IS CHANGING THE MINIMUM LEGAL DRINKING AGE
AN EFFECTIVE POLICY TOOL?

Nicolai Brachowicz Quintanilla, Judit Vall Castelló

IEBWorking Paper

IS CHANGING THE MINIMUM LEGAL DRINKING AGE AN EFFECTIVE POLICY TOOL?

Nicolai Brachowicz Quintanilla, Judit Vall Castelló

IS CHANGING THE MINIMUM LEGAL DRINKING AGE
AN EFFECTIVE POLICY TOOL? [*]

Nicolai Brachowicz Quintanilla, Judit Vall Castelló

ABSTRACT: In year 1991 regional governments in Spain started a period of implementation of a law that rose the Minimum Legal Drinking Age from 16 to 18 years old. This process was fully completed in year 2015. To evaluate the effects of this change on consumption of legal drugs and its related morbidity outcomes, we construct a regional panel dataset on alcohol consumption and hospital entry registers and compare variation in several measures of prevalence between the treatment group (16-18 years old individuals) and the control group (20-22 years old individuals). Our findings show important differences by gender. Firstly, our main result regarding overall drinking prevalence show reductions ranging from -11.57% for the subsample including both genders to -14.31% for the subsample of males. Secondly, effects on males are driven mainly by reductions in beer with alcohol consumption (-8.98%). Thirdly, effects on wine and/or cava drinking prevalence range from -12.62% for the subsample including both genders to -9.65% for the subsample of females. No effects regarding overall smoking prevalence are found. Fourthly, we do not find evidence that these reductions in alcohol consumption are translated into hospitalizations related to alcohol overdose. To our knowledge, this is the first paper providing evidence on gender-based differences to policies aimed at reducing alcohol consumption. Our results have important policy implications for countries currently considering changes in the Minimum Legal Drinking Age.

Nicolai Brachowicz Quintanilla
Center for Research in Health and Economics (CRES - UPF)
Universitat Pompeu Fabra
E-mail: nicolai.brachowicz@barcelonagse.eu

Judit Vall Castelló
Universitat de Barcelona &
Institut d'Economia de Barcelona (IEB)
E-mail: judit.vall@ub.edu

1 Introduction

Undesired and fatal consequences of the abuse of alcohol consumption have been studied from multiple perspectives, ranging from direct effects on individuals (Carpenter, 2004a; Mann, Smart, & Govoni, 2003; Rosenberg, Ventura, Maurer, Heuser, & Freedman, 1996; Wagenaar & Toomey, 2002) to negative externalities exerted on the society as a whole (Carpenter, 2005, 2007; Markowitz, 2000, 2005). According to the latest figures provided by the Report on Survey on Drugs Use in Secondary Schools in Spain (Observatorio Español de las Drogas y las Adicciones (OEDT). Ministerio de Sanidad y Servicios Sociales e Igualdad, 2016), corresponding to survey years 2014/2015, the average age at first use of alcohol considering weekly consumption, has remained almost invariable since year 1996 at around 15 years old. Moreover, around 48%, 61%, and 74% of youngsters, aged 14, 15, and 16 respectively, declared to have consumed alcohol during the last 30 days in years 2014/2015. There is a growing body of evidence pointing at the limitation of access to alcohol consumption as an effective policy tool for preventing unhealthy habits and fatal consequences (Carpenter, 2004b; Carpenter & Dobkin, 2011; Dee, 1999; Deza, 2015; Yörük & Yörük, 2011, 2013). In an effort to reduce the prevalence of alcohol consumption and its undesired outcomes, regional authorities in Spain decided to restrict the access of teenagers to alcohol by increasing the Minimum Legal Drinking Age (hereafter, MLDA) from 16 to 18 years old. Figure 1 shows a chronological description of the implementation of the new MLDA in Spain.

Figure 1: Spain - Years of Implementation of the New MLDA
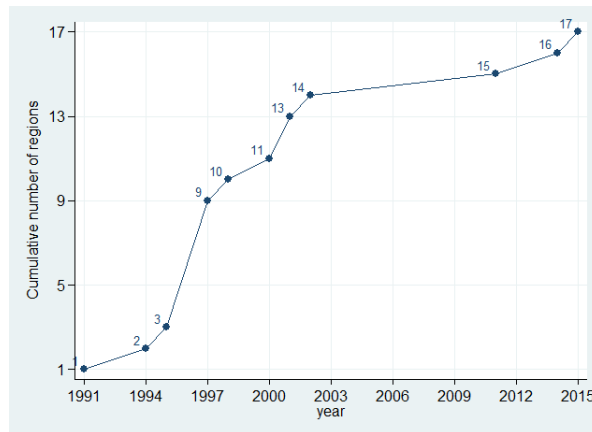
Note: MLDA = Minimum Legal Drinking Age. Source: Official National/Regional Bulletins. All seventeen regions considered.

Having a uniform MLDA threshold at 18 years old in all seventeen regions took more than two decades, although most of them implemented the legal modification during the period 1994-2002. Until year 1991 the MLDA in all regions was 16 years old. On April 1991 the region of Navarra was the first to rise the MLDA to 18 years old. This was followed progressively by Region of Castilla y León in 1994, and Region of Castilla - La Mancha in 1995. In year 1997 most of the regions, namely Andalucía, Canarias, Cantabria, Comunitat Valenciana, Extremadura, and Murcia, updated its corresponding law. Region of País Vasco implemented the new threshold in 1998, Madrid in year 2000, Region of La Rioja and Region of Aragón in 2001, and the Region of Catalunya in 2002. Late joiners, namely Galicia, Baleares, and Asturias shifted the threshold in 2011, 2014, and 2015, respectively.[1] Table C1, in Appendix C provides detailed regional information.

Our empirical study takes advantage of this quasi-natural experiment using a differences in differences (hereafter, DiD) method, with the aim of evaluating and quantifying the prospective effects of changing the MLDA on the consumption of legal drugs (i.e. alcoholic drinks and cigarettes) and their related morbidity outcomes.

---

[1]Regions of Castilla y León, and Comunitat Valenciana kept permitting teenagers aged 16 or older to consume alcoholic drinks up to 18° alcoholic degrees until year 2007 and 2002, respectively. In order to provide conservative estimates, we consider year of partial ban, when proceeds, as if it were the case of a full prohibition.

2 Methods

2.1 Differences-in-Differences

We compare variation in prevalence measures between the treatment group (16-18 years old individuals) and the control group (20-22 years old individuals) before and after policy implementation. The key identifying assumption in our DiD setting is that the variables reflecting the answers of individuals within the treatment group would have followed parallel trends to those variables reflecting the answers of individuals in the control group, if the MLDA had not changed. Figures 1 - 7, provided in Appendix B, show graphical evidence to assess the validity of this assumption.

