

Online Appendix

The Sentimental Propagation of Lottery Winnings: Evidence from the Spanish Christmas Lottery

Appendices

A Data Description and Summary Statistics

A.1 Spanish Christmas Lottery Data

Data on prizes and expenditure on Christmas Lottery by province were assembled using information from the National Lottery and Gambling Agency (*Sociedad Estatal Loterías y Apuestas del Estado*) and the dataset constructed by [Bagues and Esteve-Volart \(2016\)](#). Although holders of winning tickets can cash out the corresponding lottery prize on the same day of the draw (December 22nd), we impute reception of lottery prizes to next January as it usually takes time to actually receive the money transfer (bank transaction costs, bank holidays, etc.) For that reason, we use observations regarding the gross income distributed by the three main top prizes in each province, ranging from January 2006 to 2020. We do not observe the remaining several smaller prizes that are also awarded the Christmas Lottery. However, given the random nature of the event, it can be assumed that their geographical distribution is proportional to the lottery expenditure by province (see also, [Bagues and Esteve-Volart \(2016\)](#)). We compute the after-tax revenue derived from the top lottery prizes and obtain a measure of net lottery-prize revenue per capita. We also observe the expenditure on the Christmas lottery per capita at the province level over the same time period.

Panel A of Table [A.1](#) presents descriptive statistics for the Christmas lottery at the province level. The average individual pays out 58 Euros to the lottery and receives on average 19.9 Euros and their probability of winning is 0.007%. These numbers reveal that the choice to participate in the lottery is more sentimental than rational to start with. Panel B summarizes the Christmas lottery expenditure and top prizes per capita in the winning provinces. The average expenditure per capita in those Spanish provinces is around €61, while the average lottery prize is around €42 per capita and the probability of being a winner in a winning province is 0.015%.

Table A.1: Summary Statistics - Christmas Lottery data at the province level

	Mean (1)	St. dev. (2)	Min. (3)	Max. (4)	N (5)
<i>A Christmas Lottery: All provinces</i>					
Top prizes pc (in euros)	19.96	168.18	0.00	3414.72	750
Number awarded tickets (in 1000 pers.)	0.07	0.37	0.00	4.61	750
Top prizes (% GDP)	0.08	0.76	0.00	14.81	650
Expenditure pc (in euros)	58.37	29.04	17.17	222.19	750
<i>B Christmas Lottery: Winning provinces</i>					
Top prizes pc (in euros)	41.47	240.74	0.02	3414.72	361
Number awarded tickets (in 1000 pers.)	0.15	0.53	0.00	4.61	361
Top prizes (% GDP)	0.20	1.16	0.00	14.81	278
Expenditure pc (in euros)	60.72	28.36	20.80	222.19	361
<i>C Christmas Lottery: Winning provinces with max prize pc</i>					
Top prizes pc (in euros)	722.49	966.83	70.74	3414.72	15
Number awarded tickets (in 1000 pers.)	1.66	1.45	0.09	4.61	15
Top prizes (% GDP)	3.35	4.41	0.22	14.81	13
Expenditures pc (in euros)	70.43	29.42	36.85	128.51	15

Note: Top prizes and expenditures per capita are computed using data from May 2005 - Jan 2021. Top prizes (% of GDP) are computed using data from 2005 to 2018

Panel C of Table A.1 reports summary statistics for the winning provinces with the maximum prize per capita in each year of our sample period. In these winning provinces, the average top lottery prize represents around 3.4% of provincial GDP and about €722 in per capita terms. The expenditures per capita reflect the high participation in the lottery while the variation in the rewards suggests that in some cases wins are substantial.

Table A.2: Number of times each province was awarded with any of the Spanish Christmas Lottery main prizes between May 2005 - Jan 2020.

Province	Number of times won any of the top lottery prizes	Province	Number of times won any of the top lottery prizes
Álava	5	La Rioja	3
Albacete	7	Lugo	8
Alicante	11	Madrid	14
Almería	9	Málaga	8
Ávila	4	Murcia	8
Badajoz	7	Navarra	7
Baleares, Islas	5	Ourense	4
Barcelona	13	Asturias	9
Burgos	7	Palencia	4
Cáceres	7	Las Palmas	7
Cadiz	7	Pontevedra	8
Castellon	8	Salamanca	7
Ciudad Real	6	Santa Cruz de Tenerife	11
Cordoba	7	Cantabria	7
Coruña, A	9	Segovia	4
Cuenca	3	Sevilla	10
Girona	6	Soria	7
Granada	9	Tarragona	6
Guadalajara	3	Teruel	2
Guipúzcua	10	Toledo	7
Huelva	7	Valencia	11
Huesca	6	Valladolid	4
Jaén	8	Vizcaya	11
León	5	Zamora	4
Lleida	10	Zaragoza	11

The table above reports the number of times each Spanish province has won any of the top prizes between 2005 and 2019.

A.2 Sentiment and Consumption Data

We collect individual-level data on Spanish confidence and consumption attitudes from monthly surveys conducted by the Center of Sociological Research, which follows closely the methodology adopted by the University of Michigan's Survey of Consumer Confidence, (*Centro de Investigaciones Sociológicas-CIS*) from April 2013 to January 2023. We start our sample in April 2013 because survey respondents were not reporting their household income before that date. Each month around 1,000-1,500 nationally representative households across Spain are asked questions related to their consumption of durable goods and own personal finances and employment status as well as about the economic situation of the Spanish economy.

The questions that concern consumers' assessment of their current and expected own financial and employment status and the state of the Spanish economy are summarized below:

1. **Q1S (Q1F)** Would you say that your household economic conditions are better off, worse off, or just about the same compared to six months ago (*in six months from now?*)?
2. **Q2S (Q2F)** Would you say that the current economic situation of Spain would allow you to improve your employment status, would worsen your employment status, would have no impact on your employment status compared to six months ago (*in six months from now?*)?
3. **Q3S (Q3F)** Would you say the current state of the Spanish economy is better, worse, or about the same compared to six months ago (*in six months from now?*)?

For each of these six questions, the surveyed households can either give a positive, neutral or negative answer. We code the answers in ascending order in the regressions.

Surveyed individuals are also asked whether they have purchased any durable goods during the past six months or whether they intend to buy durables in the next six months:

1. **(DC)** denotes durable consumption and takes value 1 if the household has purchased at least one durable good in the past six months.
2. **(FDC)** denotes future durable consumption and takes values from 1 to 3 if the household expects their consumption of any durable good to decrease, remain the same, or increase in one year from now.

Moreover, households are asked to specify what type of durable goods they have purchased. To take advantage of this information we construct indices for the following durable goods categories: (i) car and motorbikes (**DCcar**); (ii) furniture (**DCfurn**); (iii) large home appliances (**DCLargeApp**) and (iv) small appliances (**DCSmallApp**). For each of these categories, the index takes the value 1 if the household has purchased at least one of these items.

We additionally retrieve socio-economic information on each interviewed household. Table A.3 provides details on the individual characteristics data while Tables A.4-A.6 describe the percentage of positive, neutral, and negative answers by households' socio-economic characteristics and durable consumption and consumer sentiment questions.

Table A.3: Description of Individual Characteristics

Variable	Description
Age	1: Less than 25 years 2: Between 25 and 34 years 3: Between 35 and 44 years 4: Between 45 and 54 years 6: More than 55 years
Gender	0: Male 1: Female
Marital Status	1: Married 2: Single 3: Widow 4: Separated 5: Divorced
Education	1: Less than 5 years of schooling 2: Primary education 3: Less than high-school 4: Some high-school 5: Vocational training I 6: High-school 7: Vocational training II 8: Some college 9: College 10: Master/ PhD degree
Employment Status	0: Other 1: Employed
Household Income	1: Less than 1100 euros 2: Between 110 and 1800 euros 3: Between 1801 and 2700 euros 4: Between 2701 and 3900 euros 5: More than 3900 euros

Table A.4: Percentage of answers by question and individual characteristics

Answer:	(1) Household Income			(2) Employment Prospects			(3) Spanish Economy		
	Positive	Neutral	Negative	Positive	Neutral	Negative	Positive	Neutral	Negative
Age									
16-24	22%	9%	9%	16%	8%	10%	14%	7%	9%
25-34	27%	14%	15%	18%	16%	16%	17%	16%	16%
35-44	24%	20%	20%	21%	22%	20%	21%	22%	21%
45-55	15%	18%	20%	16%	20%	19%	17%	20%	19%
> 55	12%	39%	36%	29%	34%	35%	31%	35%	35%
	100%	100%	100%	100%	100%	100%	100%	100%	100%
Gender									
Female	46%	51%	53%	44%	52%	53%	42%	53%	52%
Male	54%	49%	47%	56%	48%	47%	58%	47%	48%
	100%	100%	100%	100%	100%	100%	100%	100%	100%
Marital Status									
Married	40%	55%	53%	50%	55%	52%	51%	55%	52%
Not Married	60%	45%	47%	50%	45%	48%	49%	45%	48%
	100%	100%	100%	100%	100%	100%	100%	100%	100%
Education									
Less High School	38%	44%	52%	40%	41%	51%	39%	43%	50%
High School	18%	16%	16%	18%	16%	16%	19%	15%	16%
Some College	19%	18%	17%	17%	19%	17%	18%	19%	17%
College	20%	18%	13%	20%	20%	13%	20%	19%	14%
Master/PhD	5%	4%	3%	4%	4%	3%	4%	4%	3%
	100%	100%	100%	100%	100%	100%	100%	100%	100%
Employment Status									
Employed	66%	49%	38%	52%	53%	43%	51%	53%	45%
Not Employed	34%	51%	62%	48%	47%	57%	49%	47%	55%
	100%	100%	100%	100%	100%	100%	100%	100%	100%
Household Income									
< €1100	16%	24%	42%	19%	24%	35%	20%	24%	35%
€1100 - €1800	33%	34%	35%	33%	35%	35%	32%	35%	35%
€1801 - €2700	26%	23%	16%	25%	23%	18%	25%	23%	18%
€2701 - €3900	15%	12%	6%	15%	12%	8%	14%	12%	8%
> €3900	10%	7%	2%	8%	6%	4%	9%	6%	4%
	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	32,504	69,508	15,464	49,160	47,156	25,918	47,824	40,903	26,049

Note: Education has been simplified to a categorical value that takes values 1 to 5 in ascending order from lower to higher degree of education attained. Marital status has also been simplified to a categorical value that takes value 1 if married and 0 otherwise

Table A.5: Percentage of answers by question and individual characteristics

	(4) Future Household Income			(5) Future Employment Prospects			(6) Future Spanish Economy		
Answer:	Positive	Neutral	Negative	Positive	Neutral	Negative	Positive	Neutral	Negative
Age									
16-24	19%	7%	6%	14%	7%	8%	14%	7%	8%
25-34	26%	13%	14%	19%	15%	16%	18%	16%	16%
35-44	26%	19%	21%	21%	22%	22%	22%	22%	21%
45-55	17%	19%	21%	17%	21%	20%	17%	20%	20%
> 55	13%	42%	38%	29%	35%	34%	29%	35%	35%
	100%	100%	100%	100%	100%	100%	100%	100%	100%
Gender									
Female	46%	51%	51%	47%	53%	50%	46%	53%	50%
Male	54%	49%	49%	53%	47%	50%	54%	47%	50%
	100%	100%	100%	100%	100%	100%	100%	100%	100%
Marital Status									
Married	41%	57%	56%	50%	55%	54%	50%	55%	54%
Not Married	59%	43%	44%	50%	45%	46%	50%	45%	46%
	100%	100%	100%	100%	100%	100%	100%	100%	100%
Education									
Less High School	41%	44%	51%	43%	42%	47%	43%	44%	46%
High School	19%	15%	15%	18%	15%	16%	18%	15%	16%
Some College	19%	18%	17%	18%	19%	19%	18%	19%	18%
College	17%	19%	14%	19%	19%	6%	17%	18%	16%
Master/PhD	4%	4%	3%	4%	4%	3%	4%	4%	4%
	100%	100%	100%	100%	100%	100%	100%	100%	100%
Employment Status									
Employed	44%	51%	57%	50%	47%	51%	49%	53%	48%
Not Employed	56%	49%	43%	50%	53%	49%	51%	47%	52%
	100%	100%	100%	100%	100%	100%	100%	100%	100%
Household Income									
< €1100	24%	24%	40%	24%	24%	31%	24%	25%	31%
€1100 - €1800	34%	34%	34%	34%	35%	35%	34%	35%	35%
€1801 - €2700	23%	23%	17%	23%	23%	20%	23%	23%	20%
€2701 - €3900	13%	12%	7%	12 %	12%	12%	12%	12%	9%
> €3900	7%	3%	3%	7%	6%	5%	7%	5%	5%
	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	22,125	63,712	27,114	39,975	25,629	40,482	39,686	30,387	39,368

Note: Education has been simplified to a categorical value that takes values 1 to 5 in ascending order from lower to higher degree of education attained. Marital status has also been simplified to a categorical value that takes value 1 if married and 0 otherwise

Table A.6: Percentage of answers by question and individual characteristics

	(1) Durable Consumption		(2) Durable Consumption Vehicle		(3) Durable Consumption Furniture		(4) Durable Consumption Large Appliance		(5) Durable Consumption Small Appliance	
Answer:	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Age										
16-24	12%	7%	15%	9%	13%	9%	13%	9%	12%	9%
25-34	19%	13%	23%	15%	23%	15%	18%	15%	19%	15%
34-44	23%	19%	23%	21%	25%	20%	22%	21%	24%	20%
44-55	20%	18%	19%	19%	18%	19%	20%	18%	20%	19%
>55	26%	42%	21%	36%	21%	37%	26%	37%	25%	37%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Gender										
Female	47%	54%	43%	51%	45%	51%	46%	52%	46%	52%
Male	53%	46%	57%	49%	55%	49%	54%	48%	54%	48%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Marital Status										
Married	53%	53%	51%	53%	51%	53%	46%	52%	53%	53%
Not Married	47%	47%	49%	47%	49%	47%	54%	48%	47%	47%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Education										
Less High School	36%	54%	38%	46%	30%	48%	35%	49%	34%	49%
High School	17%	15%	18%	16%	17%	16%	18%	16%	17%	16%
Some college	20%	16%	20%	18%	21%	17%	20%	17%	21%	17%
College	21%	13%	20%	17%	25%	16%	22%	16%	23%	15%
Master/PhD	45%	3%	5%	4%	7%	3%	5%	3%	5%	3%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Employment										
Employed	57%	41%	62%	48%	63%	47%	57%	46%	58%	46%
Not Employed	43%	59%	38%	52%	37%	53%	43%	54%	42%	54%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Household Income										
< €1100	17%	38%	15%	29%	13%	30%	16%	31%	17%	31%
€1100 - €1800	33%	35%	32%	34%	30%	35%	32%	35%	33%	35%
€1801 - €2700	26%	17%	27%	21%	28%	20%	26%	20%	25%	20%
€2701 - €3900	15%	7%	16%	10%	18%	10%	16%	9%	15%	9%
>3900	9%	3%	10%	5%	12%	5%	10%	5%	9%	6%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	29,406	87,964	10,445	107,353	17,215	100,489	27,446	90,282	29,406	87,964

Note: Education has been simplified to a categorical value that takes values 1 to 5 in ascending order from lower to higher degree of education attained. Marital status has also been simplified to a categorical value that takes value 1 if married and 0 otherwise

A.3 Macroeconomic Data

Data on unemployment and labor contracts by province is obtained at a monthly frequency from the National Employment Agency (*Servicio Público Estatal de Empleo*). Provincial and national CPI, number of mortgages, and population are obtained from the Spanish Statistical Office (*Instituto Nacional de Estadística*). We obtain also monthly data on employment by province from Social Security Statistics (*Seguridad Social Estadísticas, SSE*). According to Spanish law, any employer must register their employees with the Spanish Social Security authorities. We use the data available by SSE to recover employment dynamics at the province level. We construct a series for the unemployment rate coming from the two distinct data sources. According to the constructed data, the average weighted unemployment rate at the province level is 20.7 percent, while at the national level, this number equals 17.5 percent for the period under consideration. We believe that this divergence is due to measurement errors in the data on employment provided by the SSE and, for that reason, we also use the ratio of unemployed over province population as an alternative measure for tracking down the dynamics of the labor market and present results for the responses of logged unemployment. For the aggregate unemployment rate series at monthly frequency for Spain we retrieve data from the OECD indicators database. Finally, we also obtain data on new car licenses from the Spanish Traffic Authority. The data has been seasonally adjusted using the Seasonal and Trend decomposition provided by Loess (STL decomposition). Table A.7 gathers information on the description of the variables and sources while Table A.8 presents summary statistics for these variables.

Table A.7: Description of macroeconomic variables

Variable	Description	Source
Total unemployment	Number of unemployed individuals registered in the National Employment Agency	SEPE
Total employment	Number of employed individuals affiliated with the Social Security System	Estadísticas Seguridad Social
Total labor contracts	Number of labor contracts signed by individuals who were registered as unemployed in the National Employment Agency	SEPE
Short-term labor contracts	Number of short-term labor contracts signed by individuals who were registered as unemployed in the National Employment Agency	SEPE
Long-term labor contracts	Number of long-term labor contracts signed by individuals who were registered as unemployed in the National Employment Agency	SEPE
Unemployment rate	Harmonized Unemployment Rate: All Persons for Spain	OECD
Provincial and National CPI	Consumer Price Index: all goods. Base 2016	INE
Provincial and National Rental Price Index	Rental prices subgroup of Consumer Price Index. Base 2016	INE
Mortgages	Number of mortgages. All types of real state property	INE
Population	Total population with Spanish residence	INE
Car licenses	Number of new car licenses	Dirección General de Tráfico

Table A.8: Summary Statistics - Macroeconomic data at the province and national level

	Mean (1)	St. dev. (2)	Min. (3)	Max. (4)	N (5)
Population (in thousands)	920.28	1136.82	89.50	6600	8850
Total Unemployment level (in thousands)	70.66	83.258	2.067	564.24	8850
Total Unemployment Level in Spain (in thousands)	3554.78	930.72	1959.34	4960.22	8850
Unemployment Rate (%) ^a	20.74	8.44	5.34	47.42	8850
Unemployment Rate in Spain (%)	17.48	5.85	7.87	26.34	8850
Unemployment Ratio (Population %)	7.52	2.73	1.96	17.06	8850
Long-term Labor Contracts (% Labor Force)	0.72	0.31	0.16	3.82	8850
Short-term Labor Contracts (% Labor Force)	8.63	4.66	2.75	77.31	8850
Total Contracts (% Labor Force)	9.34	4.69	3.07	77.93	8850
Labor Market Tightness (%)	49.32	30.28	9.19	285.09	8850
Regional CPI (% Spanish CPI)	100.27	0.83	96.32	105.09	8850
CPI	97.1	5.82	80.22	106.17	8850
CPI (Spain)	96.8	5.91	83.29	104.87	8850
Car licenses	1568.46	3540.99	50	46890	4992

^aAverage unemployment rate is weighted by provincial labor force participation.

