Clientelism as Political Monopoly*

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Abstract

We characterize political clientelism as a regime in which an incumbent holds a political monopoly over resources valuable to the voters. Through a formal model in a simple economy we study how clientelism affects policy in a democratic setting, placing special emphasis on its effects on economic redistribution. We show that political monopoly depresses (but does not eliminate) electoral competition, and gives incumbents an interest in suppressing both redistributive policies and economic development.

1 Introduction

In recent decades, new democratic governments swept aside authoritarian regimes in countries across Africa, Asia, Eastern Europe, and Latin America. Citizens of these countries, like the scholars who studied them, had high expectations for the new democracies. We expected regular,

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free, and fair elections in systems where people enjoyed constitutionally protected rights of association and speech to create broad and fairly open competition for elected offices (Dahl, 1971). And democracy held out other promises as well, such as economic development and the alleviation of poverty (Barro, 1990; Olson, 1991; Przeworski, 1990). But as time passed, it became clear that some of the expected benefits of democracy were not endogenous to it, but rather required some set of institutional arrangements, social preconditions, or just plain luck. The comparative politics literature on new democracies has been concerned with studying features once thought to be inherent in democracy, but which now appear to be necessarily but not sufficiently explained by it.

A growing literature on political clientelism bespeaks citizens' and scholars' sense that electoral competition in new democracies and in the developing world often has dynamics and effects different from those found in advanced industrial democracies. Scholars have used the term *clientelism* to capture some of these differences in recent studies of Mexico (Fox, 1994; Estévez, Magaloni and Diaz-Cayeros, 2002), Brazil (Gay, 2001, 1998; Hagopian, 1996; Mainwaring, 1999), Peru (Stokes, 1995), Argentina (Auyero, 2001; Brusco, Nazareno and Stokes, 2002; Levitsky, 2001, 1999; Szwarcberg, 2001), Russia (Van Loo and Taran, 2001), Bulgaria (Kitschelt et al., 1999), Benin (Wantchekon, 2002), and Vietnam (Malesky, 2001).

It is often true that social science concepts mean different things to different people, and this seems especially true of clientelism. Even in the analytically oriented literature we find significant conceptual diversity. For Robinson and Verdier (2002), clientelism means that politicians distribute to voters goods that are reversible, rather than goods that are permanent. For Estévez and his associates (Estévez, Magaloni and Diaz-Cayeros, 2002), it means that politicians distribute goods to individual voters, instead of distributing public or club goods. For Wantchekon (2002), it means that politicians offer voters concrete benefits in the lead-up to elections, rather than promises of programmatic benefits that will materialize after the election. For Lyne (2001) and for Brusco and her associates (Brusco, Nazareno and Stokes, 2002), it means that politicians use the criterion of expected political support rather than more abstract criteria of identity or need to decide which citizens get what.

In this paper we are less interested in producing a definition than in showing that democratic competition in the context of some economic and institutional features generates outcomes associated with systems described as clientelistic. We analyze a model that is similar to pure distributional games of party competition, except in two respects. First, we posit incumbent politicians ("patrons") who exercise monopoly control over a good that is useful to voters in allowing them to reduce the risk entailed in variations in income from private sources. Second, we posit that incumbents can monitor the vote, in the minimalist sense that voters know that the probability that they will enjoy a reward that the incumbent bestows or suffer a punishment he metes out is positively correlated with their vote choice. The clientelist features that our model predicts are reduced electoral competition, a preference among incumbents against redistribution, and lethargic economic development.

In a loose sense, our model draws inspiration from the economics literature on monopoly. Aghion and Bolton (1987) show that an economic monopolist can make it attractive for consumers to sign *exclusive-dealing contracts*, which stipulate that the consumers will pay a penalty if they defect from trading with the monopolist and turn instead to a competitor. Given *ex ante* uncertainty about the competitor's costs, the exclusive-dealing contract keeps even lower-cost competitors from entering into competition.

Our context is quite different. It does not rely on imperfect information: all relevant variables (costs, programs) are known to all actors. The parallel between our model of political monopoly and Aghion and Bolton's of economic monopoly lies in that both derive a result of reduced competition from an assumption of initial monopoly control by one competitor over an economically valuable resource or activity.

2 A Model of Electoral Competition in a Clientelistic Polity

2.1 Description

There are $N+2$ players in the game: N of them are voters (labeled with lower-case subindexes i, j) and the remaining two are candidates. (N is an odd number.) The two candidates are the *patron* (who is the current incumbent) and the *challenger*, denoted by indexes P and C respectively. The chronology of the game is as follows:

- **Stage 1:** Patron chooses platform
- **Stage 2:** Challenger chooses platform[1]

- **Stage 3:** Elections take place (majority rule)

A *platform* is an $N-$dimensional vector representing the allocation of resources among the N voters that each candidate is offering. This political game is played against the backdrop of an economic environment, with the following features.

Voters have an endowment ω_i that they can use for production. Voters have two possible income-generating activities: a risk-free one (f_0) and a risky one (f_1). We describe these activities by the following production functions: $f_0(x) = k_0 x, f_1(x) = \sigma k_1 x$. The term σ is a stochastic shock taking value 1 (when exogenous conditions are good, say, good weather for agriculture) with probability p and 0 (when these same conditions are bad) with probability $1-p$. The actual value of the shock is not known at the time of the election. Access to the risk-free activity is controlled by the patron, who sells the voters access to it at price q.

Voters decide how to allocate their endowment between the two activities. Therefore their income is $y_i = k_1(1-\theta_i)\omega_i\sigma + (k_0 - q)\theta_i\omega_i$ where θ_i is the share of endowment allocated to the risk-free activity. The voters are risk-averse and their preferences are represented by a utility function u such that: *a)* $u' > 0$, *b)* $u'' < 0$, and *c)* $xu'(x)$ is increasing.[2]

Voters optimally allocate their endowments between risky and risk-free activities following this rule:

$$\theta_i^*(q) = \arg\max_{0 \leq \theta_i \leq 1} Eu(y_i)$$

Hence, both income (y_i) and the optimal allocation rule (θ_i^*) depend on the price of access to the risk-free activity, q.

The economy formed by these individuals collects taxes at a flat rate τ. Candidates compete in elections by proposing the N-dimensional distribution of this tax revenue. We will assume that the tax policy is exogenous: both the challenger and the incumbent can decide how to allocate the tax revenue but they cannot decide the total amount of revenue available to redistribute. That policies are N-dimensional means that the victorious candidate can transfer resources to the voters in any way he wants. This fact captures an important feature of clientelism: the non-universal, *quid pro quo* quality of "policy."

Usually we characterize the policies by the income allocation they produce, after taxes and after distribution. We denote transfers as $t_J(\sigma) = (t_1^J(\sigma), \ldots, t_N^J(\sigma))$.[3] Hence, if candidate J offers a specific sum of money $s_i(\sigma)$ to voter i, then the transfer $t_i^J(\sigma)$ will be:

$$t_i^J(\sigma) = (1-\tau)y_i(\theta^*(q),\sigma) + s_i(\sigma).$$

(To avoid an unnecessary proliferation of symbols, generally we write the transfers as $t_J = (t_1^J, \ldots, t_N^J)$, that is, omitting their dependence on σ except when it is necessary to stress it.)