2.2 Analysis

We constructed each regional outcome variable y_{str} as prevalence per treatment status, for each year before and after policy implementation. Our treatment dummy variable $d\_treatment_s$ takes on value 1 for the treatment group, and value 0 for the control group. Our pre-post policy dummy variable d_policy_{tr} takes on value 1 for the year of implementation and subsequent years, and 0 for all years prior to the year of the legal change. Variable DD_{str} is the interaction between dummy variables $d\_treatment_s$ and d_policy_{tr}. Our econometric model is the following:

$$y_{str} = \beta_0 + \beta_1 * d\_treatment_s + \beta_2 * d\_policy_{tr} + \beta_3 DD_{str} + \alpha_r + \psi_t + \theta_{rt} + \epsilon_{str} \qquad (1)$$

Equation 1 includes region fixed-effects (α_r), year fixed-effects (ψ_t), as well as region-specific linear trends (θ_{rt}), and an error term (ϵ_{str}). Standard errors were clustered at the regional level and computed using wild-bootstrapping (Bertrand, Duflo, & Mullainathan, 2004). Furthermore, regional size differences are taken into account by using as analytical weights the corresponding population per treatment status, region and year. The coefficients of interest that would quantify the causal effect of this policy reform, provided our parallel trends assumption holds, would be a statistically significant estimate of β_3.

3 Data

Figure 2: Spain - Implementation of the New MLDA during years 1994-2002
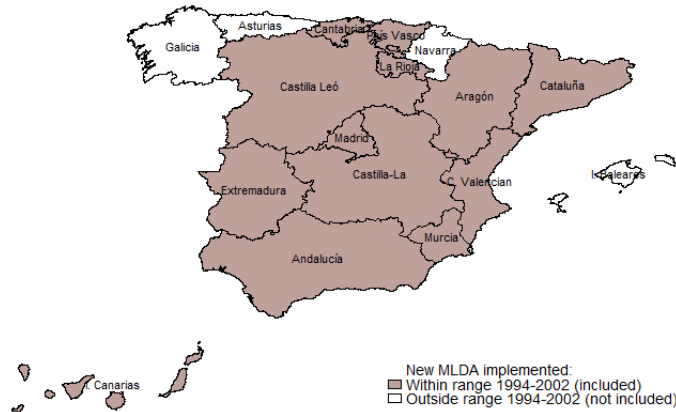
Note: MLDA = Stands for Minimum Legal Drinking Age. Source: Official National/Regional Bulletins.

The National Health Survey, *(Encuesta Nacional de Salud* or ENS), and The Hospital Morbidity Survey *(Encuesta de Morbilidad Hospitalaria* or EMH) are the two main data sources used in this study. While ENS available waves correspond to years 1991, 1993, 1995, 1997, 2001, 2003, 2004, 2006, and 2007, EMH available waves correspond to each natural year between the 1991-2007 period. In order to use the same available data from both sources, we only used yearly datasets corresponding to ENS available waves. From these foregoing sources, we extracted data for the same thirteen regions that shifted the MLDA between years 1994-2002 (see Figure 2). Data for the four remaining regions that shifted the MLDA in years, 1991, 2011, 2014, 2015, were not included due to a lack of enough pre or

post policy survey datasets. Three regional panel datasets were prepared, the first including males and females altogether, the second considering only females, and the third including just males. We only considered individuals aged 16-18 or 20-22. Data regarding regional population were extracted from the Population Statistics Database provided by the National Statistics Institute *(Instituto Nacional de Estadística* or INE).[2]

4 Results

4.1 Overall Prevalence

Table 1: Overall Drinking Prevalence
DiD - Summarized Results

VARIABLES	(1) DiD All	(2) DiD Females	(3) DiD Males
DD=Dummy treatment*Dummy policy	-0.06**	-0.02	-0.08**
	(0.03)	(0.05)	(0.04)
Dummy treatment	-0.17***	-0.14***	-0.19***
	(0.06)	(0.05)	(0.07)
Dummy policy	0.00	-0.02	0.04
	(0.02)	(0.05)	(0.04)
Constant	0.72***	0.26***	0.50***
	(0.00)	(0.00)	(0.00)
Observations	208	203	207
R-squared	0.63	0.48	0.54
Mean Before Policy for Treated	0.48	0.38	0.54
Implied impact of New MLDA in %	-11.57	-5.12	-14.31

Note: Region and Year fixed effects included. Region-specific linear trends also included. Clustered standard errors using wild bootstrap method (400 reps, 200 seeds), in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Weighted by corresponding population per each region, year, and treatment status. Source: *Encuesta de Nacional de Salud (ENS)*: 1993; 1995; 1997; 2001; 2003(2004); 2006(2007). *Ministerio de Sanidad, Servicios Sociales e Igualdad.*

Table 1 show two statistically significant DD_{str} estimated coefficients of -0.06 and -0.08, both significant at the 5% level, corresponding to causal effects of -11.57% and -14.31% in overall drinking prevalence for the subsample including both genders and the subsample of males, respectively. However, for the case of overall smoking prevalence, Table A1, shows that none of the DD_{str} estimated coefficients in any the three subsamples is statistically significant. Figure 1 in Appendix B provide graphical evidence suggesting that our parallel trends assumption holds.

4.2 Drink type Prevalence

Firstly, for the beer with alcohol case, the third column in Table 2, corresponding to the subsample of males, shows a DD_{str} estimated coefficient of -0.07, statistically significant at the 1% level, suggestive of a causal effect of -8.98%. Secondly, for the mixed drinks and/or liquors case, the first column in Table 3 regarding the subsample including both genders shows a DD_{str} estimated coefficient of -0.04, statistically significant at the 10% level, that corresponds to a causal effect of -9.53%, whereas the third column, with regard to the subsample of males, shows a DD_{str} estimated coefficient of -0.08, statistically significant at the 10% level, that implies a causal effects of -16.66%. Thirdly, the first and second columns in Table 4 for the wine and/or cava case, show estimates, at the 5% level, of -0.06 and -0.08 corresponding to an implied effect of -12.62% and -15.16% respectively. Interestingly, these latter effects are identified for the subsample of both genders and the subsample of just females, correspondingly. Figures 3, 4, and 5, in Appendix B, provide graphical evidence supporting the validity of our parallel trends assumption.

