Secessions and Political Extremism: Why Regional Referenda Do Not Solve the Problem*

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Abstract

This paper shows that an uninformed player can increase his bargaining power by committing to receive information from an expert more skeptical to cooperation. This general idea is applied to a model in which a regional political leader (the expert) influences voting in a referendum on independence by strategically disseminating information about the consequences of separation. I show that this motivates a moderate electorate to appoint a more extreme leader, to receive biased information that increases their bargaining power over the gains of staying unified. However, a trade-off between bargaining power and precision of information causes inefficient outcomes in equilibrium. [*Keywords: Political Economy, Secessions, Cheap talk, Bargaining, Delegation. JEL codes: C73, D72, D82, H77.*]

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1. Introduction

In this paper I look at the incentives for political extremism in regions considering the option of secession. The underlying argument is that populations with mixed feelings about the pursuit of separation often seem to give openly separatist parties a disproportionate amount of political support in regional elections. For instance, even though less than 40 percent of the voters favoured a separation from Canada in the polls before the regional elections in Quebec in 1994, the separatist Parti Quebecois still won a majority of the seats in the regional parliament. Another case in point is the support for the separatist party Lega Nord in northern Italy. Even though polls showed that the support for an actual separation was very weak in the region, the party, and its extremist leader Umberto Bossi, received sufficient electoral support in the middle of the 1990's to become an influential political player. This is also true for the support of separatist parties in other regions around the world, such as the Spanish regions of The Basque and Catalonia.

A natural explanation for this pattern is that the support for more or less extreme separatists is motivated by discontent with current policies of the central government, and the hope that political support for separatists will force the rest of the country to adopt more accommodating policies towards the region in order to avoid a secession.[1] This explanation finds support in the literature. For instance, Treisman (1999), in a comprehensive empirical study of Russia, shows that the threat of separation was one of the most important variables explaining the pattern of net Center-to-Region transfers between 1992-1996. Treisman (1997, p. 221) also argues that the separatist claims were to a great extent instrumental; they were made "..in the hope of extorting other concessions from the center in return for a retreat."[2]

[1] This argument, of course, requires that the rest of the country perceives secession as costly, as is usually assumed in the literature. For instance, a smaller population can be costly due to economies of scale in production together with trade restrictions across countries, or because of the existence of pure public goods. A smaller country may also decrease the ability to use cross-regional transfers as insurance against idiosyncratic shocks, i.e. the scope for risk-sharing may be hampered. See Alesina and Spolaore (1997), Alesina (2002), and Bolton and Roland (1997).

[2] There exists numeral other examples as well. Bookman (1993) mentions Bougainville, Slovakia and Quebec as examples of "the use of economic policy as a tool for the appeasement of sub-national regions with active secessionist movements", while Gurr (2000) claims that many states have abandoned strategies of assimilation and control in favor of policies of pluralism and accommodation, in dealing with politically active ethnic groups. In a referendum in Western Australia in 1933, two thirds of the population supported independence. Actual separation was avoided only by an extremely accommodating tax policy from the rest of Australia (Birch 1989). The support for the separatist party of Lega Nord in northern Italy

The theoretical argument for why a more extreme regional politician would make this threat of separation more credible also seems straightforward. If continued unification creates a common surplus that will be shared someway, then a politician with a greater desire for independence will have greater bargaining power simply because he will require a larger share of the common surplus. The problem with this simple argument is that secession is one of the few political decisions that generally requires a referendum, so the electorate cannot actually delegate the decision whether or not to separate.[3] This curbs the electorate's ability to increase the credibility of the threat of separation for strategic reasons by electing more separatist leaders because the political representatives of the rest of the country realize that it will be the electorate making the ultimate decision. Hence, electing more extreme regional leaders seems to constitute an empty threat.

This paper reconciles these seemingly contradictory observations by developing a new model in which the electorate can increase their bargaining power vis-à-vis the rest of the country by appointing a more extreme regional leader, even though the final decision on separation is taken in a referendum. I develop, in a simple bargaining framework with incomplete information and communication, a general model of the role of biased experts in bargaining that can have many other potential applications. The crucial assumption is that voters are incompletely informed about the economic consequences of separation, but that they receive additional information from a better informed regional politician before they vote in the referendum.

The logic of the mechanism is as follows. In the final stage of the game, the electorate, based on their perceptions of the relative merits of the alternatives, vote for or against separation. Their perceptions will depend on the information conveyed by the regional leader, who has an incentive to try to convince the voters to support the alternative he prefers himself. In particular, a regional leader who prefers independence will have

in the 1990's was a reaction to transfers from the northern parts of Italy to the southern and central parts, and the government of Romani Prodi in 1996 responded by a package of tax and administrative reforms aimed to appease the opposition in the north. Similarly, it is generally conceived that threats of separation from Catalonia, and, perhaps in particular, The Basque provinces, have been one main reason why these provinces have been able to reach privileged agreements on tax and revenue sharing in Spain.

[3] There is no clear rule for when a claim of independence should find support in international law, but the praxis is that a minimum requirement is that the region can show that a majority of the population supports independence in a referendum. For instance, the Supreme Court of Canada acknowledge the need for negotiations in case a sufficient support for independence can be shown in a referendum.

incentives to send an overly rosy picture about the economic consequences of separation in order to make the electorate more favorably disposed toward separation. Anticipating this influence, the central government will realize that it may have to offer a larger transfer in order to either convince the regional leader to abstain from lobbying for separation, or to convince the electorate to stay within the union despite the regional leader's rosy pictures. The electorate, anticipating the effects of the regional leader on their bargaining power, will have incentives to elect a more extreme regional leader in order to commit to receiving information that makes them require a larger transfer. They do not elect a very extreme leader though. The information value of a regional politician's statements about the economic consequences of separation decreases when the politician becomes more extreme. Voters realize that an extreme leader has incentives to make favorable statements even if the actual consequences are quite unfavorable. When choosing the optimal politician the electorate therefore trades off these two counteracting forces, bargaining strength and precision of information, but the elected regional politician will always have greater preferences for independence than the median voter. The important normative implication of this result is that, in equilibrium, the electorate deliberately gets somewhat imprecise information so outcomes may be inefficient, i.e. secessions may occur even when the mutual gains from staying together exceeds the gains from separation.

The mechanism identified in this paper is fundamentally different from the well known idea of the benefits of delegation of decision power. In this model, the principal can only choose the preferences of an expert, not delegate actual decision power, but the same incentives, and potential inefficiencies, still arise. In fact, in Section 3.4, I compare institutional designs and show that for a broad range of parameter values (though not for all), the choice of regional politician would be identical if the separation decision could be delegated. The general idea of this model, that there may exist incentives to delegate information acquisition to a biased agent in order to increase bargaining power vis-a-vis a third player, is therefore general, and these incentives should be kept in mind when thinking about institutional design. In addition, the model shows that a common assumption in models of communication - that more precise information is unambiguously beneficial to the decision maker - is not necessarily true when the decision maker is involved

in bargaining with a third player.[4]

Epstein and O'Halloran (1995) present a model with similar logic. They model a game between an uninformed Congress and a better informed bureaucratic agency with potentially disparate preferences over the choice of policy. They analyze the role of interest groups in monitoring agencies and sending "fire alarms" when policies are not in the interest of the Congress. There is no explicit delegation stage in the model, but the authors show that under some circumstances the Congress is better off by listening to interest groups that are biased against the agency, even if that means that the interest groups do not share the Congress' preferences. Calvert (1985) shows that a decision maker with incomplete information over the relative pay-off of two alternatives may prefer policy advice from a better informed expert with a bias against one of the alternatives if the expert can only send highly imprecise signals. The incentives for information transmission is not modeled, though, and the mechanism would break down if more precise signals were allowed. Gilligan and Krehbiel (1990), show that an uninformed legislature may appoint an informed committee with more extreme preferences. Their argument, though, differs from mine and relies on the assumption that it is costly for the committee to become informed, and the cost of acquiring information is decreasing in the preference distance between the legislator and the committee. The legislator then trades off precision of information against the resources they need to supply to the committee to induce the latter to acquire information. Finally, Levy and Razin (2003) present a model of international bargaining where decisions are taken either by privately informed politicians or by, ex ante, uninformed voters in a referendum. They show that centralized negotiations may fail because of the inability of politicians to credibly signal their own preferences truthfully to the other country, but that a referendum together with public signals (that can be observed by representatives of the other country as well as the citizens within the own country) can solve that problem by making truthful signals being in the self-interest of the politicians. Similar to the findings in this paper, the median voter in Levy and Razin (2003) may prefer to appoint a leader in the decentralized decision case with different preferences than himself. However, this only happens when a leader with similar preferences to

[4]See, for instance, Gilligan and Krehbiel (1989), Austen-Smith (1993), and Krishna and Morgan (2001).

the median voter cannot send informative signals in equilibrium. That is, delegation is an instrument for increased credibility of signals, not an instrument to gain additional bargaining power.

The paper is outlined as follows. Section two describes the model. In Section three the equilibrium is characterized and the intuition behind the mechanism and the positive and normative results are presented. Section four provides a discussion of the robustness of the results, with a specific emphasis on the informational assumptions. Section five concludes.

