

# Electoral Risk and Vote Buying, Introducing Prospect Theory in the Experimental Study of Clientelism

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## Abstract

Most traditional theories of clientelism assert that parties in need of securing electoral support invest in vote buying. We consider this framework limited because of two reasons. First, it assumes that losses and gains affect a party's decision-making process in a comparable way. Second, the framework assumes that the decision-making process of clientelist political parties focuses only on absolute levels of utility while overlooking changes in outcomes with respect to a reference point. By proposing a shift from gains to a one focused on losses, we hypothesize that parties are risk-averse in the domain of gains and risk-seeking in the domain of losses—i.e., losing an election hurts more than winning an election pleases. Unlike traditional theories of clientelism, we argue that clientelist political parties buy more votes when they are winning the election or have experienced important losses in the past. After formalizing a theory of vote buying, we tested it by designing an economic experiment. Exploiting these novel experimental data, we show that prospect theory bridges important unexplained gaps in the literature.

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## I. PARTIES WITH A GAMBLING PROBLEM: VOTE BUYING AS A RISKY YET PERSISTENT STRATEGY

Vote buying is a very risky strategy.<sup>1</sup> First, it is illegal.<sup>2</sup> Buying votes requires extra care to avoid reputational, electoral, and legal costs. For instance, due to the stigma associated with vote buying, clientelist political parties might risk electoral support from the wealthy (Weitz-Shapiro 2012) or from society in general (González-Ocantos, Kiewiet de Jonge, and Nickerson 2014). Second, vote choices are secret, thus preventing parties from conducting effective monitoring and enforcement (Nichter 2008). Even in developing contexts such as Africa (Wantchekon 2003; Vicente 2014), the Philippines (Hicken, Leider, et al. 2015; Hicken, Leider, et al. 2018) and Latin America (Hidalgo and Nichter 2015; Oliveros 2019; V. Murillo, Oliveros, and Zarazaga 2021), voters might accept the private benefit but then secretly vote for another party (Stokes 2005; Nichter 2008; Szwarcberg 2013; González-Ocantos, Kiewiet de Jonge, and Nickerson 2014; Vicente 2014), rendering the risks taken by the clientelist party worthless.<sup>3</sup>

If vote buying is risky (Szwarcberg 2013, p. 43), expensive (Zarazaga 2014, p. 35), and uncertain (Rueda 2017, p. 164), how do clientelist political parties allocate scarce resources efficiently? In this paper, we address two related but more specific questions about strategic vote buying related to the role of political contestation and sunk costs. First, *How risk-tolerant are parties when facing contested elections?* Second, *Do clientelist political parties consider “yesterday’s” spending levels when buying votes “today”?* These are important questions, as they directly speak about a party’s decision-making process when faced with risk. Unfortunately, we find that some of the literature provides conflicting answers to these questions. This paper posits that a number of these gaps originate in a misunderstanding about a party’s decision-making processes under risk.

Traditional theories of clientelism assert that vote buying is more likely when parties are losing elections, while ignoring prior spending levels on vote buying. We consider this framework is limited in a number of ways. First, it assumes that losses and gains affect a party’s decision-making process in a comparable way—i.e., winning elections feels just as good as losing one hurts. Second, it

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<sup>1</sup>Gans-Morse, Mazzuca, and Nichter (2013) explain that clientelist parties utilize a mix of four clientelist strategies during elections (vote buying, turnout buying, abstention buying, and double persuasion). In this paper we concentrate on vote buying which is defined as the distribution of rewards during elections in contingent exchange for vote choices (Nichter 2014, p. 316).

<sup>2</sup>Bahamonde (2022) explains that in the United States, vote buying was illegal as early as the 1700s.

<sup>3</sup>In fact, since clientelism may also work even with low levels of enforcement and monitoring (Hicken and Nathan 2020), investments in clientelism are always done in contexts of very high risk.

assumes that the decision-making process of clientelist political parties focuses only on absolute levels of utility while overlooking changes in outcomes with respect to a reference point—i.e., it does not matter whether clientelist parties have had successes or failures in the past (Kahneman, Knetsch, and Thaler 1986; Schumacher et al. 2015). In this paper we contest these assumptions.

By introducing prospect theory (Kahneman and Tversky 1979) in the study of clientelism, our argument is twofold. First, clientelist political parties buy more votes when they are winning the election. When parties are in the domain of gains (e.g. in favorable electoral contexts), they tend to over-secure the electoral support they already have. Analytically, the argument proposes a shift from gains to a one focused on losses: while parties like having a larger supporter base, losing voters hurts more than winning voters pleases, putting heavy pressures to invest in vote buying, specially in favorable electoral contexts. In fact, we find that the literature provides some empirical support for this argument. For instance, González-Ocantos, Jonge, et al. (2012, pp. 205–206), who fielded a list experiment in Nicaragua for the 2008 elections, find that while the incumbent party enjoyed 40% of the electoral support, 24% of registered voters were offered a clientelist gift in an election that “[was] not heavily contested.” Why would a party buy such a *massive* number of votes in a safe and uncontested election? Are parties purposely wasting their resources? Our argument sheds light onto these questions by asserting that parties in the domain of gains find unbearable the idea of potentially losing the massive electoral support they already have. By exploring the concepts of “endowment effect” (Kahneman, Knetsch, and Thaler 1990) and “loss aversion” (Kahneman, Knetsch, and Thaler 1991), this paper explains that parties will buy more votes when winning the election because prospective losses are weighted substantially more than commensurate gains (i.e. risk aversion respect to losing electoral support parties already have).<sup>4</sup> Thus, in scenarios like these, parties take the risky gamble (i.e. vote buying) because it seems safer than the potential costs of losing current electoral endowments.

Second, clientelist political parties buy more votes when their levels of sunk costs are high. Once clientelist political parties are in the domain of losses (i.e. when they are losing the election), risky strategies (such as vote buying) become more attractive for recovering losses in the short run (risk-seeking respect to vote buying). In these cases, “gambling” more money on vote buying will

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<sup>4</sup>The relationship between vote buying and the level of risk attained to future electoral outcomes has also been studied in the literature. For instance, Rueda (2015, p. 428) presents a game-theoretical model of vote buying in which a broker sustains bribed voters’ compliance by conditioning future bribes. Similarly, Gallego (2014, p. 401) develops a formal model of political clientelism in which a candidate disciplines a majority of voters through the promise of a future flow of benefit.

seem more attractive because clientelist political parties will feel the need to aggressively compensate for prior losses. Thus, in several respects we stand opposite to traditional explanations of vote buying that argue vote buying should be more common when parties are losing the election. However, in other respects our findings complement past research, but for different reasons: incumbents do not “gamble” more on vote buying because of resource availability only, but also because they feel the need to “break even.”

We acknowledge that only paying attention to incumbency is a narrow strategy, potentially excluding other relevant factors that explain vote buying (see Hicken 2011 for an excellent review; importantly, see also Hagene 2015, p. 147). However, due to space concerns, this paper explores the traditionally studied relationship between incumbency and vote buying because scholars have usually argued that incumbency grants considerable amounts of leverage to clientelist candidates. For instance, Boas and Hidalgo (2011, p. 869) find that in Brazil “incumbency *more than doubles* the probability of an application’s approval by the Ministry of Communications.”<sup>5</sup> Similarly, Medina and Stokes (2009) stress how some incumbents act as political monopolists with greater access to political and economic resources, and importantly, Calvo and M. V. Murillo (2004) and Oliveros (2021) explain how incumbents parties grant public jobs to party supporters.

Building on traditional theories of clientelism, we first formalized a basic theory of vote buying, and then we tested it by designing an economic experiment. The voting experiment was carefully designed to capture different domains of gains and losses as well as varying reference points. Exploiting these novel experimental data, we show that prospect theory sheds light on several inconsistencies present in the literature. As the statistical analyses suggest, because of risk-aversion in the domain of gains and risk-seeking in the domain of losses, experimental subjects adopt the riskier alternative of buying votes in a way that is unpredicted by standard expected-value calculations.

