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VOTE-BUYING AND ASYMMETRIC INFORMATION

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Abstract

Previous works on vote-buying have highlighted that an informational advantage allows party machines to efficiently distribute discretionary transfers to voters. However, the microfoundations that allow party machines to electorally exploit their informational advantage have not yet been elucidated. The probabilistic model in this paper provides the microfounded mechanism that explains how party machines translate their informational advantage into more efficient allocation of discretionary transfers and win elections with higher probabilities than their contenders. Furthermore, its probabilistic design allows the model to account for why party machines target their own supporters with discretionary transfers. In-depth interviews with 120 brokers from Argentina motivate the model.

Resumen

La bibliografía disponible sobre clientelismo y compra de votos ha resaltado que las maquinarias políticas disponen de una ventaja informacional que les permite distribuir eficientemente transferencias discrecionales a los votantes. Sin embargo, los mecanismos que permiten a estas maquinarias políticas explotar electoralmente sus ventajas informacionales no han sido explicados. El modelo probabilístico desarrollado en este artículo revela los micro fundamentos que explican cómo las maquinarias políticas transforman sus ventajas informacionales en una distribución más eficiente de las transferencias discrecionales y ganan elecciones con más alta probabilidad que sus contrincantes. Este modelo probabilístico también expone por qué las maquinarias políticas distribuyen a sus propios partidarios transferencias discrecionales. El modelo está motivado con evidencia proveniente de 120 entrevistas en profundidad con punteros de Argentina.

Political history is full of party machines that were electorally successful; some examples are the Daley's machine in Chicago, the Revolutionary Institutional Party in Mexico, and the Peronist Party in Argentina. Scholars argue that a key element for party machines' electoral success is their networks of brokers through which they gather better information about voters than their rivals (Rakove 1975; Levitsky 2003; Stokes 2005). Illustratively, Wang and Kurzman say that a Kuomintang broker in Taiwan is a "walking encyclopedia of local knowledge" (2007, 64). Existing formal models on the topic state that this informational advantage allows party machines to efficiently distribute discretionary transfers to voters, thus acquiring an electoral advantage over their contenders (Cox and McCubbins 1986; Dixit and Londregan 1996). However, these previous models assume that more complete information automatically translates into a more efficient allocation of resources without actually elucidating the microfoundations that allow party machines to electorally exploit their informational advantage. In contrast with previous works, the model in this paper incorporates a party machine's private information about voters in a probabilistic environment and shows which strategy allows it to exploit this information advantage in order to win elections.

The paper formally shows that party machines exploit their informational advantage and shield their base of support by implementing "leveling strategies" of the type described by Groseclose and Snyder (1996). With a leveling strategy party machines use their private information about voters' reservation values (i.e., the lowest price at which an individual will "sell" his or her vote) in order to price-discriminate in their allocation of discretionary transfers. Parties using a leveling strategy target only within the half of the distribution of voters closer to them, and tailor rewards to these voters based on the risk of having them vote for the other party. The model proves that by implementing a leveling strategy, party machines have higher probabilities of electoral victory than their counterparts. In this way the paper contributes to our understanding of party machines' frequent electoral hegemony.

Furthermore, the leveling strategy in the context of the model's probabilistic design speaks to the ongoing debate in the vote-buying literature over which type of voters—core, swing, or opposed—machines are more likely to target. A pending and fundamental question in this debate is why party machines should need to buy the votes of their own partisans—their core group—when such voters are already inclined to vote for them. By extending Dixit and Londregan's (1996) asymmetric case of competition between two parties into a probabilistic environment and fully solving the dynamic game between the two parties, this paper shows that party machines target their own supporters to prevent their defection. In the electoral arena, many factors beyond parties' control—such as economic downturns, scandals, or campaign blunders—can unexpectedly change voters' electoral choice. Even after promising transfers to voters, parties remain uncertain about how they will actually vote. The probabilistic model incorporates this uncertainty and reveals that party machines use a leveling strategy to target their own supporters to compensate for unexpected factors and prevent defections. The model is underpinned by a new conceptual framework which suggests that, when party machines make transfers to voters, they do not buy a "sure-vote" so much as a probability of receiving a vote.

Scholars highlight that the Argentine Partido Justicialista (the Peronist Party, or PJ) is a typical party machine that commands substantially larger networks of brokers and better volumes of information than its competitors (Auyero 2001; Brusco, Nazareno, and Stokes 2004; Levitsky 2003; Zarazaga 2014). Given this consensus and the PJ's extraordinary record of electoral success, I use the PJ as the case to illustrate the model. In this paper I focus on modeling electoral competition between parties with asymmetric information. Given that brokers are the source of private information, I motivate the formal analysis with evidence drawn from 120 in-depth interviews with Argentine brokers, 112 of whom worked for the PJ (See Data Appendix). This paper proceeds as follows. I first motivate the model with evidence showing that information is a non-tangible but highly valuable component of clientelistic strategies. I then develop a formal model that captures parties' asymmetric information about voters. Finally, the results of the model are discussed.

Party Machines, Brokers, and Information

Argentina has long been recognized as a context in which vote-buying plays a central role. Recent interviews conducted with 120 brokers reveal three stylized facts which I highlight in these section: a. networks of brokers provide party machines with an informational advantage; b. brokers efficiently distribute rewards according to the information they posses about voters' party preferences; and, c. brokers mainly target voters already inclined toward their parties to assure their votes in the face of uncertainty. These are foundational to the model the paper later develops. This section presents how brokers cultivate and use their informational advantage, and confer this evidence with theories from the previous literature.

Brokers (called punteros in Argentina) are neighborhood party agents deeply immersed in poor areas who distribute rewards to voters to garner votes for their political bosses. The average age of brokers is 48 years and their average length of service is 19 years. Ninety-two percent (110) of the brokers I interviewed live in the same neighborhood where they need to assure electoral victory for their political bosses. Brokers' embeddedness in the communities gives the PJ an advantage for collecting information and delivering goods to poor voters that is hard for any other party to match (Calvo and Murillo 2013). Former Interior Minister and Radical Party leader, Enrique Nosiglia, affirmed that the "the Radical Party has almost no brokers in the slums. It is hard to compete in these conditions with the PJ."[1] When I asked brokers in an open question what the fundamental keys to being a broker were, 72 percent (86) of them mentioned in some form "knowing the people." For example, a broker declared, "I know everybody in my neighborhood and everybody knows me. Even the parrots in the trees call my name when I walk these streets."[2]

Brokers are well informed about their clients' socioeconomic situation. Eighty-seven percent (104) of the brokers said they were able to name the most urgent need of each

[1]Interview by the author. Buenos Aires City, July 26, 2012. All translations Spanish to English are by the author.

[2]Interview by the author with a PJ broker. Buenos Aires Province, August 2, 2009.

family.[3] A PJ broker told me, "I know their situation every minute. When Matilde, the old lady across the street, passed away, nobody told me but I knew they did not have money for the coffin so I showed up with it. When spring comes, I know that the mother of the asthmatic boy from two blocks down cannot afford the medication so I get it for her from the Mayor. Nobody could ever help them like me."[4] Other empirical works largely confirm brokers' command of information (Auyero 2001; Levitsky 2003; Stokes et al. 2013).

A key piece of information that brokers collect for being efficient at vote-buying is clients' party preferences. Seventy-three percent (82) of the PJ brokers claimed to know which party their clients prefer.[5] This knowledge allows brokers to assure clients' votes at the lowest possible price. A broker captured well this mechanism: "I know my people. They have been Peronist all their lives. They cannot pretend that they will vote Radical if they do not get a fortune. I know what to give them to have them with me."[6] Another broker also explained, "I know I would need a lot of resources to have that Radical family in the next street to support me in the secret booth, so I forget about them. For half of the resources I get the support of all the families in this block that I know have always been Peronist."[7] Owing to the information they gather about voters' party preferences, brokers buy votes decreasing the amount of the transfers they promise in voters' increasing preferences for the party machine. In this way they can use resources more efficiently and win elections more often than their rivals.

While the evidence shows that party machines target voters according to their party preferences, it also displays that they target mainly their own supporters. Most of the brokers I interviewed consider their followers predominantly Peronists. A broker said "resources are to be distributed among your partisans,"[8] while another one proudly told me "... all that

[3] Questions asked: Do you know your each of your followers most urgent need?

[4] Interview by the author with a PJ broker. Buenos Aires Province. December 11, 2010.

[5] Question asked: Do you know which party your followers prefer?

