Do Provinces that Win the Spanish Christmas Lottery Experience a Surge in Incumbent Popularity? An Out-of-Sample Replication of Bagues and Esteve-Volart (2016)

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Abstract

A large literature has examined the relationship between random economic windfalls and incumbent political popularity. One of the most important studies is Bagues and Esteve-Volart (2016), which considers the political repercussions of the Spanish Christmas Lottery. Examining the period 1989-2008, Bagues and Esteve-Volart find that lottery-winning provinces expressed increased support for incumbent parties in the next election and gave these parties higher approval ratings in public opinion surveys in the months after the prizes were announced. Our paper extends their analysis to 2009–2023 in order to assess the robustness of these findings. Using updated electoral and survey data and incorporating methodological refinements such as wild cluster bootstrap, our out-of-sample replication lends no support to the hypothesis that lottery windfalls elevate incumbent popularity. Both electoral and survey data suggest that provinces that won top prizes in the most recent lottery support the incumbent party at about the same rate as non-winning provinces. The Spanish Christmas Lottery, which had furnished one of the most convincing examples of how random economic shocks shape electoral outcomes, instead seems to show that random windfalls have no electoral consequences.

1 Introduction

An extensive observational literature dating back to the 1920s documents the tendency for public opinion to turn against political leaders who preside over difficult economic conditions, such as recessions or crop failures (Hovland and Sears 1940; Barnhart 1925). Conversely, incumbent leaders and their parties typically benefit from positive economic shocks and a prevailing sense of consumer optimism (Nadeau and Lewis-Beck 2001; MacKuen, Erikson and Stimson 1989). Although scholars debate whether the connection between economic conditions and incumbent popularity depends on media coverage of the economy (Garz and Martin 2021; Hetherington 1996), it is generally taken

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as axiomatic that economic conditions affect the standing of the governing party and its leader (Murillo and Visconti 2017; Steinberg 2022).[1]

More controversial is the thesis that voters reward or punish incumbent leaders based on conditions that may be outside the government's control. The "blind retrospection" argument advanced by Achen and Bartels (2017) holds that "voters' retrospections are blind, not just in natural disasters but in hardships of all kinds ... In most cases, incumbents will pay at the polls for bad times, whether or not objective observers can find a rational basis for blame" (p. 118). In essence, voters reward or punish public officials based on retrospective evaluations of how things are going, regardless of whether the government is plausibly responsible for these conditions. Their canonical example is the downturn in the popularity of Woodrow Wilson on account of widely-publicized shark attacks off the New Jersey shoreline during the lead-up to the 1916 election. Although critics have argued that the public might reasonably expect the government to prevent disasters (Ashworth, Bueno de Mesquita and Friedenberg 2018) and that this particular anecdote does not stand up to close statistical scrutiny (Fowler and Hall 2018), this general line of argumentation turns up in an assortment of research literatures. Economic booms driven by global market forces, rather than presidential actions, seem to disproportionately benefit incumbents in Latin American countries reliant on commodity prices, particularly oil (Campello and Zucco 2016). Another literature uses college football games as a source of exogenous variation in ambient mood; initial evidence seemed to suggest that the places whose teams prevailed in these contests also expressed greater support for the incumbent (Healy, Malhotra and Mo 2010).[2] Other observational evidence has been adduced to suggest that the death of a spouse (Liberini, Redoano and Proto 2017) or the end of a close personal friendship (Esaiasson, Dahlberg and Kokkonen 2020) brings about a change in subjective well-being that in turn lessens the assessment of the incumbent leader or party.

Perhaps the most striking empirical finding in the blind retrospection genre is the discovery that incumbent popularity in Spain surges in provinces that win the top prizes in the Spanish Christmas Lottery (Bagues and Esteve-Volart 2016). By way of background, the scale of the Spanish Christmas Lottery is extraordinary. The top three prizes distributed via this lottery amount to 0.1 percent of Spain's GDP (p.1275), and 75 percent of Spanish households participate (p.1274). Because tickets

[1] A corollary argument is that incumbent support is affected by voters' subjective well-being (Ward 2020).

[2] Critics of that study questioned the robustness of the empirical findings (Fowler and Montagnes 2015), whereupon the original authors offered further examples (Healy, Malhotra and Mo 2015).

are very often purchased jointly by family and friends, prize winners tend to be geographically concentrated. Studying the period 1989–2008, Bagues and Esteve-Volart (2016) find that provinces that win a disproportionate share of prize money vote at higher rates for the incumbent party in the election following the lottery victories; using monthly survey data, they also show that incumbent popularity rises in winning provinces for weeks after the winners are announced. Bagues and Esteve-Volart (2016) also find a positive economic impact on those provinces, results echoed by other recent studies that suggest lottery winnings are associated with optimism about macroeconomic conditions and spending intentions (Ghomi, Micó-Millán and Pappa 2024), entrepreneurship (Bermejo et al. 2022), and durable consumption (Kent and Martínez-Marquina 2021; Cabanillas-Jiménez 2024).

The Spanish Lottery windfall is intriguing theoretically because it is, by design, a random event and in no way reflects the policies or competence of the incumbent party.[3] Another interesting aspect of the Spanish Lottery effect is that it is detectable using province-level data. Direct lottery winners (and their social networks) presumably constitute only a small share of the provincial population; to the extent that the incumbent popularity effect is driven by tangible economic gains, they would come from the surge in economic activity that is said to occur due to an infusion of lottery winnings. Bagues and Esteve-Volart (2016) report that the economic magnitude of a lottery windfall is substantial: during the 1989–2008 period, when the annual provincial GDP growth rate was 2.4 percent, "The average income shock received by the [winning] province is equivalent to about 3.5 percent of provincial GDP." (p.1277) However, the authors' analysis of economic indicators also suggests that the windfall is felt by a relatively narrow slice of the population. Although the infusion of prize money leads to significant and persistent increases in bank deposits and new vehicle registrations (p.1284), it does not lead to detectable changes in provincial GDP or employment (p.1285).[4] Nevertheless, the electoral consequences of the provincial windfall are found to be substantial: "Receiving 1 percent of GDP in the form of lottery winnings during the electoral term increases the votes received by the incumbent by approximately 0.21 percentage

[3] A rather different literature leverages experimental deployment of conditional cash transfer programs to assess whether randomly assigned household income affects the incumbent party's popularity, as gauged by surveys or election results. The distinction is that cash transfer programs are often conducted under the auspices of government overseers. Even if the government does not distribute the funds in a clientelistic manner, beneficiaries may nevertheless credit them for facilitating the anti-poverty program. The empirical literature is mixed but on balance suggests positive effects. For a recent review of the literature, see Araújo (2021).

[4] Nor does the lottery lead to "attribution errors" (p.1289): "voters in winning provinces do not seem to overestimate the economic situation at the national level: it does not seem that the greater propensity to reelect the incumbent is due to voters' wrongly thinking that the national economic situation has improved."

points" (p.1285).[5] This coefficient rises to 0.66 when the authors weight the electoral results by the size of the eligible electorate. Based on that estimated effect, an average shock of 3.5 percent of GDP translates into a vote share increase of $(3.5)(0.66) = 2.31$ percentage points.

This paper revisits this remarkable finding using data collected after 2008.[6] Our aim in conducting this out-of-sample replication is to assess whether the electoral impact of the Spanish Lottery windfall is a stubborn fact that merits theoretical explanation. We revisit the original data and statistical model (making some minor corrections and updates, such as the use of wild cluster bootstrap when analyzing survey data), extend the dataset forward in time from 2009–2023, and estimate the effects of the Spanish Christmas Lottery on election outcomes and public opinion survey responses. The out-of-sample replication from 2009–2023 does not indicate that lottery windfalls elevate the incumbent party's popularity or vote share. The point estimates for vote share are weakly negative; the point estimates for the survey analysis are weakly positive, but the confidence intervals include zero. The Spanish Christmas Lottery, which arguably furnished the most compelling evidence in support of the blind retrospection thesis, now appears to have no electoral effects.

2 Data and Measures

In this section, we briefly review the sources we used to reconstruct the authors' original measures. Thanks to the authors' publicly available replication data and code, we are able to directly compare our variables to theirs, and for the most part, they correspond closely. We note below a few discrepancies, which are described in more detail in the appendix.

2.1 Data Sources

The authors present two analyses, one of province-level vote shares for the incumbent party and another of individual-level survey responses. Election data come from the Spanish Ministry of the Interior. Survey data come from the Barometer of the Center for Sociological Research (CIS is its Spanish acronym). The lottery data used in both analyses come from the Spanish state-owned company State Society for State Lotteries and Betting (SELAE is its Spanish acronym), which

[5] The authors find no effects of lottery prizes on provincial voter turnout rates.

[6] Because our paper tries to hew as closely as possible to the original manuscript's coding and estimation, we did not file a pre-analysis plan. The few instances in which we deviated from the original authors' procedures are explained in detail in the text and appendix.

is responsible for the management and operation of the Spanish Christmas Lottery. We collected provincial GDP data from the Spanish National Statistics Institute.

2.2 Outcome Measures

2.2.1 Vote Shares

Bagues and Esteve-Volart (2016) use as their main outcome variable the difference in vote share of the incumbent from one election to the next. We use the same measure with official data obtained from the Spanish Ministry of the Interior. When the incumbent party in year t differs from the incumbent in the previous electoral year, the variable is calculated as the difference in support *within* the same party, and not from one incumbent to the other.

2.2.2 Survey Measures of Incumbent Party Support

The CIS barometer asks the following question: "Assuming that general elections are held tomorrow, that is, to the Spanish Parliament, which party would you vote for?" Bagues and Esteve-Volart (2016) recode responses into a binary variable reflecting whether the respondent would vote for the incumbent party.[7] Although the CIS barometer is conducted monthly, the question about political support is not included in every month's barometer. In most years, this question is only asked in January, April, July, and October. However, from 1989 to 1996 and in 2000, the political support question was also occasionally asked in other months (February, March, May, June, September, November, and December). In the year 2000, the question appeared only in the February barometer, not the January one. The authors included the September, May, and February survey data from 1989, 1996, and 2000, respectively, in their analysis. However, they omitted the available data from 50 surveys (a total of 125,578 observations) from different months from 1987 to 1996.[8] For our out-of-sample replication, we included all the survey data available for the first quarter of each

[7] We found a small coding discrepancy in the main outcome variable of incumbent party support for the survey immediately after the 2004 general election, where PSOE beat the previous incumbent (PP). In survey 2561 (April 2004), the questions were asked between the 22nd and 27th of April. The official handover was on the 17th of April. Other questions in the same survey mention José Luis Rodríguez Zapatero (candidate of PSOE) as the president of the government. Therefore, we consider PSOE as the incumbent, but the original paper codes the previous government (PP) as the incumbent.

[8] From our personal communication with Manuel Bagues and Berta Esteve-Volart, we learned that when they conducted their study, the survey data were not available online and had to be purchased from the Center for Sociological Research (CIS). For that reason, they ordered only the surveys they were confident would include the questions of interest for their analysis, typically the barometers from the months of January, April, July, and October.

year.[9] In section 3.6, we discuss the implications of the authors' decision to include surveys from Q2-Q4 and their method of imputing lottery prizes and expenditures to survey data from those later months.

2.3 Measures of Lottery Prizes and Expenditures

2.3.1 For electoral specification

For each year in the electoral term preceding year t, Bagues and Esteve-Volart (2016) sum the top three lottery prizes won in province s and scale this sum by the provincial GDP. The authors then define their treatment variable as the total of these scaled amounts over the course of each electoral term (which typically lasts 4 years).[10] In our out-of-sample analysis, we use three alternative versions of the lottery treatment variable. First, we replicate the authors' definition of the treatment as closely as possible, referring to this variable as `Top lottery prizes`. Next, to assess the robustness of the estimates to different coding schemes, we define two alternative versions: a) the total income from all lottery prizes per province,[11] which we call `Total lottery prizes`, and b) the sum of the top three prizes but only for the lottery draw from the year immediately preceding the election, which we call `Top lottery prizes (yearly)`.

Expenditure measures are operationalized equivalently: for each year in the electoral term preceding year t, the authors sum the total provincial expenditure in the lottery and scale it by the provincial GDP. Following the authors, we define the expenditure variable as the total of these scaled amounts within each electoral term and call it `Lottery expenditure`. Figure 1 shows the distribution of top prizes scaled by GDP for each election in the sample.[12] For our robustness

[9] In section A6 of the appendix, we also include a table comparing the number of observations per survey used by the authors in their original analysis with the number of observations from the same set of surveys included by us in this out-of-sample exercise.

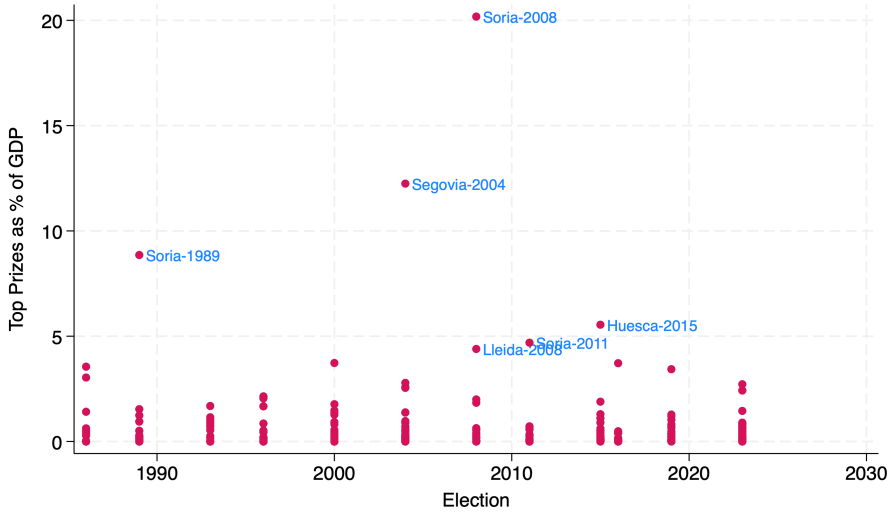
[10] For the period studied by Bagues and Esteve-Volart (2016), most electoral terms lasted three or four years. Consequently, the measure of the lottery shock before each election was calculated as the sum of the top three lottery prizes during those three or four years. However, in the more recent period covered in our out-of-sample analysis (2009–2023), increased political instability and fragmentation resulted in more frequent elections (e.g., the 2016 election occurred less than a year after the 2015 election) and a non-electoral change in the governing party in 2018, following a vote of no confidence against the incumbent party. As a result, applying the authors' coding of the treatment variable to this newer period entails summing lottery winnings over shorter electoral terms. For this and other reasons discussed in Section 3.5, our preferred treatment measure is the `Top lottery prizes (yearly)`, as explained below.

[11] According to the representative of Cejuego (the Business Council of the Gaming Sector), the source of the total prize variable used in this analysis, this variable includes all prizes from the Spanish Christmas Lottery, including the smaller ones.

[12] Figure A4 in the appendix presents the same graph with an alternative measure of total prizes for the most

check in Section 3.5, we use lottery expenditures only from the year immediately preceding the election, rather than the cumulative amount over the term. We refer to this variable as `Lottery expenditures (yearly)`.

Figure 1: Top Prizes as Percent of GDP for Each Election



Note: Labeled observations correspond to province-years with prizes that are more than three standard deviations above the mean.