2. The Model

Consider a federation of two regions with equal population size, a and b, where the citizens in region a attach intrinsic utility to political independence. The strength of the desire for independence is measured by the parameter α_i, which is distributed in the population according to a density function with positive support on the closed and bounded interval between $[\underline{\alpha}, \bar{\alpha}]$. Individuals also care about consumption of a private good, y^j, with $j \in \{s \text{ (separation)}, u \text{ (union)}\}$. Consumption levels depend on per capita income, given by x in case of separation and normalized to 1 in case of a union, and on a lump-sum per capita transfer from region b, $t \in R$, which is endogenously determined and supplied only in case the federation is kept in place. The variable x is stochastic and drawn at stage zero from a uniform distribution $F(x)$ with bounded support on $[x^e - \varepsilon, x^e + \varepsilon]$, where x^e is the ex ante expected value of x, and ε is a measure of the variance of the distribution. Utility functions of individuals living in region a are linear and additive, and given by[5]

$$v_i^j(\cdot) = \begin{cases} x + \alpha_i & \text{if } j = s \\ 1 + t & \text{if } j = u \end{cases} \tag{2.1}$$

Citizens in region b are assumed to be identical in preferences and endowments, and they only care about income given by x_j^b, with $j \in \{s\ ,\ u\}$. Separation is costly, $x_u^b > x_s^b$, so citizens in region b are willing to renounce part of the surplus of keeping the country together in order to avoid separation by offering the citizens of region a a per capita

[5] I have shown in a previous version of this paper that the main result carries over to a more general specification in which utility functions are only constrained to be weakly concave and twice differentiable.

lump sum transfer to stay within the federation.[6] However, there is a limit, defined by $\bar{t} \equiv x_u^b - x_s^b$, to the size of the transfer that they are willing to offer. The utility function of a representative individual of region b is represented by

$$v_k^j(\cdot) = \begin{cases} x_s^b & \text{if } j = s \\ x_u^b - t & \text{if } j = u \end{cases} \tag{2.2}$$

It is shown in Appendix 3 that the median voter theorem applies to both voting decisions in region a. The focus is therefore on the median preferences, and the model is developed as a reduced game with three players: the regional politician in region a, henceforth referred to as the governor (α_g), the median voter in region a (α_m) and a representative individual from region b, labelled the president (p). Everything in the model is common knowledge except the realization of x, which is assumed to be observed only by the president and the governor, but not by the median voter.[7] The governor can signal, though, to the median voter what he has learned. This signalling is modelled as cheap talk which puts no restrictions on the strategy space of the sender.[8] In particular, there are no restrictions that signals be truthful.

The model is a sequential game with incomplete information, and we are looking for a Perfect Bayesian Equilibrium (PBE) in pure strategies. At stage one, an election determines the identity of the governor, α_g, in region a. Candidates are outcome oriented and cannot commit to a signaling strategy ex ante and they come from the full support of individuals in region a. The strategy of α_m is to choose the governor that maximizes his expected utility, given the information he has in stage one. His optimal strategy will be a function of his own preferences for independence, the maximum transfer the president is willing to supply and the characteristics of the $F(\cdot)$ function. Formally, his strategy is given by $\alpha_g(\alpha_m, \bar{t}, F(\cdot)) \in [\underline{\alpha}, \bar{\alpha}]$.[9] At stage two, the president observes the realization of

[6] The general idea that threats of secession limits the ability of a majority group to exploit a minority group can also be found in the work by Buchanan and Faith (1987), Bolton and Roland (1997) and Olofsgard (2003).

[7] It is not necessary to assume that the president can observe the realization of x, but he would have strong incentives to get that information since it matters for the size of the transfer that he has to supply to avoid separation. It therefore seems most plausible to make the assumption that he does indeed observe x.

[8] The cheap talk literature took off with the seminal paper by Crawford and Sobel (1982). For theoretical extensions see, for instance Farrell and Gibbons (1989), Farrell (1993), Krishna and Morgan (2001) and Battaglini (2002).

[9] I do not explicitly model the individual decision whether to run for office or not. However, note that in this simple one-dimensional set-up the median voters most preferred governor is a Condorcet winner.

x, and offers the citizens in region a a per capita transfer to avoid separation. The size of the transfer will depend on $\bar{t}$ and the preferences of the median voter, α_m, but it will also depend on x and α_g since the signal from the governor, which depends on x and α_g, will influence the median voter's decision. The president's strategy can therefore be written as $t(\alpha_m, \bar{t}, x, \alpha_g) \in R$. At stage three, the governor observes the realization of x and decides on a message to be transmitted to the electorate. The governor will choose his message based on the realization of x, the size of the offered transfer and his own preferences for or against separation in order to try to persuade the median voter to make a decision in the interest of himself. Following the cheap talk set-up the governor's strategy, defined as $\sigma_g(\alpha_g, x, t)$, is a mapping to any interval on the support $[x^e - \varepsilon, x^e + \varepsilon]$. That is, the message can be true or false, precise or imprecise. At stage four, α_m receives the signal from the governor, updates his beliefs, and then votes for or against separation. His strategy can thus be written as $\sigma_m(\alpha_m, t, \alpha_g \mid \sigma_g) \in \{s, u\}$. Finally, after the referendum, individual payoffs are realized.

3. Solving the Model

The game can be divided into a pre-stage, the delegation stage, and the following secession game.[10] The basic trade-off faced by the median voter in the delegation stage is between the precision of information (and therefore the probability of ultimately voting for the wrong alternative), and the size of the transfer. If $\alpha_g = \alpha_m$, then the probability of a mistake is zero, but by choosing $\alpha_g > \alpha_m$ through delegation, the median voter may increase the transfer payment. The median voter is certain to be better off by appointing a governor with preferences $\alpha_g \geq \alpha_m$ compared to a governor with $\alpha_g < \alpha_m$. Hence, there exists no equilibrium where $\alpha_g < \alpha_m$, and without loss of generality, the analysis can be restricted to the case where $\alpha_g \geq \alpha_m$.

Cheap talk games are generally characterized by a multitude of equilibria with different

Together with restrictions on the entry costs, and the default option, a Condorcet winner is generally sufficient for a one-candidate equilibrium in an endogenous candidate model. What makes this model different from Besley and Coate (1997), for instance, is that all potential candidiates would prefer a candidate with preferences different from their own, even if there is a zero entry cost. It follows that, in a setting with endogenous candidates, there may exist other equilibria with even more extreme candidates.

[10] Strictly speaking, this is not a proper subgame.

signalling strategies and different beliefs. In the following analysis I will restrict attention to informative equilibria, and disregard equilibria in which the receiver of the information treats the signals as pure noise (babbling equilibria). In particular, I will show that there exists a large number of informative equilibria, but that they are all payoff equivalent. That is, the mapping between the realization of x and the outcome whether to separate or not is identical in each. The equilibria differ only in terms of the information conveyed in the signals, with signals being more or less correct (the governor may very well lie) and more or less precise. This payoff equivalence means that I can restrict attention to one of these equilibria without loss of generality. I focus on what I refer to as a two-partition equilibrium. In this equilibrium the governor partitions the support of x in two parts; the realizations of x such that the governor prefers to stay within the union and the realizations of x such that the governor prefers to separate. The governor then truthfully signals the interval in which the actual value of x lies.[11] A main reason why I focus on this specific equilibrium is that it has a simple and intuitive logic. It can be interpreted as if the governor signals whether he prefers to separate himself or not, i.e. whether the governor recommends separation or not.

3.1. The Secession Game

As stated above, the analysis will focus on the truthful two-partition equilibrium. With a truthful equilibrium I mean an equilibrium in which messages of x are correct, though not necessarily precise. That is, in some truthful equilibria, the governor may signal the exact realization of the stochastic variable x, while in others, he may signal that the realization lies within some interval. The notion of a truthful equilibrium does thus not necessarily mean that the signal is precise, just that the message contained in the signal is correct. To define the truthful two-partition equilibrium more exactly, a cut-off value, $\tilde{x}_g(\alpha_g, t)$, is defined. This is the realization of x that makes governor α_g indifferent between separating or not, given the per capita transfer t. From the indifference condition $x + \alpha_g = 1 + t$, we can define the cut-off value as $\tilde{x}_g(\alpha_g, t) = 1 + t - \alpha_g$. The first main result of the model

[11] The reason why the number of partitions is two for all types of governors, and not a function of the preference distance between the sender and the receiver as in the typical cheap talk game, is that the decision space of the receiver of the information is a binary variable rather than a continuous variable.

is summarized in Proposition 1 below. The proof is in the appendix.

