Politicians' Luck of the Draw: Evidence from the Spanish Christmas Lottery

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Motivation

- Economic voting
- Sources of economic voting:
  - Voters rewarding incumbents
  - Attribution errors
  - Happiness
- Empirical evidence
  - Endogeneity of economic conditions
  - Even in the case of seemingly exogenous events, such as natural disasters or terrorist attacks, the shock may reveal information about the incumbent

Motivation

- Here we exploit the evidence provided by a large scale randomized natural experiment:
- The Spanish Christmas Lottery
  - Syndicate lottery: 75% of Spaniards participate, typically sharing numbers
  - And they play a relatively large quantity: on average, €70 per person
    - In total, €3 billion (0.3% of Spain's GDP)
  - Many relatively small prizes to several thousand individuals sharing the same ticket number
  - Large economic impact:
    - The main winning province receives an average income shock equivalent to 3% of its GDP

Motivation

- Convenient features:
  - Several thousand families in the same network receive a positive economic shock
  - Not a gamblers' lottery, but more of a social interaction
  - It is public knowledge that the shock is exogenous
  - The incumbent is not expected to play any role anticipating or reacting to the shock

Motivation

- Results:
  - We find that a shock in lottery prizes equivalent to 1% of provincial GDP is associated with a (significant) increase in votes for the incumbent of 0.21 percentage points
  - In terms of votes, we estimate that for every winning fraction, the incumbent receives 0.6 additional votes
  - What is the source of the effect?
    - Winners should be well aware of the random nature of the lottery
    - Survey information suggests that lottery prizes do not affect voters' assessment of the incumbent
  - Alternative explanations?
    - Increases in wealth may reinforce voters' preference for the status quo
    - Happiness

Outline

Outline

Literature

- Descriptive evidence:
  - Pearson and Myers (1948)
  - Kramer (1971)
  - Fair (1978)
  - Lewis-Beck (1988)
  - Brender and Drazen (2008)
- Exogenous variations in economic conditions:
  - Wolfers (2002)
  - Brunner et al. (2008)
- Other exogenous factors that may affect voting:
  - Natural disasters: Healy and Malhotra (2010)
  - Terrorist attacks: Gardeazabal (2010), Montalvo (2010)
  - Sports outcomes: Healy et al. (2010)

Literature

- Lottery papers:
  - Labor supply, earnings, savings and consumption (Imbens et al. 2001)
  - Health and mortality (Lindahl 2005)
  - Physical and mental health (Apouey and Clark 2009)
  - Marriage and divorce (Hankins and Hoekstra 2011)
  - Individual bankruptcy (Hankins et al. 2011)
  - Neighbors' consumption (Kuhn et al. 2011)
- Our paper:
  - Not a gamblers' lottery
  - The impact of an increase in the unearned income of a community, not a single individual

Outline

Political System in Spain

- After Franco's death, the first democratic election was held in 1977
- Between 1986 and 2008 there have been seven national elections
- Two political parties have been in power: the Socialist Party (14 years) and the People's Party (8 years)

Spanish Christmas Lottery

- The lottery is always held on December 22
- Origin can be traced back to 1812
- Syndicate play started in 1862
- Biggest lottery event worldwide: approximately €3 billion (0.3% of Spain's GDP)

Spanish Christmas Lottery

- 85,000 numbers
- 1,950 fractions ("tickets") per number (€20 each)
- Fractions are often divided into shares, at a cost of between €2 and €5.
- Depending on how many fractions and shares have been sold, for each number there might exist somewhere between 2,000 an 20,000 ticket holders.

Spanish Christmas Lottery

- Strict rules regulate the process
- Three top prizes, and 13,334 smaller prizes
- The amount received for a winning ticket (€20) holder is:
  - First prize: €300,000
  - Second prize: €100,000
  - Third prize: €50,000

Spanish Christmas Lottery

- 75% of the Spanish population plays
- On average, they spend €70 per person
- Roughly similar amounts:
  - Conservative voters spend an average €6 more
  - University (high school) graduates spend €6 (15) more than high school dropouts
  - Men spend €15 more
  - No differences according to age
- 87% of Christmas lottery buyers syndicate play:
  - with relatives: 64%
  - with friends: 33%
  - with co-workers: 28%
- Most fractions are sold in the same outlet
- Most buyers live in the same location (exception: town of Sort)