A.4 Sentiment and Lottery Expenditure

To check if lottery expenditures in each province are influenced by aggregate economic sentiment, we adopt the specification in Equation 1 and regress the per capita regional lottery expenditures on the two aggregate sentiment indices. The estimates in Table A.9 suggest that current and lagged consumer sentiment indices do not explain lottery expenditures at the province level.

Table A.9: Testing for Endogeneity of the Lottery Expenditures

	(1) LotteryExp _t	(2) LotteryExp _t	(3) LotteryExp _t	(4) LotteryExp _t
ICC _t	2.44e-06 (2.41e-06)		1.78e-06 (2.82e-06)	
ICE _t		5.53e-07 (2.25e-06)		3.61e-06 (2.99e-06)
ICC _{t-1}			-2.37e-06 (3.30e-06)	
ICC _{t-2}			5.70e-06 (3.74e-06)	
ICC _{t-3}			2.54e-06 (3.13e-06)	
ICE _{t-1}				-7.08e-06 (4.41e-06)
ICE _{t-2}				5.38e-06 (3.79e-06)
ICE _{t-3}				-2.16e-07 (2.82e-06)
LotteryExp _{t-1}	0.985*** (0.015)	0.985*** (0.015)	0.985*** (0.015)	0.985*** (0.015)
Provincial Controls	Yes	Yes	Yes	Yes
Aggregate Controls	Yes	Yes	Yes	Yes
Observations	972	972	972	972

LotteryExp_t denotes per capita expenditure on lottery tickets, ICC is the aggregate index for current economic condition, and ICE is the aggregate index of consumer expectation. Robust standard errors clustered at the province level are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

B Aggregate Consumer Sentiment Indices

We follow the methodology adopted by the University of Michigan's Survey of Consumer Confidence and construct two broad consumer sentiment indices for each province j : Index of Current Economic Conditions (ICC) and Index of Consumer Expectation (ICE)

$$ICC_{j,t} = \frac{Q_{1S,j,t} + Q_{2S,j,t} + Q_{3S,j,t}}{3}$$

$$ICE_{j,t} = \frac{Q_{1F,j,t} + Q_{2F,j,t} + Q_{3F,j,t}}{3}$$

where

$$Q_{i,j,t} = \% \text{Better}_{j,t} - \% \text{Worse}_{j,t} + 100 \quad i \in \{1S, 2S, 3S, 1F, 2F, 3F\}$$

The Spanish consumer confidence survey is designed to be representative at the national level, but the CIS does not guarantee that the sample will be representative of the population within each separate province during each month. Following [Aguiar et al. \(2013\)](#), we average over two months responses in order to mitigate measurement error in our data set due to sampling variation within the survey at the province level. Also, to keep the representativeness of the consumer sentiment indices at the province level, we keep in our sample those monthly observations for which the provincial ICC and ICE are constructed with at least 25 respondents. A representativeness threshold of 25 respondents implies that we have at least 25 survey answers for each of the three questions included in the computation of ICE and ICC, respectively. Table B.1 summarizes the number of observations in the representative sample.

Table B.1: Representativeness of Provincial ICC and ICE - Consumer sentiment indices at the province level have been constructed using monthly information between November 2011 and January 2020 for 50 Spanish provinces.

Representativeness of Provincial ICC and ICE			
Threshold	Number of observations	Provinces remaining in the sample	Provinces remaining in the sample at least 50 monthly obs.
≥ 25 survey respondents per question	1,692	29	17

Provincial and aggregate consumer confidence indices are strongly correlated (the average correlation coefficient between the national and all provincial ICC and ICE is 0.88 and 0.82, respectively)¹².

C Individual-level Regressions

C.1 Realized durable consumption

We start by investigating whether the surveyed households living in winning provinces are more likely to report durable goods purchases during the subsequent months of the lottery wins. To do so, given that the survey question on durable consumption asks households about any durable goods purchases in the last six months, we adopt the same empirical specification as in Equation (3) and investigate how the responses about realized consumption for durables varies the months after the lottery wins. This strategy provides us with more flexibility in capturing the timing of household consumption choices after the lottery draw takes place.

Figure C.1 plots the marginal effects associated with the β_s coefficients and their 95 percent confidence intervals from a probit model in Equation (3). The dependent variable is a dummy that takes the value of 1 when households give a positive answer to the question related to durable consumption in the last six months (DC).

¹²The reported values for the average unconditional correlations between the national and all provincial ICC and ICE have been computed after keeping those monthly observations for which there are at least 25 respondents answering the survey questions. If we relax the threshold for representativeness to 5 respondents, these average unconditional correlations take value 0.80 and 0.71, respectively.

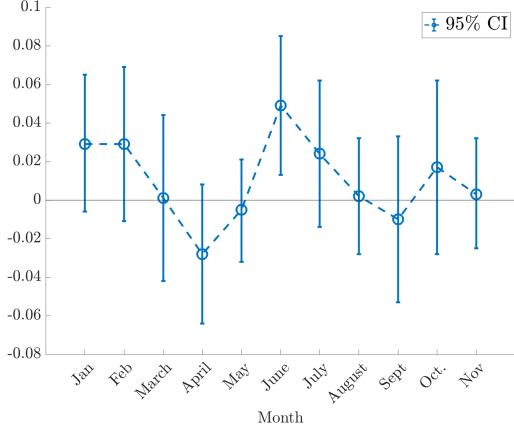


Figure C.1: Effects of Christmas Lottery on realized durable consumption

This figure plots the marginal effects associated to the β_s coefficients and their 95% CI from estimating Equation (3) using a probit model. The dependent variable in Panel C.1 is DC. Standard errors are robust and clustered at the province level

The evidence suggests that exogenous variations in local income affect significantly realized durable consumption. Households living in provinces awarded with Christmas lottery prizes are 5% more likely to report having purchased at least one durable good around six months after the win. It is worth highlighting that the surveyed households are asked about their durable consumption purchases in the last six months. This implies that the peak observed in Figure C.1 after six months does not correspond to an increase in consumption after six months but rather that the maximal effect of the lottery on accumulated consumption shows six months after the shock.

Given the number of coefficients, one might worry about false positives. Note that Figure C.1 only has one month with a significant coefficient, June. We test in Table C.1 for the joint significance of the lottery dummies coefficients in Equation (4) when the dependent variable is recent durable purchases or intended durable purchases, respectively. The results reported in the Table below suggest that we can reject the hypothesis that all coefficients are equal to 0 at a 99% confidence level.

Table C.1: Testing joint significance of regression coefficients

Dependent Variable	Chi-stat	p-value
Recent Durable Purchases	43.04	0.000
Intended Durable Purchases	26.96	0.005

We continue by examining the responses of realized consumption for the different durable categories available in the survey. Figure C.2 reveals that the significant increase in the probability of having purchased at least one durable good reported in Figure C.1 is driven by household consumption of furniture and vehicles (see Panels C.2a and C.2b).

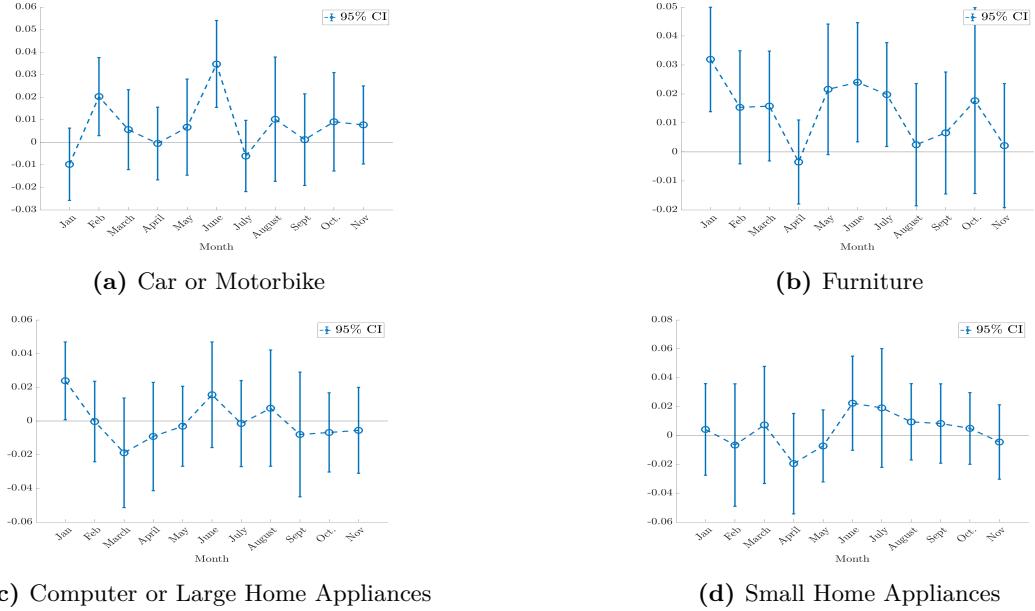


Figure C.2: Effects of Christmas Lottery on realized durable consumption by item

These figures plot the marginal effects associated to the β_s 's coefficients and their 95% CI from estimating Equation (3) using a probit model. The dependent variable DCcar (a), DCfurn (b), DCLargeApp (c), DCSmallApp (d) in the past six months. Standard errors are robust and clustered at the province level

In particular, households living in winning provinces are more likely to report having purchased a car or motorbike in the, two or six months following the win. They are also around 3% more likely to report having purchased furniture goods in January and around 2% more likely to have purchased furniture in a period between five to seven months after the win. In the month after the win households are also 2% more likely to have purchased a computer or a large house appliance. These results align well with a version of the life-cycle consumption model in which households adjust the timing of durables purchases to smooth consumption (See, e.g., [Browning and Crossley \(2009\)](#)). They are also very consistent with the results of [Kuhn et al. \(2011\)](#) that also report significant effects of lottery wins on car and other durable expenditures.

C.2 Alternative Definition of the Lottery Prize Variable

The hypothesis we test is whether winning the lottery in the province affects sentiment, independently of the amount received of lottery per capita. For that reason, we estimate again our baseline regression for consumer sentiment at the individual level by specifying the lottery variable in total 1000 euros instead of per capita terms. Figure C.3 and Table C.2 show that our results are robust to this alternative definition of the treatment variable.

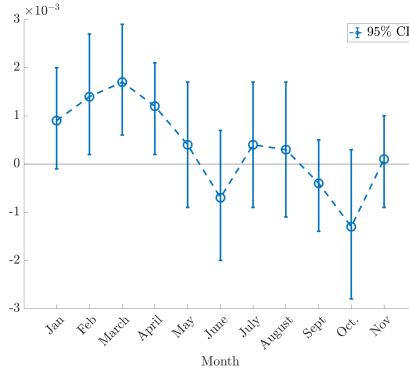


Figure C.3: Effects of Christmas Lottery on intended durable consumption

This figure plots the marginal effects associated to the β_s coefficients and their 95% CI from estimating Equation (3) using an ordered probit model. The treatment variable is total rewards in logs. The specification includes population and total lottery expenditures as controls Standard errors are robust and clustered at the province level

Table C.2: Survey evidence on the effects of Spanish Christmas Lottery on consumer sentiment - Total lottery prizes

	(1) Household Income	(2) Future Household Income	(3) Employment Prospects	(4) Future Employment Prospects	(5) Spanish Economy	(6) Future Spanish Economy
Lottery Prize (log)	0.008** (0.003)	0.009*** (0.003)	0.009*** (0.004)	0.006 (0.004)	0.005* (0.003)	0.007** (0.003)
Lottery Expenditures (log)	1.301*** (0.184)	0.824*** (0.124)	0.389*** (0.124)	-0.888*** (0.188)	-0.180 (0.164)	-0.671*** (0.168)
Population (log)	-0.721 (1.269)	-0.127 (0.891)	-1.977* (1.171)	-2.013*** (0.671)	-2.533*** (0.903)	-1.999*** (0.697)
Month × Province Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Individual Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Observations	117476	112951	112047	106086	114776	109441
Pseudo R^2	0.049	0.039	0.023	0.011	0.021	0.012

Columns (1)-(6) provide results from an ordered probit where the dependent variable is Q1C-Q3F. *Lottery Prize log* refers to the logarithm of total Christmas lottery prizes in 1000 euros. *Lottery expenditures log* refers to the logarithm of total Christmas lottery expenditures in 1000 euros. We use the approximation of $\ln(x + 0.001) \approx \ln(x)$ as lottery prizes and expenditures are 0 in other months different from January and December, respectively. Robust standard errors clustered by province in parentheses. The sample includes information from consumer confidence monthly surveys conducted by the Spanish Center for Sociological Research (CIS) between April 2013 and January 2020. Significance * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

D The Joint Response of Sentiment and Consumption

In this section, we use the question about future durables in the survey to create a categorical variable that summarizes the joint response of the surveyed individuals' economic expectations and future durable consumption plans responses as follows: for each individual, we construct a categorical variable that takes values 1 to 3 if households respond that their economic expectations and future durable consumption is both lower/same/higher. We create three different categorical variables where we consider the joint responses to questions about intended durable consumption and economic expectations related to a) household income, b) employment prospects, and c) the Spanish economy. We use an ordered probit to estimate the joint responses of confidence and future durable consumption.

Table D.1 collects the results of these regressions. These results suggest that individuals tend to give positive answers to both questions about their expectations and their consumption plans after a lottery win, indicating that sentiment responses are related to the demand for durables at the individual level. [Gillitzer and Prasad \(2018\)](#), using voting intention as an instrument for economic sentiment, document a similar causal effect running from sentiment to consumption. The evidence presented in Table D.1 indicates a positive relationship between sentiment and future consumption plans.

Table D.1: Survey evidence on the effects of Spanish Christmas Lottery on consumer sentiment and future consumption

	(1)	(2)	(3)
	Future Durable & Consumption Household Income	Future Durable& Consumption Employment Prospects	Future Durable & Consumption Spanish Economy
Lottery Prize Dummy	0.152*** (0.044)	0.141** (0.057)	0.140*** (0.051)
Lottery Expenditures	16.978*** (3.584)	0.863 (4.066)	4.526 (3.897)
Month × Province Dummies	Yes	Yes	Yes
Individual Characteristics	Yes	Yes	Yes
Observations	70571	43471	47609
Pseudo R^2	0.054	0.050	0.048

Significance * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

E Disentangling Income vs Sentiment Effects from Lottery Wins

Table E.1: Survey evidence on the effects of Spanish Christmas Lottery on households' current ability to pay bills

	(1) Current ability to pay bills
Lottery Prize Dummy	-0.009 (0.038)
Lottery Expenditures	15.609*** (2.420)
Month × Province Dummies	Yes
Individual Characteristics	Yes
Observations	117244
Pseudo R^2	0.105

Columns (1) provide results from an ordered probit where the dependent variable is the ability-to-pay bills question. *Lottery Prize Dummy* takes value 1 if awarded Christmas lottery tickets were distributed in that province. *Lottery Expenditures* are expressed in 1000 euros per capita. Robust standard errors clustered by province in parentheses. The sample includes information from consumer confidence monthly surveys conducted by the Spanish Center for Sociological Research (CIS) between April 2013 and January 2020. Significance * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table E.2: Survey evidence on the effects of Spanish Christmas Lottery on consumer sentiment - High vs low prizes per capita

	(1) Household Income	(2) Future Household Income	(3) Employment Prospects	(4) Future Employment Prospects	(5) Spanish Economy	(6) Future Spanish Economy
High Lottery Prizes	0.110* (0.066)	0.229*** (0.075)	0.120 (0.107)	0.204 (0.135)	0.086 (0.082)	0.201** (0.083)
Lottery Expenditures	23.944*** (3.230)	14.195*** (2.960)	5.982** (2.382)	-18.852*** (2.815)	-5.860* (3.267)	-15.153*** (2.983)
Observations	110039	105793	105003	99351	107509	102462
Low Lottery Prizes	0.124*** (0.046)	0.125*** (0.037)	0.186*** (0.056)	0.094** (0.047)	0.121*** (0.043)	0.102** (0.044)
Lottery Expenditures	23.904*** (3.228)	14.201*** (2.966)	6.059** (2.382)	-18.776*** (2.818)	-5.777* (3.256)	-15.089*** (2.976)
Observations	116116	111638	110748	104826	113438	108151
p-value	0.04	0.11	0.31	0.11	0.25	0.15
Chi-square stat	0.85	2.59	1.04	2.58	0.61	2.07

Columns (1)-(6) provide results from an ordered probit where the dependent variable is Q1C-Q3F. *High Lottery Prize* equals 1 when Christmas lottery rewards per capita are above the average prize per capita and 0 for non-winning regions. *Low Lottery Prize* equals 1 when Christmas lottery rewards per capita are below the average prize per capita but strictly positive and 0 for non-winning regions. *Lottery expenditures* refers to the Christmas lottery expenditures per capita. The last two columns show the p-value and Chi-square stats of testing the equality of the coefficients of *High Lottery Prize* and *Low Lottery Prize* variables. The sample includes information from consumer confidence monthly surveys conducted by the Spanish Center for Sociological Research (CIS) between April 2013 and January 2020. Significance * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

F News About Fundamentals

F.1 Business confidence

We study data on business confidence that are available at the quarterly frequency for different Spanish autonomous communities. Recall that we have performed our analysis so far using province level monthly data. Luckily there are seven autonomous regions in Spain that have only one province. We use these provinces to investigate how business confidence reacts to lottery wins.

We use the Harmonised Business Confidence Index from Spanish Statistical Office (*Instituto Nacional de Estadística*) for those provinces that are also constituted as autonomous communities. These are: Asturias, Cantabria, Islas Baleares, Madrid, Murcia, Navarra and La Rioja. This index measures the confidence of a representative sample of firms operating in all sectors of the economy. It is constructed as the geometric average of two other indices: Situation Index and Expectations Index. The Situation and Expectations Indices for region j are constructed as follows:

$$Q_{j,t} = \% \text{Better}_{j,t} - \% \text{Worse}_{j,t} + 100$$

The index reference quarter are 2013Q1.

