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ELECTORAL PROCESS AND UNION SUPPORT: VOTING IN AN ARGENTINE OIL PROVINCE

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Abstract

This paper examines the process of negotiation between two candidates vying for the executive office in a province of Argentina and an oil union there that plays a crucial role in the electoral process. It studies the various possible outcomes when each candidate negotiates with the union for its support. The basic theme that emerges from this analysis is that institutional frameworks, which define term limits, and the existence of discretional funds, are significant influences in the union's decision. Yet it also shows the dynamics of political survival in provinces highly dependent on the royalties generated by extractive activities, and in which most employees are unionized and follow their union leader's directives.

INTRODUCTION

In some provinces of Argentina traditional political parties have lost members and with them their electoral base[1]. The political context of the province of Santa Cruz is a case in point. In addition to the attrition of political party membership, there is an evident government fiscal dependence on the royalties generated by extractive mining and oil activities.[2] Furthermore, there is a concentration of workers represented by a powerful union affecting the province's main economic activity, the oil industry, and consequently the province's fiscal resources. All these features give the union a leading role that conditions the electoral process, since the union's endorsement of a candidate affects, a priori, the decision of voters, who, in part, follow its political directives. This paper studies the process of negotiation between the contenders for power who seek to capture enough votes to win the election and with it the political rent the office grants, and the union, which, aware of the key role it plays, demands, in exchange for its support, a share of that political rent.

The study was conducted using as a framework the concept that the ability of political actors to achieve cooperative agreements and to enforce them is crucial for the generation of public policies. We use a "political transaction cost approach"[3] to address the findings of our work. Based on "Game Theory" -through Subgames Perfectness Nash Equilibrium- we formalize the existing processes of negotiation that imply defining the political actors, their timeframes[4], the frequency of interaction and the negotiation context. The analysis involves negotiations and exchanges accomplished in the present tense (spot transaction type) and inter-temporal transactions. These exchanges depend on the actors´ preferences, their incentives and the constraints they face.

The results of this paper show that within institutional frameworks that impose term limits in which the Incumbent can use discretionary funds to gain the union's support, the union will support the Incumbent. The result is opposite when candidates' bids are available once the winner takes office. This paper also shows that in electoral processes with no term limit and in

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[1] The voters are more independent. They are not aligned with a political party. Candidates have become more important than parties. The electorate is less ideologically oriented and it demands concrete solutions rather than general principles (See Rosendo Fraga, Konrad Adenauer Foundation, 2000: 44. Also Orlando D' Adamo and Virginia García Beaudoux, 2003, analyze the loss of the party-bound vote.

[2] This feature is essential for distinguishing those provinces that have a union that is powerful but unable to affect the fiscal resources of its province.

[3] Using the approach of transaction costs is better when it is supplemented by other perspectives analysing the same phenomenon. See Oliver Williamson (1985) p xii. The transaction cost approach also provides a better understanding of political decisions made in an instant of time and an explanation for the behavior of political organizations and economies over time. See Douglas North (1990).

[4] The timeframe and the rate of impatience that are taken into consideration by each political actor to make his decisions directly affect the probability of reaching sustainable inter-temporal agreements. Fudenberg and Tirole 1991.

which the Incumbent can use discretionary funds to gain the union's support, the union will support the Incumbent, thereby explaining why in provinces with these features the leaders manage to stay in power.

The roadmap for the paper is as follows. In the next section (2) we explain the formal model. We then analyze the model, positing that political candidates intend to gain the union's support making closed bids that become effective once the winner has taken the executive office. In section 3, we also analyze the model, positing that the Incumbent, in an effort to gain the union's support, can include in his bid discretionary funds[5] that might be transferred before the election on condition of union support. Finally, we analyze the case where the negotiation between each candidate and the union occurs in an institutional context that does not impose a term limit. Section 4 is the Conclusion.

2. MODEL

Let us assume a race between two and only two political candidates whom we shall call I (Incumbent) and R (Rival). I and R are competing for the provincial executive office limited to two terms. Also, we assume there is a labour union that we shall call S and which plays a key role in the electoral process. Finally, there are voters who may be union (V) or non-union (B) voters.

In the model, voters seek to maximize the benefits of public goods, politicians seek to maximize the political rent that the office provides, and the union seeks to maximize the wining candidate's bid.

Voters

Voters cast their vote according to the expected benefits of public goods that depend on their perception of the politician's skill in managing public resources and depend as well on oil prices (as an exogenous variable)[6]. Each voter has his own perception of that skill. Consequently, the utility function of voters will be:

$$U = \theta_i + O + c \tag{1}$$

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[5] Discretionary funds are those public resources that are not specifically earmarked within the fiscal budget and are available to the Incumbent.

[6] The price of oil affects the royalties that Argentina's provinces receive from the exploitation of this non-renewable resource. In our model, we assume that royalties are directly linked to oil prices and there are no official prices agreed on between the federal government and the provinces.

where U is the expected utility of public goods, θ_i is the ability of candidate i, O is the variation in the price of oil, which we assume functions as an exogenous variable subject to random shocks, and c is a constant and positive parameter, large enough to make U always positive.