We contribute to the literature in three ways. First, while prospect theory has been influential in political science only among international relations scholars, the theory has not received much attention among political economists nor comparative politics scholars (Mercer 2005, p. 2, Vis 2011, pp. 338–339). We believe this is a serious issue that should be corrected. We intend to bridge this gap by offering an alternative theory of the political economy of vote buying taking prospect theory as a starting point. Second, in this paper we follow Levy (1992b, p. 297) as we carefully try to not only show that the observed behavior of political agents is consistent with prospect theory but that

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<sup>5</sup>Our emphasis.

prospect theory provides a better explanation of vote buying than do traditional descriptions of vote buying. Third, and from a methodological standpoint, we follow Aldrich and Lupia (2011) and McDermott (2002) in that there is a need for implementing experiments aimed to test formal models, and such, we believe that political scientists might benefit from this process to establish empirical validation of formal models (McDermott 2002, p. 45). Since the formal model follows traditional theories of clientelism, it is particularly relevant to test the model in an experimental setting. Finally, our paper is especially relevant to the study of democracy and development, where experiments have been described as “a promising research tool” (De La O and Wantchekon 2011).

This paper proceeds as follows. First, we present several gaps present in the vote-buying literature. Second, we explain the basic concepts behind prospect theory, while providing more details about the direct implications for the clientelism and vote-buying literatures. Third, based on a basic formal model of vote buying, we present our experimental design. Fourth, we analyze the experimental data. Fifth, we conclude by readdressing our results and by discussing some of the limitations of our study as well as proposing some future avenues research.

## II. TRADITIONAL THEORIES OF CLIENTELISM AND EXPECTED UTILITY THEORY

Neumann and Morgenstern (2007) introduced expected utility theory as one of the first theories of decision making under risk (McDermott 1998, p. 15). As its core, the theory considers that the value of an outcome is equal to its payoff times its probability, and that agents choose the option with the highest weighted sum (Quattrone and Tversky 1988, Levy 1992a, p. 173, Levy 1997, p. 88, McDermott 1998, p. 15). Importantly, it is assumed that the carrier of utilities are levels of assets rather than gains and losses respect to a reference point (Levy 2003). Since expected utility theory was introduced, a specific set of behavioral assumptions has dominated political science (Levy 1997, p. 87, McDermott 2004, p. 289).

We contest this traditional approach focused on absolute gains by shifting the attention to losses and context-dependent decision-making processes. In particular, we find it limiting that most research on clientelism focuses on absolute levels of wealth, while assuming that whether decision-makers (i.e., parties) are in a domain of gains or losses should not affect their attitudes toward risk. In simple, our paper proposes that clientelist parties process their electoral and economic

gains and losses not in a vacuum, but considering how prior gains and losses affect their choices (Thaler and Johnson 1990, p. 643). Thus, we suggest to consider prospect theory as an alternative framework to study vote buying, specifically, by incorporating a decision-maker’s risk propensity as it shifts in response to changes in the environment (McDermott 2004, p. 292).

This paper posits that a shift in focus is a valuable exercise because strategic behavior under risk has usually been modeled according to assumptions about expected-value calculations that are “unrealistic” (Aldrich and Lupia 2011, p. 124). Furthermore, a large body of experimental research finds that many behavioral expectations under risk do not comport with the assumptions present in classical decision-making theory (Battalio, Kagel, and Jiranyakul 1990, p. 25, Mercer 2005, p. 1). As a matter of fact, Bernoulli—the forefather of expected utility theory (Schoemaker 1982)—was the first to notice that people would not always behave on the basis of the expected value of a game (McDermott 1998, pp. 15–16). From a decision-making standpoint, many find that the assumptions underlying classical theory of risky choice are “systematically violated” (Quattrone and Tversky 1988, p. 719) and that both variance and semivariance ideas of risk have been shown to be “inconsistent” with von Neumann axioms (March and Shapira 1987, p. 1405). Furthermore, there seems to be a strong consensus that standard assumptions about strategic behavior under risk “continually failed empirically” (Vis 2011, p. 335), while others find that experiments have shown that “actual behavior and decisions frequently deviate from the neoclassical predictions” (Fatas, Neugebauer, and Tamborero 2007, p. 167).

In sum, the empirical literature consistently finds that “people systematically violate the predictions of expected utility theory” (Barberis 2013, p. 173). In fact, Levy (1997, p. 87) finds it “ironic” that just as rational choice has become the most influential paradigm in political science, the theory has come under heavy attack by experimental and empirical evidence. The problem is that some of these assumptions have also been embedded in most of the vote-buying literature. Thus, while much progress has been made in the understanding of clientelism and vote buying (see Hicken 2011 for an excellent review), there are several inconsistencies that authors tend to ignore or treat as unimportant empirical deviations. We believe that some of these inconsistencies originate in the wrong understanding of decision-making under risk. Consequently, rather than neglecting traditional theories of clientelism, our paper seeks to complement such progress by bridging several gaps in the literature. In this paper, we address two important inconsistencies relevant to our understanding of vote buying. We concentrate on these two aspects because both speak directly to the party’s

decision-making process under risk.

**Political Contestation** The first inconsistency in part of the clientelism literature is the role political contestation plays in vote buying. Whether parties target their resources when they are winning or losing the election is a fundamental question, yet some of the literature is quite inconclusive about this issue. In fact, Weitz-Shapiro (2012, p. 570) suggests that “there is no consensus about the relationship between high levels of political competition and the phenomenon of clientelism.”

On the one hand, some explain that the more contested an election, and hence the more risk of losing the election, the more incentives to resort to vote buying (Scott 1972; Shefter 1977; Kitschelt and Wilkinson 2006; Diaz-Cayeros 2008; Keefer and Vlaicu 2017; Corstange 2018). In fact, from a risk-management perspective, this approach makes sense. If we think of vote buying as an insurance against political losses, then utility-maximizer parties should “buy insurance” only in risky scenarios, that is, in cases when the expected electoral outcome is a loss. As Arrow (1996, p. 111) explains, “those most at risk will buy more insurance than the others.” In addition to that, a very important line of work argues for a conditional effect of political contestation and poverty on vote buying (Kitschelt 2000; Kitschelt and Altamirano 2015). Since the poor derive more utility from immediate transfers than the uncertain returns associated with future policy packages, clientelist political parties mostly target the poor (Brusco, Nazareno, and Stokes 2004; Stokes et al. 2013). Following this rationale, Kitschelt and Wilkinson (2009, p. 32) explain that political “competition enhances clientelism,” especially among poor countries, while Weitz-Shapiro (2012) finds that in Argentina, mayors who face larger oppositions in their town councils invest more in clientelism when the size of the poor group is large.

Yet, there are recent contributions that report very large levels of vote buying in contexts of *low* political contestation (like the Nicaraguan example mentioned above, see González-Ocantos, Jonge, et al. 2012). In addition that, Medina and Stokes (2002) and Medina and Stokes (2009) explain that political parties that hold an electoral *monopoly* tend to offer clientelist goods to deter the entry of political challengers. Similarly, Magaloni (2008) explains that hegemonic regimes such as the PRI in Mexico have survived thanks to successful deterrence strategies and clientelism (see also Hagene 2015, p. 146). In fact, other notable examples include cases of authoritarian or semi-authoritarian clientelism where political contestation is outright banned—like in Russia (Saikkonen 2021)—or



limited, like in Cameroon (Miscoiu and Kakdeu 2021).<sup>6</sup> At the end of the day, however, the question still stands: When should vote buying be higher, in contexts of high or low political contestation? We believe this lack of consensus is due in part to a misunderstanding of a party’s decision-making under risk.