---

[2]In Appendix C, Table C1 shows precise implementation dates; Table C2 depicts a summary of descriptive statistics for ENS and EMH waves; finally, Table C3 lists diseases (diagnoses) considered for the case of morbidity outcomes.

Table 2: Beer with alcohol drinking Prevalence
DiD - Summarized Results

VARIABLES	(1) DiD All	(2) DiD Females	(3) DiD Males
DD=Dummy treatment*Dummy policy	-0.03	0.01	-0.07***
	(0.05)	(0.10)	(0.03)
Dummy treatment	-0.10***	-0.10***	-0.10**
	(0.03)	(0.04)	(0.04)
Dummy policy	0.02	-0.04	0.01
	(0.04)	(0.10)	(0.06)
Constant	0.74***	1.02***	0.91***
	(0.00)	(0.00)	(0.00)
Observations	204	190	203
R-squared	0.62	0.39	0.56
Mean Before Policy for Treated	0.72	0.61	0.80
Implied impact of New MLDA in %	-4.62	2.14	-8.98

Note: Region and Year fixed effects included. Region-specific linear trends also included. Clustered standard errors using wild bootstrap method (400 reps, 200 seeds), in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Weighted by corresponding population per each region, year, and treatment status. Source: *Encuesta de Nacional de Salud (ENS)*: 1993; 1995; 1997; 2001; 2003(2004); 2006(2007). *Ministerio de Sanidad, Servicios Sociales e Igualdad.*

Table 3: Mixed drinks and/or liquors drinking Prevalence
DiD - Summarized Results

VARIABLES	(1) DiD All	(2) DiD Females	(3) DiD Males
DD=Dummy treatment*Dummy policy	-0.04*	0.07	-0.08*
	(0.02)	(0.07)	(0.05)
Dummy treatment	-0.02	-0.02	-0.05
	(0.02)	(0.05)	(0.04)
Dummy policy	-0.03	-0.04	-0.01
	(0.04)	(0.06)	(0.04)
Constant	0.36***	0.36***	0.31***
	(0.00)	(0.00)	(0.00)
Observations	181	164	173
R-squared	0.57	0.39	0.65
Mean Before Policy for Treated	0.43	0.36	0.47
Implied impact of New MLDA in %	-9.53	19.58	-16.66

Note: Region and Year fixed effects included. Region-specific linear trends also included. Clustered standard errors using wild bootstrap method (400 reps, 150 seeds), in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Weighted by corresponding population per each region, year, and treatment status. Source: *Encuesta de Nacional de Salud (ENS)*: 1993; 1995; 1997; 2001; 2003(2004); 2006(2007). *Ministerio de Sanidad, Servicios Sociales e Igualdad.*

Table 4: Wine and/or Cava drinking Prevalence
DiD - Summarized Results

VARIABLES	(1) DiD All	(2) DiD Females	(3) DiD Males
DD=Dummy treatment*Dummy policy	-0.06**	-0.08**	-0.05
	(0.03)	(0.03)	(0.03)
Dummy treatment	-0.07**	-0.07	-0.06**
	(0.03)	(0.05)	(0.03)
Dummy policy	-0.08**	-0.08	-0.07
	(0.03)	(0.10)	(0.07)
Constant	0.34***	0.51***	0.28***
	(0.00)	(0.00)	(0.00)
Observations	198	186	194
R-squared	0.52	0.49	0.48
Mean Before Policy for Treated	0.49	0.51	0.48
Implied impact of New MLDA in %	-12.62	-15.16	-9.65

Note: Region and Year fixed effects included. Region-specific linear trends also included. Clustered standard errors using wild bootstrap method (400 reps, 200 seeds), in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Weighted by corresponding population per each region, year, and treatment status. Source: *Encuesta de Nacional de Salud (ENS)*: 1993; 1995; 1997; 2001; 2003(2004); 2006(2007). *Ministerio de Sanidad, Servicios Sociales e Igualdad.*

4.3 Morbidity Outcomes

Tables A2 and A3 in Appendix A show that none of the DD_{str} estimates is statistically significant. Figures 6 and 7 in Appendix B supports our parallel trends assumption.

5 Discussion

Firstly, our main result regarding overall drinking prevalence show reductions ranging from -11.57% for the subsample including both genders to -14.31% for the subsample of males. Secondly, effects on males are driven mainly by reductions in beer with alcohol consumption (-8.98%) and to a lesser extend to reductions in mixed drinks and/or liquors consumption (-16.66%). Thirdly, effects on wine and/or cava drinking prevalence range from -12.62% for the subsample including both genders to -9.65% for the subsample of females. No effects regarding overall smoking prevalence are found. Fourthly, we do not find evidence that these reductions in alcohol consumption are translated into hospitalizations related to alcohol overdose.

We argue that the mechanism of transmission of this policy is closely related to bench drinking or "botellón" given that the identified effects are observed on popular drink types amongst teenagers. Nonetheless, analysing the degree of effective enforcement in public areas as well as the existing alternative ways youngsters use to have access to alcoholic drinks could help to put these findings in context. These effects can be considered as a lower bound given the usual limitations of surveys of this sort (i.e. underreporting). Finally, there may also be unobserved confounding factors that were not controlled by comparison with the 20-22 cohort.

6 Conclusions

Our findings provide evidence to argue that shifting the MLDA from 16 to 18 years old caused important reductions in alcohol consumption. To our knowledge we are the first to provide evidence regarding gender-based differences related to policies aimed at reducing alcohol consumption. This results suggest that the inclusion of gender perspectives in the process of policy design can contribute to identify more effective policy levers. Furthermore, a quite interesting exercise would be to assess the findings of this study to those that could be obtained from a more focused set of surveys such as the Survey on Alcohol and other Drugs in Spain *(Encuesta sobre alcohol y otras drogas en España,*

EDADES)[3]. We believe our results have important policy implications for countries currently considering changes in the Minimum Legal Drinking Age. If this reduction had an impact on the prospective consequences of excessive drinking, such as performance on standardized tests, crime rate, or traffic accidents, remains as key topics for future research.

Source of Financial Support

Conflict of Interest

The authors have no conflict of interest.

Acknowledgements

---

[3]Access to these survey-microdata still not granted. See `http://www.pnsd.msssi.gob.es/profesionales/sistemasInformacion/sistemaInformacion/encuestas_EDADES.htm` (Last accessed March 27th 2018).