The patron's control over the risk-free income-generating activity plays an important role in this model. Broadly speaking, a risk-free activity is one that helps voters to diversify their risk in an uncertain economic environment. It could be a technology such as a grain elevator, up-to-date transportation infrastructure, or anything that reduces fluctuations in private income, e.g., protection from the local racketeering gang (perhaps run by the patron!). One very conspicuous example of a risk-free activity is employment in the public sector with a wage not subjected to the vagaries of the economic cycle.

The patron's control over such an activity allows him to offer voters exclusive-dealing contracts. These contracts stipulate two prices, one if the voter supports the patron-incumbent (q_0) and one if the voter does not ($q_1 : q_1 > q_0$). Such contracts stipulate prices contingent on the voters' voting decisions.[4]

If the patron is able to charge a lower price to voters who do not vote for him, he must be able to observe how they vote. Implicitly, our model assumes that the patron can perfectly monitor the voters' choices whereas the incumbent cannot do so at all. We will outline in Appendix A.1 how to prove that the model's results stand under imperfect and asymmetric monitoring, i.e., as long as the incumbent has better monitoring capacities than those of the challenger.

Sometimes the assumption of perfect monitoring is a very close approximation to reality, as in countries yet to adopt the Australian ballot. But even when it is not, what matters for our purposes is that incumbent politicians are able to induce in voters the belief that their *expected* payoff depends on their *individual* voting choice. This will happen when voters perceive that much is at stake for them in the outcome of the election and that their individual vote is positively correlated with their gaining some benefit or suffering some retaliation meted out by the winner. Elsewhere (Medina and Stokes, 2002) we offer the example of a small city in Northeastern Argentina, where a local magnate controlled employment opportunities for and services to much of the population and threatened to retaliate against suspected defectors if his preferred candidate lost. Voters would consistently support this candidate, even when his opponent was popular. A key difference, then, between clientelism and programmatic politics is that in the latter, each voter's fate depends only on the aggregate results of the election, not on how he votes.

We distinguish between two types monopoly: private, "economic" monopolies that the patron holds regardless of electoral outcomes (such as a grain-storage facility) and public, "political" monopolies that the patron can lay claim to only if he retains office. In the case of an economic monopoly, the patron can inflict a punishment on voters who support the challenger (charging them q_1 for access to the risk-free activity) whether or not the patron wins. In the case of a political monopoly, the patron's monopoly power vanishes if he loses the election. This is the more general case, in which political monopoly is a sub-class of the general phenomenon of incumbent advantage. Our discussion focuses on political monopoly.

The patron in our model has a dual role as a politician interested in maximizing his electoral fortunes, and as the owner of a monopoly interested in extracting the most surplus possible. There are many possible trade-offs between these two goals. In some regions of the aggregate demand curve, a high value of q may increase his profit while making him electorally unattractive vis-á-vis the challenger and hence decreasing his probability of victory. Since our focus here is on the *political* dynamics of the model, we will simplify by taking q_0 as a given and $q_1 = \infty$.

2.2 Equilibrium Analysis

We analyze this stage-game by using the concept of backward induction. Thus, we proceed by characterizing the equilibrium of the model in reverse temporal order.

2.2.1 Electoral Stage

We analyze first the case of an individual voter. A voter i will vote for the incumbent if the expected utility of his income (as affected both by the transfer and the price he faces) is higher when the incumbent wins than when the challenger wins. Here, ϕ_i denotes the probability that voter i supports the patron and π denotes the patron's probability of victory. This value π is a function of all $N + 2$ strategies: the platforms and the individual voting decisions. To simplify notation, we express π solely as a function of the strategies being chosen at each particular stage of the game. In the present stage, we treat π as though it depends only on the voters' decisions (the vector $\vec{\phi} = (\phi_1, \ldots, \phi_N)$). When voter i supports the patron, the lottery the voter faces is:

receive transfer t_i^P if the patron wins, which happens with probability $\pi = \pi(1, \phi_{-i})$, or t_i^C if he looses. In both cases, the voter is granted access to the risk-free activity (pays price q_0). If he votes for the challenger, he faces a different lottery. With probability $\pi = \pi(0, \phi_{-i})$, the patron wins and denies him access to the risk-free activity (charging a price of q_1) and he receives a transfer of t_i^P. With probability $1 - \pi(0, \phi_{-i})$, the challenger wins and he will receive transfer t_i^C while participating in the risk-free activity at price q_0.

We adopt the following notational conventions to simplify the expressions:

$$\begin{aligned} Eu((1-\tau)y_i(\theta^*(q_1), \sigma) + s_i^P(\sigma)) &= Eu(t_i^P, q_1) \equiv v(t_i^P, q_1) \\ Eu((1-\tau)y_i(\theta^*(q_0), \sigma) + s_i^P(\sigma)) &= Eu(t_i^P, q_0) \equiv v(t_i^P, q_0) \\ Eu((1-\tau)y_i(\theta^*(q_1), \sigma) + s_i^C(\sigma)) &= Eu(t_i^C, q_1) \equiv v(t_i^C, q_1) \end{aligned}$$

Notice that the payoff a voter obtains from a policy depends not only on the transfers offered, but also on the price charged for access to the risk-free activity. With this notation we can write each voter's payoffs. If a voter supports the patron, his expected payoff is:

$$v(t_i^P, q_0)\pi(1, \phi_{-i}) + v(t_i^C, q_0)(1 - \pi(1, \phi_{-i})) \tag{1}$$

whereas if he votes for the challenger, his expected payoff is:

$$v(t_i^P, q_1)\pi(0, \phi_{-i}) + v(t_i^C, q_0)(1 - \pi(0, \phi_{-i})). \tag{2}$$

Hence we obtain the following best-response correspondence

$$\phi_i^*(\phi_{-i}) = \begin{cases} 1 & \text{if } (v(t_i^P, q_0) - v(t_i^C, q_0))\pi(1, \phi_{-i}) > (v(t_i^P, q_1) - v(t_i^C, q_0))\pi(0, \phi_{-i}) \\ [0,1] & \text{if } (v(t_i^P, q_0) - v(t_i^C, q_0))\pi(1, \phi_{-i}) = (v(t_i^P, q_1) - v(t_i^C, q_0))\pi(0, \phi_{-i}) \\ 0 & \text{if } (v(t_i^P, q_0) - v(t_i^C, q_0))\pi(1, \phi_{-i}) < (v(t_i^P, q_1) - v(t_i^C, q_0))\pi(0, \phi_{-i}) \end{cases} \tag{3}$$

This stage of the game has three types of Nash equilibria: *a)* equilibria where $\pi(\vec{\phi}) = 1$, *b)* equilibria with $\pi(\vec{\phi}) = 0$, and *c)* equilibria with $0 < \pi(\vec{\phi}) < 1$. Type c equilibria will play an important role in our analysis. In these equilibria, voters use mixed strategies and there is uncertainty about who wins. Because of this uncertainty we call them *non-degenerate* equilibria.