[6] Interview by the author with a PJ broker. Buenos Aires Province, October 21, 2010.

[7] Interview by the author with a PJ broker. Buenos Aires Province, October 1, 2010.

[8] Interview by the author with a PJ broker. Buenos Aires Province, November 1, 2010.

I have is exclusively for *los compañeros*"[9] (companions, term used in Argentina to refer to Peronist supporters). Stokes (2005, 322) reports results showing that the broad sector of voters receiving rewards from PJ brokers (60 percent) labels the PJ as good. In a survey experiment Stokes et al. (2013, 109) find that around two thirds of the surveyed brokers (682) considered that brokers distribute more resources to voters that prefer their parties.

When asking the brokers which the reasons are to target their own supporters they explained that they need to reassure their votes. Most of the PJ brokers admit that they are never certain of how their followers will vote. A broker exemplified, "...you never know. Sometimes you think they are with you, but then your candidate does something ridiculous on TV or just the opposition candidate appears on a show and you go several steps back in the game."[10] Unexpected economic crisis, campaign blunders, terrorist attacks, and many other factors beyond candidates' control frequently affect voters' choices and the course of an election. Brokers target supporters to shield their base of support against unexpected and beyond-their-control events. Illustrating how uncertainty induces clientelistic parties to target supporters, a broker said, "You need to nurture the vote of your loyal supporters by giving them handouts. If not you might one day get the unpleasant surprise that they are playing for someone else."[11]

Following the evidence, the model that follows contributes to the existing literature in two important ways. First, it reveals the microfounded mechanism that explains how party machines exploit their informational advantage. Second, it provides a rationale for party machines to target their own supporters with clientelistic rewards.

Existing formal models on the topic (Cox and McCubbins 1986; Dixit and Londregan 1996; Stokes 2005) state that an informational advantage allows party machines to efficiently distribute discretionary transfers to voters. However, these previous models do not show the microfoundations by which private information translates into efficiency. In Dixit

[9] Interview by the author with a PJ broker. Buenos Aires Province, July 19, 2009.

[10] Interview by the author with a PJ broker. Province of Buenos Aires, August 2, 2009.

[11] Interview by the author with a PJ broker. Province of Buenos Aires, November 1, 2010.

and Londregan's seminal model, for example, party machines can deliver to certain groups of voters more effectively than the other party; that is, in allocating transfers to certain groups the percentage of the transfer that gets lost is smaller for the party machine than for the other party. However, in their model private information about voters does not play any role in party machines' strategy. They just assume that better information translates into efficiency without formalizing the mechanism. In contrast with previous models, the model in this paper displays this mechanism, showing that party machines' optimal strategy for exploiting their informational advantage takes the form akin to Groseclose and Snyder's "leveling strategy" (1996). By this strategy party machines exploit their informational advantage over voters' party preferences by rewarding voters at their reservation values. Stokes et al. (2013) implicitly support this argument, arguing that brokers target loyal and swing voters but that they give fewer resources to loyal voters because they are cheaper.

The model in this paper also contributes by addressing the question over which voters are targeted by party machines: core, swing, or opposed voters. The previous literature largely disagrees on this topic. For instance, Cox and McCubbins (1986) argue that since parties know better and can allocate resources more efficiently to their constituencies than to other groups, they target core voters rather than swing voters. By contrast, Lindbeck and Weibull (1987) set up a model where in equilibrium parties target swing voters. Dixit and Londregan (1996) establish conditions under which parties target one group or the other. For the Argentine context, Stokes (2005) argues that the PJ brokers target swing voters, while Nichter (2008) argues that brokers target their supporters to persuade them to turn out.

Qualitative and quantitative evidence mainly shows that party machines reward their own supporters. However, authors holding theories in which party machines target swing or opposed voters (Lindbeck and Weibull 1987; Stokes 2005) wonder which the reasons are for parties to target their core voters. According to them parties would waste resources as these voters would already vote for them.

Some authors answer this question saying that brokers transfer to supporters not to buy their votes but to induce them to turn out (Nichter 2008). However, voting is compulsory in Argentina and parties do not need to pay voters for turning out. Stokes et al. (2013) attempt to provide a different answer, arguing that although party machines seek to target swing voters, brokers divert resources to core voters to have a group of followers at a cheap price and keep more rent for themselves. However, brokers are monitored by their bosses and need to win elections to keep their positions. Brokers have strong incentives to distribute resources efficiently and win elections (Szwarcberg 2012; Zarazaga 2014).

In contrast with previous work and in consonance with the available evidence, the probabilistic model in this paper shows that party machines target their supporters to shield their electoral coalition against unexpected events. As Stokes et al. admit in their survey, "some brokers used the verb to 'assure'– giving the impression that respondents saw these voters as possibly voting for the party of their own accord but only being certain to do so if they received some direct benefit" (111). For this reason, to bring clarity to the debate rather than using the term "core voters" to describe voters that support the party machine ex ante transfers, I call them in this model "conditional supporters." They are conditional supporters because they will vote for the party machine only as long as unexpected events do not persuade them to do otherwise.

The model sheds light on political machines' strategies beyond the case of the PJ in Argentina. Evidence from other countries suggests that other party machines around the world also enjoy an informational advantage and use a leveling strategy to efficiently reward their own supporters. For example, according to Magaloni (2006, 81), in Mexico local politicians affiliated to the Partido Revolucionario Institucional "employ dense organizational networks in order to acquire knowledge about voters' loyalties and to target benefits." Rakove (1975, 4) also implies that brokers in Chicago made payments according to a leveling strategy: "Every man has his price, according to the machine, and the major problems are to find out what that price is and whether it is worth paying." The model that follows extends asymmetric competition to a probabilistic context and shows that the party machine targets its conditional supporters to prevent their defection. By fully solving the dynamic game between two parties, the model reveals that party machines' optimal strategy is a leveling strategy by which party machines target voters according to their reservation values and win elections more often than their rivals.

Vote-Buying with Asymmetric Information

This model analyzes electoral competition between two parties that have asymmetric information about voters' party preferences.[12] More precisely, one party can identify the position of each voter in the party preferences spectrum, whereas the other cannot. Both parties seek to win an election to control a pre-determined budget. In order to increase the odds of winning, each party courts voters by promising them transfers, which the winning party will honor by assumption. Given this commitment, the transfers are costly and reduce the size of the budget available to the winning party. Thus, each party faces a trade-off between increasing its probability of winning by offering more to voters and having fewer resources if it actually wins the election.

Model Setup

The game is a simple probabilistic voting model with two parties, P and R, and a continuum of voters i with mass one. The parties begin the game by making simultaneous offers to the voters. The party that gets a majority of the votes takes office and gains control of budget B out of which it pays the promised transfers. Although incumbent parties have better access to resources, since this model aims to capture party machines' informational advantage I

[12]While I do not deny that in some contexts political machines compete with one another (Nichter and Peress 2013), I model here, as do previous formal works, the common situation where one party has the monopoly over the networks of brokers (Stokes 2005; Nichter 2008).

assume, as previous works do (Dixit and Londregan 1996), that the budget B is exogenous to parties.

In this model voters are distinguished by their party preferences for P which is denoted by $\pi_i \in [-1, 1]$, where the most adverse voter to P is the voter $\pi_i = -1$, and the most favorable is the voter $\pi_i = 1$. Since party preferences distinguish voters, from now on I will refer to voters just by π. I next characterize voters' preferences.

Voters care about parties' transfers, but they also derive utility from their non-pecuniary preferences over parties, described here as party preferences. Voters thus vote to maximize their utility functions, which depend on transfers and party preferences. As in previous work about vote-buying, I assume that voters vote sincerely (Dixit and Londregan 1996; Gans-Morse, Mazzuca, and Nichter 2009; Morgan and Várdy 2012).[13]

The partisan utility for π of voting for P is $-\gamma (1-\pi)^2 + b$, where the parameter b measures the bias of all voters toward Party P, and the parameter $\gamma\,(> 0)$ captures the salience of partisan preferences. Therefore, the total payoff for a voter π for voting for P is given by

$$U_\pi (P) = -\gamma (1-\pi)^2 + t(\pi) + b + \delta,$$

where $t(\pi)$ is what P promises to a voter with party preference π if that voter votes for P and where δ represents a stochastic shock toward Party P that is uniformly distributed in the interval $[-u, u]$. Formally—as in other probabilistic voting models—this shock makes the probability of winning a random variable; substantively it represents any random event—such as an economic downturn, a scandal, or a campaign blunder—that affects the popularity of a party's candidate, and thus the electoral outcome. It captures the uncertainty parties have about voters' ultimate behavior at the polls.