Figure F.1 shows the effect of winning the lottery on the consumer sentiment in autonomous communities with one province using quarterly indicators for consumer sentiment. Our baseline results still hold for these provinces. That is, consumer confidence about the current and future economic conditions increases in response to the lottery wins significantly.

We next examine how the Harmonised Business Confidence Index from the Spanish Statistical Office (*Instituto Nacional de Estadística*) reacts for those provinces that also constitute an autonomous community. The Business Confidence Indicators survey collects the opinions of the managers of the establishments regarding the progress of their business for the past quarter and their expectations for the coming quarter.

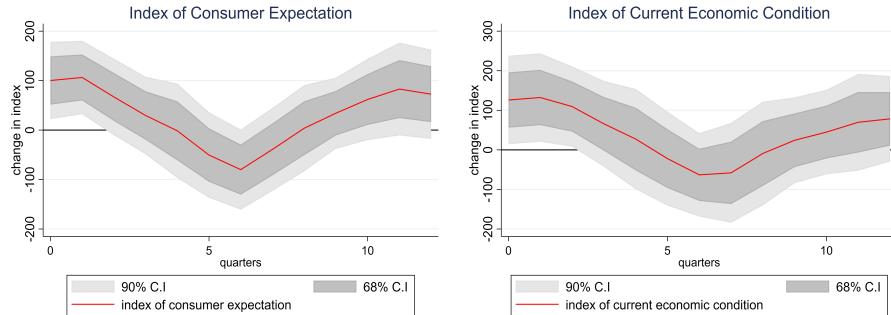


Figure F.1: Effect of Christmas Lottery Prizes on the Index of Current Economic Condition and the Index of Consumer Expectation- Seven provinces

Impulse responses to Christmas Lottery prizes in the linear LP model (1). Sentiment indices are normalize to 100 for the first quarter of 2013, to be comparable to the business sentiment index. Christmas Lottery prizes are net of taxes and measured in 1000 euros per capita. The sample period covered is 2013Q1-2019Q4 and includes data for Asturias, Cantabria, Islas Baleares, Madrid, Murcia, Navarra and La Rioja. Standard errors are robust and clustered at the communities level and response functions are smoothed by centered moving average.

Figure F.2 presents the responses of the Harmonised Business Expectations Index in those communities to a lottery win. The responses of the business expectation index are flat, indicating that firms do not change their expectations after a lottery win. This could be because firms do not perceive a substantial increase in local economic fundamentals after a lottery win. It could also be due to the fact that businesses operate subject to the aggregate economic conditions in Spain and not with the local conditions and for that reason, their sentiment is less local.

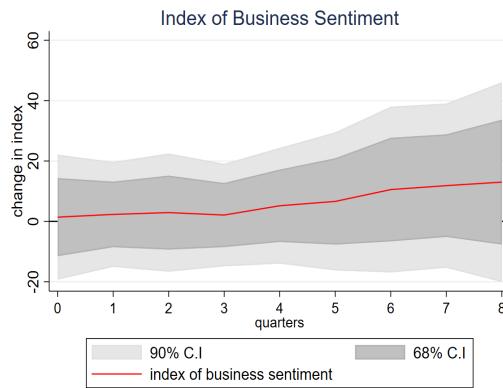


Figure F.2: Effects of Christmas Lottery prizes on the Harmonised Business Confidence Index - Seven provinces

Impulse responses to Christmas Lottery prize in the linear LP model (1). Due to data availability, the sample period covered is 2013Q1-2019Q4 for the seven communities with a unique province. Standard errors are robust and clustered at the community level and response functions are smoothed by centered moving average.

F.2 Disaggregated responses of sentiment indices to lottery wins

Figure F.3 depicts the aggregate responses for each question to a lottery win. All indices react significantly to the lottery win on impact with the sentiment about the future Spanish economic conditions reacting strongly to the lottery wins. If the lottery win was a signal about changes in local demand one should expect rational respondents when asked about the Spanish macroeconomic conditions to be less optimistic

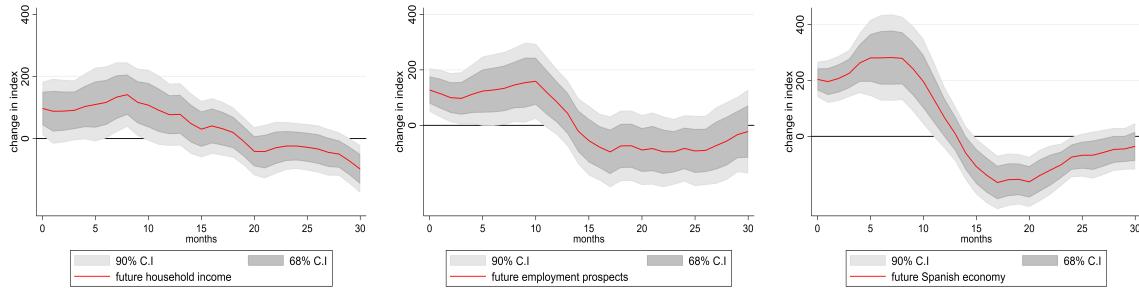


Figure F.3: Effects of Christmas Lottery prizes on disaggregated consumer sentiment indices

Impulse responses to Christmas Lottery prizes in the linear LP model (1). To increase the representativeness of the indices at the regional level, we focus on data with at least 25 respondents in each province and, for each question, we use responses for two consecutive months. The sample period covered is 2011M11-2020M1. Standard errors are robust and clustered at the province level and response functions are smoothed by a centered moving average.

Table F.1 presents the first stage F-statistics for the different sentiment questions on impact and the first month after the lottery wins and reconfirms these results. Sentiment about the Spanish economy is significantly more responsive to lottery news relative to sentiment about personal finances and employment prospects. For example, the standard F-statistic for Q3F equals 12.8 on impact and 50.9 one month after the lottery win, while the same statistics for questions Q1F and Q2F are significantly lower.

Table F.1: First-stage F-statistics for the null hypothesis that the lottery awards has no explanatory power for consumer confidence.

F-statistics			
horizon (months)	Question 1F	Question 2F	Question 3F
$h = 0$	1.9	4.9	12.8
$h = 1$	11.9	2.1	50.9

F.3 Nationalist regions

We exploit the presence of active secessionist movements in the provinces of Catalonia and the Basque Country to test whether surveyed respondents are able to disentangle local from national demand shocks. Households living in Catalonia and the Basque Country, who are more aware of the local economic conditions of their regions, should not expect better prospects for the Spanish economy as a whole if winning the lottery carries only news about the economy. To investigate this hypothesis, we estimate the following regression:

$$\begin{aligned} c_{i,j,t,s} = & \alpha + \beta \text{LotteryPrize}_{j,t,s} + \kappa \text{Nationalist}_j + \zeta (\text{Nationalist}_j \times \text{LotteryPrize}_{j,t,s}) \\ & + \delta \text{LotteryExp}_{j,t,s} + \gamma X_{i,j,t,s} + \sum_{s,j} \lambda_{s,j} D_{s,j} + \epsilon_{i,j,t,s} \end{aligned} \quad (4)$$

where the variable Nationalist_j equals 1 for Catalan and Basque Country provinces and 0 for the rest of Spanish regions. Political attitudes shape perceptions of national economic conditions (Duch et al., 2000) and economic arguments have been playing a major role in the discourse of nationalist and secessionist movements (Muñoz and Tormos, 2015). Therefore, households living in Catalonia or the Basque Country should be able to disentangle news about regional from news about national fundamentals.

Table F.2 presents the estimation results for this regression.

Table F.2: Survey evidence of the effects of Christmas Lottery prizes in provinces with active nationalist movements

	(1) Spanish Economy	(2) Future Spanish Economy
Lottery Prize Dummy	0.144*** (0.046)	0.118** (0.054)
Nationalist Provinces	-0.268 (0.233)	-1.048*** (0.221)
Lottery \times Nationalist Provinces	-0.138 (0.110)	-0.039 (0.081)
Lottery Expenditures	-5.767* (3.265)	-15.075*** (2.982)
Month \times Province Dummies	Yes	Yes
Individual Characteristics	Yes	Yes
Observations	114776	109441
Pseudo R^2	0.022	0.014

Columns (1)-(2) provide results from an ordered probit where the dependent variable is question Q3C and Q3F. *Lottery Prize Dummy* takes value 1 if awarded Christmas lottery tickets were distributed in that province. *Lottery Expenditures* are expressed in 1000 euros per capita. *Nationalist* takes value equal to 1 if households live in Catalonia or Basque Country and 0 otherwise. Robust standard errors clustered by province in parentheses. . Significance * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Interestingly, households living in Catalonia and the Basque Country are more pessimistic on average with respect to the future of the Spanish economy. However, the sentimental effects of lottery winnings with respect to current and future national economic conditions are not significantly different from the rest of the Spanish regions. Hence, the increase in sentiment seems the only explanation for the reaction of consumer confidence to lottery wins.

F.4 Using lottery wins as IV for consumer sentiment

Finally, given the reaction of confidence to lottery wins and given the analysis that suggests that lottery wins are independent of economic fundamentals, one could use lottery wins as an instrument for autonomous changes in sentiment at the aggregate level. Figure F.4 presents the unemployment and provincial CPI responses for the sample period 2011M11-2020M1 to a confidence shock identified using lottery wins as an instrument for autonomous changes in ICE. Consistently with [Lagerborg et al. \(2022\)](#), in response to confidence shocks identified through an IV that uses lottery wins as instrument unemployment falls significantly on impact and CPI prices increase the first month after the shock¹³. Relative to the last authors, we investigate a positive shock to sentiment (lottery wins versus mass shootings) and find that results on unemployment are short-lived. Yet, our results should be taken with caution given the short sample size and are not directly comparable since the latter authors investigate the dynamics of sentiment shocks in the US economy.

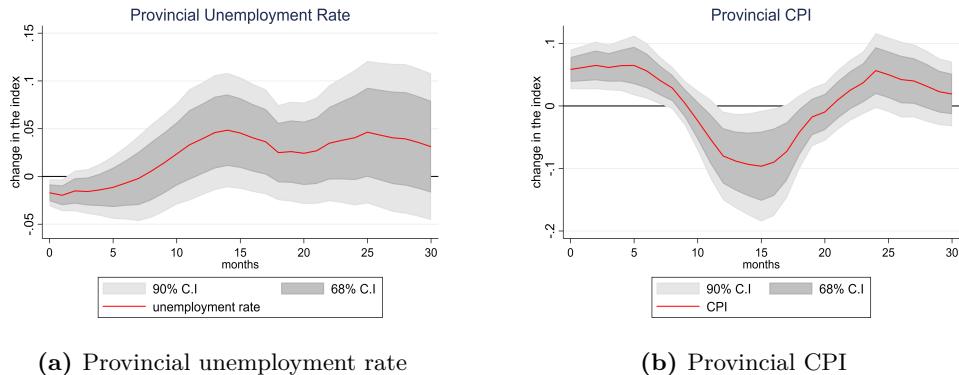


Figure F.4: Effect of the Index of Consumer Expectation Instrumented by Lottery Rewards on the Provincial Unemployment Rate and CPI

Impulse responses to the Index of Consumer Expectation shocks instrumented by Lottery prizes. To increase the representativeness of the indices at the regional level, we focus on data with at least 25 respondents in each province and, for each question, we use responses for two consecutive months (see Online Appendix for details and robustness checks on the construction of the indices). Christmas Lottery prizes are net of taxes and measured in 1000 euros per capita. The sample period covered is 2011M11-2020M1. Standard errors are robust and clustered at the province level and response functions are smoothed by a centered moving average.

In the main text we have established that economic sentiment reacts positively to lottery wins and argued that lottery wins satisfy the exclusion restriction of having no direct effect on spending intentions. We now examine the effects of consumer sentiment on intended durable consumption that work through the optimism boost stemming from the lottery winnings. To do so, we rely on an IV

¹³Notice that we have few data available at the aggregate level (9 years) and drop many of the provinces from the analysis because of the lack of enough respondents in some provinces to make the response of the aggregate sentiment index representative. As a result, the explanatory power of the IV regressions at the aggregate level is weak.

strategy where we use the lottery prize dummy variable as an instrument for changes in consumer sentiment. The last column of Table F.3 reports the F-statistics of the first stage regression for each consumer sentiment question. The F-statistics are high and above 10 for all the questions, indicating that lottery wins are strong instruments for confidence.

Table F.3: Effects of consumer sentiment on intended durable purchases - 2SLS estimates

	(1)	(2)	(3)	
	Intended Durable Purchases	Intended Durable Purchases	Intended Durable Purchases	F-stat
Future Household Income	0.420*** (0.157)			25.22
Future Employment Prospects		0.598* (0.323)		27.39
Future Spanish Economy			0.445** (0.226)	11.69
Month × Province Dummies	Yes	Yes	Yes	
Individual Characteristics	Yes	Yes	Yes	
Observations	110294	103803	106943	

This table presents the 2SLS estimates when each of the consumer sentiment questions is instrumented using the set of Christmas Lottery dummies. The dependent variable is a categorical variable that takes values 1-3 if the household intends to decrease/maintain/increase her consumption of durable goods in the near future. Robust standard errors clustered at the province level in parentheses. The sample is between April 2013 and January 2020. Significance * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Changes in sentiment instrumented by lottery wins affect significantly spending intentions. Concentrating on the question about the future of the Spanish economy, corresponding to BUS12 in the Michigan survey, a change in confidence instrumented by lottery wins increases significantly intended durable purchases at the 90% confidence level, suggesting that innovations to consumer sentiment have a causal effect on intended consumption.

G Heterogeneous Effects

G.0.1 Heterogeneous Effects on Sentiment

Table G.1: Heterogeneous effects of Spanish Christmas Lottery on consumer sentiment - future household income

	(1) Future Household Income	(2) Future Household Income	(3) Future Household Income	(4) Future Household Income	(5) Future Household Income
Lottery Prize Dummy	0.157*** (0.052)	0.148*** (0.039)	0.162*** (0.053)	0.150*** (0.051)	0.126*** (0.042)
Lottery Expenditures	14.201*** (2.966)	14.204*** (2.966)	14.200*** (2.965)	14.196*** (2.965)	14.210*** (2.967)
Age \times Lottery	-0.007 (0.009)				
Gender \times Lottery		-0.034* (0.021)			
Education \times Lottery			-0.005 (0.006)		
Household Income \times Lottery				-0.008 (0.012)	
Employment \times Lottery					0.010 (0.030)
Month \times Province Dummies	Yes	Yes	Yes	Yes	Yes
Individual Characteristics	Yes	Yes	Yes	Yes	Yes
Observations	112951	112951	112951	112951	112951
Pseudo R^2	0.041	0.041	0.041	0.041	0.041

Columns (1)-(5) provide results from an ordered probit. Robust standard errors clustered by province in parentheses. The sample includes information consumer confidence monthly surveys conducted by the Spanish Center for Sociological Research (CIS) between April 2013 and January 2020. Significance * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table G.2: Heterogeneous effects of Spanish Christmas Lottery on consumer sentiment - future employment prospects

	(1) Future Employment Prospects	(2) Future Employment Prospects	(3) Future Employment Prospects	(4) Future Employment Prospects	(5) Future Employment Prospects
Lottery Prize Dummy	0.195*** (0.048)	0.077 (0.049)	0.213*** (0.068)	0.177*** (0.060)	0.121** (0.054)
Lottery Expenditures	-18.756*** (2.819)	-18.746*** (2.819)	-18.765*** (2.817)	-18.790*** (2.818)	-18.774*** (2.816)
Age \times Lottery	-0.027** (0.013)				
Gender \times Lottery		0.047* (0.026)			
Education \times Lottery			-0.019*** (0.005)		
Household Income \times Lottery				-0.033*** (0.012)	
Employment \times Lottery					-0.043* (0.023)
Month \times Province Dummies	Yes	Yes	Yes	Yes	Yes
Individual Characteristics	Yes	Yes	Yes	Yes	Yes
Observations	106086	106086	106086	106086	106086
Pseudo R^2	0.011	0.011	0.011	0.011	0.011

Columns (1)-(5) provide results from an ordered probit. Robust standard errors clustered by province in parentheses. The sample includes information consumer confidence monthly surveys conducted by the Spanish Center for Sociological Research (CIS) between April 2013 and January 2020. Significance * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table G.3: Heterogeneous effects of Spanish Christmas Lottery on consumer sentiment - future Spanish economy

	(1) Future Spanish Economy	(2) Future Spanish Economy	(3) Future Spanish Economy	(4) Future Spanish Economy	(5) Future Spanish Economy
Lottery Prize Dummy	0.151** (0.059)	0.095** (0.043)	0.220*** (0.049)	0.198*** (0.047)	0.110** (0.044)
Lottery Expenditures	-15.080*** (2.983)	-15.075*** (2.981)	-15.094*** (2.978)	-15.125*** (2.980)	-15.077*** (2.978)
Age×Lottery	-0.012 (0.012)				
Gender×Lottery		0.027 (0.025)			
Education×Lottery			-0.019*** (0.004)		
Household Income×Lottery				-0.038*** (0.010)	
Employment×Lottery					-0.004 (0.024)
Month × Province Dummies	Yes	Yes	Yes	Yes	Yes
Individual Characteristics	Yes	Yes	Yes	Yes	Yes
Observations	109441	109441	109441	109441	109441
Pseudo R^2	0.014	0.014	0.014	0.014	0.014

Columns (1)-(5) provide results from an ordered probit. Robust standard errors clustered by province in parentheses. The sample includes information consumer confidence monthly surveys conducted by the Spanish Center for Sociological Research (CIS) between April 2013 and January 2020. Significance
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

G.O.2 Heterogeneous Effects on Intended Durable Consumption

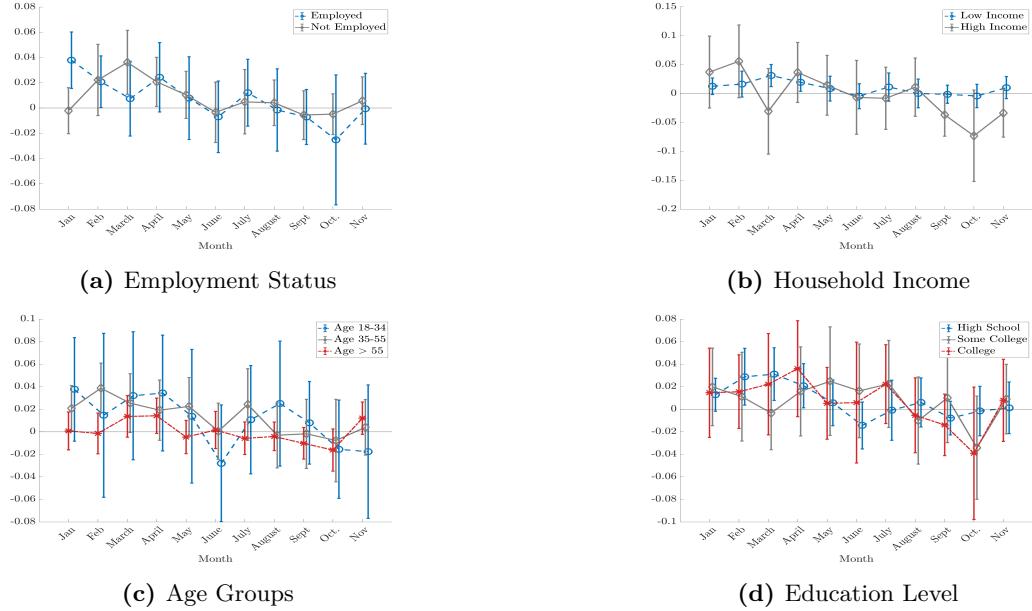


Figure G.1: Heterogeneous effects of Christmas Lottery - Intended household durable consumption

Panel G.1a restricts the sample to employed individuals (blue circled line) and unemployed or non-active individuals (gray diamond line). Panel G.1b to households with monthly household income below or equal to 2700 euros (blue circled line) and above 2700 euros (gray diamond line). Panel G.1c plots responses for individuals aged between 18-34 years old (blue circled line), aged between 35-55 years old (gray diamond line) and panel aged above 55 years old (red star line). Panel G.1d plots responses for individuals with high school degree or lower (blue circled line), with some college degree (gray diamond line), and with college degree or higher (red star line). Standard errors are robust and clustered at the province level

H Sentimental Effects of Lottery Wins in Expansions vs Recessions Periods

In this section we explore how the effects of lottery shocks on consumer sentiment depend on the state of the economy. In particular, we study whether the effect of receiving random lottery wins on consumer confidence becomes stronger during recessions. To this end, we estimate our baseline specification in a subsample where the unemployment rate in Spain is higher than 20% and in another subsample where the unemployment rate in Spain is lower than that threshold.

