An Economic Theory of Constitution Making

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Abstract

This paper presents a signaling model of constitution making in which strategic behavior and institutions matter. The paper includes the amount of rent available to the politician, the cost of deviation from commitment in the implementation of a constitution, the extent to which the politician prioritizes the well-being of voters, and the prior probability distribution of politicians' types in the model. Two types of politician are examined: low-type (self-interested) and high-type (altruistic/benevolent). We argue that the constitution cannot be designed so as to maximize public interest (the first-best outcome) as claimed in the conventional theory. The findings confirm that a first-best outcome is impossible in the making of constitutions. Strategic behavior and institutional structure influence equilibrium constitutions. The results suggest that the well-being of the society from the making of constitutions would be improved if the institutional setting leads politicians to be consistent with their commitments by removing rent and making deviation costly.

Keywords: Constitution making, signaling, strategic behavior, institutional structure

JEL Codes: C79, D02, K19,

1 Introduction

This paper analyzes a constitution making process from the point of view of *Law and Economics*. Even though the economic analysis of constitutions has been fundamental in the literature of *Law and Economics*, there are only a few studies investigating the constitution-making process itself (Mueller, 1996; Cooter, 2002; Myerson, 2000), while there are more about comparative analysis of constitutions (Elster, 1995), their economic implications (Persson & Tabellini, 2003; Franck, 2009) and the analysis of constitutional institutions (Salzberger, 1993; Salzberger & Fenn, 1999; Hanssen, 2004). This is because neoclassical economics disregarded strategic interaction in the making of constitutions and assumed that constitution makers aim at public interest rather than their own interest. Accordingly, constitutions are designed to maximize public interest by altruistic and benevolent policy makers with a well-defined social welfare function (Landes and Posner, 1975). In this view, there is no strategic behavior. Also, institutions are disregarded. Yet, in the real world, politicians such as the agents of the private sector are rational individuals pursuing their own interest rather than public interest. In modern democracies, the presence of interest groups and rent seeking processes is an inherent component of constitution making processes[1].

[1] Accordingly, strategic behavior can transform the making of constitutions to a rent seeking process because both policy makers and interest groups can make themselves better off if they engage in rent seeking. For instance, if the dominant strategy is to engage in rent seeking after a constitution has been accepted, rational policy makers will pursue rent for their self-interest rather than public interest. As a result, constitutions may not be designed in line with public interest when self-interested politicians are involved (Macey, 1987; Mueller, 1996; Cooter, 2002; Myerson, 2000; Hanssen, 2004). On the other hand, the reason for relatively higher efforts of private interest groups to manipulate the constitution is the fact that the articles of constitutions are more durable than ordinary legislation (Landes and Posner, 1975; Crain and Tollison, 1979).

Following Myerson (2000) and Cooter (2002), we argue that strategic behavior and institutions matter in the process of constitution making. The politician can pursue his own interest if rent is available and deviation is not costly. In particular, mimicking the high-type (credible) politician, the low-type (non-credible) politician can convince voters to approve a constitution draft in the referendum process and then can deviate from his commitment in the implementation of a constitution if the institutional structure is ill designed. Conversely, a well-designed institutional setting enables the politician not to deviate from his commitment. Accordingly, a crucial part of the economic analysis of constitutions is to investigate the constitution-making process by paying attention to the strategic behavior of politician and the effect of institutions in this interaction from the perspective of game theory (Myerson, 2000). As a matter of fact, a policy-making process is one of the areas where the game theoretic analysis of principle-agent relations is intensively applied (Cooter, 2002; Kreps, 1990). Note that, after the constitution has been enacted, all of the individuals and interest groups within a society are in a classic prisoner's dilemma in relation to one another. Although everybody would be better off if an enforceable agreement to constrain rent seeking could be achieved, individual interest groups can make themselves better off when they engage in rent seeking, provided of course that nobody else does. Thus, dominant strategy in the post-constitution making stage is to engage in rent seeking (Macey, 1987). Under these conditions, we argue that the maximization of public interest in a constitution policy-making process is inconsistent with the nature of policy-making processes in which the making of constitutions consists of the struggle of

interest groups to redistribute the wealth of the society in their favor.

In order to investigate the effect of these components in a constitution making process, we employ a signaling model in which the politician is the sender and the voter is the receiver. The aim is to show possible equilibrium outcomes (constitutions) under strategic interaction and different institutional structures and to understand the effect of factors determining those outcomes. Thus, we aim to introduce an economic theory of constitution making in which we analyze a constitution-making process using a signaling game and taking into account strategic behavior and institutions. To our knowledge, this paper is a first attempt because the previous literature has ignored these components of a constitution-making process. Among a few works, Kirstein and Voigt (2006) analyze a constitution as an incomplete contract and model the provisions of the contract in the post-constitutional stage. Auriol and Gary-Bobo (2007) design a robust mechanism based on constitutions. This article consists of six sections including the introduction. Section two is a literature review that gives a brief summary of economic analysis of constitutions. Section three constructs a model defining and explaining the constitution-making process and discusses costs and benefits of different actions to the politician and the voter. Section four is the equilibrium analysis of the game. Section five presents our findings and some crucial policy suggestions in the context of those findings. The paper ends with a conclusion.

2 Economic analysis of constitution making

From a normative perspective[2], the neoclassical theory assumed that a constitution is designed to maximize public interest by the politician who is altruistic and benevolent. According to this approach, in the process of constitution making, there is no strategic interaction and institutions are ignored. Some recent approaches including Public Choice, New Institutional Economics, and Law and Economics have rejected this approach. A constitution has been defined as institution, contract, and regulation among others. The constitution as an institution, which protects property rights and enforces contracts effectively, reduces transaction costs and obtains a credible commitment. The constitution as a social contract determines all the relations in the society. The constitution as a regulation redefines property rights and thus redistributes welfare among the interest groups (Acemoglu, 2005; Weingast, 1993; North, 1991; Nye, 2008; Macey, 1988). In fact, a constitution is the most basic element that leads to an interaction between political and economic processes. This interaction suggests that all of the agents and interest groups within political and economic spheres are influenced by the constitution and can, in turn, influence the constitution-making process (Macey 1988). Constitutions are still designed to maximize public welfare, though, while

[2] There are two main approaches in the economic analysis of constitutions: normative and positive approaches. The normative approach examines the constitution making process within the context of agency and is interested in whether the activities and status of representatives (e.g. legislators) are rational (Myerson, 2000; Cooter, 2002). It examines the results of certain choices based on their effectiveness. In other words, it dwells on the economic meaning of constitutions. The positive approach is interested in understanding the (economic) effects of a constitution and the emergence and evolution of alternative constitutional rules. While the normative approach is mostly theoretical, the positive approach consists of empirical studies (Franck, 2009; Voigt; 2008; Person and Tabellini, 2003). In this paper, we consider the constitution from the perspective of the normative approach.

politicians and private groups try to manipulate them to maximize their own interests (Salzberger 1993). Even with the existence of effective checks and balances (i.e. the separation of powers), private interest groups may have power to influence constitutions through legislative actions for their own interests (Landes and Posner, 1975; Crain and Tollison, 1979). Accordingly, following Macey (1987), we define constitutions as the equilibrium between the politician and the voter. Also, we define the interaction between the politician and the voter as a strategic behavior because both politicians and citizens are self-interested rational agents who pursue their own interests rather than public interest (Cooter, 2002).

On the other hand, another important component in the making of constitutions is institutional structure since designing a constitution involves making choices under institutional constraints (Elster 1995). Deviation cost, rent, and implementation costs are institutional constraints. We accept that a well-designed institutional setting includes high costs of deviation, low rents, and high implementation costs while a bad institutional environment refers to low deviation costs, high rents, and low implementation costs. This is consistent with the related literature and the conditions of real world. If institutional components such as legal mechanisms, elections, information channels, and transparent democratic structures are well designed in a country, this institutional environment will increase the cost of deviation for the politician from his commitment. At least, in this institutional setting, it is possible that the politician will lose the next election when his commitment is not credible. Thus, the cost of deviation is high, and rent

is low in a well-designed institutional structure. Accordingly, we assume that interest groups cannot easily manipulate politicians and thus the politician cannot deviate from his commitment in the implementation of a constitution under a well-designed institutional setting. Conversely, under an ill-designed institutional structure, it should be easy for the politician to deviate from his commitment. In this sense, an institutional weakness can deepen the problems and risks based on strategic behavior, and vice versa. Thus, if an institutional setting can motivate the politician to be consistent with his commitment, the well-being of the society from making a constitution would be better off.