[13] Sincere voting means here that voters get offers from P and R and simply vote for the offer that yields them a better payoff, assuming that it is what they will get.

Similarly, $\pi's$ partisan utility of voting for R is $-\gamma(1+\pi)^2$and the total payoff for voting for R is given by

$$U_{\pi}(R) = -\gamma(1+\pi)^2 + r,$$

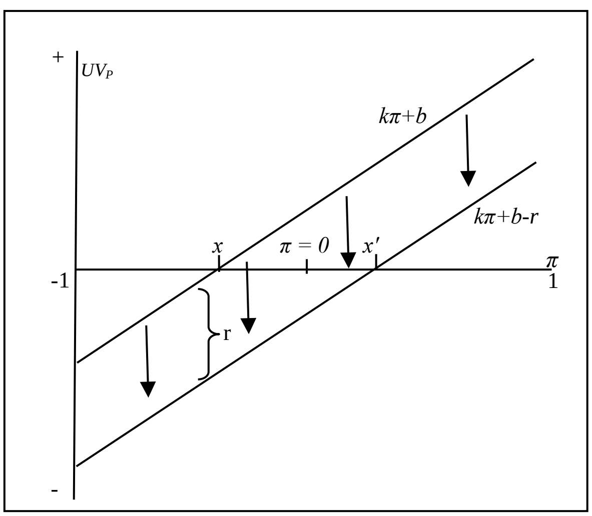
where r is a lump sum R offers to every voter. For convenience, I label the difference between $\pi's$ partisan utility of voting for P and $\pi's$ partisan utility of voting for R the *reservation value* $V(\pi)$ of voter π such that $V(\pi) = \left(-\gamma(1-\pi)^2 + b\right) - \left(-\gamma(1+\pi)^2\right)$. By algebra, $V(\pi) = 4\gamma\pi + b$. To simplify the notation, let $4\gamma = k$. Therefore, π prefers P if $\pi's$ differential utility for voting for P is positive; that is, if its reservation value plus P's transfer, minus R's transfer, plus the shock, shields a positive utility. Formally, π prefers P if $k\pi + b + t(\pi) - r + \delta \geq 0$.

Party P and Party R court voters by promising transfers, but they have asymmetric information about voters' party preference π. To model this asymmetry as simply as possible, I assume P knows each voter's party preference π, whereas R just know that those preferences are uniformly distributed over $[-1, 1]$. Thus the difference is that P can identify the position of each voter in the distribution whereas R cannot. Since P knows π, it can condition its offer to voters on it. Hence, a strategy for P is a function $t(\pi)$ for all $\pi \in [-1, 1]$, where $t(\pi)$ is the transfer promised to a voter with ideological preference π. By contrast, R does not know π and therefore cannot condition its offer on it. In the light of this, I assume that R's strategy is the same offer r to every voter. This assumption captures the competition between a clientelistic party with extended networks and superior information that promises discretionary goods to voters (such as the Peronists in poor districts in Argentina) and a party without such information that can only offer non-discretionary transfers (such as the Radical Party in Argentina in 2009 promising a general income for every citizen).

Vote-Buying and Electoral Outcomes

In seeking to win the election parties make simultaneous promises to the voters affecting their utilities. Figure 1 provides some intuition as to how parties' promises affect voters' utilities for a given $b > 0$, and before the shock takes place. In this graph the horizontal axis represents voters' party preferences, and the vertical axis represents voters' differential utility for voting for P. The line $k\pi + b$ graphs voters' reservation values for voting for P before any transfers are promised from either party. In this case voters to the left of the cut point x vote for R, and those to the right of x vote for P. Below line $k\pi + b$, the line $k\pi + b - r$, graphs voters' differential utilities for voting for P after R makes the lump-sum offer r. By promising r, R shifts the line down to $k\pi + b - r$, increasing its vote share from the cut point x to the cut point x'. Also notice that the line $k\pi + b - r$ is parallel to the line $k\pi + b$. This is because R offers the same amount r to each voter affecting equally each voter's utility.

Figure 1:Voter's payoffs and random component



Party P promises transfers, but is able to do that taking into account its private information about voters' reservation values. Unlike R, party P can transfer different amounts to different voters. Consequently the line $k\pi + b - r + t(\pi)$ that includes P's promises will not necessarily be parallel to the line $k\pi + b - r$. In fact, the next section shows that, in equilibrium, P tailors its promises to voters' reservation values in such a way that voters' differential utilities are not equally affected and consequently the line $k\pi + b - r + t(\pi)$ is not parallel to the line $k\pi + b - r$. This is an important model feature as it captures party machines' advantage over their competitors. For example, the Daley machine in Chicago and the PJ in Argentina mold transfers to voters according to the private information they gather through their brokers.

However, after making promises parties do not know how voters will cast their votes. As shown by the evidence, brokers are not even sure if those voters who receive promises from them will actually support them with their votes. This uncertainty is captured in the model by the shock that takes place after parties make promises and shifts all voters' payoff by the same amount. The line that represents voters' payoffs would move up with a shock $\delta > 0$, and down with a shock $\delta < 0$. Obviously, for $\delta = 0$, the line stays in the same place it was after both parties made their promises. Because there is a shock, the outcome of the election is probabilistic. Now that we have an intuition of how the random component of the model works, let's develop some key notation and formalize parties' payoffs. I denote $\Delta_p(t(\pi), r) \in [0,1]$ the measure of the set of voters who vote for P given strategies $t(\pi)$ and r. This measure will depend on the stochastic shock and will define the probability that Party P wins; that is, that the measure of voters is above 1/2; $\Pr[\Delta_P(t(\pi), r) \geq 1/2]$. Then P's payoffs are:

$$UP_{(t(\pi),r)} = \begin{cases} B - \int_{\Delta_P(t(\pi),r)} t(\pi)\, d\pi/2 & \text{for} \quad \Pr[\Delta_P(t(\pi), r) \geq 1/2] \\ 0 & \text{for} \quad \Pr[\Delta_P(t(\pi), r) < 1/2]. \end{cases}$$

The first line expresses the utility for P when it wins the election, i.e. at least half of the voters vote for it. In this case it gets the budget B minus its total costs, that is, minus the integral over the transfers to every voter. The second line expresses what P gets if it loses the election, i.e. less than half of the voters vote for it.[14] Since voters are uniformly

[14] I assume as a tie break rule that P wins in the case that exactly half of the voters vote for it.

distributed over $[-1,1]$, the assumption that they have mass one implies that the density of voters' ideal points is given by $\pi/2$.

Similarly, by letting $\Delta_R(t(\pi), r) \in [0,1]$ denote the measure of the set of voters who vote for R, R's payoffs are:

$$UR_{(t(\pi),r)} = \begin{cases} B - \int_{-1}^{1} r d\pi/2 & \text{for} \qquad \Pr[\Delta_R(t(\pi), r) > 1/2] \\ 0 & \text{for} \qquad \Pr[\Delta_R(t(\pi), r) \leq 1/2]. \end{cases}$$

R as well as P maximize their expected utility function, given respectively by

$$\begin{aligned} U_P(t(\pi), r) &= \left(B - \int_{\Delta_P(t(\pi),r)} t(\pi)\, d\pi/2\right)(\Pr[\Delta_P(t(\pi), r) \geq 1/2]) \\ U_R(t(\pi), r) &= \left(B - \int_{-1}^{1} r d\pi/2\right)(\Pr[\Delta_R(t(\pi), r) > 1/2]). \end{aligned}$$

Strategies

Next, I find Party *P's* best response to Party R, and vice-versa. We know that R promises the same amount to every voter, so its best response to a strategy $t(\pi)$ is the level of r that maximizes its utility given $t(\pi)$. Conversely, *P's* best response will be the amount $t(\pi)$ it promises to each non-zero measure subset of voters that maximizes its utility given R's strategy. Formally, Party P's best response is $br_P(r) \in \arg\max_{t(\pi)} U_P(t(\pi), r)$, where $t \in T$, and T is the set of all the integrable functions over $[-1,1]$, such that $\int_{-1}^{1} t(\pi) d\pi/2 \in [0, B]$. Similarly, Party R's best response is $br_R(t(\pi)) \in \arg\max_r U_R(t(\pi), r)$ where $r \in [0, B]$.