Table H.1 presents estimates of Equation 4 for the answers related to future household income, future employment given the economic situation of Spain, and future conditions in the Spanish economy when unemployment in Spain is high (columns (1)-(3)) and when it is low (columns (4)-(6)).

The positive effect of lottery wins on consumer confidence is significantly larger during periods of high unemployment. Households living in winning provinces become very confident about their future household income, employment prospects and the Spanish economy in times of high unemployment. By contrast, there is almost no evidence suggesting that receiving lottery shocks in the region affects positively households' sentiment about their future income during periods of low unemployment.

Table H.1: Survey evidence on the effects of the Spanish Christmas Lottery on consumer sentiment: high vs low unemployment rate periods

	(1)	(2)	(3)	(4)	(5)	(6)
	High unemployment rate			Low unemployment rate		
	Future Household Income	Future Employment Prospects	Future Spanish Economy	Future Household Income	Future Employment Prospects	Future Spanish Economy
Lottery Prize Dummy	0.177*** (0.041)	0.254*** (0.058)	0.242*** (0.063)	0.081 (0.073)	0.134* (0.080)	0.108 (0.077)
Lottery Expenditures	78.861*** (8.407)	90.559*** (9.935)	94.475*** (8.948)	-5.940 (6.370)	-58.883*** (14.027)	-61.964*** (14.036)
Month × Province Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Individual Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Observations	46873	44438	46042	66078	61648	63399
Pseudo R^2	0.039	0.022	0.022	0.049	0.019	0.020

Columns (1)-(6) provide results from an ordered probit where the dependent variable is question Q1F-Q3F. *Lottery Prize Dummy* equals 1 if awarded Christmas lottery tickets were distributed in that province. *Lottery Expenditures* are expressed in 1000 euros per capita. Robust standard errors clustered by province in parentheses. The sample includes information from consumer confidence monthly surveys conducted by the Spanish Center for Sociological Research (CIS) between April 2013 and January 2020

I Province-level Regressions

I.1 First-stage F-statistics ICE and ICC

Table I.1: F-statistics of the first-stage regression of Christmas Lottery prizes on consumer confidence. Sample 2011M11-2020M1

Horizon (months)	F statistics for ICC	F statistics for ICE
$h = 0$	42.7	10.8
$h = 1$	23.6	65

I.2 State-dependent Response of the Aggregate Variables

As mentioned in the main text, after a lottery shock, both sentiment indices for current and future economic conditions significantly increase for up to one year. In what follows we adapt the empirical model to account for possible state-dependency of the transitory shocks by allowing for time-varying coefficients according to the state of the business cycle. In particular, we use the following state-dependent LP specification for any $h \geq 0$:

$$\begin{aligned} S_{j,t+h} &= I_{t-1} [\alpha_{A,j,h} + \beta_{A,h} \text{LotteryPrize}_{j,t} + \psi_{A,h}(L)X_{j,t}] \\ &+ (1 - I_{t-1}) [\alpha_{B,j,h} + \beta_{B,h} \text{LotteryPrize}_{j,t} + \psi_{B,h}(L)X_{j,t}] + \varepsilon_{j,t+h} \end{aligned} \quad (5)$$

where $X_{j,t}$ is all control variables included in the linear specification in Equation (1) (i.e. provincial lottery expenditures, unemployment rate and CPI prices, as well as the overall unemployment rate and CPI for Spain), $\psi(L)$ is the lag operator and I_t is an indicator variable of the state of the economy when the lottery shock hits. This dummy variable equals 1 (i.e $I_t = 1$) whenever the economy enters a state in which the unemployment rate in Spain exceeds 20% which roughly corresponds to recessionary

periods. When we distinguish between expansionary and recessionary periods, the responses of both ICC and ICE to lottery wins are strong and statistically significant the first few months after the win during recessions. During expansions, the ICC reaction which measures sentiment about economic current conditions does not respond significantly on impact but improves significantly with a lag, along with the improvements in the real economy, while expectations about future conditions, measured by the ICE, increase significantly on impact and remain uplifted up to one year after the win.

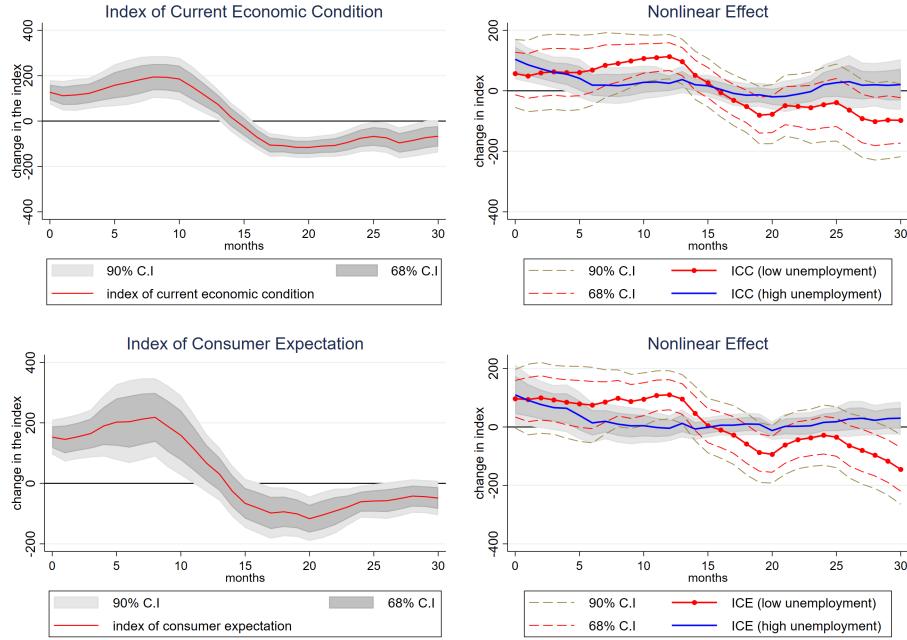


Figure I.1: Effect of Christmas Lottery Prizes on the Index of Current Economic Condition and the Index of Consumer Expectation

Impulse responses to Christmas Lottery prizes. The left panel presents the responses in the linear LP model (1), while the right panel presents the responses in the state-dependent LP model. The solid blue line are responses in high-unemployment state and the dotted red line are responses in low-unemployment state. To increase the representativeness of the indices at the regional level, we focus on data with at least 25 respondents in each province and, for each question, we use responses for two consecutive months. Christmas Lottery prizes are net of taxes and measured in 1000 euros per capita. The sample period covered is 2011M11-2020M1. Standard errors are robust and clustered at the province level and response functions are smoothed by centered moving average.

On the right-hand side of Figure I.2 we plot the IRFs to lottery shocks in periods of high unemployment (continuous blue lines) and low unemployment (circled red lines). The beneficial effect of the lottery win on unemployment is significantly larger and more persistent during recessions, while CPI prices react similarly in the two states.

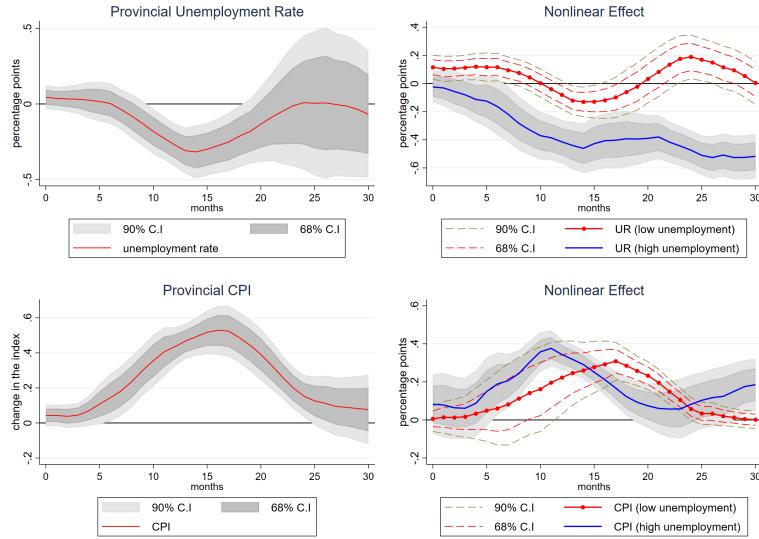


Figure I.2: Effect of Christmas Lottery prizes on unemployment rate and CPI

Impulse responses to Christmas Lottery prizes. The left panel presents the responses in the linear LP model (1), while the right panel presents the responses in the state-dependent LP model, where the solid blue line are responses in high-unemployment state and the dotted red line are responses in low-unemployment state. Christmas Lottery prizes are net of taxes and measured in 1000 euros per capita. The sample period covered is 2005M5–2020M1. Standard errors are robust and clustered at the province level and response functions are smoothed by centered moving average.

I.3 Alternative De-trending Methods: growth rates and HP filtered series

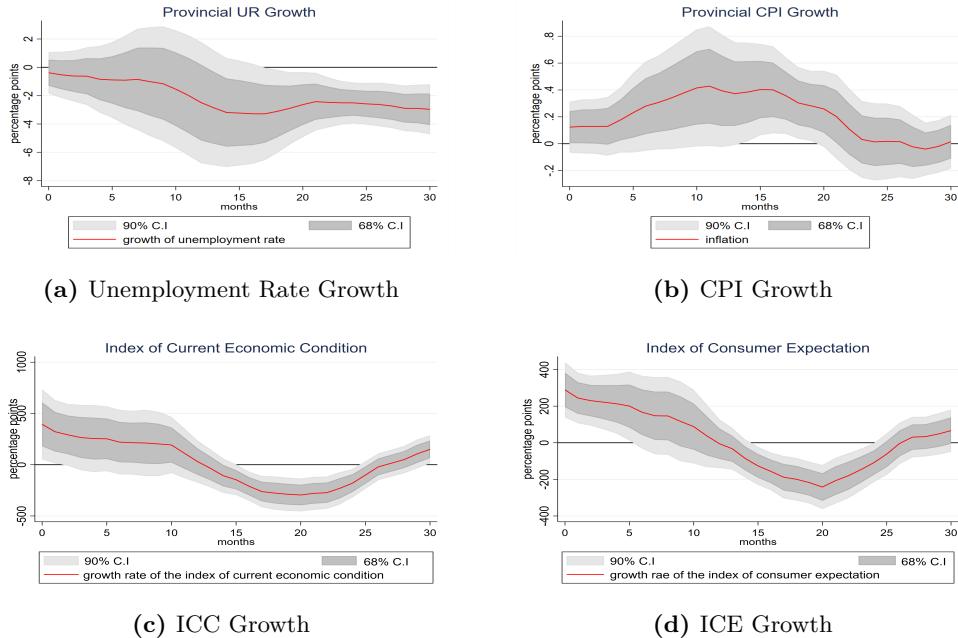


Figure I.3: Effects of Christmas Lottery Prizes on the Growth Rate of Unemployment Rate, CPI, and Consumer Sentiment Indices

Impulse responses to Christmas Lottery prizes using the LP model (1). Data are in growth rates instead of a fourth-order polynomial. Christmas Lottery prizes are net of taxes and measured in 1000 euros per capita. The sample period covered and indices are as in the baseline regression.

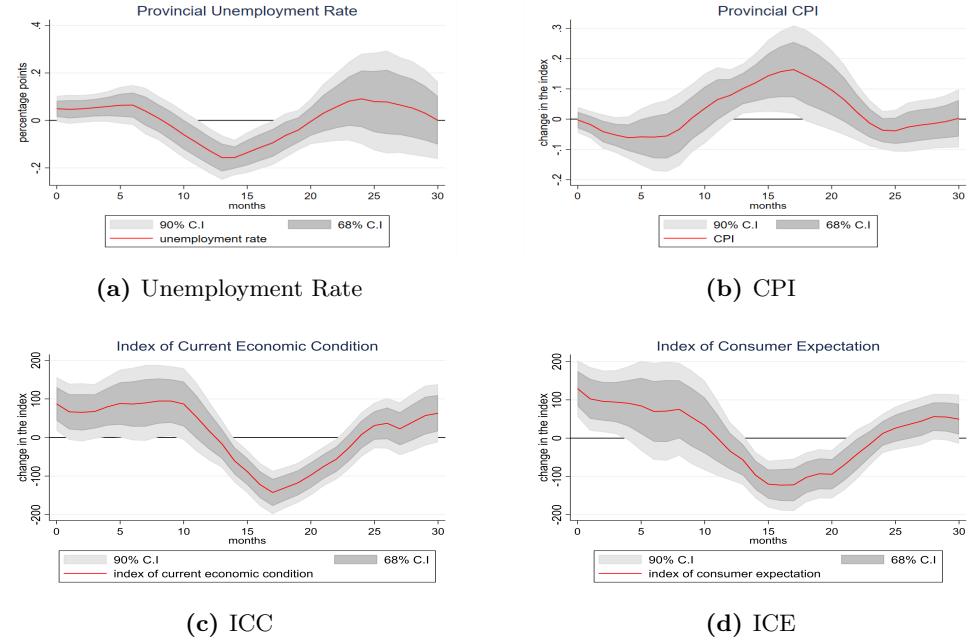


Figure I.4: Effects of Christmas Lottery Prizes on Unemployment Rate, CPI, and the Sentiment Indices.

Impulse responses to Christmas Lottery prizes. The graph shows the responses in the linear LP model (1). Data has been detrended using Hodric Prescott filter instead of a fourth order polynomial. Christmas Lottery prizes are net of taxes and measured in 1000 euros per capita. The sample period covered is 2005M5 - 2020M1 for UR and CPI and 2011M11 - 2020M1 for the sentiment indices. To increase the representativeness of the indices at the regional level, we focus on data with at least 25 respondents in each province and we use responses for two consecutive months. Standard errors are robust and clustered at the province level and response functions are smoothed by centered moving average.

I.4 Alliterative Lottery Prize Variable Definition: Net-of-Expenditures Prizes

In this section, we investigate whether our results are sensitive to the treatment effect considered. In the main text, we report results where the treatment effect is lottery wins after taxes. Here the treatment effect is the lottery wins net of lottery expenditures.

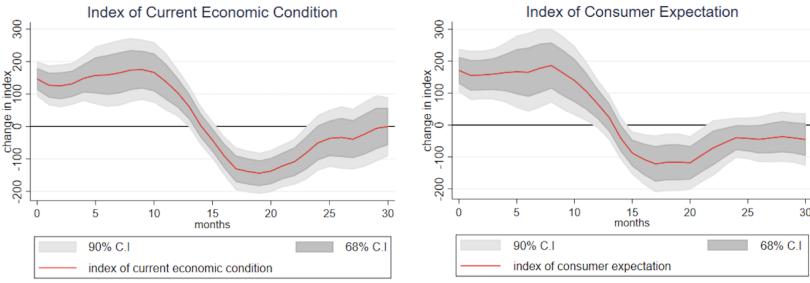


Figure I.5: Effect of Christmas Lottery Prizes (net of lottery expenditures) on Index of Current Economic Condition and Index of Consumer Expectation

Impulse responses to Christmas Lottery prizes (net of lottery expenditures). To increase the representativeness of the indices at the regional level, we focus on data with at least 25 respondents in each province and we use responses for two consecutive months. Christmas Lottery prizes are net of lottery expenditures and measured in 1000 euros per capita. The sample period covered is 2011M11-2020M1. Standard errors are robust and clustered at the province level and response functions are smoothed by centered moving average.

