Simple decision rules in small groups: Collegial rule vs. rotational rule

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A B S T R A C T

I analyze the decision by ex ante identical group members with private preferences who must choose between two simple power-sharing schemes: collegial rule and rotational rule. Under collegial rule, members simultaneously express their preferred decisions, and the final decision takes the form of a simple compromise: the average of expressed decisions. Under rotational rule, one member is given the full authority to make decisions for a period of time, but this role (potentially) rotates among members. I identify the trade off between preference aggregation and information aggregation, and its interaction with group size and the extent of preference alignment among members.

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1. Introduction

"We run Google as a triumvirate," wrote Larry Page in their 2004 Founder IPO Letter. "The three of us [Larry Page, Sergey Brin (co-founder), and Eric Schmidt (CEO)] run the company collaboratively... For important decisions...differences are resolved through discussion and analysis and by reaching consensus." Google's collegial way of decision making is typical of many spinoffs and startups, especially in "emergent entrepreneurial teams" where members participate in "joint action of discovery" (Harper, 2008). Under collegial rule, members of a group make decisions together by building consensus and making compromises, so that when there is a conflict, no member's preferred decision is implemented. One form of collegial rule is when each member expresses a preferred decision and the final decision takes the form of a simple compromise: the average of the expressed preferred decisions. A simple alternative to collegial rule is rotational rule, in which each member becomes the decision maker for a period of time and implements his preferred decisions, but this role (potentially) rotates among members. For example, in the Brazilian military regime (1964–1985) in which the power was concentrated in the

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executive branch, the presidency rotated among top Army generals.[1] This paper analyzes the trade offs between rotational and collegial rules of decision making in groups of equally powerful members.

Decision making in many real world settings resemble those of collegial or rotational rules. For example, in the Roman Republic, a group of annually elected *consuls* shared the highest authority in the state. Their authority included the right to exercise civil and criminal jurisdiction, summon the senate, supervise certain religious matters, and command the armed forces (Abbott, 1901, pp. 175–181). As a method of sharing authority between the *consuls*, consular power "alternated from month to month [between *consuls*] in the active exercise of that power over the city. When they were in joint command of an army in Italy they commonly alternated day by day. The possession of *fasces* [a collection of wooden rods that symbolized authority] passed from one to the other to indicate the change" (Abbott, 1901, p. 155, see also p. 176).[2]

In a relationship setting, consider a couple who regularly go on dinner dates. They live in a lively city with a broad range of restaurants. They can take turns deciding which restaurant to go to or compromise each time they must decide.

Collegial rule aggregates preferences for every decision in a simple way that captures members' compromise, while rotational rule does not aggregate preferences at all. What complicates decision making is that members are often uncertain about each others' preferences when making decisions. For example, even though officers may be well-informed about each other's preferences at the time of a coup, they will be less informed about their preferences about new issues arising in the complex process of governance. This uncertainty is inconsequential for decision making under rotational rule in which the officer in charge implements his ideal decisions. However, under collegial rule, this uncertainty leads officers to act strategically: they express preferred decisions that are more extreme than their true ideal decisions in order to manipulate the process (Proposition 3). The magnitude of distortions in the members' expressed preferred decisions increases with the group size and decreases with the extent to which their preferences are aligned—as captured by the correlation between preference shocks (Proposition 4). As a result, when players' preferences are not too aligned, members forgo preference aggregation (collegial rule) in favor of rotational rule if and only if the group size exceeds a threshold. Alternatively, members prefer collegial rule to rotational rule if and only if their preferences are sufficiently aligned (Theorem 1).

Moreover, in most settings, members have private information and care about aggregating their information. For example, in a coup setting, junta officers may have private information about the merits of each decision due to their different background and advisors. When members have private information, collegial rule aggregates their information more effectively than rotational rule. Under collegial rule, the members' private information influences the final decision via their expressed preferred decisions. In contrast, under rotational rule, the sole decision maker has to decide based on his own information. To capture these information aggregation aspects, I endow members with noisy private signals about a common value payoff component. Interestingly, under collegial rule, members' equilibrium strategies fully aggregate their private information, as if a central decision maker collects all the members' signals and updates according to the Bayes' rule (Proposition 6).