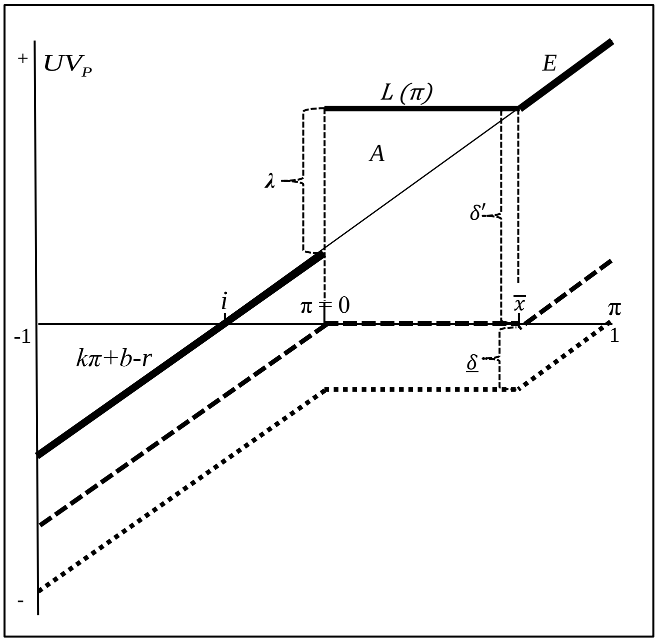
Finding P's best response seems to be a hard problem because there are no obvious restrictions on the properties of $t(\pi)$. It turns out, however, as will be demonstrated shortly, that P's best response takes the simple form of what Groseclose and Snyder (1996) called a "leveling strategy." Before proceeding with the formal proof, it will be convenient to provide in the next subsection some intuitions about the nature and structure of such leveling strategies.

Intuition behind a Leveling Strategy

In a leveling strategy P buys from the median voter ($\pi = 0$) to the right until it reaches a certain cut-point voter $\overline{x}$, to be determined. The segment of voters that receive a promise from P is represented in Figure 2 by the solid horizontal line under the label $L(\pi)$.

The amounts it promises to each of these voters between the median and the cut-point voter ($\overline{x}$) decrease monotonically from left to right because, owing to its informational advantage, P can decrease transfers as voters' support for it increases (as captured in Figure 2 by the triangular area A that represents P's diminishing transfers from right to left). In other words, in a leveling strategy the most expensive voter for P is the median (in Figure 2, P promises to the median the amount denoted by λ) and then the transfers monotonically diminish to the right with voters increasing party preference for P until the cut-point voter $\overline{x}$. This implies that all those voters receiving transfers end up with the same level of differential utility (as captured in Figure 2 by the solid horizontal line under the label $L(\pi)$). Obviously, not every voter receives a promise from P; voters to the left of the median do not get any. Neither do the voters ideologically very close to P, that will probably vote for it no matter what, receive promises (see the diagonal segment label E in Figure 2). I illustrate next how strategies and the random component interact in the model. I call δ' the minimal shock for which P wins with a leveling strategy $L(\pi)$. Formally: $\delta' = \min\{\delta : \Delta_P(L(\pi), r) \geq 1/2\}$.

Figure 2: P's Leveling Strategy



In Figure 2 the diagonal solid line represents voters' differential utilities after receiving the promise r from R, but before P makes any promise and the shock takes place ($\delta = 0$).[15] Note that every voter to the right of voter i is voting for P. The horizontal solid line under the label $L(\pi)$ incorporates voters' differential utilities after P makes its promises and before the shock takes place. Note now that the voters between the median and the cut-point voter $\overline{x}$ receive the transfers represented by the triangular area A and that they all have the same differential utility for voting for P. More important, note that by promising this area A, party P has protected itself against adverse shocks except the most severe ones. For P to lose now the adverse shock has to be of a magnitude bigger than δ', as captured in Figure 2 by the dotted vertical line labeled δ'. Furthermore, the dotted line on the bottom of Figure 2 represents voters' differential utilities for the worst possible shock against P; that is, for a shock $-u$. This means that P only loses for the small segment of shocks represented in Figure 2 by the short dotted vertical line labeled $\underline{\delta}$.

[15]While parties make promises simultaneously, for clarity purpose I present them here as making promises sequentially.

Note that for a distribution in which the median voter is indifferent or favors party P, that is for a $b \geq 0$, P targets voters that ex ante transfers are supporters. I call these voters "conditional supporters" because they are P supporters before promises are made, but we do not know if they will continue to be after the shock. Once parties promise transfers to conditional voters, I call them "shielded voters", because, as said before, they will vote for P for every shock except the most adverse ones to P. Figure 2 makes possible to visualize why P's informational advantage lets that party target voters in such a way that it shields the electoral result against most adverse shocks. Obviously, this does not mean that P will always win – for the worst shocks against it, P will lose– but it does mean that P can tilt the odds in its favor. The leveling strategy is formally characterized next.

Formal Characterization

Under a leveling strategy, all voters who receive promises from P get the same differential utility of voting for P. I formally express this by making their utilities equal to the same constant denoted by C; that is, $V(\pi) - r + L(\pi) = C$ for all $\pi \in [0, \overline{x}], \overline{x} \leq 1$. The first term on the left-hand side represents the voter's reservation value of voting for P, the second term represents R's promise, and the third term represents P's promise. In other words, P's strategy is to promise transfers that 'level' the payoffs for all voters that receive a promise. Note also that to make the problem tractable I impose the following assumption: $\overline{x} \leq 1$. This means that P never makes promises to the voters in the extreme of the distribution most favorable to it ($\pi = 1$), as not even the worst shock can make these voters defect from voting for P. While this assumption simplifies parties' costs estimation in the next section, it makes sense empirically, as there are always hard-core supporters that prefer to vote for the party machine even in the event of the worst possible shock. Alternatively, this assumption can be captured with the following expression that I use later in the Discussion section: $k - B + b - u > 0$, where k multiplied by 1 represents P*'s* most favorable voter's ideological payoff of voting for P ($\pi = 1$), B the maximum feasible transfer that R can promise, and

$-u$ the worst possible shock against Party P. In order to characterize a leveling strategy, I need then to specify $\overline{x}$ and $L(\pi)$ for every $\pi \in [0, \overline{x}]$.

The differential utility for voting for P, after promises have been made, is the same for the median voter $\pi = 0$, for the cut-point voter $(\overline{x})$, and for all the voters (π) in between (note that these are the only voters who received a promise from P and have a "leveled" differential utility). This allows us to derive both $\overline{x}$ and $L(\pi)$ for every $\pi \in [0, \overline{x}]$. Given that $V(\pi) - r + L(\pi) = C$, it must be the case that $V(0) - r + \lambda = C$, where $V(0)$ is the median voter's ($\pi = 0$) reservation value, and λ is what P transfers to the median voter with a leveling strategy; ($L(0) = \lambda$). Then, given that $V(\pi) = k\pi + b$, it is the case that $b - r + \lambda = C$, and consequently, $b - r + \lambda = V(\pi) - r + L(\pi)$. By algebra it easy to determine that $L(\pi) = \lambda - k\pi$. Now given that by definition $L(\bar{x}) = 0$, it must be the case that $0 = \lambda - k\bar{x}$. Therefore, $\bar{x} = \lambda/k$.

A leveling strategy can then be formally defined as follow

$$L(\pi) = \begin{cases} 0 & \text{for} \quad \pi < 0 \\ \lambda - k\pi & \text{for} \quad \pi \varepsilon \, [0, \min(1, \lambda/k)] \\ 0 & \text{for} \quad \pi : \lambda/k < \pi \leq 1, \end{cases} \tag{1}$$

except possibly for a measure zero set or voters.

With $L(\pi)$ and $\overline{x}$ defined as before, the problem of party P is reduced to that of choosing the amount λ promised to the median voter. Once that decision is made, the probability of winning and the decision of which other voters to buy to the right of the median and at which "price" are automatically determined.

Heuristic Proof

This subsection demonstrates that given r, for every non-leveling strategy for P there will always be a leveling strategy that delivers a higher payoff. This will reduce the search for P's equilibrium strategy to the set of leveling strategies. This considerably simplifies Party P's maximization problem, as it reduces it to simply finding the optimal transfer to the median voter, $L(0) = \lambda^*$.