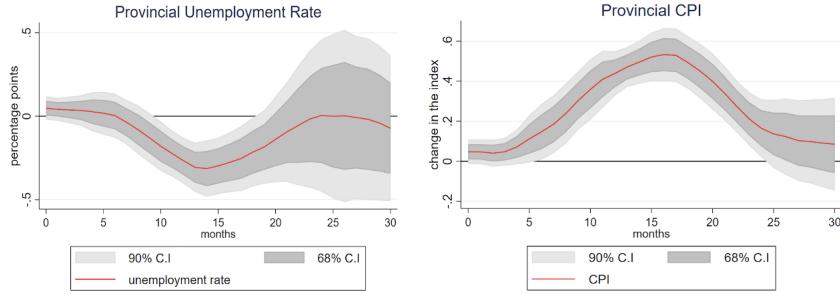


Figure I.6: Effects of Christmas Lottery Prizes (net of lottery expenditures) on Unemployment Rate and CPI

Impulse responses to Christmas Lottery prizes (net of lottery expenditures). Christmas Lottery prizes are net of lottery expenditures and measured in 1000 euros per capita. The sample period covered is 2005M5 - 2020M1. Standard errors are robust and clustered at the province level and response functions are smoothed by centered moving average.

I.5 Alternative CPI and Labor Market Variables Definitions

In the baseline regressions, we control for the aggregate unemployment and CPI in Spain in order to evaluate the effects of the shocks on unemployment and CPI at the province level. Here we present results when instead we regress relative unemployment, i.e., province unemployment/average unemployment in Spain and relative CPI, defined similarly on the lottery wins

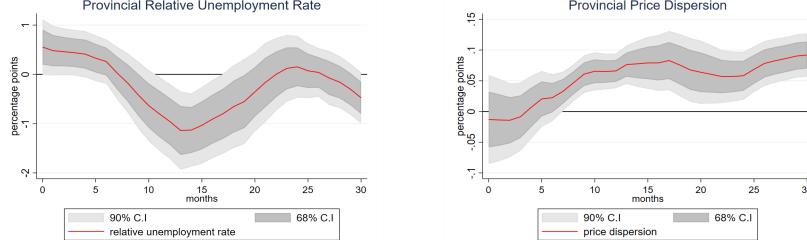


Figure I.7: Effects of Christmas Lottery Prizes on Relative Unemployment rate and Relative CPI

Impulse responses to Christmas Lottery prizes. The graph show responses in the linear LP model (1). Relative unemployment is defined as provincial unemployment over total unemployment. Similarly relative CPI is defined as the ratio of provincial CPI over Spain's CPI.

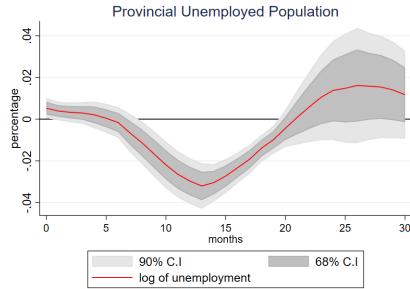


Figure I.8: Effect of Christmas Lottery Prizes on Log of Total Unemployment

Impulse responses to Christmas Lottery prizes the linear LP model (1). Given the discrepancy of the unemployment rate data, we present here results of the same set of regressions as in Equation (1) for the log of the total number of unemployed population instead of the unemployment rate.

I.6 Effects of Lottery Shocks in Sub-sample 2011-2020

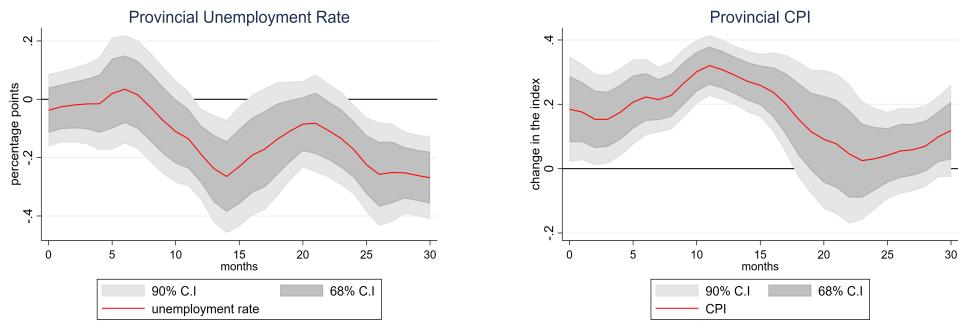


Figure I.9: Effects of Christmas Lottery Prizes on Unemployment Rate and CPI

Impulse responses to Christmas Lottery prizes. The graph shows the responses in the linear LP model (1). Christmas Lottery prizes are net of taxes and measured in 1000 euros per capita. The sample period covered is 2011M1 - 2020M1. Standard errors are robust and clustered at the province level and response functions are smoothed by centered moving average.

I.7 Effects of Lottery Wins on Other Variables at the Province Level

Due to limited data availability, we were able to examine the responses of durable consumption to the lottery shocks at the individual level. Data on non-durable consumption at the regional level are not publicly available. To investigate how lottery wins affect non-durable consumption we have used two proxies for a specific type of non-durable consumption: retail sales and restaurants.

First, we have collected data from Google searches for restaurants in Google Trends since 2011 at the Spanish regional level and investigated using the same specification as in Equation (1) how the winning of the lottery affects searches for restaurants in the winning provinces. The underlying assumption behind this exercise is that people that intend to go to restaurants search more for restaurants online in the winning regions. Results are presented in Figure I.10 where we plot the IRFs for the number of Google searches in the winning provinces relative to the total searches for restaurants in Spain. Restaurant searches increase by more than two percentage points on average on impact and significantly after the lottery rewards for seven months.

Next, the national statistical institute (INE) collects monthly data for the General Retail Trade Index at constant prices at the autonomous region level. We have investigated how this index changes after lottery wins for seven communities that have a unique province. The bottom panel of Figure I.10 presents the estimated effect of lottery wins on the Retail Trade Index in those provinces.¹⁴ The retail trade index increases significantly after 17 months in the winning provinces.



Figure I.10: Effects of Christmas Lottery prizes on the relative number of Google searches for restaurants and retail sales

The left panel presents the responses in the linear LP model (1) for the number of Google searches, while the right panel presents the response of the index for sales. The relative number of Google searches is defined as the ratio of the number of Google searches in each province to the total Google searches for restaurants in Spain for the sample period 2011M1-2020M1. The sample period for the retail trade index is 2005M5-2020M1 and the reported responses are based on seven communities with a unique province. Standard errors are robust and clustered at the province level and response functions are smoothed by a centered moving average.

Next, following [Bagues and Esteve-Volart \(2016\)](#) and [Kent and Martinez \(2020\)](#), we investigate the effects of lottery wins on house prices. [Bagues and Esteve-Volart \(2016\)](#) report an insignificant increase in house prices at all horizons, while [Kent and Martinez \(2020\)](#) document a significant increase in rural land values and home sales per capita two years after the shock.

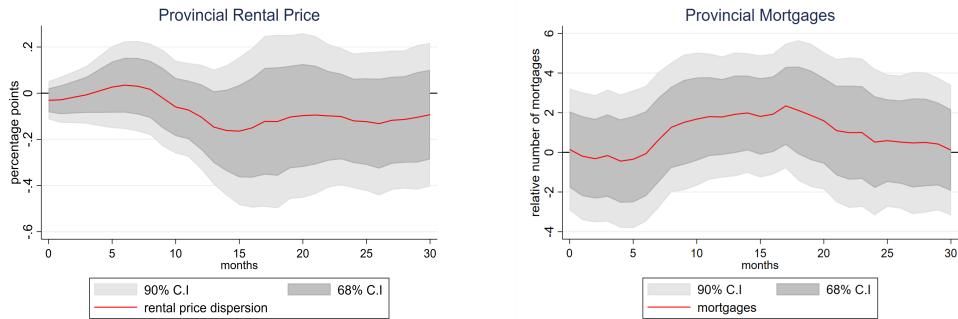


Figure I.11: Effect of Christmas Lottery prizes on rental prices and number of mortgages

Impulse responses to Christmas Lottery prizes. The left panel presents the responses of provincial rental prices to lottery wins, while the right panel presents those of provincial mortgages defined as the ratio of the number of provincial mortgages to the average number of mortgages in Spain. The sample period covered is 2005M5-2020M1. Standard errors are robust and clustered at the province level and response functions are smoothed by centered moving average.

¹⁴Details about those communities and their response to lottery wins are provided in the next section.

Since we do not have readily available monthly data on house and rental prices at the province level we impute monthly rental prices by using the rental housing price index used to compute monthly provincial CPI for all goods and services. We also have available monthly data on the number of mortgages constituted within a province from INE (*Instituto Nacional de Estadística*). Figure I.11 displays the IRFs of the level of rental prices and the number of mortgages relative to the average number of mortgages in Spain to the lottery win. Contrary to Kent and Martinez (2020), we detect no effect of the shock on rental prices or mortgages at any short horizon.

Bagues and Esteve-Volart (2016), using annual data, have shown that lottery wins have a temporary marginally significant impact on unemployment and house prices. We report a more substantial drop in unemployment and no significant rise in house prices. Yet, we also find that lottery wins also push upwards the provincial CPI, while they do not report any significant price effects. Bermejo et al. (2021), using also annual data, report a higher firm creation in winning provinces and, in particular, during recessions. Although the results we present are compatible with theirs, the mechanism we put forward is different. The sentimental responses to the lottery win indicate that a demand effect is clearly operative.

I.8 Effects of Lottery Shocks on Long vs Short Run Contracts and Labor Market Tightness

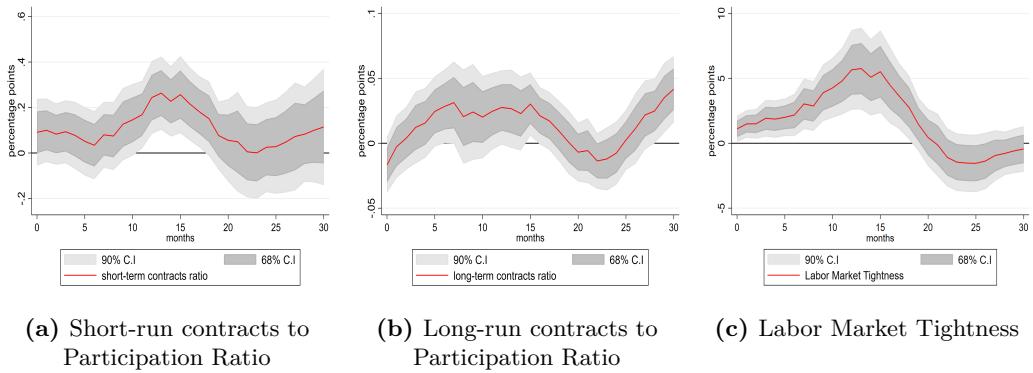


Figure I.12: Effects of Christmas Lottery Prizes on Labor Contracts by Contract Duration and on Labor Market Tightness

Impulse responses to Christmas Lottery prizes in the LP model (1). Christmas Lottery prizes are net of taxes and measured in 1000 euros per capita. The sample period is 2005M5 - 2020M1. Labor market tightness is defined as the ratio of total contracts per number of unemployed. Standard errors are robust and clustered at the province level and response functions are smoothed by centered moving average.

J Robustness Exercises

J.1 Extending the Spanish Lottery Data: El Niño Lottery

The *El Niño* lottery (*Sorteo de 'El Niño'*) is the second most popular national lottery game held in Spain. This lottery event was institutionalized in 1877 for the first time by the king of Spain Alfonso

XII, given its popularity among Spaniards. The draw takes place on the 6th of January¹⁵ just 15 days after the Christmas Lottery event, and is also organized by the National Lottery and Gambling Agency (*Sociedad Estatal de Loterías y Apuestas del Estado*). El Niño tickets have also five-digit numbers and are available at a cost of €200. Each of the tickets is split into 10 identical sub-tickets (or fractions), known as decimos, sold for €20 each. Similar to what occurs with the Christmas lottery, it is also very common to buy a share of a decimo, through local associations, workplaces, sport teams, etc.

Lottery tickets are sold in official lottery outlays located throughout the country. Out of the total revenues, 70% of the ticket sales are distributed as prizes while the remaining 30% is devoted to commissions paid to outlets, internal revenue, and administration costs. There are three main prizes: the top prize, also popularly known as *El Gordo de El Niño*, which awards to each fraction holder of the winning number €10,000 per euro played, and the second and third prize which reward winners with €3,750 and €1,250 per euro played, respectively. This means that all holders of a decimo of the top prize winning number would win €200,000. The individuals holding a decimo of the second or third prize winning number would win €75,000 or €25,000, respectively. The top prizes represent around half of the total payout assigned to prizes. There are also several smaller prizes ranging from €60 to €1 per euro played. Usually one lottery outlay sells most (if not all) of the series of a single number. The El Niño lottery constitutes a collective game in the same way the Christmas lottery does: Spaniards like to share decimos with family, friends and co-workers, especially if they were not lucky enough to win any Christmas lottery prize. Again, this implies not only that the winners of a lottery number usually live in the same area (province or village) but that the main top prizes end up being distributed as smaller prizes to several individuals living in the same location.

J.2 Descriptive statistics

Data on El Niño lottery gross rewards and expenditures by province has been provided by the National Lottery and Gambling Agency (*Sociedad Estatal de Loterías y Apuestas del Estado*) for the time period January 2006-January 2020. Differently from the Christmas Lottery event, we input El Niño lottery prizes in January, that is, the very same month in which the gambling event takes place, as the draw is held at the beginning of the month (6th of January). Expenditures on El Niño Lottery are in turn inputted in December¹⁶. As in the Christmas Lottery case, we do not observe the remaining several smaller prizes that are also awarded in El Niño Lottery. We also compute the after-tax revenue derived from the top lottery prizes and obtain a measure of net lottery-prize revenue per capita. Table J.1 presents descriptive statistics for El Niño Lottery at the province level. Panel B summarizes the El Niño lottery expenditure and top prizes per capita in the winning provinces. The average expenditure per capita in those Spanish provinces is around €15, which is substantially lower than the €61 that on average Spaniards spent on Christmas Lottery during the same period.

¹⁵ Before 1999 the draw used to take place on the 5th of January and it was moved to the 6th of January in 2000

¹⁶ We have inputted El Niño lottery expenditures in December for computational purposes although we have also considered the case in which these expenditures are inputted in January and results remain unaltered. This is somewhat intuitive since what matters for the identification of the causal effect of lottery prizes on consumer sentiment and macroeconomic outcomes is to control for the amount of lottery expenditures at the province level (high provincial lottery expenditures increase the odds of winning the lottery for that province)

Table J.1: Summary Statistics - El Niño Lottery data at the province level. Top prizes and expenditures per capita are computed using data from May 2005 - Jan 2020. Top prizes (% of GDP) are computed using data from 2005 to 2018

	Mean (1)	St. dev. (2)	Min. (3)	Max. (4)	N (5)
A: El Niño Lottery: all provinces					
Top prizes pc (in euros)	2.92	32.53	0.00	832.47	750
Top prizes (% of GDP)	0.01	0.16	0.00	3.84	650
Expenditure pc (in euros)	16.96	7.25	5.05	53.25	750
B: El Niño Lottery: winning provinces					
Top prizes pc (in euros)	8.85	56.29	0.02	832.47	247
Top prizes (% GDP)	0.05	0.29	0.00	3.84	194
Expenditure pc (in euros)	15.48	5.16	5.05	47.16	247
C: El Niño Lottery: winning provinces with maximum prize pc					
Top prizes pc (in euros)	108.88	208.21	10.03	832.47	15
Top prizes (% GDP)	0.54	1.03	0.03	3.84	13
Expenditures pc (in euros)	23.20	11.83	9.28	53.07	15

The average lottery prize is around €9, which is also lower than the average Christmas lottery prize per capita, €42. Panel C of Table 30 reports summary statistics for those provinces that were awarded the maximum prize per capita for our sample period. In these winning provinces, the average top lottery prize per capita on El Niño lottery goes up to €109 with a standard deviation of €208.

If the Christmas lottery constitutes the most popular lottery event in the country, El Niño lottery should be considered the second most popular one. Given the proximity in time of these two lottery events (only 15 days between the two draws), those provinces where the winning tickets are sold experience relatively large lottery shocks in a short time window between the end of each year and the beginning of the next one. It is precisely this proximity in time between these two lottery events coupled with the common traits it shares with the Christmas lottery (syndicate game, popularity), that has motivated us to construct broader lottery rewards and expenditures per capita variables and check whether our results are robust to including El Niño lottery data in our sample. We now consider the lottery prize and expenditures variable as the sum of the main prizes of both the Christmas and El Niño lottery and the sum of their corresponding expenditures, respectively, for the time period December 2005 - January 2020. As a result, we are able to compare the effects of windfall gains coming from these two lottery events on consumer sentiment and macroeconomic outcomes in the winning provinces versus non-winning provinces in the cleanest possible way¹⁷. Figures J.1 and J.3 replicate the provincial-level results and show that results are robust to considering both lottery events. Tables J.2 to J.5 and Figure J.2 show the individual-level main results when the lottery wins and expenditures variable compound the Christmas and El Niño lottery events. Results remain unaltered except for Table J.2 where the coefficients for the lottery prize dummy on consumer sentiment about their current household income and about the current and future evolution of the Spanish economy are no longer significant.

¹⁷For example, in some years of the sample El Niño lottery randomly allocates income to some Spanish provinces that the Christmas lottery does not and viceversa. Although El Niño lottery tends to distribute a lower amount of income per capita in form of awards to the lucky provinces, still this could drive relevant effects in terms of consumer sentiment, prices, and labor market outcomes

J.3 Effects on Aggregate Sentiment Indices, Controlling for El Niño lottery

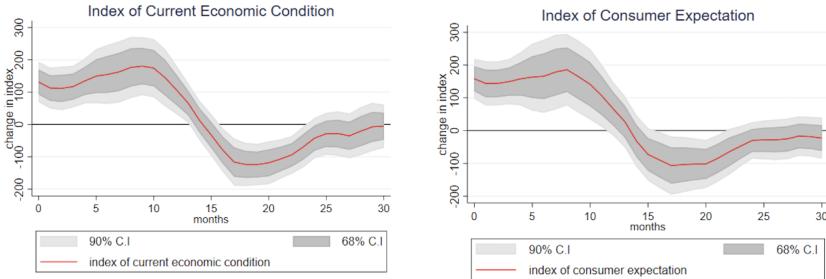


Figure J.1: Effect of Christmas Lottery and El Niño Prizes on the Index of Current Economic Condition and the Index of Consumer Expectation

The graph shows the responses in the linear LP model (1). We focus on data with at least 25 respondents in each province and, for each question, we use responses for two consecutive months. Christmas Lottery and El Niño prizes are net of taxes and measured in 1000 euros per capita. The sample period covered is 2011M11-2020M1. Standard errors are robust and clustered at the province level and response functions are smoothed by centered moving average.