O has a uniform probability distribution with values between $O^{\min}$ and $O^{\max}$ [$O^{\min} = -O^{\max}$] and an expected value of O,

$$E(O) = 0 \qquad (2)$$

$$VAR(O) = \frac{\left(O^{\max} - O^{\min}\right)^2}{12} \qquad (3)$$

The unionized voter adopts a behavior known as corporate vote. Thus, this type of voter knows the skill of each candidate through the support provided by the union. This electoral behavior implies that unionized voters receive the directive from the union's leader about which candidate to support and how to vote. Most voters are less interested in whom they vote for than in pleasing the union's leader. Unionized voters know that if they vote for the candidate supported by the union, the possibility of receiving more public goods is higher, which is what voters ultimately seek. The reason for this is that the political rent appropriated by the union is distributed into more benefits for their members, such as health plans, vacations and specialized lawyers to defend them in civil litigations. In this context, the candidates know that the probability that a unionized voter votes in his favour if the union supports him is equal to 1 (one), and 0 (zero) if the union does not support him.

The non-unionized voter casts his vote[7] based on private information. We assume that he knows the Incumbent's skill, but not the opponent's. The non- unionized voter's behavior corresponds to a type of behavior called "rational choice."

In this way, we posit that the skill of politicians (θ) in managing public goods has a uniform distribution which belongs to the interval [0, 1]. Before each election, the non- unionized voters observe the Incumbent's skill and they vote for him on that probability. (For example, with a parameter of 0.6, they vote for him with 60% of probability).
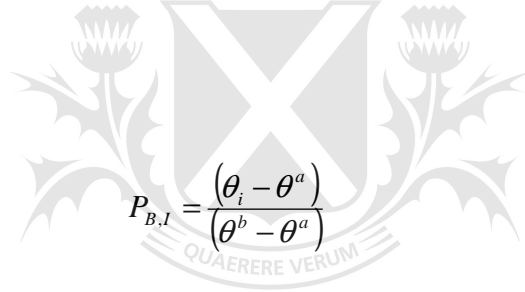
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[7] In our model we assume that there is a compulsory vote and voters cannot abstain.

If θ^a and θ^b are the minimum and maximum values of candidates´ skills, assuming that $\theta^b > \theta^a \geq 0$ and in keeping with the uniform probability function where $\theta_i \sim \mathrm{U}\left[\theta^a ; \theta^b\right]$ $i = I, R$, we conclude that the probability observed (θ_i) by voters is equal to

$$P(\theta_i) = \frac{(\theta_i - \theta^a)}{(\theta^b - \theta^a)}$$ (4)

, from which it follows that the expected value is equal to $E(\theta_i) = \frac{(\theta^a + \theta^b)}{2}$ and the variance is equal to $VAR(\theta_i) = \frac{(\theta^b - \theta^a)^2}{12}$.

Out of the belief that the Incumbent's skill is θ_i, the probability that a non-unionized voter votes for the Incumbent will be:

$$P_{B,I} = \frac{(\theta_i - \theta^a)}{(\theta^b - \theta^a)}$$ (5)

Likewise, out of the belief that the Incumbent's skill is θ_i, the probability that a non- unionized voter votes for the Rival will be:

$$P_{B,R} = 1 - \frac{(\theta_i - \theta^a)}{(\theta^b - \theta^a)} = \frac{(\theta^b - \theta_i)}{(\theta^b - \theta^a)}$$ (6)

Electorate

We posit that the electorate is composed of unionized voters (V), whose percentage over the total voters (T) is less than the percentage of non-unionized voters (B) over the total. In other words, $\frac{V}{T} < \frac{B}{T}$ and $\frac{V}{T} + \frac{B}{T} = 1$.

Knowing how unionized and non-unionized voters vote, we can establish that the probability that a unionized voter will vote for the Incumbent (I) when the union supports the latter is

$$P_{V,I}^{I} = 1$$

The probability that a unionized voter votes for the Rival (R) when the union supports the Incumbent. $P_{V,R}^{I} = 0$

The probability that a unionized voter votes for the Rival (R) when the union supports the latter. $P_{V,R}^{R} = 1$.

The probability that a unionized voter votes for the Incumbent (I), when the union supports the Rival. $P_{V,I}^{R} = 0$

Union

The union decides which candidate to support[8]. The union's decision depends on the expected political rent that will emerge from the negotiations between the union and each candidate. In the negotiation process, the union, through its leader, decides whom it will support by comparing the expected political rents offered by each candidate and giving priority to maintain its leadership within the union's political arena[9]. Leaders reduce the risk of losing their leadership the more resources they have.

The union's decision to choose one candidate over another is exclusive. The union makes its decision before the political parties announce their candidates[10]. At the moment of making its decision, the union knows how much political rent each candidate is offering and how likely its success can be. If the union supports the candidate who loses the election, the union's expected rent is null and the union's leader has put his leadership on the line. If the union supports the winning candidate, the political rent obtained is positive.

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[8] In our analysis we do not consider the alternative case in which the union is neutral in its decision. This is a potential line of research.

[9] By union political arena the reader must understand leaders' internal dispute to be appointed general secretary. The union leader uses the union's resources to negotiate delegates´ support of union's directives. Not having resources increases the possibility that some other member of the union will dispute his leadership.

[10] This occurs because bids might include elective positions on party lists. Situations like this one can be clearly exemplified through the electoral process in the province of Neuquén, Argentina, in 2013, in which the secretary general of the oil union ran as candidate for a national senate position.

Before continuing we will introduce the probabilities recognized by the union that will be useful for our future analysis.