**Sunk Costs** In other respects, our argument somewhat conforms with past research, but for different reasons. Our overall explanation is different because it considers that decision-makers weigh their options with respect to a reference point, which in turn explains higher levels of vote buying. As explained above, traditional vote-buying theories usually explain that incumbents enjoy important comparative advantages relative to political challengers. Since incumbents are in office while campaigning, they are usually able to divert public resources to vote buying (Cox and McCubbins 1986; Dixit and Londregan 1996; Daglberg and Johansson 2002; Hicken 2007; Grzymala-Busse 2008). While incumbents’ relatively higher levels of clientelist spending may be explained by their disposable public resources, we believe this is a necessary but insufficient condition to explain vote buying.

Building on Szwarcberg (2013, p. 33), we posit that having the *capacity* to buy votes is a necessary but insufficient condition to explain the *use* of clientelism. Thus, while incumbents might have more available resources, they will not necessarily engage more aggressively in vote buying. Taking this important insight as a starting point, we consider an additional conditional effect under which clientelist political parties spend more on vote buying. In particular, we argue that incumbents not only need to have the capacity to deliver—as traditional accounts of vote buying assert—but also have a history of large prior investments; the larger prior spending levels are, the larger the spendings will be. The argument does not rely on some deterministic treat of the incumbent but about the need to compensate for prior losses or “sunk costs.”

Incumbents are usually portrayed as if they were always in the domain of gains, as the “incumbency *advantage*” concept implies. However, we tend to disagree with this view. First, the material, coordination, and political costs of maintaining a large-scale vote-buying operation is very high (Scott 1969; Auyero 2000; Kitschelt and Wilkinson 2009; Szwarcberg 2013). Party machines need to have the capacity to grant public jobs to their clients (Calvo and M. V. Murillo 2004; Oliveros 2021), but also to organize rallies (Szwarcberg 2012), deliver benefits (Brusco, Nazareno, and Stokes

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<sup>6</sup>Due to space concerns we leave these forms of clientelism for future research.

2004), “*acarrear*” (Hilgers 2011, p. 577) and monitor clients at the best of the machine’s abilities (Stokes 2005, p. 317). Second, incumbents face a number of uncertainties. Party machines cannot effectively monitor their clients (Hicken 2011), nor their own brokers (Kitschelt and Wilkinson 2009, p. 9), and also struggle obtaining resources to be delivered in a clientelist manner (Auyero 2000; Zarazaga 2014). If vote buying is expensive and uncertain, What motivates clientelist political parties to buy such massive numbers of votes, as the Nicaraguan example above suggested? In this context of uncertainty and risk, we argue that clientelist political parties will “gamble” more money and resources to compensate for prior losses. For every additional unit incumbents spend on vote buying, they will feel the need to spend even more to “break even” to try to compensate for prior losses or clientelist investments.

In sum, the way in which the literature assesses the role of political contestation and sunk costs on vote buying leaves many unaddressed gaps. First, part of the literature seems to suggest that clientelist political parties waste valuable resources when buying votes in uncontested elections. Second, the literature explains higher levels of clientelist spending by focusing only on current available resources while overlooking the role of prior losses or investments on vote buying (i.e., sunk costs). We interpret this apparent “misbehavior” (Thaler 2015) as an analytical problem, particularly, a misunderstanding of how political parties make decisions under risk. To bridge these gaps, the next section introduces prospect theory (Kahneman and Tversky 1979) to the study of vote buying. Importantly, this section sheds light on why parties buy votes when they are winning the election and why sunk costs might explain massive spendings on vote buying.

### III. PROSPECT THEORY AND ITS IMPLICATIONS FOR CLIENTELISM: WHEN LOSSES LOOM LARGER THAN GAINS

Prospect theory is a theory of decision making under conditions of risk (McDermott 1998, p. 15), and it was developed by Kahneman and Tversky (1979) as a way to incorporate empirically observed violations of expected utility (Levy 1992a, p. 179, McDermott 2004, p. 290). Since its development, prospect theory has emerged as a “leading alternative” (Levy 1992a, p. 171), “best available description,” (Barberis 2013, p. 173) and “empirically correct theory” (Vis 2011, p. 334) about how people evaluate risk (Ackert et al. 2006, p. 5), particularly excelling in providing a model that offers “descriptively accurate formulations” of the human decision-making process (McDermott

2004, p. 292).<sup>7</sup> Importantly, it should be noted that while attitudes toward risk are usually portrayed as aspects of personality (March and Shapira 1987, p. 1406), prospect theory is *not* a personality theory; that is, it is not necessary to know about the individual personality traits of decision-makers in order to predict behavior (McDermott 2004, p. 293, Vis 2011, p. 335)

While the theory has been most influential among international relations scholars, it has unfortunately had “limited” influence on political science as a whole (Mercer 2005, p. 2). Still, there are several contributions in comparative politics that take prospect theory as a framework. For instance, Weyland (2002) studies levels of loss aversion of dictatorships when they perform radical economic reforms. Vis (2009) and Vis (2010) study welfare state reform showing that political gains are the necessary condition for not-unpopular reforms, while deteriorating socio-economic situations or political losses are necessary for unpopular reforms. Additionally, Steinacker (2006) studies issue salience, Schumacher et al. (2015) focuses on party platform change, and Carreras (2019) argues that “citizens who were in the domain of economic losses were more likely to take a risk and vote in favor of Brexit.”

Since others have already provided very comprehensive overviews of prospect theory (Levy 1992a; Levy 1992b; Levy 1997; McDermott 1998; McDermott 2004; Mercer 2005; Vis 2011; Barberis 2013; Linde and Vis 2017; Vieider and Vis 2019), we will limit this section to describing its main components.<sup>8</sup> The theory is based on two empirically derived concepts (Vieider and Vis 2019, p. 334). First, utilities are defined over changes in outcomes with respect to a reference point (“reference dependence”). Note the sharp contrast with expected value theories, where the focus is on absolute levels of wealth (Ackert et al. 2006, pp. 5–6). Second, individuals distort values of outcomes in an asymmetrical, non-linear, S-shaped way when making risky decisions (“value-function dependence”). Note also another important difference with expected value theories, where agents are assumed to treat expected utility values linearly, something that does not seem to go away, “even with training and effort” (McDermott 2004, p. 293).<sup>9</sup> As McDermott (1998, p. 18) clearly summarize it, “prospect theory predicts that individuals tend to be risk averse in a domain of gains, and relatively risk seeking in a domain of losses.” This distinction also separates prospect theory from expected value

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<sup>7</sup> *Descriptive* analyses focus on decision-making processes “as they are,” in sharp contrast to *normative* analyses, where the focus is on “how they should be” (Kahneman and Tversky 1984, p. 341, see also Thaler 1980).

<sup>8</sup> For the purposes of this paper, we will focus on the main implications of the value function, leaving other aspects of the theory, such as the probability weighting function (Levy 2003, pp. 220–221) for future research.

<sup>9</sup> Note that expected utility theory essentially assumes a non-linear utility function for risk averse and risk acceptant (but not risk averse) actors. I thank one of the reviewers for this comment.

theory, where the latter assume that whether decision-makers are in a domain of gain or loss should not affect their attitude toward risk (Mercer 2005, p. 1).

Reference dependence is the central idea in prospect theory (McDermott 1998, p. 40, Barberis 2013, p. 178). This aspect of the theory allows people’s preferences to depend on the circumstances they face (March and Shapira 1987, p. 1412, McDermott 2004, pp. 293–294, Fatas, Neugebauer, and Tamborero 2007, p. 168), which is usually (Vis 2011, p. 335), but not always (Levy 1992a, p. 174), the *status quo*,<sup>10</sup> and how it shifts over time (McDermott 1998, p. 28, McDermott 2004, p. 301).<sup>11</sup> As Kahneman and Tversky (1979, p. 273) put it more clearly, “the carriers of value or utility are changes of wealth, rather than final asset positions.” An important consequence is that, contrary to the assumption of invariance (Barberis 2013, p. 186), a shift in the reference point should also lead to reversals of preferences (Quattrone and Tversky 1988, p. 719, Thaler and Johnson 1990, p. 643, Levy 2003, p. 218).