Proposition 1 *There exists multiple informative equilibria of the signalling game. These equilibria only differ in terms of the sender's strategy, and they are all payoff equivalent. In one of these equilibria, the governor partitions the support of x into two parts, and truthfully reports that x belongs to $[x^e - \varepsilon, 1 + t - \alpha_g]$ or $(1 + t - \alpha_g, x^e + \varepsilon]$.*

The signal $x \in [x^e - \varepsilon, \tilde{x}_g(\alpha_g, t)]$ reveals that the realization of x lies in the interval where the governor prefers not to separate, while the signal $x \in (\tilde{x}_g(\alpha_g, t), x^e + \varepsilon]$ reveals that he wants to separate. The signalling game can thus be interpreted as the governor recommending separation or not, and he will choose whatever is in his own self-interest. The signal $x \in [x^e - \varepsilon, \tilde{x}_g(\alpha_g, t)]$ will therefore henceforth be labeled as "u_g", indicating that the governor wants to remain within the union, and the signal $x \in (\tilde{x}_g(\alpha_g, t), x^e + \varepsilon]$ will be labeled "s_g". The underlying intuition behind the truthful two-partition equilibrium is that since signals are not necessarily true, the median voter must take the governor's incentives for misrepresentation into account when judging the information contained in the signal. The median voter knows that the governor would have incentives to send a signal that makes him prefer to separate, as long as the governor himself prefers to separate for the true realization of x. That is, the actual information that the median voter can derive from the signals is whether the governor wants to separate or not , i.e. if $x \in (\tilde{x}_g(\alpha_g, t), x^e + \varepsilon]$ or $x \in [x^e - \varepsilon, \tilde{x}_g(\alpha_g, t)]$. Given such beliefs, the governor may as well truthfully signal whether the realization of x is such that he wants to separate or not.

The median voter will update his beliefs based on the signal from the governor and potentially the size of the transfer offered by the president, and then make his decision. If α_g truthfully signals that he prefers not to separate, then α_m also prefers not to separate, since $\alpha_g \geq \alpha_m$. The median voter will hence always vote against separation after observing the signal u_g. In this case the median voter will be able to determine the true realization of x. This is because the median voter realizes that the president will offer the smallest necessary transfer to convince the governor to signal against separation, i.e. the transfer that makes the governor indifferent between separating or not. It follows that

$x^*(t, \alpha_g \mid u_g) = \tilde{x}_g(\alpha_g, t)$, or, equivalently,

$$x^*(t, \alpha_g \mid u_g) = 1 + t - \alpha_g. \tag{3.1}$$

Things are less clear-cut when the governor signals that he wants to separate. In this case, the transfer from the president carries no more precise information. Based on Bayes rule, the median voter will calculate the expected economic outcome in case of separation as[12]

$$x^*(t, \alpha_g \mid s_g) = \frac{1 + t - \alpha_g + x^e + \varepsilon}{2}. \tag{3.2}$$

In this case, there is a range of realizations of x for which α_g, but not α_m, wants to separate, and the size of this range will depend on the preference distance between the two. As a consequence, the median voter will not always follow the governor's recommendation, and his decision will not only depend on the size of the transfer, but also on the type of governor.

The president wants to avoid separation, but he wants to pay as little as possible. There are two ways in which the president can convince the median voter to abstain from separation. The first approach is to convince the median voter "indirectly", through offering a transfer that makes the governor signal u_g. The president is given all the bargaining power, so it is sufficient that he offers a transfer that is just sufficiently large to make the governor indifferent between separating or not. The governor's indifference transfer is labeled $\tilde{t}_g(\alpha_g, x)$, and is given by

$$\tilde{t}_g(\alpha_g, x) = x - 1 + \alpha_g. \tag{3.3}$$

Note that $\tilde{t}_g(\alpha_g, x)$ depends positively on both x and α_g.

The other option for the president is to convince the median voter "directly", through offering a transfer sufficiently large to make the median voter indifferent between separating or not, even if the governor signals that he wants to separate. This indifference condition is given by $1 + t = \alpha_m + x^*(t, \alpha_g \mid s_g)$, which yields the median voter's indifference transfer, labeled $\tilde{t}_m(\alpha_g \mid s_g)$, as

$$\tilde{t}_m(\alpha_g \mid s_g) = x^e + \varepsilon - 1 + 2\alpha_m - \alpha_g. \tag{3.4}$$

[12] It is sufficient to look at the expected outcome, since linear utility implies risk neutrality.

Note that $\tilde{t}_m(\alpha_g \mid s_g)$ is independent of x and negatively related to α_g.

The president will then offer the smallest of these two transfers, provided that this is lower than his upper limit, $\bar{t}$. Which of the two cut-off transfers is the smallest will depend on the realization of x and the type of governor, α_g. If both transfers are larger than $\bar{t}$, then the cost of avoiding secession is greater than what the president is willing to offer, so he will offer the transfer zero in this case. The truthful two-partition equilibrium of the secession game is defined below (the notation $*$ defines this specific equilibrium).

Proposition 2. *The two-partition Perfect Bayesian Equilibrium of the secession game is a set of strategies and a set of beliefs such that:*

i) The governor truthfully signals whether he wants to separate or not, given the offered transfer.

$$\sigma_g^*(x, t, \alpha_g) = \begin{cases} s_g & \text{if } t < x - 1 + \alpha_g \\ u_g & \text{otherwise} \end{cases} \tag{3.5}$$

ii) The median voter votes for separation if and only if he expects to be strictly better off by independence, given the offered transfer.

$$\begin{aligned} \sigma_m^*(\alpha_g, \alpha_m, t \mid u_g) &= u \\ \sigma_m^*(\alpha_g, \alpha_m, t \mid s_g) &= \begin{cases} s & \text{if } t < x^e + \varepsilon - 1 + 2\alpha_m - \alpha_g \\ u & \text{otherwise} \end{cases} \end{aligned} \tag{3.6}$$

iii) The president offers the smallest possible transfer that avoids separation, given that this transfer is smaller than his maximum transfer $\bar{t}$

$$t^*(x, \alpha_g, \alpha_m) = \begin{cases} \min\{x - 1 + \alpha_g, x^e + \varepsilon - 1 + 2\alpha_m - \alpha_g\} & \text{if } < \bar{t} \\ 0 & \text{otherwise} \end{cases} \tag{3.7}$$

iv) The median voter observes the governor's signal and updates his beliefs

$$\begin{aligned} x^*(t, \alpha_g \mid u_g) &= 1 + t - \alpha_g, \\ x^*(t, \alpha_g \mid s_g) &= \tfrac{1 + t - \alpha_g + x^e + \varepsilon}{2}. \end{aligned} \tag{3.8}$$

To clarify how threshold and equilibrium transfer levels depend on the identity of the governor I construct Figure 3.1. The value of $\tilde{t}_g(\alpha_g, x)$ and $\tilde{t}_m(\alpha_g \mid s_g)$ are displayed on the y-axis and α_g on the x-axis, starting with α_m. The $\tilde{t}_g(\alpha_g, x)$ function depends on the realization of x. That is, independent of type, all governors will require a higher transfer

to be indifferent between s_g and u_g if x is increasing. The impact of an increase in x on $\tilde{t}_g(\alpha_g, x)$ can be represented by a parallel shift upwards. Three different representations are drawn in the figure. At the limits are $\tilde{t}_g(\alpha_g, \underline{x})$ and $\tilde{t}_g(\alpha_g, \bar{x})$, and in-between those realizations, the governor's indifference transfer function for an intermediate value, $\acute{x}$, is given by $\tilde{t}_g(\alpha_g, \acute{x})$. In contrast, the $\tilde{t}_m(\alpha_g \mid s_g)$ function is independent of x and, as explained above, decreasing in α_g.[13] The maximum transfer the president is willing to offer, $\bar{t}$, is displayed as a straight line. As the figure shows, the transfer offered in equilibrium will be a function of both x and α_g. By fixing $x = \acute{x}$, I can define the conditional (on the realization of that particular x) equilibrium transfer as a function of α_g, denoted by $t^*(\alpha_g \mid \acute{x})$. This conditional equilibrium transfer function is displayed as the thick discontinuous line in the figure. As can be seen, for relatively moderate governors, the president will find it worthwhile to offer a transfer that makes the governors indifferent between separating or not, in which case they will signal u_g and the median voter will vote against separation. For somewhat more extreme governors, the transfer necessary to avoid separation now becomes greater than the president's gain from keeping the union together, so at this point the president will offer a transfer of size zero. However, for even more extreme governors, the $\tilde{t}_m(\alpha_g \mid s_g)$ function drops below $\bar{t}$, so even if the transfer necessary to convince the governor now is even larger, it has become worthwhile for the president to convince the median voter directly despite the unfavorable signal from the governor. The main results at this stage are summarized in Proposition 3.

Proposition 3. *i) The conditional equilibrium transfer function $t^*(\alpha_g \mid x)$ is a non-monotonic function of α_g. ii) The ex ante probability of separation in equilibrium is increasing in α_g to the point at which $\alpha_g = \tilde{\alpha}_g(\bar{t})$, where it falls to zero.*

The non-monotonicity comes from the fact that $\tilde{t}_m(\alpha_g \mid s_g)$ is decreasing in α_g. The intuition is that the median voter knows that a governor who cares a great deal about independence will prefer to separate even if the economic consequences are quite detrimental, while a more moderate separatist only wants to separate if the economic prospects

[13] The reason why $\tilde{t}_m(\alpha_g \mid s_g)$ eventually flattens out is that if the governor is sufficently extreme, then he will prefer to separate for all realizations of x. The signal s_g then carries no more information than what is contained in the prior, so the median voter will require the transfer that leaves him indifferent based on his prior expectations for all types more extreme than this.