J.4 Individual-level Results: Controlling for El Niño lottery

Table J.2: Survey evidence on the effects of Spanish Christmas Lottery and El Niño Lottery on consumer sentiment

	(1) Future Household Income	(2) Future Employment Prospects	(3) Future Spanish Economy
Lottery Prize Dummy	0.112** (0.051)	0.024 (0.063)	0.099* (0.058)
Lottery Expenditures	13.397*** (2.603)	-14.421*** (2.214)	-11.382*** (2.358)
Month × Province Dummies	Yes	Yes	Yes
Individual Characteristics	Yes	Yes	
Observations	112951	106086	109441
Pseudo R^2	0.041	0.014	0.014

Columns (1)-(6) provide results from an ordered probit where the dependent variable is Q1F-Q3F. *Lottery prize dummy* takes value 1 if awarded Christmas and El Niño tickets were distributed in that province. *Lottery expenditures* are expressed in 1000 euros per capita. Robust standard errors clustered by province in parentheses. The sample includes information from consumer confidence monthly surveys conducted by the Spanish Center for Sociological Research between April 2013 and January 2020. Significance * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table J.3: Heterogeneous effects of Spanish Christmas Lottery and El Niño Lottery on consumer sentiment - future household income

	(1) Future Household Income	(2) Future Household Income	(3) Future Household Income	(4) Future Household Income	(5) Future Household Income
Lottery Prize Dummy	0.129** (0.064)	0.125** (0.053)	0.143** (0.059)	0.123** (0.059)	0.108** (0.053)
Lottery Expenditures	13.395*** (2.603)	13.397*** (2.604)	13.392*** (2.602)	13.392*** (2.603)	13.401*** (2.604)
Age×Lottery	-0.005 (0.009)				
Gender×Lottery		-0.025 (0.021)			
Education×Lottery			-0.005 (0.005)		
Household Income×Lottery				-0.005 (0.011)	
Employment×Lottery					0.008 (0.028)
Month × Province Dummies	Yes	Yes	Yes	Yes	Yes
Individual Characteristics	Yes	Yes	Yes	Yes	Yes
Observations	112951	112951	112951	112951	112951
Pseudo R^2	0.041	0.041	0.041	0.041	0.041

Columns (1)-(5) provide results from an ordered probit. Robust standard errors clustered by province in parentheses. The sample includes information consumer confidence monthly surveys conducted by the Spanish Center for Sociological Research (CIS) between April 2013 and January 2020. Significance * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table J.4: Heterogeneous effects of Spanish Christmas Lottery and El Niño Lottery on consumer sentiment - future employment prospects

	(1) Future Employment Prospects	(2) Future Employment Prospects	(3) Future Employment Prospects	(4) Future Employment Prospects	(5) Future Employment Prospects
Lottery Prize Dummy	0.115 (0.073)	0.006 (0.064)	0.118* (0.070)	0.085 (0.065)	0.044 (0.066)
Lottery Expenditures	-14.424*** (2.215)	-14.420*** (2.214)	-14.435*** (2.212)	-14.453*** (2.212)	-14.440*** (2.211)
Age×Lottery	-0.026** (0.011)				
Gender×Lottery		0.037 (0.024)			
Education×Lottery			-0.016*** (0.005)		
Household Income×Lottery				-0.026** (0.011)	
Employment×Lottery					-0.038*
Month × Province Dummies	Yes	Yes	Yes	Yes	Yes
Individual Characteristics	Yes	Yes	Yes	Yes	Yes
Observations	106086	106086	106086	106086	106086
Pseudo R^2	0.014	0.014	0.014	0.014	0.014

Columns (1)-(5) provide results from an ordered probit. Robust standard errors clustered by province in parentheses. The sample includes information consumer confidence monthly surveys conducted by the Spanish Center for Sociological Research (CIS) between April 2013 and January 2020. Significance * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table J.5: Heterogeneous effects of Spanish Christmas Lottery and El Niño Lottery on consumer sentiment - future Spanish economy

	(1) Future Spanish Economy	(2) Future Spanish Economy	(3) Future Spanish Economy	(4) Future Spanish Economy	(5) Future Spanish Economy
Lottery Prize Dummy	0.138** (0.068)	0.091 (0.059)	0.192*** (0.061)	0.168*** (0.060)	0.103* (0.059)
Lottery Expenditures	-11.384*** (2.359)	-11.382*** (2.358)	-11.397*** (2.356)	-11.417*** (2.357)	-11.385*** (2.354)
Age \times Lottery	-0.011 (0.010)				
Gender \times Lottery		0.015 (0.025)			
Education \times Lottery			-0.016*** (0.004)		
Household Income \times Lottery				-0.030*** (0.011)	
Employment \times Lottery					-0.007 (0.024)
Month \times Province Dummies	Yes	Yes	Yes	Yes	Yes
Individual Characteristics	Yes	Yes	Yes	Yes	Yes
Observations	109441	109441	109441	109441	109441
Pseudo R^2	0.014	0.014	0.014	0.014	0.014

Columns (1)-(5) provide results from an ordered probit. Robust standard errors clustered by province in parentheses. The sample includes information consumer confidence monthly surveys conducted by the Spanish Center for Sociological Research (CIS) between April 2013 and January 2020. Significance * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

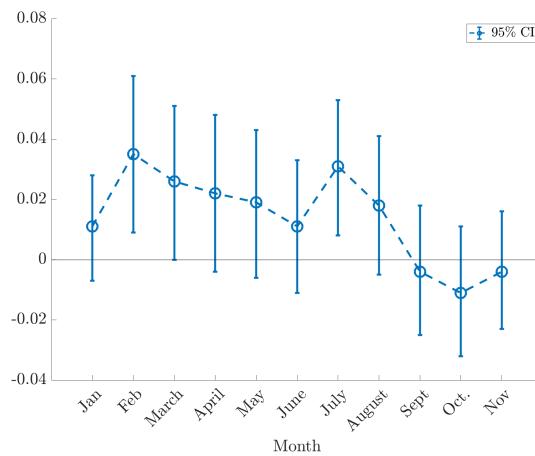


Figure J.2: Effects of Christmas and El Niño Lottery on intended durable consumption

This figure plots the marginal effects associated with the β_s 's coefficients and their 95% CI from estimating Equation (3) in the main text using an ordered probit model. The dependent variable is FDC. Standard errors are robust and clustered at the province level

J.5 Province-level Results: Controlling for El Niño lottery

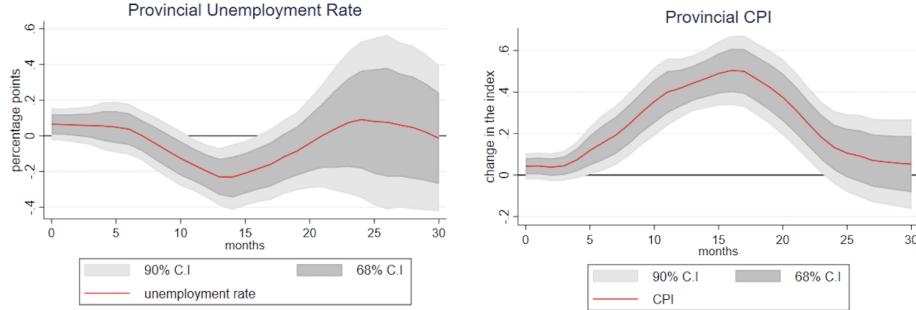


Figure J.3: Effects of Christmas Lottery and El Niño Lottery Prizes on Unemployment Rate and CPI

IRFs from the LP model (1) to the sum of Christmas Lottery prizes and El Niño Lottery prizes. Christmas Lottery and El Niño prizes are net of taxes and measured in 1000 euros per capita. The sample period covered is 2005M5 - 2020M1. Standard errors are robust and clustered at the province level and response functions are smoothed by centered moving average.

J.6 Regional Spillover Effects of Lottery Winnings

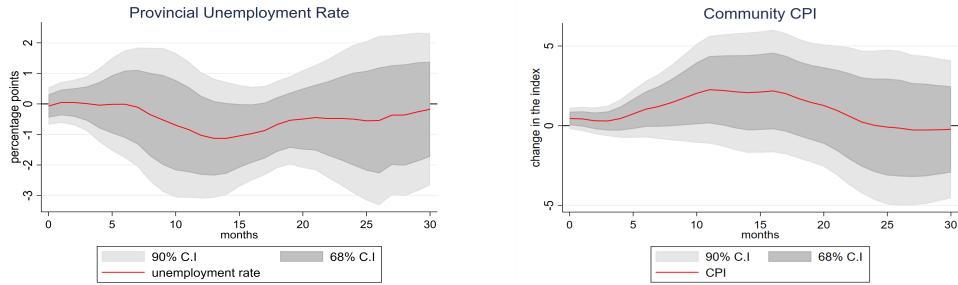


Figure J.4: Effect of Christmas Lottery Prizes on the Weighted Average of Unemployment Rate and CPI in the Autonomous Community

The graph shows the responses in the LP model (1). The sample period covered is 2005M5-2020M1. Standard errors are robust and clustered at the province level and response functions are smoothed by centered moving average..

J.7 Aggregating Data in Quarters

Next, we aggregate our data at quarterly frequency as a simple average of monthly data in each quarter. Due to the random sampling of the household sentiment survey, each quarterly data will represent a higher number of questioned households in each province for each quarter. Figure J.5 shows a similar effect on the macroeconomic aggregates of the regional economy. The confidence bands on the reaction of sentiments, although still above zero at the 68 percent confidence level, are wider. This is because, as we have seen in the analysis at the monthly frequency, the confidence responses are more significant in the first six months after the lottery shock and aggregation at the quarterly level distorts the significance of this short-run effect. For the same reason, also the size of the responses is distorted and when aggregating the data at quarterly frequency the effect of the shock in both macroeconomic aggregates and sentiment indices appears to be smaller.

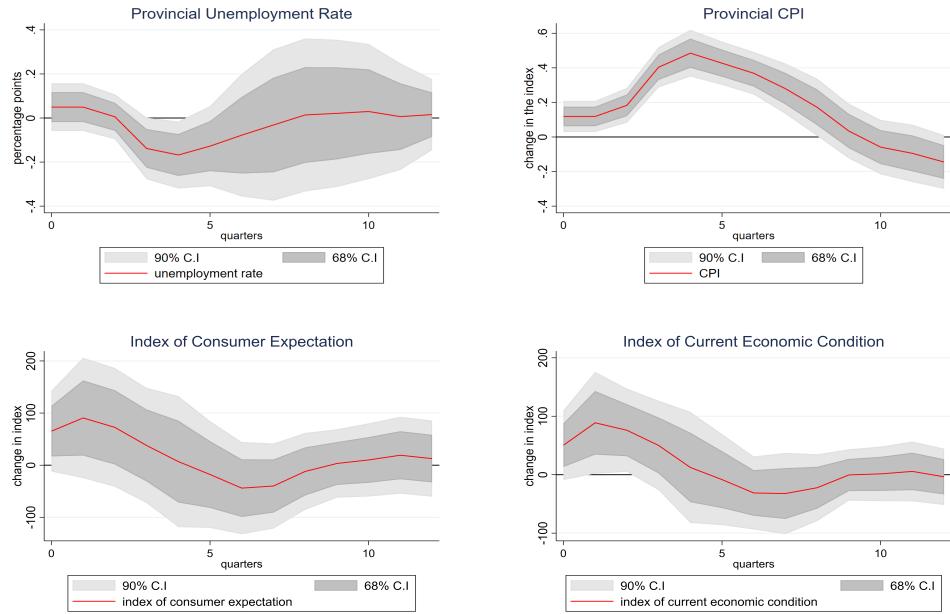


Figure J.5: Effects of Christmas Lottery Prizes on Unemployment rate, CPI and Consumer Sentiment Indices - Aggregating data in quarters

Impulse responses to Christmas Lottery prizes. The graph shows the responses in the LP model (1). Data has been transformed from monthly to quarterly frequency. Thus, the sample period is 2005Q2-2020Q1. To increase the representativeness of the indices at the regional level, we focus on data with at least 25 respondents in each province and, for each question, we use responses for two consecutive months. Standard errors are robust and clustered at the province level and response functions are smoothed by centered moving average.

J.8 Dummy for Lottery Shocks

In the analysis so far, we have used a continuous value for reward per capita to explore the macroeconomic effects of lottery winnings. Figure J.6 shows that if we do not account for the magnitude of the reward and just define a dummy for provinces that have won at least one euro per capita in the lottery, the effect on unemployment and consumer sentiments remains significant.

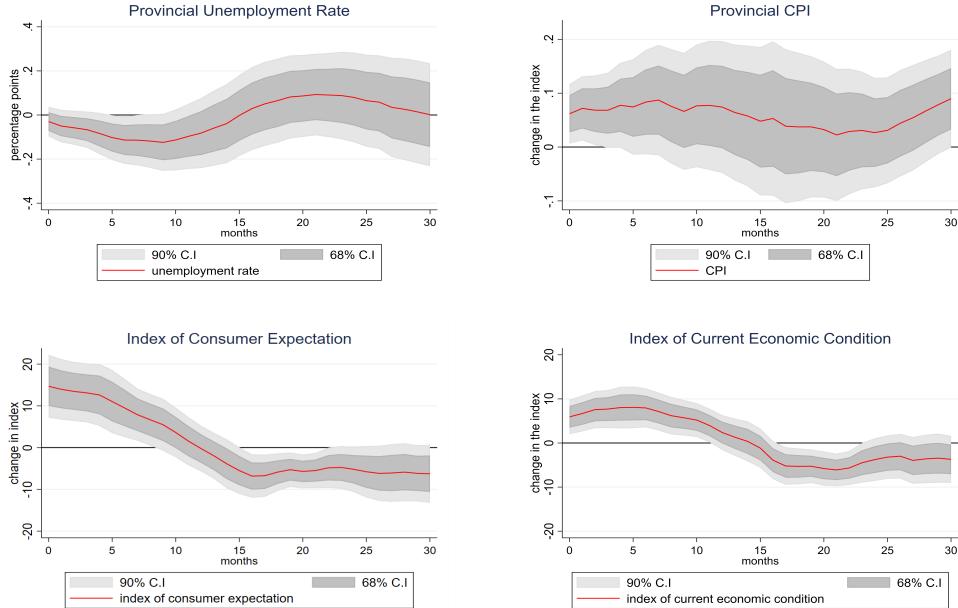


Figure J.6: Effects of Christmas Lottery Prizes on Unemployment rate,CPI and Consumer Sentiment Indices - Dummy Variable

Impulse responses to Christmas Lottery prizes. The graph shows the responses in the LP model (1) when the Christmas Lottery variable is defined as a dummy variable that takes value of 1 if the province is awarded at least one euro per capita with any of the top prizes. To increase the representativeness of the indices at the regional level, we focus on data with at least 25 respondents in each province and, for each question, we use responses for two consecutive months. The sample period is 2011M11-2020M1. Standard errors are robust and clustered at the province level and response functions are smoothed by centered moving average.

This result is important since it implies that some reward, albeit small, might still stimulate positive sentiment among the individuals in the winning province and affects household's perception about economic conditions and, thus, can have positive real effects¹⁸.

J.9 Lottery Prize Outliers

J.9.1 Large Lottery Prizes

One might worry that our results are driven by a few outliers that contaminate the effects of lottery prizes on unemployment or sentiment. To alleviate such concerns, we have dropped all the rewards higher than 1000 per capita and repeated our benchmark regressions. Figure J.7 shows that the effect on unemployment and sentiment indices remains significant and that it is not driven by some big rewards.

¹⁸Given that our mechanism does not work through the money transfer but rather through the good news about large money drops in the region, it is not surprising that if we would run regressions where we would consider lottery rewards per capita as a continuous variable in the individual regressions, we would get small and insignificant coefficients. Those regressions would capture how much a marginal change in lottery awards per capita changes consumer sentiment. Instead, we are interested in studying how the fact that a province won the lottery affects consumer sentiment and not the amount of per capita lottery prize transfers per se.

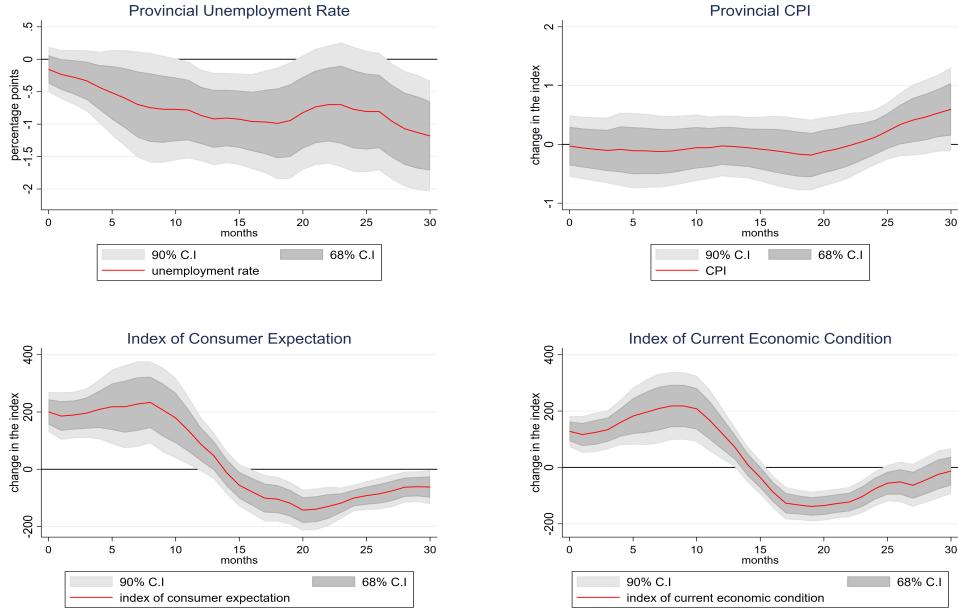


Figure J.7: Effects of Christmas Lottery Prizes on Unemployment rate, CPI and Consumer Sentiment Indices - Outliers

Impulse responses to Christmas Lottery prizes. The graph shows the responses in the LP model (1) when we omit Christmas Lottery prizes higher than 1000 euros per capita. To increase the representativeness of the indices at the regional level, we focus on data with at least 25 respondents in each province and, for each question, we use responses for two consecutive months. The sample period is 2005M5-2020M1. Standard errors are robust and clustered at the province level and response functions are smoothed by centered moving average.