Value-function dependence is another central idea in prospect theory. Importantly, the shape of the value function is non-linear. In the domain of gains, the concavity of the value function encourages risk aversion, while in the domain of losses, the convexity of the value function encourages risk-seeking behaviors (Levy 1992a, pp. 183–184). Formally, the asymmetrical curvature of the value function explains why individuals exhibit risk-averse behaviors in choices among gains but risk-acceptant behaviors in choices among losses (Levy 1997, p. 87). A direct consequence of this is that prospect theory pays considerable attention to losses.<sup>12</sup> In fact, Levy (1992a, p. 171) explains that individuals “give more weight to losses than to comparable gains,” which translates into the famous statement *losses loom larger than gains*. From an analytical point of view, we consider this to be *the* feature that trumps the normative expectations contained in standard expected-value theories.

The implications for vote buying are considerable. In sharp contrast to traditional vote-buying theories, prospect theory predicts that clientelist parties will likely buy votes when they are winning the election, that is, when they are in the domain of gains. In these scenarios, parties will find

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<sup>10</sup>The location of the reference point emerges as a critical factor in the analysis of decisions (Kahneman and Tversky 1979, p. 288). Levy (1992a, p. 174) explains that the reference point could also be an “aspiration level.” In a similar way, Koszegi and Rabin (2006, p. 1135) developed the idea of a reference point that consists of “expectations rather than the status quo.” We owe this point to Salomo Hirvonen.

<sup>11</sup>While we do not focus on the role of emotions, others have found that “sad people will take more risk when trying to avoid a certain loss” (Campos-Vazquez and Cuijty 2014, p. 6).

<sup>12</sup>Losses have also been the focus in other areas of political science (McDermott 2004, p. 298). For instance, Lau (1985, p. 132) explains that “negative information is more influential than comparable positive information.”

intolerable the idea of potentially losing the supporter base they already have, particularly because decision-makers are more concerned with *preventing* a decline than increasing gains (Levy 1997, p. 89). Analytically, under such circumstances of “loss aversion” (Kahneman and Tversky 1984; Kahneman, Knetsch, and Thaler 1991; Levy 1992a; McDermott 2004; Mercer 2005)—i.e., parties giving more weight to potential losses—the value function will encourage risk-averse behaviors, making investments in vote buying more attractive. Our argument is consistent with (Levy 1992b, pp. 297, 299–300) who explains that in the domain of gains, risk-averse decision-makers are excessively eager to secure gains, and with Schumacher et al. (2015, p. 1042), who find that “loss aversion motivates [agents] to become risk acceptant.”

Importantly, it should be noted that the aversion is with respect to potential negative electoral outcomes (i.e., losing an already acquired supporter base). This is consistent with prospect theory, particularly, with the concept of “endowment effect:” the very process of acquiring something (e.g. a supporter base) enhances the value of the object (Thaler 1980; Kahneman, Knetsch, and Thaler 1990). In these situations, decision-makers (parties) should tend to over-value current possessions (Levy 1992a, p. 175), making the risky strategy (vote buying) seem more attractive. In fact, Horowitz and McConnell (2002) find that losing something looms 2.5 times more than obtaining it, thus making agents more eager to hold on to the good.

In addition, our argument complements with other empirical studies that confirm that “actors perceive themselves to be in the domain of losses more often than we would normally expect,” even if they are not (Levy 1992b, p. 291; see also Lau 1985). Thus, the empirical consequences of both loss aversion and endowment effect combined with the perception of enhanced losses will push winning parties to be more prone to gamble more resources on vote buying. Analytically, the idea of potentially losing something (voters) will shift the decision-maker’s (party) reference point, driving them to take the risky alternative (vote buying).

Moving forward, clientelist parties can also be expected to buy more votes when they are in the domain of losses because of risk-seeking. In these cases, vote buying should be higher when they have experienced important losses or when they have had high spending levels in the past. In line with prospect theory, we argue that past losses are harder to accept, and hence when things have been bad in the past, decision-makers are more likely to make risky choices “today” to recover “yesterday’s” losses (McDermott 2004, p. 294). Analytically, Levy (1992b, p. 297) notes that the elasticity of the risk-seeking behavior is quite high because the magnitudes of past losses need not be

large in order to induce the behavior. This means that even small losses can be expected to induce risk-seeking behaviors. Consequently, we expect a steeper predicted effect in the data analyses.

Importantly, the risk-seeking behavior is with respect to vote buying as a strategy. By shifting the decision-makers’ reference point downward, vote buying seems more attractive because of the tendency of individuals in the domain of losses to try to “break-even” (Thaler and Johnson 1990). Unlike traditional understandings of the “incumbency advantage,” our argument implies that clientelist political parties should be expected to buy more votes not necessarily because they want to win the next election but because they will try to compensate for past losses or “sunk costs.”<sup>13</sup> Hence, we expect that clientelist parties will buy more votes when their past electoral losses or past levels of clientelist investments have been high. Clientelist parties that have a history of lost elections or that have invested considerable amounts in vote buying in the past are possible examples of this mechanism.

#### IV. EXPERIMENTAL DESIGN: BUYING VOTES IN THE LAB

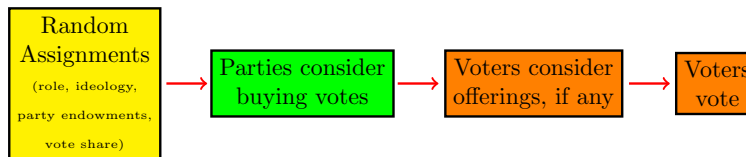
Formal models can help experimentalists to determine which theoretical settings and equilibria are most relevant to a particular causal hypothesis (McDermott 2002, Aldrich and Lupia 2011 and Barberis 2013, p. 174). Thus, in subsection A1 we developed a vote-buying game within the Downsian paradigm (Downs 1957; Enelow and Melving Hinich 1990). The idea was to test the descriptive accuracy of the game-theory model in an experimental context (Bassi, Morton, and Williams 2011, p. 559, Dickson 2011, Aldrich and Lupia 2012, Tyszler and Schram 2016, p. 361, Vieider and Vis 2019, p. 1). This feature is particularly relevant for our identification strategy because most spatial theories of vote buying are based on expected utility assumptions. This section tests for those assumptions. Epistemologically, an experiment based on classic economic maximization for testing hypotheses in the context of prospect theory becomes a “crucial case.” Thus, the “least-likely” design approach presented in this paper should improve the inferential leverage of our results (Levy 2008, p. 12).

As Figure 1 shows, at the beginning of every game, participants received a role at random.

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<sup>13</sup>Due to the “cost of governing” (Powell and Whitten 1993; Nannestad and Paldam 2002; Bawn and Somer-Topcu 2012), Schumacher et al. (2015, p. 1041) empirically find that incumbents in the domain of losses take more risks. In terms of our argument, we also find it plausible for incumbents to fear losing office, thus incentivizing investments in clientelism. However, while our explanation complements theirs, our formal model, the experimental design and the data analyses focus on incumbency and sunk costs. Building on Schumacher et al. (2015), we encourage future experimental research to problematize the incumbent’s risk of losing office. We owe this point to one of the reviewers.

Following Dickson (2011), roles were presented using neutral terminology to maximize experimental control. The design incorporated the following roles: *party A*, *party B*, or *voter*. Every game was played among three players (one *party A*, one *party B*, and one *voter*).



**Figure 1: Experimental Flow and Timing of the Voting Game.**

**Note:** At the beginning of each experimental session, all participants were required to successfully complete two practice rounds. A total of 102 subjects were recruited. Each subject played the game three times, for a total sample size of 306. For every new game, a whole new randomization process took place. Formally, we follow an in-between-subjects design where different groups of individuals are randomly assigned to various experimental or control conditions.