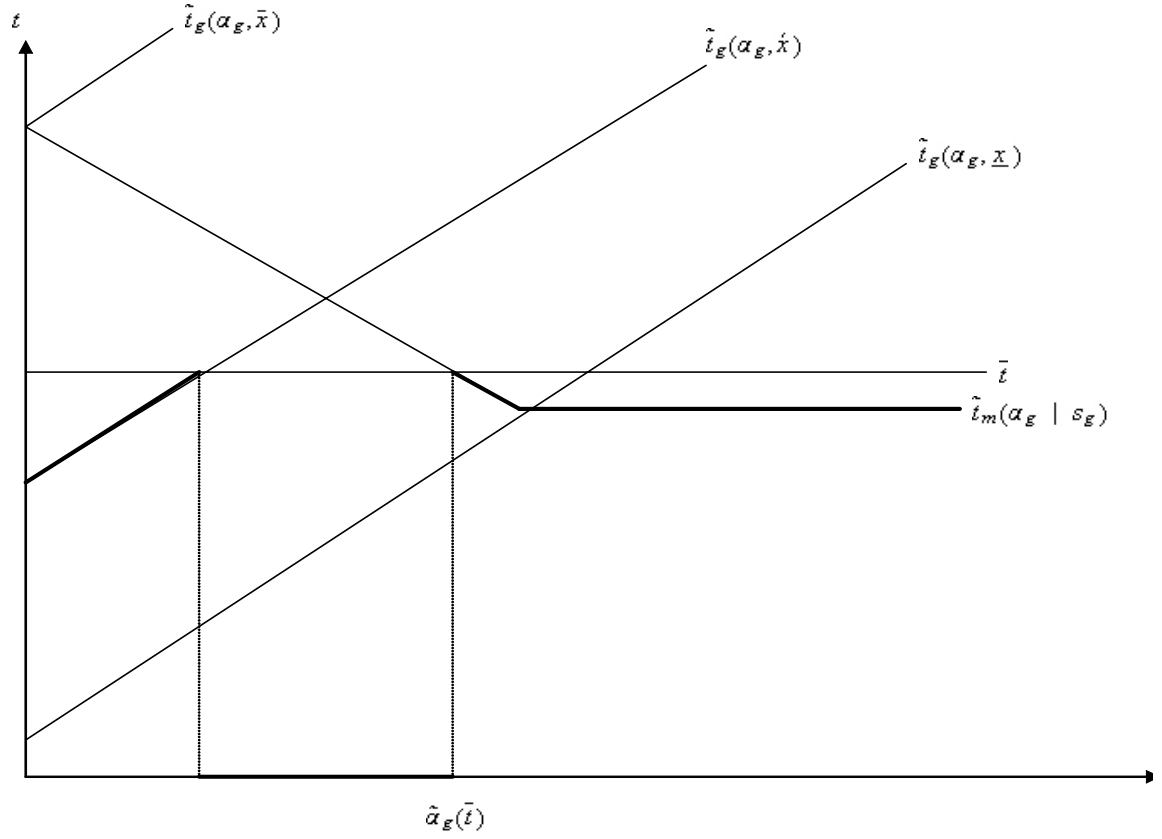

Figure 3.1: The conditional equilibrium transfer as a function of α_g.

are fairly good. A signal saying that the governor wants to separate thus has a smaller information value if he is more extreme, and updated beliefs are less favorable. When the governor becomes sufficiently extreme, i.e. when $\alpha_g \geq \tilde{\alpha}_g(\bar{t})$, he will never be able to convince the median voter to separate. The probability of separation therefore drops to zero at this point, since the transfer required to avoid separation has now dropped below the maximum transfer, $\bar{t}$.[14] The most credible threat of separation is thus given by a moderately more separatist governor. This is also clear from the picture where actual separation occurs for intermediate values of α_g, where $\min\{x - 1 + \alpha_g, x^e + \varepsilon - 1 + 2\alpha_m - \alpha_g\}$ is the greatest.

3.2. The Delegation Stage

The delegation stage boils down to electing the governor best fit to play the secession game, in the sense that he maximizes the median voter's expected utility. In general terms, the expected utility can be defined as a value function, $V_i(\alpha_g)$, and the optimal governor is given by

$$\alpha_g^* \in \underset{\alpha_g \in [\underline{\alpha}, \bar{\alpha}]}{\arg\max} V_m(\alpha_g). \tag{3.9}$$

An equilibrium of the full game is thus the strategy profile and the set of beliefs given in Proposition 2, and the solution to equation (3.9).

The specific form of the value function depends on the exogenous parameters. In particular, it is possible to distinguish between three cases, depending on the value of $\bar{t}$. If $\bar{t} \geq \tilde{t}_m(\alpha_g \mid s_g)$ for all α_g, then the president is always willing to compensate α_m to avoid a separation, so separation is a zero probability event for all types of governors. However, different transfer functions apply depending on the value of x. For relatively bad realizations of the economic outcome $\tilde{t}_g(\alpha_g, x) < \tilde{t}_m(\alpha_g \mid s_g)$, while the opposite is true for relatively good economic outcomes. By setting $\tilde{t}_g(\alpha_g, x) = \tilde{t}_m(\alpha_g \mid s_g)$ it is possible

[14] That the probability of separation is zero for sufficiently extreme governors also has another interesting implication. Above the threshold-level $\tilde{\alpha}_g$, all voters agree on the optimal governor being the one maximizing the expected size of the transfer and they all receive the same expected utility from this type. However, for a given $\alpha_g \in [\alpha_m, \tilde{\alpha}_g)$, and thus a given probability of separation, the expected utility is increasing in α_i. It follows that more separatist voters are more likely to prefer a governor for whom there is a positive probability of separation, to a governor maximizing the expected size of the transfer but never causing separation. This implies that voting behaviour may be counterintuitive in the sense that if there are two exogenously given candidates, then voters with low preferences for independence may prefer the governor with greater preferences for independence, while voters with high preferences for independence may prefer the governor with relatively lower preferences for independence.

to solve for the threshold value of x for which it becomes cheaper to convince the median voter directly. This threshold is given by $x = x^e + \varepsilon - 2(\alpha_g - \alpha_m)$, and the value function subsequently becomes[15]

$$\int_{x^e-\varepsilon}^{x^e+\varepsilon-2(\alpha_g-\alpha_m)} (x+\alpha_g)\frac{1}{2\varepsilon}dx + \int_{x^e+\varepsilon-2(\alpha_g-\alpha_m)}^{x^e+\varepsilon} (x^e+\varepsilon+2\alpha_m-\alpha_g)\frac{1}{2\varepsilon}dx. \tag{3.10}$$

In this case there are three effects of choosing a more extreme governor. The first effect is that transfers will increase for relatively bad outcomes, i.e. whenever the minimum transfer is given by $\tilde{t}_g(\alpha_g, x)$. The second effect is that the probability to get $\tilde{t}_g(\alpha_g, x)$ rather than $\tilde{t}_m(\alpha_g \mid s_g)$ goes down, since the threshold level of x is decreasing in α_g. The final effect is that transfers will decrease for relatively good outcomes, i.e. whenever the minimum transfer is given by $\tilde{t}_m(\alpha_g \mid s_g)$. The first order condition thus offers the solution to the trade-off between these three effects, and the optimal governor maximizes the expected size of the transfers.

If $\bar{t} < \tilde{t}_m(\alpha_g \mid s_g)$ for all α_g, then there is a strictly positive risk of separation for all potential governors. In this case, there will always be separation if the governor signals s_g, but for values of $x \leq 1 + \bar{t} - \alpha_g$, the president can compensate the governor to signal u_g. The value function can thus be written as

$$\int_{x^e-\varepsilon}^{1+\bar{t}-\alpha_g} (x+\alpha_g)\frac{1}{2\varepsilon}dx + \int_{1+\bar{t}-\alpha_g}^{x^e+\varepsilon} (x+\alpha_m)\frac{1}{2\varepsilon}dx, \tag{3.11}$$

In this case there are only two effects of choosing a more extreme governor, since utility in case separation is realized is independent of the identity of the governor. The first effect is identical to the first effect above, the size of the transfer increases for the realizations of x for which there is no separation. The second effect is similar to the second effect above, but this time it is the probability to actually separate that increases.

In the intermediary case, then $\bar{t} < \tilde{t}_m(\alpha_g \mid s_g)$ for sub-sample $\alpha_g \in [\underline{\alpha}, \tilde{\alpha}_g(\bar{t}))$, while $\bar{t} \geq \tilde{t}_m(\alpha_g \mid s_g)$ for sub-sample $\alpha_g \in [\tilde{\alpha}_g(\bar{t}), \bar{\alpha}]$, where $\tilde{\alpha}_g(\bar{t})$ is the least extreme governor for whom there is a zero probability of separation, defined by the equality $\bar{t} = \tilde{t}_m(\tilde{\alpha}_g \mid s_g)$. There is thus a positive probability of separation for the first subset, and the value function

[15] If $\alpha_g \geq \alpha_m + \varepsilon$, then the transfer is equal to $x^e - 1 + \alpha_m$ for all realizations of x, and expected utility is thus given by $x^e + \alpha_m$.

is then represented by equation (3.11), and a zero probability of separation within the second subset, represented by the value function (3.10).

