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Consensus-building in Electoral Competitions: Evidence from Papal Elections

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Abstract

Papal elections are outstanding grounds to study consensus-building in an electoral competition. In contrast to standard two-round elections, the conclave lasts until a candidate receives the two-thirds of votes. In this paper, we argue that this election process can be viewed as a "war of attrition" between two fractions: the "conservatives" and the "progressives". We show that the duration of conclaves positively depends on the political polarization of the College of Cardinals. This result is consistent with empirical evidences. Through an original data set, we show that the duration of conclaves show an upward trend with respect to a polarization parameter.

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1. Introduction

The papal election – the *Conclave* – is one of the oldest voting process with many participants for selecting a leader under a qualified-majority rule. This method of selection have two noteworthy features that are at odds with standard election processes in representative democracies. On the one hand, each cardinal is both a voter and a candidate. On the other hand, the number of election rounds is endogenous: in contrast to standard two-ballot processes, the conclave lasts until a candidate receives the two-thirds of votes (see Baumgartner, 2003). The conclaves then are interesting cases to study consensus-building in electoral competitions.

According to some historians, there are two fractions that oppose in the conclaves – the "conservatives" and the "progressives". The latter term is not related to the the dogma of the Catholic Church – almost all cardinals are conservative on this point – but to the political functioning of the Roman Curia (the administrative apparatus of the Catholic Church). The historiography distinguishes the *zelante* fraction – the conservatives who belong to the curia – and the *politicante* fraction – that desires to deal with the real word.[1]

In this paper, we argue that the election process in conclaves can be viewed as a "war of attrition" between the two fractions. Indeed, wars of attrition describe contests characterized by substantial waiting behaviour and allow to study consensus-building in electoral competitions (as, e.g., Padovano and Venturi, 2001). In our model, each fraction – the conservative (the curia members) and the progressive – supports its own candidate during the election period. The fraction surrenders by voting for the opponent's candidate. Thus, the conclave (namely, the war of attrition) ends once one fraction surrenders.[2]

Our results are twofold. We show that the duration of conclaves (i) increases with the political polarization of the electorate, and decreases with the costs suffered during the conclave. (iii) By building a new data set, we show that these theoretical findings are consistent with the stylized facts. During the modern period, the duration of conclaves

[1] Levillain (2002) describes this distinction between the two fractions. For example, for the election of Leon XII (p.671), or for the election of Pie VII (p. 980).

[2] Our paper studies a game in continuous time with complete information following Bliss and Nalebuff (1984); Fudenberg and Tirole (1986); Alesina and Drazen (1991); Menuet (2016b). The typical equilibrium concept is the symmetric Nash equilibrium, which satisfies stability properties (see Hendricks et al., 1988; Menuet, 2016a).

shows an upward trend with respect to the political polarization.

Our paper belongs to the scale literature that studies the papal elections within the framework of Public Choice theory (Ault et al., 1987; Colomer and McLean, 1998; Padovano and Wintrobe, 2013; Kóczy and Sziklai, 2015; Williams and Paton, 2015; Mackenzie, 2015; Ponsatí and Zápal, 2016, among others). Colomer and McLean (1998) show that the conclave processes were provided several effective voting rules (including qualified-majority rule, and approval balloting). Recently, focusing on the Pope Francis election, Kóczy and Sziklai (2015) compute the voting power of the member of the College of Cardinals. They claim that the voting power can select the critical players of a coalition, and show that the cardinal Bergoglio (the future Pope Francis) was precisely an initial favorite *ex ante*. Our paper extends this previous works by building a theoretical setup to explain the duration of conclaves and the formation of an ideological and/or political consensus.

2. A simple war of attrition model

The essence of the theoretical model is that the conclave seems to be a war of attrition. Two fractions – the conservative party (assimilated to the curia-members), and the progressive party, denoted by C and P, respectively – compete about the election of the new Pope. Each fraction or "party" supports its own candidate, and hopes that its opponent will vote for him.[3] Thus, parties are willing to wait, and to remain in the conclave, as the fraction that surrenders first faces a new Pope who belongs to the opponent's fraction.

During the conclave, each fraction i, $i \in \{C, P\}$, suffers an idiosyncratic cost v_i (that reflects, e.g., the fatigue due to the burdensome and long liturgy governing the election process). In a imperfect symmetric information setup,[4] we assume that v_i are independently drawn from distribution F over the support $[\underline{v}, \overline{v}]$, with f the associated density

[3]Before the outbreak of conclaves, there has already been some negotiation processes within each fraction. Cardinals do not have the same chance to be elected *ex ante*. Some are favorites, the famous *papabili*. During the *sede vatante*, some meetings – the *General Congregations* – allows revealing the different fractions, and selecting the potential favorite candidates in the two fractions. The conclave serves, in turn, a simple consensus-building.