2.3.2 For the survey specification

Unlike the electoral model, which defines treatment using prize winnings since the previous election, the survey model defines treatment using prize winnings from the the most recent lottery. Lottery income won by province s in year t is scaled by the provincial GDP and assigned to all respondents who took the survey in January (or February, in the year 2000)[13] of year $t+1$. As in the electoral specification, we use two versions of this variable: one from the top three prizes and the other from total prizes. We call there variables `Top lottery prizes (yearly)` and `Total lottery prizes (yearly)`, respectively.

Similarly, the lottery expenditure from year t, which is also scaled by the provincial GDP, is assigned to all respondents who took the survey in January (February in the year 2000) of year $t+1$. The original authors impute zero lottery prizes and expenditures to survey respondents from

recent elections.

[13]It seems the authors decided to use the February survey responses instead of January's in the year 2000 because the barometer that includes the question about support for the incumbent was not conducted in January of this year.

all other months after the first quarter of the year. In section A7 of the appendix, we present an example of the way the authors impute zeroes to the prizes and expenditures variables of surveys from the second to the fourth quarter of the year. In our data, we correct minor inconsistencies in the assignment of zero lottery prizes and expenditure to surveys from months other than January.[14] We replicate the authors' definition of this variable and refer to is as `Lottery expenditures (yearly)`.

2.4 Covariates

2.4.1 Province-level Covariates

Bagues and Esteve-Volart (2016) include as covariates the change over the electoral term in GDP, unemployment, inflation, and housing price.[15] In our analysis, we use the same covariates as the authors and calculate differences from election year to election year as follows: difference in unemployment rates from election to election, percentage increase in the consumer price index from election to election, and percentage increase in GDP per capita from election to election, percentage increase in housing prices from election to election. Although we obtained data for the entire period for the first three variables, we only found housing price data starting after the first two elections in their sample. We estimate the models (see below) in three ways: ignoring those two elections; using the data from Bagues and Esteve-Volart (2016) for the first two elections; using the authors' data for their full period and adding our data for the new years. Results are similar when using any of the three coding schemes.

2.4.2 Survey Covariates

We use the same covariates as Bagues and Esteve-Volart (2016): municipality size (7-level categorical variable from less than 2,000 inhabitants to more than a million), sex (binary, female=1), age (continuous with values between 16 and 99), education (categorical: primary or less; secondary; higher education), and employment status (categorical: employed; unemployed; student; retired; housekeeper).

[14] Specifically, there were approximately 20 observations from months other than January for which the authors assigned non-zero lottery prizes and expenditure.

[15] Information on our attempts to replicate the variables in Bagues and Esteve-Volart (2016) can be found in the Appendix.

The primary challenge with the covariates was the consolidation of survey data into a unified dataset. The CIS does not provide a consolidated dataset that includes political outcomes, and the available consolidated data lack identifiers necessary for merging with relevant political outcomes. Consequently, we closely examined each of the 391 surveys conducted between 1989 and 2022 to assess variable equivalence. Specifically, a significant complication arose from the lack of harmonization across these surveys, as question wording and response options often varied. To maintain consistency with the original study by Bagues and Esteve-Volart (2016), we adopted the same variable options used in the original analysis. Detailed information on the discrepancies between our dataset and that of Bagues and Esteve-Volart (2016) is provided in the Appendix.

3 Vote Share Model and Results

3.1 Model of Provincial Vote Shares for the Incumbent Party

The authors use linear regression to estimate the marginal effect of lottery prizes on the change in the incumbent's vote share from one election to the next. Their model is

$$\Delta Vote_{s,t} = \alpha_t + \beta Prizes_{s,t} + \gamma Expenditure_{s,t} + \epsilon_{s,t} \tag{1}$$

where $Prizes_{s,t}$ denotes the total income from Spanish Christmas Lottery prizes as a percentage of GDP received by province s in the electoral term preceding year t. To control for cross-province variation in expected lottery winnings — stemming from differences in ticket sales across provinces — it is essential to include the covariate $Expenditure_{s,t}$, which represents the province's spending on the Christmas Lottery as a percentage of GDP during the same period. This model effectively adjusts for variations in expected payouts when the analysis is confined to a single election. However, when pooling elections, it becomes necessary to account for cross-year variation in the effects of $Expenditure_{s,t}$ by interacting $Expenditure_{s,t}$ with year-fixed effects. These interaction terms allow for differing cross-province expected lottery prizes in each election year. The public replication code reveals that the original authors omitted these interaction terms; however, their inclusion does not materially alter the results, likely due to the relative stability of cross-province sales variation over time. Since the treatment assignment is randomized and varies across years, we do not cluster

our results by province in our main specifications (Abadie et al. 2023). Using clustered standard errors, as Bagues and Esteve-Volart (2016) do, yields very similar results.

Beyond this basic specification, the authors also include as covariates the change during the electoral term of GDP per capita, unemployment, CPI, and housing prices. These variables are not strictly necessary for unbiased inference (because $Prizes_s$ is randomly assigned, conditional on $Expenditures_s$), and they have little effect on the precision with which β is estimated because the covariates are not strongly predictive of $\Delta Vote_{s,y}$. The authors include them primarily to demonstrate the robustness of the results.

Finally, there is the question of whether to weight the province-level regression results by vote-eligible population. One argument for weights is to make the voting analysis parallel to the survey analysis, which is implicitly weighted by population. Weights comport with the fact that the underlying estimand is the average treatment response of voters to a given provincial dosage of lottery winnings. A complication that arises when weighting the data is that the underlying design is a cluster randomized trial with provincial clusters containing markedly different numbers of subjects. When the estimand is defined as an average individual-level treatment effect, regression is asymptotically unbiased as the number of clusters increases. In this application, we have only 50 clusters, which risks bias if cluster size is related to cluster-level potential outcomes (Middleton and Aronow 2015). For this reason, it may make sense to define the target estimand as the province-level average effect and use unweighted regression. We will estimate both the weighted and unweighted regression equations to assess whether weights make a material difference.

3.2 Vote Share Results

Section 3.3 presents our replication of the results using the time frame in the original article. Section 3.4 shows the out-of-sample results covering the period after 2008. Pooled results across all available elections are included in the Appendix.

3.3 Results from the Time Period of the Original Article (1989–2008)

First, we replicate the results in Bagues and Esteve-Volart (2016) using our specification, which includes the interaction between expenditures and year fixed effects. Results are presented in Table 1. The odd-numbered columns use the data from Bagues and Esteve-Volart (2016), and the even-

numbered columns show the same specification using our data. If anything, our replication yields larger and more significant results than the original results. Columns (1) and (2) do not include controls or province fixed effects, which are added (respectively) in columns 3 and 4 and columns 5 and 6. Results presented here confirm the initial hypothesis by Bagues and Esteve-Volart (2016) that larger lottery prizes as a share of GDP are associated with more support for the incumbent party. Columns (7) and (8) exclude the province of Lleida in the region of Catalonia because it includes the village of Sort (which means "luck" in Catalan), a town that attracts lottery buyers from all around the country, but the estimates are broadly unchanged.[16] Analogous results using population weights by province are shown in Table 2. Like Bagues and Esteve-Volart (2016), we find that population weights produce much larger point estimates.

In order to convey how the province-level lottery winnings and vote outcomes generate the regression estimates, Figure 2 presents a scatterplot of residualized lottery winnings on the horizontal axis and residualized change in vote share on the vertical axis. This figure presents the population-weighted regression results; larger provinces are depicted with larger points. The strong upward slope linking lottery winnings to incumbent vote shares indicates the hypothesized effect. The graph is also instructive insofar as it depicts the distribution of residualized provincial lottery winnings; as intuition would suggest, relatively few provinces win far more or far less than would be expected based on their ticket purchases.

[16] According to the state-owned public corporation that manages the Spanish public radio and television, the main seller in the town of Sort sells online approximately 87% of their total sales (article available here).

3.3.1 Estimated Effects of Lottery Winnings on Province-Level Vote Share for the Incumbent Party, Unweighted, 1989–2008

Table 1: Estimated Effects of Lottery Winnings on Province-Level Vote Share for the Incumbent Party, Unweighted, 1989–2008

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.
Top lottery prizes	0.248***	0.257***	0.256***	0.263***	0.296***	0.315***	0.328**	0.345**
	(0.0872)	(0.0868)	(0.0903)	(0.0866)	(0.108)	(0.104)	(0.145)	(0.135)
Lottery expenditure	-1.507	-1.282	-1.877	-1.557	-2.512	-2.827	-5.462	-5.820
	(2.543)	(2.389)	(2.543)	(2.384)	(4.082)	(3.866)	(3.762)	(3.601)
N	300	300	300	300	300	300	294	294
R^2	0.619	0.611	0.628	0.626	0.705	0.712	0.723	0.728
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Data	Repl.	Ours	Repl.	Ours	Repl.	Ours	Repl.	Ours
Expenditure x Year FEs	✓	✓	✓	✓	✓	✓	✓	✓
Province FEs	×	×	×	×	✓	✓	✓	✓
Controls	×	×	✓	✓	✓	✓	✓	✓
Cluster Province	×	×	×	×	×	×	×	×
Pop. Weights	×	×	×	×	×	×	×	×
Sample	Pre-09	Pre-09	Pre-09	Pre-09	Pre-09	Pre-09	Pre-09	Pre-09
Observations	All	All	All	All	All	All	Ex-Lleida	Ex-Lleida

Notes: Lottery prizes and expenditures calculated as the cumulative amount won by each province since the previous election.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

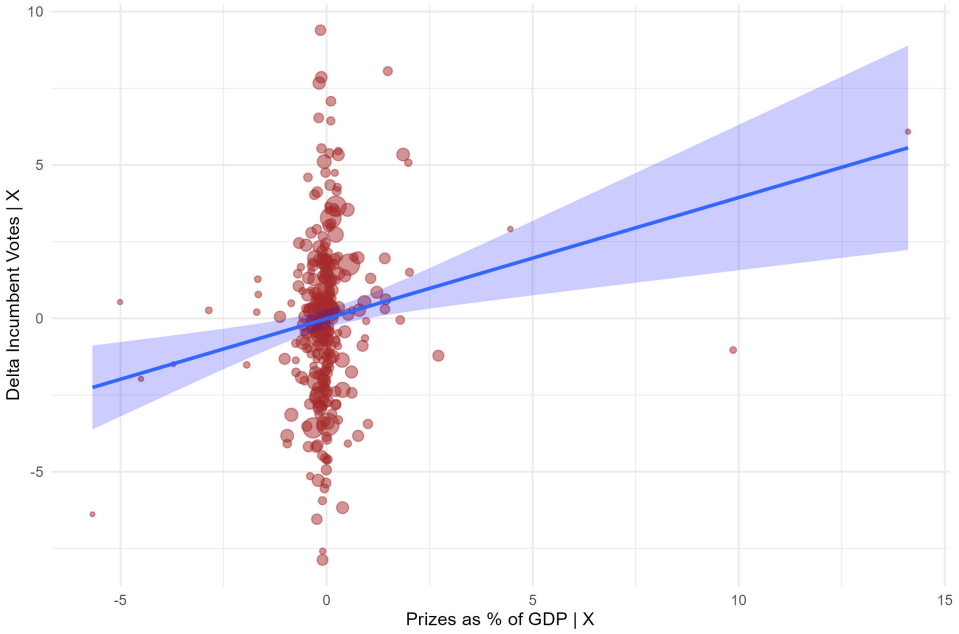
3.3.2 Estimated Effects of Lottery Winnings on Province-Level Vote Share for the Incumbent Party, Weighted by Provincial Population, 1989–2008

Table 2: Estimated Effects of Lottery Winnings on Province-Level Vote Share for the Incumbent Party, Weighted by Provincial Population, 1989–2008

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.
Top lottery prizes	0.760***	0.734***	0.754***	0.714***	0.729***	0.711**	0.632**	0.629**
	(0.280)	(0.272)	(0.273)	(0.268)	(0.272)	(0.275)	(0.250)	(0.258)
Lottery expenditure	-5.752**	-5.112**	-5.950*	-5.832**	-3.887	-3.521	-4.894	-4.399
	(2.618)	(2.341)	(3.036)	(2.439)	(3.745)	(3.746)	(3.915)	(3.974)
N	300	300	300	300	300	300	294	294
R^2	0.645	0.634	0.658	0.645	0.751	0.737	0.761	0.745
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Data	Repl.	Ours	Repl.	Ours	Repl.	Ours	Repl.	Ours
Expenditure x Year FEs	✓	✓	✓	✓	✓	✓	✓	✓
Province FEs	×	×	×	×	✓	✓	✓	✓
Controls	×	×	✓	✓	✓	✓	✓	✓
Cluster Province	×	×	×	×	×	×	×	×
Pop. Weights	✓	✓	✓	✓	✓	✓	✓	✓
Sample	Pre-09	Pre-09	Pre-09	Pre-09	Pre-09	Pre-09	Pre-09	Pre-09
Observations	All	All	All	All	All	All	Ex-Lleida	Ex-Lleida

Notes: Lottery prizes and expenditures calculated as the cumulative amount won by each province since the previous election.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Figure 2: Residual-Residual Plot Depicting the Electoral Effects of Lottery Prizes, Weighted by Provincial Population, 1989–2008



3.4 Results from the Out-of-Sample Time Period (2009–2023)

How do the results change when we use only elections *after* the period studied by Bagues and Esteve-Volart (2016)? We use data from the six general elections that followed the period studied by Bagues and Esteve-Volart (2016): 2011, 2015, 2016, April 2019, November 2019, and 2023. Two aspects of these more recent elections are particularly noteworthy. First, because there were two general elections in 2019, the effects of the same lottery shock from the 2018 lottery draw can be assessed twice within the same year. Second, a non-electoral change in the incumbent party occurred in 2018, when a vote of no confidence in Congress ousted the then-Prime Minister, leading to the formation of a new government led by the opposition party.[17] Although there was a non-electoral change of government in 2018, the same party has remained in power since then. This continuity allows us to include both 2019 elections in our analysis, as we can still use the results to address how lottery winnings affect the vote share of the party that was the incumbent at the time of the lottery draw. Regression estimates are presented in Table 3. For reference, we kept columns 1, 3, 5, and 7 using the data covering pre-2009 elections from Bagues and Esteve-Volart (2016). Even-numbered columns report the out-of-sample replication results for elections after 2008. The post-2008 results lend no support to the hypothesis that incumbent support rises in provinces that won larger-than-expected top lottery prizes since the last election.[18] Adding controls, including province fixed effects, or excluding the province of Lleida yields coefficients indistinguishable from zero.[19] Table 4 replicates these results using population weights, again showing substantively small and non-significant results.

The out-of-sample regression estimates may be visualized using a res-res plot. For the 2009–2023 period, the fitted regression line depicted in Figure 3 is flat or weakly negative, suggesting no apparent relationship between lottery winnings and vote shares. This pattern holds for a range of alternative specifications.

[17] In June 2018, a motion of no confidence against the government of President Mariano Rajoy from the People's Party (PP) was passed in Congress. Following this, Pedro Sánchez from the Spanish Socialist Workers' Party (PSOE) was appointed as the new President. In the subsequent election held in April 2019, Sánchez managed to keep the presidency, although he struggled to maintain a working majority in Congress with the support of the parties that had backed the no-confidence motion.

