alpha + (1-P)\alpha] \quad (19)$$

characterizes the lowest feasible transfers in period $(T-1)$ in a subgame perfect equilibrium in which no leadership contest occurs. In this equilibrium, the payoff to the leader $(1 - n\alpha_{T-1}^P + \delta(1 - n\alpha))$ is increasing in the prior P and is higher than the payoff under the conclave regime and lower than the payoff under divide-et-impera.

Given that, in the presence of uncertainty about the regime expected to prevail, the greater the prior probability of divide-et-impera that the players have, the higher the leader's payoff is, it would be in the leader's interest to induce prior beliefs P as close to 1 as feasible. Perhaps, up to a certain point, a certain level can be achieved with cheap, costless talk. Another way is to do this with costly deeds that lock-in, or more moderately, increase the likelihood of locking in future contestants into the divide-et-impera regime. For example, Mehmed the Conqueror killed his brothers when he became Sultan and so did King Ashoka. That was a costly action that did not just reduce the probability of challenges, but also increased the likelihood that future challengers (the sons or even members of the aristocracy who could conceivably, if remotely,

could pose a challenge) would have to fight to the death amongst themselves. Moreover, both Mehmed the Conqueror and Ashoka took additional actions to increase the chance of divide-et-impera version – Mehmed by enacting the fratricide law and Ashoka by making the (presumably costly) visit to hell.

We can thus very simply think of the leader in period $T - 1$ having the choice of an action $b \in [0, \infty]$ that has a cost $C(b)$ (which is increasing and convex in b) and can influence the prior beliefs of the players so that $P = P(b)$ (increasing and concave in b). Assuming that the choice of b takes place before any challenges are possible and any payments can be made, the leader's problem would be choose the b that maximizes the leader's payoff,

$$1 - na_{T-1}^P + \delta(1 - n\alpha) - C(b).$$

By the assumptions about P and C, a unique such action b^* will exist. How close the (now) posterior $P(b^*)$ is to 1, and therefore how likely is the divide-et-impera regime, depends on how sensitive the players are to the actions of the current leader and how convincing these actions can be, and of course how costly these actions are for the leader. Note that the benefit of this costly action for the leader within our model does not come from the lower likelihood of a challenge, since no challenge would occur in equilibrium. The benefit comes instead from the higher payoff to the leader induced by the greater belief among the players of the divide-et-impera regime prevailing in the event of a challenge.

If the leader could take costly actions to change beliefs to his advantage, could the supporters also take actions that would be to their advantage? We should not rule out such a possibility. As shown in models by Weingast (1997) and Acemoglu, Robinson, and Verdier (2004) that are better adapted to the task, institutions like the conclave regime require the collaboration and active involvement of the supporters as well as the absence of active policies of the leader that would prevent such collaboration. Or, put differently, the divide-et-impera regime is more of a default regime, whereas the conclave regime requires higher trust, coordination, and other institutional restraints and checks on

powerful leaders; it is easier to break something than to build it. Thus, it is conceivable that the supporters could shift the posteriors in their favor but that can be expected to be costlier for them than it would be for the leader. Still, such a regime shift has happened from the early stages of feudalism to its late stages and a number of effects might have made this possible. How this could happen is an interesting and perhaps central issue – very much related to the emergence of modern governance out of autocracy – but it would lead us too far afield for the objectives of this paper.

7   Discussion

In this paper we compared two principles governing the rules of succession, asking what are the implications of rivalry among supporters of an incumbent leader for their rents from overthrowing the incumbent leader, and what consequences does this, in turn, have for the relationship between incumbent leaders and their supporters. In case of a replacement of the incumbent leader by one of his supporters, the other supporters of the former leader may, but need not be able to credibly act as supporters of the new leader. This distinguishes two regimes which we called divide-et-impera and conclave regime. We show that rivalry among supporters shifts a considerable share of governance rents from the group of supporters to the leader. Intuitively, much more is at stake for supporters in the case of a leadership change if the group of supporters is completely replaced than if the old supporters stay on under the new leadership, particularly for those who do not become the new leader. This makes the group of possible successors fight harder in the struggle for leadership, and this makes it less interesting for supporters to enter into such a struggle. Accordingly, the leader does not have to pay them much to prevent them from challenging his leadership.

We discussed an endogenous choice of the regime. Given the difference in the allocation of rents, it is clear that a leader who can, to some extent, choose

his supporters, may want to choose the divide-et-impera regime.

Many aspects are important for establishing this regime. In the introduction we discussed costly actions that may help install some institutional rules. An incumbent leader may also choose new supporters that consist of groups which already are in conflict with existing supporters. At least in the business world, but also in politics, leaders sometimes build up a 'crown prince', and possibly even more frequently, several of them, narrowing down the group of likely successors to a small number, but inducing strong rivalry between the members of this group. Moreover, leaders may design institutions and allocate the duties of supporters in a way such that their competencies may overlap and are not well designed, or choose other institutional arrangements that induce fighting between the groups.

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