[4]In a perfect information setup, the pair of cost $\{v_C, v_P\}$ is a public information: each player knows the opponent's cost, and a simple pure strategy equilibrium appears: the players with the higher cost surrenders at the initial instant, so that the war of attrition disappears (see Fudenberg and Tirole, 1986; Hendricks et al., 1988). In contrast, in an imperfect information environment, each player ignores the opponent's cost, but knows its distribution. Thus, the uncertainty about the opponent's cost leads to a equilibrium where players do not surrender at the initial instant (namely, the war of attrition exists in equilibrium).

function. At the end of the conclave, if the candidate of fraction i is elected, this party enjoys the payoff V^W, and the opponent, the payoff V^L. We introduce the parameter $\delta := V^W - V^L > 0$ that reflects the positive gap of ideology. In war of attrition models (see, e.g., Alesina and Drazen, 1991; Alesina et al., 2006), δ denotes the ideological polarization of the electorate.

Let us denote by $H(\cdot)$ the distribution of the opponent's dropping-out time (which will be derived below) and by $h(\cdot)$ the associated density function. Consequently, if the fraction i drops out at time T_i, its inter-temporal payoff is

$$U_i = (1 - H(T_i)) \left(- \int_0^{T_i} v_i e^{-rt} dt + V^L e^{-rT_i} \right) + \int_{x=0}^{x=T_i} \left(\int_0^x -v_i e^{-rz} dz + V^W e^{-rx} \right) h(x) dx, \quad (1)$$

where $r \in (0, 1)$ is the subjective discount rate. In Eq. (1), the first line represents the fraction i's expected utility if it drops out first (at time T_i). The second line represents the expected utility if the other fraction drops out before T_i (at time x).

To resolve the game, we use the equilibrium concept of Bliss and Nalebuff (1984) and Fudenberg and Tirole (1986). As we will show, the optimal strategy of the fraction i is given by a decreasing and differentiable function in cost v_i. This function is computed by the best response in symmetric equilibrium: if the other fraction behaves according to the function $T(\cdot)$, it is optimal for the fraction i to drop out according to $T(v_i)$. Namely, in a symmetric configuration, each fraction plays the same strategy, and we can omit the i subscript. The following definition characterizes the equilibrium.

Definition 1. (Equilibrium) The function $T : [\underline{v}, \overline{v}] \to \mathbb{R}^+$ is a symmetric equilibrium if and only if

$$T(v) \in \left\{ \underset{v \in [\underline{v}, \overline{v}]}{\operatorname{argmax}} U_i, \ \forall i \in \{C, P\} \right\}.$$

The strategy profile $T(v)$ is an equilibrium if the excepted utilities (1) of both fractions are simultaneously maximized at $t = 0$. Thus, Finding equilibrium is equivalent to solving a standard maximization problem in a convex space. Based on the proof of Alesina and

Drazen (1991), we characterize the equilibrium in the following proposition.

Proposition 1. *The unique symmetric equilibrium is implicitly given by*

$$\left[-\frac{f(v)}{F(v)}\frac{1}{T'(v)}\right]\delta = v + rV^L, \tag{2}$$

where $F(v) = 1 - H(T(v))$.
The uniqueness of equilibrium is ensured by the boundary condition $\tilde{T} = T(\overline{v})$.

Proof: See Appendix.

The optimal strategies is such that the marginal cost just equals the marginal gain.

The right hand side of Eq. (2) is the cost of waiting another instant to vote for the opponent, which is the loss of utility due to the election period (v) plus the discount value of the loser-fraction's payoff (rV^L). The left hand side is the expected gain to waiting another instant to vote for the opponent, which is the product of the conditional probability that the opponent surrenders (the hazard rate, in brackets) multiplied by the extra-gain related to the election of its own candidate (δ).

The expected duration of the conclave, denoted by T^{SE}, is defined as the expected minimum of the optimal dropping out time.

Definition 2. The expected end date of the conclave is given by

$$T^{SE} = \min(T(v_C), T(v_P)) = \int_{\underline{v}}^{\overline{v}} T(s)\ F(s)f(s)ds.$$

Regarding the comparative static, T^{SE} positively depends on the polarization δ. The higher the ideology gap between the two fractions, the longer the conclave. According to the political economy literature (Alesina and Drazen, 1991; Spolaore, 2004; Alesina et al., 2006), less political cohesion generates greater difficulties in reaching an agreement. Thus, the conclaves end quickly in the case of polarized Colleges, because this electorate can not reach a "fair" and acceptable distribution of costs due to the Pope's election.