[18] For the two elections held in 2019, we use the lottery prizes from the December 2018 lottery draw as the treatment.

[19] The larger standard errors in the post-2009 period may reflect the fragmentation of the Spanish political system after the Global Financial Crisis and European Debt Crisis (Orriols and Cordero 2016; Rodríguez-Teruel et al. 2018).

3.5 Robustness Check: Recent Lottery Prizes

When coding the top prizes or expenditures on lottery prizes for their vote share analysis, the original authors use the cumulative amounts between elections. However, when using survey data, Bagues and Esteve-Volart (2016) use the previous year's lottery winnings. We replicate the electoral results but only using the prizes and expenditure amounts from the previous year instead of the cumulative amounts since the previous election.[20] Results for the period in the original paper, the period after the paper, and the full dataset are presented in Table 5. None of the regressions indicate that lottery winnings elevate incumbent support. The point estimates are weakly negative.

3.5.1 Estimated Effects of Lottery Winnings on Province-Level Vote Share for the Incumbent Party, Unweighted, 2009-2023

Table 3: Estimated Effects of Lottery Winnings on Province-Level Vote Share for the Incumbent Party, Unweighted, 2009-2023

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.
Top lottery prizes	0.248***	0.085	0.256***	-0.005	0.296***	0.001	0.328**	0.014
	(0.087)	(0.320)	(0.090)	(0.301)	(0.108)	(0.304)	(0.145)	(0.305)
Lottery expenditure	-1.507	1.969*	-1.877	2.540**	-2.512	-1.370	-5.462	3.042
	(2.543)	(1.041)	(2.543)	(1.117)	(4.082)	(4.201)	(3.762)	(4.262)
N	300	300	300	300	300	300	294	294
R^2	0.619	0.875	0.628	0.879	0.705	0.890	0.723	0.899
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Data	Repl.	Ours	Repl.	Ours	Repl.	Ours	Repl.	Ours
Expenditure x Year FEs	✓	✓	✓	✓	✓	✓	✓	✓
Province FEs	×	×	×	×	✓	✓	✓	✓
Controls	×	×	✓	✓	✓	✓	✓	✓
Cluster Province	×	×	×	×	×	×	×	×
Pop. Weights	×	×	×	×	×	×	×	×
Sample	Pre-09	Post-08	Pre-09	Post-08	Pre-09	Post-08	Pre-09	Post-08
Observations	All	All	All	All	All	All	Ex-Lleida	Ex-Lleida

Notes: Lottery prizes and expenditures calculated as the cumulative amount won by each province since the previous election.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

[20] This alternative coding of the lottery intervention is in line with recent analyses by Ghomi, Micó-Millán and Pappa (2024) and Bermejo et al. (2022)

3.5.2 Estimated Effects of Lottery Winnings on Province-Level Vote Share for the Incumbent Party, Weighted by Provincial Population, 2009-2023

Table 4: Estimated Effects of Lottery Winnings on Province-Level Vote Share for the Incumbent Party, Weighted by Provincial Population, 2009-2023

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.
Top lottery prizes	0.760***	-0.269	0.754***	-0.385	0.729***	-0.497	0.632**	-0.428
	(0.280)	(0.623)	(0.273)	(0.609)	(0.272)	(0.751)	(0.250)	(0.743)
Lottery expenditure	-5.752**	3.001*	-5.950*	3.258*	-3.887	-0.450	-4.894	3.424
	(2.618)	(1.619)	(3.036)	(1.807)	(3.745)	(5.393)	(3.915)	(7.795)
N	300	300	300	300	300	300	294	294
R^2	0.645	0.861	0.658	0.865	0.751	0.875	0.761	0.880
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Data	Repl.	Ours	Repl.	Ours	Repl.	Ours	Repl.	Ours
Expenditure x Year FEs	✓	✓	✓	✓	✓	✓	✓	✓
Province FEs	×	×	×	×	✓	✓	✓	✓
Controls	×	×	✓	✓	✓	✓	✓	✓
Cluster Province	×	×	×	×	×	×	×	×
Pop. Weights	✓	✓	✓	✓	✓	✓	✓	✓
Sample	Pre-09	Post-08	Pre-09	Post-08	Pre-09	Post-08	Pre-09	Post-08
Observations	All	All	All	All	All	All	Ex-Lleida	Ex-Lleida

Notes: Lottery prizes and expenditures calculated as the cumulative amount won by each province since the previous election.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Figure 3: Residual-Residual Plot Depicting the Electoral Effects of Lottery Prizes, Weighted by Provincial Population, 2009–2023

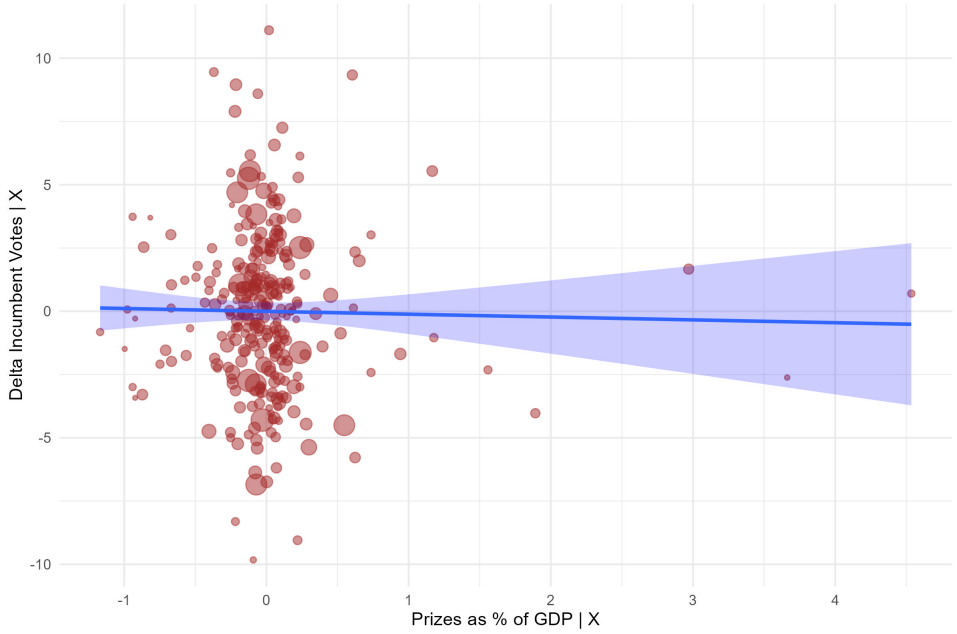


Table 5: Estimated Effects of Lottery Winnings (Restricted only to the Previous Lottery) on Province-Level Vote Share for the Incumbent Party

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.
Top lottery prizes (yearly)	-0.045	-0.314	-0.093	-0.289	-0.010	-0.021	-0.132	-0.202	-0.121
	(0.167)	(0.367)	(0.350)	(0.370)	(0.594)	(0.615)	(0.146)	(0.291)	(0.321)
Lottery expenditure (yearly)	-0.987	-3.345	-6.467	0.093	5.041	3.456	-3.698	-13.36*	-14.63*
	(10.306)	(10.212)	(11.161)	(12.387)	(21.043)	(32.975)	(7.561)	(7.972)	(8.041)
N	300	300	294	250	250	245	550	550	539
R^2	0.705	0.729	0.737	0.907	0.893	0.896	0.855	0.848	0.853
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Data	Ours	Ours	Ours	Ours	Ours	Ours	Ours	Ours	Ours
Expenditure x Year FEs	✓	✓	✓	✓	✓	✓	✓	✓	✓
Province FEs	✓	✓	✓	✓	✓	✓	✓	✓	✓
Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cluster Province	×	×	×	×	×	×	×	×	×
Pop. Weights	×	✓	✓	×	✓	✓	×	✓	✓
Sample	Pre-09	Pre-09	Pre-09	Post-08	Post-08	Post-08	All	All	All
Observations	All	All	Ex-Lleida	All	All	Ex-Lleida	All	All	Ex-Lleida

Notes: Lottery prizes and expenditures calculated as the total amount won by each province in the latest lottery draw.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

3.6 Model of Survey Respondents' Support for the Incumbent Party

When analyzing survey outcomes, the authors "focus...on surveys conducted in January, just a few weeks after the Christmas Lottery" (p.1287). However, their analysis also includes survey responses from the months of April, July, and October of the preceding year. Their regression model is

$$z_{i,s,t} = X_{i,t}\alpha + \beta Prizes_{s,t-1} + \gamma Expenditure_{s,t-1} + \Sigma\delta_t S_t + \Sigma\lambda_{s,t} D_{s,t} + \epsilon_{i,s,t}, \tag{2}$$

where $z_{i,s,t}$ denotes the survey responses of individual i in province s at time t[21]; X_{it} is a vector of individual characteristics; $Prizes_{s,t-1}$ denotes the Christmas Lottery income awarded in the province the month prior to the survey as a percentage of GDP; $Expenditure_{s,t-1}$ is the corresponding expenditure on the Christmas Lottery; S_t are fixed effects for each survey[22]; and $D_{s,t}$ are fixed effects for period and province.[23] The fixed effects are essentially modeling over-time trends and seasonal variation; they play a minor role. The authors estimate this model using probit regression and report marginal means. Instead, we use OLS regression and obtain similar results.

Table 6 presents the authors' reported results for 1989–2009 in column (1), using their replication data. Column (2) reports the same analysis for the same period but uses data we coded from primary sources. These results are almost identical, with point estimates of 0.012 and 0.011, implying that a one-unit increase in scaled lottery prizes increases average incumbent support by just over one percentage point. When we expand the author's analysis to include all available surveys from the 1989–2009 period, the point estimate diminishes to 0.004 with a standard error of 0.005 (column (3)). Replicating the analysis out-of-sample using all available surveys for 2010–2022 yields a point estimate of -0.004 with a standard error of 0.007 (column (4)). In other words, simply replicating the original analysis using subsequent data lends no support to the hypothesis that incumbent support rises in provinces that recently won a top lottery prize. Pooling all available survey data from 1989 to 2022 results in a point estimate of 0.000 with a standard error of 0.005 (column (5)).

One questionable feature of the authors' model is that $Prizes_{s,t-1}$ and $Expenditure_{s,t-1}$ are

[21] Specifically, this is a binary variable for whether the individual says that they would vote for the incumbent party if the elections were held tomorrow.

[22] This is equivalent to year-month fixed effects.

[23] These are not year fixed effects and province fixed effects, but year*province fixed effects.

coded zero for surveys conducted in the last three quarters of the year. In other words, while survey responses from January include province-level lottery prizes and expenditure from the previous year, subjects interviewed in previous months have these variables set to zero. Including surveys from these months and setting the corresponding lottery variables to zero have several implications. The number of observations included in the regression increases from approximately 113,000 to 282,000, which reduces the standard errors of the estimates. Although the sign of the lottery coefficient is positive both with and without the inclusion of the non-January surveys, its magnitude is slightly larger when these months are included. In other words, the authors obtained slightly larger, more precise, and significant point estimates with the inclusion of these later surveys. We can observe these differences by comparing columns (1) and (6) of Table 6. While column (1) shows the original specification from the paper, column (6) presents the results that would have been obtained had the authors not increased the sample size by including survey data from the last three quarters of the previous year with imputed zero prizes and zero expenditures.[24]

An econometric development that occurred after the publication of the Bagues and Esteve-Volart (2016) article is the use of wild cluster bootstrap (WCB) confidence sets for experimental designs involving clustered assignment (Roodman et al. 2019). This method has been shown to have more accurate coverage than confidence intervals based on the clustered standard errors used by the original authors, especially when treatment assignment is skewed (relatively few provinces win the lottery) and when clusters vary in size (Madrid and Barcelona are orders of magnitude larger than the smallest provinces). In this application, wild cluster bootstrap confidence sets prove to be much wider than conventional confidence intervals, suggesting that the contrast between the original survey estimates and the ones obtained from our out-of-sample replication is to be expected given the amount of sampling variability in the estimates. We report WCB confidence sets in curly brackets, directly below conventional confidence intervals in square brackets. Notably, when applying WCB confidence sets, none of the estimates in Table 6 remain statistically significant.

In section A9 of the Appendix, we present various specifications with several adjustments to the statistical model used by Bagues and Esteve-Volart (2016) to analyze survey data from the original

[24]In section A8 of the Appendix, we present graphs of the simulated sampling distributions for the models in columns (1) and (6) under the sharp null hypothesis of no treatment effect for any unit. Under the sharp null, the sampling distribution of an unbiased estimator should have an expectation of zero. The simulation results suggest that the regression estimator that imputes zeroes for prior months' lottery winnings exhibits a slight positive bias.

study period (1987–2009). We also provide a year-by-year analysis of the results using both the replication data (section A10) and the data we compiled from official sources (section A11). Ten of the 23 yearly point estimates are negative, 12 are positive, and one is zero. The meta-analysis results presented in column (24) of these tables suggest that the relationship between lottery prizes and support for the incumbent party is weakly positive, but the confidence interval includes zero.

Table 6: Effects of Prizes on Survey Measures of Incumbent Party Support, by Period and Data Source

	(1)	(2)	(3)	(4)	(5)	(6)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.
Top lottery prizes (yearly)	0.012	0.011	0.004	-0.004	0.000	0.011
	(0.006)	(0.006)	(0.005)	(0.007)	(0.005)	(0.012)
	[0.000,0.025]	[-0.000,0.023]	[-0.006,0.014]	[-0.018,0.011]	[-0.009,0.009]	[-0.015,0.037]
	{-0.003,0.030}	{-0.003,0.026}	{-0.008,0.014}	{-0.019,0.017}	{-0.010,0.010}	{-0.016,0.051}
N	282798	281089	413010	289178	702188	113951
R^2	0.052	0.054	0.055	0.038	0.054	0.036
Estimation	OLS	OLS	OLS	OLS	OLS	OLS
SurveyFE	✓	✓	✓	✓	✓	✓
Prov*Year FE	✓	✓	✓	✓	✓	✓
Data	Repl.Pkg	Our data	Our data	Our data	Our data	Repl.Pkg
Period	1986-2009	1986-2009	1986-2009	2010-2022	1986-2022	1986-2009
Surveys	Paper	Paper	All	All	All	Q1 from Paper

Notes: Clustered standard errors in parentheses. 95% conventional confidence intervals in squared brackets for models with clustered SE. 95% wild cluster bootstrap confidence sets in curly brackets. The model in column (6) includes only surveys from the first quarter of the year and does not include province*year fixed effects (which is only one set of FE), but province-FE plus year-FE. The two sets of FE correct serious collinearity problems from the model with province*year-FE

4 Conclusion

The vast empirical literatures on retrospective voting, pocketbook voting, and electoral accountability include an assortment of applications, most focusing on instances in which variation in outcomes for which the government was deemed responsible led to electoral repercussions. Another strand of this literature adduces instances in which the electorate "kicked the dog," to use Achen and Bartels's (2017) memorable phrase (p. 111). During the 1930s, voters from a variety of countries expelled from office an ideologically diverse array of parties that had no plausible connection to the worldwide depression. A third strand of this literature contends that voters are influenced by their

own mood or the general tenor of their surroundings such that football games and public lotteries shape their support for the incumbent party and its leaders.