The family of equilibria a consists of only one member. It is a pure-strategy equilibrium where $\phi_i = \phi_j = 1$. Comparing equations 1 and 2 we see that this equilibrium exists for any combination of values t_i^P, t_i^C as long as $v(t_i^P, q_0) > v(t_i^P, q_1)$. This last inequality is true for every voter for whom the optimal demand of the risk-free asset is strictly positive.

Family b consists of several sets of equilibria in which at least $\frac{N+1}{2}$ voters choose $\phi_i = 0$ (causing π to be 0) and the remaining voters choose any arbitrary randomization $0 \leq \phi_j \leq 1$. These equilibria also exist for any set of platforms t^P, t^C.

Finally, family c consists of one equilibrium which does not always exist. If a majority of voters is offered larger transfers by the patron than by the challenger, then voting for the patron is a strictly dominant strategy for every voter. The patron's probability of victory in this case is 1. Therefore, a non-degenerate equilibrium only exists when the challenger offers a larger transfer than the patron to a majority. In a non-degenerate equilibrium, this majority chooses mixed-strategies, leading to the positive probability of victory for the challenger, while for the remaining minority, voting for the patron is a dominant strategy.

Let $\mathcal{C}$ be the set of possible coalitions of voters (the power set of N) and $\gamma \in \mathcal{C}$ an arbitrary coalition. To characterize the non-degenerate equilibrium, let $\gamma(C)$ be a winning coalition such that its cardinality (that is, its number of members) $\#\gamma(C) \geq \frac{N+1}{2}$ and $t_i^C > t_i^P$ for every $i \in \gamma(C)$. Then, the non-degenerate equilibrium solves the following system of $\#\gamma(C)$ equations:

$$\frac{\pi(1, \phi_{-i})}{\pi(0, \phi_{-i})} = \frac{v(t_i^C, q_0) - v(t_i^P, q_1)}{v(t_i^C, q_0) - v(t_i^P, q_0)} \quad \forall i \in \gamma(C) \tag{4}$$

with $\phi_j = 1$ for every $j \notin \gamma(C)$.

Notice that this system of equations only has a solution if $v(t_i^C, q_0) \geq v(t_i^P, q_0)$ for every i. Otherwise, the denominator of the right-hand side of every equation will be negative. Because the left-hand side is positive by definition, when this condition is not met the equations will be impossible to satisfy.

2.2.2 Equilibrium Selection

If we are to use backward induction to calculate the platforms proposed by the candidates it must be the case that, despite multiple equilibria, the candidates have a forecast of how the electorate will vote at the electoral stage. Otherwise the candidates will not be able to attach payoffs to their strategic choices. Candidates therefore need a mechanism of equilibrium selection.

More intuitively, when the challenger's platform offers higher transfers to the voters, voters confront a collective action problem. If they are able to coordinate their voting decisions they can elect the challenger, obtain these higher transfers, and avoid the punishment that the patron imposes. Yet voters may not be able to attain such coordination. Is it likely that they will? The equilibrium analysis does not answer this question. If we want to answer it, we need to take a step out of the confines of standard game theory.

In games with multiple equilibria, the outcome of the game is determined by what players believe about each other. In a coordination game with Pareto-ranked equilibria like the one we have described, if every voter believes that every other voter will do his share by supporting the challenger, then it is rational for him to support the challenger.

We can interpret mixed strategies (as is occasionally done) as beliefs that players hold about other players' strategies. Thus, in our notation, ϕ_i would represent the beliefs of all voters other than i about i's likely choices (intuitively, the probability with which they believe voter i will support the patron). Under this interpretation, an arbitrary vector $\vec{\phi} = (\phi_1, \ldots, \phi_N)$ represents what voters expect from each other. In everyday parlance we often call this the "collective mood." If all the components of $\vec{\phi}$ are very close to 1, then everyone is fairly sure that the incumbent will win, regardless of their preferences.

If voters are rational, some values of $\vec{\phi}$ would be inconsistent because they would lead voters to form expectations about each other that are not in line with what the other voters will actually do. In fact, the only values of $\vec{\phi}$ that are consistent in this sense are those that result in a Nash equilibrium. At any other value, the beliefs held by players different from i about i describe a behavior that i would not engage in given what she believes about everybody else. Only values of $\vec{\phi}$ that correspond to a Nash equilibrium can be common knowledge among rational voters. Understandably, this property leads game theorists to focus exclusively on the set of Nash equilibria.

For our purposes we can take as exogenous the process leading to common knowledge of the voters' beliefs. Therefore, we will adopt the following formalism:

Let $\Phi = [0,1]^N$ be the N-dimensional cube representing the voters' strategy space and let F be a probabilistic measure over Φ, which is absolutely continuous relative to the Lebesgue measure. Nature will choose an element $\vec{\phi}^0 \in \Phi$ according to the distribution F. Such element will be the *initial conditions* of the electoral stage.[5]

Once $\vec{\phi}^0$ becomes common knowledge, it will turn out to be self-defeating unless it already corresponds to a Nash equilibrium. In particular, all the players will adjust their respective strategies, choosing optimally, given the beliefs specified by the initial conditions. So, we introduce a mapping $K : \Phi \rightarrow \Phi$ such that:

$$K(\vec{\phi}) = (\phi_1^*(\phi_{-1}), \ldots, \phi_N^*(\phi_{-N})).$$

By definition, mapping K has fixed points at all the Nash equilibria of the electoral game. That is, $K(\vec{\phi}) = \vec{\phi}$ if and only if $\vec{\phi}$ is a Nash equilibrium. As for the other values, we can partition Φ into different regions according to the value to which each vector of initial conditions is assigned. Some elements are mapped onto Nash equilibria, but others are not. We will call *stable* the regions of Φ that are mapped into Nash equilibria and *unstable* those that are not. If the set of initial conditions is within a stable region (if the candidates' organizations have managed to shape beliefs that lie in a stable region), the voters' rational calculations will push them to an electoral equilibrium robust to minor changes in beliefs. [6]

The likelihood of each equilibrium will be determined by how the set Φ is partitioned and by the probability of each region occurring (dictated by F). More precisely, the probability of an equilibrium will be equal to the probabilistic measure of the stable region associated with it. Formally, if $\vec{\phi}^E$ is a Nash equilibrium of the electoral game:

$$\Pr(\vec{\phi}^E) = F(\{\vec{\phi} : K(\vec{\phi}) = \vec{\phi}^E\})$$

In what follows, we give a special label to the non-degenerate Nash equilibrium that plays an important role in our analysis: $\vec{\phi}^{ND}$.

The next result, Lemma 1, demonstrates that the non-degenerate equilibrium (where voters use mixed strategies and the electoral result is uncertain) is a zero-probability event. The usefulness of this result is that it allows us to use the non-degenerate equilibrium to delimit the stable regions of the other equilibria.