- q_I^I is the probability that the Incumbent wins the election given that the union supports him.

$$q_I^I = \frac{V}{T} + P_{B,I}\frac{B}{T} = \frac{V}{T} + \frac{\left(\theta_I - \theta^a\right)}{\left(\theta^b - \theta^a\right)}\frac{B}{T} \tag{7}$$

- q_R^I is the probability that the Incumbent wins the election given that the union supports the Rival.

$$q_R^I = 0\ \frac{V}{T} + P_{B,I}\frac{B}{T} = P_{B,I}\frac{B}{T} = \frac{\left(\theta_I - \theta^a\right)}{\left(\theta^b - \theta^a\right)}\frac{B}{T} \tag{8}$$

- q_R^R is the probability that the Rival wins the election given that the union supports him.

$$q_R^R = \frac{V}{T} + P_{B,R}\frac{B}{T} = \frac{V}{T} + \frac{\left(\theta^b - \theta_I\right)}{\left(\theta^b - \theta^a\right)}\frac{B}{T} \tag{9}$$

- q_I^R is the probability that the Rival wins the election given that the union supports the Incumbent.

$$q_I^R = 0\ \frac{V}{T} + P_{B,R}\frac{B}{T} = P_{B,R}\frac{B}{T} = \frac{\left(\theta^b - \theta_I\right)}{\left(\theta^b - \theta^a\right)}\frac{B}{T} \tag{10}$$
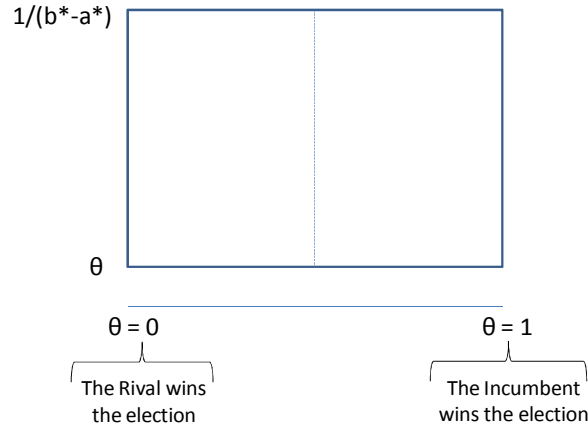
3. DYNAMIC OF THE MODEL

In order to assess how the model works we will start with a very simple case and then we will make the model more complex. Suppose that all non-unionized voters share the same sense of the Incumbent´s skill where

$\theta_I = 0 \rightarrow P_{B,I} = 0 \rightarrow U\left(\theta_R\right) > U\left(\theta_I\right) \rightarrow$ The Rival wins the election.

$\theta_I = 1 \rightarrow P_{B,I} = 1 \rightarrow U\left(\theta_R\right) < U\left(\theta_I\right) \rightarrow$ The Incumbent wins the election.

For these two extreme cases, the role of the union in the electoral process is ruled out, since the result of the election is defined by the skills of the candidates. Graphically,

1/(b*-a*)

θ

θ = 0

θ = 1

The Rival wins
the election

The Incumbent
wins the election

Additionally, if $\theta_I \approx \dfrac{1}{2} \rightarrow P_{B,I} \approx \dfrac{1}{2} \rightarrow U(\theta_R) = U(\theta_I)$

1/(b*-a*)

θ

( )

θ ≈ 1/2

The union´s support is crucial to win
the election.
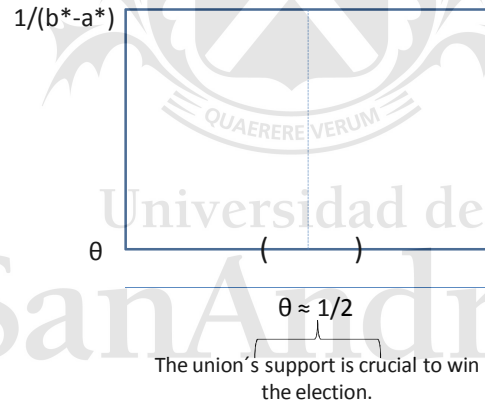
This last case represents the situation where the non-unionized voters share a similar perception of each candidate´s skill and, consequently, the probability of winning for each candidate depends exclusively on which candidate the union decides to support. Our model attempts to explain how the union's decision becomes essential to determine the winner of the election when the candidates´ skills are considered almost equal.

CASE NO. 1

Knowing the fundamental role played by the union to define the election, the candidates must make their promises to the union (let us call S_I the promise made by the Incumbent and S_R the promise made by the Rival). In this case we assume that candidates' offers will become

effective only on taking office. With $q_I^I S_I = \left[\dfrac{V}{T} + \dfrac{(\theta_I - \theta^a)}{(\theta^b - \theta^a)} \dfrac{B}{T} \right] S_I$ as the union's expected

political rent, given that the union supports the Incumbent, and $q_R^R S_R = \left[\dfrac{V}{T} + \dfrac{(\theta^b - \theta_I)}{(\theta^b - \theta^a)} \dfrac{B}{T} \right] S_R$

as the union's expected political rent given that the union supports the Rival, the union will support the Incumbent if

$$q_I^I S_I > q_R^R S_R \tag{11}$$

, from which we conclude that the larger q_I^I is compared with q_R^R, the smaller the transfer the Incumbent must offer to gain the union's support. In other words, the greater the skill of the Incumbent, the lower the transfer the Incumbent should offer. Thus, the union will support that candidate who represents the higher expected promise.

Meanwhile, candidates make their decisions in order to maximize the political rent the executive office confers.