Jackpot joy: The people of Granen celebrate winning the Christmas lottery in Spain by doing the Conga. The winning tickets were all bought in the small town and the surrounding villages including Sodeto which has around 70 houses

Mail Online

The unluckiest man in the world: Only person in whole of Spanish village who didn't win a share of £600m lottery jackpot (because he didn't buy a ticket)

- **Costis Mitsotakis was missed off as residents went round collecting money for the draw**
- **Every other home in Sodeto, northwest Spain, had at least one winning ticket in the Christmas draw**
- **A single £4 ticket would have won him £83,000**
- **Some households bought several tickets and became millionaires**

By Rob Cooper
UPDATED: 18:59 GMT, 3 February 2012

Spanish town celebrates after winning £600m on lottery – except for one man who FORGOT to buy his ticket | Mail Online 11/11/12 12:21 PM

World's unluckiest man: Costis Mitsotakis is the only person in Sodeto who did not win a share of the El Gordo Christmas lottery jackpot after he didn't buy a ticket

Outline

Data

- At the Individual Level:
  1. Survey data on Christmas Lottery (6 surveys; 12,000 observations)
  2. Survey data on Voting (100 surveys; 300,000 observations)
- At the Provincial Level:
  1. Electoral (national elections)
  2. Macroeconomic
  3. Christmas Lottery prizes and expenditure

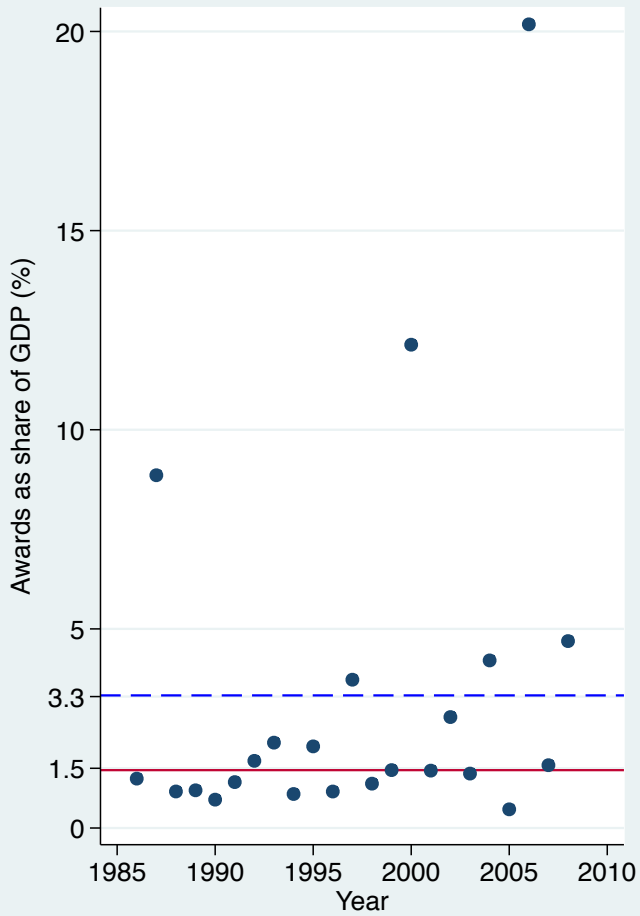
Table: **Descriptive Statistics - Information at the Provincial Level**