In order to account for the effect of strategic behavior and institutional structure on the making of constitutions, we introduce a signaling model in which the politician is the sender and the voter is the receiver. We include parameters such as rent, implementation costs, and deviation cost, which refer to institutional components, in the model in order to reveal the effect of institutional structure. Rent occurs because interest groups are willing to pay for the politician to implement the constitution in favor of those groups. Rent represents a return to the politician from the rent-seeking activities and the politician acts strategically when he pursues rent to maximize his own welfare. Deviation cost is related to rent. Deviation cost is high if there are strong institutions that constrain or impede the politician from deviating from his commitment for rent, and *vice versa*. In the model, strategic behavior is represented by the type of politician and a constitution draft. Accordingly, the politician can be altruistic or self-interested. A low-type

politician refers to a self-interested player while the high-type of politician represents altruistic player aiming to maximize public interest. Regarding the type of politician, what is important is how the politician will behave when he faces institutional constrains even if he is in favor of the well-being of the society. For instance, we presume that the low-type of politician under a bad institutional setting mimics the high-type to convince the voter to accept the draft in the referendum process. Lastly, in general, the voter's utility or welfare refers to public interest because the voter represents the society in the game.

3 The model

The model is formed as a signaling game Γ, involving two players, namely the politician P (as sender), and the voter V (as receiver). The nature draws the type of politician from the set $\Theta = \{\theta_h, \theta_l\}$ where $\theta_h > \theta_l$, according to a prior probability distribution π. Following In and Wright (2017)[3], we assume that, after realizing his type θ_i, the politician sends a signal $m_i \in [0, 1]$, that is to say, declares a constitution draft as proposal. With this signal, we endogenize the quality of the constitution and thus use the quality as an implicit way of signaling the politician's type[4]. In this stage, the politician commits to properly implement this draft in implementation stage. The voter observes the draft as a signal m_i (but not the

[3] In and Wright (2017) classify endogenous signaling games. First, the sender chooses his own type before sending a signal. Second, he sends a signal and then choses his type.

[4] In and Wright (2017) show that even though the type of sender is exogenously by nature his unobserved features may still be endogenously determined through the signal chosen by the sender.

type θ_i)[5] and chooses x_i from a set of feasible actions $X = \{A, R\}$; she either approves or rejects the draft in the referendum process. If the voter rejects the draft, $x = R$, the game ends. If $x = A$, we move on to the implementation stage of the constitution in the game. Then, the politician makes a choice y_i from the set $Y = (C, D)$ showing whether he will implement C the draft or deviate D from his commitment.

The VonNeumann-Morgenstern payoff functions of the politician and the voter are given by $U_p(\theta_i, m_i, y_i, x_i)$ and $U_v(m_i, y_i, x_i)$. Before defining payoff functions explicitly, note that the game ends with three possible scenarios: (i) the voter rejects the draft, (ii) the voter approves it in the referendum process and the politician deviates in the implementation of a constitution (This outcome refers to non-credible commitment for the politician), or (iii) the voter approves the draft and the politician implements it properly (This outcome represents the credible commitment for the politician). The construction of the voter's utility, U_v, is defined for three cases as follows: (i) if the voter rejects the draft, she will get a reservation utility r_v, (ii) if she accepts the draft and the politician implements it properly, she will get a utility $f(m_i)$, and (iii) if the politician deviates, she will get $g(m_i)$.

[5] Assuming that the voter observes the draft as a signal, but not the type of politician, is realistic because it is more difficult to assess the type of politician in the real world. For doing this, the voter can observe the history of politician and/or his commitments. Yet, it is not easy to understand if the politician is credible or not. Instead, the voter can evaluate the quality of a constitution draft easier than the type of politician. Also, the assessment of a constitution draft as a signal still refers to the type or credibility of politician because this draft is written by the politician who offers it.

For the politician, costs and benefits determining his utility are as follows: First, the politician always cares about the well-being of voters however its weight is proportional to the type, namely $\theta_i U_v$. We assume that the high-type of politician prioritizes the well-being of voters, whereas the low-type is less interested in it because the priority of the low-type is to maximize his own interest. Second, if the voter accepts the draft, the politician can acquire a rent K from deviation whereas he has to burden a deviation cost $c(m_i)$. By this assumption, we include the effect of a rent seeking process between the politician and private interest groups into the model. Accordingly, rent represents a return from interest groups for the politician to implement the constitution in favor of those groups. However, this type of politician is non-credible and most likely loses his power in the next election because he deviates from his referendum commitment. Thus, the cost of deviation will be high in a well-designed institutional setting. However, if the politician implements the accepted draft, he will suffer from the implementation cost $h(m_i)$. Implementation costs are the administrative and time costs of implementing a constitution because the politician spends time and administrative resources to enact new laws in accordance with the new constitution in the implementation of the constitution. Because the politician implements the constitution properly under a well-designed institutional structure we assume that implementation costs increase if the institutional structure is well established. Thus, rent, implementation costs, and deviation cost refer to the effect of institutional structure on the making of constitutions in the paper. Accordingly, we presume

that K is low while implementation and deviation costs are high when institutional structure is well-designed, and *vice versa*. To summarize, the pair of utilities for both of players (U_v, U_p) are defined as follows:

1. $U_v(m_i, y_i, R), U_p(\theta_i, m_i, y_i, R)) = (r_v, r_p)$,

2. $U_v(m_i, C, A), U_p(\theta_i, m_i, C, A)) = (f(m_i), \theta_i f(m_i) - h(m_i))$,

3. $U_v(m_i, D, A), U_p(\theta_i, m_i, D, A)) = (g(m_i), K + \theta_i g(m_i) - c(m_i))$.

Before defining the Perfect Bayesian Nash Equilibrium (PBNE) for this signaling game Γ defined above, note that a behavior strategy for the politician after observing his type, should consist of a draft decision $m_i \in M$ (we are focusing on only pure strategies to maintain simplicity), and a function y_i: $M \rightarrow Y$ which determines the implementation decision for an approved draft m_i. Therefore, the politician's strategy is a function $\beta(\Theta) = \big(m_i(\Theta), y_i(m_i, \Theta)\big)$, and the voter's strategy is a function ω: $M \rightarrow A$ where behaviors are pure strategies on the action sets.

Similar to the definition of Nash Equilibrium for signaling games, we will require the following conditions for the tuple of strategies and beliefs $((\omega, \beta)\mu)$, to be a PBNE of the signaling game Γ we have defined above:

Definition 1 *Behavior strategies* (ω^*, β^*) *where* $\beta^*(\theta_i) = \big(m_i^*, y_i^*(m_i)\big)$ *, constitute* ***a PBNE*** *with the belief structure* μ *if and only if* $\forall_i \in \{H, L\}$.

1. *(Sequential Rationality)*

   (a) (for the Voter:) $\omega^*(m) = \arg\max \Sigma_i \mu((\theta_i|m) U_v\big(m, y_i^*(m), \omega(m)\big)$,

   (b) (for the Politician:) $U_p\big(\theta_i, m_i^*, y_i^*(m_i), \omega^*(m_i)\big) \geq$

   $U_p\big(\theta_i, m_i, y_i(m_i), \omega^*(m_i)\big) \forall m_i, y_i$,

   and

2. *(Consistency of Beliefs)* $\forall m \in [0,1]$,

   (a) $\mu(\theta_h|m) + \mu(\theta_l|m) = 1$

   (b) $m_h^* \neq m_l^*$ *implies* $\mu(\theta_h|m_h^*) = 1$ *and* $m_h^* = m_l^*$ *implies* $\mu(\theta_h|m_h^*) = \pi(\theta_h)$.

From now on, we will use the notation as follows:

$\mu(\theta_h|m) = \mu(m)$ and $\mu(\theta_l|m) = 1 - \mu(m)$.

An essential part of the model is the signal that the politician sends, namely the constitution draft. We assume that this signal is common knowledge. That is, once the politician proposes a constitution draft, both the public and the politician should be able to assess its quality or the extent to which it contributes to public interest, by grading that draft with a real number in the interval [0,1]. The fact that the constitution drafts in the real life are accessible for each citizen justifies this assumption. Moreover, there are information channels such as television, radio, internet, newspapers where the properties of a constitution draft are discussed. Now, we will make more assumptions about the costs, benefits, and utilities.

The utility to a voter from a well-implemented constitution should be greater than her reservation utility since otherwise the process will end up with rejection of the constitution, which is not the case in the real life. Therefore, it is plausible to assume it. Also, her utility should be less than her reservation utility when the constitution is not well-implemented. Otherwise, the voter will always approve the draft, which makes the referendum and public opinion irrelevant in this process. Hence, here we normalize the reservation utility of the voter to 0. Lastly, the utility to a voter from a well-implemented constitution draft $f(m)$ should be increasing in m because the quality of a constitution is represented with m and is defined according to its contribution to public interest.