Lemma 1 *The stable region mapped into the mixed-strategy Nash equilibrium $\vec{\phi}^{ND}$ is such that:*

$$F(\{\vec{\phi} : K(\vec{\phi}) = \vec{\phi}^{ND}\}) = 0$$

Proof: Without loss of generality, consider a vector $\vec{\phi}' \geq \vec{\phi}^{ND}$ such that $\phi'_i = \phi_i^{ND} + \epsilon$ for an arbitrarily small $\epsilon > 0$. Then, for every other voter $j, \pi(1, \phi'_{-j}) > \pi(1, \phi_{-j})$. So, from best-response correspondence 3: $(v(t_j^P, q_0) - v(t_j^C, q_0))\pi(1, \phi'_{-j}) > (v(t_j^P, q_0) - v(t_j^C, q_0))\pi(1, \phi_{-i}) = (v(t_j^P, q_1) - v(t_j^C, q_0))\pi(0, \phi_{-i})$. Therefore, $\phi_j^*(\phi'_{-j}) = 1$ for every j. By a similar argument it can be proven that for $\phi''_i = \phi_i^{ND} - \epsilon, \phi_j^*(\phi''_{-j}) = 0$.

Although the non-degenerate equilibrium has measure zero in the Φ space, we can use it to characterize the stable region of the Nash equilibrium in which the patron wins with probability 1. In fact, the argument used to prove Lemma 1 leads to the following corollary that establishes that the stable region of the equilibrium where the patron wins is the set of initial conditions that dominates $\vec{\phi}^{ND}$, when restricted to the relevant set of voters (those of the majority favored by C):

Corollary 1 *Let $\gamma(C) \in \mathcal{C}$ be a winning coalition such that $t_i^C > t_i^P$ for every i in $\gamma(C)$. For any vector $\vec{\phi}$, let $\vec{\phi}_{\gamma(C)}$ be the sub-vector containing exclusively components of all the voters $i \in \gamma(C)$. Then, the stable region mapped into the pure-strategy equilibrium $\vec{\phi}^P = (1, \ldots, 1)$, that is, the equilibrium in which the patron wins with probability 1 is:*

$$\{\vec{\phi} : K(\vec{\phi}) = \vec{\phi}^P\} = \{\vec{\phi} : \vec{\phi}_{\gamma(C)} \geq \vec{\phi}_{\gamma(C)}^{ND}\}$$

The following result completes the characterization of the stable region for the Nash equilibrium in which the incumbent wins.

Lemma 2 *If the electoral-stage game lacks a non-degenerate equilibrium, then the patron wins with probability 1:*

$$\{\vec{\phi} : K(\vec{\phi}) = \vec{\phi}^P\} = 1$$

Proof: The non-degenerate equilibrium solves the system of equations 4. This is true because, for any voter $v(t_i^P, q_0) \geq v(t_i^P, q_1)$, a sufficient condition for this system to have a meaningful solution (i.e with $0 \leq \phi_i \leq 1$ for every i) is $v(t_i^C, q_0) \geq v(t_i^P, q_0)$. If this condition is not satisfied, then from Equation 3 we obtain that: $\phi^*(\phi_{-i}) = 1$ for every voter i.

Therefore the probability of victory of the patron is simply the probability that the set of initial conditions lies in $\vec{\phi}^P$'s stable region. Whenever a non-degenerate equilibrium exists (which is the case of interest), $\pi(t^P, t^C) = F(\{\vec{\phi} : \vec{\phi}_{\gamma(C)} \geq \vec{\phi}^{ND}_{\gamma(C)} \mid t^P, t^C\}$. Since F is absolutely continuous relative to the Lebesgue measure, if we want to obtain comparative statics on the probability of victory for the patron we just need to analyze how changes in the parameters change the Lebesgue measure of the stable region for $\vec{\phi}^P$. The probability of victory is monotonic on the Lebesgue measure of this stable region.[7] For simplicity, we assume that F is, in fact, the Lebesgue measure (except, of course, in the unstable regions where it is 0). With this result in hand, we can calculate the strategic choices of the two candidates.

2.2.3 The Choice of Electoral Platforms

Since both candidates are office-seekers, they choose platforms t^P, t^C so as to maximize their respective probabilities of victory $\pi(t^P, t^C), 1 - \pi(t^P, t^C)$. From the previous section we know that the function π is defined as follows. Let $\gamma(C) \in \mathcal{C}$ be the coalition of voters receiving a higher transfer from the challenger (formally, $i \in \gamma(C) \iff v(t_i^C, q_1) > v(t_i^P, q_1)$). Then:

$$\pi(t^P, t^C) = \begin{cases} 1 & \text{if } \#\gamma(C) < \frac{N+1}{2} \\ F(\{\vec{\phi} : \vec{\phi}_{\gamma(C)} \geq \vec{\phi}^{ND}_{\gamma(C)} \mid t^P, t^C\} & \text{if } \#\gamma(C) \geq \frac{N+1}{2} \end{cases}$$

The following result, familiar from the theory of pure-distribution games, says that the challenger will always choose t^C such that it concentrates benefits on a minimal winning coalition.

Lemma 3 *At any Stackelberg equilibrium:*

- $t_i^C = (1-\tau)y_i(\theta_i^*(q_1), \sigma)$ *if* $i \notin \gamma(C)$
- $\#\gamma(C) = \frac{N+1}{2}$.

Proof: As to the first claim, assume that the optimal platform t^{C*} is such that for some $j \notin \gamma(C), t_j^{C*} = (1-\tau)y_j(\theta_j^*(q_1), \sigma) + s_j^{C*}$ for some $s_j^{C*} > 0$. But then there is a platform $t^{C'}$ such that $s_j^{C'} = 0$ and, for some $i \in \gamma(C), t_i^{C'} = t_i^{C*} + s_j^{C*}$. For this new platform $(v(t_i^P, q_0) - v(t_i^{C'}, q_0))\pi(1, \phi^{ND}_{-i}) < (v(t_i^P, q_1) - v(t_i^{C'}, q_0))\pi(0, \phi^{ND}_{-i})$. Voter i will only choose a randomized strategy under a profile of mixed strategies $\vec{\phi}'$ such that:

$$\frac{\pi(1, \phi'_{-i})}{\pi(0, \phi'_{-i})} > \frac{\pi(1, \phi^{ND}_{-i})}{\pi(0, \phi^{ND}_{-i})}.$$

Therefore, for this new platform, the non-degenerate equilibrium $\vec{\phi}' > \vec{\phi}^{ND}$. This implies that the stable region of the Nash equilibrium where the incumbent wins is smaller under the new platform. In other words, $\pi(t^P, t^{C'}) > \pi(t^P, t^{C*})$. Therefore, t^{C*} is not optimal, which leads to a contradiction.