The main positive result of the model is stated in the proposition below. The proof of the proposition and the derivation of the exact formulas that follow, are given in the appendix.

Proposition 4. *The median voter always elects a governor with greater preferences for separation. That is,* $\alpha_g^* > \alpha_m$ *always holds true.*

Proposition 4 shows that the median voter will always elect a more extreme governor. To understand the motivation behind this delegation, first consider the case when the governor's and the median voter's preferences coincide. In this case, the president will offer a transfer that is just sufficiently large to make the governor signal that he does not want to separate, a recommendation that will certainly be followed by the median voter since their preferences are perfectly aligned. Now, consider a case where the governor cares more about independence, and assume that the president offers the same transfer. This time, the governor prefers to separate, and signals this to the median voter. The median voter will not necessarily follow the recommendation, since his preferences differ from those of the governor, but if their preferences are sufficiently aligned, he will after having updated his beliefs still come to the conclusion that his expected utility is higher in independence. It follows that the president must increase the transfer, either to the level at which the governor prefers not to separate or to the level at which the median voter prefers not to separate, even if the governor still signals that he wants to separate.

The explicit formulas for α_g^* are given in equation (3.12) below.

$$\alpha_g^* = \begin{cases} \frac{\alpha_m + 1 + \bar{t} - (x^e - \varepsilon)}{2} & \text{if } \bar{t} < x^e + \frac{\varepsilon}{3} + \alpha_m - 1 \\ x^e + \varepsilon - 1 + 2\alpha_m - \bar{t} & \text{if } x^e + \frac{\varepsilon}{3} + \alpha_m - 1 \leq \bar{t} \leq x^e + \frac{\varepsilon}{2} + \alpha_m - 1 \\ \alpha_m + \frac{\varepsilon}{2} & \text{if } \bar{t} \geq x^e + \frac{\varepsilon}{2} + \alpha_m - 1 \end{cases} \tag{3.12}$$

The explicit solutions show that the extent of extremism depends on $\bar{t}$. In particular, as shown more clearly in Figure 3.2, the relationship between α_g^* and $\bar{t}$ is non-monotonic. The optimal type of governor becomes more extreme as $\bar{t}$ increases, as long as $\bar{t}$ is relatively small, but for higher values of $\bar{t}$, the relationship is reversed. What makes this result

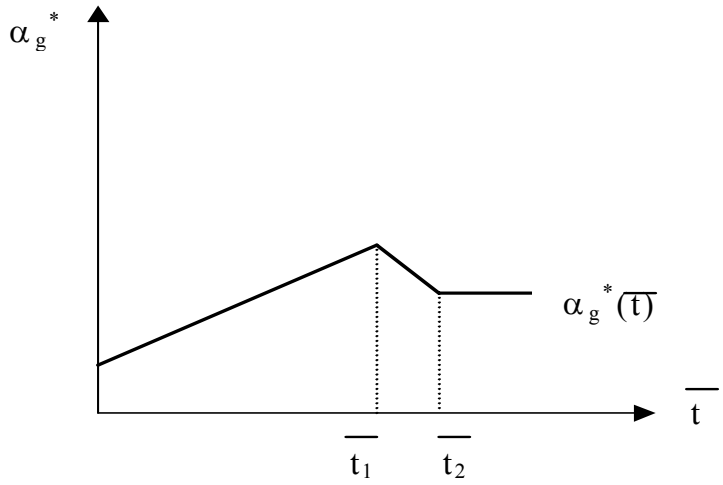

Figure 3.2: The optimal governor as a function of $\bar{t}$.

interesting is that it contrasts sharply with the pattern that would appear from a model with delegation of actual decision-power. In the latter case, α_g^* would be monotonically increasing in the size of the transfer that can be reaped.

3.3. A Normative Analysis

There is also a cost of electing a governor who cares more about independence though. If the median voter were to elect a governor with preferences identical to his own, he would be sure of getting sufficient information in equilibrium to always make the ex post correct decision. However, this is not true when he elects a more extreme governor, in which case there may be both inefficient separations and inefficient lack of separation due to insufficient information. Inefficient separations occur when there exist realizations of x, such that the median voter votes for separation in equilibrium, but ex post finds himself worse off than he would be within the federation receiving a feasible transfer. To see that this can happen, note that the ex post condition for an inefficient separation is given by

$$\bar{t} \geq x + \alpha_m - 1. \tag{3.13}$$

For this to be an equilibrium, it must first of all be the case that the governor signals s_g, which requires that

$$\bar{t} < x + \alpha_g - 1. \tag{3.14}$$

It must also be the case that the transfer necessary to convince the median voter, after observing the signal s_g, is greater than $\bar{t}$, i.e.

$$\bar{t} < \tilde{t}_m\left(\alpha_g \mid s_g\right) = x^e + \varepsilon - 1 + 2\alpha_m - \alpha_g. \tag{3.15}$$

To have an inefficient separation, $\bar{t}$ must simultaneously satisfy the three conditions above. The first finding is that the inequalities in equations (3.13) and (3.14) cannot be simultaneously satisfied, if $\alpha_g = \alpha_m$. This confirms the previous statement that the median voter gets sufficient information to never make a mistake, if he delegates political power to a governor with identical preferences to his own. The condition for equations (3.13) and (3.15) to be simultaneously satisfied, is given by

$$x \leq x^e + \varepsilon - \left(\alpha_g - \alpha_m\right). \tag{3.16}$$

This can clearly be satisfied for permissible values of x, and it is more likely to be satisfied if α_g is not to extreme, since $\tilde{t}_m\left(\alpha_g \mid s_g\right)$ is decreasing in α_g. Strategic delegation thus has the important normative implication that inefficient separations may occur in equilibrium.[16]

As outlined above, if $\bar{t}$ is high enough, then the optimal governor is of the type for which the probability of separation in equilibrium is zero. This indicates that there may also be inefficient lack of separation in equilibrium, i.e., realizations of x for which the median voter is better off by separation than by staying within the union receiving $\bar{t}$, but still votes against separation. Just as with inefficient separations, it is possible to define three conditions that must be simultaneously satisfied for an inefficient lack of separation. An inefficient lack of separation requires that both the median voter and the governor are better off by separating than by receiving the maximum transfer, which is represented by

$$\bar{t} < x + \alpha_m - 1, \tag{3.17}$$

$$\bar{t} < x + \alpha_g - 1. \tag{3.18}$$

If equation (3.17) holds, then equation (3.18) also clearly holds, since $\alpha_g \geq \alpha_m$. It must also be the case that the president convinces the median voter to vote against separation,

[16] It could be argued that the two countries should be able to reintegrate if they so wish, once the economic outcome is realized and has become known to everyone. However, a fixed cost is likely to be associated with re-integration. If this cost is of a non-trivial size, it will make the event of re-integration unlikely.

in effect

$$\bar{t} \geq \tilde{t}_m \left(\alpha_g \mid s_g \right) = x^e + \varepsilon - 1 + 2\alpha_m - \alpha_g. \tag{3.19}$$

Combining equations (3.17) and (3.19), yields the condition that

$$x > x^e + \varepsilon - \left(\alpha_g - \alpha_m \right). \tag{3.20}$$

As in the previous case, this condition cannot be satisfied if $\alpha_g = \alpha_m$. There is, thus, no inefficient lack of separation if the governor and the median voter have identical preferences.

This inefficiency result may be somewhat puzzling, since both the median voter and the governor prefer to separate for this set of realizations of x. The intuition for why this happens is that the difference in preferences makes it impossible for the governor to credibly signal that the economic outcome in case of separation is favorable, even if that is the case, since the median voter knows that he would have incentives to make this claim even if the economic outcome was relatively bad.[17] These normative implications of the model are summarized in the proposition below.

Proposition 5. *i) If* $x^e - \epsilon + \alpha_m - 1 < \bar{t} < x^e + \frac{\varepsilon}{3} + \alpha_m - 1$*, then there is a positive probability of inefficient separations in equilibrium. ii) If* $x^e + \frac{\varepsilon}{3} + \alpha_m - 1 \leq \bar{t} < x^e + \epsilon + \alpha_m - 1$*, then there is a positive probability of inefficient lack of separation in equilibrium.*

To summarize, the median voter will always elect a governor who cares somewhat more about independence than himself. By electing a more separatist governor, the median voter can commit to make a decision on a signal that is biased such that he requires a greater transfer to vote against separation. However, the signal is also less informative so there is a positive probability that the median voter makes what ex post shows to be an incorrect decision. The governors identity therefore correspond to the trade-off between the bargaining strength he gives, and the quality of the information he generates. The

[17] This result is clearly similar to the logic behind why "left-wing" ("right-wing") parties may be unable to get support for socially beneficial "left-wing" ("right-wing") reforms in the framework of Cukierman and Tommasi (1998). The electorate cannot tell the difference between reform suggestions motivated by social welfare and those motivated by partisan preferences if they are uncertain about "the state of the world".

model thus corresponds to an example of rational ignorance, where the strategic incentives to reap transfers in the bargaining makes the median voter prefer to remain somewhat ignorant about the true state of the world.