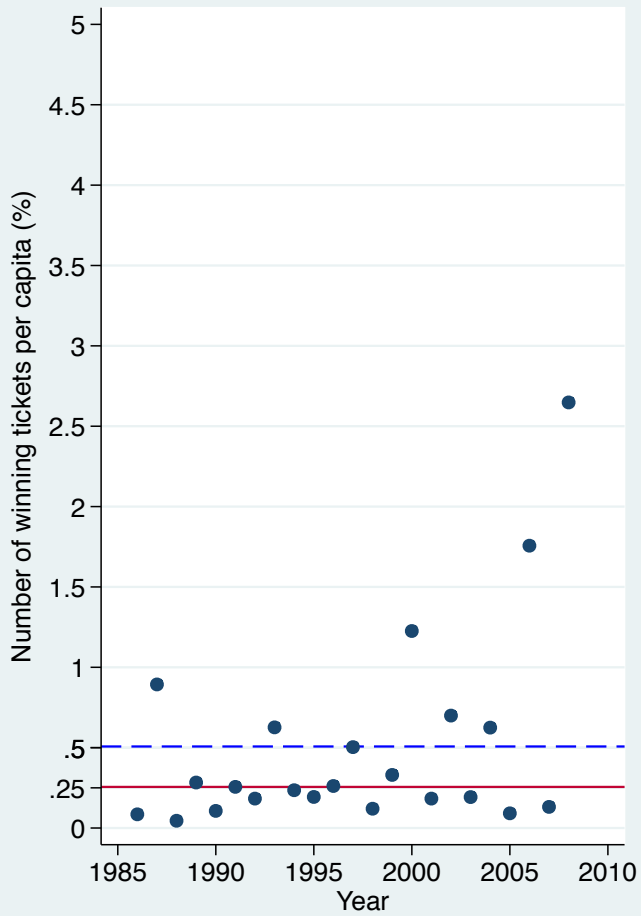
	Mean	St. dev.	Minimum	Maximum	N
1. Electoral data	(1)	(2)	(3)	(4)	(5)
Electoral roll (in thousands)	639	755	74	4459	350
Voter turnout (%)	73.50	6.02	49.97	84.15	350
Incumbent votes (%)	41.44	9.60	11.45	65.31	350
Socialist Party votes (%)	39.69	8.36	18.40	62.22	350
People's Party votes (%)	38.10	12.81	7.00	65.31	350
2. Macroeconomic variables					
Population (in thousands)	831	998	91	6,490	1300
GDP per capita	14,267	3,631	6,113	27,238	1300
Inflation rate	3.92	1.92	-1.59	10.95	1300
Disposable income per capita	10,395	1,929	6,105	16,985	800
Other transfers per capita	818	192	505	4,023	800
Bank deposits per capita	11,126	4,468	3,871	28,929	1274
Bank loans per capita	11,855	7,888	1,709	40,983	1224
Vehicle registrations (per 1,000 pop.)	33	13	11	141	1200
Housing price/m^2	842	412	328	2,555	1050
Employment rate (%)	44.06	6.53	29.26	61.69	1300
Labor force participation (%)	52.28	5.41	38.05	67.25	1300
Unemployment rate (%)	15.86	7.50	2.96	43.57	1300

Table: **Descriptive Statistics - Information at the Provincial Level**

	Mean	St. dev.	Minimum	Maximum	N
3. Christmas Lottery: All provinces					
Expenditure (% GDP)	0.28	0.11	0.08	0.96	1300
Top prizes (% GDP)	0.10	0.84	0	20.18	1300
Expenditure per capita	41	20	8	199	1300
Top prizes per capita	16	139	0	3,415	1300
Number of winning fractions	83	32	0	3910	1300
Winning fractions per capita (%)	0.02	0.11	0	2.65	1300
4. Christmas Lottery: Winning province					
Expenditure (% GDP)	0.35	0.14	0.14	0.72	26
Top prizes (% GDP)	3.48	4.79	0.41	20.18	26
Expenditure per capita	55	31	22	129	26
Top prizes per capita	555	819	68	3,415	26
Number of winning fractions	1301	60	3910	3910	26
Winning fractions per capita (%)	0.47	0.62	0.04	2.65	26

Christmas Lottery top prize at the provincial level (% of GDP)





Outline

Christmas Lottery and Economic conditions

- Size of the unexpected temporary income shock: €75k-300k
- Spanish survey of household finances (2005)
  - Income: €32k
  - (Net) Assets: €257k (80% real estate, 9% own business, 5% bank accounts, 6% other)
  - Debts: €30k
  - Permanent income (back of the envelope calculation): Approximately €1 million
- On average the *Fatty* represents a 7.5%-30% increase in permanent income

- The (short term) effect of lottery prizes on lottery winners
  - Consumption
  - Durable goods: housing, car.
  - Saving
    - Bank accounts
    - Cancel debts (*tapar agujeros*)
  - Labour market supply
    - Intensive margin (as in Imbens et al. 2002)
    - Extensive margin (population aged 55-64)
- The impact on non winners living in the same province
  - Demand shock (market for goods and services, labour market)
    - Spanish provinces are small very open economies (openness=175%)
  - Social effects
    - Effect on neighbours' consumption (as in Kuhn et al. 2011)

- Overall
  - Increase in income
  - Increase in bank deposits
  - Increase in consumption of durable goods
  - Ambiguous effect on total loans
  - Ambiguous effect on economic activity
  - Ambiguous effect on labour supply

Is the Christmas Lottery really random?