Bagues and Esteve-Volart (2016)'s study of the Spanish Christmas Lottery is arguably the most convincing example of the latter genre. The authors leveraged a randomized experiment (as opposed to an as-if random sports outcome) conducted over many years to demonstrate a causal effect. Moreover, they did so using two different outcome measures, election results and an extensive collection of public opinion surveys. They considered a range of robustness checks, and their public replication data and code make their results transparent and reproducible. Their study makes a compelling case for a theoretically intriguing empirical regularity, one that calls out for out-of-sample confirmation.

Extending the dataset to 2009–2023, we find a quite different pattern of results. Across six general elections (2011, 2015, 2016, April 2019, November 2019, and 2023), we do not see increases in incumbent vote share in provinces that won the lottery since the last election, regardless of which covariates we include or whether we weight the data by size of the provincial electorate. Survey data, too, lend no support for the hypothesis that provinces that win the top Christmas lottery prizes experience a surge in support for the incumbent party in the months that follow. Various robustness checks, such as changing the period during which lottery prizes are tallied, affirm the null findings. We infer, therefore, that the originally reported result was a false positive.

The marked contrast between the original results and the out-of-sample replication serves as a reminder of the frailty of studies based on naturally occurring experiments.[25] Such studies are drawn from a potentially large pool of possible settings — the Spanish Christmas Lottery is just one of many lotteries that allocate prizes in a geographically clustered manner. If the research community only hears about the political repercussions of lottery windfalls when the results are "interesting" enough to merit publication, we are in effect drawing inferences based on a nonrandom sample from the population of potential results. Out-of-sample replication therefore plays an especially important role when assessing the theoretical implications of findings generated by natural experiments. In the present case, the theoretical implications flip. Instead of furnishing noteworthy evidence in favor of a debated proposition about the bases of incumbent support, the Spanish

[25] A growing literature has systematically assessed the replicability of experimental studies, especially those conducted in lab (Camerer et al. 2016) or survey (Camerer et al. 2018; Coppock 2019) contexts. Less attention has been given to the replicability of studies that leverage lotteries such as those used to assign visas or military service.

Christmas Lottery now appears to lend no support for the notion that random, geographically concentrated windfalls burnish the incumbent party's popularity or vote share.

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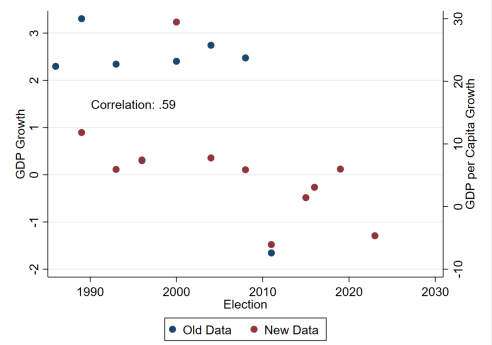
Appendix

A1 Electoral Data - Comparison of Control Variables

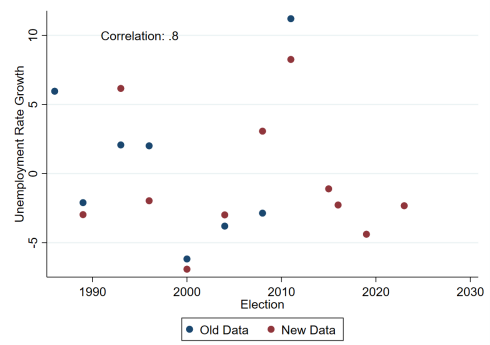
We gathered the same data but had some difficulty reconciling their calculations. In some cases, the years used were the ones *before* an election while in other cases they were the years *of* the election. For instance, the unemployment growth term is calculated as the difference between the unemployment rate the year *before* the election at t and the unemployment rate the year *before* the previous election. However, the inflation term is calculated as the difference between the inflation rate the year *before* the election at t and the inflation rate the *same* year of the previous election. We were not able to replicate the calculations for the growth terms of GDP and inflation.

Figure A1: Control Variable Comparison

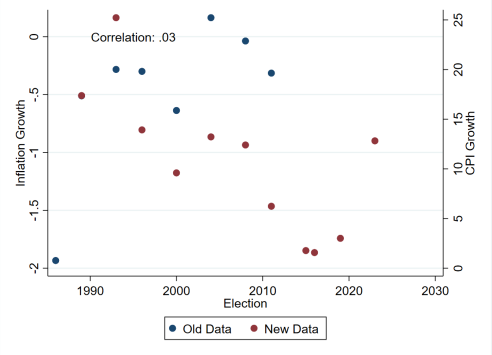
(a) GDP Change



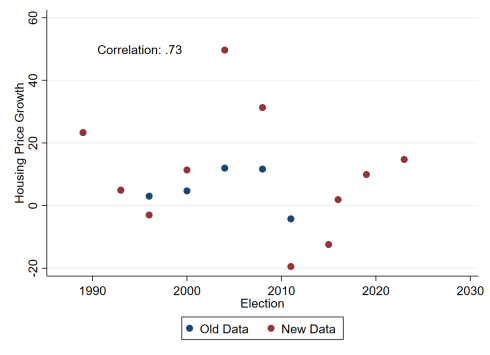
(b) Unemployment Change



(c) Prices Change



(d) Housing Prices Change



A2 Pooled Electoral Results - Full Period (1989-2023)

In this section, we pool results from all periods together, including the elections from the original paper (Bagues and Esteve-Volart 2016) and the elections since. Table A2 shows the pooled results without weights; A2 repeats exercise with population weights. Note that both of these tables leave intact the original coding of lottery prizes as the cumulation of prizes since the last election; see the main text for evidence that the electoral results are highly sensitive to this coding rule and that the survey results, which focus solely on the effects of prizes from the most recent lottery, show no effect.

Table A1: Estimated Effects of Lottery Winnings on Province-Level Vote Share for the Incumbent Party, Unweighted, 1989–2023

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.
Top lottery prizes	0.248***	0.234***	0.256***	0.240***	0.296***	0.273***	0.328**	0.298**
	(0.087)	(0.084)	(0.090)	(0.084)	(0.108)	(0.096)	(0.145)	(0.119)
Lottery expenditure	-1.507	-1.252	-1.877	-1.556	-2.512	-3.453	-5.462	-3.861
	(2.543)	(2.382)	(2.543)	(2.314)	(4.082)	(2.554)	(3.762)	(2.464)
N	300	600	300	600	300	600	294	588
R^2	0.619	0.823	0.628	0.824	0.705	0.846	0.723	0.854
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Data	Repl.	Ours	Repl.	Ours	Repl.	Ours	Repl.	Ours
Expenditure x Year FEs	✓	✓	✓	✓	✓	✓	✓	✓
Province FEs	×	×	×	×	✓	✓	✓	✓
Controls	×	×	✓	✓	✓	✓	✓	✓
Cluster Province	×	×	×	×	×	×	×	×
Pop. Weights	×	×	×	×	×	×	×	×
Sample	Pre-09	All	Pre-09	All	Pre-09	All	Pre-09	All
Observations	All	All	All	All	All	All	Ex-Lleida	Ex. Lleida

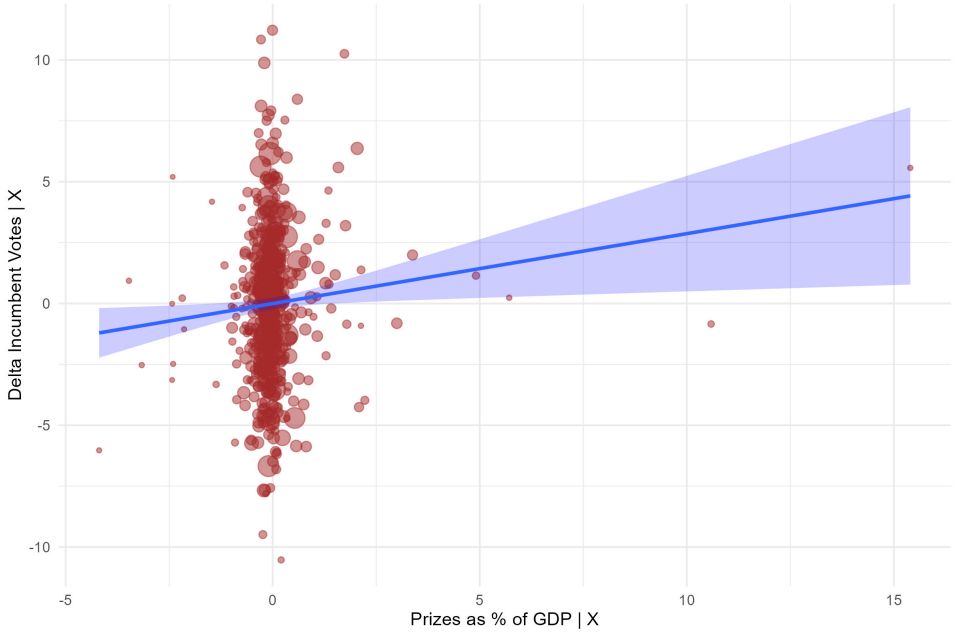
Notes: Lottery prizes and expenditures calculated as the cumulative amount won by each province since the previous election.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A2: Estimated Effects of Lottery Winnings on Province-Level Vote Share for the Incumbent Party, Weighted by Provincial Population, 1989–2023

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.
Top lottery prizes	0.760***	0.461*	0.754***	0.457*	0.729***	0.453*	0.632**	0.398
	(0.280)	(0.240)	(0.273)	(0.238)	(0.272)	(0.267)	(0.250)	(0.264)
Lottery expenditure	-5.752**	-4.991**	-5.950*	-5.292**	-3.887	-5.818**	-4.894	-5.909**
	(2.618)	(2.340)	(3.036)	(2.382)	(3.745)	(2.492)	(3.915)	(2.529)
N	300	600	300	600	300	600	294	588
R^2	0.645	0.821	0.658	0.821	0.751	0.842	0.761	0.847
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Data	Repl.	Ours	Repl.	Ours	Repl.	Ours	Repl.	Ours
Expenditure x Year FEs	✓	✓	✓	✓	✓	✓	✓	✓
Province FEs	×	×	×	×	✓	✓	✓	✓
Controls	×	×	✓	✓	✓	✓	✓	✓
Cluster Province	×	×	×	×	×	×	×	×
Pop. Weights	✓	✓	✓	✓	✓	✓	✓	✓
Sample	Pre-09	All	Pre-09	All	Pre-09	All	Pre-09	All
Observations	All	All	All	All	All	All	Ex-Lleida	Ex. Lleida

Notes: Lottery prizes and expenditures calculated as the cumulative amount won by each province since the previous election.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Figure A2: Residual-Residual Plot - Electoral Effects of Lottery Prizes, Weighted by Provincial Population, 1989–2023



A3 Election by Election Results

Table A3: Electoral Results without Population Weights, by Election, Using the Authors' Replication Data

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.
Top lottery prizes	-0.033	-2.195*	1.445**	0.978	0.282	0.295*	0.296***	0.231
	(0.127)	(1.206)	(0.588)	(0.691)	(0.171)	(0.148)	(0.108)	(0.136)
Lottery expenditure	-0.704	2.739*	-0.371	-2.291*	1.278*	-2.074	-2.512	
	(2.367)	(1.428)	(1.788)	(1.212)	(0.761)	(2.109)	(4.082)	
N	50	50	50	50	50	50	300	6
R^2	0.145	0.324	0.110	0.281	0.282	0.116	0.705	
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	Meta
Data	Repl.	Repl.	Repl.	Repl.	Repl.	Repl.	Repl.	Repl.
Year FEs	✓	✓	✓	✓	✓	✓	✓	
Province FEs	✓	✓	✓	✓	✓	✓	✓	
Controls	✓	✓	✓	✓	✓	✓	✓	
Cluster Province	×	×	×	×	×	×	×	
Election	1989	1993	1996	2000	2004	2008	All	All
Pop. Weights	×	×	×	×	×	×	×	

Notes: Lottery prizes and expenditures calculated as the cumulative amount won by each province since the previous election. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A4: Electoral Results with Population Weights, by Election, Using the Authors' Replication Data

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.
Top lottery prizes	-0.009	-1.759	1.928**	0.959	0.703	1.025	0.729***	0.555
	(0.318)	(1.153)	(0.798)	(0.794)	(0.556)	(0.635)	(0.272)	(0.352)
Lottery expenditure	-2.713	3.007	-0.392	-0.950	1.427	-3.669*	-3.887	
	(2.266)	(1.880)	(2.111)	(1.598)	(0.884)	(2.131)	(3.745)	
N	50	50	50	50	50	50	300	6
R^2	0.362	0.389	0.344	0.153	0.323	0.101	0.751	
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	Meta
Data	Repl.	Repl.	Repl.	Repl.	Repl.	Repl.	Repl.	Repl.
Year FEs	✓	✓	✓	✓	✓	✓	✓	
Province FEs	✓	✓	✓	✓	✓	✓	✓	
Controls	✓	✓	✓	✓	✓	✓	✓	
Cluster Province	×	×	×	×	×	×	×	
Election	1989	1993	1996	2000	2004	2008	All	All
Pop. Weights	✓	✓	✓	✓	✓	✓	✓	

Notes: Lottery prizes and expenditures calculated as the cumulative amount won by each province since the previous election. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A5: Electoral Results without Population Weights, by Election, Using Our Data

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.
Top lottery prizes	-0.011	-2.336**	1.260***	0.732	0.190	0.327**	-0.147	0.036	0.200	0.174	0.008	0.325	0.273***	0.164**
	(0.119)	(0.913)	(0.453)	(0.649)	(0.189)	(0.157)	(0.482)	(0.393)	(0.154)	(0.339)	(0.634)	(1.136)	(0.096)	(0.078)
Lottery expenditure	-1.394	2.527*	-0.369	-2.718*	1.406	-2.231	2.828**	-0.944	3.838***	0.698	4.349*	-2.543**	-3.453	
	(2.021)	(1.263)	(1.637)	(1.482)	(1.267)	(2.024)	(1.352)	(1.395)	(1.218)	(2.142)	(2.208)	(0.974)	(2.554)	
N	50	50	50	50	50	50	50	50	50	50	50	50	600	12
R^2	0.285	0.376	0.268	0.201	0.120	0.176	0.263	0.238	0.226	0.192	0.324	0.318	0.846	
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	Meta
Data	Ours	Ours	Ours	Ours	Ours	Ours	Ours	Ours	Ours	Ours	Ours	Ours	Ours	Ours
Year FEs	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Province FEs	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Cluster Province	×	×	×	×	×	×	×	×	×	×	×	×	×	
Election	1989	1993	1996	2000	2004	2008	2011	2015	2016	2019 (4)	2019 (11)	2023	All	All
Pop. Weights	×	×	×	×	×	×	×	×	×	×	×	×	×	

Notes: Lottery prizes and expenditures calculated as the cumulative amount won by each province since the previous election. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A6: Electoral Results with Population Weights, by Election, Using Our Data