Voters were assigned an “ideological” position at random. That is, voters received at random a certain number of experimental points depending on whether party A or B won the election. For example, if party A won the election, the voter would receive 2,400 points, whereas if party B won the election, the voter would receive 200 points. Hence, the voter in this example should feel “ideologically” closer to party A. Critically, this piece of information was not presented to participants as “ideology,” but as the points either electoral outcome would give. In turn, parties also received an “ideological” position that made them “closer” or “farther away” from the voter.

Substantively, this feature accomplishes two goals. First, it accounts for party-voter spatial distances, as considered by traditional voting theories (Downs 1957; Enelow and Melving Hinich 1990). The basic premise of this paradigm is that the set of candidates that are ideologically closer to a voter produce more utility in the form of fiscal policies, either in terms of redistributive or free-market oriented policies (Boix 2003; Acemoglu and Robinson 2009, but importantly, see Haggard and Kaufman 2016). Second, it incorporates both the targeting and the core/swing voter scholarly debates.<sup>14</sup> We believe it is important to consider these issues because the literature is divided.<sup>15</sup> On the one hand, Cox and McCubbins (1986) and Zarazaga (2016, p. 7) explain that

<sup>14</sup>Due to space concerns, we do not expand on this debate from a prospect theory standpoint. Additionally, we only consider these two ideal types of voters. There are other types that for simplicity are not addressed here. For instance, Zarazaga (2016, p. 7) introduces another category—“conditional supporters”—who “will vote for the party machine only as long as unexpected events do not persuade them to do otherwise.” In addition to that, we acknowledge that single-issue spatial distances might roughly sort core and swing voters in an ideological continuum.

<sup>15</sup>In fact, Carlin and Moseley (2015, p. 14) state that “our knowledge of who parties target remains incomplete.”

since constituencies are well known to clientelist parties, they allocate resources to core voters. On the other hand, Lindbeck and Weibull (1987), Dixit and Londregan (1996), Daglberg and Johansson (2002), and Stokes (2005) argue that since allocating resources to individuals who *ex ante* vote for the party is a waste, parties target swing voters. All in all, by considering single-issue ideological party-voter positions and the utilities associated with them, it was possible to control for other sources of variation that might also influence vote buying.

Next, parties received at random different endowments. For every game, both parties receive the same endowment. However, since our experimental design is an in-between-subjects design, we should be able to observe and exploit statistical differences (if any) across “parties” with different endowments. Participants acting the “party” role accumulated or lost wealth depending on whether they are elected or not elected. Every time they bought votes at some amount, that amount was discounted from their wealth. In turn, participants acting the “voter” role accumulated or lost wealth depending on whether their party was elected or not elected. Critically, and as per economic theories of voting, parties and voters derive utilities when they win elections. It is important to note that following our formal model and Tyszler and Schram (2016, p. 371), both ideology and party endowments were common knowledge among participants.<sup>16</sup>

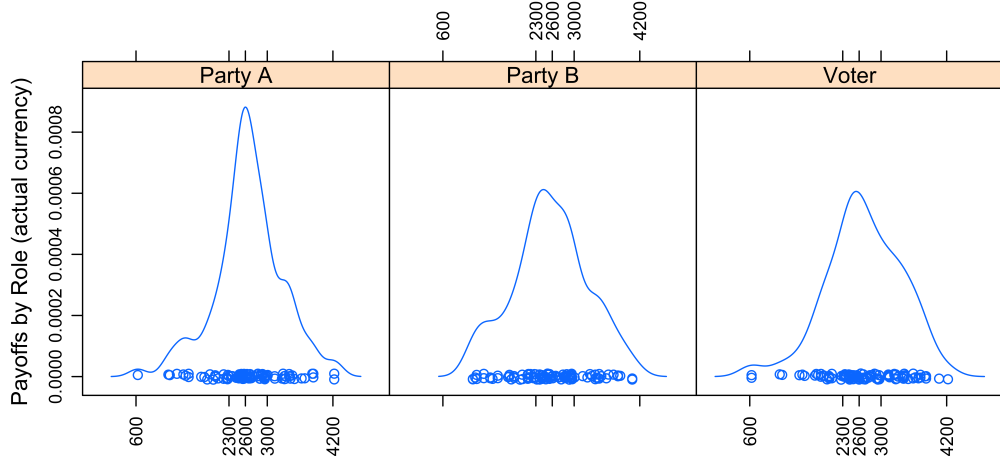
The substantive idea was to reflect the fact that some parties are wealthier than others, a factor that might increase the probability of vote buying (Luna 2014). Importantly, it is not clear whether having more resources leads to more clientelism. On the one hand, Szwarcberg (2013) explains that having economic and material resources available does not necessarily cause more vote buying. Similarly, Hagene (2015, p. 147) finds that political clientelism is “perfectly possible without controlling public funds.” On the other hand, Bahamonde (2018) explains that parties with larger budgets will engage in more expensive forms of clientelism, even buying votes from the wealthy. All things considered, the experimental designed tried to emulate an electoral market of vote buying, where parties not only faced different levels of electoral risk—see below—but also, had different economic means to deal with this problem. Since the role of party resources on clientelism is important but debated, special attention was payed to this issue. Thus, we considered these dynamics in the experiment to account for potentially alternative explanation of vote buying.

Moving forward, both parties received at random an initial vote share, that is, a *certain* number

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<sup>16</sup>For simplicity, voters received zero initial endowments. We discuss the shortcomings of this limitation in the final portion of the paper. We encourage future research to consider different levels of inequality among voters.





**Figure 2: Density of Payoffs by Role (actual currency; show-up fee excluded).**

**Note:** Density plots show the distribution of payoffs expressed in actual currency by experimental condition. Amounts exclude the show-up payment of \$2,000 CLP. 0%, 25%, 50%, 75% and 100% quantiles are shown (rounded).

of (fictional) voters that were going to cast their votes for each party. Overall, this experimental condition mimics the degree to which an election is contested. This portion of the design accomplishes two goals. First, it puts parties in different environments of electoral contestation. In other words, it introduces the element of risk (of losing the election) in the game. Since voters win or lose points when their parties win or lose elections, this risk is also relevant for players acting the “voter” role. Second, it gives (or not) voters a certain amount of electoral leverage. Since Downs (1957), traditional spatial theories of voting have considered that pivotal voters have more weight in an election. For instance, votes have more value in close electoral races. Thus, given that their votes are more decisive, they might have incentives to sell them at higher prices. It is key in our experimental design that all these pieces of information are public.

During the second stage, parties decide whether to buy votes and make an offer to the voter. Experimental subjects acting the “party” role that want to buy votes enter a number of points,

which ranged from zero to the maximum assigned budget in that round.<sup>17</sup> The design allows for simultaneous offers (i.e., offers from both parties), one offer, or zero offers. In the third stage, voters evaluate offers (if any). If the party(s) decided that it (they) did not want to make an offer at that time, the voter is told that the party(s) did not make an offer.<sup>18</sup>

Finally, the experiment was conducted in Chile by the *Centre for Experimental Social Sciences (CESS)* administered by the *University of Santiago* and *Oxford University, Nuffield College* between April 20 2021 and May 28 2021. The subject pool were males and females who were at least 18 years old who were recruited in the surroundings of the university district in downtown Santiago. The experiment was programmed in **0-tree**, the online version of **Z-tree** (Fischbacher 2007). At the beginning of each experimental session all participants were required to successfully complete two practice rounds.<sup>19</sup> Those data were not used in the statistical analyses. In addition, subjects received a show-up payment of \$2,000 CLP ( $\approx$  €2.1). Following Harrison (2006) and others, our experimental design minimizes hypothetical bias and “cheap talk” by compensating subjects with real money according to the quality of their decisions (Morton and Williams 2010a; Dickson 2011).<sup>20</sup> Figure 2 shows the density of payoffs expressed in actual currency, by role. A total of 102 subjects were recruited. Each subject played the game three times. The total sample size is 306. Table A1 shows summary statistics broken down by individual pre-treatment observables. These covariates were captured by a battery of socio-demographic questions delivered at the end of the study.<sup>21</sup> For every new game, a whole new randomization process took place.<sup>22</sup> Formally, we follow an in-between-subjects design, where different groups of individuals are randomly assigned to various experimental or control conditions (McDermott 2002; Tyszler and Schram 2016; Hwang 2021).