Many works in political science attempt to measure the political polarization in electoral contexts (Fiorina and Abrams, 2008; Stanig, 2011), and some studies discuss a conceptual element: parties' homogeneity. In this vein, the political polarization is defined by the deviant voting behavior (Dalton, 2008; Rehm and Reilly, 2010). We apply this view in the context of papal elections by building a simple polarization indicator, denoted by P_t for the election t. On the one hand, we compute the weight of the curia current (denoted by C_t) through the ratio between the number of curia-members and the total number of cardinal-voters. Thus, in a two-party context, the weight of the "progressive" party is $1 - C_t$. On the other hand, using historical databases[5], we determine whether or not the elected candidate belongs to the curia. Namely, we define

$$P_t = \begin{cases} 1 - C_t & \text{if the elected pope belongs to the curia,} \\ C_t & \text{else.} \end{cases}$$

This indicator is simple but serves our purposes. If P_t is low (close to zero), the degree of homogeneity is high, because parties vote in blocks. In contrast, if P_t is high (close to one), the dominant current elects the opponent's candidate, namely parties not form coherent groups. Thus, the indicator P_t takes into account the deviant voting behavior, and reflects the degree of homogeneity in the electorate.

Table 1 provides some summary statistics of our data set about modern conclaves. We note that the College of Cardinals was composed (on average) of 67,33 electors, that the average age of cardinals was 67,54 years, and that the Popes were elected (on average) after 21,72 rounds. Besides, we observe that 44% of cardinals (in average) were belonged to the Roman Curia.

	Number of rounds	Number of participants	Average age	Weight of the curia
Mean	$21,72$	$67,33$	$67,54$	$0,44$
Std. deviation	$24,63$	$26,81$	$3,81$	$0,18$

Table 1: Summary statistics

[5]Our conclave data is an event-based data set that covers the period 1723-2017. Indeed, before the 18th century, catholic countries had a right of veto over the elected cardinal, which arbitrarily delayed the election. We extract the data from the historic data projects of Salvador Miranda (http://www.fiu.edu/ mirandas/cardinals.htm), and of John Paul Adams (http://www.csun.edu/hcfll004/). Other data (notably the average age of the College of Cardinals) are available to the famous history project: http://www.catholic-hierarchy.org/.

In Figure 1, we observe that the duration of election positively depends (in terms of trend) on the political polarization. When the elected candidate is appointed by the opponent (i.e. P_t is high), each party does not form a coherent group, and the conclave is more likely to last in time. In contrast, when the degree of homogeneity is high (i.e. P_t is low), each fraction votes for its candidate, and the conclave is more likely to end quickly.

This feature is consistent with our results. In war of attrition models, the conflict is delayed when groups are polarized (Spolaore, 1993; Alesina et al., 2006)[6], because it is more difficult to reach an agrement in a polarized consistency. Here, in a context of a high deviant voting behaviour, the parties not form coherent groups, namely the cardinals not vote in blocks, so that the consensus is more difficult to reach[7].

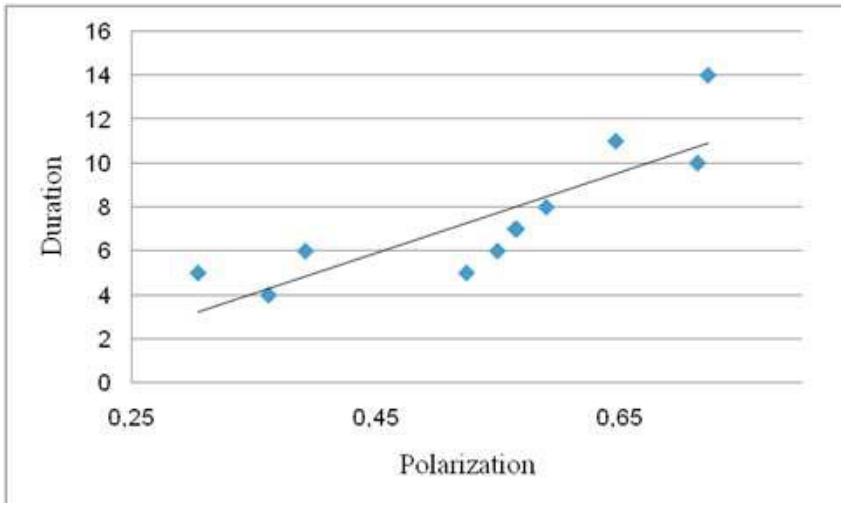

Figure 1: The relationship between the conclave durations and the political polarization

3. Conclusion

Our paper suggests analyzing papal elections through a theoretical economic methodology. Here, we argue that the papal elections can be studied through a conflict over an electoral consensus. Indeed, the two fractions that shape the College of Cardinals

[6]In two-party contexts, Alesina et al. (2006) show that political systems in which the executive has strong powers (as in single-party governments) are characterized by low polarization, and the opposition faces high costs of "fighting" the war of attrition.