3.4. Comparative Institutional Design

I have so far in the paper shown that the institution of a referendum can give rise to the incentives to elect extreme separatists as regional leaders, and that this can give rise to inefficient separations even though side-payments are allowed. But, how does this institution compare with one in which the voters can delegate the actual decision whether to separate or not to their regional leader? It is straightforward to show that if we solve a similar game in which the regional politician is given the power to decide, then the equilibrium type of governor, for all values of $\bar{t}$, is given by

$$\alpha_g^* = \frac{\alpha_m + 1 + \bar{t} - (x^e - \varepsilon)}{2}. \tag{3.21}$$

This is identical to the case in the previous model, when $\bar{t} < x^e + \frac{\varepsilon}{3} + \alpha_m - 1$. As shown in Figure 3.2, the optimal governor in the original model then becomes less extreme as t is increasing, and, in particular, a governor for which the probability of separation in equilibrium is zero is chosen. Hence the relative performance of the different institutions depend on the value of the rest of the country of keeping the country together. If that value is relatively low, then both institutions lead to the same choice of governors, and the same probability of inefficient separations. When the value is higher, then the referendum requirement leads to the election of less extreme separatists than the alternative rule (but still more extreme than the median voter), and the probability of inefficient separations drops to zero. This does not necessarily mean that the referendum rule is superior from a welfare perspective though, because it opens up for the opposite possibility, inefficient lack of separation.

4. Robustness of the Results

The purpose of this section is to further discuss the underlying assumptions of the model and the robustness of the result when the structure of the model is somewhat altered. First

of all, the mechanism outlined in the model builds exclusively on the role of information transmission. That is, the governor has no other instrument to influence the outcome of the referendum or the size of the transfer than through strategically choosing what information to share with the public. This is of course a simplification and the focus on information should not be understood as a denial of the potential influence through other channels. In particular, the governor may have agenda setting power over when to hold the referendum and the exact alternatives to choose between in the elections.[18] However, there is nothing that prevents the two roles to coexist, and unless there is a strong case for treating these as simultaneous and interconnected decisions, a partial analysis of the role of information transmission should be useful and informative.

The results derived from the model rely on a couple of important informational assumptions. The first of these assumptions is that the incumbent politicians are better informed about the economic consequences of separation than the voters. This is indeed a crucial assumption, but the idea that politicians are better informed about the mapping between policy and outcome is common (see e.g. Cukierman and Tommasi (1998), Gilligan and Krehbiel (1989) and Harrington (1993) for some influential contributions). It is generally conceived that politicians have both more resources and greater incentives to gather information. In particular, whereas the probability that an individual voter is pivotal is infinitesimal, the politicians can have a potentially substantial impact on the voting outcome. Their superior ability to transmit information can change the vote of a large share of the voters and thereby have a non-negligible chance of altering the electoral outcome.

The weak incentives for voters to inform themselves also has a bearing on another aspect of the model that warrants some discussion, the implicit assumptions about commitment given by the timing of moves in the model. In particular, once the transfer has been offered by the president, the median voter would have incentives to reconsider his choice of governor in order to minimize the risk of taking the wrong decision. However, this is understood by the president so the biased information from the first governor would constitute an empty threat and the mechanism would brake down. In a similar way, if we

[18] Quebec in 1995 offers one example in which regional pro-separation leaders were debating over the timing and the question to be posed in the upcoming referendum (Young, 1998, p. 271).

allow for potentially other senders, then the model shows that the median voter would like to be able to commit to only seek information from his governor of choice, but once the president has chosen the size of the transfer the median voter would have incentives to once again update his beliefs, this time preferably from someone with identical preferences of his own. The implicit argument here is that politicians have unique possibilities to reach out with information to voters who have little incentives to actively seek the information themselves. The political information that voters have is generally acquired through media (see e.g. Page, Shapiro and Dempsey (1987)). The role of the media differs across countries, depending on the extent to which the media is free from influence of the ruling political elite. When media is politically controlled it reproduces the statements of the incumbent, but even in a society with freedom of press, there is a close interdependence between the media and incumbent politicians and the former tend to broadcast the opinions of the latter albeit not exclusively.[19] This close media attention means that incumbent politicians have a somewhat unique ability to reach out to the constituency of voters.

Nevertheless, there is of course always the chance that voters are influenced by other signals, from political activists or non-partisan experts (in case voters really identify them as non-partisan). With multiple signals, if preferences of the senders are known, this opens up for the possibility of information aggregation by the voters (see e.g. Krishna and Morgan 2001), which may even lead voters to become precisely informed. In order to study the robustness of the model, I therefore discuss below in two different cases what may happen if the ability of the median voter to commit to only pay attention to the signal from the governor is violated.

4.1. The President as a Sender

To start with, the president in the model is also informed about the economic consequences of separation, and he clearly has incentives to try to influence the median voters' decision,

[19] Besley and Burgess (2002) show that it is newspapers circulation in regional languages that matter for government responsiveness to droughts and floods across Indian states. Their interpretation of this finding is that it is in particular through regional or local media that propensive voters get their political information. This is probably equally true for the case of secessions, and regional and local media are probably even more likely to cover the opinions of local political incumbents.

so why cannot he signal what he knows? The presidents problem is that the ability to signal credibly in cheap talk games requires some alignment in preferences between the sender of the signal and the receiver. This requirement is not met here since the president does not want separation for any realization of x. In other words, the president would only have incentives to send signals to make the median voter prefer to stay in the union, but the median voter is aware of that the president wants him to vote against separation for all realizations of x. Hence, the actual information contained in such a signal would just be that $x \in [x^e - \varepsilon, x^e + \varepsilon]$, i.e. the signal would contain no additional information than what is already known. Generally, as shown by Krishna and Morgan (2001), the result may be different, though, if the existence of two senders is made explicit. In this case the addition of another sender, even if he is an "extremist", may give rise to the existence of more informative equilibria for some realizations of the state variable. The intuition behind this result is that the receiver can apply a rule for when to adopt the recommendation of the non-extremist that is such that the non-extremist is indifferent between confirming a truthful revelation of the realization of x by the extreme sender and sending his best alternative message that will be considered (a message that is not deemed as "self-serving" if the message of the extremist indeed is true). However, if the extremist reports a realization of x below the true x, then the non-extremists best alternative message that will be considered will make him strictly better off, which creates disincentives for the "extremist" to deviate in the first place. Hence, the extreme sender will report precisely and truthfully and the non-extremist will have (weak) incentives to confirm the message of the extremist, but, only if the message of the extremist indeed is true to begin with. This type of equilibrium, though, relies crucially on the assumptions of a continuous decision space and utility functions that are concave in the decision of the receiver, which makes it possible to define this rule that makes the non-extremist indifferent between confirming the extremists signal and send his best alternative message that will be considered. When the receivers decision space is binary, as in the model presented in this paper, then no such indifference rule can be defined. Hence, the president is informed and he has incentives to try to influence the decision of the median voter, but due to his "extreme" preferences

(relative to the median voter) he will not be able to credibly send any informative signals.[20]

The situation changes, though, if we instead assume that $\bar{t}(x)$, with $\frac{\partial \bar{t}(x)}{\partial x} > 0$. This could be motivated by two reasonable assumptions: i) that x reflects the productivity in region a, ii) that resources are (at least partially) pooled across regions within the unified country. In this case the loss of separation for citizens in region a is increasing in x, so they will be willing to offer a larger transfer as x is increasing. Now the size of the transfer offered by the president can, in itself, carry some further information about the realization of x because the transfer effectively works as a costly signal. In particular, for any $t > \bar{t}(x^e - \varepsilon)$, the median voter realizes that the realization of x must be such that $\bar{t} \in [t(x), \bar{t}(x^e + \varepsilon)]$. From this information, the median voter can potentially derive a more precise inference about the likely realization of x than what he can learn from the governor's signal. In a previous version of the paper (available from the author upon request) I analyze this extension of the model formally, but I confine myself to present only the main results here for reasons of brevity.