Thus, the Incumbent will face the following problem:

To maximize the Expected Value of his political rent $= q_?^I(N - S_I)$ where $q_?^I$ is the probability that the Incumbent wins the election given that he has or doesn't have the union's support, and where N is the Incumbent's expected political rent. If the Incumbent makes a bid and he gains the union's support, his expected political rent will be $= q_I^I(N - S_I) = \left[\dfrac{V}{T} + \dfrac{(\theta_I - \theta^a)}{(\theta^b - \theta^a)} \dfrac{B}{T} \right] (N - S_I)$.

If the Incumbent makes a bid and he fails to gain the union's support, the expected political rent will be $= q_R^I(N) = \left[\dfrac{(\theta_I - \theta^a)}{(\theta^b - \theta^a)} \dfrac{B}{T} \right] (N_I)$.

Consequently, the Incumbent will face $q_I^I(N - S_I)$ vs $q_R^I(N)$, from which we can conclude that he wants to gain the union's support if

$$q_I^I(N - S_I) \geq q_R^I(N) \tag{12}$$

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$$N \frac{\left(q_I^I - q_R^I\right)}{q_I^I} \geq S_I \qquad (13)$$

$$N \left[\frac{V\left(\theta^b - \theta^a\right)}{V\left(\theta^b - \theta^a\right) + B\left(\theta_I - \theta^a\right)} \right] \geq S_I \qquad (14)$$

whereby we conclude that the higher the political rent offered by the executive office is, the higher will be the bid the Incumbent makes. So, the same will occur the greater the difference is between the probability of winning the election with versus without the union´s support. In other words, how crucial the union's influence is in the election.

Likewise, the Rival will face the following problem:

To maximize the Expected Value of his political rent $= q_?^R\left(M - S_R\right)$, where $q_?^R$ is the probability that the Rival wins the election given that he has or doesn't have the union's support, and where *M* is the Rival's expected political rent. If the Rival makes a bid and he gains the union's support, his expected political rent will be $= q_R^R\left(M - S_R\right) = \left[\frac{V}{T} + \frac{\left(\theta^b - \theta_I\right)}{\left(\theta^b - \theta^a\right)} \frac{B}{T} \right]\left(M - S_R\right).$

If the Rival makes a bid and he fails to gain the union's support, his expected political rent will be $= q_I^R\left(M\right) = \left[\frac{\left(\theta^b - \theta_I\right)}{\left(\theta^b - \theta^a\right)} \frac{B}{T} \right]\left(M\right).$

Consequently, the Rival will face $q_R^R\left(M - S_R\right)$ *vs* $q_I^R\left(M\right)$, from which we conclude that he wants to gain the union's support if

$$q_R^R\left(M - S_R\right) \geq q_I^R\left(M\right) \qquad (15)$$

$$M \frac{\left(q_R^R - q_I^R\right)}{q_R^R} \geq S_R \qquad (16)$$

$$M \left[\frac{V\left(\theta^b - \theta^a\right)}{V\left(\theta^b - \theta^a\right) + B\left(\theta^b - \theta_I\right)} \right] \geq S_R \qquad (17)$$

from which we conclude that the higher the political rent offered by the executive office is, the higher will be the bid made by the Rival. So, the same will occur the greater the difference is between the probability of winning the election with versus without the union´s support. In other words, how crucial the union's influence is in the election.

Since each candidate has his expected political rent, we can safely assume that they are not equals $(N \neq M)$. After all, to the Incumbent winning again will mean just one more term as head of the executive, while the Rival stands to gain a first term with the added possibility of a second. So, $N < M$ and $M = N + jN$ where j is the probability of winning a second term.[11]

With the aim of comparing the expected political rents, we calculate $E\left(q_R^R\right)$ and $E\left(q_I^I\right)$, and we conclude that $E\left(q_R^R\right) = \dfrac{V}{T} + \dfrac{1}{2}\dfrac{B}{T}$ is equal to $E\left(q_I^I\right) = \dfrac{V}{T} + \dfrac{1}{2}\dfrac{B}{T}$. Thus, $E\left(q_R^R\right) = E\left(q_I^I\right)$. For more extensive calculations, see appendix 1.

Within a framework of verifying that each candidate has his own value of expected political rent, bids are closed and each candidate has his dominant strategy (maximum bid), we can apply the Theory of Second Price Auctions[12].

By this theory, according to which the Incumbent´s maximum bid is $q_I^I S_I^{\max} = N\left(q_I^I - q_R^I\right) = N\left(\dfrac{V}{T}\right)$ (the best Incumbent´s strategy revealing his true value for the union´s support), the Rival´s maximum bid is $q_R^R S_R^{\max} = M\left(q_R^R - q_I^R\right) = M\left(\dfrac{V}{T}\right)$ (the best Rival`s strategy revealing his true value for the union´s support) and $E\left(q_R^R\right) = E\left(q_I^I\right)$, we conclude that $E\left(q_R^R\right)S_R^{\max} > E\left(q_I^I\right)S_I^{\max}$ because the Rival is the one who values the political rent of the office more than the Incumbent, and thereby gains the union´s support.

EQUILIBRIUM

Based on the Theory of Second Price Auction we can argue that there is a unique Subgame Perfect Nash Equilibrium $\left[S_I^{\max}; S_R^{\max}; R\right]$. Both the Incumbent and Rival reveal their true value

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[11] It is important to note that the Incumbent (by his own experience) has accurate data about the expected political rent offered by the executive office (how much rent he might obtain once he has taken office) in comparison to the Rival. Nevertheless, we assume that this difference is not big enough to make $N \neq M$.