All transactions were performed exchanging experimental “points.” Again, we endeavored to employ neutral terminology to maximize experimental control (Dickson 2011). Thus, throughout all

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<sup>17</sup>Participants acting the “party” role are told that offering a zero amount means that they do not want to buy votes at that time.

<sup>18</sup>Voters are told that accepting the offer necessarily implies voting for that party. For simplicity, we did not include the possibility of defecting. We discuss the shortcomings of this limitation in the final portion of the paper. We encourage future designs to include this feature.

<sup>19</sup>To make sure participants understood the dynamics of the game, they were shown two examples of the voting game. Participants were required to enter the correct number of points each hypothetical participant would have received in each example. Importantly, all actual participants had to enter the exact number of points to continue playing the game.

<sup>20</sup>Levy (1997, p. 95) notes that in poorer societies (like the Chilean society), conducting research with relatively smaller monetary incentives is still meaningful. However, see Morton and Williams (2010a) and Bassi, Morton, and Williams (2011).

<sup>21</sup>The table also details the same information conveyed in Figure 2.

<sup>22</sup>That is, participants received a role, an “ideology,” a party endowment and a contestability structure.

three games, participants bought and sold votes (if any) and accumulated and lost wealth expressed purely in experimental points. Every experimental point was equivalent to \$0.42 CLP ( $\approx$  €0.00045). Participants learned about the conversion when reading the initial instructions. Final payoffs were converted to actual currency at the end of the study.

Finally, from an external validity standpoint, we believe that voters in real elections can estimate, with some degree of success, actual vote shares (for instance, by looking at electoral polls). Voters can also identify parties' ideological positions. For example, Luna and Zechmeister (2005) identify a number of conditions that are associated with higher levels of elite-mass congruence in Latin America.<sup>23</sup> Voters can also make inferences about a party's endowment, and how those endowments can be redistributed in a clientelist fashion (Auyero 2000). In turn, the literature is consistent in that brokers also provide necessary information about available resources and how to gain access to them (V. Murillo, Oliveros, and Zarazaga 2021).

## V. STATISTICAL ANALYSES: VOTE BUYING AND RISK

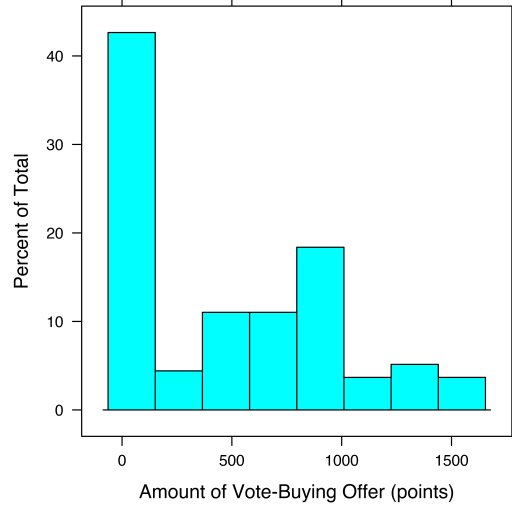
Since the focus of this paper is on vote buying, we discarded the voter data and analyzed all observations  $i$  acting any of the party roles (*party A* and *party B*). In practice, this leaves the data formatted in party-voter dyads. Empirically, we concentrate on one main dependent variable, namely, the amount of the vote-buying offers made by parties (if any). The distribution of this variable is shown in [Figure 3](#).

From an internal validity standpoint, we expect this distribution to vary with the levels of risk the party is dealing with. Accordingly, if the predictions of our formal model are correct, the amount of the vote-buying offers made by parties should be higher in riskier scenarios (i.e., when losing the election). Since vote share, ideological positions, and endowments were public information (as formalized in our game and designed in the experiment), we believe these theoretical expectations should be consistent with the principles of expected utility theory.

However, based on prospect theory, we have different expectations: parties should buy votes due to risk-aversion in the domain of gains (i.e., when winning the election as the idea of losing already acquired electoral support becomes unbearable), and due to risk-seeking in the domain of losses (i.e., when having experienced higher levels of sunk costs). To test these hypotheses we exploit the

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<sup>23</sup>However, see Visconti (2021).



**Figure 3: Distribution of the Dependent Variable.**

**Note:** Since the focus of this paper is on vote buying, we discarded the voter data. The new sample size consisting only of parties is  $N = 142$  (mean = 464, median = 394).

experimental data described above by fitting the OLS regression model specified in [Equation 1](#),

$$\begin{aligned}
 \text{Offer}_i = & \beta_0 + \\
 & \beta_1 \text{Vote Share}_i + \\
 & \beta_2 \Delta \text{Points Accumulated}_i + \\
 & \beta_3 \text{Ideological Distance}_i + \\
 & \beta_4 \text{Party Budget}_i + \\
 & \beta_5 \text{Pivotal Voter}_i + \\
 & \alpha_i + \epsilon_i
 \end{aligned} \tag{1}$$

where *Vote Share* is the percentage of a certain number of (fictional) voters who were going to cast their votes for the party, while  *$\Delta$ Points Accumulated* captures changes in the accumulated points with respect to the experimental round played in  $t - 1$ . For instance, if a player won 1,200 points at  $t - 1$  but then lost 500 in the next round, then  $\Delta \text{Points Accumulated}_t = 700$ . Importantly, this variable captures sunk costs. The intuition is to determine whether they are *not* considered

when evaluating new proposals, as traditional expected-value theories posit. *Party Budget* is the party budget, and  $\alpha_i$  is a vector of participant fixed effects.

Following our formal model, we also factor in a parameter  $\beta_3$  to test the effect of ideological and spatial distances on vote buying. Given the ongoing debate regarding whether parties target core or swing voters, we do not have specific expectations about the sign of  $\beta_3$ . Equation 1 also has a parameter  $\beta_4$  to test the effect of having large budgets. Since it is still contested whether wealthier parties spend more on clientelism relative to poorer parties, we do not have clear expectations regarding the sign of  $\beta_4$  either. Finally,  $\beta_5$  tests whether parties engaged in more aggressive ways of vote buying by spending more resources on pivotal voters. Following the literature, we should expect that  $\beta_5 > 0$ . We consider important to test for these three hypotheses— $\beta_3$ ,  $\beta_4$  and  $\beta_5$ —as they are well-established (alternative) explanations in the vote-buying literature.

Simply put, if traditional vote-buying theories are correct, then we should expect that the larger the vote share, the less vote buying that occurs (because there are less risks of losing the election), sunk costs should not matter for vote buying, and pivotal voters should produce more expensive vote-buying offers. Also, the closer a party is to the voter is either positive for vote buying (core voter hypothesis) or negative (swing voter hypothesis). And finally, the bigger the budget of a party, the more (less) vote buying. However, if the expectations conform with prospect theory, we should expect  $\beta_1 > 0$  and  $\beta_2 < 0$ .

Substantive results are shown in Figure 4 (regression table is shown in Table A2). Overall, results clearly depart from the theoretical expectations of traditional vote-buying theories and widely support prospect theory. This is particularly relevant given that the experiment was designed according to a formal model based on classical economic voting games.