Assumption 1 *For all* $m \in [0,1],\ f(m) > 0,\ g(m)\ < 0, r_v = 0.$

Using this assumption, we aim to capture the basic facts regarding the voter's welfare because public interest is mainly represented by the well-being of voters in the paper. Accordingly, a properly implemented constitution will increase both the voter's welfare and public interest. The benefit the voter gets will increase with the influence of the constitution on the formation of a democratic political environment and to the protection of property and human rights for given social and political structures and dynamics. Similarly, when a constitution draft, which was accepted under such positive expectations, is not implemented properly, that is, when legal, political, and economic institutions and organizations implied by the constitution are not established, the society's well-being is less than the initial level. As the constitution is the fundamental 'social contract' arranging relations among social

actors and determining rights and responsibilities of citizens, its preparation requires more 'social energy' than ordinary laws. Furthermore, it is very difficult to correct initial wrong steps due to bureaucratic inertia and path-dependency of political processes. Thus, we can claim that a failed constitution-making process has both short and long run costs to the society. By assuming that $g(m)$ is negative, we capture these adverse effects.

We set $f(m_i)$ equal to m_i since the welfare of voters should increase with the quality of an accepted draft when a constitution is implemented properly. This is the simplest form we can assume, and m_i is satisfactory for practical use in the model. Similarly, the welfare of voters from deviation, $g(m_i)$, is equal to $-m_i$. It is negative and a decreasing function of the quality of initial draft. Actually, this form of function is not required to achieve the equilibria below, however it can be justified by the indignation that will be aroused by a deviation from a better draft.

Assumption 2 $f(m_i) = m_i,\ g(m_i) = -m_i$.

For the reservation utility of politician, we assume that $(r_\theta) = -inf$. Indeed, this assumption is made since it allows us to have equilibria only in which the politician offers a constitution draft. This is because we analyze the process of constitution making. Also, note that situations where the process of constitution making is not yet initiated are outside of the scope of the paper. Using this assumption, we have an initiated constitution-making process whatever the underlying reason is.

We assume that the implementation cost of the draft $h(m_i)$ to be equal to$-m_i^2/2$. Note that $h'(m_i) < 0$. That is, the cost resulting from implementing a better draft will be higher. This is because of the fact that a new constitution refers to new and better institutions and organizations, which necessitate more time and resource in establishing them. Conversely, the cost of implementation of a bad constitution will be lower because this type of constitution does not include better institutions and organizations requiring more time and resource to establish them. Also, note that the politician only implements constitutions properly under a well-designed institutional structure. Accordingly, we assume that there is a positive relationship between the quality of institutional structure and implementation costs. Moreover, $h''(m_i) < 0$. When institutional structure is well-designed, and when a higher quality of constitution draft is offered, implementation costs will be higher. Therefore, we use a quadratic form. Also, technically, it captures the idea that the utility that a politician with the type θ_i gets from implementing the constitution properly should be maximized when the quality of draft is equal to θ_i. Note that the utility of a politician from the implementation of a constitution is $\theta_i f(m_i) - h(m_i) = \theta_i m_i - m_i^2/2$, which is maximized at θ_i. The intuition behind this choice is the idea that the functional forms we employ should lead to a direct revelation of types in the equilibrium if there is no deviation after the approval of a constitution draft.

We set deviation cost $c(m_i)$ equal to $\alpha(m_i)$. α mainly reflects the level of the quality of institutional structure. A higher α represents a well-designed

institutional structure, including better institutions, which give rise to a higher cost for the politician who deviates from his commitment. This assumption is realistic and compatible with the political setting in modern democracies because the politician who deviates from his commitment loses reputation and power in the next elections under a well-designed institutional setting due to transparency and accountability inherent in the well-designed institutional structures. Also, note that the politician in our model deviates for rent from interest groups in the rent seeking processes if the politician pursues his own interest. This rent is likely illegal. In this case, if institutions are well-designed, the politician is punished by laws. These are absolute costs for the politician who deviates from his commitment for rent and those costs increase along with a well-designed institutional structure. As a result, there is a positive relationship between the quality of institutional structure and deviation costs. For that reason, we choose $c(m_i)$ as an increasing function of m_i because deviation from a higher commitment representing better constitution should lead to higher cost. Linear form is used to maintain simplicity.

Assumption 3 $h(m_i) = -m_i^2/2, c(m_i) = \alpha(m_i)$.

4 Equilibrium Constitutions

Next proposition is the direct consequence of assumption 1.

Proposition 1 *There is no equilibrium where both types of politician deviate from the approved draft.*

Proof. Let $s_l = (m_l, D), s_h = (m_h, D)$ in a PBNE. Then, the expected payoff for the voter $U_v(s_l, s_h, s_v) = -\big(1 - \mu(m_l)\big)m_l - \mu(m_h)m_h < 0$ from assumption 1.

However, $U_v(s_l, s_v, R) = r_v = 0 > U_v(s_l, s_h, s_v)$ rejecting any draft is a profitable strategy for the voter. Therefore, there exists no equilibrium in which both types of politician deviate in the implementation period.

4.1 The politician's type and the voter's strategy

The voter is omniscient except the actual realization of the politician's type. Hence, she should always reject the draft for which she can deduce that the politician, whatever his type is, will not implement the draft properly. Without any positive expectation, the voter gets $g(m)$ and prefers the reservation utility.

To solve the equilibria, we have to consider the strategies of players. Consider the voter's strategy. The voter will accept the draft m if to implement the constitution properly is more profitable than deviating for both types of politician since we assume that $f(m) > 0$ for all m. That is, if both types of politician implement the draft properly, the best response for the voter is to approve it. Before proving it, we define:

Definition 2 *The set I_θ is implementation set for a given type of politician θ, if and only if $m \in I_\theta$ implies $U_p(\theta, m, C, A) \geq U_p(\theta, m, D, A)$.*

In words, for a given type, if implementation is more profitable than deviation, the draft is included in the implementation set of politicians.

Claim 1 I_θ is an interval.

Proof. Note that $P(x) = U_\theta(x, C, A) - U_\theta(x, D, A) = \theta x - x^2/2 - K + \alpha x + \theta x$ is a concave function. Let $x, z \in I_\theta$, then $P(x) > 0, P(z) > 0$. Hence $P(y) > 0$,

where $y = \omega x + (1-\omega)z, \omega \in [0,1]$, implying $y \in I_\theta$ too. Henceforth, we will use implementation interval instead of implementation set.

Since, in our model, the high-type politician pays attention to the welfare of voters more, the implementation interval of high-type includes the low-type's interval. Note that our model implicitly assumes that benefits and costs in the situation where the politician merely pays attention to public interest are only dependent on his type. Rent, implementation costs, and deviation cost are independent from the type of politician. In other words, the type of politician is related to the extent to which he pursues public interest. If the politician aims to maximize his own interest rather than the well-being of voters or public interest, he is a low-type politician, and *vice versa*. Hence, the direct implication of the previous definition is the following lemma.

Lemma 1 $I_l \subset I_h$, (*For a given* m, *if deviation is more profitable than implementation for a high-type politician, then it is also profitable for the low-type*.

Proof. Note that we have assumed that $\theta_h > \theta_l$. Let $m \notin I_h$, then high-type deviates, $\theta_h\big(f(m) - g(m)\big) - h(m) - K + c(m) < 0$, and from our assumption about the utility of voters $f(m) - g(m) \geq 0$. These two conditions imply that $\theta_l\big(f(m) - g(m)\big) - h(m) - K + c(m) < 0$ which means deviation is also profitable for low-type for $m \notin I_l$. Therefore, the definition of implementation interval implies that the low-type's interval is a subset of high-type's interval.

In this lemma, we continue to cover self-evident facts. The type of politician considering the well-being of voters will always get a higher utility from a proper implementation of the approved constitution. Similarly, he will suffer from a higher cost in the case of deviation. Thus, for a given draft in which the low-type politician considers implementation more profitable than deviation, the high-type politician will prefer implementation rather than deviation. In this context, we can directly define some equilibria as being improbable and leave them out of consideration. We also conclude that the voter accepts the draft when it is in the implementation interval of low-type because she believes that both types implement the approved draft properly for the given interval.