[12] A deeper analysis of the necessary conditions to apply the Theory of Second Price Auction can be found in "A theory of auctions and competitive bidding" (p 1100) by Milgrom and Weber (1982).

for the union´s support through their bids, with the Rival`s being higher than the Incumbent´s. Ultimately, the union supports the Rival.

CASE NO. 2

Once we have reached an equilibrium with the simplest model, we can add complexity to it to obtain other results. With this purpose, we assume that the Incumbent can include in his bid those discretionary funds that the office has at its disposal to gain the union´s support. In this way, the Incumbent is going to make them available before the electoral process on condition of receiving the union's support. In this case, we assume that the union has a rate of impatience (β) regarding receiving the funds before or after the election.

In case no. 1 we showed that even when the Incumbent makes his best bid, the union supports the Rival. Now, the Incumbent decides to include discretionary funds to make his bid more attractive and thereby increase the probability of gaining the union´s support.

Discretionary funds deriving from his political rent are available to the Incumbent. We posit that resources of this kind do not accrue interests from one period to another, so he has no incentive to hoard them.

The Incumbent faces the problem of deciding which part of his bid to offer in the form of discretionary funds and which part to offer in the form of a promise for the next period; he has the alternative of offering a bid of purely discretionary funds. As we have learned in case no.1 we know that if the whole offer is a promise for the next period, the Rival gains the union's support. This problem will be easily solved if the Incumbent knows the union's rate of impatience, but we assume he does not know it. However, the Incumbent does know both the size of the discretionary funds "C" (where we assume that $C \leq N$ [13]) and his bid, but he cannot know how much the Rival is bidding. In this context, the Incumbent's bid consists of both discretionary funds (C) and those resources to be transferred once he takes office (S_I). The Rival's offer, on the contrary, consists of resources to be transferred once he has taken office.

Assuming that the union is very impatient such that $\beta = 0$ and positing that the Incumbent decides to include discretionary funds in his bid, with $C > 0$, the union will face the following bids:

$$q_I^I\left(\beta S_I + C\right) \ vs \ q_R^R\left(\beta S_R^{\max}\right) \tag{18}$$

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[13] In our model we have assumed that $C \leq N$. We have yet to consider the case in which discretionary funds fail to cover the Incumbent's expected value of political rent.

$$q_I^I\left(0S_I + C\right) \; vs \; q_R^R\left(0S_R^{\max}\right) \tag{19}$$

$$E\left(q_I^I\right)\left(C\right) > 0 \tag{20}$$

Thus, when the union is so thoroughly impatient that it sets the future´s value at zero, it supports the Incumbent. Merely by including very low values of C in his bid, the Incumbent gains the union's support.

On the other hand, if we assume that the union is very patient, such that $\beta = 1$, the union will face the following bids:

$$q_I^I\left(\beta S_I + C\right) \; vs \; q_R^R\left(\beta S_R^{\max}\right) \tag{21}$$

$$q_I^I\left(S_I + C\right) \; vs \; q_R^R\left(S_R^{\max}\right) \tag{22}$$

From which we can see that the Incumbent's bid $\left(S_I + C\right)$ is valued by the union as it was in case no. 1, in which the entire bid was a promise to be fulfilled once he has taken office. Let us therefore postulate that $\left(S_I + C\right) = S_I^{\max}$ and we obtain:

$$q_I^I\left(S_I^{\max}\right) \; vs \; q_R^R S_R^{\max} \tag{23}$$

$$E\left(q_I^I\right)\left(S_I^{\max}\right) \; < \; E\left(q_R^R\right)S_R^{\max} \tag{24}$$

It can be seen that if the union is totally patient it will support the Rival, since the union does not care whether it receives the funds in the present or in the future. Thus, as occurred in case no. 1, in which $q_I^I S_I^{\max} = N\left(q_I^I - q_R^I\right)$ and $q_R^R S_R^{\max} = M\left(q_R^R - q_I^R\right)$, the union supports the Rival because his bid $\left(M\right)$ is higher than the one offered by the Incumbent $\left(N\right)$.

If we now assume that $\beta \neq 0$ and $\beta \neq 1$, the union will support the Incumbent if:

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$$q_I^I S_I^{\max} > q_R^R S_R^{\max} \qquad (25)$$

From case no. 1 we know that $q_I^I S_I^{\max} = N\left(q_I^I - q_R^I\right)$ and $q_R^R S_R^{\max} = M\left(q_R^R - q_I^R\right)$. Rewriting the previous equation we obtain:

$$N\left(q_I^I - q_R^I\right) > M\left(q_R^R - q_I^R\right) \qquad (26)$$

Whereby, the Incumbent's bid can be offered in the form of discretionary funds (C) and/or a promise to fulfill once he has taken office (S_I). Within this framework, the union will support the Incumbent if:

$$\left[\beta S_I + C\right]\left(q_I^I - q_R^I\right) > \beta M\left(q_R^R - q_I^R\right) \qquad (27)$$

$$\left[\beta S_I + C\right]\frac{V}{T} > \beta M\frac{V}{T} \qquad (28)$$

$$C > \beta M - \beta S_I \qquad (29)$$

$$C > \beta M - \beta(N - C) \qquad (30)$$

$$C - \beta C > \beta M - \beta N \qquad (31)$$

$$C > \frac{\beta}{(1-\beta)}(M - N) \qquad (32)$$

The union will support the Incumbent if the discretionary funds included in his offer are greater than the difference between M and N affected by the ratio $\dfrac{\beta}{1-\beta}$. The more patient the union is, the more discretionary funds the Incumbent must include in his bid. The greater the difference between M and N is, the greater the discretionary funds to be included in the offer are.