- We estimate the following set of equations:

$$\underset{t,t-1}{\Delta} y_s = \alpha + \beta Prizes_{s,t+1} + \gamma Expenditure_{s,t+1} + \varepsilon_{s,t} \quad (1)$$

  where $\underset{t,t-1}{\Delta} y_s$ denotes the variation in a certain macroeconomic variable for province s between year t and year $t-1$, $Prizes_{s,t+1}$ denotes the Christmas Lottery prizes collected in year $t+1$, and $Expenditure_{s,t+1}$ refers to the value of Christmas Lottery tickets sold. All variables are measured in per capita terms.
- We use population weights and we cluster standard errors at the province level.

Table: The 'Effect' of Christmas Lottery Prizes on Past Economic Conditions

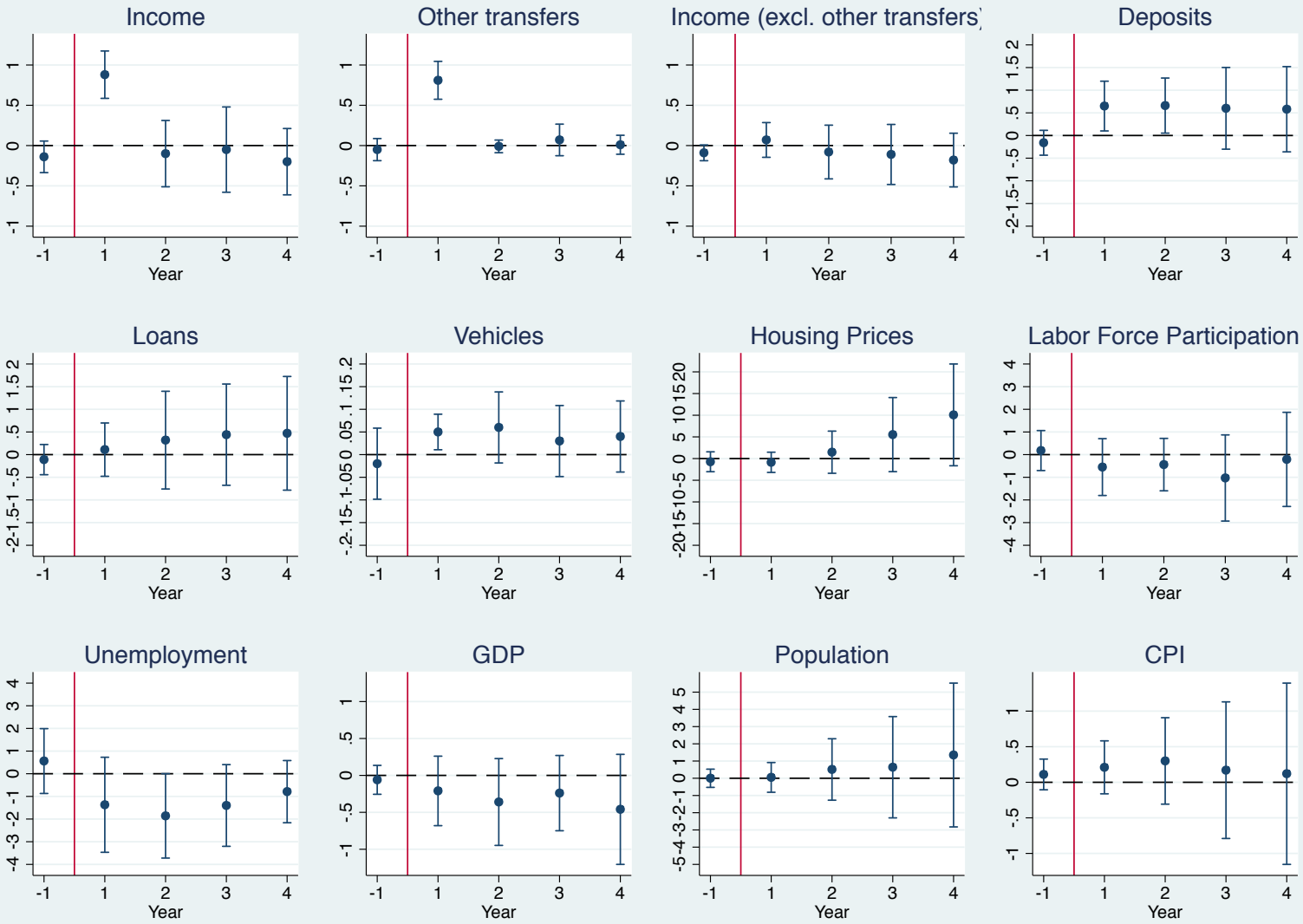
	Independent variable: Christmas Lottery prizes awarded in year t, collected in year t+1												
Dep. var.:	Income	Other transfers	Income (excl. Other transfers)	Bank deposits	Loans	Vehicles	Housing prices	Employ-ment rate	Labor force participation	Unemploy-ment rate	GDP	Population	Consumer price index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
$\Delta_{t-1,t}$	-0.14	-0.05	-0.09*	-0.16	-0.11	-0.84	-0.73	-0.14	0.18	0.57	-0.09	0.00	0.11
	(0.10)	(0.07)	(0.05)	(0.13)	(0.17)	(1.72)	(1.17)	(0.58)	(0.45)	(0.73)	(0.08)	(0.28)	(0.11)