4.2 Equilibrium analysis of the Γ

Corollary 1 *There is no equilibrium where the high-type politician deviates in the implementation stage.*

Proof. Suppose there exists an equilibrium where $s_h = (m_h, D)$. Let $s_l = (m_l, X)$. If $m_h \neq m_l$, then the voter should reject $m_h$in the equilibrium. If $m_h = m_l = m$, then $U_l(m, D, A) > U_h(m, D, A) > U_h(m, C, A) > U_l(m, C, A)$ by assumption 3. Therefore, X should be equal to D in the equilibrium. Then, by assumption 1, the voter will not accept m.

Because we consider only pure strategies, we can only have two types of equilibria: pooling and separating. One should observe that deviation is possible only in pooling equilibria since in a separating equilibrium the voter can deduce the type of politician and his optimal behavior about the implementation of the

constitution for a given draft. Therefore, she will always reject the drafts, which will not be implemented properly, whenever she is able to detect the type. In other words, there does not exist any separating equilibrium where at least one type of politician deviates from an approved draft in the equilibrium.

Consequently, we have the following types of equilibrium, except trivial ones where both types are rejected. If an equilibrium is pooling then from corollaries we can say that the high-type should implement the draft, therefore there are two possible types of pooling equilibria, (i) both types of politician implement the draft, (ii) the high-type implements where the low-type deviates. In all separating equilibria, both types of politician should either implement the draft or will be rejected. Therefore, there are again two possible types of separating equilibrium, (i) both types of politician implement the draft, (ii) the high-type implements where the low-type is rejected.

Although we choose functional forms for costs and benefits, we do not put assumptions on parameters K, α, θ_i and μ for now since they will enable us to derive conditions to have different equilibria for different relationships among them. Using those parameters, we will be able to interpret the effects of institutional components such as rent, deviation costs, and implementation costs in the equilibria.

At this point, before deriving the conditions of parameters for the equilibrium, we will explain how to solve the equilibria. To this aim, we employ a useful

graphical analysis, which is applicable to all the relationships between parameters manipulating the equilibrium strategies of both politician and voter in the model.

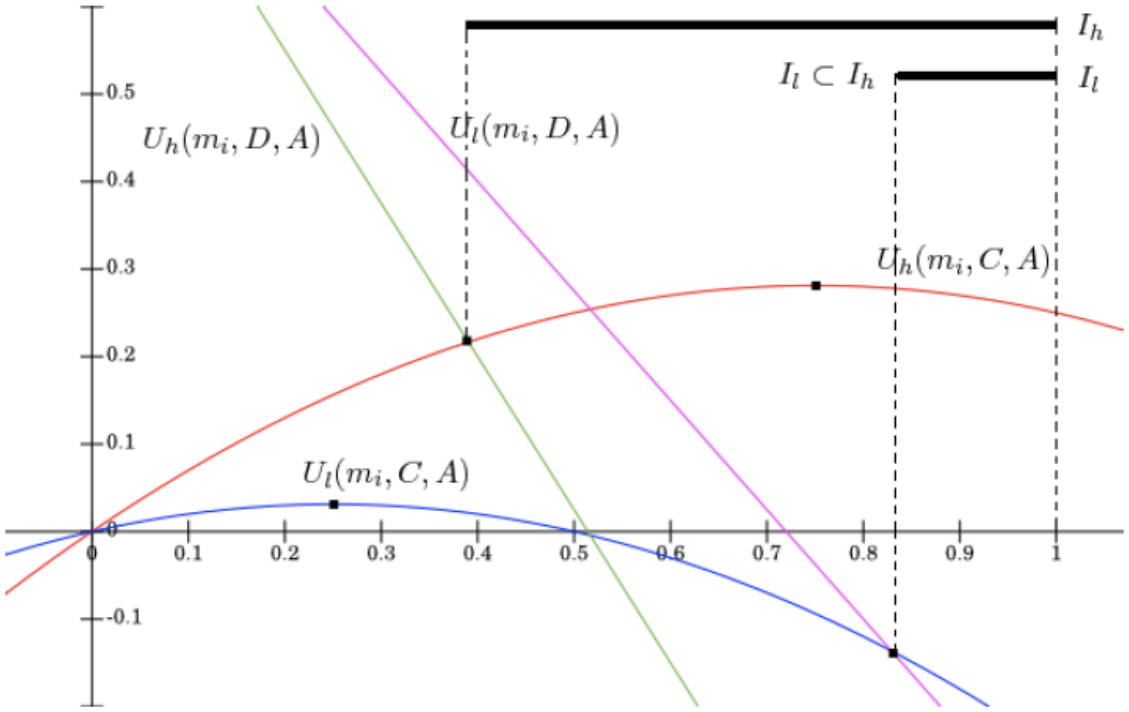

Figure 1. Equilibria where $\theta_h = 3/4, \theta_l = 1/4, K = 0.9, \alpha = 1$.

We start with a graph in which we analyze $U_h(m_i, C, A)$, $U_h(m_i, D, A), U_l(m_i, C, A), U_l(m_i, D, A)$. In Figure 1, m_i lying on the x-axis represents the utilities for both types of politician and both of the cases where they deviate from or implement the draft accepted in the referendum. Accordingly, the functions in the figure refer to the type-dependent utilities for the politician and whether the draft is being implemented properly or not. The lines on up-right illustrates the implementation interval. Note that implementation interval I_θ is defined as the set of m_i such that $U_\theta(m_i, C, A) \geq U_\theta(m_i, D, A)$. With this

illustration, we are able to see that implementation interval for a low-type politician is included in the one for high-type.

Also, we analyze the voter's belief and decision through interpreting utilities in Figure 1. Note that for m_i in the region in which is not included in I_h or I_l, the voter will not approve the draft since she believes that the approved draft will not be implemented properly independently from the politician's type. Hence, we can directly conclude that her strategy will be to reject the draft if $m_i \notin I_h$. Moreover, we can say that if $m_i \in I_l$, she can make sure that the approved draft will be implemented properly again independently from the politician's type, thus she will approve those drafts. In these two cases, the belief about the type of politician is irrelevant to whether the voter will decide to approve or reject. The only part where her belief makes a difference in the equilibrium is $I_h \backslash I_l$. For $m_i \in I_h \backslash I_l$, her belief will be the determinant of her decision. The voter's problem is to check whether $\mu(m(f(m) - \big(1 - \mu(m)\big)g(m) > 0$ or not. To have a PBNE, the belief $\mu(m)$ for $m \in I_h \backslash I_l$ should be consistent. Moreover, it should satisfy more conditions when we consider the refinements for the PBNE. These conditions will be considered.

4.3 Strategic behavior

We will investigate an equilibrium for all the domains formed by a difference in the relationships between parameters and solve the game through classifying the conditions on the types of politician with respect to implementation intervals. That is, we will check whether $\theta_{i,j} \in I_{i,j}$ or not. Thus, we aim to account for the effect

of strategic behavior on the making of constitutions. Before solving the equilibrium for this game, we have to assume that an implementation interval starting at a point before 1 should also include 1. This assumption is made to ensure that there is no implementation interval included in interval [0,1], which makes the solution of the game much simpler without harming the characterization of the equilibrium. To have this condition, the next assumption should be made:

Assumption 4 $\max I_i = (2\theta_i + \alpha) + \sqrt{(2\theta_i + \alpha)^2 - 2K} > 1$.

First, if $\theta_l \in I_l$, from Lemma 1, $\theta_l \in I_h$. Then, assumption 4 and $\theta_h > \theta_l$ imply that θ_h is also included in both I_l and I_h. There is a unique equilibrium satisfying when this condition holds in which both types reveal themselves.