PROPOSITION 1. For any non-leveling strategy $h(\pi)$ there is always a leveling strategy $L(\pi)$ that strictly dominates it. Formally, $U_P\left(L\left(\pi\right), r\right) > U_P\left(h\left(\pi\right), r\right).$

I sketch here the proof for the previous proposition (full details available in the Supporting Information - SI). Assume that instead of implementing a leveling strategy, P makes promises according to a non-leveling strategy $h(\pi)$. Given r and $h(\pi)$ there will always be a minimal shock δ' for which P wins. Let δ' be defined by $\delta' = \min\left\{\delta : \Delta_P\left(h\left(\pi\right), r\right) \geq 1/2\right\}.$ Let $h'_{\delta'}(\pi)$ denote any arbitrary non-leveling strategy that wins for $\delta \geq \delta'$. That is, if P chooses a strategy $h'_{\delta'}(\pi)$ it wins if $\delta \geq \delta'$ and loses otherwise.

Note now that for any arbitrary non-leveling strategy $h'_{\delta'}(\pi)$, P can always construct a leveling strategy $L'_{\delta'}(\pi)$ that wins with the same probability (that is for shocks greater than or equal to δ'), by making an offer that leaves the median voter and all the voters to the right of the median (that receive a promise) indifferent between P and R for a shock δ'. This leveling strategy $L'_{\delta'}(\pi)$ takes the form of any leveling strategy;

$$L'_{\delta'}(\pi) = \begin{cases} 0 & \text{for} \quad \pi < 0 \\ \lambda' - k\pi & \text{for} \quad \pi \; \varepsilon \left[0, \min\left(1, \lambda'/k\right)\right] \\ 0 & \text{for} \quad \pi : \lambda'/k < \pi \leq 1, \end{cases}$$

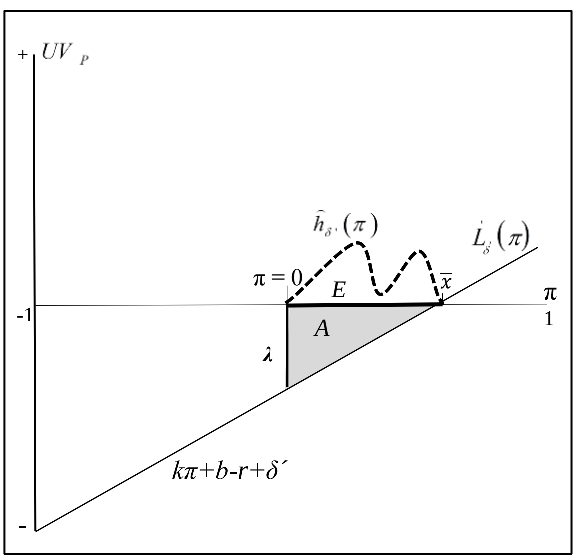
except possibly for a set of measure zero, and where λ' is what P transfers to the median.

Note that the transfer λ' to the median voter can be determined by exploiting the fact that δ' leaves the median voter ($\pi = 0$) indifferent between P and R. Since under $L'_{\delta'}(\pi)$ the median voter is indifferent when $\delta = \delta'$, it follows that $k\left(0\right) + b + \lambda' - r + \delta' = 0$. This leaves $\lambda' = r - b - \delta'$. With λ' defined, this also defines what P transfers to every voter π under $L'_{\delta'}(\pi)$. Therefore, we have now a leveling strategy $L'_{\delta'}(\pi)$ that wins and loses exactly when any arbitrary non-leveling strategy $h'_{\delta'}\left(\pi\right)$ does. This leveling strategy strictly dominates the non-leveling strategy if it turns out be less expensive than the latter as shown next.

The non-leveling strategy $h'_{\delta'}(\pi)$ is non-leveling for one of two reasons: (1) it pays to some voters to the right of the median more than the leveling strategy $L'_{\delta'}(\pi)$; and/or (2) it buys off voters to the left of the median.

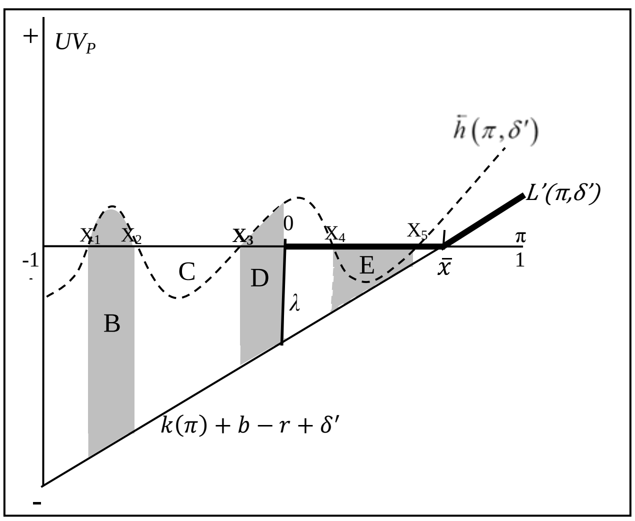
In the first case, clearly the non-leveling strategy is more expensive. Figure 3 shows an example of this first case in which P transfers with a non-leveling strategy—denoted now by $\widehat{h}_{\delta'}(\pi)$—to some voters to the right of the median more than specified by the leveling strategy. Note that the leveling strategy $L'_{\delta'}(\pi)$ in Figure 3 leaves all voters $\pi \in [0, \bar{x}]$ indifferent, and the cost for P is just the triangle area A, while the non-leveling strategy $\widehat{h}_{\delta'}(\pi)$ implies costs not only for the size of the triangle area A, but also for the size of the bumped area B. Clearly, with a strategy $\widehat{h}_{\delta'}(\pi)$, P wastes money by transferring more than $L'_{\delta'}(\pi)$ to some voters $\pi \in [0, \bar{x}]$, without increasing its probability of winning. The probability is the same for both strategies; it is the probability that a shock $\delta \geq \delta'$ takes place. Therefore, for this first case it has to be that $U_P\left(L'_{\delta'}(\pi), r\right) > U_P\left(\widehat{h}_{\delta'}(\pi), r\right)$.

Figure 3: Strategies $\widehat{h}_{\delta'}(\pi)$ and $L'_{\delta'}(\pi)$ for a shock δ'



In the second case, P buys voters to the left of the median with some strategy $\overleftarrow{h}_{\delta'}(\pi)$. There are two possibilities in this case. It can be that besides buying voters to the left of the median, P secures also the vote of all voters to the right of the median or it can be that P is not buying all voters to the right of the median. If all voters to the right of the median are voting for P for a shock δ', clearly, P is wasting money by transferring to voters to the left of the median and buying more voters than it needs to win the election. If P is not buying some voters to the right of the median, it would be cheaper to do so instead of buying voters to the left of median. Figure 4 illustrates this last scenario and shows that for any arbitrary non-leveling strategy $\overleftarrow{h}_{\delta'}(\pi)$ that buys voters to the left of the median, P can construct a leveling strategy $L'_{\delta'}(\pi)$ that wins with the same probability (that is, for shocks equal or bigger than δ') at lower cost, which means that $L'_{\delta'}(\pi)$ delivers a strictly higher payoff to P than $\overleftarrow{h}_{\delta'}(\pi)$.

Figure 4: *P* buys voters to the left of the median



In the example of Figure 4, P buys voters to the left of the median with a strategy $\overleftarrow{h}_{\delta'}(\pi)$ and the shock is the minimal, δ', for which P wins. Note that the segment $[x_1, x_2]$ and the segment $[x_3, 0]$ of voters to the left of the median vote for P, and the size of the sum of these two segments needs to be at least equal to the length of the segment $[x_4, x_5]$ —the segment of voters to the right of the median not voting for P when $\delta = \delta'$. If that were not the case P would not be winning for a shock equal to δ'. To win for a shock δ' with $\overleftarrow{h}_{\delta'}(\pi)$, P needs to spend an amount equal to the area of B plus D. Since the length of segment $[x_1, x_2]$ plus the length of segment $[x_3, 0]$ needs to be at least equal to the length of segment $[x_4, x_5]$, the shaded area of B plus D is necessarily bigger than the shaded area E. This is because voters to the left of the median are ideologically further away from P and, therefore, are more expensive for P to buy. This shows that in order to maintain the same probability of winning, Party P spends more with a non-leveling strategy than with the leveling strategy $L'_{\delta'}(\pi)$. It follows that for any arbitrary non-leveling strategy, which includes those that level utility to the left of the median voter, there is a leveling strategy $L'_{\delta'}(\pi)$ that dominates it (Formal Proof available in SI).

Equilibria

Finding the equilibria of the game involves first finding each party's strategy that maximizes its utility given the other party's strategy. In order to solve parties' maximization problem I calculate each party's probabilities of winning and the associated costs. I find first P's probability of winning, that is, $Pr[\Delta_P(\lambda, r) \geq 1/2]$.