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EQUILIBRIUM

From equation (32), we analyse the second parenthesis on its right side $(M - N)$. Bearing in mind that $M = N + Nj = N(1 + j)$, we assume (as an extreme case) that all voters decide to vote for the Rival for a second term, so that the probability today of being elected for a second term period is equal to 1 $(j = 1)$. Thus, we obtain:

$$M = (1 + 1) \tag{33}$$

$$M = N2 = N + N \tag{34}$$

$$M - N = N \tag{35}$$

So, we have proved that the greatest difference between the value of M and N is N.

Now, we observe the first parenthesis on the right side of equation (32) and we recall that the union makes its decision not only taking into account the candidates´ bids but also giving priority to the union leader's position within the political arena of the union. Based on these assumptions, we conclude that the union will choose the possibility of having the funds in the present in order to reinforce its leadership within the union. Consequently, $\dfrac{\beta}{1 - \beta}$ will tend to zero.

Once we have proved that the first parenthesis on the right side of equation 19.22 will tend to zero; that the second parenthesis of the same side cannot be higher than N; and since $C \leq N$, we conclude that $C > \dfrac{\beta}{1 - \beta} N$ when $C = N$.

Within the framework of the Theory of Second Price Auction, in which the Incumbent cannot know how much the Rival is bidding and he also cannot accurately determine the exact level of discretionary funds to include in his bid, it is a dominant strategy for the Incumbent to use all available discretionary funds in his offer. In other words, $C = N$. On the other hand, the Rival reveals his true value for the union's support through his bid $\left(S_R^{\max}\right)$. Finally, the Incumbent´s bid is higher and the union supports the Incumbent. In this way, we can say that there is only one Subgame Perfect Nash Equilibrium. $\left[C = S_I^{\max}; S_R^{\max}, I\right]$

CASE NO. 3

After concluding that the union supports the Incumbent when he makes an offer using discretionary funds, we now study the case in which the negotiation between each candidate and the union occurs in a province such as Santa Cruz, Argentina, which does not set term limits.

For this case we make the same assumption we made in case no. 2 in which the Incumbent can make an offer using discretionary funds in order to gain the union's support. Unlike cases 1 and 2 in which the negotiation was conducted within a timeframe of one additional term for the Incumbent (t=1) and two terms for the Rival (t=2), we extend the analysis to the case in which the timeframe tends to n periods for both candidates (t=n). Now we begin studying the negotiation when the candidates' timeframe consists of two and three periods ahead (t=2, 3) and there is no limit on running for office.

We begin the analysis positing that the timeframe of the negotiation is two periods ahead (t=2) and candidates can be re-elected indefinitely. In cases 1 and 2 we assume that $M = N(1 + j)$ since the Rival, at the moment of the negotiation, could run for the office for one more term than the Incumbent. In the present case the two candidates can run for the same number of terms, so the difference in the expected political rent we found in cases 1 and 2 disappears and we can assume that both candidates face the same expected political rent (N).[14] Therefore, the union will face the following offers:

$$q_{I,0}^{I}\left(S_{I,0}\right) + q_{I,1}^{I}\left(\beta S_{I,1}\right) \; vs \; q_{R,0}^{R}\left(\beta S_{R,0}\right) + q_{R,1}^{R}\left(\beta^2 S_{R,1}\right) \tag{36}$$

, in which $q_{I,0}^{I}$ and $q_{I,1}^{I}$ must be read as the probability that the Incumbent wins the election given that the union supports him during the first and second term period respectively. The same interpretation holds for $q_{R,0}^{R}$ and $q_{R,1}^{R}$.

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[14] Assuming that candidates have the same expected political rent for the n elections implies that today the probability (inferred by each of them) of winning the election during the n periods is the same for both candidates. (y) being the probability that the Incumbent wins the election in the term (i) and (j) being the probability that the Rival wins the election in the term (i), we assume that $N(1 + y + y^2 + ... + y^n) = N(1 - y)^{-1} = N(1 - j)^{-1} = N(1 + j + j^2 + ... + j^n)$.

Since the Incumbent cannot know how much the Rival is bidding, though he knows the results[15] of cases 1 and 2, his dominant strategy will be to reveal his true value for the union's support through his maximum bid. Thus, the union will face the following bids:

$$q_{I,0}^I\left(S_{I,0}^{\max}\right) + q_{I,1}^I\left(\beta S_{I,1}^{\max}\right) \; vs \; q_{R,0}^R\left(\beta S_{R,0}^{\max}\right) + q_{R,1}^R\left(\beta^2 S_{R,1}^{\max}\right) \tag{37}$$

Since $E\left(q_{I,0}^I\right) = E\left(q_{I,1}^I\right) = ... = E\left(q_{I,n}^I\right)$ and $E\left(q_{R,0}^R\right) = E\left(q_{R,1}^R\right) = ... = E\left(q_{R,n}^R\right)$[16], we obtain that:

$$q_{I,0}^I\left(S_{I,0}^{\max}\right) + q_{I,0}^I\left(\beta S_{I,1}^{\max}\right) \; vs \; q_{R,0}^R\left(\beta S_{R,0}^{\max}\right) + q_{R,0}^R\left(\beta^2 S_{R,1}^{\max}\right) \tag{38}$$

$$q_{I,0}^I\left(S_{I,0}^{\max} + \beta S_{I,1}^{\max}\right) \; vs \; q_{R,0}^R\left(\beta S_{R,0}^{\max} + \beta^2 S_{R,1}^{\max}\right) \tag{39}$$