References

Bertrand, M., Duflo, E., & Mullainathan, S. (2004). How much should we trust differences-in-differences estimates? *The Quarterly Journal of Economics*, *119*(1), 249-275. Retrieved from `http://dx.doi.org/10.1162/003355304772839588` doi: 10.1162/003355304772839588

Carpenter, C. (2004a). Heavy alcohol use and youth suicide: evidence from tougher drunk driving laws. *Journal of Policy Analysis and Management*, *23*(4), 831–842. Retrieved from `https://doi.org/10.1002/pam.20049` doi: 10.1002/pam.20049

Carpenter, C. (2004b). How do zero tolerance drunk driving laws work? *Journal of Health Economics*, *23*(1), 61–83. Retrieved from `https://doi.org/10.1016/j.jhealeco.2003.08.005` doi: 10.1016/j.jhealeco.2003.08.005

Carpenter, C. (2005). Heavy alcohol use and the commission of nuisance crime: Evidence from underage drunk driving laws. *American Economic Review*, *95*(2), 267-272. Retrieved from `http://www.aeaweb.org/articles?id=10.1257/000282805774670220` doi: 10.1257/000282805774670220

Carpenter, C. (2007). Heavy alcohol use and crime: evidence from underage drunk-driving laws. *The Journal of Law and Economics*, *50*(3), 539–557. Retrieved from `https://doi.org/10.1086/519809` doi: 10.1086/519809

Carpenter, C., & Dobkin, C. (2011). The minimum legal drinking age and public health. *Journal of Economic Perspectives*, *25*(2), 133-56. Retrieved from `http://www.aeaweb.org/articles?id=10.1257/jep.25.2.133` doi: 10.1257/jep.25.2.133

Dee, T. S. (1999). State alcohol policies, teen drinking and traffic fatalities. *Journal of Public Economics*, *72*(2), 289–315. Retrieved from `https://doi.org/10.1016/S0047-2727(98)00093-0` doi: 10.1016/S0047-2727(98)00093-0

Deza, M. (2015). The effects of alcohol on the consumption of hard drugs: regression discontinuity evidence from the national longitudinal study of youth, 1997. *Health economics*, *24*(4), 419–438. Retrieved from `https://doi.org/10.1002/hec.3027` doi: 10.1002/hec.3027

Mann, R. E., Smart, R. G., & Govoni, R. (2003). The epidemiology of alcoholic liver disease. *Alcohol Research and Health*, *27*, 209–219.

Markowitz, S. (2000). The price of alcohol, wife abuse, and husband abuse. *Southern Economic Journal*, *67*(2), 279-303. Retrieved from `https://www.jstor.org/stable/1061471` doi: 10.2307/1061471

Markowitz, S. (2005). Alcohol, drugs and violent crime. *International Review of Law and Economics*, *25*(1), 20-44. Retrieved from `https://doi.org/10.1016/j.irle.2005.05.003` doi: 10.1016/j.irle.2005.05.003

Observatorio Español de las Drogas y las Adicciones (OEDT). Ministerio de Sanidad y Servicios Sociales e Igualdad. (2016). *La Encuesta sobre uso de drogas en Enseñanzas Secundarias en España (ESTUDES) 2014/2015.* Retrieved from `http://www.sepg.pap.minhafp.gob.es/sitios/sepg/es-ES/Presupuestos/PresupuestosEjerciciosAnteriores/Paginas/Ejercicio2016.aspx`

Rosenberg, H. M., Ventura, S. J., Maurer, J. D., Heuser, R. L., & Freedman, M. A. (1996). Births and deaths: United states, 1995. *Monthly vital statistics report*, *45*(3), 2.

Wagenaar, A. C., & Toomey, T. L. (2002). Effects of minimum drinking age laws: review and analyses of the literature from 1960 to 2000. *Journal of Studies on Alcohol, Supplement*(s14), 206-225. Retrieved from `https://doi.org/10.15288/jsas.2002.s14.206` doi: 10.15288/jsas.2002.s14.206

Yörük, B. K., & Yörük, C. E. (2011). The impact of minimum legal drinking age laws on alcohol consumption, smoking, and marijuana use: Evidence from a regression discontinuity design using exact date of birth. *Journal of Health Economics*, *30*(4), 740–752. Retrieved from `https://doi.org/10.1016/j.jhealeco.2011.05.010` doi: 10.1016/j.jhealeco.2011.05.010

Yörük, B. K., & Yörük, C. E. (2013). The impact of minimum legal drinking age laws on alcohol consumption, smoking, and marijuana use revisited. *Journal of Health Economics*, *32*(2), 477–479. Retrieved from `https://doi.org/10.1016/j.jhealeco.2012.09.007` doi: 10.1016/j.jhealeco.2012.09.007

Appendix A: Auxiliary Results

6.1 Tables - Overall Smoking Prevalence

Table A1: Overall Smoking Prevalence
DiD - Summarized Results

VARIABLES	(1) DiD All	(2) DiD Females	(3) DiD Males
DD=Dummy treatment*Dummy policy	-0.02	-0.03	0.01
	(0.03)	(0.05)	(0.04)
Dummy treatment	-0.16***	-0.15**	-0.16**
	(0.05)	(0.06)	(0.07)
Dummy policy	-0.04	-0.05	-0.03
	(0.03)	(0.05)	(0.05)
Constant	0.54***	0.31***	0.35***
	(0.00)	(0.00)	(0.00)
Observations	208	203	207
R-squared	0.57	0.39	0.44
Mean Before Policy for Treated	0.35	0.33	0.35
Implied impact of New MLDA in %	-4.68	-9.58	2.75

Note: Region and Year fixed effects included. Region-specific linear trends also included. Clustered standard errors using wild bootstrap method (400 reps, 200 seeds), in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Weighted by corresponding population per each region, year, and treatment status. Source: *Encuesta de Nacional de Salud (ENS)*: 1993; 1995; 1997; 2001; 2003(2004); 2006(2007). *Ministerio de Sanidad, Servicios Sociales e Igualdad.*

Table A2: Hospitalizations by MDALC
DiD - Summarized Results

VARIABLES	(1) DiD All	(2) DiD Females	(3) DiD Males
DD=Dummy treatment*Dummy policy	-1.58	-0.87	-1.55
	(15.68)	(1.63)	(8.79)
Dummy treatment	-36.77***	-8.05***	-28.26***
	(12.92)	(2.83)	(9.92)
Dummy policy	-1.22	-2.14	2.25
	(4.37)	(3.90)	(3.58)
Constant	12.14***	4.95***	31.47***
	(4.27)	(0.00)	(0.00)
Observations	200	190	188
R-squared	0.81	0.77	0.77
Mean Before Policy for Treated	21.81	8.71	15.83
Implied impact of New MLDA in %	-7.23	-9.95	-9.82