[7]Especially, this view is consistent with some political works suggesting that the leaders of coalition attempt to destroy deviant political behaviour to ensure a large support for their policy (Lipset, 1990; Long, 2013).

compete among themselves about the election of the new Pope. We analyze the duration of the conclaves by developing an original "war of attrition" model. Our theoretical setup highlights that the conclaves lasts longer when the College is politically polarized. Through a new data set on the recent conclaves, our model allows explaining the positive trend with respect to the polarization of the College of Cardinals. Finally, this paper provides an original framework for future researches on the consensus formation in electoral competitions.

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Appendix A. Proof of Proposition 1

The first step proves that the optimal dropping out time T_i is monotonically decreasing in v_i, while the second step determines the symmetric Nash equilibrium.

Step 1. Differentiating (1) with respect to T_i, $i \in \{C, P\}$, we obtain

$$\frac{\partial U_i}{\partial T_i} = e^{-rT_i}\left(\delta h(T_i) - (v_i + rV^L)(1 - H(T_i))\right)$$

hence;

$$\frac{\partial^2 U_i}{\partial T_i \partial v_i} = -e^{-rT_i}(1 - H(T_i)) < 0.$$

Therefore, $\partial U_i/\partial T_i$ is deceasing in v_i, and the optimal dropping out time T_i is monotonically decreasing in v_i.

Step 2. We can rewrite (1) as

$$U_i = (1 - H(T_i))\left(\frac{v_i}{r}\left(e^{-rT_i} - 1\right) + V^L e^{-rT_i}\right) + \int_0^{T_i}\left(\frac{v_i}{r}\left(e^{-rx} - 1\right) + V^W e^{-rx}\right) h(x)dx. \quad \text{(A.1)}$$

Now we suppose that the other fraction drops out according to $T(\cdot)$. Thus, choosing a time T_i as above would be equivalent to choosing a value $\hat{v}_i$, and dropping out at time

$T_i = T(\hat{v}_i)$. Since $T' \leq 0$, Eq. (A.2) becomes

$$U_i(v_i, \hat{v}_i) = F(\hat{v}_i)\left(\frac{v_i}{r}\left(e^{-rT(\hat{v}_i)} - 1\right) + V^L e^{-rT(\hat{v}_i)}\right) + \int_{\hat{v}_i}^{\overline{v}} \left(\frac{v_i}{r}\left(e^{-rT(x)} - 1\right) + V^W e^{-rT(x)}\right) f(x)dx. \quad \text{(A.2)}$$

By differentiating with respect to $\hat{v}_i$, the first order condition is (where we drop the i subscript)

$$\frac{\partial U}{\partial \hat{v}}(v, \hat{v}) = e^{-rT(\hat{v})}\left(-F(\hat{v})T'(\hat{v})(v + rV^L) - f(\hat{v})\delta\right) = 0. \quad \text{(A.3)}$$

As $T(v_i)$ is the optimal dropping out time for a group with cost v_i, then $\hat{v}_i = v_i$ when $\hat{v}_i$ is chosen optimally. Thus, the first order condition (A.6) evaluated at $\hat{v}_i = v_i$ implies the result (2).

Yet, substituting $T'(\cdot)$ evaluated at $\hat{v}$ from (2) into (A.3), we obtain

$$\frac{\partial U_i}{\partial \hat{v}} = \frac{e^{-rT(\hat{v})}\delta f(\hat{v})(v - \hat{v})}{\hat{v} + rV^L}$$

Therefore, $\text{sign}(\partial U_i/\partial \hat{v}) = \text{sign}(v - \hat{v})$, so that the second order condition is satisfied. As usual, for any $v \in [\underline{v}; \overline{v}]$, the gain to having the opponent stabilize is positive. Thus as long as $f(\overline{v}) > 0$, groups with $v < \overline{v}$ will not stabilize immediately. This in turn a group with $v = \overline{v}$ will stabilize immediately, i.e. $T(\overline{v}) = 0$.