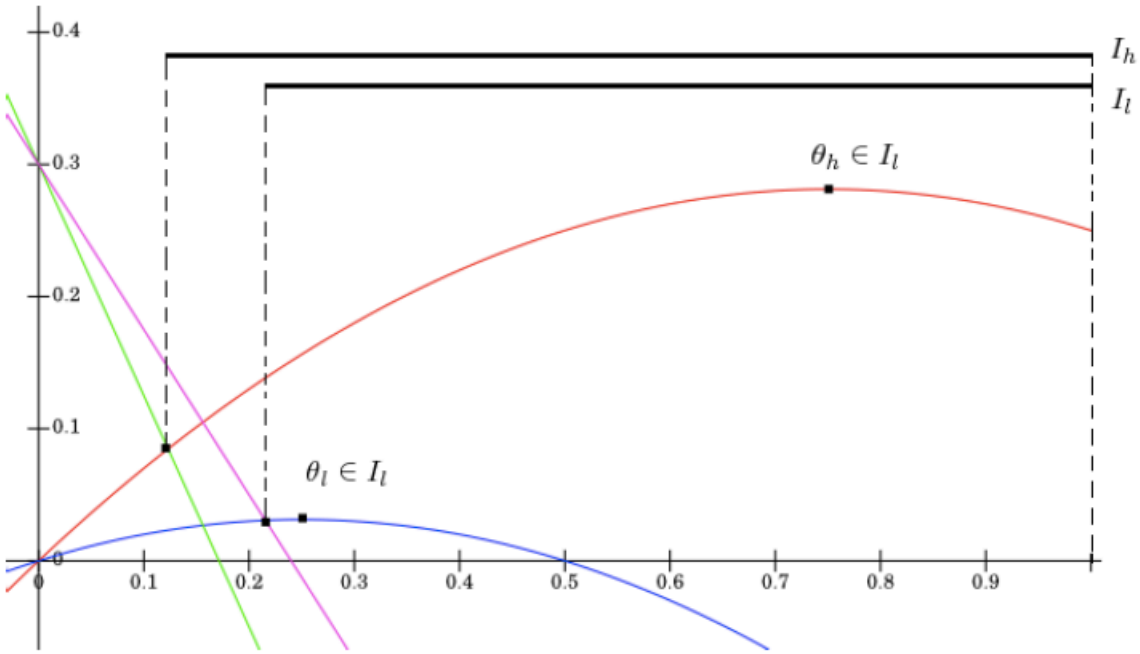

Figure 2. Equilibria where $\theta_l \in I_l$ and $\theta_h \in I_l$ ($\theta_h = 3/4, \theta_l = 1/4, K = 0.3, \alpha = 1$).

Figure 2 depicts the equilibria where $\theta_l \in I_l$ and $\theta_h \in I_l$. When $\theta_l \in I_l$, the high-type politician knows that $\theta_h \in I_h$ and $\theta_h \in I_l$. Therefore, he knows that the voter will accept $m_h = \theta_h$ since both types will implement such a draft. Note that, revealing his type ($m_h = \theta_h$), the politician maximizes his utility in his implementation interval. To achieve higher utility, he has to send a very low signal, which is not included in his implementation interval, and to deviate from it, as depicted in Figure 2. However, we know from Lemma 1, when $m_h \notin I_h$, $m_h \notin I_l$. Therefore, we can conclude that the voter will definitely reject such a draft. Hence, the high-type politician will reveal his type in the equilibrium.

Equilibrium 1 $s_h = (\theta_h, C), s_l = (\theta_l, C), s_v = (Accept\ iff\ m \in I_l), \mu(m) = 0$ *for all* $m \in I_h \backslash \{\theta_l\}$ *is the unique equilibrium satisfying the intuitive criterion when* $\theta_l \in I_l$.

We have considered the condition $\theta_l \in I_l$. As illustrated in Figure 3, for $\theta_l \notin I_l$, we will consider several cases. If $\theta_h \in I_l$, we claim that the only equilibrium may be such that $m_h = \theta_h,\ m_l = \min I_l$.

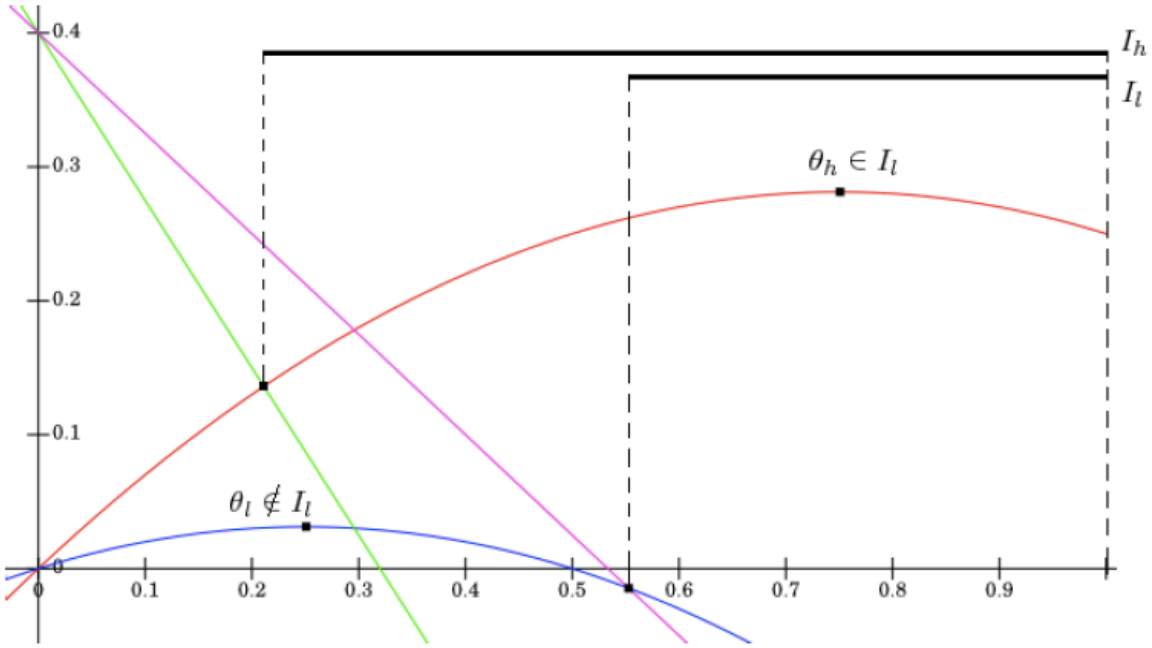

Figure 3. Equilibria where $\theta_h \notin I_l$ *and* $\theta_h \in I_l$ ($\theta_h = 3/4, \theta_l = 1/4, K = 0.4, \alpha = 0.5$).

Similar to the equilibrium for the previous part $\theta_h \in I_l$, therefore the high-type politician guarantees $U_h(\theta_h, C, A)$ by choosing $m_h = \theta_h$ since the voter approves an offer in $I_l \subset I_h$. For higher utilities, he has to propose $m_h \notin I_h$, but in this domain the voter will definitely reject any draft. Hence, the only m_h in the equilibrium is θ_h. For the low-type politician, the drafts, which are not included in the high-type's implementation interval, will always be rejected. For the drafts in I_l, the voter will always accept the draft and the low-type politician will implement it properly. For the drafts in $I_l \backslash I_h$, the utility of low-type politician depends on the belief of voters. For example, if the voter believes that for $m \in I_h \backslash I_l, \mu(m) > 1/2$, it will be the best response for the voter to accept any draft in I_h. Therefore, the low-type politician can maximize his utility by choosing $m_l = \min I_h$. Formally,

the strategy for the low-type politician $s_l = (\min I_h, D)$ and the strategy for the high-type politician $s_h = (\theta_h, C), s_v = \{\text{Accept if and only if } m \in I_h\}$ with the belief $\mu(m) = \pi \geq 1/2$ will constitute a separating PBNE, while the conditions $\theta_l \notin I_l$ and $\theta_h \in I_l$ are satisfied.

However, this equilibrium does not survive the intuitive criterion. Note that, in the equilibrium, the high-type politician gets a utility, which is greater than all alternatives, $U_h(\theta_h, C, A) > U_h(m, x, y)$ for all $x \in \{C, D\}, y \in \{A, R\}, m \in I_h$. Hence, the voter has to update his beliefs such that $\mu(m) = 0$ for all $m \in I_h \setminus \{\theta_h\}$. This means that the low-type politician will be detected if $m_l \in I_h \setminus \{\theta_h\}$. Therefore, the voter will not accept any draft less than $\min I_l$. The low-type politician's utility is maximized at $\min I_l$ since $U_l'(m_i, C, A) < 0$.Also, $U_l(\min I_l, C, A) > U_l(m_i, D, A)$ for all $m_i \in I_l$. Therefore, the only set of PBNE satisfying intuitive criterion is:

Equilibrium 2 $s_h = (\theta_h, C), s_l = (\min\ I_l, C), s_v = (Accept\ iff\ m \in I_l), \mu(m) = 0$ *for all* $m \in I_h \setminus \{\theta_h\}$ *is the unique equilibrium satisfying the intuitive criterion when* $\theta_h \notin I_l$ *and* $\theta_h \in I_l$ in Figure 3.

In the previous equilibria, θ_h was in I_l. Now consider the case where $\theta_h \in I_h \setminus I_l$ and $\pi > 1/2$. Notice that we do not make a difference between the cases where θ_l is in I_h or not since for $m_l \notin I_l$ deviation is always more profitable than proper implementation and hence $U_l(m_l, C, A)$ is irrelevant for $m_l \notin I_l$. In this case, there will be only a set of pooling equilibria in which $m_l = m_h = \theta_h$.