Note: MDALC = Main diagnostic related to alcohol consumptio. Region and Year fixed effects included. Region-specific linear trends also included. Clustered standard errors using wild bootstrap method (400 reps, 200 seeds), in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Weighted by corresponding population per each region, year, and treatment status. Source: *Encuesta de Mordilidad Hospitalaria (EMH)*: 1993-2007. *Ministerio de Sanidad, Servicios Sociales e Igualdad.*

Table A3: Ratio Hospitalizations by MDALC/population (per 1000 individuals)
DiD - Summarized Results

VARIABLES	(1) DiD All	(2) DiD Females	(3) DiD Males
DD=Dummy treatment*Dummy policy	-0.01	0.02	-0.04
	(0.08)	(0.02)	(0.07)
Dummy treatment	-0.16***	-0.07**	-0.23***
	(0.06)	(0.03)	(0.08)
Dummy policy	-0.02	-0.03	0.01
	(0.03)	(0.03)	(0.04)
Constant	0.35***	0.31***	1.34***
	(0.00)	(0.00)	(0.00)
Observations	200	190	188
R-squared	0.73	0.63	0.70
Mean Before Policy for Treated	0.15	0.14	0.20
Implied impact of New MLDA in %	-3.97	14.29	-20.00

Note: MDALC = Main diagnostic related to alcohol consumptio. Region and Year fixed effects included. Region-specific linear trends also included. Clustered standard errors using wild bootstrap method (400 reps, 200 seeds), in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Weighted by corresponding population per each region, year, and treatment status. Source: *Encuesta de Mordilidad Hospitalaria (EMH)*: 1993-2007. *Ministerio de Sanidad, Servicios Sociales e Igualdad.*

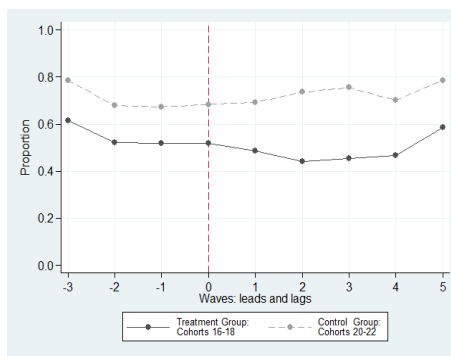# Appendix B: Auxiliary Figures

Figures - Overall prevalence

Figure 1: Trends - Overall drinking prevalence
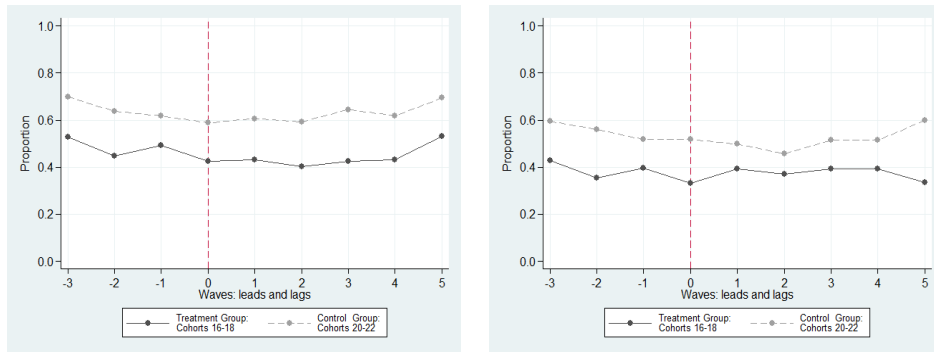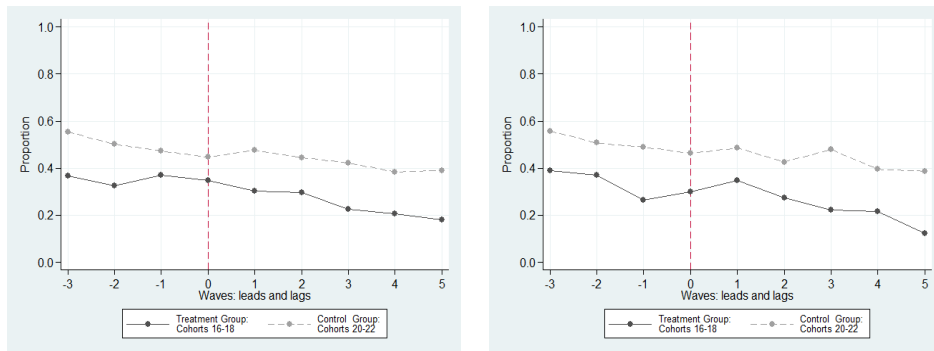

(a) Both genders
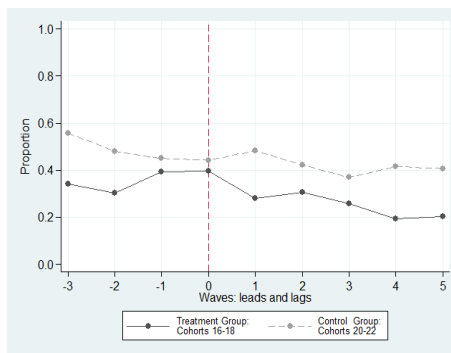
(b) Females

(c) Males

Note: MLDA = Minimum Legal Drinking Age. Source: *Ministerio de Sanidad y Asuntos Sociales.*

Figure 2: Trends - Overall smoking prevalence
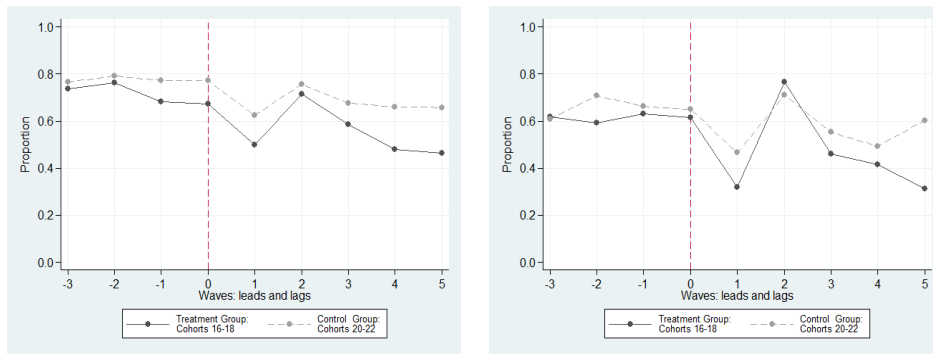