Information aggregation considerations tend to make collegial rule more attractive. When both information and preference aggregation considerations are present, with quadratic preferences, the difference between a member's payoff from rotational rule vs. collegial rule is a quadratic function of the group size (Eq. (18)). As a result, as the group size increases, members' preference for rotational rule vs. collegial rule can change, at most twice. In particular, in two-member groups, members prefer collegial rule unless they have extreme conflict of interest, i.e., their preferences are sufficiently negatively

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[1] The list of the Army generals who became president in the Brazilian military regime: Catello Branco (1964–1967), Artur da Costa e Silva (1967–1969), Emilio Medici (1969–1974), Ernesto Geisel (1974–1979), and Joao Figueiredo (1979–1985). Typically, the Army has the most personnel among the branches of armed forces, and it plays the dominant role in capturing the government, fighting domestic guerrilla movements, and containing strikes and demonstrations in coups. Therefore, "it is customary that the presidency during military regimes be taken by a top level General [of the army]" (Fontana, 1987, p. 46). Following the 1964 coup, the military regime, through a series of Institutional Acts, concentrated the decision making power in the executive branch headed by the president. For example, the president could amend the constitution with minimal support from the (rubber-stamp) National Congress, had the authority to decree a recess of the legislature, and most starkly, the president had the authority "to suspend the political rights of any citizen for the period of (10) ten years and to end federal, state, and municipal elective terms of office" (Guerchon, 1971, p. 267). For the details of the power arrangement and the decision making processes within the Brazilian military regime (1964–1985), see Bacchus (1990), Schneider (1971), Skidmore (1988), and Stepan (1988). Similar power arrangements existed in the Argentinian military regime (1976–1983), but the power of the president was more limited and the Military Junta, consisting of the commanders-in-chief of the three branches of the military, was the "supreme organ of the nation" with comparable decision making power to the president (Fontana, 1987, p. 27). But even in Chile—which is associated with the personal dictatorship of Pinochet—before the coup, "the members of the Junta had informally agreed that the office [of president] rotate among them, with one-year terms" (Barros, 2002, p. 52).

[2] In a democratic political setting, consider negotiating parties in a constitutional convention choosing between presidential and parliamentary systems. In a presidential system, in each period, the party who wins the election has significantly more decision-making power. However, the incumbent may lose the next election, in which case this power rotates between the parties. In contrast, in a parliamentary system, "where no party typically commands a majority of seats" in the parliament (Diermeier and Merlo, 2004, p. 795), the decision making power is distributed more evenly among the parties, and they must compromise in each period. Clearly, the mean rule is too simplistic to capture the details of preference aggregation in parliamentary governments, and one may think that variations of more complex Baron–Ferejohn style bargaining models must have had great success in capturing the essence parliamentary politics. However, almost all such models imply the proposer/*formateur* advantage, while there is a strong empirical regularity (Gamson's Law) that "the proportion of cabinet ministries received by each government party...tends strongly to equal the proportion of legislative seats contributed by that party to the government seat total." This "portfolio allocation paradox" (Warwick and Druckman, 2001, 2006) imply that "the profession's canonical theory of bargaining in legislatures is contradicted by one of the profession's strongest and most robust empirical laws" (Laver et al., 2011, pp. 287–288). That is, "we still do not fully understand...how the preferences of cabinet members are aggregated to produce government policy" (Goodhart, 2013, p. 205). As another example, consider the chair of an academic department in a university. The position of the chair typically rotates among the tenured faculty. Of course, some faculty consider being the chair a costly service and do not care much about implementing their preferred policies. To the extent that these considerations are negligible, the power-sharing scheme in academic departments resembles the rotational rule.