In this case, there exists an equilibrium where the high-type politician reveals himself, then implements the draft properly, and the low-type one mimics him, but

deviates from the approved draft and the voter accepts the drafts $m \in I_l \bigcup \{\theta_h\}$ with beliefs such that $\mu(\theta_h) = \pi > 1/2$. We claim that this equilibrium payoff for the high-type politician dominates the other possible payoffs resulting from signals $m_h \in I_h$.

Therefore, intuitive criterion implies that the voter's belief should be such that $\mu(m) = 0$ for $m \in I_h \backslash \{\theta_h\}$. This eliminates all other equilibria since the voter will not accept any other drafts than the ones in I_l or θ_h. The high-type then had to propose θ_h since $\theta_h \in I_h$ and $I_l \subset I_h$ implies for all $m_h \in I_l, U_h(\theta_h, C, A) > U_h(m_h, C, A) > U_h(m_h, D, A)$. Also, note that the voter will accept the draft θ_h since his belief $\mu(\theta_h) > \pi$. Therefore, the low-type will have $U_l(\theta_h, D, A)$ if he proposes θ_h. If he proposes any $m_l \in I_l$, his utility will be lower than $U_l(\theta_h, D, A)$. Any other drafts will be rejected by the voter. This means he will choose $m_l = \theta_h$ in the equilibrium. Hence the only equilibrium surviving intuitive criterion is:

Equilibrium 3 $s_h = (\theta_h, C), s_l = (\theta_h, D), s_v = (Accept\ iff\ m \in I_l \bigcup \{\theta_h\})$, $\mu(\theta_h) = \pi, \mu(m) = 0$ *for all* $m \in I_h \backslash \{\theta_h\}$ *is the unique set of equilibria satisfying the intuitive criterion when* $\theta_l \notin I_l$ and $\theta_h \in I_h \backslash I_l, \pi > 1/2$.

This equilibrium is illustrated in Figure 1. The conditions for this type of equilibrium are the same as the previous one, but $\pi < 1/2$. In this case, the voter will only accept the drafts in I_l. Note that if the voter accepts any draft $m \in I_h \backslash I_l$ (for $m \notin I_h$, it is dominated strategy to accept), then the low-type will choose the signal that is the best one for him among the accepted drafts and he will deviate in the implementation. However, in this case the consistency of beliefs should imply

that the expected utility of the voter is negative for that signal and should not be approved by the voter. Therefore, the voter can only accept the drafts in I_l and both types of politicians will maximize their utilities by proposing a draft $m_h = m_l = \min I_l$. We do not need to use intuitive criterion in this case. The only equilibrium is:

Equilibrium 4 $s_h = (\min I_l, C), s_l = (\min I_l, C), s_v = (Accept\ iff\ m \in I_l)$, $\mu(\min I_l) = \pi$, *for all* $m \in I_l$ *is the unique equilibrium* $\theta_l \notin I_l$ *and* $\theta_h \in I_h \setminus I_l, \pi < 1/2$.

This equilibrium is also illustrated in Figure 1. Now consider the case where $\theta_h \notin I_h$ and $\pi > 1/2$. In this case, we will give an example of equilibrium and then eliminate other equilibria via intuitive criterion and find the unique set of equilibria. Consider the strategies $s_h = (\min I_h, C), s_l = (\min I_h, D), s_v =$ (Accept iff $m \in I_l \bigcup \{\min I_h\}$) with the belief $\mu(\min I_h) = \pi, \mu(I_h \setminus I_l) = 0$. This is an equilibrium and we claim that this equilibrium payoff for the high-type dominates the other possible payoffs resulting from signals $m_h \in I_h$. Therefore, intuitive criterion implies that the voter's belief should be such that $\mu(m) = 0$ for $m \in I_h \setminus \{\min I_h\}$ in the equilibria satisfying intuitive criterion. This eliminates all other equilibria since the voter will not accept any other drafts than in I_l or $\min I_h$. The high-type then had to propose $\min I_h$ since $\min I_h \in I_h$ and $I_l \subset I_h$implies for all $m_h \in I_l$, $U_h(\min I_h, C, A) > U_h(m_h, C, A) > U_h(I_h, D, A)$. Also, note that the voter will accept the offer $\min I_h$ since her belief $\mu(\min I_h) \geq \pi$. Therefore, the low-type will have $U_l(\min I_h, D, A)$ if he proposes min I_h. If he proposes any $m_l \in I_l$, his

utility will be less than $U_l(\min I_h, D, A)$. Any other draft will be rejected by the voter. This means he will choose $m_l = \min I_h$ in the equilibrium. Hence the only equilibrium surviving intuitive criterion is:

Equilibrium 5 $s_h = (\min I_h, C), s_l = (\min I_h, D), s_v = (Accept\ iff\ m \in I_l \cup \{\min I_h\}), \mu(\min I_h) = \pi, \mu(m) = 0$ *for all* $m \in I_h \backslash \{\min I_h\}$ *is the unique equilibrium satisfying the intuitive criterion when* $\theta_h \notin I_h, \pi > 1/2$.

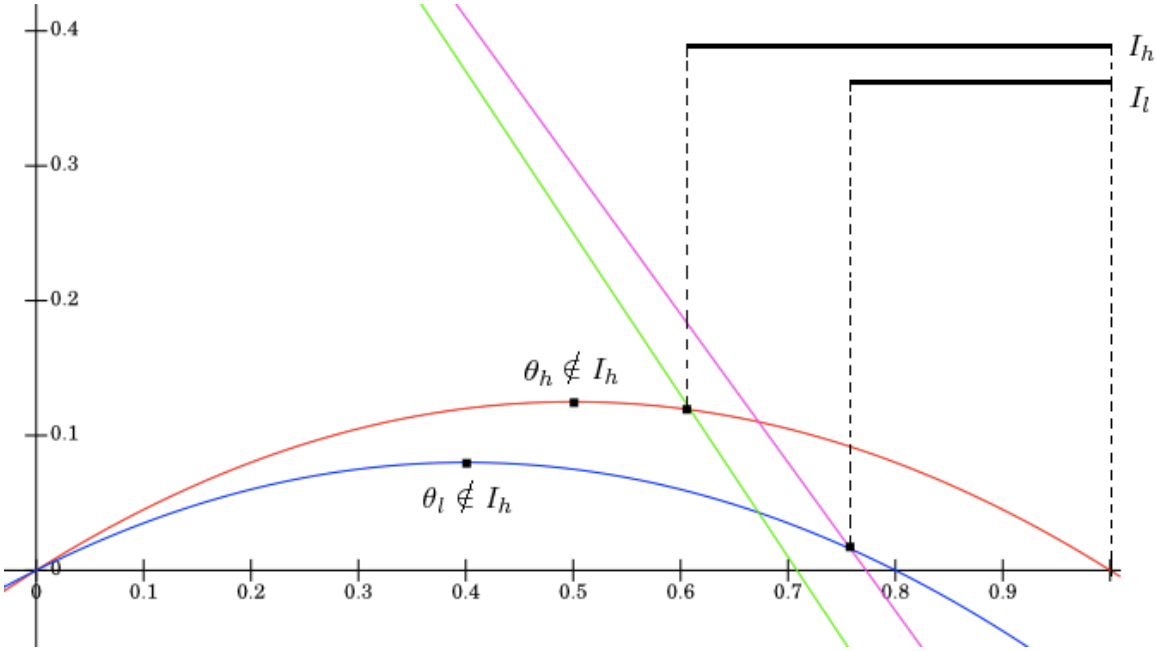

Figure 4: Equilibria where $\theta_h = 1/2, \theta_l = 2/5, K = 0.85, \alpha = 0.7$.

We consider the case where $\theta_h \notin I_h$ and $\pi < 1/2$ in Figure 4. This case actually is a subcase of fourth type of equilibria. In this case, without using intuitive criterion, we can conclude that the drafts, which are not in I_l, will not be accepted by the voter. This directly implies that both types of politicians will choose $\min I_l$ to propose since their utilities are maximized for the smallest element in I_l, both of them then will implement the draft properly. The unique equilibrium is:

Equilibrium 6 $s_h = (\min I_l, C), s_l = (\min I_l, C), s_v = (Accept\ iff\ m \in I_l)$, $\mu(\min I_l) = \pi$, *for all* $m \in I_l$ *is the unique equilibrium* $\theta_h \notin I_h, \pi < 1/2$.