We repeat a similar exercise also at the individual level in order to examine the sensitivity of our results with respect to the effects of the lottery shocks on household durable consumption and confidence. In this way, we make sure our results on the macroeconomic effects of lottery winnings and their propagation through consumers' confidence are not spurious.

We estimate again the baseline specification for both household intended durable consumption and consumer confidence when we drop the Lugo observation from the sample, where the lottery prize per capita in 2017 was €1191.633. Tables J.6 and Figure J.8 collect the results of these exercises. Results are robust.

Table J.6: Survey evidence on the effects of Spanish Christmas Lottery on consumer sentiment - Dropping Outliers

	(1) Future Household Income	(2) Future Employment Prospects	(3) Future Spanish Economy
Lottery Prize Dummy	0.131*** (0.037)	0.099** (0.050)	0.108** (0.043)
Lottery Expenditures	14.205*** (2.966)	-18.747*** (2.819)	-15.073*** (2.981)
Month × Province Dummies	Yes	Yes	Yes
Individual Characteristics	Yes	Yes	Yes
Observations	112938	106073	109427
Pseudo R^2	0.041	0.014	0.014

Columns (1)-(6) provide results from an ordered probit where the dependent variable is Q1F-Q3F. *Lottery prize dummy* takes value 1 if awarded Christmas lottery tickets were distributed in that province. *Lottery expenditures* are expressed in per capita terms. Robust standard errors clustered by province in parentheses. The sample includes information from consumer confidence monthly surveys conducted by the Spanish Center for Sociological Research (CIS) between April 2013 and January 2020. We drop Lugo (Christmas 2017). Significance * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

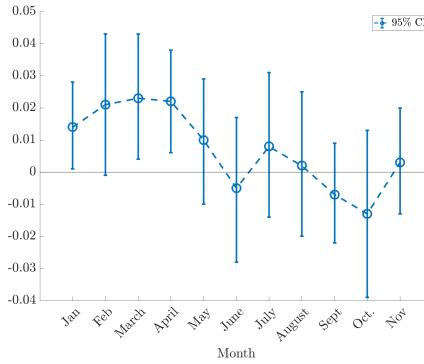


Figure J.8: Effects of Christmas Lottery on Intended Durable Consumption - Dropping Outliers

This figure plot the marginal effects associated with the β_s 's coefficients and their 95% CI from estimating Equation (3) in the main text using an ordered probit model. The dependent variable is FDC. Standard errors are robust and clustered at the province level. We drop from our sample the Christmas Lottery event in 2017 for Lugo.

J.9.2 Excluding Lleida and Madrid

We repeat our exercises excluding Lleida and Madrid as two notorious lottery outlets that attract buyers from all over the country are located in these two provinces. These lottery outlets are the one of Sort, a small village in the province of Lleida, and "Doña Manolita" located in Madrid. Sort attracts buyers for superstitious reasons as "Sort" is the Catalan word for "Luck". Instead, the popularity of "Doña Manolita" has to do with historical tradition as this lottery outlet opened its doors back in 1910. In recent years, these two lottery outlets have sold décimos with a total value of 100 and 70 million, which represent 3% and 2% of total sales, respectively. If lottery winnings in these regions are spread to other provinces, consumer sentiment and durable consumption responses to lottery shocks should be more precisely estimated when excluding these two provinces.

As can be inspected, the results presented in Table J.7 for consumer sentiment and Figure J.9 for

consumption barely differ from the ones presented in the main analysis in terms of precision and magnitude.

Table J.7: Survey evidence on the effects of Spanish Christmas Lottery on consumer sentiment - Excluding Lleida and Madrid

	(1)	(2)	(3)	(4)	(5)	(6)
	Household Income	Future Household Income	Employment Prospects	Future Employment Prospects	Spanish Economy	Future Spanish Economy
Lottery Prize Dummy	0.117*** (0.045)	0.132*** (0.038)	0.182*** (0.054)	0.103** (0.050)	0.122*** (0.040)	0.118*** (0.042)
Lottery Expenditures	23.772*** (2.989)	14.292*** (2.713)	5.156** (2.532)	-20.669*** (2.924)	-9.035*** (3.018)	-17.526*** (3.055)
Month × Province Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Individual Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Observations	100086	96175	95452	90245	97726	93065
Pseudo R^2	0.051	0.041	0.025	0.014	0.022	0.015

Columns (1)-(6) provide results from an ordered probit where the dependent variable is question Q1C-Q1F. *Lottery Prize Dummy* equals 1 if awarded Christmas lottery tickets were distributed in that province. *Lottery Expenditures* are expressed in 1000 euros per capita. Robust standard errors clustered by province are reported in parentheses. The sample includes information from consumer confidence monthly surveys conducted by the Spanish CIS between April 2013 and January 2020. Significance * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

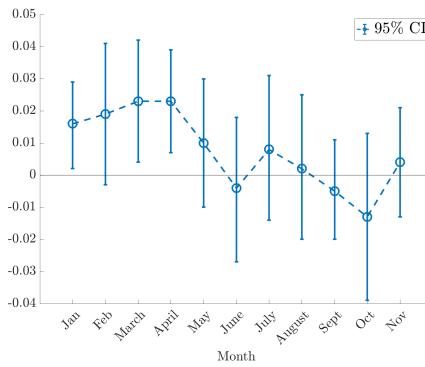


Figure J.9: Effects of Christmas Lottery on intended durable consumption - Excluding Lleida and Madrid

This figure plots the marginal effects associated with the β_s coefficients and their 95% CI from estimating Equation (3) using an ordered probit model. The dependent variable is FDC. Standard errors are robust and clustered at the province level

Similarly, for the aggregate data, we estimate our main results with excluding Madrid and Lleida from our dataset and as depicted in Figure J.10 all the the main results hold under this exercise.

J.10 Excluding provinces that won lotteries multiple times

Since it is common for Madrid and Barcelona provinces to win a prize, one might worry that these two regions are the main drivers of our results. Another concern is that despite controlling for expenditure if these two provinces win many times, our exercise has no good control. We run a robustness treatment dropping these two provinces. Table J.8 shows that except for the question about future employment prospects, our results for consumer sentiment remain close to the baseline estimates in terms of significance and magnitude.

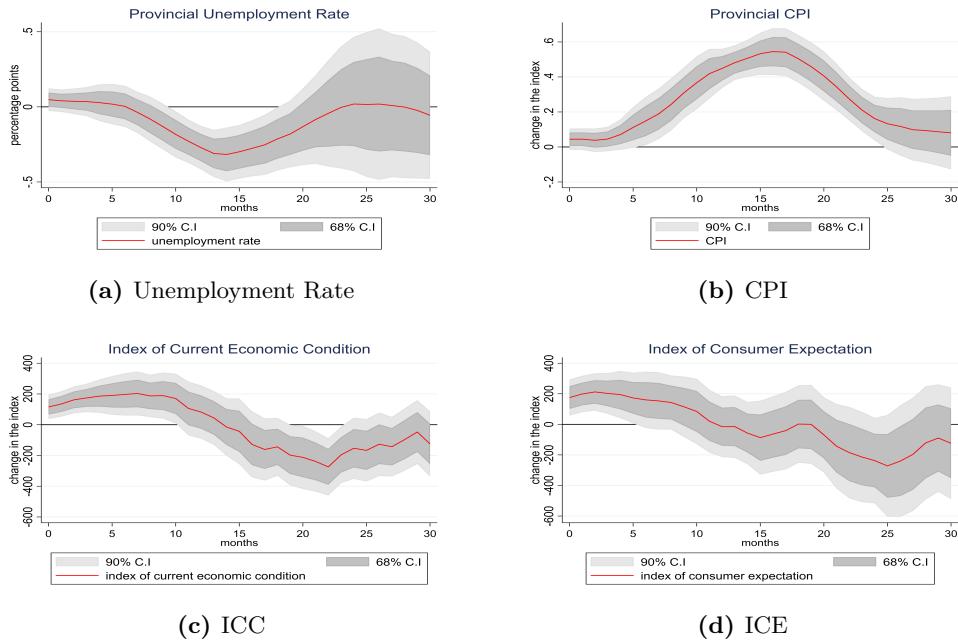


Figure J.10: Effects of Christmas Lottery Prizes on Unemployment Rate, CPI, and the Sentiment Indices excluding Lleida and Madrid

Impulse responses to Christmas Lottery prizes. The graph shows the responses in the linear LP model. Christmas Lottery prizes are net of taxes and measured in 1000 euros per capita. The sample period covered is 2005M5 - 2020M1 for UR and CPI and 2011M11 - 2020M1 for the sentiment indices. To increase the representativeness of the indices at the regional level, we focus on data with at least 25 respondents in each province and we use responses for two consecutive months. Standard errors are robust and clustered at the province level and response functions are smoothed by a centered moving average.

Table J.8: Survey evidence on the effects of Spanish Christmas Lottery on consumer sentiment - Excluding Madrid and Barcelona

	(1)	(2)	(3)	(4)	(5)	(6)
	Household Income	Future Household Income	Employment Prospects	Future Employment Prospects	Spanish Economy	Future Spanish Economy
Lottery Prize Dummy	0.108** (0.050)	0.123*** (0.042)	0.207*** (0.055)	0.064 (0.045)	0.112** (0.046)	0.107** (0.049)
Lottery Expenditures	21.281*** (3.011)	11.681*** (2.732)	4.158* (2.241)	-19.373*** (3.194)	-8.892*** (2.914)	-16.643*** (3.239)
Month × Province Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Individual Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Observations	87753	84271	83835	79110	85676	81585
Pseudo R^2	0.051	0.040	0.025	0.014	0.023	0.015

Columns (1)-(6) provide results from an ordered probit where the dependent variable is question Q1C-Q1F. *Lottery Prize Dummy* equals 1 if awarded Christmas lottery tickets were distributed in that province. *Lottery Expenditures* are expressed in 1000 euros per capita. Robust standard errors clustered by province are reported in parentheses. Significance * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Figure J.11 confirms estimates of the dynamic responses of intended consumption are robust to excluding Madrid and Barcelona provinces. Figure J.12 presents the aggregate responses for the unemployment rate, CPI, current (CCE) and expected (ICE) consumer sentiment to a lottery shock when we exclude Barcelona and Madrid from the regressions. Results are robust to this modification.

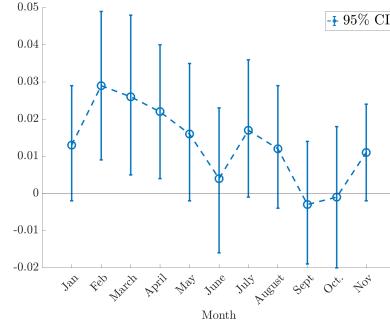


Figure J.11: Effects of Christmas Lottery on intended durable consumption - Excluding Madrid and Barcelona

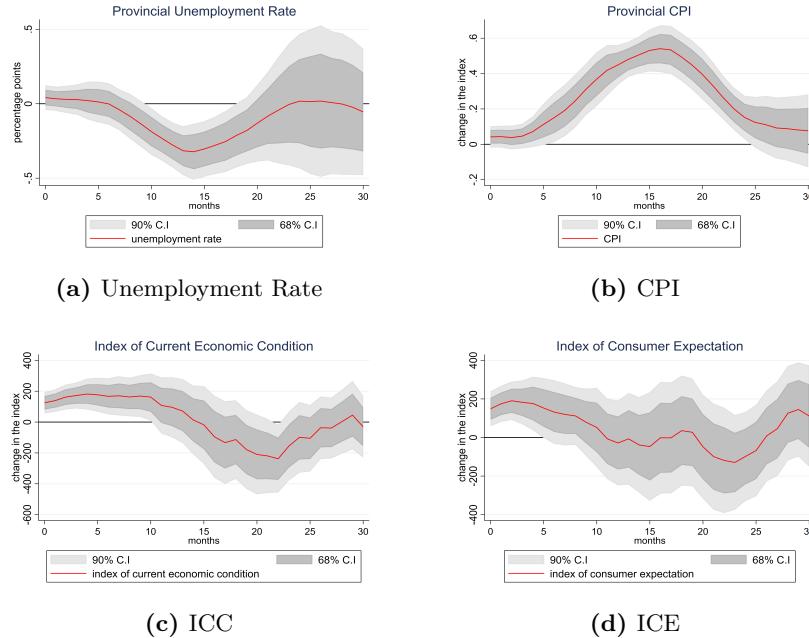


Figure J.12: Effects of Christmas Lottery Prizes on Unemployment Rate, CPI, and the Sentiment Indices, excluding Madrid and Barcelona

IRFs to Christmas Lottery prizes.

Although we cannot do so at the aggregate level because of data unavailability at the individual level we can investigate whether our results are robust to excluding more provinces that won several times the prize. Table J.9 presents the baseline results for consumer sentiment excluding all provinces that win the Christmas Lottery at least 10 times in our sample period. These regions are Madrid, Barcelona, Alicante, Guipuzcoa, Lleida, Santa Cruz de Tenerife, Sevilla, Valencia, Vizcaya, and Zaragoza. As can be inspected, the coefficient estimates are very close to the ones presented in the main text in terms of significance and magnitude.

Table J.9: Survey evidence on the effects of Spanish Christmas Lottery on consumer sentiment - Excluding provinces that win at least 10 times

	(1)	(2)	(3)	(4)	(5)	(6)
	Household Income	Future Household Income	Employment Prospects	Future Employment Prospects	Spanish Economy	Future Spanish Economy
Lottery Prize Dummy	0.110** (0.053)	0.122*** (0.044)	0.213*** (0.058)	0.082* (0.047)	0.130*** (0.044)	0.130** (0.052)
Lottery Expenditures	21.504*** (3.282)	12.664*** (2.899)	2.163 (2.693)	-20.535*** (3.214)	-12.005*** (2.666)	-18.326*** (3.277)
Month × Province Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Individual Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Observations	60679	58299	57985	54730	59211	56334
Pseudo R ²	0.051	0.039	0.026	0.015	0.023	0.015

Columns (1)-(6) provide results from an ordered probit where the dependent variable is question Q1C-Q1F. *Lottery Prize Dummy* equals 1 if awarded Christmas lottery tickets were distributed in that province. *Lottery Expenditures* are expressed in 1000 euros per capita. Robust standard errors clustered by province are reported in parentheses. The sample includes information from consumer confidence monthly surveys conducted by the Spanish CIS between April 2013 and January 2020. Significance * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Consistently with the main analysis, Figure J.13 presents the results for intended durable purchases and shows they remain unaltered when excluding the provinces that win the lottery multiple times.

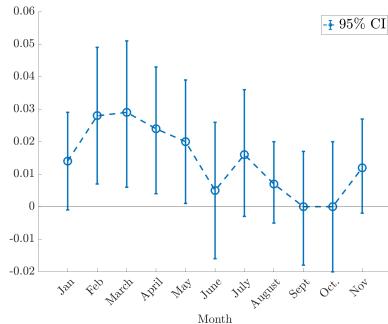


Figure J.13: Effects of Christmas Lottery on intended durable consumption - Excluding provinces that win at least 10 times.

J.11 Total Lottery Prizes and Aggregate Sentiment Indices

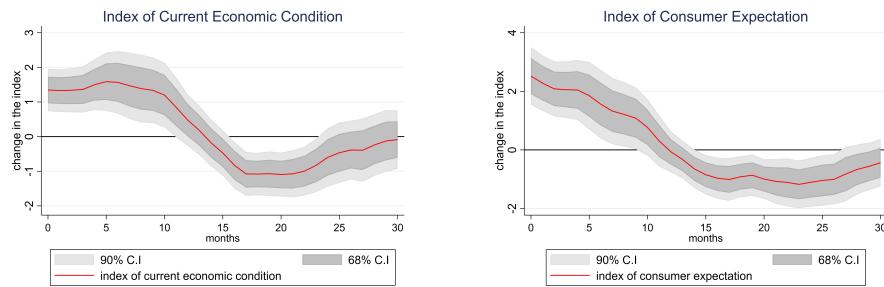


Figure J.14: Effect of total Christmas Lottery Prizes on the Index of Current Economic Condition and the Index of Consumer Expectation

Impulse responses to Christmas Lottery prizes. The left panel presents the responses in the LP model (1) for the index of consumer current condition, while the right panel presents the responses of the index of consumer expectation.

J.12 Placebo Treatment and Pre-trends

J.12.1 Placebo Treatment

In this exercise, we assume that Christmas lottery prizes take place randomly in any month between June and October of each year for the winning regions. We decided to shift the treatment between 3 to 6 months as there are many provinces that won the lottery several years in a row, and thus shifting the lottery winnings by one year might lead to confounding results. We regress consumer sentiment questions as well as intended durable purchases on this placebo treatment month while controlling for the full set of individual characteristics together with region times month-fixed effects. We report the impact response as well as the next two following months' responses in Figures J.15 and J.16.

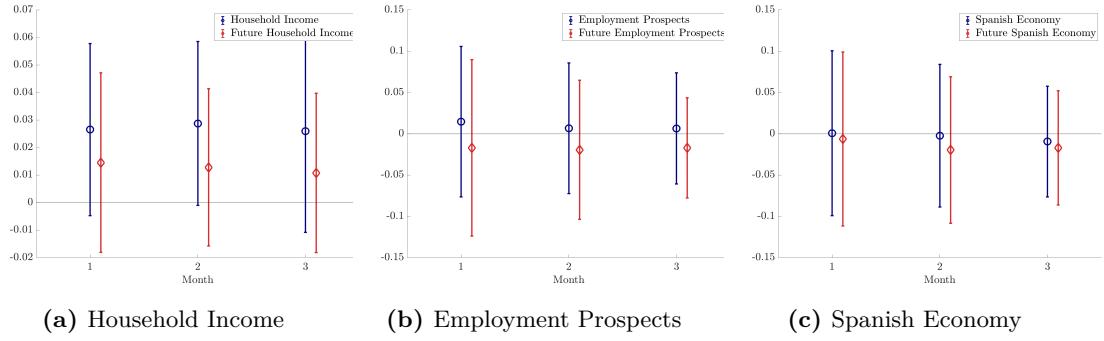


Figure J.15: Placebo treatment - consumer sentiment

The figure plots median coefficients of impact and two subsequent months' responses. We regress 1000 times, drawing from a uniform distribution, survey questions on a placebo treatment where each time all winning provinces win randomly the lottery in a month between June to October. We store the simulated coefficients of each draw and compute the standard deviation to construct the confidence intervals at the 95% level.