To prove the second claim, let's assume that for the optimal platform $t^{C*}, \#\gamma(C) > \frac{N+1}{2}$. The probability of victory of the challenger is then the measure of the set of vectors of initial conditions $\vec{\phi}$ such that, for every voter i member of $\gamma(C), \phi_i < \phi_i^{ND}$. In other words:

$$1 - \pi(t^P, t^C) = \prod_{i \in \gamma(C)} \phi_i^{ND}.$$

But, since $\phi_i^{ND} \leq 1$ for every $i \in \gamma(C)$, the challenger can secure a higher probability of victory by excluding an arbitrary voter i from the coalition (setting $s_i^{C'} = 0$). Thus, the new $\phi_i^{ND} = 1$ which leads to a higher probability of victory for the challenger. Still, it is important to keep in mind that excluding voters from the coalition $\gamma(C)$ can only increase the probability of victory for the challenger up to the point where $\#\gamma(C) = \frac{N+1}{2}$ because, as seen above, if $\#\gamma(C) < \frac{N+1}{2}$ then the non-degenerate equilibrium ceases to exist and the probability of victory for the challenger becomes 0.

This result is important since it allows us to calculate the probability of victory of the patron for any pair of equilibrium platforms t^P, t^C:

Lemma 4 *At any Stackelberg equilibrium t^P, t^C, the probability of victory of the patron is defined by:*

$$\pi(t^P, t^C) = \prod_{i \in \gamma(C)} \left(\frac{v(t_i^P, q_0) - v(t_i^P, q_1)}{v(t_i^C, q_0) - v(t_i^P, q_1)} \right)^{\frac{2}{N-1}}$$

Proof: In general, the non-degenerate equilibrium solves the system of equations 4. When the coalition $\gamma(C)$ is a minimal winning coalition, any single vote of a member of this coalition for the incumbent will lead to the incumbent's victory, while the challenger can only win if every single member of $\gamma(C)$ votes for him. So, for every voter $i \in \gamma(C)$:

$$\frac{\pi(1,\phi_{-i})}{\pi(0,\phi_{-i})} = \frac{1}{1 - \prod\limits_{\substack{j \neq i \\ j \in \gamma(C)}} \phi_j}.$$

The result follows from solving these equations for every $i \in \gamma(C)$.

The platforms of the two candidates can, in principle, be calculated using this expression for the probability of victory. Following the prescriptions of Stackelberg equilibrium, the challenger chooses an optimal t^{C*} that minimizes $\pi(t^P, t^C)$ with respect to t^C, taking t^P as given. In turn, the patron maximizes $\pi(t^P, t^{C*})$ with respect to t^P.

To calculate exactly the platforms that the two candidates adopt, we would need to make assumptions about the income profile of voters and about the average value to voters of candidates' offers.[8] Even without such a precise calculation, we can establish two major results of comparative statics. We focus here on two variables that determine the politico-economic environment: the tax rate and the productivity of the risky activity.

Our first result pertains to the impact that redistributive taxation has on the robustness of the patron's political monopoly. The conclusion is straightforward: higher redistributive taxes *lower* the patron's probability of victory. There is an intuitive reason for this. The patron's electoral advantage comes from his ability to inflict harm on voters by denying them access to the risk-free activity, conditional on their voting behavior. In order to attract voters, the challenger needs to compensate them for this harm by offering them redistributive transfers. So, the lower the tax rate, the smaller the resource pool available for redistribution and the harder it is for challengers to compensate voters that defect from the incumbent.

Another way of looking at this is that when it comes to universalistic distribution via taxes, the challenger and the patron are on an equal footing. The asymmetry between them comes from the incumbent's control the risk-free activity (at least until he is voted out of office). Intuitively, the larger the *relative* role of the risk-free activity, the greater the advantage of the incumbent. At the extreme, if there were no taxation, the challenger would have nothing to offer to the voters and no one would have any reason to vote for him.

Following this logic, anything that reduces the relative importance of the risk-free technology will reduce the patron's advantage. This leads to the second important result of comparative statics. One can conceptualize economic development as a process whereby the productivity of private, risky activities grows relative to the productivity of public, risk-free ones. In our model this process of economic development *lowers* the patron's probability of victory. Increases of the productivity of the risky activity have two effects. At the individual level, they reduce each voter's dependency on the risk-free activity.[9] At the aggregate level, they increase the benefits from redistribution since, as all voters become more productive, the tax revenue increases.

Formally, these two results are captured by the following theorem:

Theorem 1 *At any Stackelberg equilibrium,* $\pi(t^{C*}, t^{P*})$ *is such that:*

- $\frac{\partial \pi}{\partial \tau} < 0$.
- $\frac{\partial \pi}{\partial k_1} < 0$.

Proof: See Appendix A.2

2.3 A Note on the Equilibrium Concept

We choose Stackelberg equilibrium because it best captures the decision problem faced by the players. There are two ways to think about the incumbent's decision problem. Either he knows with certainty the coalition that the challenger will put together, or he does not. The first case is unrealistic and uninteresting: the incumbent chooses a platform that wins with probability 1. Thus, the game must be solved by using an equilibrium concept that does justice to the uncertainty under which the incumbent chooses his strategy. In principle, Nash equilibrium, with its assumption of simultaneous play, would seem to be the right choice. But in this context Nash equilibrium in pure strategies does not exist: for any platform proposed by a candidate, the other candidate can always react with another platform that wins with probability 1. This is a pervasive feature of pure-distribution games. The two candidates would continuously modify their platforms in response to the other's reaction, or alternatively, they would simply wait until the very end of the campaign to propose their platform. The predictions would crucially depend on tiny wrinkles of the game (like how quickly can candidates make their proposals). The sequence adopted here captures the uncertainty under which the incumbent chooses his platform, while at the same time generating a meaningful decision problem for which a solution exists. Regarding the challenger, whatever the patron's offer, she must always choose a minimal winning coalition. This imperative does not depend on the sequence of the moves or on the information available to the players at the time they make their choice.

Roemer (2001) has proposed an equilibrium concept that exists, in pure strategies, for N-dimensional policy spaces: the PUNE. Such a concept is not appropriate for our model since it assumes that some factions of a party have ideological preferences. Our model is more parsimonious. Rather than assuming an ideological commitment *a priori*, our model generates some ideological traits for the patron, viz. his antipathy to redistribution.

3 Concluding Remarks

To summarize, N voters and two office-seeking candidates inhabit an economic environment subject to uncertainty and, hence, voters have positive demand for a risk-free activity that allows them to diversify some of the risk. Access to this activity is controlled by one of these candidates, the incumbent (patron), as long as he manages to hold onto elected office. The patron monitors voters, perhaps imperfectly. When he wins, voters' access to the risk-free activity is positively correlated with whether or not they voted for him. Therefore voters approach the question of how to vote keeping in mind that if they vote against the patron and he wins, there is some probability that they will be shut off from the risk-free activity. Voters vote on two proposals about how to redistribute an exogenously given tax revenue. As a result, the patron's control over the risk-free activity gives him an electoral advantage over any would-be challenger. This advantage is adversely affected by structural aspects of the politico-economic environment, namely the depth of universalistic redistribution and the productivity of the risk-free technology.