From case no. 1 we know that $E\left(q_I^I\right) = E\left(q_R^R\right)$. If we rewrite the previous equation, we obtain:

$$\left(S_{I,0}^{\max} + \beta S_{I,1}^{\max}\right) \; vs \; \left(\beta S_{R,0}^{\max} + \beta^2 S_{R,1}^{\max}\right) \tag{40}$$

In this context, the Incumbent´s best bids for the first and second term are equal to C and N respectively, where C is offered on condition of being transferred during the negotiation period (t-1 period) and N is offered to be transferred in next period (t). In both cases, bids are transferred one period before taking the office for which the bid has been made. On the other hand, the Rival´s best bids are equal to N for both periods and they will be available once the Rival has taken office. Given that the Incumbent can transfer his bid in period t-1 using discretionary funds, we obtain:

$$C + \beta N \; vs \; \beta N + \beta^2 N \tag{41}$$

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[15] From case no.1 the Incumbent knows that if his bid is a promise for the next period, the Rival will gain the union's support. From case no. 2 the Incumbent knows that if his bid is offered in the form of discretionary funds, he will obtain the union´s support.

[16] See appendix 2 for further calculations.

$$C + \beta N \ \ vs \ \ N\left(\beta + \beta^2\right) \tag{42}$$

According to case no. 2, when the Incumbent can use discretionary funds to make his offer more attractive, his best bid is $C = N$. Therefore,

$$N + \beta N \ \ vs \ \ N\left(\beta + \beta^2\right) \tag{43}$$

$$N(1 + \beta) \ \ vs \ \ N\left(\beta + \beta^2\right) \tag{44}$$

$$N + N\beta \ \ vs \ \ N\beta + N\beta^2 \tag{45}$$

$$N \ \ vs \ \ N\beta^2 \tag{46}$$

$$N \ > \ N\beta^2 \tag{47}$$

We can see that when the timeframe is two terms and the institutional framework sets no limits, the union supports the Incumbent, since it has a strong preference for receiving the funds as soon as possible.

When the timeframe is three terms, the union will face the bids $N\left(1 + \beta + \beta^2\right) \ vs \ N\left(\beta + \beta^2 + \beta^3\right)$, and by the same reasoning applied to two terms, we conclude that $N > N\beta^3$. Thus, the Union will support the Incumbent.

When the timeframe tends to n (infinite) terms, the union will face the following bids:

$$q^I_{I,0}\left(S^{max}_{I,0}\right) + q^I_{I,1}\left(\beta S^{max}_{I,1}\right) + ... + q^I_{I,n}\left(\beta^n S^{max}_{I,n}\right) \ vs \ q^R_{R,0}\left(\beta S^{max}_{R,0}\right) + q^R_{R,1}\left(\beta^2 S^{max}_{R,1}\right) + ... + q^R_{R,n}\left(\beta^n S^{max}_{R,n}\right) \tag{48}$$

Following the same assumptions that we made for the timeframes of two and three terms, we obtain:

$$N\left(1+\beta+\beta^2+...+\beta^n\right) \; vs \; N\left(\beta+\beta^2+\beta^3+...+\beta^{n+1}\right)^{17} \tag{49}$$

$$\frac{N}{1-\beta} \; vs \; N\left(\beta+\beta^2+\beta^3+...+\beta^{n+1}\right) \tag{50}$$

If we add and subtract N from the right side of the equation, we obtain:

$$\frac{N}{1-\beta} \; vs \; N\left(\beta+\beta^2+\beta^3+...+\beta^{n+1}\right)+N-N \tag{51}$$

$$\frac{N}{1-\beta} \; vs \; \frac{N}{1-\beta}-N \tag{52}$$

$$\frac{N}{1-\beta} > \frac{N}{1-\beta}-N \tag{53}$$

Thus, it is demonstrated why it is optimal for the union to support the Incumbent. Receiving discretionary funds before the election is always preferable to being merely promised them. Consequently, the union maximizes its income and the union leader strengthens his dominant position as well.

4. CONCLUSION

This work has allowed us to address a particular negotiation between two candidates vying for the executive office in a province of Argentina and a union there that plays a crucial role in that electoral process. We studied the different possible outcomes when each candidate negotiates with the union for its support. Through this paper we also can understand the dynamics of

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[17] The sum of infinite series $\left(1+\beta+\beta^2+...+\beta^n\right)$ is analogous to the approach $(1-\beta)^{-1}=\frac{1}{(1-\beta)}$. Therefore, any subsequent term becomes progressively smaller and consequently, we can use $(1-\beta)^{-1}$ for any desired degree of accuracy by an appropriate choice of the number n.

political survival in provinces that have a high dependence on the royalties generated by extractive activities, and in which most of the employees are unionized and follow their union´s leader directives.

The first result is that within institutional frameworks that set term limits and in which candidates, in order to gain the union´s support, make their bids that become effective once the winner has taken office, the union will support the Rival, since he can run for one more term, and consequently, he can promise a higher expected political rent. Besides, the size of the bid will depend on the impact that the union has in the electoral process, which will depend on the percentage of votes that the union is able to capture. The bigger the union´s impact in the electoral process is, the bigger the political rent transfers to the union will be.