First, the fact that the maximum transfer the president is willing to offer is no longer constant means that, for a certain intermediate range of governors, the mapping from x to the separation decision may take on new forms. In particular, separation may occur for intermediate realizations of x while the union survives for low *and high* realizations of x. The intuition for why the union survives also in very favorable realizations of x is that the president in these cases will be willing to offer a greater transfer, and if x is high enough, he will be willing to offer a transfer high enough to convince the median voter even if the governor signals that he supports separation. The second main result is that the president's costly signal will carry additional information to that contained in the governor's signal only when the realization of x is high and the preference distance between the median voter and the governor is large enough to constrain the ability of

[20] An interesting aspect of the referendum campaign leading up to the 1995 election in Quebec is that while the regional Yes side forcefully propagated that secession would entail no economic losses and even would be beneficial in the long run, the federalist side had little at all to say about the long term effects for Quebec of a secession. As reported in Young (1998, pp. 302), "In fact, the basic federalist position on this dimension was to make no concrete predictions about the economic effect of a Yes vote. The concrete promises of the sovereigntists certainly were not to be believed, for they could guarantee nothing about the future, which would become radically uncertain after a Yes vote." An interpretation of this strategy, in line with the arguments in this model, is that the federal side was aware about that their signals would not be deemed credible so instead of claiming that they possesed superior information they tried to discredite the signals from the sovereigntists by arguing that the economic consequences can not really be known.

the governor to signal "good news" with credibility. Hence, when the president's signal matters it will lead the median voter to (correctly) expect the realization of x to be more favourable, in which case he will also require a larger transfer to abstain from separating. The paradoxical result is thus that the ability of the president to send costly signals is beneficial for the median voter, and detrimental for the president, because the president will be forced to supply a greater transfer to avoid separation than what he had had to do if his choice of transfer carried no information. The third, and final, main result is that this extension does not alter the incentives for the median voter to delegate information acquisition to a more extreme governor, indicating a certain robustness of the previous result.

4.2. Other Senders

But, what about other potential senders? The specification with only two potentially informed senders is a simplification that merits some discussion. The ability of the electorate to commit to listen only to a message from their regional leader is most likely hampered by information and propaganda from other sources. This is unlikely, however, to completely erode the ability of the regional incumbent to influence voting behaviour. The extent of information aggregation will depend on the relative preferences of the senders (if they have like or opposite bias, their preference distance to the receiver), so the additional sender's identity matters. There is no obvious complementary sender to the governor in the current model (except the president, discussed above), but one way to capture this idea is to assume that with some external probability the median voter will receive an additional correct and precise signal, leaving him completely informed. This random event can be thought of as the chance that the voter through media is reached by truthful and precise information from a source that he trusts as being unbiased or having identical preferences to himself. What this means is that instead of assuming that the median voter can commit with probability one to making his decision based on the signal from the governor, I now assume that the commitment technology is imperfect, so with probability $\rho \in (0,1)$ the median voter, after the signal from the governor but before he makes his decision, receives a precise and correct signal of the realization of x. From

the perspective of the president this means that it is no longer certain that the governor manages to influence the median voter's decision, but that it's a possibility that cannot be ruled out. As a consequence, the mapping from the transfer the president is offering to the outcome whether to separate or not, may now become uncertain.

As in the previous subsection, the formal analysis of this extension is given in a previous version of the paper. The main result that comes out from that formal analysis though is that the incentives for delegation to a more extreme governor remains. More precisely, the identity of the governor is identical to that in the previous case when $\rho = 0$. However, as ρ is increasing, the optimal governor becomes more moderate, and when $\rho = 1$ then $\alpha_g^* = \alpha_m$. Hence, introducing the possibility that the median voter is reached by a precise signal in addition to the signal from the governor does moderate the median voters choice of governor, but, as long as $\rho < 1$, the governor will still have greater preferences for separation and inefficiencies may occur in equilibrium. The important implication of this result is that the logic of the base model carries over to the case of imperfect commitment. As long as the president puts a positive probability on the ability of the regional leader to influence the median voter, the incentives for delegation still exist.

5. Concluding Remarks

This paper has analyzed the political incentives in a region threatening to secede when the decision to separate is taken in a referendum. The main finding is that even though the median voter cannot delegate the actual power to decide on separation, he may still benefit from electing a regional politician caring more about independence than himself if the politician gains superior information about the economic consequences of separation. The politician will influence the decision in the referendum by strategically choosing what information to reveal. A politician caring more about independence will bias the information in such a way that the median voter will require a larger transfer from the rest of the country to abstain from separation. But a more extreme politician will also send less precise information. The optimal politician is thus chosen by trading off bargaining power and the precision of the information, with the implication that the median

voter has incomplete information in equilibrium. It follows that equilibria may be inefficient. Secessions can occur even though side-payments are allowed and the total welfare of maintaining the union exceeds that of the two separate countries. The implications of the results thus stretch beyond the positive implications of better understanding the incentives within politics in potentially separating regions, it also points in the direction of institutional design in order to alleviate inefficiencies. In particular, for an international community concerned with welfare decreasing secessions, requiring support in a referendum for separatist claims may not be sufficient.

A comprehensive empirical test of the model is unfortunately very hard to conduct, for several reasons. First of all, the number of cases is not that big, and, secondly, the key result, the preference distance between the median voter and the governor, is very hard to measure in a consistent way across different cases. Nevertheless, some support for the arguments that voters should elect regional political leaders that care more about independence and that the support for independence is a non-monotonic function of the preferences of the regional politician can be derived from the case of Quebec. The separatist party Parti Quebecois won a majority of the seats in the regional parliament in the 1994 elections, even though less than 40 percent favoured separation in the polls. Even more to the point, the so called "Bouchard effect" shows that a less extreme politician is deemed to be more credible when arguing for separation, and he will therefore be able to convince a larger share of the population to support that cause. The long-time political leader of Parti Quebecois, Mr. Parizeau, forcefully promoted separation once in office. However, as revealed in the following quotation, Mr. Parizeau was deemed as very extreme, "Mr. Parizeau's entire political career has been devoted to the cause of sovereignty, and there is no evidence that he would stray from this course even if it were to impose large costs on the citizens of the province. " (Young 1998, p. 145) He was therefore not considered to be credible when arguing that the short term costs of separation should be small, and that the long run effects on the economy even should be positive. As a result he had very scant success in raising popular support. Because of this failure to convince the electorate, the leadership of the sovereignty forces slid to another politician, Mr. Bouchard, who was known to be less extreme. This lead to a significant increase in

the support for separation. According to some studies the "Bouchard effect" amounted to an increase by four to five percentage points in the proportion of voters intending to vote yes. Furthermore, as revealed by the following quotation, once again from Young (1998, p. 294), Mr. Bouchard in particular made the economic expectations about sovereignty more positive: "Thus, Mr. Bouchard's impact, as shown in this analysis, was to diminish fears about the economic consequences of sovereignty". That is, voters realized that the more moderate Mr. Bouchard would not be in favour of separation if he expected that the economic consequences would be grave.

A. Appendix

A.1. Proof of Proposition 1

A standard result in cheap talk models, is that the ability of the sender to communicate is constrained by the receiver's understanding that the sender will only communicate what is in his own interest. For all $x \in [\underline{x}, \tilde{x}_g(\alpha_g, t)]$ the governor has no incentives for misrepresentation, since $\tilde{x}_g(\alpha_g, t) < \tilde{x}_m(\alpha_m, t)$, and the median voter will vote against separation for any signal, $\sigma_g(\alpha_g, x, t)$, that conveys correct information. Hence, there exists numerous potential signals, precise or imprecise, but they will all yield the same mapping between the realization of x and the outcome whether to separate or not. For all realizations of $x \in (\tilde{x}_g(\alpha_g, t), \tilde{x}_m(\alpha_m, t)]$, the governor has incentives to make the median voter believe that $x \in (\tilde{x}_m(\alpha_m, t), \bar{x}]$. Hence, whenever the median voter receives any signal $\sigma_g(\alpha_g, x, t)$ such that $x^*(t, \alpha_g \mid \sigma_g(\cdot)) \in (\tilde{x}_m(\alpha_m, t), \bar{x}]$, then he realizes that this may be incorrect, but, given the governors incentives, it must be the case that $x \in (\tilde{x}_g(\alpha_g, t), \bar{x}]$. It follows that, once again, there exists numerous potential signals, precise or imprecise, true or false, when $x \in (\tilde{x}_g(\alpha_g, t), \bar{x}]$, but they all lead the median voter to make his decision based on the same information, i.e. that $x \in (\tilde{x}_g(\alpha_g, t), \bar{x}]$. The mapping between the realization of x and the decision whether to separate or not is thus once again the same, since the median voter in all these equilibria make his decision based on the same information. To sum up, there exists numerous equilibria that may differ in their information content, but they are all payoff equivalent since they yield the same mapping between the realization of x and the outcome whether to separate or not.

One of these equilibria is the two-partition equilibrium in which the governor partitions the support of x into two parts, and sends imprecise, but correct, signals saying that $x \in [\underline{x}, \tilde{x}_g(\alpha_g, t)]$ or $x \in (\tilde{x}_g(\alpha_g, t), \bar{x}]$. Note that when $x \in [\underline{x}, \tilde{x}_g(\alpha_g, t)]$, then the governor prefers not to separate, and he can always achieve that by signalling that $x \in [\underline{x}, \tilde{x}_g(\alpha_g, t)]$. When $x \in (\tilde{x}_g(\alpha_g, t), \bar{x}]$ then the governor prefers to separate, but this time he may not be able to achieve this through his signal since $\tilde{x}_g(\alpha_g, t) < \tilde{x}_m(\alpha_m, t)$. It follows that the governor would have incentives to send another signal, that may very well be correct, that can achieve separation. However, the median voter cannot verify if that signal really

is correct, and realizes that the governor would have incentives to send that signal even if $x \in (\tilde{x}_g(\alpha_g, t), \tilde{x}_m(\alpha_m, t)]$. Hence, the median voter will make his decision based on the information that $x \in (\tilde{x}_g(\alpha_g, t), \bar{x}]$ anyway. It follows that the governor may as well send the imprecise but correct signal that $x \in (\tilde{x}_g(\alpha_g, t), \bar{x}]$. That is, the two-partition strategy is indeed an equilibrium.