Our central comparative-statics results are the following:

Monopoly of an incumbent over a risk-reducing activity depresses electoral competition below the level we would expect in the absence of monopoly. At the same time, in some equilibria a candidate challenging the patron has a positive probability of winning. This result nicely captures the sense conveyed by many qualitative studies of clientelism, that patrons hold an electoral advantage but their control falls short of, say, authoritarian rulers who hold rigged elections, in which the probability of their losing is nil.

Our model predicts an asymmetry in the margins of victory of each candidate: either the patron wins by a wide margin or is defeated by a narrow one. At the electoral equilibrium where the incumbent wins, it is to every voter's advantage to support him, thus avoiding the punishment that would otherwise ensue. In contrast, at the equilibria where the challenger wins, a narrow majority support him and the rest of the voters randomize their choice.

Redistribution hurts clientelistic incumbents. Most scholars and observers associate clientelism with highly unequal societies, without explaining why this association exists. In our model, redistribution undermines the incumbent patron's advantage over any challenger. Intuitively, as the tax rate increases, the challenger has more opportunities to redistribute so that all the minimal winning coalitions become more expensive for the incumbent. For this reason, entrenched political monopolies of the kind that we have here identified with clientelism are less likely the more redistribution the polity undertakes through taxation. Although we have proven this result for a flat tax policy, it also holds for any other type of taxation scheme.

The tension between clientelism and redistribution that our model identifies helps resolve a puzzle. In developing countries where a large segment of the electorate is poor, democratic theory would suggest that income inequalities would decline over time as pure office-seeking candidates promote distribution. But the developing democracies frequently identified as clientelistic display persistent inequality. The clientelistic patrons in our model are fundamentally office-seekers and they also favor non-distributive policies. This is not in spite of their electoral motive, but precisely because of it. The political monopoly they enjoy is more stable and allows the appropriation of more surplus in environments in which there is little redistribution and this lack of redistribution ties the hands of would-be challengers in their attempts to put together minimal winning coalitions.[10]

Our model implies that monopoly plus monitoring produce states that are anti-redistributive, but not necessarily states that are small. Patrons may use large states to increase the dependency of the electorate on their monopoly. Taxes used not for redistribution but for employing people in a bloated bureaucracy increase his probability of victory. In other words, a clientelistic patron *qua* office-seeker may have preferences for a large, but non-redistributive, government. Indeed, the combination of large public sectors with low distributive components is a common feature of poor democracies.

Economic development (rising productivity of the non-monopolized activity) hurts

clientelist incumbents. Whether they are observing inter-War Greece (Mavrogordatos, 1984) or contemporary Oaxaca (Fox, 1994), scholars identify clientelism with societies that are poor. Although the isomorphism between clientelism and poverty would be acknowledged by almost all scholars, very few have explained the mechanisms connecting the two. In our model, economic development, conceptualized as an increase in the productivity of private, risky activities over monopolized, risk-free ones (such as public employment) undermines the electoral strength of the patron. As the private economy becomes more productive, agents depend less on the patron's monopoly and, at the same time, universalistic redistribution becomes more salient. It is a small step to speculate that the patron, knowing this is true, is less than energetic in his pursuit of economic development (a point that Chubb (1981, 1982) drives home in her analysis of Southern Italian politics in the post-War decades).

Ethnically divided societies may be more prone to clientelism than are ethnically homogeneous ones. It has been observed that clientelism thrives in polities marked by deep ethnic divisions or by other kind of deep political cleavages. (See for instance, Fearon (2002).) The logic of our model provides a step toward an explanation of this phenomenon. We assume that the traits that may distinguish voters from one another (race, class, region, religion, etc.) do not create barriers to their entering into a challenger's minimal winning coalition. Yet in deeply divided societies these may not be true. A challenger herself may have a trait that alienates her from some potentia coalition members. As the number and depth of political cleavages increases, some coalitions become impossible. Numerous and deep cleavages work to the advantage of the patron: they alleviate the constraints of the optimization program that generates his universalistic platform. The fewer coalitions that the challenger can assemble, the higher the probability of victory of the patron.

In conclusion, conceptualizing clientelism as a type of political monopoly captures some basic features of this hybrid type of regime, one that stands half way between authoritarianism and democracy. Clientelism as political monopoly helps us understand why political competition seems less than vigorous, why economic development is lethargic and why maldistribution and social segmentation are pervasive in many developing countries.

References

Aghion, Philippe and Patrick Bolton. 1987. "Contracts as a Barrier to Entry." *American Economic Review* 77(3):388–401.

Auyero, Javier. 2001. *Poor People's Politics: Peronist Survival Networks and the Legacy of Evita.* Durham: Duke University Press.

Barro, Robert J. 1990. "Government Spending in a Simple Model of Economic Growth." *Journal of Political Economy* 98(5):103–25.

Brusco, Valeria, Marcelo Nazareno and Susan C. Stokes. 2002. Clientelism and Democracy: Evidence from Argentina. In *Conference on Political Parties and Legislative Organization in Parliamentary and Presidential Regimes.* Yale University.

Chubb, Judith. 1981. "The Social Bases of an Urban Political Machine: The Case of Palermo." *Political Science Quarterly* 96(1):107–125.

Chubb, Judith. 1982. *Patronage, Power, and Poverty in Southern Italy.* Cambridge: Cambridge University Press.

Dahl, Robert. 1971. *Polyarchy: Participation and Opposition.* New Haven: Yale University Press.

Estévez, Federico, Beatriz Magaloni and Alberto Diaz-Cayeros. 2002. A Portfolio Diversification Model of Policy Choice. In *Conference on Clientelism in Latin America: Theoretical and Comparative Perspectives.* Stanford University.

Fearon, James. 2002. Why Ethnic Politics and Pork Tend to go Together. In *Conference on Clientelism in Latin America: Theoretical and Comparative Perspectives.* Stanford University.

Fox, Jonathan. 1994. "The Difficult Transition from Clientelism to Citizenship: Lessons from Mexico." *World Politics* 46(2):151–184.

Gay, Robert. 1998. The Broker and the Thief: A Parable (Reflections on Popular Politics in Brazil). In *XXI International Congress of the Latin American Studies Association.* Chicago.

Gay, Robert. 2001. Between Clientelism and Citizenship: Exchanges, Gifts & Rights in Contemporary Brazil. In *Conference on Citizen-Politician Linkages in Democratic Politics*. Duke University.

Hadar, Josef and Tae Kun Seo. 1988. "Asset Proportions in Optimal Portfolios." *The Review of Economic Studies* 55(3):459–468.

Hagopian, Frances. 1996. *Traditional Politics and Regime Change in Brazil*. Cambridge and New York: Cambridge University Press.

Harsanyi, John and Reinhardt Selten. 1988. *A General Theory of Equilibrium Selection in Games*. Cambridge: MIT Press.