4.4 Institutional constraints, equilibrium constitutions and the voter's utility

This section is motivated by the idea that institutional setting is influential in the process of constitution making under strategic behavior. To this aim, we mathematically investigate the effects of parameters, which represent the interaction between institutional structure, the politician's behavior and the well-being of voters, on equilibrium constitutions. Thus, we aim to explain the dynamics of a constitution-making process such as the voter's welfare or public interest, strategic behavior, and the role of institutions.

Since the aim of this study is to understand the effect of the parameters K, α, θ, and μ in the constitution making process on the welfare of voters, we try to reveal the voter's utility for any given parameter tuple. Actually, U_v^{EQ}: $[0,1]^3 \times \mathbb{R}^2 \longrightarrow \mathbb{R}$ can be defined as the voter's utility for given parameters $\theta_l, \theta_h, \mu \in [0,1]$ and $K, \alpha \in \mathbb{R}$. In Table 1, we create a partition and give the all types of equilibria, their conditions on parameters, the voter's utility in the equilibrium U_v^{EQ} for each part[6].

[6] First, note that the condition for $I_l \bigcap [0,1]$ is $\min I_l < 1$ is not given in the table. $\min I_l$ is computed below. For the condition $\theta_i \in I_i$,we consider the inequality $U_i(\theta_i, C, A) \geq U_i(\theta_i, D, A) \Rightarrow \theta_i\theta_i - \theta_i^2 \geq K - \alpha\theta_i - \theta_i^2$. For the condition $\theta_i \in I_j$, we consider the inequality $U_j(\theta_j, C, A) \geq U_j(\theta_i, D, A) \Rightarrow \theta_j\theta_i - \theta_i^2/2 \geq K - \alpha\theta_i - \theta_j\theta_i$.
When we are computing the voter's utility, we compute $\min I_i$. To do this, we find the roots of $\theta_i x - x^2 = K - \alpha x - \theta_i x \Rightarrow x^2 - (2\theta_i)x + K = 0$. There are two roots of this equation, $x = (2\theta_i + \alpha) \pm \sqrt{(2\theta_i + \alpha)^2 - 2K}$. To have a solution, we find a non-empty implementation interval the condition $2K < (2\theta_i + \alpha)^2$ should hold. When it holds we have to two roots, actually $\min I_i = (2\theta_i + \alpha) - \sqrt{(2\theta_i + \alpha)^2 - 2K}$ and $\max I_i = (2\theta_i + \alpha) + \sqrt{(2\theta_i + \alpha)^2 - 2K}$ gives the

Table 1. Equilibrium properties of the Γ

$\boldsymbol{Eq}$	Equilibrium Condition	Condition on Parameters	$\boldsymbol{s_h}$	$\boldsymbol{s_l}$	$\boldsymbol{s_v} = (\textbf{accept } \boldsymbol{iff}$	Type	$\boldsymbol{U_v^{EQ}}$
$\boldsymbol{Eq_1}$	$\theta_l \in I_l$	$3(\theta_l)^2 + 2\alpha\theta_l \geq 2K$	(θ_h, C)	(θ_l, C)	$m \in I_l$	Sprt	$\pi\theta_h + (1-\pi)\theta_l$
$\boldsymbol{Eq_2}$	$\theta_l \notin I_l, \theta_h \in I_l$	$2\theta_h(2\theta_l + \alpha - \theta_h) \geq 2K$, $3(\theta_l)^2 + 2\alpha\theta_l < 2K$	(θ_h, C)	$(\min I_l, C)$	$m \in I_l$	Sprt	$\pi\theta_h + (1-\pi)\min I_l$
$\boldsymbol{Eq_3}$	$\theta_l \notin I_l, \theta_h \in I_h \setminus I_l, \pi > 1/2$	$3\theta_h^2 + 2\alpha\theta_h \geq 2K$, $2\theta_h(2\theta_l + \alpha - \theta_h) < 2K$	(θ_h, C)	(θ_h, D)	$m \in I_l \cup \{\theta_l\}$	Pool	$(2\pi - 1)\theta_h$
$\boldsymbol{Eq_4}$	$\theta_l \notin I_l, \theta_h \in I_h \setminus I_l, \pi < 1/2$	$3(\theta_h)^2 + 2\alpha\theta_h \geq 2K$, $2\theta_h(2\theta_l + \alpha - \theta_h) < 2K$	$(\min I_l, C)$	$(\min I_l, C)$	$m \in I_l \cup \{\theta_l\}$	Pool	$\min I_l$
$\boldsymbol{Eq_5}$	$\theta_l \notin I_l, \theta_h \notin I_h, \pi > 1/2$	$3(\theta_h)^2 + 2\alpha\theta_h < 2K$	$(\min I_h, C)$	$(\min I_h, D)$	$m \in I_l$	Pool	$(2\pi - 1)\min I_h$
$\boldsymbol{Eq_6}$	$\theta_h \notin I_h, \pi < 1/2$	$3(\theta_h)^2 + 2\alpha\theta_h < 2K$	$(\min I_l, C)$	$(\min I_l, C)$	$m \in I_l \cup \{\min I_l\}$	Pool	$\min I_l$

Now we consider the voter's utility by evaluating equilibrium constitutions. Before analyzing the equilibria, note that we have to take into account the features of equilibrium pairs and points due the presence of pooling and separating equilibria in the game, as discussed above. In the equilibrium pair of Eq_1 and Eq_2, the voter takes the utilities $\pi\theta_h + (1-\pi)\theta_l$ and $\pi\theta_h + (1-\pi)\min I_l$. Note that when Eq_2 is observed, $\min I_l > \theta_l$, which implies that the utility of voters in Eq_2 is greater than Eq_1. To say this, we take the parameters θ_l and θ_h are as given. Similar orderings are made between Eq_3 and Eq_4 and also between Eq_5 and Eq_6.

In order to reveal the role of institutional components in the process of constitution making, we consider the effect of K and α on the well-being of voter under the different equilibrium constitutions.

Proposition 2 *For any given equilibrium,* $dU_v/dK \geq 0$ *and* $dU_v/d\alpha \leq 0$.

Proof. In all equilibria, the voter's welfare is either independent from K and α, such as in the first and third equilibria, or dependent on $\min I_\theta$, which has a positive derivative with respect to K and negative derivative with respect to α. Note that

$$\frac{U_v}{dK} = \frac{d(2\theta_i + \alpha) - \sqrt{(2\theta_i + \alpha)^2 - 2K}}{dK} = \frac{1}{\sqrt{(2\theta_i + \alpha)^2 - 2K}} > 0$$

and

$$\frac{U_v}{d\alpha} = \frac{d(2\theta_i + \alpha) - \sqrt{(2\theta_i + \alpha)^2 - 2K}}{d\alpha} = 1 - \frac{(2\theta_i + \alpha)}{\sqrt{(2\theta_i + \alpha)^2 - 2K}} < 0.$$

This proposition confirms the effect of institutional structure on equilibrium constitutions. We evaluate solutions in the context of the pairs of equilibrium because the best institutional structure yields the equilibria 1 and 2 whereas a

worse structure leads to the equilibria pair 3 and 4 and the worst institutional setting gives rise to the pair of equilibria 5 and 6. Also, note that separating equilibria are achievable only in a well-designed institutional structure, while pooling equilibria are achievable in the ill-designed institutional structures. That is, the low-type of politician has a strong incentive to hide himself by mimicking the high-type in the pairs of equilibria 3-4 and 5-6 under the bad institutional structures, while there is no reason for the low-type to mimic the high-type in equilibrium constitutions under the well-designed institutional setting. Note that all types of the same player play the same strategy in the equilibrium pairs 3-4 and 5-6 because these are pooling equilibria. The results have remarkable implications, as reported in Table 1.

First, proposition shows that the welfare of voters is maximized in the constitution equilibrium 6 under the worst institutional structure. Here, the voter's utility is at its highest level. Rent is high and deviation cost is low. Even though this outcome is hypothetically achievable, it is unachievable in the real world because the equilibrium 6 does not exist. Note that the voter will gain the highest level of welfare in this equilibrium only and only if the politician implements the constitution properly. However, the politician will deviate from his commitment in the implementation of the constitution because rent is high and deviation cost is low.

Second, proposition captures the intuition that when the quality of institutional structure deteriorates, the only thing that the politician has to do is to send a strong signal to the voter. If this signal is strong enough or if the politician's

commitment is credible, the voter will approve the draft. This is compatible with the findings from the previous subsection on the strategic behavior of politicians. However, note that institutional structure in the equilibrium 6 does not lead the politician to be consistent with his commitment. Conversely, even if the politician deviates, he will not suffer from deviation cost and he will also acquire rent. For that reason, the politician will only mimic the high-type to convince the voter, as elaborated above. That is, the politician's commitment in the referendum process is not credible since he will deviate from his commitment due to the presence of high rent and low deviation cost in the equilibrium 6 under the ill-designed institutional structure.