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.
Top lottery prizes	-0.163	-2.144**	1.953**	0.921	0.661	0.705	-0.456	-0.495	0.393**	0.123	-0.042	1.210	0.453*	0.251
	(0.292)	(0.983)	(0.845)	(0.833)	(0.627)	(0.459)	(1.510)	(1.185)	(0.194)	(0.454)	(0.447)	(1.431)	(0.267)	(0.152)
Lottery expenditure	-1.982	4.051**	-0.442	-1.418	1.729	-2.944	3.426**	-1.838	2.644	-0.183	7.127***	-4.280*	-5.818**	
	(2.042)	(1.923)	(1.856)	(1.879)	(1.032)	(2.212)	(1.514)	(2.887)	(1.836)	(3.169)	(2.334)	(2.431)	(2.492)	
N	50	50	50	50	50	50	50	50	50	50	50	50	600	12
R^2	0.474	0.305	0.392	0.141	0.191	0.159	0.281	0.384	0.313	0.343	0.343	0.386	0.842	
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	Meta
Data	Ours	Ours	Ours	Ours	Ours	Ours	Ours	Ours	Ours	Ours	Ours	Ours	Ours	Ours
Year FEs	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Province FEs	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Cluster Province	×	×	×	×	×	×	×	×	×	×	×	×	×	
Election	1989	1993	1996	2000	2004	2008	2011	2015	2016	2019 (4)	2019 (4)	2023	All	All
Pop. Weights	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

Notes: Lottery prizes and expenditures calculated as the cumulative amount won by each province since the previous election. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

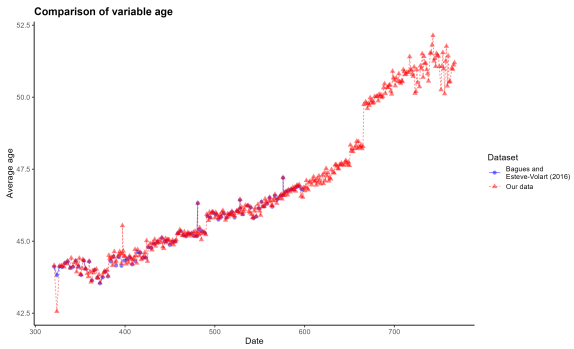
A4 Survey Covariates Calculations

We were able to replicate the covariates identically in the vast majority of cases. However, replicating the coding of the education variable in Bagues and Esteve-Volart (2016) involved the following two manual changes. First, we recoded all the empty answers as Primary Education. Second, the options "Bachillerato Superior, BUP y equivalentes"[26] and "Formación profesional 1 y enseñanzas técnicas"[27] mostly appear as secondary education except for a small number of surveys where they are considered primary education. Figure A3 shows a comparison of the monthly evolution of the main control variables and outcome variable between our data and the data in Bagues and Esteve-Volart (2016).

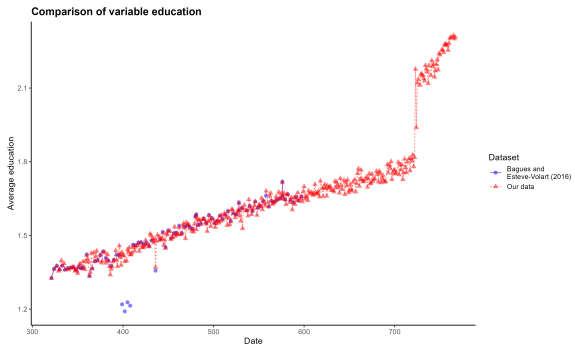
[26] Refers to high school and equivalent.
[27] Refers to vocational training and technical education.

Figure A3: Main Survey Variables Comparison

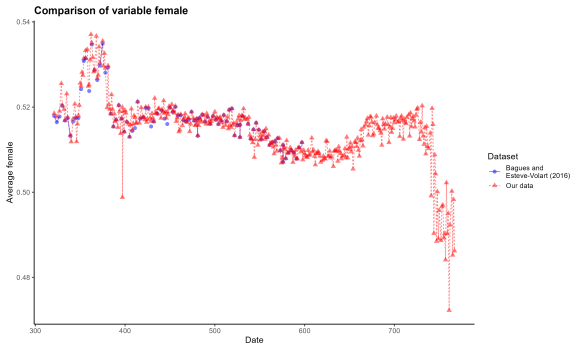
(a) Age



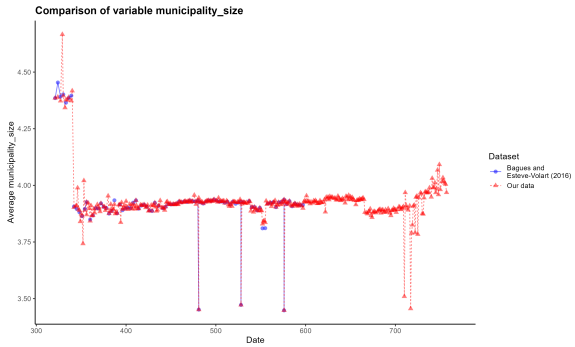
(b) Educational Level



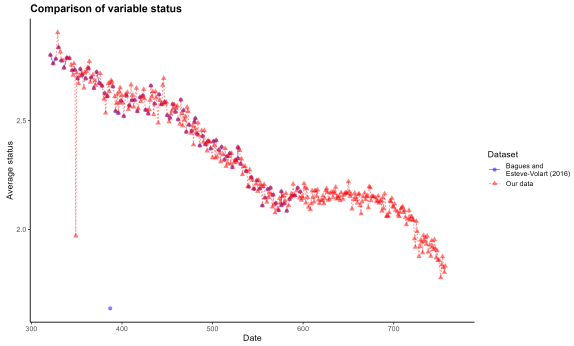
(c) Gender - Female



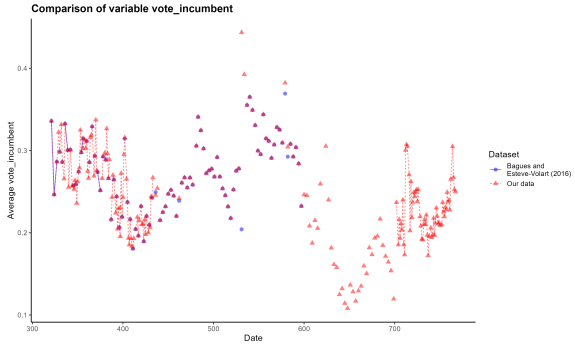
(d) Municipality Size



(e) Employment Status

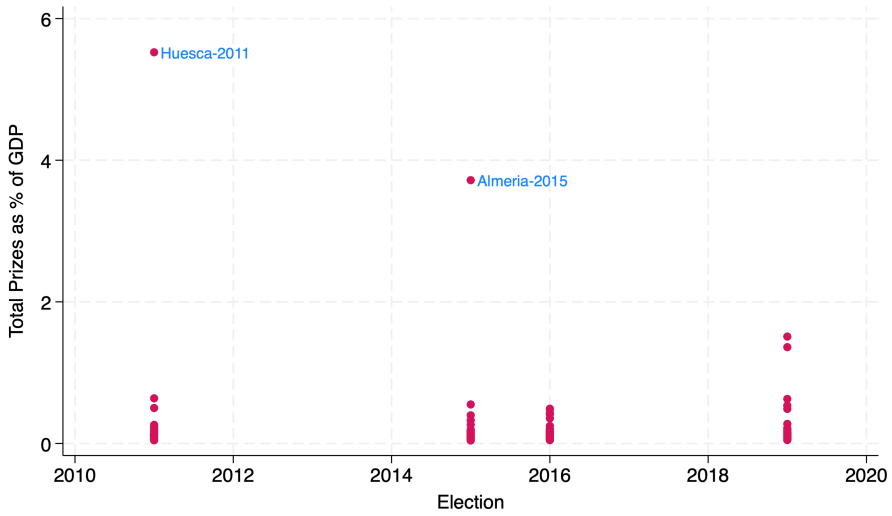


(f) Incumbent Vote



A5 Alternative outcome measure: Total prizes as % of GDP across years

Figure A4: Total Prizes as Percent of GDP



Note: Labeled observations correspond to province-years with prizes that are more than three standard deviations above the mean.

A6 Comparison of observations in the replication data and the data collected by us

Number of observations in surveys included in replication data vs the same surveys collected by us from the CIS website.

Table A7: Number of observations in survey data from Bagues and Esteve-Volart 2016 vs our data

Year-Month	**Survey**	**Replication**	**Our Data**
1986m10	1552	4,878	2,484
1987m1	1595	2,339	2,492
1987m4	1626	2,390	2,475
1987m7	1697	2,394	2,489
1987m10	1707	2,453	2,492
1988m1	1725	2,445	2,497
1988m4	1740	2,441	2,496
1988m7	1761	2,385	2,443
1988m10	1767	2,444	2,499
1989m1	1785	2,443	2,497
1989m4	1801	2,884	2,951
1989m7	1819	2,435	2,498
1989m9	1840	2,415	2,482
1990m1	1858	2,836	2,923
1990m4	1870	2,800	2,895
1990m7	1881	2,431	2,500
1990m10	1901	2,427	2,487
1991m1	1913	2,379	2,488
1991m4	1962	2,453	2,494
1991m7	1972	2,401	2,494
1991m10	1979	2,437	2,491
1992m1	1989	2,389	2,498
1992m4	2002	1,465	2,497
1992m7	2016	2,375	2,498
1992m10	2023	2,449	2,498
1993m1	2045	2,441	2,492
1993m4	2055	2,469	2,500
1993m7	2065	2,452	2,485
1993m10	2068	2,458	2,499
Continued on next page			

Year-Month	Survey	Replication	Our Data
1994m1	2077	2,460	2,500
1994m4	2087	2,425	2,487
1994m7	2110	2,419	2,492
1994m10	2118	2,448	2,494
1995m1	2130	2,454	2,496
1995m4	2156	2,465	2,497
1995m7	2188	2,445	2,494
1995m10	2194	2,456	2,493
1996m1	2204	2,450	2,499
1996m5	2215	2,458	2,496
1996m10	2225	2,459	2,498
1997m1	2233	2,443	2,488
1997m4	2244	2,454	2,496
1997m7	2254	2,466	2,495
1997m10	2264	2,455	2,496
1998m1	2274	2,466	2,496
1998m4	2285	2,466	2,498
1998m7	2294	2,463	2,486
1998m10	2307	2,468	2,490
1999m1	2316	2,469	2,493
1999m4	2324	2,482	2,499
1999m7	2367	2,462	2,490
1999m10	2372	2,470	2,496
2000m2	2382	23,415	23,562
2000m4	2389	2,474	2,491
2000m7	2396	2,469	2,493
2000m10	2400	2,481	2,497
2001m1	2406	2,479	2,486
2001m4	2415	2,479	2,492
2001m7	2428	2,462	2,485
2001m10	2433	2,471	2,499

Continued on next page

Year-Month	Survey	Replication	Our Data
2002m1	2444	2,484	2,498
2002m4	2454	2,486	2,498
2002m7	2463	2,462	2,482
2002m10	2468	2,475	2,489
2003m1	2477	2,459	2,480
2003m4	2508	2,477	2,494
2003m7	2531	2,454	2,476
2003m10	2541	2,473	2,488
2004m1	2555	23,539	23,631
2004m4	2561	2,473	2,493
2004m10	2577	2,469	2,494
2005m1	2589	2,470	2,495
2005m4	2602	2,445	2,477
2005m7	2616	2,411	2,425
2005m10	2622	2,468	2,489
2006m1	2633	2,448	2,484
2006m4	2640	2,452	2,481
2006m7	2651	2,465	2,482
2006m10	2657	2,446	2,481
2007m1	2672	2,452	2,472
2007m4	2700	2,435	2,455
2007m7	2728	2,463	2,483
2007m10	2735	2,472	2,493
2008m1	2750	17,727	17,830
2008m4	2761	2,449	2,459
2008m7	2769	2,443	2,468
2008m10	2775	2,458	2,481
2009m1	2782	2,464	2,482
2009m4	2798	2,453	2,481
2009m7	2811	2,434	2,482
2009m10	2815	2,451	2,478
Total		**282,798**	**285,309**

A7 Survey Data Structure

Table A8: Survey data structure in the paper: with imputed zeroes

Province	**Year**	**Month**	**Expenditure (%GDP)**	**Top prizes (%GDP)**
Alicante	1994	1	0.313	1.637
Alicante	1994	4	0	0
Alicante	1994	7	0	0
Alicante	1994	10	0	0
Alicante	1995	1	0.341	0
Alicante	1995	4	0	0
Alicante	1995	7	0	0
Alicante	1995	10	0	0

Table A9: Adjusted survey data structure: without imputed zeroes and including only outcomes from January surveys

Province	**Year**	**Month**	**Expenditure (%GDP)**	**Top prizes (%GDP)**
Alicante	1994	1	0.313	1.637
Alicante	1994	4	.	.
Alicante	1994	7	.	.
Alicante	1994	10	.	.
Alicante	1995	1	0.341	0
Alicante	1995	4	.	.
Alicante	1995	7	.	.
Alicante	1995	10	.	.

Table A10: Adjusted survey data structure: without imputed zeroes and including only outcomes from first-quarter surveys

Province	**Year**	**Month**	**Expenditure (%GDP)**	**Top prizes (%GDP)**
Alicante	1994	1	0.313	1.637
Alicante	1994	2	0.313	1.637
Alicante	1994	3	0.313	1.637
Alicante	1994	4	.	.
Alicante	1994	7	.	.
Alicante	1994	10	.	.
Alicante	1995	1	0.341	0
Alicante	1995	2	0.341	0
Alicante	1995	3	0.341	0
Alicante	1995	4	.	.
Alicante	1995	7	.	.
Alicante	1995	10	.	.

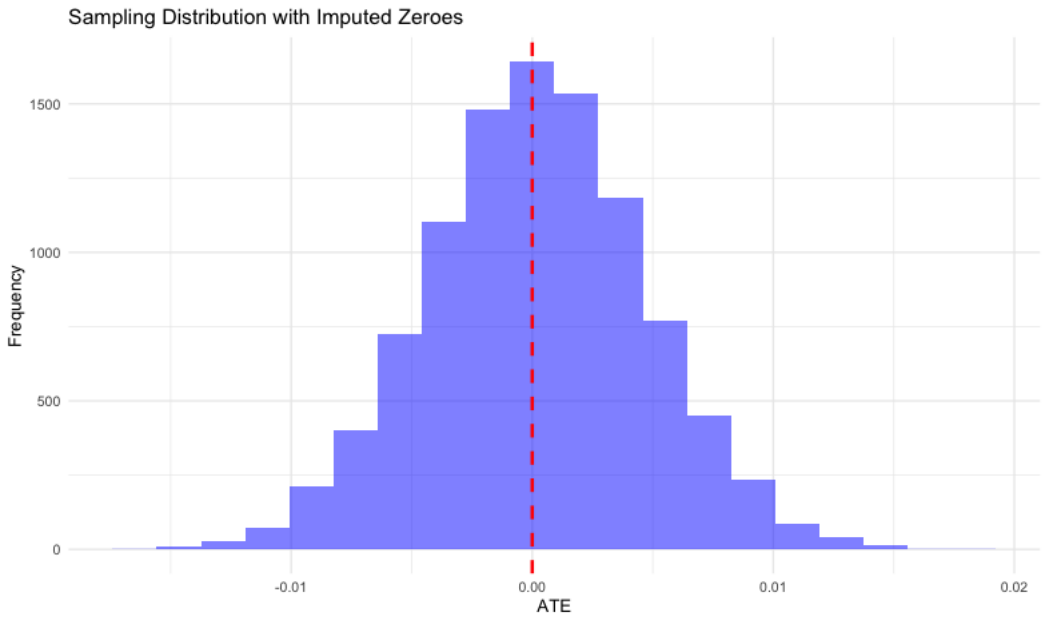
A8 Survey Data Sampling Distributions

To assess whether the inclusion of observations with imputed zeroes biases the estimated effect of lottery winnings on support for the incumbent, we conducted simulations using two sets of observations from the replication package of Bagues and Esteve-Volart 2016. The simulations randomly permuted lottery outcomes according to the sharp null hypothesis that lottery winnings have no effect on outcomes – thus, any potential outcomes that are revealed empirically under a given treatment would have been identical under a counterfactual alternative treatment. This approach allows us to examine whether the resulting sampling distributions exhibit any indication of bias; under the sharp null of no treatment effect for any unit, the sampling distribution of an unbiased estimator should have a mean of zero. The first simulation includes the same survey data used by the original authors, which covers responses from the last three quarters of the year and involves imputations of zero for both lottery winnings and expenditures. The second set, a subset of the first, is restricted to observations from the first quarter, thereby excluding any survey responses with imputed zeroes.