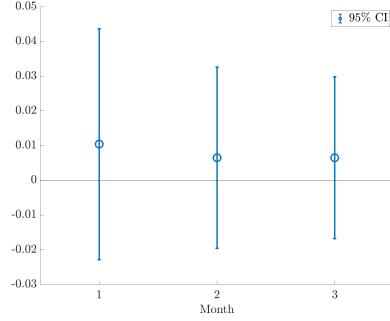


Figure J.16: Placebo treatment - intended durable purchases

The figure plots median coefficients of impact and two subsequent months' responses. We regress 1000 times, drawing from a uniform distribution, survey questions on a placebo treatment where each time all winning provinces win randomly the lottery in a month between June to October. We store the simulated coefficients of each draw and compute the standard deviation to construct the confidence intervals at the 95% level.

We also performed a similar placebo exercise for the two sentiment indices at the province level. In coherence with the results at the individual level, we do not detect any statistically significant effect of placebo lottery wins on regional sentiment indices (See Figure J.17).

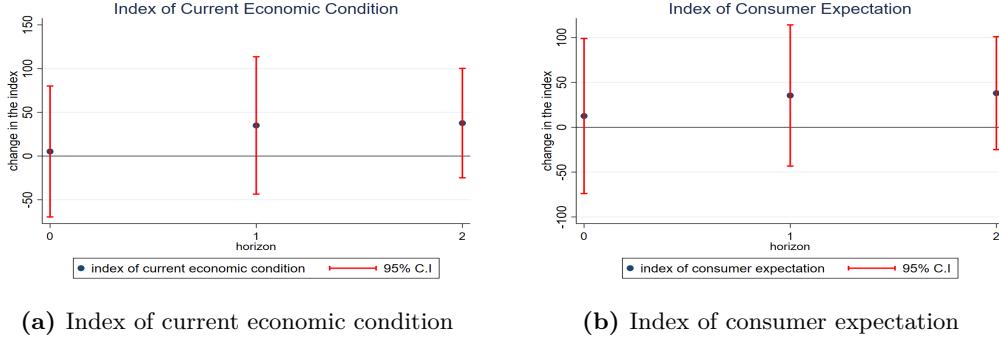


Figure J.17: Placebo treatment - aggregate sentiment indices

The figure plots the median local projection estimates of regressing 1000 times the consumer sentiment indices on a placebo treatment where each time all winning provinces randomly win the lottery in a month between June to October, drawn from a uniform distribution. The figure plots the impact response as well as the two subsequent months' responses. For each draw, we store the simulated coefficients and compute the standard deviation to construct the confidence intervals at the 95% level.

J.12.2 Pre-trends

We estimate the following event study regression:

$$y_{jst} = \sum_{t,s \neq December} \beta^{s,t} \cdot d_{s,t} \times LotteryPrize_{jst} + \delta LotteryExp_{jst} + \gamma X_{ijst} + \zeta_{jt} + \lambda_s + \nu_{jst} \quad (6)$$

where y_{jst} is the dependent variable (i.e. consumer sentiment or durable consumption) for province j in year t and month s and $d_{s,t}$ refers to an indicator for each year and month relative to the baseline period, December of each year. The treatment variable, $LotteryPrize_{jst}$ takes value equal to 1 if the Christmas Lottery is awarded in province j . We control for a set of individual characteristics X_{ijst} as well as for province times year-fixed effects (ζ_{jt}) and month fixed-effects (λ_s). The coefficients $\beta^{s,t}$ estimate the effect on the outcome of interest for each period relative to the baseline.

Figures J.18 and J.19 plot the event-study estimated coefficients.

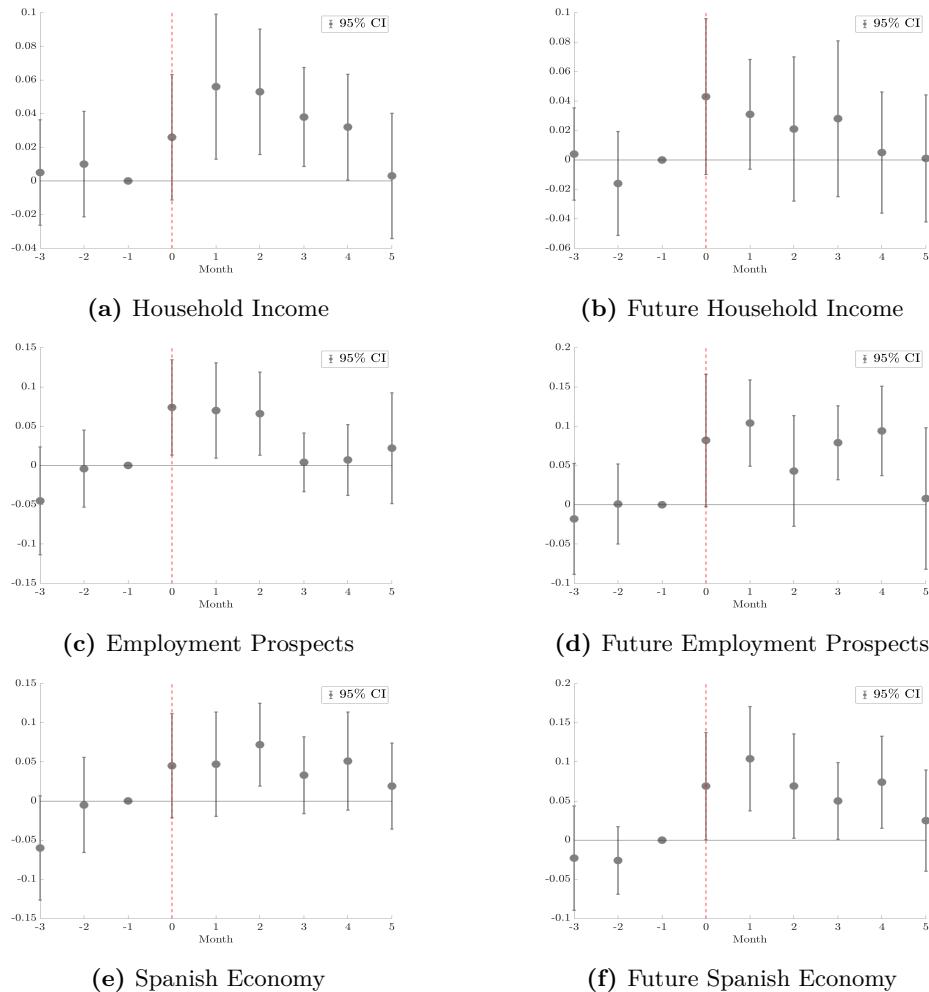


Figure J.18: Effects of Christmas Lottery on Consumer Sentiment - Event Study

This figure plots the event-study coefficients and the corresponding 95% CI in Equation 6. Standard errors are robust and clustered at the province level

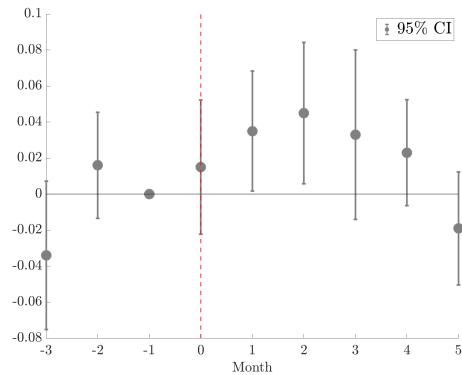


Figure J.19: Effects of Christmas Lottery on Intended Durable Purchases - Event Study

This figure plots the event-study coefficients and the corresponding 95% CI in Equation 6. Standard errors are robust and clustered at the province level

The lack of significant pre-trends signals randomness in who wins the lottery. Furthermore, we have conducted an event study analysis with the aggregate data, in which we regress the sentiment indices (ICE and CEE) and car purchases to the prize for months before and after the lottery win controlling for month and province fixed effects and the provincial and aggregate unemployment and CPI rate. Results supporting the absence of pre-trends in expectations are presented in Figure J.20:

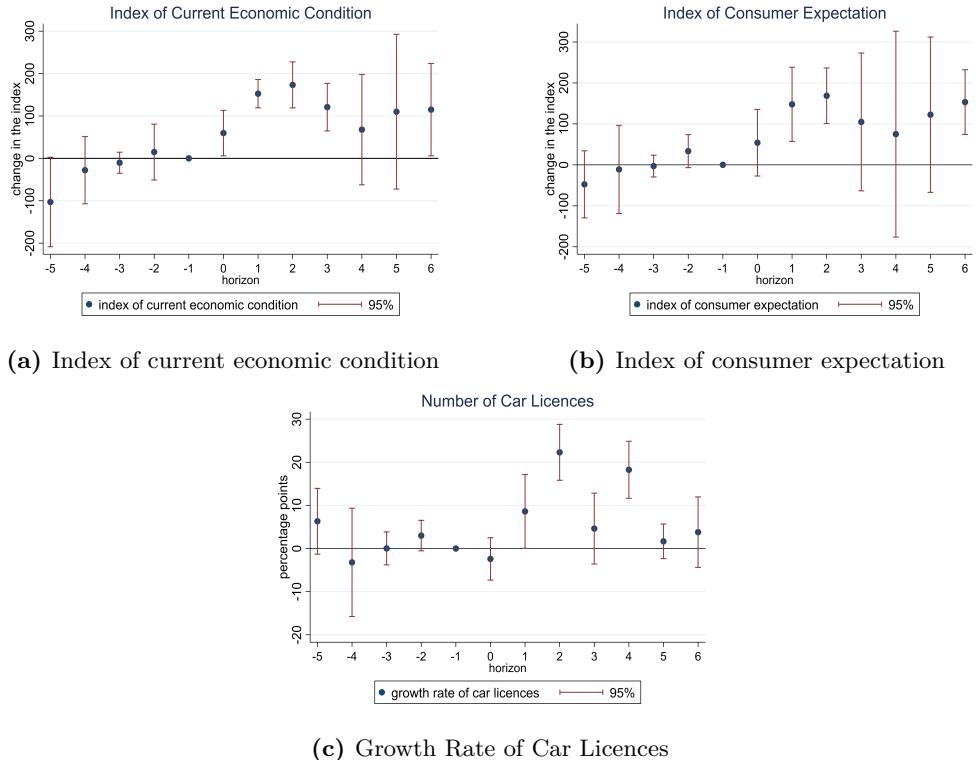


Figure J.20: Effects of Christmas Lottery on consumer sentiment indices and car purchases - Event Study

This figure plots the event-study coefficients and the corresponding 95% CI using provincial data. The dependent variable are ICC or ICE. Standard errors are robust and clustered at the province level

J.13 Spanish Christmas Lottery as a Redistribution Mechanism

To examine whether our main results are driven by poorer provinces receiving huge transfers from rich regions we interact lottery rewards with a dummy variable for poorer provinces and estimate the following linear LP model for our variables of interest for any $h \geq 0$:

$$S_{j,t+h} = \alpha_{j,h} + \beta_h \text{LotteryPrize}_{j,t} + \delta_h \text{LotteryExp}_{j,t-1} + \zeta_h (\text{LotteryPrize}_{j,t} \times \text{Poor}_j) + \sum_{k=1}^{12} \psi_{k,h} X_{j,t-k} + \sum_{s=1}^{12} \lambda_s M_s + \varepsilon_{j,t+h} \quad (7)$$

where Poor_j is a dummy variable that takes the value of 1 if the average per capita GDP for a province during the sample period is less than the average per capita GDP for all Spanish provinces. Parameter ζ_h captures whether the effect of lottery rewards differs across provinces depending on their GDP per capita level. Figure J.21 presents the estimation of ζ for economic variables and consumer sentiment indices, respectively.

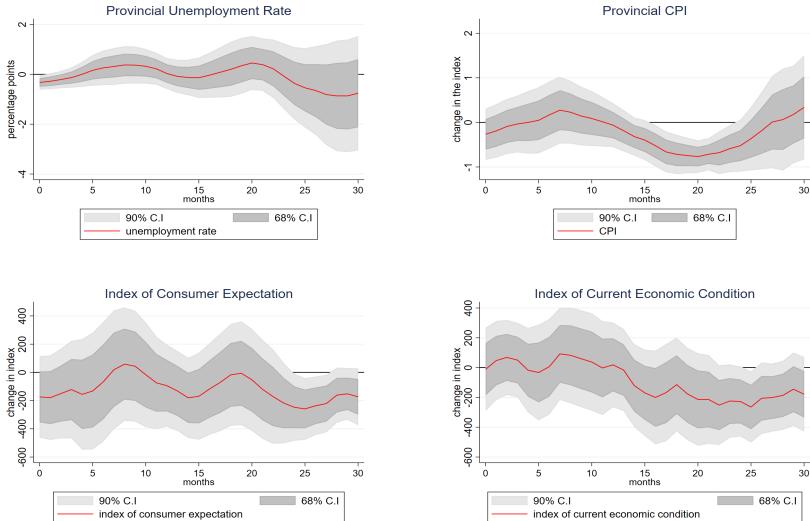


Figure J.21: Effects of Christmas Lottery Prizes on Unemployment rate, CPI and Consumer Sentiment Indices in High vs Low-GDP per capita Provinces

Impulse responses to Christmas Lottery prizes in provinces with low GDP per capita. The graph shows the responses in the LP model (7) for the coefficient of the interaction term between a dummy variable for poor provinces and lottery prizes.

In all regressions, ζ is not significantly different from zero. The effect of CPI is slightly weaker for poor provinces.

We investigate further whether lottery wins affect consumer confidence and durable consumption differently when households live in poor vs rich provinces by looking directly at individuals' survey responses. Table J.10 reports the results of this regression for the set of consumer sentiment questions about the future and shows that sentiment about future household income seems to react stronger in low-income regions.

Table J.10: Survey evidence on the effects of Spanish Christmas Lottery on consumer sentiment - High vs low GDP pc

	(1) Future Household Income	(2) Future Employment Prospects	(3) Future Spanish Economy
Lottery Prize Dummy	0.033 (0.047)	0.189*** (0.056)	0.137*** (0.050)
Lottery Expenditures	18.213*** (3.677)	-1.893 (2.771)	2.008 (3.370)
Poor Dummy	-0.156*** (0.023)	-0.069*** (0.023)	-0.092*** (0.026)
Lottery \times Poor	0.120* (0.061)	0.013 (0.056)	0.080 (0.063)
Month \times Province Dummies	Yes	Yes	Yes
Individual Characteristics	Yes	Yes	Yes
Observations	90224	85892	88432
Pseudo R^2	0.042	0.016	0.017

Columns (1)-(6) provide results from an ordered probit where the dependent variable is Q1F-Q3F. *Lottery prize dummy* takes value 1 if awarded Christmas lottery tickets were distributed in that province. *Lottery expenditures* are expressed in per capita terms. *Poor dummy* takes value 1 if GDP per capita in the province is lower than the average GDP per capita across provinces. Robust standard errors clustered by province in parentheses. Significance * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Figure J.22 presents the results of estimating Equation 3 from the main text in two different samples, one for provinces whose GDP per capita is below the sample average GDP per capita and another one for those provinces whose GDP per capita is above. As can be inspected, realized durable consumption effects are not stronger in the poorer Spanish region. However, the effect of lottery wins on intended durable purchases seems to pick up earlier in the poorer provinces.

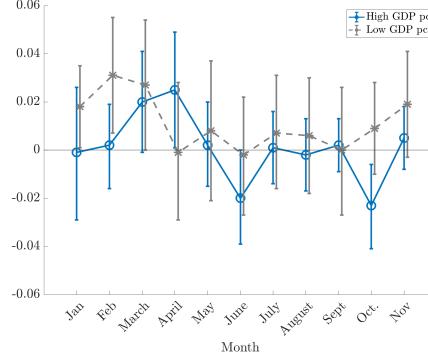


Figure J.22: Effects of Christmas Lottery on intended durable consumption - High vs low GDP pc

This figure plot the marginal effects associated with the β_s 's coefficients and their 95% CI from estimating Equation (3) in the main text using an ordered probit model. The gray star line refers to provinces with GDP per capita above the sample average GDP per capita while the blue circle line refers to provinces with GDP per capita below the sample average GDP per capita. The dependent variable is FDC. Standard errors are robust and clustered at the province level

J.14 Controlling for Cross-section Dynamic Heterogeneity

Given that our analysis could be subject to dynamic heterogeneity, in this section, we estimate the effect of lottery wins for each province separately and then compute a cross-sectional average. In Figure J.23 we present the weighted average responses of the local projection estimates we have run unit-by-unit for the unemployment rate and CPI, and for the two sentiment indices we consider. We weight responses by the inverse of the standard errors of the unit responses. The Figure confirms the response patterns we have obtained in the cross-section analysis. Hence, dynamic heterogeneity does not distort the picture presented in our baseline regressions.

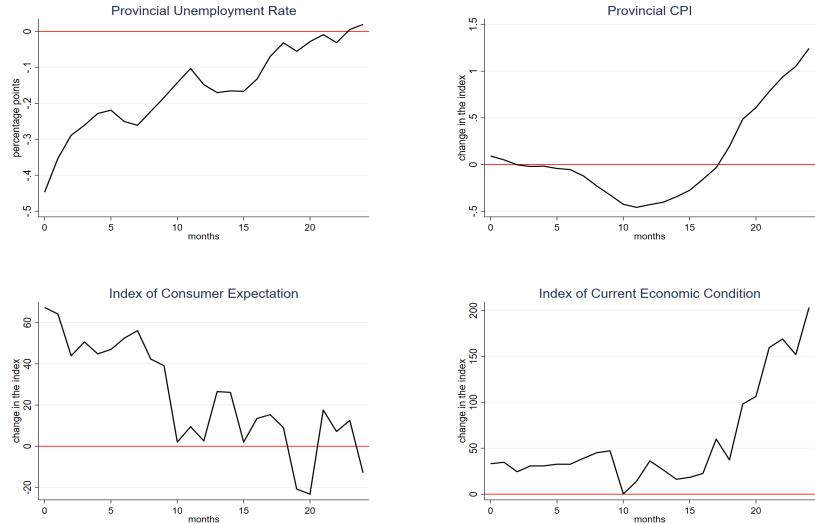


Figure J.23: Weighted Average of Unit-by-unit Local Projection Estimates

This graph shows the weighted average of unit-by-unit local projection estimates of the effect of Christmas Lottery prizes on unemployment rate, CPI, and consumer sentiment indices. The weights are the inverse of the standard error of the unit responses. Response functions are smoothed by centered moving average