Additionally, within institutional frameworks that set term limits and in which the Incumbent can use discretionary funds to gain the union's support, the union will support the Incumbent with the particularity that the full offer will become effective before the election, with the possibility of being placed on a ballot. The bargaining power of the union becomes so essential that the Incumbent must reveal his true value for the union´s support and transfer it before the election. Here emerges a potential line of research that involves studying the case in which the Incumbent faces fiscal situations in which discretionary funds fall short of his worth for the union´s support, so that the terms of negotiation must be modified.

Finally, in electoral processes with no term limits and in which the Incumbent can use discretionary funds to gain the union's support, the union will support the Incumbent not only because receiving discretionary funds before the election is always preferable to being promised them, but also because the union leader strengthens his dominant position within the union´s arena. This result explains why in provinces with the features we have described, politicians stay in power and why union leaders tend to represent the electorate through executive or legislative elective positions.

Appendix 1

Let us calculate $E\left(q_R^R\right)$ and $E\left(q_I^I\right)$ in order to prove that $E\left(q_R^R\right)=E\left(q_I^I\right)$.

Using the formula $q_R^R = \dfrac{V}{T} + \dfrac{\left(\theta^b - \theta_I\right)}{\left(\theta^b - \theta^a\right)}\dfrac{B}{T}$, we calculate its expected value and we obtain:

$$E\left(q_R^R\right) = \frac{V}{T} + \frac{\left(\theta^b - E(\theta_I)\right)}{\left(\theta^b - \theta^a\right)}\frac{B}{T}$$

$$E\left(q_R^R\right) = \frac{V}{T} + \frac{\left(\theta^b - \dfrac{\left(\theta^b + \theta^a\right)}{2}\right)}{\left(\theta^b - \theta^a\right)}\frac{B}{T}$$

$$E\left(q_R^R\right) = \frac{V}{T} + \frac{1}{2}\frac{B}{T}$$

If we do the same for q_I^I , we obtain:

$$q_I^I = \frac{V}{T} + \frac{\left(\theta_I - \theta^a\right)}{\left(\theta^b - \theta^a\right)}\frac{B}{T}$$

$$E\left(q_I^I\right) = \frac{V}{T} + \frac{\left(E(\theta_I) - \theta^a\right)}{\left(\theta^b - \theta^a\right)}\frac{B}{T}$$

$$E\left(q_I^I\right) = \frac{V}{T} + \frac{\left(\dfrac{\left(\theta^b + \theta^a\right)}{2} - \theta^a\right)}{\left(\theta^b - \theta^a\right)}\frac{B}{T}$$

$$E\left(q_I^I\right) = \frac{V}{T} + \frac{1}{2}\frac{B}{T}$$

In this way, we have proved that $E\left(q_R^R\right)=E\left(q_I^I\right)$.

Appendix 2

In order to prove that $E\left(q_{I,0}^{I}\right)= E\left(q_{I,1}^{I}\right)= .... = E\left(q_{I,n}^{I}\right)$, let us use $q_{I,0}^{I}$ to represent the probability that the Incumbent wins the election, since the union supports him in the first election process within an election process of n terms.

In this way, when the Incumbent timeframe is equal to one, as occurred in case no 1, $E\left(q_{I,0}^{I}\right)= E\left(q_{I}^{I}\right)=\dfrac{V}{T} + \dfrac{\left(E(\theta_I)- \theta^a\right)}{\left(\theta^b - \theta^a\right)}\dfrac{B}{T}$.

Recalling that θ (the Incumbent´s ability) is uniformly distributed in the interval [0-1], and the voters, before each electoral process, are aware of this variable whereby $E(\theta_I)=\dfrac{\left(\theta^a + \theta^b\right)}{2}$ does not depend on the moment in which voters observe it[18], we can conclude that whatever the number of terms for which the expected value $E\left(q_I^I\right)$ is calculated, the result will always be the same. Based on the proof of appendix 1, this result extends to $E\left(q_R^R\right)$.

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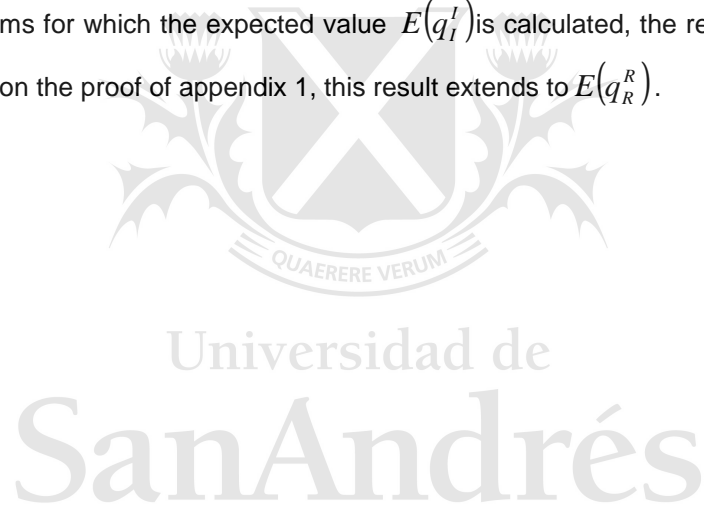
[18] Assuming that θ_I is modified over time, affecting the voters´ expectations of the Incumbent´s ability, is a potential topic for future research.

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