The macroeconomic effects of the Christmas Lottery

- We estimate the following set of equations:

$$\underset{t+k,t}{\Delta} y_s = \alpha + \beta Prizes_{s,t+1} + \gamma Expenditure_{s,t+1} + \varepsilon_{s,t}, \text{ for } k = 1, 2, 3, 4 \quad (2)$$

where y denotes a certain macroeconomic variable


Income
Other transfers
Income (excl. other transfers)
Deposits
Loans
Vehicles
Housing Prices
Labor Force Participation
Unemployment
GDP
Population
CPI
Year

Economic conditions and electoral outcomes

- We estimate the following equation:

$$\Delta Votes_{st} = \alpha_t + \beta \Delta Economic\ variables_{st} + \varepsilon_{st} \quad (3)$$

where $\Delta Votes_{st}$ denotes the variation in the percentage of votes received in province s by the incumbent party in the national elections between the election in year t and the previous election

Table: **The Effect of Economic Conditions on Electoral Outcomes**

Dependent variable:	Δ Votes for Incumbent (%)
Δ GDP per capita	0.33**
	(0.13)
Δ Unemployment	-0.03
	(0.05)
Δ CPI	0.01
	(0.77)
Δ Housing prices	-0.02
	(0.03)
Adjusted R-sq	0.60
Election fixed-effects	Yes
N	300

Christmas Lottery and electoral outcomes

- We estimate the following equation:

$$\Delta Votes_{st} = \alpha_t + \beta Prizes_{st} + \gamma Expenditure_{st} + \varepsilon_{st} \quad (4)$$

  where $Prizes_{st}$ denotes the total income in Spanish Christmas Lottery prizes as percentage of GDP received by province s in the years prior to the election in year t, and $Expenditure_{st}$ is the expenditure on the Christmas Lottery as percentage of GDP during the same period
- Our identification strategy makes use of the fact that, conditional on lottery expenditure, the lottery prizes are randomly distributed

Table: The Effect of Christmas Lottery Prizes on Electoral Outcomes

Dependent variable:	Δ Votes for Incumbent (%)								
	All incumbents				Ex. Sort	Left-wing	Right-wing	Placebo	Tickets
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Lottery prizes	0.21**	0.22**	0.25**	0.66**	0.21***	0.19**	0.31*	-0.08	
	(0.09)	(0.09)	(0.12)	(0.29)	(0.07)	(0.09)	(0.18)	(0.09)	
Lottery expenditure	-0.73	-0.70	-1.67	-1.23	-1.13	-0.92	-0.44	-0.03	-0.50
	(0.67)	(0.70)	(1.50)	(0.82)	(0.68)	(1.14)	(0.68)	(0.44)	(0.72)
Winning tickets per capita (%)									0.61**
									(0.30)
Economic conditions	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province fixed-effects	No	No	Yes	No	No	No	No	No	No
Population weights	No	No	No	Yes	No	No	No	No	No
Adjusted R-sq	0.59	0.60	0.61	0.64	0.61	0.21	0.84	0.60	0.60
N	300	300	300	300	294	200	100	300	300