(a) Both genders

(b) Females

(c) Males

Note: MLDA = Minimum Legal Drinking Age. Source: *Ministerio de Sanidad y Asuntos Sociales.*
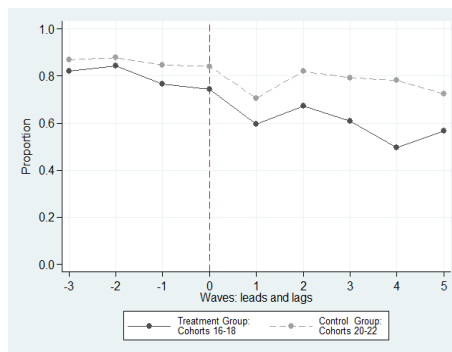
Figures - Drink type prevalence

Figure 3: Trends - Beer with alcohol drinking prevalence
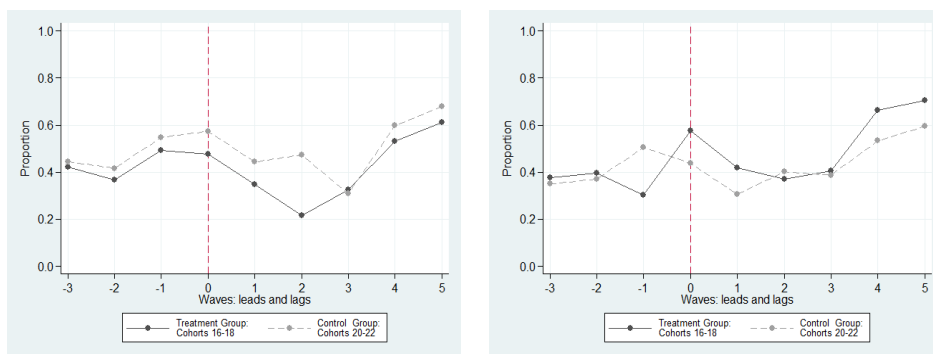

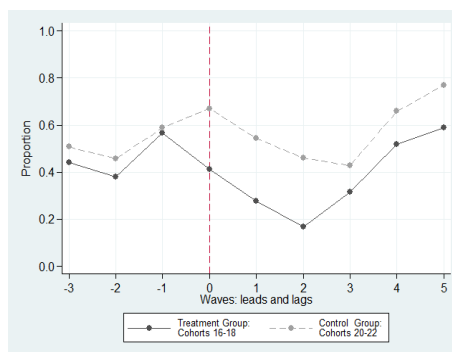(a) Both genders

(b) Females

(c) Males

Note: MLDA = Minimum Legal Drinking Age. Source: *Ministerio de Sanidad y Asuntos Sociales.*

Figure 4: Trends - Mixed drinks and/or Liquors drinking prevalence

(a) Both genders

(b) Females

(c) Males

Note: MLDA = Minimum Legal Drinking Age. Source: *Ministerio de Sanidad y Asuntos Sociales.*

Figure 5: Trends - Wine and/or Cava drinking prevalence
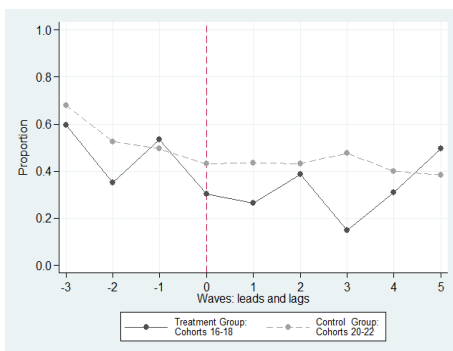
(a) Both genders
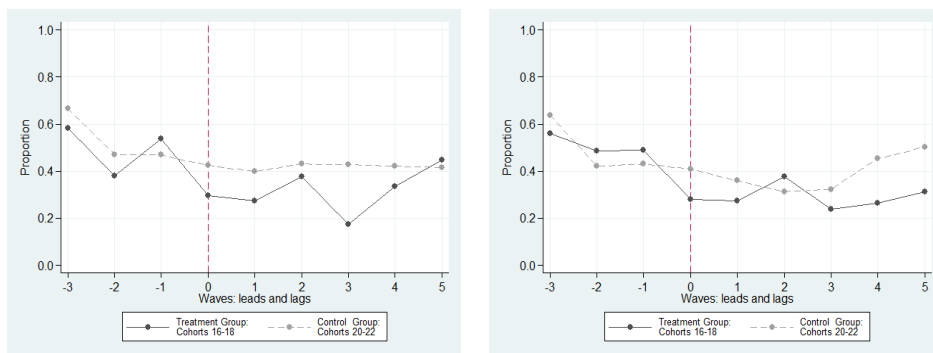
(b) Females

(c) Males

Note: MLDA = Minimum Legal Drinking Age. Source: *Ministerio de Sanidad y Asuntos Sociales.*

Figures - Morbidity Outcomes

Figure 6: Trends - Hospitalizations by MDALC
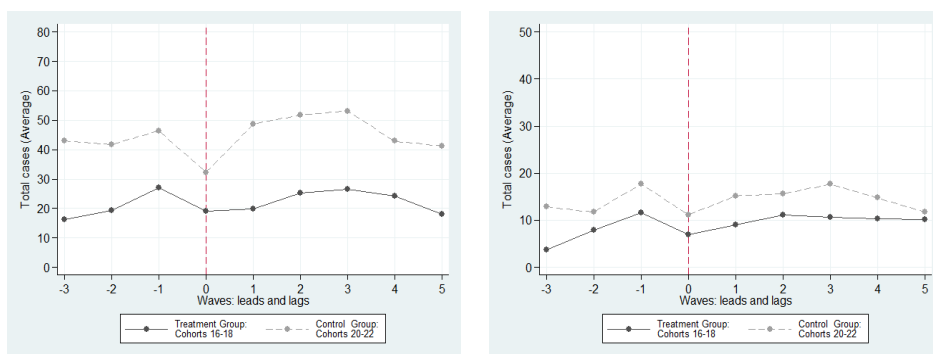
(a) Both genders

(b) Females
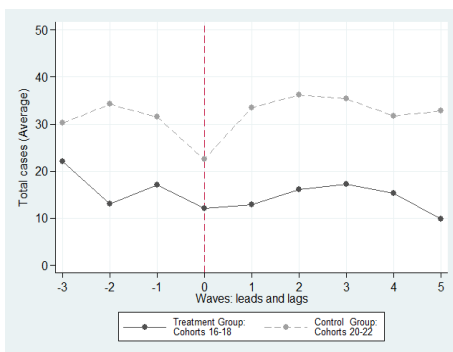
(c) Males

Note: MDALC = Mean diagnostic related to alcohol consumption. Source: *Ministerio de Sanidad y Asuntos Sociales.*