First, parties do not buy votes when they are losing the election but when they are winning the election. As panel 1 in Figure 4 shows, as vote share increases, e.g., as parties have accumulated more electoral assets (i.e., domain of gains), experimental subjects playing the party role consistently buy *more* votes, not less. This finding goes against predictions based on expected utility theory, widely supporting prospect theory. As the latter predicts, decision-makers in the domain of gains—i.e., parties *winning* the election—tend to be loss averse (Kahneman, Knetsch, and Thaler 1991) respect to their current endowments (Kahneman, Knetsch, and Thaler 1990). As Levy (1997, p. 91) explains it, in the domain of gains, “an individual will treat the *possibility* of a subsequent setback as a loss



**Figure 4: Predicted Values of Vote-Buying Offer.**

**Note:** Based on the OLS estimates in Table A2, the figure shows the predicted values of the offer made by the party expressed in experimental points. Confidence intervals were constructed using robust standard errors (as shown in Table A2). Substantively, the figure shows that experimental subjects avoid losses by over-securing electoral support even in favorable contexts (panel 1) and that they do consider sunk costs and try to recover losses in the short run by spending more on vote buying (panel 2). Panel 3 indicates that parties spend more on vote buying for voters closer to their ideological preferences. Panel 4 shows that larger party budgets incentivize more spending on vote buying, and that parties do not necessarily consider whether the voter is pivotal or not (panel 5).

rather than as a foregone gain,”<sup>24</sup> and consequently “engage in risk-seeking behavior to maintain her cumulative gains against that loss.” Thus, these statistical results seem to support the idea that parties in the domain of gains will give more weight to potential losses due to loss aversion (Schumacher et al. 2015, p. 1042), and thus overdo their spendings on vote-buying to counteract the unbearable idea of losing already acquired electoral assets (political base).

Second, panel 2 in Figure 4 suggests that parties will consider sunk costs in their calculations and will buy votes when experiencing prior losses. That is, when parties are in the domain of losses (parties that have spent or lost a considerable amount of resources in the past) will be more risk-seeking and gamble more money on vote buying. Similarly, these results widely depart from what expected utility theory predicts. According to expected-value explanations, sunk costs should

<sup>24</sup>Our emphasis.

not matter when making a decision. However, our statistical analyses strongly suggests that agents (parties) do consider historical spendings and losses in their decision-making processes. The scope of the proposed framework pays special “attention to losses” (McDermott 2004, p. 298), which in practice means that agents systematically give more weight to losses than to commensurate gains. Accordingly, our statistical analyses show that parties gamble more on vote buying because they feel the need to “break even.”

As per Equation 1, these main estimated treatment effects were calculated considering the contribution of other possible rival explanations of vote buying—i.e., core/swing voter, party resources and pivotal voter. In panel 3 of Figure 4 we find that the smaller the party-voter distance, the more frequent the vote-buying offer is. In other words, we find some support for the core voter hypothesis: political parties buy more votes from voters that are ideologically *closer* to them (not farther away). However, and counter to traditional core voter expectations, we also find that political parties buy these votes at relatively *higher* prices (not lower). While we leave a more thorough explanation of this particular finding for future research, these results seem to suggest that in fact parties find unacceptable the idea of losing their *own* supporters, so they buy them more aggressively by over-spending on vote buying, i.e. by offering more money for those votes. Substantively, we read this result as in line with the concepts of “endowment effect” and “loss aversion” addressed above.

In panel 4, our results show that parties with larger budgets buy votes at higher prices. These results somewhat conform with Bahamonde (2018, p. 52), where he argues that clientelist parties in Brazil buy votes from the wealthy at higher prices. Thus, in such cases, parties with higher endowments will effectively be able to buy votes more expensively. This form of costly clientelism is possible due to wealthier districts not only have higher personal incomes but also shift the broker’s vote-buying capacities upwards (see also Hicken 2007, p. 55). Finally, in panel 5 we find no support for the pivotal voter argument. That is, contested electoral scenarios and tight electoral races do not necessarily rise the market price of votes during campaigns. We believe this finding also supports our alternative framework of risky decision making in clientelism studies: parties do not treat vote buying in the typical “insurance” sense (i.e., insurance against losing the election), but as an electoral strategy that becomes appealing to agents depending on whether they are in the domain of losses or gains, and always considering a reference point.

## VI. DISCUSSION

This paper began by identifying that some of the vote-buying literature has relied on expected-value assumptions at the cost of overlooking several empirical inconsistencies. We have identified two in particular, namely the role of political contestation and sunk costs on vote buying. To clarify these empirical departures, we have applied basic concepts of prospect theory into the study of vote buying. After formalizing a voting game within the expected-value framework, we designed and implemented an economic experiment in the lab. Our design aimed at mimicking an electoral market, where it was possible to observe under which conditions different clientelist dynamics developed. Results widely conform with prospect theory. Importantly, since the experiment was designed according to an economic voting game, we believe our findings enhance our inferential leverage about vote buying (i.e., least-likely case design).

In particular, we concentrated our efforts on two findings. First, clientelist political parties buy more votes when they are winning the election. Leveraging the concept of “endowment effect,” we explained that parties in the domain of gains experience larger amounts of loss aversion respect to losing acquired assets (i.e., their supporter base). Thus, in scenarios like these, parties overdo their spending on vote buying by acquiring more political safeties respect to their current electoral assets. Therefore, when clientelist parties are winning the election they will tend to buy more votes because “future losses hurt more than future gains gratify” (Levy 1992b, p. 285). Consequently, we expect vote buying to be an attractive strategy in favorable electoral scenarios due to the absolute aversion and intolerance of losing an already acquired important political base. Second, clientelist political parties buy more votes when they have experienced larger sunk costs in the past (domain of losses). In other words, when retrospective investments in vote buying or other electoral costs have been high in the past, parties will feel the need to compensate for past losses. Consequently, parties that have gambled considerable amounts of resources in the past will tend to engage in more aggressive and expensive instances of vote buying to break even.

While experiments are the gold standard for causal inference (Rubin 2008, p. 1349), laboratory experiments come with an important price, i.e., while some ability to control the environment is gained, some external validity must be sacrificed (Morton and Williams 2010b). For instance, our subject pool might not behave in the same way as brokers or actual campaigning politicians



might do.<sup>25</sup> Also, our subject pool were individuals recruited in the capital, and hence attitudes of individuals with non-urban and regional backgrounds were not captured in this particular experiment. In addition to that, to gain experimental control, other hard choices in the design had to be made. The most important one is that we did not include in our design the possibility of defecting. As explained above, voters might take the money and then vote for whomever they want. Additionally, it should be acknowledged that more sophisticated spatial theories of voting consider more than single-dimensional spaces (Melvin Hinich and Munger 1997). We strongly recommend future research to model different dynamics of clientelist defection and also include multidimensional party-voter spatial distances. Finally, another limitation is that “attitudes toward risk are not determined by the S-shaped value function alone” (Levy 1992a, p. 183). Probability weighting is another important feature of prospect theory which unfortunately has been unstudied in political science in general. Future research must consider this important aspect of prospect theory.

Another limitation that ought to be addressed in the future is the issue of different aspects of authoritarian or semi-authoritarian dynamics of political competition. In our paper we have addressed situations where political contestation should not be high to produce the outcome of interest (vote buying). These kinds of dynamics might also be relevant for authoritarian or semi-authoritarian contexts like Russia (Saikkonen 2021) or Cameroon (Misoiu and Kakdeu 2021), where political competition has been effectively restricted. Therefore, it should be interesting for democracy scholars to study the different dynamics of authoritarian clientelism in light of prospect theory.

Overall, we encourage future research, particularly scholars in comparative politics, development, behavioral, and electoral studies, to consider prospect theory as a valid alternative to explain decision-making under risk.

## VII. APPENDIX

### A1. A Formal Model of Vote Buying

We consider an electorate of  $n$  voters. Voters cast votes for a leader to implement a common policy  $\gamma$  from the set  $\Gamma = \{1, 2, \dots, 100\}$ . Each citizen  $i$  has an ideal point  $x_i$ , which is an *iid* draw from

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<sup>25</sup>In fact, Linde and Vis (2017, p. 101) find that both politicians and citizens deviate from expected utility theory and behave according to prospect theory. However, individuals deviate more compared to politicians. We believe that their findings might contribute to giving more external validity to our results. While the order of magnitude of their effects varies by type (i.e., politicians and non-politicians), the effect signs remain the same.

an uniform distribution over  $\Gamma$ . When policy  $\gamma$  is implemented, payoffs of citizen  $i$  are given by  $u(x_i, \gamma) = D - |x_i - \gamma|$ , where  $D$  represents the utility of implementing any given policy. This payoff can be incremented by transferences from both parties to voter  $i$ .