Kitschelt, Herbert, Zdenka Mansfeldova, Radoslaw Markowski and Gàbor Tòka. 1999. *Post-Communist Party Systems: Competition, Representation, and Inter-Party Cooperation*. Cambridge: Cambridge University Press.

Levitsky, Steven Robert. 1999. From Laborism to Liberalism: Institutionalization and Labor-Based Party Adaptation in Argentina (1983-1997) PhD thesis Department of Political Science, University of California, Berkeley.

Levitsky, Steven Robert. 2001. From Labor Politics to Machine Politics: The De-Unionization of Argentine Peronism and the Transformation of Working Class Linkages in Latin America. In *Conference on Citizen-Politician Linkages in Democratic Politics*. Duke University.

Lyne, Mona. 2001. Of Citizens and Patrons: A Unified Electoral Theory of Programmatic and Clientelist Democracy. In *Conference on Citizen-Politician Linkages in Democratic Politics*. Duke University.

Mainwaring, Scott. 1999. *Rethinking Party Systems in the Third Wave of Democratization: The Case of Brazil*. Stanford: Stanford University Press.

Malesky, Edmund. 2001. Enduring Clientelism in Vietnam. In *Conference on Citizen-Politician Linkages in Democratic Politics*. Duke University.

Mavrogordatos, George Th. 1984. *Stillborn Republic: Social Coalitions and Party Strategies in Greece, 1922-1936*. Berkeley: University of California Press.

Medina, Luis Fernando. 2002. "Some Myths About the Collective Action Problem." Department of Political Science, University of Chicago.

Medina, Luis Fernando and Susan C. Stokes. 2002. Monopoly and Monitoring: An Approach to Political Clientelism. In *Citizen-Party Linkages in Democratic Politics*, ed. Herbert Kitschelt and Steven Wilkinson. Forthcoming.

Olson, Jr, Mancur. 1991. Autocracy, Democracy, and Prosperity. In *Strategy and Choice*, ed. Richard J. Zeckhauser. Cambridge, MA: MIT Press pp. 131–157.

Przeworski, Adam. 1990. *The State and the Economy Under Capitalism*. Chur, Switzerland: Harwood Academic Publishers.

Robinson, James A. and Thierry Verdier. 2002. The Political Economy of Clientelism. In *Conference on Clientelism in Latin America: Theoretical and Comparative Perspectives*. Stanford University.

Roemer, John. 2001. *Political Competition*. Cambridge: Harvard University Press.

Stokes, Susan C. 1995. *Cultures in Conflict: Social Movements and the State in Peru*. Berkeley: University of California Press.

Szwarcberg, Mariela L. 2001. "Feeding Loyalties: An Analysis of Clientelism, the Case of the Manzaneras." Universidad Torcuato di Tella.

Van Loo, Jonathan and Sergiy Taran. 2001. Parties, Clientelism and Electoral Systems in the Russian Duma: Alternative Politician-Citizen Linkages. In *Conference on Citizen-Politician Linkages in Democratic Politics*. Duke University.

Wantchekon, Leonard. 2002. Markets for Votes: Evidence from a Field Experiment in Benin. In *Conference on Clientelism in Latin America: Theoretical and Comparative Perspectives*. Stanford University.

A Appendixes

A.1 Asymmetric Monitoring

Throughout the paper, we have assumed that the incumbent can perfectly monitor the voters' choices whereas the challenger cannot monitor them at all. This assumption is stark and is introduced solely for purposes of simplification. The basic structure of the model remains the same, except for one modification, if we assume that both candidates can monitor the voters' behavior but their ability to do so is *asymmetric* in that the patron has better monitoring capacities than the challenger. This will happen if patrons command richer organizational resources than their opponents, and can deploy this organizational advantage to monitoring. For instance their organizational resources might allow them to send operatives to accompany voters to the voting booth, or to keep track of turnout and voting patterns, or to stuff pre-prepared ballots into pockets.

Here we will prove that, if the model is modified in this way, the electoral game has the same types of equilibria as in those described earlier and so its comparative statics remains qualitatively the same.

Suppose that both candidates can monitor the voters and –if the candidate wins– punish voters who voted against them. Introduce parameters $\rho_P > \rho_C$ which represent the probability that the patron and the challenger (respectively) detect a deffection from a voter. That is, the payoff a voter obtains from voting for the patron now becomes:

$$v(t_i^P, q_1)\pi(1, \phi_{-i}) + v(t_i^C, q_1)(1 - \rho_C)(1 - \pi(1, \phi_{-i})) + v(t_i^C, q_0)\rho_C(1 - \pi(1, \phi_{-i}))$$

while the payoff from voting for the challenger is changed to:

$$v(t_i^P, q_1)\pi(0, \phi_{-i})(1 - \rho_P) + v(t_i^p, q_0)\rho_P\pi(0, \phi_{-i}) + v(t_i^C, q_1)(1 - \pi(0, \phi_{-i}))$$

Given these payoff functions, it can be verified that the game still has a pure-strategy equilibrium in which every voter supports the patron (as long as $v(t_i^P, q_1) > v(t_i^P, q_0)$, which is trivial) and one pure-strategy equilibrium in which the challenger wins (as far as $v(t_i^C, q_1) > v(t_i^C, q_0)$).[11] This game also has a mixed-strategy, non-degenerate equilibrium in which every voter randomizes her choice and both candidates can win with some positive probability.

Having established that the set of equilibria of the modified game is qualitatively equal to the set of equilibria of the original one, it can also be proven that the stable regions of the equilibria have the same structure. In fact, since the payoff player i obtains from supporting the patron is monotonically increasing in ϕ_{-i}, any set of initial conditions that dominates $\phi^{\vec{N}D}$ belongs to the stable region of the equilibrium where the incumbent wins. Similarly, the stable region of the other equilibrium is the set of initial conditions that are dominated by $\phi^{\vec{N}D}$.

The major difference between this setting and the one we adopt above is that the challenger does not need to concentrate benefits on a minimal winning coalition to maximize her probability of victory. This is because for any pair of platforms, there is one equilibrium in which she obtains all the votes. (The same is true for the incumbent). The challenger's lower monitoring capacity, however, means that the stable region of this equilibrium is smaller than the stable region of the other equilibrium in pure strategies (where the incumbent wins). So the incumbent retains his advantage over the challenger, just as in the model developed in the paper.

A.2 Proof of Theorem 1

In Lemma 4 we established that the probability of victory of the incumbent is:

$$\pi(t^P, t^C) = \prod_{i \in \gamma(C)} \left(\frac{v(t_i^P, q_0) - v(t_i^P, q_1)}{v(t_i^C, q_0) - v(t_i^P, q_1)} \right)^{\frac{2}{N-1}}$$

Here we prove that each individual term of this product is decreasing in k_1 and τ. To that end, we prove that:

1. $v(t_i^P, q_0) - v(t_i^P, q_1)$ is decreasing in τ and k_1.

2. $v(t_i^C, q_0) - v(t_i^P, q_0)$ is increasing in τ and k_1.