Third, for those reasons, the realistic outcome in this equilibrium pair is the equilibrium 5. That is, the politician will pursue his own interest and deviate from his commitment as a rational agent because he will maximize his welfare when he deviates. Thus, the voter will face the second-worst scenario.

Fourth, similar outcomes are valid for the pair of equilibria 3 and 4. The politician will have similar incentives and will deviate because rent is high and deviation cost is low in these equilibria. In this case, the voter will face the worst outcome because equilibrium constitution will be the equilibrium 3.

Fifth, in the equilibria 1 and 2, a well-designed institutional setting leads to the best outcome, which is achievable. The voter approves the draft in the referendum and the politician implements it properly when rent is low and deviation cost is high. In other words, the politician does not mimic the high-type to convince the voter in the referendum process because he does not need to offer a draft that he

cannot implement properly under such an institutional setting. As a result, both equilibria are realistic and guarantee a moderate welfare for both the voter and the politician.

Sixth, an improvement in the institutional quality reduces the variance of the voter's welfare with respect to her belief. This outcome is represented by the fact that the level of well-being for the voter in the equilibria 1 and 2 is in the middle of utility ranking.

From this proposition's results, we conclude that even though the first-best equilibrium constitution is possible under a bad institutional structure, this outcome is not achievable because it is not realistic. Instead, the second-best outcome in a well-designed institutional environment is the first-best constitution equilibrium of the real world. As a result, this proposition shows that institutions matter in the process of constitution making because institutional structure leads to the change in equilibrium constitutions. Moreover, a well-designed institutional structure with a low rent and a high deviation cost ensures a moderate level of public interest from a constitution-making process.

We assume that a politician who is not credible in his commitment due to his political background is the low-type politician in the voter's belief, and *vice versa*. Once we have that this reliance to politicians is low as given, namely $\pi < 1/2$, we can conclude that the voter's welfare will increase in the case where politicians are reliable, namely $\pi > 1/2$.

Proposition 3 *Given $\theta, K,$ and α, an increase in π can only lead to a loss in U_v.*

Proof. Note that if θ, K, and α are given there can be only shift from equilibrium 4 to 3 or equilibrium 6 to 5 with an increase in π, if it exceeds the critical point 1/2. In those cases, the voter's welfare either increases from $(2\pi - 1)\theta_h$ to $\min I_l$ or from $(2\pi - 1)\ \min I_h$ to $\min\ I_l$.

This proposition investigates the relationship between the belief of voters and the credibility of the politician's commitment and the effect of this interaction on equilibrium constitutions. The results confirm that an increase in the belief of voters leads to the loss in her welfare when the politician's type is low. Note that the welfare differences between the equilibria 3 and 4 or between the equilibria 5 and 6 are rather high since the low-type deviates in the equilibria 3 and 5. This suggests that if the politician's commitment is not credible or if the voter believes that the politician will deviate from his commitment in the implementation of a constitution, then she will not accept the draft in the referendum. However, note that, again, the voter gains the highest welfare in the equilibria 4 and 6 in which the low-type politician does not deviate. This means if the politician can send a strong signal referring to a credible commitment, the belief of voters will increase and thus, she will accept the draft in the referendum. However, the low-type politician can ensure the belief of voters in his commitment only by mimicking the high-type in the referendum because he will definitely deviate from his commitment in the implementation of a constitution, as revealed before. For that reason, we define the equilibrium constitutions 4 and 6 as unachievable equilibria because it is not realistic to expect that the low-type will implement the constitution properly

even though he can convince the voter by sending a strong signal in the referendum process. In this case, the equilibria 1 and 2 are the first-best outcomes in the real world because those equilibrium constitutions are achievable solutions. As a result, this solution suggests that an increase in the belief of voters leads to a loss in their welfare when the politician's commitment is not credible since the low-type politician can convince voters only by mimicking the high-type.

The last analysis about the changes in parameters will be the one where we fix the available rent, the deviation cost, and the ex-ante probability.

Proposition 4 *For any given equilibrium,* $dU_v/dK \geq 0$ *and* $dU_v/d\theta_l \geq 0$.

Proof. In all equilibria, the voter's welfare is dependent on θ_h and θ_l or both. Note that in all equilibria the multiplier of θ_h or θ_l are positive and the derivative $d\text{min}l_i \ d\theta_i$ is greater than 0:

$$\frac{d\text{min}I_i}{d\theta_i} = \frac{d(2\theta_i + \alpha) - \sqrt{(2\theta_i + \alpha)^2 - 2K)}}{d\theta_i} = 2\left(1 - \frac{2\theta_i + \alpha}{\sqrt{(2\theta_i + \alpha)^2 - 2K}}\right) > 0$$

Also note that $d \ \text{min}I_i \ d\theta_j = 0$. Hence, we can conclude that $dU_v/d\theta_h$ and $dU_v/d\theta_l \geq 0$.

Here, we change the type of politician or the level of type under different scenarios in order to understand the extent to which the politician's type impacts on the voter's well-being. When both types of politicians are benevolent, we capture the equilibrium 1. In other words, if we assume that both types are high in the model, this condition leads to the equilibrium 1. The low-type leads to the equilibrium 2. When both types are self-interested, we achieve the equilibria 6 and 5. When politicians care about the voter's welfare in the moderate levels, we

capture the equilibria 3 and 4. When we evaluate these findings as the equilibrium pairs, the results are consistent with the previous findings. For instance, the voter can gain the highest utility in the equilibrium 6. However, note that the type of politician in this scenario is low. If the politician is low-type or self-interested, he will deviate as confirmed in the proposition 3. This means that the equilibrium 6 does not exists or is not realistic in this equilibrium pair. In other words, we should expect that the voter will face the constitution in the equilibrium 5 rather than the equilibrium 6 under this scenario. Accordingly, if the politician is self-interested, this will lead to the worst equilibrium constitution, compared to the other scenarios. On the other hand, when we compare the pair of equilibriums 6 and 5 to the pairs of equilibrium 1-2 and 3-4, it is clear that an increase in the type of politician guarantees a higher utility for the voter.

Overall, although those results suggest that the well-being of voters increases when the type of politician is high, the highest utility is still not possible in any constitution equilibrium in which the politician pursues public interest rather than his own interest. Conversely, the highest utility for the voter is only possible under equilibrium constitution 6 if the politician is self-interested. Consequently, we conclude that it is not possible to maximize public interest in the process of constitution making, even if the politician is benevolent because this equilibrium is not realistic and achievable.

Conclusion

The main findings of the paper are fourfold. First, the voter always approves the constitution independently from the institutional structure if she believes that

the constitution is well-prepared. Second, the voter gets the highest utility under the bad institutional structure if the politician does not deviate from his commitment in the implementation of the constitution. Third, even though a constitution designed in a good institutional setting does not lead to the highest utility for the voter, it guaranties a moderate level in the well-being of voters. Fourth, if there is no institutional safeguard and if the politician is self-interested, the voter gets the lowest level of well-being.

The findings suggest that strategic behavior and institutional constraints matter in the making of constitutions. Both high- and low-type politicians will behave strategically and not properly implement the constitution when rent is available for the politician even if he is altruistic. In other words, in the presence of strategic behavior and institutional incompleteness, public interest is not maximized in the constitution-making process. On the other hand, increasing deviation costs for the politician and decreasing the implementation costs of a constitution, a well-designed institutional setting can exclude rent seeking activities and strategic behavior and thus, lead the politician to properly implement the constitution, even if he is self-interested.

However, the constitution does not lead to the highest utility for the voter in a well-designed institutional setting. In contrast, the voter gets the highest utility from the low-type politician's commitment under a bad institutional structure. Nevertheless, note that the low-type politician will deviate under a bad institutional structure. For that reason, he has to convince the voter to approve the draft by mimicking the high-type in order to hide his type because there is no

an institutional setting to force the politician not to deviate from his commitment. Otherwise, the low-type will reveal his type if he offers a different draft from the high-type politician. The voter cannot force the politician to carry out his commitment at the implementation stage without institutional safeguards. This suggests that we cannot rely on the credibility of a politician's commitment under an ill-designed structure even if public interest can be maximized by this type of politician because this outcome is not realistic. Instead, we have to rely on institutional commitments. The findings suggest that the politician will not deviate from his commitment under a well-designed institutional setting and the voter will still get a moderate well-being level even if it is not the first-best outcome.

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