Figure 7: Trends - Ratio Hospitalizations by MDALC/Population (per 1000 individuals)

(a) Both genders

(b) Females

(c) Males

Note: MDALC = Mean diagnostic related to alcohol consumption. Source: *Ministerio de Sanidad y Asuntos Sociales.*

Appendix C: Auxiliary Tables

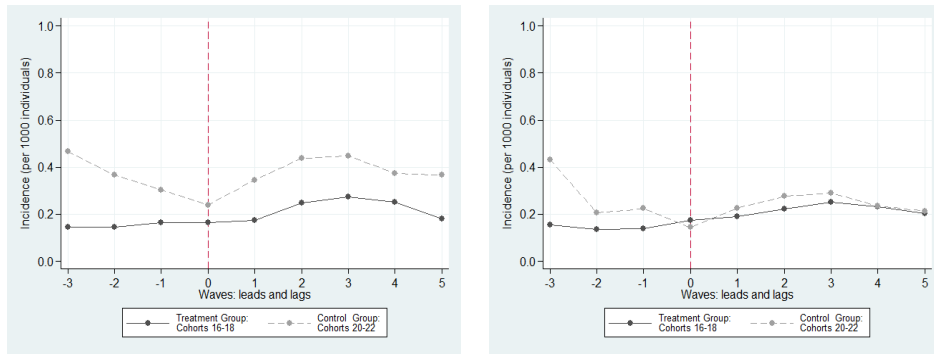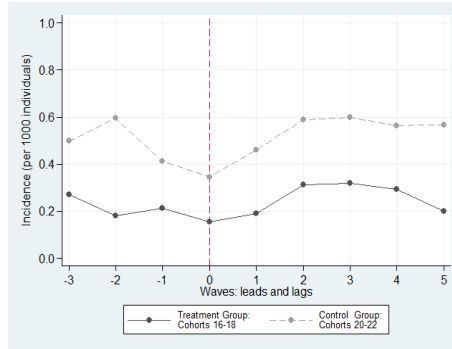Table C1: Spain - Implementation of New MLDA in all seventeen regions

Region	Date of implementation Chronologically ordered	Regional or National Official Bulletins
Navarra[†]	April 6th, 1991	BOE-A-1991-23614
Castilla y León	April 7th, 1994 (partial ban)	BOCL nm. 65, de 6 de abril de 1994
	June 14th, 2007 (full ban)	BOCL nm. 52, de 14 de marzo de 2007
Castilla-La Mancha	April 22nd, 1995	Diario Oficial de Castilla-La Mancha núm. 19, de 21 de abril de 1995
Andalucía	July 20th, 1997	BOE-A-1997-18301
Canarias	February 18th, 1997	BOE-A-1997-5498
Cantabria	November 15th, 1997	Boletín Oficial de Cantabria núm. 205, de 14 de noviembre de 1997
C. Valenciana	June 19th, 1997 (partial ban)	Diario Oficial de la Generalitat Valenciana núm. 3.016, de 18 de junio de 1997
	August 27th, 2002 (full ban)	BOE-A-2002-14189
Extremadura	May 18th, 1997	Diario Oficial de Extremadura núm. 57, de 17 de mayo de 1997
Murcia	November 13th, 1997	BOE-A-1998-3169
País Vasco	July 15th, 1998	BOE-A-2011-20661
Madrid	May 12th, 2000	BOE-A-2000-9793
Aragón	May 1st, 2001	BOE-A-2001-9342
La Rioja	February 18th, 2001	BOE-A-2000-21563
Cataluña	April 8th, 2002	DOGC nm. 3598, de 19 de marzo de 2002
Galicia[†]	February 28th, 2011	BOE-A-2011-1647
Baleares[†]	February 28th, 2014	BOE-A-2014-655
Asturias[†]	May 20th, 2015	BOE-A-2015-4847

Note: MLDA = Minimum Legal Drinking Age. BOE = Boletín Oficial del Estado (National Official Bulletin). BOCL = Boletín Oficial de Castilla y León (Official Bulletin of Region of Castilla y León). DOGC = Diario Oficial de la Generalitat de Catalunya (Official Bulletin of the Region of Catalunya). [†] Data for these regions was not used because New MLDA was implemented outside the 1993-2007 inclusive range of years. Source: Regional or National Official Bulletins.

Table C2: National Health Survey and Hospital Morbidity Survey
Summary of Descriptive Statistics

Panel A: National Health Survey (ENS)

| | 1993-2007 | | | |
	count	mean	min	max
Dummy Treatment: 0=Cohorts 20-22=0; 1=Cohorts 16-18	208	0.50	0	1
Dummy gender: 0=Females; 1=Males	208	0.53	0	1
Have you drunk recently?	208	0.54	0	1
Do you smoke nowadays?	208	0.37	0	1
Do you drink beer with alcohol?	204	0.66	0	1
Do you drink mixed drinks and/or liquors?	181	0.48	0	1
Do you drink wine and/or cava?	198	0.41	0	1
Do you drink aperitives with alcohol?	189	0.16	0	1
Do you drink whisky?	190	0.22	0	1

Panel B: Hospital Morbidity Survey (EMH)

| | 1993-2007 | | | |
	count	mean	min	max
Hospitalizations due to MDALC	200	33.95	1.00	180.00
Hospitalizations/Population(per 1000 hab.)	200	0.29	0.02	1.28

Note: MDALC = Mean Diagnostic Related to Alcohol Overdose. Aggregate descriptive statistics including all (8) waves and genders. 13 out 17 regions were included. Excluded (4) regions did not have enough data for waves before or after policy implementation. Treated and control group included cohorts 16-18 years old and cohorts 20-22 years old, respectively. Units of observation at the regional level. For ENS and EMH we used the following waves: 1993, 1995, 1997, 2001, 2003(2004), 2006(2007). Panel A: *Encuesta Nacional de Salud (ENS):* Waves 1993-2001 prepared by the Centre of Sociological Research. Waves 2003-2007 prepared by the National Institute of Statistics (INE). Panel B: *Encuesta de Morbilidad Hospitalaria (EMH)*: 1993-2007, prepared by the National Institute of Statistics (INE).