Statement 1: The expression $v(t_i^P, q_0) - v(t_i^P, q_1) > 0$ is decreasing in k_1 since θ^* (the demand for the risk-free activity) is decreasing in k_1. Intuitively, as k_1 increases, the optimal allocation of the endowment (at q_0) approaches the allocation when the agent is denied access to the risk-free activity.

To prove that it is also decreasing in τ, rewrite it as:

$$v(t_i^P, q_0) - v(t_i^P, q_1) = Eu((1-\tau)y_i(q_0, \sigma) + s_i^P) - Eu((1-\tau)y_i(q_1, \sigma) + s_i^P) > 0$$

Just as in the case of k_1, as τ increases, the difference between $(1-\tau)y_i(q_0, \sigma)$ and $(1-\tau)y_i(q_1, \sigma)$ approaches 0.

Statement 1: Both results require that, at the optimum, the challenger concentrates benefits on a minimal winning coalition (as proven in Lemma 3), while the incumbent distributes them across all voters (because he needs to equate the N lowest possible probabilities of victory).

At the first-best optimum, the candidates choose platforms such that, for every $i, j \in \gamma(C)$ and for every value τ:

$$\begin{aligned} v(t_i^C, q_0) - v(t_i^P, q_1) &= v(t_j^C, q_0) - v(t_j^P, q_1) \\ v(t_i^P, q_0) - v(t_i^P, q_1) &= v(t_j^P, q_0) - v(t_j^P, q_1) \end{aligned}$$

Consider now $\tau_1 > \tau_0$ and label $\Delta v(t_i^J, q)$ the change in payoff for voter i, under candidate J's platform, at price q, resulting from the change in tax rate. From these equations we obtain that:

$$\Delta v(t_i^P, q_0) - \Delta v(t_j^P, q_0) = \Delta v(t_i^C, q_0) - \Delta v(t_j^C, q_0)$$

Therefore, if $\Delta v(t_i^P, q_0) > \Delta v(t_i^C, q_0)$ for some voter i, the same holds for every voter j. But this would imply that:

$$\begin{aligned} &\sum_{i \in \gamma(C)} Eu(y_i(q_0, \sigma)(1 - \tau_1) + s_i^{P*}(\tau_1)) - Eu(y_i(q_0,)(1 - \tau_0) + s_i^{P*}(\tau_0)) > \\ &\quad \sum_{i \in \gamma(C)} Eu(y_i(q_0, \sigma)(1 - \tau_1) + s_i^{C*}(\tau_1)) - Eu(y_i(q_0, \sigma)(1 - \tau_0) + s_i^{C*}(\tau_0)) \end{aligned}$$

For this to be true, it would have to be that, for at least some state σ:

$$\sum_{i \in \gamma(C)} s_i^{P*}(\tau_1) \geq \sum_{i \in \gamma(C)} s_i^{C*}(\tau_1)$$

But this is impossible because, as already shown, the incumbent cannot concentrate benefits on $\gamma(C)$ the way the challenger does. This contradiction establishes that the difference $v(t_i^C, q_0) - v(t_i^P, q_0)$ is increasing in τ. In the same way it can be proven that this difference is also increasing in k_1.

Notes

[1]The fact that the two candidates choose their platforms in order means that the solution concept adopted is a Stackelberg equilibrium. We spell out the arguments in favor of this choice in subsection 2.3.

[2]The first two of these assumptions about preferences are straightforward. They imply that agents have well-behaved preferences with risk-aversion. The last one has been introduced by Hadar and Seo (1988) in the literature of portfolio choice. Its role is to ensure that the demand for risky assets increase as their yield increases, a very intuitive property.

[3]Sometimes we refer simply to the sum of money that the candidate promises to give an individual voter, independent of other components of the political and economic environment. In this case, candidate J's offer will be expressed as a vector $s_J(\sigma) = (s_1^J(\sigma), \ldots, s_N^J(\sigma))$.

[4]An interesting possibility is that the contracts are also contingent on *other* voters' decisions. We will not pursue that analysis here.

[5]To say that the initial conditions are chosen "by Nature" should not be interpreted as saying that they are beyond the control of the candidates. Quite the opposite, the candidates and their respective organizations play a crucial role in determining such initial conditions. Because we want to isolate the role played by the strategic choice of the platforms, we do not endogenize the organizational capacities of each candidate.

[6]The existence of unstable regions deserves some comment. The approach adopted in this section is akin to the concept of *source sets* introduced by Harsanyi and Selten (1988). Intuitively, what happens in these regions is that as initial conditions become common knowledge, the voters react in ways that are, in turn, inconsistent with common knowledge since they do not form a Nash equilibrium. If this is the case, the candidates' organizations will have both the *need* and the *possibility* to influence the voters' beliefs until they are pushed to a stable region. To capture this idea, we assume that F assigns zero probability to unstable regions. Through the use of the *tracing procedure*, the source set approach of Harsanyi and Selten maps initial conditions in unstable regions into pure-strategy equilibria of the game. Both our method and theirs lead to

similar comparative statics. The qualitative results of the present model are robust to the choice of method. A further discussion of the difference between the source sets and the stable regions is offered in Medina (2002).

[7]In fact, absolute continuity is a sufficient but not necessary condition for this statement to be true.

[8]To understand why, note, first, that for the challenger, the first-best solution is to distribute the tax revenue among her coalition equalizing the value $v(t_i^{C*}, q_0) - v(t_i^P, q_1)$ across all the voters $i \in \gamma(C)$. But this first-best may not be feasible since such redistribution is subject to the constraint that voters cannot be taxed beyond what is legal. So, without knowing the exact income profile of the electorate, it is impossible to know for which voters such constraint will be binding. Second, there are $\binom{N}{\frac{N+1}{2}}$ possible minimal winning coalitions while the incumbent chooses only N individual transfers. With many more equations than unknowns, the incumbent can simply maximize the probability of victory of the N "worst" coalitions (the ones with the lowest probability of victory, given the challenger's optimal platform). Since the challenger equalizes $v(t_i^{C*}, q_0) - v(t_i^P, q_1)$ (subject to the constraints already mentioned), the lower bound of the probability of victory of each coalition is an increasing function of the average value of $v(t_i^P, q_1)$ among its members. So, without having an exact description of those averages, one cannot calculate which are the N worst coalitions for the incumbent.

[9]Notice that this is because $xu'(x)$ is increasing. This assumption is fulfilled by most of the utility functions used in economics, but not all of them (the quadratic function, for example).

[10]Our model assumes that tax levels are exogenous, and candidates simply offer different methods of dividing a given pie. But one could imagine patrons as the people whom a national party relies on to generate votes, a national party that sets tax policy. This patron-dependent party would be loathe to raise taxes if doing so would undermine the electoral prospects of its patrons around the country.

[11]This game has only one pure-strategy equilibrium where the challenger wins. This in contrast to the game developed in the main body of the paper where, instead of one pure-strategy equilibrium with this result, there are several pure-mixed equilibria that lead to it. This is not a

source of concern because the comparative statics of the game do not depend on the number of equilibria but on their properties and the size of their stable regions.