For the reasons given in the subsection "Strategies", if the median voter ($\pi = 0$) votes for P, all the voters to the right do. Thus, the probability that P wins is equal to the probability that $\pi = 0$ votes for P, given by the probability that $b - r + \lambda + \delta > 0$. Therefore, P wins for any δ such that $\delta > r - b - \lambda$. Given that δ is uniformly distributed over $[u, -u]$, this probability is equal to $(u - (r - b - \lambda))/2u$. It follows that the probability that R wins is $(u + r - b - \lambda)/2u$.

I now calculate the costs for parties P and R. As established earlier P will adopt a leveling strategy that pays λ to the median voter and then decreasing amounts— $\lambda - k(\pi)$— to voters to the right of the median ($\pi = 0$) up to the cut point voter $\bar{x}$ given by $\bar{x} = \lambda/k$ (remember that it is given that $\bar{x} \leq 1$). Therefore, the total cost of *P's* leveling strategy is given by

$$\int_0^{\min[\lambda/k,1]} (\lambda - k(\pi))\, d\pi/2.$$

Solving this integral yields a total cost for P of $\lambda^2/4k$ for $\lambda/k \in [0, 1]$. The costs for

R are easier to calculate, as this party transfers the same amount to every voter. Formally: $\int_{-1}^{1} r d\pi/2 = r$. With these preliminaries in place it is possible now to formally solve each party's maximization problem and find, therefore, their respective best responses.

As mentioned above, each party maximizes its expected utility from accessing power minus the costs of transfers. Thus, P maximizes

$$U_P(\lambda, r) = \left(B - \frac{\lambda^2}{4k}\right)\frac{u - r + b + \lambda}{2u},$$

and the first order condition is given by

$$\frac{3\lambda^2}{2} + \lambda(u - r + b) - 2Bk = 0. \tag{2}$$

Solving this expression for λ determines P's best reply; as characterized by Equation [1] in the Strategies subsection. Similarly, R maximizes

$$U_R(\lambda, r) = (B - r)\frac{u + r - b - \lambda}{2u}.$$

The first order condition for this problem yields R's best reply, $r = (-u + B + b + \lambda)/2$. To find the equilibria of the game, I now substitute R's best reply into P's best reply [2], $-2\lambda^2 - \lambda(3u + b - B) + 4Bk = 0$. Solving for λ,

$$\lambda^* = \frac{B - b - 3u + \sqrt{(B - b - 3u)^2 + 32kB}}{4} \tag{3}$$

Note that I can disregard the negative square solution as it would yield a negative λ^*, that is, a negative transfer for the median voter, $\pi = 0$, which is ruled out by assumption. This implies uniqueness of equilibrium (see SI for proof). Replacing λ^* in r yields

$$r^* = \frac{5B + 3b - 7u + \sqrt{(B - b - 3u)^2 + 32kB}}{8} \tag{4}$$

Equilibrium: The unique equilibrium is given by Equation [4] and P's leveling strategy

$$L(\pi) = \begin{cases} 0 & \text{for} \quad \pi < 0 \\ \lambda^* - k\pi & \text{for} \quad \pi \varepsilon \left[0, \min\left(1, \lambda^*/k\right)\right] \\ 0 & \text{for} \quad \pi : \lambda^*/k < \pi \leq 1, \end{cases}$$

except possibly for a set or voters measure zero and where λ^* *is defined by Equation 3.*

By replacing λ^* and r^* in $U_P(\lambda, r)$, and in $U_R(\lambda, r)$, I get the following utilities, respectively, in equilibrium.

$$\begin{aligned} U_P^*(\lambda^*, r^*) &= \left(\frac{B - \left(B - b - 3u + \sqrt{(B-b-3u)^2 + 32kB}\right)^2}{64k} \right) \left(\frac{9u + 3b - 3B + \sqrt{(B-b-3u)^2 + 32kB}}{16u} \right) \\ U_R^*(\lambda^*, r^*) &= \left(\frac{B - \left(5B + 3b - 7u + \sqrt{(B-b-3u)^2 + 32kB}\right)^2}{8} \right) \left(\frac{7u - 3b + 3B + \sqrt{(B-b-3u)^2 + 32kB}}{16u} \right). \end{aligned}$$

I next discuss the main findings of the model.

Private Information and Electoral Outcomes

I prove and discuss here an important finding of this paper: given equal budgets the clientelistic party with private information about voters' reservation values wins elections with a higher probability than the party without such information.

PROPOSITION 2. Party machine P wins elections more often than its rival R.

PROOF. The probability that P wins is given by, $\left(9u + 3b - 3B + \sqrt{(B-b-3u)^2 + 32kB}\right)/16u$. Then the probability that P wins is bigger than $1/2$ when $u + 3b - 3B + \sqrt{(B-b-3u)^2 + 32kB} \geq 0$ (Equation 5). Note that this expression is increasing in k, so it holds for sure if it holds for the smallest possible k which is $k = \lambda^*$ (recall from above that $\lambda^*/k \leq 1$). I proceed to prove that even when setting k equal to the smallest possible value $k = \lambda^*$, P wins with greater probability than R. By

Equation 3, $k = \lambda^*$ implies that $k = \left(B - b - 3u + \sqrt{(B - b - 3u)^2 + 32kB}\right)/4$. By algebra I get that $\sqrt{(B - b - 3u)^2 + 32kB} = 4k - B + b + 3u$. Now I can replace the right side of this expression in Equation 5 and get $u + 3b - 3B + (4k - B + b + 3u) \geq 0$. Therefore, P wins with greater probability than R if $k - B + b + u \geq 0$. Note that the more demanding condition $k - B + b - u \geq 0$ is already established. Therefore, given that it is always true that $k - B + b - u \geq 0$, then $k - B + b + u \geq 0$ also has to be true, and P always wins with a greater probability than R. ■

The intuition behind the proof is rather simple; by resorting to a leveling strategy party machines can electorally exploit their informational advantage by tailoring rewards to voters' reservation values. By paying to voters the minimum amount needed to assure their votes, party machines buy votes more efficiently and win elections more often than their rivals. Information means for brokers more accuracy at buying votes. A broker clearly exemplified this: "I can get the same amount of votes as any other party representative but with half of the resources, because I know which families have more children and what they need."[16] A councilman interviewed by Nichter nicely illustrates brokers' leveling strategy in Brazil saying: "he [the broker] arrives there the day before Election Day, pays a twenty reals bill, a ten reals bill... depending on the value of the voter... There your have the one of ten, the one of twenty, you have the one of fifty... it will depend on the resistance of the voter."[17]

In this model information asymmetries translate into higher probabilities of electoral victory for the better-informed party. The electoral hegemony of the party with better information, the party machine, is what we observe in fact in many countries for long periods of time, as in the cases of the PRI in Mexico, the Daley machine in Chicago, and the KMT in Taiwan, among others. It is not a surprise that, in Argentina, from redemocratization in 1983, the PJ won 5 out of 7 Presidential elections and 207 out of 247 (84%) mayoral elections

[16]Interview by the author with a PJ broker. Buenos Aires Province, October 21, 2010.

[17]Interview by Simeon Nichter with a Councillor, from Bahia, Brazil, on November 24, 2008. The author is thankful to Nichter for the use of this unpublished quotation.

in the Conurbano Bonaerense, the most important electoral jurisdiction constituted by the 33 municipalities that surround the city of Buenos Aires. This electoral dominance is well accounted for by the probabilistic model in the context of asymmetric information.

“Core” versus “Swing” voter

The model also addresses the much discussed question of which type of voters party machines target: core, swing or opposed. It shows the conditions under which party machines target their own partisans.

PROPOSITION 3. For $b \geq 0$, party machines target their conditional supporters with rewards.

PROOF. It has been already proved above that with the optimal strategy, the leveling strategy, the party machine transfers λ^* to the median voter and then decreasing amounts, determined by $L(\pi) = \lambda^* - k(\pi)$, to voters to the side of the median closer to the party machine until the cut point x (see Figure 2). This means that the party machine targets within the half of the distribution of voters closer to it. Note now that $b \geq 0$ implies that the median voter is indifferent between both parties or favors P. Therefore if $b \geq 0$ then this model predicts that the party machine will target voters already inclined to vote for the party machine. ■

Which incentives may party machines have to target these voters? Uncertainty is an inevitable condition of electoral politics. Politicians and parties run campaigns in circumstances in which many factors escape their control. This probabilistic model captures this uncertainty and shows that party machines target voters already inclined to vote for them to prevent their defection. By introducing the shock δ that affects voters’ party choices after parties have promised transfers, the probabilistic model makes voters’ party choice more relative. The shock δ can turn the electoral result in favor of or against the party machine. If a shock $\delta < 0$—i.e. a shock against the party machine—takes place, voters that were previously inclined to vote for the political machine could vote against it. As stated by the brokers party machines "assure" with rewards their followers' votes.