For the simulation, we randomly reassigned treatment dosages while conditioning on the province's actual level of lottery expenditure.[28] We conducted 10,000 simulations for each set of observations. The figures below display the sampling distributions for the dataset with imputed zeroes (Figure A5), and without imputed zeroes (Figure A6). Table A11 reports the mean estimate of each distribution, along with the corresponding 95% confidence intervals. The simulation results suggest that the zero-imputation analysis exhibits a small positive bias with the zero imputations. However, the analysis excluding lagged outcomes (and imposing no imputations) is centered at zero.

A8.1 Sampling distribution with imputed zeroes

Figure A5: Sampling Distribution **with** Imputed Zeroes



[28] Although the treatment variable is continuous, it was discretized into quintiles, resulting in five bins based on the original expenditure distribution.

A8.2 Sampling distribution without imputed zeroes

Figure A6: Sampling Distribution **without** Imputed Zeroes

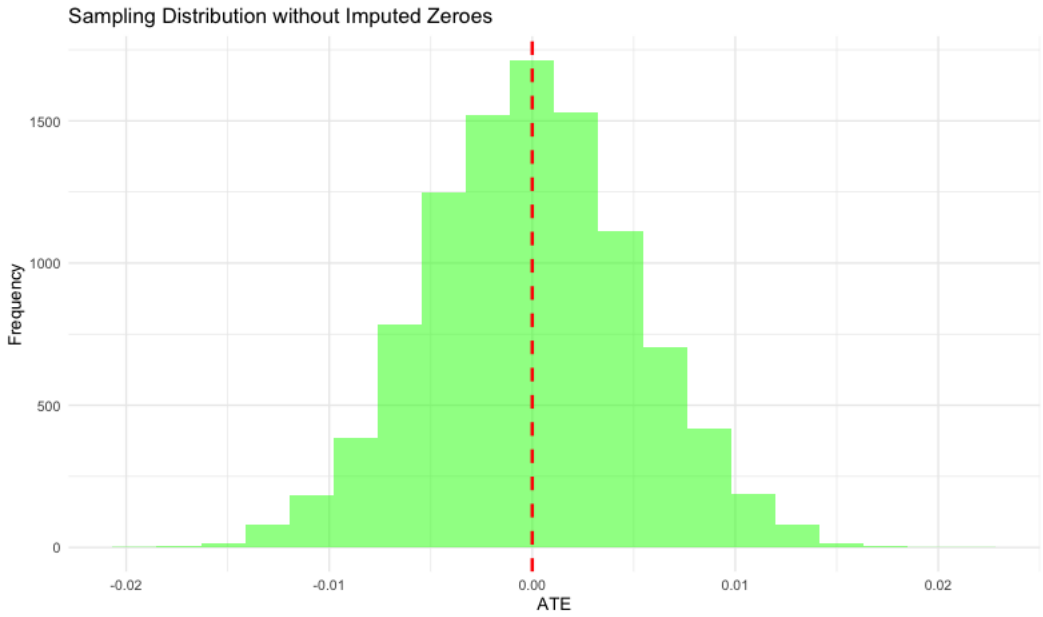


Table A11: Comparison of Sampling Distributions

Sample	**Mean estimate**	**95% CI**
With imputed zeroes	0.00016	[0.00007, 0.00025]
Without imputed zeroes	-0.00008	[-0.00018, 0.00002]

A9 Pooled Survey Results - Specification modified

Table A12: Modified specification with different samples

	(1)	(2)	(3)	(4)	(5)	(6)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.
Top lottery prizes	0.012	0.009	0.009	0.000	0.007	0.002
	[0.004, 0.021]	[-0.000, 0.017]	[0.000, 0.019]	[-0.010, 0.010]	[-0.007, 0.020]	[-0.008, 0.013]
	{-0.017, 0.053}	{-0.020, 0.044}	{-0.015, 0.041}	{-0.018, 0.016}	{-0.019, 0.036}	{-0.034, 0.034}
N	282798	282798	113951	74572	34905	97578
R^2	0.032	0.033	0.038	0.034	0.048	0.046
Estimation	OLS	OLS	OLS	OLS	OLS	OLS
Adjustment	FE corrected	Propensity	Q1,Propen,FE	Only Q1	Only January	Month pre-elect
Data	Repl.Pkg	Repl.Pkg	Repl.Pkg	Ours	Ours	Ours
Period	1986-2009	1986-2009	1986-2009	2010-2022	2010-2022	1989-2019
Province FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓	✓
Propensity corrected	×	✓	✓	✓	✓	✓

Notes: 95% conventional clustered confidence intervals in squared brackets. 95% wild cluster bootstrap confidence sets in curly brackets.

A10 Year by Year Survey Results - Specification modified with replication data

Table A13: Year-by-year regressions with meta-analysis using replication data. Part 1/3

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.
Top lottery prizes (yearly)	0.045	0.041	-0.169	0.078	-0.059	-0.023	-0.036	0.005
	[-0.063,0.154]	[0.004,0.078]	[-0.239,-0.100]	[-0.016,0.171]	[-0.388,0.269]	[0.158,0.112]	[-0.122,0.051]	[-0.018,0.028]
	{-0.824,0.372}	{-1.216,0.288}	{-0.515, 0.354}	{-0.195, 0.404}	{-0.393,0.602}	{-0.196,0.494}	{-0.537,1.129}	{-0.274,0.261}
Lottery expenditure (yearly)	-0.413	-0.526	-0.221	-0.515	-0.399	-0.420	0.087	-0.089
	[-0.824,-0.002]	[-1.096,0.044]	[-0.791,0.349]	[-1.555,0.525]	[-1.004,0.207]	[-0.817,-0.024]	[-0.306,0.479]	[-0.492,0.314]
	{-0.859,0.178}	{-1.316, 0.274}	{-0.841, 0.499}	{-1.629, 1.035}	{-1.110, 0.521}	{-0.871,0.044}	{0-.330,0.515}	{-0.578,0.384}
N	2339	2445	2443	2836	2379	2389	2441	2460
R^2	0.025	0.039	0.031	0.034	0.026	0.032	0.041	0.036
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Data	Q1	Q1	Q1	Q1	Q1	Q1	Q1	Q1
Province FE	×	×	×	×	×	×	×	×
Survey FE	✓	✓	✓	✓	✓	✓	✓	✓
Year	1987	1988	1989	1990	1991	1992	1993	1994

Notes: 95% conventional clustered confidence intervals in squared brackets. 95% wild cluster bootstrap confidence sets in curly brackets. While WCB confidence sets are not necessarily symmetrical, we assumed symmetry in this instance to facilitate the use of WCB confidence sets for the meta-analysis in column (24).

Table A13: Year-by-year regressions with meta-analysis using replication data. Part 2/3

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.
Top lottery prizes (yearly)	0.023	0.061	0.173	-0.021	-0.108	0.113	-0.004	0.099
	[-0.097,0.144]	[0.013,0.109]	[0.045,0.302]	[-0.040,-0.002]	[-0.234,0.019]	[0.074,0.151]	[-0.011,0.002]	[0.042,0.156]
	{-0.458,0.154}	{-0.687,0.551}	{-0.028,0.583}	{-0.477,0.451}	{-0.367,0.173}	{-0.102,0.898}	{-0.094,0.136}	{-0.142,0.316}
Lottery expenditure (yearly)	0.072	-0.014	-0.030	0.475	0.134	0.333	0.230	0.266
	[-0.195,0.340]	[-0.430,0.403]	[-0.447,0.387]	[0.055,0.894]	[-0.361,0.629]	[-0.029,0.694]	[-0.213,0.673]	[-0.133,0.665]
	{-0.224,0.385}	{-0.517,0.545}	{-0.583,0.440}	{-0.022,0.938}	{-0.441,0.688}	{-0.106,0.707}	{-0.245,0.768}	{-0.185,0.710}
N	2454	2450	2443	2466	2469	23415	2479	2484
R^2	0.041	0.046	0.023	0.020	0.024	0.020	0.012	0.033
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Data	Q1	Q1	Q1	Q1	Q1	Q1	Q1	Q1
Province FE	×	×	×	×	×	×	×	×
Survey FE	✓	✓	✓	✓	✓	✓	✓	✓
Year	1995	1996	1997	1998	1999	2000	2001	2002

Notes: 95% conventional clustered confidence intervals in squared brackets. 95% wild cluster bootstrap confidence sets in curly brackets. While WCB confidence sets are not necessarily symmetrical, we assumed symmetry in this instance to facilitate the use of WCB confidence sets for the meta-analysis in column (24).

Table A13: Year-by-year regressions with meta-analysis using replication data. Part 3/3

	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.
Top lottery prizes (yearly)	0.015	-0.065	-0.011	0.145	0.105	-0.008	0.106	0.010
	[-0.043,0.072]	[-0.264,0.134]	[-0.053,0.030]	[-0.004,0.293]	[-0.119,0.328]	[-0.035,0.018]	[0.025,0.187]	[-0.045,0.065]
	{-0.104,0.133}	{-0.320,0.191}	{-0.174,0.151}	{-0.792,1.082}	{-0.584,0.793}	{-0.426,0.409}	{-0.254,0.466}	
Lottery expenditure (yearly)	0.070	0.382	-0.163	-0.162	-0.058	0.017	-0.272	-0.005
	[-0.320,0.460]	[0.110,0.653]	[-0.541,0.215]	[-0.425,0.102]	[-0.213,0.098]	[-0.103,0.137]	[-0.419,-0.126]	[-0.110,0.101]
	{-0.366,0.505}	{0.100,0.664}	{-0.573,0.246}	{-0.496,0.173}	{-0.313,0.198}	{-0.149,0.184}	{-0.521,-0.024}	
N	2459	23539	2470	2448	2452	17727	2464	23
R^2	0.026	0.025	0.013	0.009	0.009	0.003	0.013	
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	Meta-analysis
Data	Q1	Q1	Q1	Q1	Q1	Q1	Q1	Q1
Province FE	×	×	×	×	×	×	×	
Survey FE	✓	✓	✓	✓	✓	✓	✓	
Year	2003	2004	2005	2006	2007	2008	2009	1987-2009

Notes: 95% conventional clustered confidence intervals in squared brackets. 95% wild cluster bootstrap confidence sets in curly brackets. While WCB confidence sets are not necessarily symmetrical, we assumed symmetry in this instance to facilitate the use of WCB confidence sets for the meta-analysis in column (24).

A11 Year by Year Survey Results - Specification modified with our data for the same period of the paper

Table A14: Year-by-year regressions with meta-analysis using our data. Part 1/3

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.
Top lottery prizes (yearly)	0.038	0.038	-0.111	0.042	-0.068	0.015	0.000	0.002
	[-0.069,0.144]	[0.001,0.074]	[-0.201,-0.020]	[-0.020,0.105]	[-0.399,0.262]	[-0.126,0.156]	[-0.055,0.056]	[-0.021,0.025]
	{-1.042, 0.360}	{-1.032, 0.223}	{-0.875, 0.657}	{0.210, 0.260}	{-0.461, 0.560}	{-0.134, 0.365}	{-0.291, 0.691}	{-0.310, 0.162}
Lottery expenditure (yearly)	-0.450	-0.612	-0.247	-0.443	-0.381	-0.345	-0.077	-0.120
	[-0.850,-0.051]	[-1.288,0.063]	[-0.702,0.207]	[-1.093,0.207]	[-0.994,0.232]	[-0.723,0.032]	[-0.383,0.229]	[-0.387,0.147]
	{-0.865, 0.141}	{-1.322, 0.291}	{-0.742, 0.331}	{1.283, 0.348}	{-1.058, 0.564}	{-0.789, 0.066}	{-0.447, 0.256}	{-0.430, 0.170}
N	2451	2424	7288	7684	2382	4761	7384	7109
R^2	0.030	0.039	0.019	0.033	0.027	0.029	0.045	0.037
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Data	Q1	Q1	Q1	Q1	Q1	Q1	Q1	Q1
Province FE	×	×	×	×	×	×	×	×
Survey FE	✓	✓	✓	✓	✓	✓	✓	✓
Year	1987	1988	1989	1990	1991	1992	1993	1994

Notes: 95% conventional clustered confidence intervals in squared brackets. 95% wild cluster bootstrap confidence sets in curly brackets. While WCB confidence sets are not necessarily symmetrical, we assumed symmetry in this instance to facilitate the use of WCB confidence sets for the meta-analysis in column (24).

Table A14: Year-by-year regressions with meta-analysis using replication data. Part 2/3

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.
Top lottery prizes (yearly)	-0.012	-0.020	0.171	-0.021	-0.107	0.113	-0.004	0.097
	[-0.088,0.063]	[-0.059,0.018]	[0.043,0.300]	[-0.040,-0.002]	[-0.233,0.020]	[0.074,0.151]	[-0.011,0.002]	[0.042,0.151]
	{-0.342, 0.092}	{-0.637, 0.441}	{-0.058, 0.585}	{-0.469, 0.445}	{-0.455, 0.167}	{-0.144, 0.864}	{-0.107, 0.147}	{-0.100, 0.354}
Lottery expenditure (yearly)	-0.151	-0.075	-0.023	0.473	0.143	0.333	0.230	0.268
	[-0.380,0.078]	[-0.418,0.268]	[-0.436,0.391]	[0.054,0.893]	[-0.354,0.640]	[-0.028,0.693]	[-0.214,0.673]	[-0.131,0.666]
	{-0.438, 0.128}	{-0.533, 0.312}	{-0.567, 0.444}	{-0.038, 0.901}	{-0.512, 0.713}	{-0.103, 0.728}	{-0.256, 0.84}	{-0.175, 0.726}
N	7380	4924	2444	2468	2476	23428	2479	2488
R^2	0.047	0.028	0.023	0.020	0.024	0.020	0.012	0.033
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Data	Q1	Q1	Q1	Q1	Q1	Q1	Q1	Q1
Province FE	×	×	×	×	×	×	×	×
Survey FE	✓	✓	✓	✓	✓	✓	✓	✓
Year	1995	1996	1997	1998	1999	2000	2001	2002

Notes: 95% conventional clustered confidence intervals in squared brackets. 95% wild cluster bootstrap confidence sets in curly brackets. While WCB confidence sets are not necessarily symmetrical, we assumed symmetry in this instance to facilitate the use of WCB confidence sets for the meta-analysis in column (24).