In this election, there are two candidates. One “left-wing” party and one “right-wing” party. The left-wing (right-wing) candidate represents a policy  $\gamma_L$  ( $\gamma_R$ ), which is an *iid* draw from an uniform distribution over  $\{1, \dots, 50\}$  ( $\{51, \dots, 100\}$ ). The location of these policies ( $\gamma_L$  and  $\gamma_R$ ) give us the number of voters  $n_L$  leaning towards the left-wing candidate, while the number of voters leaning towards the right-wing party is given by  $n_L + n_R = n$ . While we consider that voters are attached to an ideological continuum, we do so with the sole purpose of modeling preferences—both formally and experimentally.<sup>26</sup>

Both parties negotiate with only one of these  $n$  voters. That voter is randomly selected from the total population  $n$ . Observe that the higher the  $n$ , the lower the representation in the election of this voter. That is, a larger  $n$  necessarily implies that every individual electoral choice matters less. However, if  $n$  is small, negotiating with this voter may be more attractive to political parties. This is because negotiating with a large number of voters is costly. We assume that each party has a budget ( $B$ ) that they can use to buy votes. If a party decides not to negotiate with the voter (or the voter does not accept the offer), the party keeps this budget. The profits of party  $i$  is given by,

$$\pi_i(s_i, a_j) = W \cdot e_i + (1 - s_i \cdot a_j) \cdot B \quad (2)$$

where  $W$  ( $W \geq B$ ) is a constant that represents how much each party values winning the election,  $e_i = 1$  if party  $i$  wins the election, 0 otherwise, and  $s_i$  is the fraction of  $B$  that the party offers to voter  $j$  who can accept the offer ( $a_j = 1$ ) or not ( $a_j = 0$ ). We study one version of this party-voter interaction, namely, when both parties make simultaneous offers to the voter, and voters decide whether to accept the offer or not.

The timing of the game is as follows: at the beginning of the game,  $n$  voters and two political parties are randomly located on their respective ideal points: voters along  $\Gamma$ , the “left-wing” candidate along  $\{1, \dots, 50\}$ , and the “right-wing” candidate on  $\{51, \dots, 100\}$ . All locations are public information, as well as every party’s budget  $B$ , the total number of voters ( $n$ ), and the number of supporters

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<sup>26</sup>Ultimately, experimental subjects are not told anything about ideology. They only observe that there are a number of “points” associated with the victory of party A or party B. In this sense, voters lean (“ideologically”) towards the party that gives them more points.

of each party ( $n_L$  and  $n_R$ ). In this game, each party simultaneously decides whether to make a vote-buying offer to the voter. If a party decides to negotiate with the voter, the party privately offers the voter to buy his vote. Then the voter decides whether or not to take the offer, or which one to accept if he receives two offers. If he accepts an offer, he should vote for that candidate.<sup>27</sup>

**Equilibrium** In this case, both parties can offer certain amounts in exchange for electoral support. Note that parties only have incentive to negotiate with a voter if he is the pivotal voter. That means that  $|n_L - n_R| \leq 1$ , and that voter  $i$  supports the ex-ante winner of the election ( $i \in \max\{n_L, n_R\}$ ). The voter prefers the party closer to her ideal point. If both parties are located at the same distance, the voter is indifferent. Denote by  $i^* \in \{L, R\}$  the preferred party of the voter, and  $-i^*$  the other party.

Note that, naturally, both parties will want to make different offers. If the voter is pivotal, the less preferred party has incentive to offer him a certain amount  $m_{-i^*}$ , such that he perceives more utility voting for that party rather than voting for the opposite party, expressed as follows:

$$\begin{aligned} m_{-i^*} &\geq (D - |x_{i^*} - \gamma_{i^*}|) - (D - |x_{i^*} - \gamma_{-i^*}|) \\ &= |x_{i^*} - \gamma_{-i^*}| - |x_{i^*} - \gamma_{i^*}|. \end{aligned} \tag{3}$$

Parties expect winning the election but have limited budgets. Hence, they want to win the election at a minimum cost. Given that  $|x_{i^*} - \gamma_{-i^*}| > |x_{i^*} - \gamma_{i^*}|$ , it is more difficult for the opposite party to incentivize the voter to change votes. If the opposite party offers to the voter all its budget  $m_{-i^*} = B$ , the party  $i^*$  may offer him  $m_{i^*} = |x_{i^*} - \gamma_{-i^*}| - |x_{i^*} - \gamma_{i^*}| + B$  and the voter will end up indifferent to both parties. Therefore, in equilibrium, the preferred party offers  $m_{i^*} = |x_{i^*} - \gamma_{-i^*}| - |x_{i^*} - \gamma_{i^*}| + B$ , the opposite party offers  $m_{-i^*} = B$ , and the voter accepts the offer of party  $i^*$ .

	role	variable	n	min	max	median	iqr	mean	sd	se	ci
1	Party A	left.right	66	1	10	3	4	4	2	0	1
2	Party B	left.right	66	1	10	4	3	4	2	0	1
3	Voter	left.right	68	1	10	3	3	4	2	0	1
4	Party A	male	66	0	1	0	1	0	0	0	0
5	Party B	male	66	0	1	0	1	0	0	0	0
6	Voter	male	68	0	1	0	1	0	0	0	0
7	Party A	party.id	66	2	9	9	0	8	2	0	0
8	Party B	party.id	66	1	9	9	0	9	1	0	0
9	Voter	party.id	68	1	9	9	0	8	2	0	0
10	Party A	party.like	66	0	1	0	1	0	0	0	0
11	Party B	party.like	66	0	1	0	0	0	0	0	0
12	Voter	party.like	68	0	1	0	0	0	0	0	0
13	Party A	payoff	73	633	4224	2630	674	2621	670	78	156
14	Party B	payoff	72	1148	4062	2592	710	2607	665	78	156
15	Voter	payoff	75	633	4224	2674	836	2664	697	80	160
16	Party A	salary.enough	66	1	4	2	0	2	1	0	0
17	Party B	salary.enough	66	1	4	2	1	2	1	0	0
18	Voter	salary.enough	68	1	3	2	0	2	1	0	0
19	Party A	vote.last.election	66	0	1	1	0	1	0	0	0
20	Party B	vote.last.election	66	0	1	1	0	1	0	0	0
21	Voter	vote.last.election	68	0	1	1	0	1	0	0	0
22	Party A	vote.next.election	66	0	1	1	0	1	0	0	0
23	Party B	vote.next.election	66	0	1	1	0	1	0	0	0
24	Voter	vote.next.election	68	0	1	1	0	1	0	0	0

**Table A1:** *Summary Statistics.*

## A2. Statistical Appendix

	OLS
	Amount of Vote-Buying Offer
Intercept	−380.54 (568.66)
Vote Share (%)	6.95 (5.55)
Points Accumulated (delta)	−0.06 (0.05)
Ideological Distance	−6.87* (3.26)
Party Budget	0.71* (0.34)
Pivotal Voter	91.16 (124.46)
R <sup>2</sup>	0.66
Num. obs.	142

\*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ ;  $\dot{p} < 0.1$ .

Robust standard errors in parentheses.

Fixed effects parameters omitted in table.

**Table A2:** *Statistical Model (OLS): Amount of Vote-Buying Offer.*

<sup>27</sup>It is important to consider that to simplify the game (and the experiment), accepting the offer necessarily implies compliance. That is, accepting the offer means voting for the party the voter accepted the offer from. We leave for future research the case where the voter may defect.

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