It may be misleading in this context then to use the term "core voters", as deterministic models do (Stokes 2005; Nichter 2008), to describe voters that support the party machine ex ante transfers. Because in this probabilistic setting these voters can change their choice of party, I call them "conditional supporters." They are conditional supporters because they will vote for the party machine as long as transfers from the opposition party and the shock do not move them to do otherwise. Party machines know that their conditional supporters are not "diehard" and by transferring to them they shield their base of support making it hard to challengers to defeat them. In fact, because of this I call conditional supporters that receive a transfer from the party machine "shielded supporters." It is interesting to note that in this model once the party machine shields its base of support with transfers, the swing voter, that is, the voter indifferent between both parties ceases to exist.

The PJ in the Great Buenos Aires municipalities is a good example of a party machine that faces a distribution of voters tilted to its side and, consequently, builds an electoral coalition of shielded supporters by sending brokers to distribute goods to conditional supporters. However, party machines do not always target conditional supporters. When the distribution of voters is tilted to the opposite side—i.e. $b < 0$, the conditional supporters are not enough to win the election, and clientelistic parties need to transfer also to "conditional opposed voters" to maximize their utility. For $b < 0$ the leveling strategy indicates that party machines need to target conditional opposed voters as well to improve their chances of winning elections. Therefore, the type of voter party machines decide to target depends ultimately on the distribution of voters.

Conclusion

Two important findings have emerged from this research. First, it has shown how party machines exploit their informational advantage. The model reveals the rationale behind party machine brokers' use of information to allocate resources to voters. Party machines' optimal strategy in the particular environment of asymmetric information is a leveling strategy. The key element in the equilibrium is that the better-informed party uses this strategy to tailor transfers according to each voter's reservation value, thus increasing its chances of winning. The leveling strategy determinates not only which voters receive transfers but also the size of the transfers. It predicts that party machines transfer the biggest reward to the median voter and then decreasing amounts to conditional voters on the side closer to the party's position. The less the risk of losing a person's vote, the smaller the transfer is to that person. The model has demonstrated that this strategy allows the party machine to win elections more often than the other party. The model allows us to better understand the relevance of private information about voters for the persistent electoral hegemony of party machines around the world.

Second, it provides a new logic to answer the question of why clientelistic parties often target their own partisans with discretionary transfers. Against the contention that parties do not need to target their own partisans because they already favor them, the model shows that party machines target their conditional supporters to assure their votes in the face of events beyond their control. Uncertainty prompts party machines to shield their base of electoral support.

Finally, this model argues that the type of voter party machines decide to target depends ultimately on the distribution of voters. For future research a comparative analysis collecting data over this point across countries would be a major contribution to the existing literature.

Data Appendix

I carried out the field work for this particular paper between 2009 and 2010 in four municipalities of the Conurbano Bonaerense (CB)—the 33 mainly poor municipalities surrounding the capital city of Buenos Aires. The CB has a population of more than 10 million, accounting for 26 percent of the national electorate, concentrated in around 1.2% of the national territory. The previous literature attests that the PJ machine has its stronghold in the CB (Levitsky 2003). The four selected municipalities, La Matanza, Malvinas Argentinas, Merlo and San Miguel, are important electoral districts which display characteristics typical of the CB, which consists mainly of poor industrial suburbs populated by working-class and unemployed people. La Matanza alone, with 834,000 voters, has a larger electorate than 17 of the 24 Argentine provinces. The four municipalities lie near the median of the CB in socioeconomic terms. Although a random sample of brokers was logistically impossible, I was able to interview a large number of them with a low rate of refusal (eight). The brokers were selected with a snowball technique. I was able to interview first the universe of brokers of a particular slum (seven brokers) that I knew well, and then asked them if they knew brokers similar to themselves in their own and in the other three municipalities. I asked brokers about their geographic area of influence; with this information I was able to assemble maps locating brokers. For some areas and localities, especially in La Matanza, which is the CB's largest municipality, brokers did not provide me with any contacts. In these localities, I recruited new seeds of snowballing. In this way I was able to interview brokers from all major areas and localities. To confirm the political dynamics described by brokers, I also interviewed party leaders and executive officials, including three former governors of the Province of Buenos Aires, five CB mayors, and twelve municipal directors and secretaries. The dynamics found in the urban Peronist machine in these four municipalities of the CB were confirmed for the provinces in interviews I carried out with twelve party leaders, four mayors, and three governors from other municipalities and provinces. I also interviewed six former ministers and five directors of different areas of welfare programs at the national level.

Supporting Information

Proof of Proposition 1

Proposition 1 For any non-leveling strategy $h(\pi)$ there is always a leveling strategy $L(\pi)$ that strictly dominates it. Formally, $U_P(L(\pi), r) > U_P(h(\pi), r)$.

Proof To prove Proposition 1, it suffices to prove that for any non-leveling strategy $h(\pi)$ there will be a leveling strategy $L(\pi)$ that lowers P's expenditures and delivers the same probability of winning. Define $\delta' = \min\{\delta : \Delta_P(h(\pi), r) \geq 1/2\}$ as the minimum shock for which P wins given a non-leveling strategy $h(\pi)$. Take any non-leveling strategy $h'(\pi)$ for which P wins the election whenever $\delta \geq \delta'$. I show next that it is possible to construct a leveling strategy that also wins whenever $\delta \geq \delta'$ and, therefore, with the same probability as $h'(\pi)$, but with a lower cost, that is, $\int_{-1}^{1} h'(\pi)\, d\pi/2 > \int_{-1}^{1} L'(\pi)\, d\pi/2$.

The strategy $L'(\pi)$ has the form

$$L'(\pi) = \begin{cases} 0 & \text{for} \quad 0 \\ \lambda' - k\pi & \text{for} \quad \pi\varepsilon\,[0, \min(1, \lambda'/k)] \\ 0 & \text{for} \quad \pi : \lambda'/k < \pi \leq 1, \end{cases}$$

except possibly for a set of measure zero, and where λ' is what P transfers to the median voter $\pi = 0$. As any leveling strategy, this is characterized by the amount (λ' in this case) that it transfers to the median. The transfer λ' to the median voter can be determined by exploiting the fact that δ' leaves the median voter ($\pi = 0$) indifferent between P and R. Since under $L'(\pi)$ the median voter is indifferent when $\delta = \delta'$, it follows that $k(0) + b + \lambda' - r + \delta' = 0$. This leaves $\lambda' = r - b - \delta'$. With λ' defined, this also defines what P transfers to every voter π under strategy $L'(\pi), \lambda' - k(\pi)$.

Now, I define m' as the type of voter that, given $h'(\pi)$ and δ', leaves to its right the minimum fraction of voters P needs to win; half of the total voters. Formally, $m' = \min\{m : \Pr\{[m, 1] \cap \Delta_P(h'(\pi), \delta', r)\} \geq 1/2\}$. Since $m' \leq 0$, it is convenient to consider two cases: $m' = 0$ and $m' < 0$. I start by proving that when $m' = 0$ the leveling strategy spends less than $h'(\pi)$. This obviously means that $L'(\pi)$ does strictly better for P than $h'(\pi)$.