Table A14: Year-by-year regressions with meta-analysis using replication data. Part 3/3

	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.
Top lottery prizes (yearly)	0.015	-0.064	-0.012	0.143	0.105	-0.007	0.106	0.011
	[-0.043,0.072]	[-0.264,0.135]	[-0.054,0.030]	[-0.006,0.293]	[-0.118,0.329]	[-0.034,0.019]	[0.025,0.187]	[-0.041, 0.064]
	{-0.077,0.136}	{-0.239,0.270}	{-0.110,0.205}	{-0.686,1.292}	{-0.508,0.555}	{-0.451,0.357}	{-0.267,0.453}	
Lottery expenditure (yearly)	0.071	0.380	-0.163	-0.159	-0.060	0.018	-0.272	-0.041
	[-0.318,0.461]	[0.108,0.652]	[-0.540,0.213]	[-0.425,0.106]	[-0.214,0.095]	[-0.101,0.138]	[-0.419,-0.126]	[-0.142, 0.059]
	{-0.342,0.529}	{0.093,0.661}	{-0.620,0.237}	{-0.531,0.120}	{-0.270,0.243}	{-0.113,0.232}	{-0.527,-0.034}	
N	2461	23526	2471	2448	2453	17659	2464	23
R^2	0.026	0.025	0.012	0.009	0.009	0.003	0.013	
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	Meta-analysis
Data	Q1	Q1	Q1	Q1	Q1	Q1	Q1	Q1
Province FE	×	×	×	×	×	×	×	
Survey FE	✓	✓	✓	✓	✓	✓	✓	
Year	2003	2004	2005	2006	2007	2008	2009	1987-2009

Notes: 95% conventional clustered confidence intervals in squared brackets. 95% wild cluster bootstrap confidence sets in curly brackets. While WCB confidence sets are not necessarily symmetrical, we assumed symmetry in this instance to facilitate the use of WCB confidence sets for the meta-analysis in column (24).

A12 Long-term Effects of Lottery Winning on Survey Respondents' Support for the Incumbent

In their original analysis, Bagues and Esteve-Volart 2016 focused exclusively on the short-term effects of lottery winnings, examining individual support for the incumbent party one month after the lottery draws in winning provinces. However, it is plausible that the effects of lottery winnings may manifest later in the year, rather than a few weeks after the draw. This issue is important for two reasons. First, if provinces with disproportionately large lottery prizes were found to exhibit higher levels of individual support for the incumbent over a longer period, it would provide continued evidence in favor of blind retrospection. Second, such findings would offer an additional explanation for why our replication of the original analysis, using data from the 1987–2009 period, shows positive and statistically significant effects of lottery winnings on electoral outcomes but not on survey measures of support.

To assess the possibility of longer-term effects, and leveraging the extensive survey data available, we examined whether lottery winnings influenced individual support for the incumbent party in the second, third, and fourth quarters of the year following the lottery draw. Our approach involved a year-by-year analysis of longer-term outcomes, using data we compiled from official sources. For the second quarter, 10 of the 23 yearly point estimates were negative, and 13 were positive. In the third quarter, seven were negative and 16 were positive. In the fourth quarter, 12 estimates were positive and 11 were negative.

The meta-analysis results, reported in column (24) of Tables A15, A16, and A17, suggest that the relationship between lottery prizes and support for the incumbent is weakly positive in the second and third quarters of the year and weakly negative in the fourth quarter. However, the confidence intervals for all three periods include zero, indicating that these effects are not statistically significant.

A12.1 Lottery effects in the second quarter of the year

Table A15: Effect of lottery winning on Q2. Year-by-year regressions with meta-analysis using our data. Part 1/3

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.
Top lottery prizes (yearly)	0.037	0.023	-0.077	-0.015	-0.238	0.052	-0.027	0.037
	[-0.132,0.206]	[-0.047,0.094]	[-0.185,0.030]	[-0.115,0.084]	[-0.466,-0.010]	[-0.032,0.137]	[-0.055,0.001]	[0.019,0.054]
	{-1.915, 0.325}	{-2.705, 0.212}	{-0.949, 0.514}	{-0.256, 0.410}	{-0.433, 0.063}	{-0.100, 0.342}	{-0.331, 0.082}	{-0.033, 0.104}
Lottery expenditure (yearly)	-0.204	-0.209	-0.159	-0.252	-0.127	-0.205	-0.184	-0.081
	[-0.489,0.082]	[-0.622,0.204]	[-0.659,0.341]	[-0.768,0.264]	[-0.538,0.284]	[-0.564,0.153]	[-0.469,0.100]	[-0.407,0.244]
	{-0.526, 0.105}	{-0.670, 0.260}	{-0.715, 0.506}	{-0.916, 0.398}	{-0.635, 0.276}	{-0.650, 0.175}	{-0.480, 0.172}	{-0.464, 0.340}
N	4127	4835	9393	8054	4860	7152	7409	4919
R^2	0.025	0.032	0.021	0.032	0.032	0.038	0.035	0.051
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Data	Q2	Q2	Q2	Q2	Q2	Q2	Q2	Q2
Province FE	✓	✓	✓	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓	✓	✓	✓
Year	1987	1988	1989	1990	1991	1992	1993	1994

Notes: 95% conventional clustered confidence intervals in squared brackets. 95% wild cluster bootstrap confidence sets in curly brackets. Although WCB confidence sets are not necessarily symmetrical, we assumed symmetry in this instance to facilitate the use of WCB confidence sets for the meta-analysis in column (24). In 1996 and 2004, the elections resulted in a change of the incumbent party between the time of the lottery draw and the time we measured vote intention. Excluding those two years from our meta-analysis does not substantially alter the results: the coefficient for the effect of lottery winnings on vote intention in the second quarter is 0.013, with a confidence interval of [-0.032, 0.057].

Table A15: Effect of lottery winning on Q2. Year-by-year regressions with meta-analysis using our data. Part 2/3

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.
Top lottery prizes (yearly)	0.115	0.027	-0.031	-0.004	-0.130	0.133	-0.097	0.052
	[0.021,0.209]	[-0.071,0.126]	[-0.164,0.101]	[-0.030,0.022]	[-0.272,0.012]	[0.063,0.203]	[-0.296,0.101]	[-0.035,0.139]
	{-0.061, 0.202}	{-1.216, 2.363}	{-0.280, 0.609}	{-0.450, 0.982}	{-0.572, 0.181}	{-0.695, 0.722}	{-0.571, 0.303}	{-0.270, 0.352}
Lottery expenditure (yearly)	0.019	0.486	0.386	-0.020	0.174	0.199	0.118	0.230
	[-0.164,0.202]	[0.137,0.835]	[-0.009,0.780]	[-0.370,0.329]	[-0.227,0.575]	[-0.303,0.701]	[-0.449,0.684]	[-0.173,0.634]
	{-0.177, 0.207}	{0.123, 0.890}	{-0.084, 0.978}	{-0.445, 0.354}	{-0.340, 0.602}	{-0.426, 0.746}	{-0.596, 0.741}	{-0.238, 0.638}
N	7365	2458	2446	2469	2481	2478	2479	2486
R^2	0.046	0.027	0.029	0.023	0.021	0.018	0.021	0.019
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Data	Q2	Q2	Q2	Q2	Q2	Q2	Q2	Q2
Province FE	✓	✓	✓	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓	✓	✓	✓
Year	1995	1996	1997	1998	1999	2000	2001	2002

Notes: 95% conventional clustered confidence intervals in squared brackets. 95% wild cluster bootstrap confidence sets in curly brackets. Although WCB confidence sets are not necessarily symmetrical, we assumed symmetry in this instance to facilitate the use of WCB confidence sets for the meta-analysis in column (24). In 1996 and 2004, the elections resulted in a change of the incumbent party between the time of the lottery draw and the time we measured vote intention. Excluding those two years from our meta-analysis does not substantially alter the results: the coefficient for the effect of lottery winnings on vote intention in the second quarter is 0.013, with a confidence interval of [-0.032, 0.057].

Table A15: Effect of lottery winning on Q2. Year-by-year regressions with meta-analysis using our data. Part 3/3

	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Meta-Analysis
Top lottery prizes (yearly)	0.018	0.051	-0.061	0.181	0.006	0.019	-0.040	0.014
	[-0.059,0.096]	[-0.099,0.200]	[-0.100,-0.022]	[0.051,0.311]	[-0.001,0.013]	[-0.011,0.048]	[-0.138,0.058]	[-0.029, 0.058]
	{-2.213, 0.365}	{-0.111, 0.322}	{-0.185, 0.062}	{0.761, 1.426}	{-0.101, 0.194}	{-0.248, 0.230}	{-0.485, 0.355}	
Lottery expenditure (yearly)	0.188	-0.104	-0.044	-0.038	-0.148	-0.010	-0.137	-0.022
	[-0.214,0.590]	[-0.558,0.350]	[-0.424,0.336]	[-0.267,0.191]	[-0.384,0.088]	[-0.409,0.388]	[-0.402,0.129]	[-0.102, 0.058]
	{-0.241, 0.695}	{-0.646, 0.370}	{-0.451, 0.399}	{-0.340, 0.237}	{-0.474, 0.137}	{-0.564, 0.355}	{-0.440, 0.206}	
N	2478	2473	2446	2453	2438	2366	2456	23
R^2	0.029	0.019	0.014	0.015	0.008	0.011	0.013	
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	Meta-analysis
Data	Q2	Q2	Q2	Q2	Q2	Q2	Q2	Q2
Province FE	✓	✓	✓	✓	✓	✓	✓	
Survey FE	✓	✓	✓	✓	✓	✓	✓	
Year	2003	2004	2005	2006	2007	2008	2009	1987-2009

Notes: 95% conventional clustered confidence intervals in squared brackets. 95% wild cluster bootstrap confidence sets in curly brackets. Although WCB confidence sets are not necessarily symmetrical, we assumed symmetry in this instance to facilitate the use of WCB confidence sets for the meta-analysis in column (24). In 1996 and 2004, the elections resulted in a change of the incumbent party between the time of the lottery draw and the time we measured vote intention. Excluding those two years from our meta-analysis does not substantially alter the results: the coefficient for the effect of lottery winnings on vote intention in the second quarter is 0.013, with a confidence interval of [-0.032, 0.057].

A12.2 Lottery effects in the third quarter of the year

Table A16: Effect of lottery winning on Q3. Year-by-year regressions with meta-analysis using our data. Part 1/3

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.
Top lottery prizes (yearly)	0.020	0.075	-0.060	-0.031	-0.255	0.086	-0.073	0.021
	[-0.130,0.170]	[0.040,0.109]	[-0.163,0.044]	[-0.111,0.050]	[-0.375,-0.135]	[0.040,0.132]	[-0.123,-0.022]	[-0.022,0.064]
	{-1.527, 0.396}	{0.502, 0.977}	{-0.966, 0.709}	{0.266, 0.182}	{0.398, 0.015}	{-0.056, 0.138}	{-0.432, 0.040}	{0.237, 0.152}
Lottery expenditure (yearly)	-0.171	-0.041	-0.402	-0.270	0.038	-0.064	-0.187	-0.171
	[-0.498,0.156]	[-0.478,0.395]	[-0.886,0.081]	[-0.745,0.205]	[-0.323,0.399]	[-0.374,0.247]	[-0.558,0.184]	[-0.455,0.112]
	{0.546, 0.187}	{-0.600, 0.4342}	{-0.946, 0.219}	{-0.798, 0.312}	{-0.434, 0.413}	{-0.407, 0.311}	{-0.629, 0.243}	{-0.504, 0.146}
N	4785	4836	7280	4869	5656	4803	4907	4888
R^2	0.032	0.025	0.031	0.034	0.042	0.033	0.039	0.048
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Data	Q3	Q3	Q3	Q3	Q3	Q3	Q3	Q3
Province FE	✓	✓	✓	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓	✓	✓	✓
Year	1987	1988	1989	1990	1991	1992	1993	1994

Notes: 95% conventional clustered confidence intervals in squared brackets. 95% wild cluster bootstrap confidence sets in curly brackets. Although WCB confidence sets are not necessarily symmetrical, we assumed symmetry in this instance to facilitate the use of WCB confidence sets for the meta-analysis in column (24). In 1996 and 2004, the elections resulted in a change of the incumbent party between the time of the lottery draw and the time we measured vote intention. Excluding those two years from our meta-analysis does not substantially alter the results: the coefficient for the effect of lottery winnings on vote intention in the second quarter is 0.013, with a confidence interval of [0.060, 0.075].

Table A16: Effect of lottery winning on Q3. Year-by-year regressions with meta-analysis using our data. Part 2/3

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.
Top lottery prizes (yearly)	0.102	0.071	0.024	0.001	-0.110	0.164	-0.154	0.073
	[0.003,0.202]	[-0.036,0.177]	[-0.083,0.131]	[-0.034,0.036]	[-0.321,0.101]	[0.092,0.235]	[-0.275,-0.034]	[0.029,0.118]
	{-0.188, 0.222}	{-1.264, 2.518}	{-0.302, 0.382}	{-0.542, 1.044}	{-0.497, 0.140}	{-0.445, 0.741}	{-0.627, 0.916}	{-0.160, 0.387}
Lottery expenditure (yearly)	-0.195	0.218	0.430	0.176	0.208	0.078	0.292	0.144
	[-0.499,0.110]	[-0.158,0.594]	[-0.075,0.934]	[-0.188,0.540]	[-0.261,0.676]	[-0.374,0.531]	[-0.059,0.643]	[-0.226,0.514]
	{-0.531, 0.180}	{-0.243, 0.620}	{-0.118, 0.973}	{-0.224, 0.598}	{-0.381, 0.742}	{-0.378, 0.628}	{-0.108, 0.677}	{-0.262, 0.588}
N	4909	2463	2471	2436	2470	2469	2463	2462
R^2	0.049	0.012	0.020	0.021	0.018	0.020	0.023	0.029
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Data	Q3	Q3	Q3	Q3	Q3	Q3	Q3	Q3
Province FE	✓	✓	✓	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓	✓	✓	✓
Year	1995	1996	1997	1998	1999	2000	2001	2002

Notes: 95% conventional clustered confidence intervals in squared brackets. 95% wild cluster bootstrap confidence sets in curly brackets. Although WCB confidence sets are not necessarily symmetrical, we assumed symmetry in this instance to facilitate the use of WCB confidence sets for the meta-analysis in column (24). In 1996 and 2004, the elections resulted in a change of the incumbent party between the time of the lottery draw and the time we measured vote intention. Excluding those two years from our meta-analysis does not substantially alter the results: the coefficient for the effect of lottery winnings on vote intention in the second quarter is 0.013, with a confidence interval of [0.060, 0.075].