Table: **The Effect of Christmas Lottery Prizes on Voter Turnout**

Dependent variable:	Δ Voter Turnout (%)					
	All incumbents			Ex. Sort	Left-wing	Right-wing
	(1)	(2)	(3)	(4)	(5)	(6)
Lottery prizes	-0.07	-0.04	-0.38*	-0.09	-0.09	-0.17*
	(0.07)	(0.09)	(0.22)	(0.07)	(0.08)	(0.09)
Lottery expenditure	0.53	-0.14	0.86**	0.76**	0.98	-0.08
	(0.37)	(0.79)	(0.39)	(0.32)	(0.81)	(0.39)
Election fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Province fixed-effects	No	Yes	No	No	No	No
Population weights	No	No	Yes	No	No	No
Adjusted R-sq	0.81	0.80	0.82	0.82	0.67	0.89
N	300	300	294	294	200	100

Christmas Lottery and Electoral Outcomes

- Effect on voter turnout
  - Negative not significant. It could explain about 1/3 of the effect on votes maximum
- Timing of the effect
  - The effect dies out after one year and a half
- Different prizes
  - Only the top prize, *the Fatty*, has a significant impact on voting
- Placebo
  - Prizes have no effect on *previous* elections

Sources of economic voting

- Incumbent tends to receive more votes in provinces awarded with *the Fatty*, particularly in elections held shortly after the prize is received
- However, we do not know why this happens
  - Are individuals wrongly attributing lottery prizes to the incumbent?
- Next we turn to survey data:
  - Survey is performed three weeks after Christmas Lottery is held
  - Individuals are directly asked to assess the incumbent's performance

Sources of economic voting

- Survey information
  - If the national elections were to be held tomorrow, which party would you vote for?
  - Overall, how would you describe the job the governing party is doing: very good, good, average, poor, very poor?
  - In general, how would you describe the political action taken by the opposition party: very good, good, average, poor, very poor?
  - Regarding Spain's overall economic situation, how would you describe it: very good, good, average, poor, very poor?
  - Regarding Spain's overall political situation, how would you describe it: very good, good, average, poor, very poor?

Sources of economic voting

- The general specification that we use is as follows:

$$z_{ist} = X_{it}\alpha + \beta Prizes_{st-1} + \gamma Expenditure_{st-1} + \sum_{t} \delta_t S_t + \sum_{st} \lambda_{st} D_{st} + \varepsilon_{ist} \tag{5}$$

where z_{ist} denotes the survey responses of individual i in province s at time t, X_{it} is a vector of individual characteristics, $Prizes_{st-1}$ denotes the Christmas Lottery income awarded in the province the month prior to the survey as percentage of GDP, and $Expenditure_{st-1}$ is the corresponding expenditure on the Christmas Lottery. S_t is a set of survey dummies and D_{st} is a set of dummies for period and province, where each period includes three surveys before Christmas (April, July and October) and a survey after Christmas (January). In other words, we are comparing survey responses in the same province before and shortly after Christmas.

Table: **Survey Evidence**

Dep. variable:	Vote for incumbent				Sympathy incumbent	Assessment incumbent	Assessment opposition	Economic situation	Political situation
Sample	All	Voted for incumbent	Voted for another party	Unknown/ Did not vote	All	All	All	All	All
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Lottery prizes	0.012**	0.002	0.006*	0.005	0.011	0.006	-0.019	0.003	-0.005
	(0.006)	(0.011)	(0.004)	(0.006)	(0.007)	(.0019)	(0.034)	(0.021)	(0.020)
Lottery expenditure	.015	-0.021	0.022	0.025	.009	.190**	.001	0.116	0.209*
	(0.026)	(0.050)	(0.022)	(0.025)	(0.033)	(0.097)	(0.118)	(0.099)	(0.085)
Pseudo R-sq	0.047	0.084	0.225	0.088	0.066	0.050	0.045	0.099	0.065
N	287163	91692	78670	92546	269926	235789	182337	219147	206709

Outline

Conclusions

- We find that the incumbent party tends to obtain relatively more votes in winning provinces
- Respondents in winning provinces are more likely to vote for the incumbent, but they do not seem to think that the incumbent is more competent, or that the national economic or political situations have improved
- Explanations?
  - Our results do not point towards the hypothesis of attribution errors
  - Our results are more consistent with two possibilities:
    - Increases in wealth may reinforce voters' preference for the status quo
    - Or, perhaps when voters are happier, they become more lenient with the incumbent