I have $h'(\pi) \geq 0$ for all $\pi \in [-1, 1]$. Since by construction $L'(\pi) = 0$ for all $\pi \in [-1, 0)$ and $\pi \in [\lambda'/k, 1]$, then it must be the case that $h'(\pi) \geq L'(\pi)$ for all $\pi \in [-1, 0)$ and $\pi \in [\lambda'/k, 1]$. Since, $m' = 0$, it must be that with $h'(\pi)$ all $\pi \in [0, 1]$, except possibly for a set of measure zero, weakly prefer P. Since by construction I know that all $\pi \in [0, \lambda'/k)$ are indifferent between P and R given offers $L'(\pi)$ and r when $\delta = \delta'$, it has to be the case that $h'(\pi) \geq L'(\pi)$ for all $\pi \in [0, \lambda'/k)$, except possibly of a set of measure zero. It follows now from above $h'(\pi) \geq L'(\pi)$ for all $\pi \in [-1, 1]$, except for a set of measure zero. Note that if $h'(\pi) = L'(\pi)$ for all $\pi \in [-1, 1]$, except possibly for a set of measure zero, then $h'(\pi)$ is a leveling strategy. If $h'(\pi) > L'(\pi)$ for a set of non-zero measure of $\pi \in [-1, 1]$, then $h'(\pi)$ is not a leveling strategy and it follows that $\int_{-1}^{1} h'(\pi)\, d\pi/2 > \int_{-1}^{1} L'(\pi) d\pi/2$. Note that this last inequality holds for every shock $\delta > \delta'$ and that $L'(\pi)$ does strictly better for P than $h'(\pi)$ because $L'(\pi)$ entails less cost for the same probability of P winning. Therefore, I have shown that for any given δ, $\int_{-1}^{1} h'(\pi)\, d\pi/2 > \int_{-1}^{1} L'(\pi)\, d\pi/2$. This implies that I have proved, for the case that $m' = 0$, that $U_P(L'(\pi), r) > U_P(h'(\pi), r)$.

To complete the proof I need to also show now that in the case that $m' < 0$, the leveling strategy $L'(\pi)$ spends less than $h'(\pi)$. This would mean that $L'(\pi)$ does strictly better for P than $h'(\pi)$, because by construction P wins with the same probability with either strategy. First note that given δ', $h'(\pi)$, and r, if $m' < 0$, then it must be the case that a set of non-zero measure of voters at the right of the median is not voting for P. Denote this set by A_1. Formally, $A_1 = \{\pi : \pi \in [0, 1] \cap \Delta_R (h'(\pi), r)\}$, where $\Delta_R (h'(\pi), r)$ denotes the set of voters that vote for R if $m' < 0$. This implies also that a set of non-zero measure of measure of voters $\pi \in [m', 0]$ is voting for P. Denote this set by A_2. Formally, $A_2 = \{\pi : \pi \in [m', 0] \cap \Delta_P (h'(\pi), r)\}$, where $\Delta_P (h'(\pi), r)$ denotes the set of voters that vote for P. I claim now that $\Pr\{A_1\} = \Pr\{A_2\}$. If that were not the case, m' would not have to its right half of the voters preferring P as required by definition. We know that

$$\begin{aligned}\Pr\{A_1\} + \Pr\{[0,1] \cap \Delta_P(h'(\pi), r)\} &= 1/2 \\ \Pr\{A_2\} + \Pr\{[0,1] \cap \Delta_P(h'(\pi), r)\} &= 1/2.\end{aligned}$$

It follows from the second equation that $\Pr\{[0,1] \cap \Delta_P(h'(\pi), r)\} = 1/2 - \Pr\{A_2\}$. By substituting this expression in the first equation I get $\Pr\{A_1\} + 1/2 - \Pr\{A_2\} = 1/2$, and I have proved that $\Pr\{A_1\} = \Pr\{A_2\}$.

Now, I denote the total cost of transfers from P to voters in A_2 with strategy $h'(\pi)$ by $\int_{A_2} h'(\pi)\, d\pi/2$ and I denote the total cost for P of leaving all voters $\pi \varepsilon A_1$ indifferent between P and R with a leveling strategy $L'(\pi)$ by $\int_{A_1} L'(\pi) d\pi/2$. I want to prove next that $\int_{A_2} h(\pi)\, d\pi/2 > \int_{A_1} L'(\pi) d\pi/2$. To do so, I define first a strategy $\widetilde{h}(\pi)$ such that $\widetilde{h}(\pi) = h'(\pi)\, \forall \pi \notin A_2$ and $\widetilde{h}(\pi) = r - k\pi - b - \delta' \forall \pi \notin A_2$. Note that since a voter is indifferent between R and P when $k\pi + b + \widetilde{h}(\pi) - r + \delta' = 0$, $\widetilde{h}(\pi)$ leaves every voter $\pi \in A_2$ indifferent between P and R. It immediately follows that $\int_{A_2} h'(\pi)\, d\pi/2 \geq \int_{A_2} \widetilde{h}(\pi)\, d\pi/2$, except for a set of measure zero. Therefore, in order to prove that $\int_{A_2} h'(\pi)\, d\pi/2 > \int_{A_1} L'(\pi) d\pi/2$, it suffices to prove that $\int_{A_2} \widetilde{h}(\pi)\, d\pi/2 > \int_{A_1} L'(\pi) d\pi/2$.

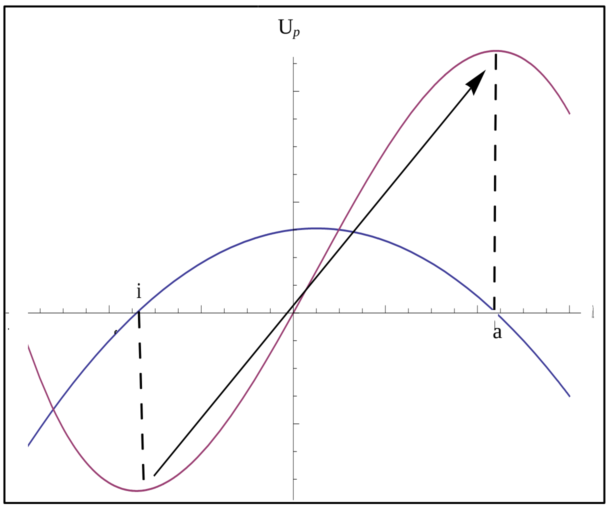
Let now $\overline{\pi}$ be any non-zero element of A_1 and $\underline{\pi}$ be any non-zero element of A_2. It is easy to show that $\widetilde{h}(\underline{\pi}) > L'(\overline{\pi})\ \forall\ \overline{\pi} \in A_1$ and $\forall\ \underline{\pi} \in A_2$. By construction, with a leveling strategy $L'(\pi)$ all voters $\overline{\pi} \in A_1$ are indifferent between P and R; $k\overline{\pi} + b + L'(\overline{\pi}) - r + \delta' = 0$ $\forall\ \overline{\pi} \in A_1$. Therefore, $L'(\overline{\pi}) = r - k\overline{\pi} - b - \delta'\ \forall\ \overline{\pi} \in A_1$.

It has been established above that $\widetilde{h}(\underline{\pi}) = r - k\underline{\pi} - b - \delta'\ \forall\ \underline{\pi} \in A_2$ and that $\overline{\pi} > \underline{\pi}$. It then must be true that $r - k\underline{\pi} - b - \delta' > r - k\overline{\pi} - b - \delta'$. Therefore, it must be the case that $\widetilde{h}(\underline{\pi}) > L'(\overline{\pi})\, \forall \overline{\pi} \in A_1$ and $\forall \underline{\pi} \in A_2$. Given this, as well as the fact that $\Pr\{A_1\} = \Pr\{A_2\}$, it follows that $\int_{A_2} \widetilde{h}(\underline{\pi})\, d\underline{\pi}/2 > \int_{A_1} L'(\overline{\pi}, \delta') d\overline{\pi}/2$, which implies that $\int_{A_2} h'(\pi)\, d\pi/2 > \int_{A_1} L'(\pi) d\pi/2$. This is true for any shock $\delta \geq \delta'$, therefore, I have proved that $U_P(L'(\pi), r) > U_P(h'(\pi), r)$.

Proof of Uniqueness

The function that P maximizes, $U_P(\lambda, r) = \left(B - \lambda^2/4k\right)(u - r + b + \lambda)/2u$, is cubic with a negative coefficient for λ cubed. This implies that the FOC is given by a quadratic function with a negative first term. This downward parabola crosses the vertical axis in the positive region, that is, above the horizontal axis, and it has a positive root and a negative root (See Figure 5 for an illustration).

Figure 5: Maximum



The geometry of the cubic equation which goes to negative infinity as λ goes to infinity implies that the smaller solution to the FOC is a local minimum (Point i in Figure 5) and that the upper root is a local maximum (Point a in Figure 5). Thus the cubic function must be increasing between these two roots (Figure 5). It is also decreasing after the larger root. We can discharge thus the solution at the negative root and state that the global maximum is either a corner solution at the upper bound for substantively possible λ or an interior solution at the larger of the two solutions to the FOC. Note that with the corner solution at the upper bound, P would burn the entire budget and its utility would be equal to 0. Since the payoff for P is always positive at the upper root of the FOC it follows that the corner solution is a dominated strategy and that the solution is always interior at the upper root.

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