Table A16: Effect of lottery winning on Q3. Year-by-year regressions with meta-analysis using our data. Part 3/3

	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Meta-Analysis
Top lottery prizes (yearly)	-0.016	0.074	0.030	0.037	0.069	0.053	0.070	0.013
	[-0.059,0.027]	[-0.052,0.200]	[-0.004,0.065]	[-0.049,0.124]	[-0.140,0.277]	[0.025,0.081]	[-0.055,0.195]	[-0.049, 0.076]
	{-0.134, 0.901}	{-0.113, 0.296}	{-0.193, 0.238}	{-0.418, 0.512}	{-0.351, 0.669}	{-0.294, 0.319}	{-0.393, 0.619}	
Lottery expenditure (yearly)	0.297	-0.405	-0.267	-0.138	-0.125	-0.258	-0.109	-0.077
	[-0.229,0.823]	[-0.774,-0.036]	[-0.670,0.135]	[-0.346,0.070]	[-0.316,0.066]	[-0.435,-0.081]	[-0.345,0.126]	[-0.161, 0.006]
	{-0.361, 0.859}	{-0.765, -0.030}	{-0.698, 0.248}	{-0.413, 0.221}	{-0.363, 0.213}	{-0.564, -0.026}	{-0.513, 0.331}	
N	2456	2456	2410	2398	2464	2350	2436	23
R^2	0.027	0.014	0.012	0.011	0.006	0.009	0.012	
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	Meta-analysis
Data	Q3	Q3	Q3	Q3	Q3	Q3	Q3	Q3
Province FE	✓	✓	✓	✓	✓	✓	✓	
Survey FE	✓	✓	✓	✓	✓	✓	✓	
Year	2003	2004	2005	2006	2007	2008	2009	1987-2009

Notes: 95% conventional clustered confidence intervals in squared brackets. 95% wild cluster bootstrap confidence sets in curly brackets. Although WCB confidence sets are not necessarily symmetrical, we assumed symmetry in this instance to facilitate the use of WCB confidence sets for the meta-analysis in column (24). In 1996 and 2004, the elections resulted in a change of the incumbent party between the time of the lottery draw and the time we measured vote intention. Excluding those two years from our meta-analysis does not substantially alter the results: the coefficient for the effect of lottery winnings on vote intention in the second quarter is 0.013, with a confidence interval of [0.060, 0.075].

A12.3 Lottery effects in the fourth quarter of the year

Table A17: Effect of lottery winning on Q4. Year-by-year regressions with meta-analysis using our data. Part 1/3

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.
Top lottery prizes (yearly)	-0.052	0.136	-0.069	-0.036	-0.285	0.060	-0.051	0.022
	[-0.203,0.098]	[0.104,0.168]	[-0.198,0.060]	[-0.086,0.015]	[-0.459,-0.112]	[0.008,0.111]	[-0.079,-0.023]	[-0.017,0.062]
	{-0.575, 0.154}	{-0.427, 0.818}	{-1.225, 0.943}	{-0.212, 0.110}	{-0.486, -0.041}	{-0.130, 0.238}	{-0.241, 0.139}	{-0.306, 0.294}
Lottery expenditure (yearly)	-0.022	-0.009	-0.015	-0.133	-0.020	-0.035	-0.215	0.020
	[-0.296,0.252]	[-0.367,0.348]	[-0.708,0.677]	[-0.617,0.351]	[-0.343,0.304]	[-0.384,0.315]	[-0.457,0.028]	[-0.274,0.313]
	{-0.322, 0.279}	{-0.449, 0.367}	{-0.836, 0.846}	{-0.720, 0.415}	{-0.393, 0.355}	{-0.444, 0.367}	{-0.467, 0.049}	{-0.335, 0.370}
N	4900	8138	5503	7301	6439	7398	7374	4904
R^2	0.022	0.029	0.028	0.032	0.034	0.034	0.039	0.036
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Data	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4
Province FE	✓	✓	✓	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓	✓	✓	✓
Year	1987	1988	1989	1990	1991	1992	1993	1994

Notes: 95% conventional clustered confidence intervals in squared brackets. 95% wild cluster bootstrap confidence sets in curly brackets. Although WCB confidence sets are not necessarily symmetrical, we assumed symmetry in this instance to facilitate the use of WCB confidence sets for the meta-analysis in column (24). In 1996 and 2004, the elections resulted in a change of the incumbent party between the time of the lottery draw and the time we measured vote intention. Excluding those two years from our meta-analysis does not substantially alter the results: the coefficient for the effect of lottery winnings on vote intention in the second quarter is 0.013, with a confidence interval of [-0.049, 0.024].

Table A17: Effect of lottery winning on Q4. Year-by-year regressions with meta-analysis using our data. Part 2/3

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.
Top lottery prizes (yearly)	-0.009	0.009	-0.011	-0.020	-0.149	0.069	-0.026	0.030
	[-0.092,0.074]	[-0.057,0.076]	[-0.102,0.080]	[-0.062,0.021]	[-0.262,-0.036]	[0.007,0.130]	[-0.035,-0.016]	[-0.057,0.116]
	{-0.267, 0.089}	{-0.944, 1.196}	{-0.259, 0.265}	{-0.496, 1.032}	{-0.517, 0.062}	{-0.372, 0.760}	{-0.131, 0.156}	{-1.186, 0.293}
Lottery expenditure (yearly)	-0.069	0.072	0.081	0.333	0.526	0.223	0.356	0.338
	[-0.359,0.221]	[-0.314,0.459]	[-0.261,0.424]	[-0.151,0.818]	[0.139,0.914]	[-0.238,0.684]	[-0.148,0.860]	[-0.234,0.910]
	{-0.401, 0.272}	{-0.364, 0.518}	{-0.316, 0.511}	{-0.302, 0.912}	{0.052, 1.003}	{-0.317, 0.734}	{-0.264, 0.971}	{-0.336, 1.013}
N	7368	2463	2461	2467	2472	2481	2474	2475
R^2	0.040	0.035	0.010	0.016	0.030	0.014	0.037	0.015
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Data	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4
Province FE	✓	✓	✓	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓	✓	✓	✓
Year	1995	1996	1997	1998	1999	2000	2001	2002

Notes: 95% conventional clustered confidence intervals in squared brackets. 95% wild cluster bootstrap confidence sets in curly brackets. Although WCB confidence sets are not necessarily symmetrical, we assumed symmetry in this instance to facilitate the use of WCB confidence sets for the meta-analysis in column (24). In 1996 and 2004, the elections resulted in a change of the incumbent party between the time of the lottery draw and the time we measured vote intention. Excluding those two years from our meta-analysis does not substantially alter the results: the coefficient for the effect of lottery winnings on vote intention in the second quarter is 0.013, with a confidence interval of [-0.049, 0.024].

Table A17: Effect of lottery winning on Q4. Year-by-year regressions with meta-analysis using our data. Part 3/3

	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Vote Incumb.	Meta-Analysis
Top lottery prizes (yearly)	0.004	0.091	-0.029	0.059	0.004	0.004	-0.043	-0.006
	[-0.042,0.051]	[0.009,0.173]	[-0.059,0.000]	[0.004,0.115]	[-0.001,0.010]	[-0.027,0.036]	[-0.102,0.015]	[-0.042, 0.029]
	{-0.095, 0.133}	{-0.003, 0.278}	{-0.109, 0.110}	{-0.133, 0.239}	{-0.062, 0.057}	{-0.235, 0.319}	{-0.317, 0.173}	
Lottery expenditure (yearly)	0.351	-0.264	-0.289	-0.034	-0.257	0.063	-0.139	-0.037
	[-0.037,0.739]	[-0.630,0.102]	[-0.564,-0.013]	[-0.188,0.119]	[-0.447,-0.067]	[-0.246,0.372]	[-0.337,0.059]	[-0.117, 0.043]
	{-0.083, 0.762}	{-0.659, 0.116}	{-0.584, 0.024}	{-0.283, 0.225}	{-0.571, -0.050}	{-0.333, 0.358}	{-0.318, 0.155}	
N	2474	2468	2468	2447	2472	2458	2453	23
R^2	0.023	0.016	0.015	0.014	0.022	0.013	0.010	0.010
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	Meta-analysis
Data	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4
Province FE	✓	✓	✓	✓	✓	✓	✓	
Survey FE	✓	✓	✓	✓	✓	✓	✓	
Year	2003	2004	2005	2006	2007	2008	2009	1987-2009

Notes: 95% conventional clustered confidence intervals in squared brackets. 95% wild cluster bootstrap confidence sets in curly brackets. Although WCB confidence sets are not necessarily symmetrical, we assumed symmetry in this instance to facilitate the use of WCB confidence sets for the meta-analysis in column (24). In 1996 and 2004, the elections resulted in a change of the incumbent party between the time of the lottery draw and the time we measured vote intention. Excluding those two years from our meta-analysis does not substantially alter the results: the coefficient for the effect of lottery winnings on vote intention in the second quarter is 0.013, with a confidence interval of [-0.049, 0.024].

A13 Catalan Lottery

"La Grossa de Cap d'Any," (literally, "The Fatty of New Year's Eve" in Catalan), is a lottery draw organized by Loteries de Catalunya in Spain since 2013. Held annually on December 31, it is managed by the Department of Economy and Knowledge of the Catalan regional government. La Grossa's introduction marks Catalonia as the first Spanish autonomous community with its own Christmas lottery, and its naming has been seen as an attempt to become a counterpart to the traditional Spanish Christmas "El Gordo" lottery. García and Pérez (2022) find that the introduction of this new lottery in Catalonia shifted demand in the existing Spanish lottery market, driven partly by nationalist sentiments. While much less popular than the Spanish Christmas lottery, it provides us an opportunity to conduct an out-of-sample replication. We obtained data from Loteries de Catalunya at the postal code level, both for prizes (only available since 2016) and spending (available since 2013), both in nominal terms. We explore three main outcomes: i) support for the incumbent in Catalonia, ii) support for the incumbent in Spain, and iii) support for independence.

In contrast to the Spanish Christmas Lottery, where the effects on voter behavior are measured at the provincial level, this study uses more granular data from Catalonia. In particular, our main specification is equivalent to equation (2) but using data at the *comarca* level, which are administrative divisions specific to Catalonia between municipalities and provinces. Moreover, we also obtained data at the municipality level for (a majority of) municipalities with more than 2,000 inhabitants. Although representing a subset of the total sample, we also run equation (2) at this level. It is important to note that, despite the fact that the distribution of the prizes as a share of *comarca*'s GDP is similar to that of the Spanish lottery, the absolute value of the prizes distributed is much smaller than the Spanish lottery (La Grossa distributes approximately €15-20 million in prizes every year compared to €2,590 million by the Spanish Lottery in 2023).

Tables A18, A19, and A20 present the results using three different specifications. In Table A18 we use our preferred measure of prizes as a share of GDP (in thousands). In Table A19 we scale prizes by average gross disposable income instead of GDP. In Table A20 we use a binary variable to measure whether a *comarca* has won a prize or not. The first three columns of each table contain results at the *comarca* level and the last three columns contain results for the subset

of municipalities over 2,000 inhabitants for which we have GDP data available.

Results across the three tables do not support the hypothesis that locations that win the lottery view the incumbent party more favorably, regardless of whether the incumbent party is defined with reference to the Catalan government or the Spanish government. While there is some evidence that support for independence is higher, results vary by specification, and none of the estimates are statistically significant to a degree that would withstand corrections for multiple corrections.

Table A18: Catalan Lottery - Survey-level Results

	(1) Vote Incumb. Spain	(2) Vote Incumb. Catalonia	(3) Indep.	(4) Vote Incumb. Spain	(5) Vote Incumb. Catalonia	(6) Indep.
Prizes as % of GDP	0.042	-0.040	0.070	-0.004	0.012	0.071
	[-0.033,0.118]	[-0.135,0.055]	[-0.037,0.177]	[-0.061,0.053]	[-0.057,0.081]	[-0.008,0.150]
	{-0.029,0.094}	{-0.140,0.670}	{-0.103,0.348}	{-0.056,0.090}	{-0.689,0.215}	{-0.597,0.593}
Spending as % of GDP	0.249	-0.343	-0.098	-0.085	-0.801	0.916
	[0.025,0.474]	[-0.625,-0.062]	[-0.418,0.222]	[-1.012,0.841]	[-1.931,0.329]	[-0.403,2.236]
	{0.026,0.350}	{-1.365,-0.433}	{-0.920,0.359}	{-0.306,0.161}	{-83.09,76.35}	{-25.27,446.1}
N	29785	29785	27486	27036	27036	24937
R^2	0.064	0.085	0.113	0.071	0.089	0.120
Year FEs	✓	✓	✓	✓	✓	✓
Geographical FEs	Province	Province	Province	Mun.	Mun.	Mun.
Controls	✓	✓	✓	✓	✓	✓
Bootstrap Cluster	Province	Province	Province	Province	Province	Province

Table A19: Catalan Lottery - Survey-level Results (Weighted by Income Measure)

	(1) Vote Incumb. Spain	(2) Vote Incumb. Catalonia	(3) Indep.	(4) Vote Incumb. Spain	(5) Vote Incumb. Catalonia	(6) Indep.
Prizes as % of Average Income	0.021	-0.004	0.042	-0.010	0.151	0.248
	[-0.021,0.063]	[-0.064,0.056]	[-0.022,0.106]	[-0.129,0.108]	[-0.016,0.318]	[0.064,0.433]
	{-0.014,0.039}	{-0.073,0.634}	{-0.044,0.207}	{-0.220,0.119}	{-0.575,0.306}	{-0.101,0.427}
Spending as % Average Income	0.102	-0.195	0.009	0.047	0.052	0.076
	[-0.023,0.227]	[-0.373,-0.016]	[-0.185,0.203]	[-0.050,0.144]	[-0.084,0.189]	[-0.074,0.225]
	{-0.008,0.243}	{-0.680,0.356}	{-0.585,-0.473}	{0.029,0.214}	{-0.171,0.465}	{-0.089,0.112}
N	19270	19270	17732	18739	18739	17234
R^2	0.054	0.089	0.126	0.068	0.106	0.147
Year FEs	✓	✓	✓	✓	✓	✓
Geographical FEs	Province	Province	Province	Mun.	Mun.	Mun.
Controls	✓	✓	✓	✓	✓	✓
Bootstrap Cluster	Province	Province	Province	Province	Province	Province

Table A20: Catalan Lottery - Survey-level Results (Binary Prize Variable)

	(1) Vote Incumb. Spain	(2) Vote Incumb. Catalonia	(3) Indep.	(4) Vote Incumb. Spain	(5) Vote Incumb. Catalonia	(6) Indep.
Prizes (Binary)	-0.002	0.009	0.022	-0.016	0.000	0.020
	[-0.020,0.017]	[-0.014,0.032]	[-0.004,0.048]	[-0.027,-0.005]	[-0.013,0.014]	[0.004,0.035]
	{-0.016,0.029}	{-0.125,0.035}	{-0.072,0.042}	{-0.042,0.015}	{-0.031,0.051}	{-0.015,0.048}
Spending as % of GDP	0.286**	-0.452	-0.271	0.041	-0.798	0.778
	[0.004,0.568]	[-0.806,-0.098]	[-0.673,0.131]	[-0.890,0.971]	[-1.933,0.337]	[-0.547,2.104]
	{0.231,0.372}	{-1.303,0.626}	{-0.911,0.223}	{-0.136,0.242}	{-39.12,54.56}	{-26.07,225.8}
N	29785	29785	27486	27036	27036	24937
R^2	0.064	0.085	0.113	0.072	0.089	0.120
Year FEs	✓	✓	✓	✓	✓	✓
Geographical FEs	Province	Province	Province	Mun.	Mun.	Mun.
Controls	✓	✓	✓	✓	✓	✓
Bootstrap Cluster	Province	Province	Province	Province	Province	Province