A.2. Proof of Proposition 4 and a derivation of the explicit values of α_g^*.

When $\bar{t} < \tilde{t}_m(\alpha_g \mid s_g)$ for all α_g, then there is a strictly positive risk of separation for all types of governors. The lowest value on $\tilde{t}_m(\alpha_g \mid s_g)$ is realized when $\tilde{x}_g(\alpha_g, t) \leq x - \varepsilon$, in which case $\tilde{t}_m(\alpha_g \mid s_g) = x^e + \alpha_m - 1$. Whenever $\bar{t} < x^e + \alpha_m - 1$, the optimal governor is the solution to the optimization of equation (3.11). Solving for α_g yields $\alpha_g^* = \frac{\alpha_m + 1 + \bar{t} - (x^e - \varepsilon)}{2}$. Note that $\alpha_g^* > \alpha_m$ unless $\bar{t} + 1 \leq \alpha_m + x^e - \varepsilon$, i.e., unless the utility of separation in the worst possible outcome is greater than the utility within the federation in the best possible outcome. In this case α_m will always vote for separation, so there is no role for the governor whatsoever.

When $\bar{t} \geq \tilde{t}_m(\alpha_g \mid s_g)$ for all α_g, then there is zero risk of separation for all x and all α_g. The highest value on $\tilde{t}_m(\alpha_g \mid s_g)$ is realized when $\alpha_g = \alpha_m$, in which case $\tilde{t}_m(\alpha_g \mid s_g) = x^e + \varepsilon - 1 + \alpha_m$. It follows that α_g^* is the solution to the optimization of equation (3.10) whenever $\bar{t} > x^e + \varepsilon + \alpha_m - 1$, which yields $\alpha_g^* = \alpha_m + \frac{\varepsilon}{2}$. For future reference, the lowest type of governor for which $t^* = \tilde{t}_m(\alpha_g \mid s_g)$ for all realizations of x, is defined as $\check{\alpha}_g$, and given by $\check{\alpha}_g = \alpha_m + \varepsilon$. Evaluating the first derivative at $\alpha_g = \alpha_m + \varepsilon$, shows that it is unambiguously negative, i.e., expected utility is increasing to the left of $\check{\alpha}_g$.

It remains to show the optimal α_g when $x^e + \alpha_m - 1 \leq \bar{t} \leq x^e + \alpha_m - 1 + \varepsilon$, i.e., when expected utility is represented by two different functions in different intervals. A first step in this direction is to show that the median voter's expected utility is a continuous function even if $\tilde{\alpha}_g(\bar{t}) \in [\underline{\alpha}, \bar{\alpha}]$. To do this I evaluate the utility functions in equations (3.10) and (3.11) at $\alpha_g = \tilde{\alpha}_g(\bar{t})$ and show that they are identical. Substituting α_g with $\tilde{\alpha}_g(\bar{t}) = x^e + \varepsilon + 2\alpha_m - 1 - \bar{t}$ shows that the integral limits are identical, and thus also

the first terms in respective equations. What remains to show is that

$$\int_{2(1+\bar{t}-\alpha_m)-(x^e+\varepsilon)}^{x^e+\varepsilon} (x+\alpha_m)\,\frac{1}{2\varepsilon}dx = \int_{2(1+\bar{t}-\alpha_m)-(x^e+\varepsilon)}^{x^e+\varepsilon} (1+\bar{t})\,\frac{1}{2\varepsilon}dx. \tag{A.1}$$

The expression on the right hand side above can be written as

$$\int_{2(1+\bar{t}-\alpha_m)-(x^e+\varepsilon)}^{x^e+\varepsilon} (1+\bar{t})\,\frac{1}{2\varepsilon}dx = (1+\bar{t})\left(1-F\left(2\left(1+\bar{t}-\alpha_m\right)-\left(x^e+\varepsilon\right)\right)\right). \tag{A.2}$$

By definition, $\bar{t}=\tilde{t}_m\left(\tilde{\alpha}_g \mid s_g\right)$ when $\alpha_g=\tilde{\alpha}_g\left(\bar{t}\right)$. Furthermore, the median voters threshold transfer is defined as the transfer that leaves him indifferent between separating or not after having seen the signal s_g. It follows that

$$\left(1+\tilde{t}_m\left(\tilde{\alpha}_g \mid s_g\right)\right) = \int_{2(1+\bar{t}-\alpha_m)-(x^e+\varepsilon)}^{x^e+\varepsilon} (x+\alpha_m)\,\frac{f\left(x\right)}{1-F\left(2\left(1+\bar{t}-\alpha_m\right)-\left(x^e+\varepsilon\right)\right)}dx. \tag{A.3}$$

Combining equations (A.2) and (A.3), and the fact that $\bar{t}=\tilde{t}_m\left(\tilde{\alpha}_g \mid s_g\right)$, shows that the equality in equation (A.1) indeed holds true.

The continuity result, together with: i) concavity of both functions, ii) that the first derivative of equation (3.11) is strictly positive when evaluated at the point $\alpha_g=\alpha_m$, and iii) that the first derivative of equation (3.10) is strictly negative when evaluated at the point $\alpha_g=\check{\alpha}_g$, this implies two things. First of all, it means that if there exists an interior solution in only one of the two functions then this is a global maximum. Second, if there exists no interior maximum, then the global maximum is given by $\alpha_g=\tilde{\alpha}_g\left(\bar{t}\right)$.

The final step is to check the conditions for existence of interior maxima. i) There exists an interior maximum within the range $\alpha_g\in[\alpha_m,\tilde{\alpha}_g\left(\bar{t}\right)]$ if and only if $\alpha_g^*<\tilde{\alpha}_g\left(\bar{t}\right)$, or $\frac{\alpha_m+1+\bar{t}-(x^e-\varepsilon)}{2}<x^e+\varepsilon-1+2\alpha_m-\bar{t}$. This can be rewritten as $\bar{t}<x^e+\frac{\varepsilon}{3}+\alpha_m-1$. ii) In the same manner, the condition for the existence of an interior equilibrium within the range $\alpha_g\in[\tilde{\alpha}_g\left(\bar{t}\right),\check{\alpha}_g]$ is given by $\alpha_g^*>\tilde{\alpha}_g\left(\bar{t}\right)$, or $\alpha_m+\frac{\varepsilon}{2}>x^e+\varepsilon-1+2\alpha_m-\bar{t}$. This can be rewritten as $\bar{t}>x^e+\frac{\varepsilon}{2}+\alpha_m-1$. Taking these results together, it shows first of all that there cannot exist interior maxima within both ranges. Furthermore, it also means that

$$\alpha_g^*=\begin{cases} \frac{\alpha_m+1+\bar{t}-(x^e-\varepsilon)}{2} & \text{if } \bar{t}<x^e+\frac{\varepsilon}{3}+\alpha_m-1 \\ x^e+\varepsilon-1+2\alpha_m-\bar{t} & \text{if } x^e+\frac{\varepsilon}{3}+\alpha_m-1\leq\bar{t}\leq x^e+\frac{\varepsilon}{2}+\alpha_m-1 \\ \alpha_m+\frac{\varepsilon}{2} & \text{if } \bar{t}>x^e+\frac{\varepsilon}{2}+\alpha_m-1 \end{cases}. \tag{A.4}$$

A.3. Proving that α_m is pivotal

In the last stage, the members of the electorate decide whether to vote for or against separation in the referendum. Note that; i) all voters receive the same signal and form the same updated beliefs, and ii) expected utility in case of separation is monotonically increasing in α_i. This is sufficient to guarantee that the median voter theorem applies at this stage.

The picture is somewhat more complicated at stage 1. Within the interval $\alpha_g \in [\tilde{\alpha}_g, \bar{\alpha}]$ the probability of separation is zero, so preferences over α_g coincide for all voters on the type that maximizes the expected size of the transfer. Within the interval $\alpha_g \in [\alpha_m, \tilde{\alpha}_g)$, a sufficient condition to guarantee that the median voter theorem applies is that preferences over α_g are monotonic and single peaked. Substituting α_m with α_i in the results in Proposition 3, it is clear that $\frac{\partial \alpha_g^*}{\partial \alpha_i} > 0$. It follows that preferences are single peaked and monotonically increasing, in the sense that more separatist voters prefer a more separatist governor.

The remaining question concerns the preferences over the best governor within each subset. Eye inspection of equation (3.10) shows that expected utility is monotonically increasing in α_i for any given α_g within the subset $\alpha_g \in [\alpha_m, \tilde{\alpha}_g)$. This means that the preferences over these alternatives satisfy the single-crossing property of Gans-Smart (1996), which is a sufficient condition for the median voters bliss-point to be a Condorcet winner.

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