Table C3: List of diseases (diagnostics) considered. ICD-9 codes

Codes: 290-319 Mental disorders

Psychosis (290-299)
Organic psychotic conditions (290-294)
(291) Alcoholic psychoses
(292) Drug psychoses

Neurotic disorders, personality disorders, and other nonpsychotic mental disorders (300-316)
Sexual deviations and disorders (302)
(302) Sexual deviations and disorders

Psychoactive substance (303-305)
(303) Alcohol dependence syndrome (Include: acute drunkenness in alcoholism, dipsomania, chronic alcoholism)
(304) Drug dependence
(305) Nondependent abuse of drugs

Codes: 520-579 Diseases of the digestive system
Other diseases of digestive system (570-579)
Liver
(570) Acute and subacute necrosis of liver
(571) Chronic liver disease and cirrhosis
(572) Liver abscess and sequelae of chronic liver disease
(573) Other disorders of liver

Codes: 800-999 Injury and poisoning
Poisoning by drugs, medicinal and biological substances (960-979)
(967) Poisoning by sedatives and hypnotics
(968) Poisoning by other Central nervous system depressants and anesthetics
(969) Poisoning by psychotropic agents
(970) Poisoning by central nervous system stimulants
(971) Poisoning by drugs primarily affecting the autonomic nervous system
(972) Poisoning by agents primarily affecting the cardiovascular system

Note: ICD-9 = International Statistical Classification of Diseases and Related Health Problems - 9th Revision.
Source: *Ministerio de Sanidad, Servicios Sociales e Igualdad.*

2013

2013/1, Sánchez-Vidal, M.; González-Val, R.; Viladecans-Marsal, E.: "Sequential city growth in the US: does age matter?"

2013/2, Hortas Rico, M.: "Sprawl, blight and the role of urban containment policies. Evidence from US cities"

2013/3, Lampón, J.F.; Cabanelas-Lorenzo, P-; Lago-Peñas, S.: "Why firms relocate their production overseas? The answer lies inside: corporate, logistic and technological determinants"

2013/4, Montolio, D.; Planells, S.: "Does tourism boost criminal activity? Evidence from a top touristic country"

2013/5, Garcia-López, M.A.; Holl, A.; Viladecans-Marsal, E.: "Suburbanization and highways: when the Romans, the Bourbons and the first cars still shape Spanish cities"

2013/6, Bosch, N.; Espasa, M.; Montolio, D.: "Should large Spanish municipalities be financially compensated? Costs and benefits of being a capital/central municipality"

2013/7, Escardíbul, J.O.; Mora, T.: "Teacher gender and student performance in mathematics. Evidence from Catalonia"

2013/8, Arqué-Castells, P.; Viladecans-Marsal, E.: "Banking towards development: evidence from the Spanish banking expansion plan"

2013/9, Asensio, J.; Gómez-Lobo, A.; Matas, A.: "How effective are policies to reduce gasoline consumption? Evaluating a quasi-natural experiment in Spain"

2013/10, Jofre-Monseny, J.: "The effects of unemployment benefits on migration in lagging regions"

2013/11, Segarra, A.; García-Quevedo, J.; Teruel, M.: "Financial constraints and the failure of innovation projects"

2013/12, Jerrim, J.; Choi, A.: "The mathematics skills of school children: How does England compare to the high performing East Asian jurisdictions?"

2013/13, González-Val, R.; Tirado-Fabregat, D.A.; Viladecans-Marsal, E.: "Market potential and city growth: Spain 1860-1960"

2013/14, Lundqvist, H.: "Is it worth it? On the returns to holding political office"

2013/15, Ahlfeldt, G.M.; Maennig, W.: "Homevoters vs. leasevoters: a spatial analysis of airport effects"

2013/16, Lampón, J.F.; Lago-Peñas, S.: "Factors behind international relocation and changes in production geography in the European automobile components industry"

2013/17, Guío, J.M.; Choi, A.: "Evolution of the school failure risk during the 2000 decade in Spain: analysis of Pisa results with a two-level logistic mode"

2013/18, Dahlby, B.; Rodden, J.: "A political economy model of the vertical fiscal gap and vertical fiscal imbalances in a federation"

2013/19, Acacia, F.; Cubel, M.: "Strategic voting and happiness"

2013/20, Hellerstein, J.K.; Kutzbach, M.J.; Neumark, D.: "Do labor market networks have an important spatial dimension?"

2013/21, Pellegrino, G.; Savona, M.: "Is money all? Financing versus knowledge and demand constraints to innovation"

2013/22, Lin, J.: "Regional resilience"

2013/23, Costa-Campi, M.T.; Duch-Brown, N.; García-Quevedo, J.: "R&D drivers and obstacles to innovation in the energy industry"

2013/24, Huisman, R.; Stradnic, V.; Westgaard, S.: "Renewable energy and electricity prices: indirect empirical evidence from hydro power"

2013/25, Dargaud, E.; Mantovani, A.; Reggiani, C.: "The fight against cartels: a transatlantic perspective"

2013/26, Lambertini, L.; Mantovani, A.: "Feedback equilibria in a dynamic renewable resource oligopoly: pre-emption, voracity and exhaustion"

2013/27, Feld, L.P.; Kalb, A.; Moessinger, M.D.; Osterloh, S.: "Sovereign bond market reactions to fiscal rules and no-bailout clauses – the Swiss experience"

2013/28, Hilber, C.A.L.; Vermeulen, W.: "The impact of supply constraints on house prices in England"

2013/29, Revelli, F.: "Tax limits and local democracy"

2013/30, Wang, R.; Wang, W.: "Dress-up contest: a dark side of fiscal decentralization"

2013/31, Dargaud, E.; Mantovani, A.; Reggiani, C.: "The fight against cartels: a transatlantic perspective"

2013/32, Saarimaa, T.; Tukiainen, J.: "Local representation and strategic voting: evidence from electoral boundary reforms"

2013/33, Agasisti, T.; Murtinu, S.: "Are we wasting public money? No! The effects of grants on Italian university students' performances"

2013/34, Flacher, D.; Harari-Kermadec, H.; Moulin, L.: "Financing higher education: a contributory scheme"

2013/35, Carozzi, F.; Repetto, L.: "Sending the pork home: birth town bias in transfers to Italian municipalities"

2013/36, Coad, A.; Frankish, J.S.; Roberts, R.G.; Storey, D.J.: "New venture survival and growth: Does the fog lift?"

2013/37, Giulietti, M.; Grossi, L.; Waterson, M.: "Revenues from storage in a competitive electricity market: Empirical evidence from Great Britain"

2014

2014/1, Montolio, D.; Planells-Struse, S.: "When police patrols matter. The effect of police proximity on citizens' crime risk perception"

2014/2, Garcia-López, M.A.; Solé-Ollé, A.; Viladecans-Marsal, E.: "Do land use policies follow road construction?"

2014/3, Piolatto, A.; Rablen, M.D.: "Prospect theory and tax evasion: a reconsideration of the Yitzhaki puzzle"

2014/4, Cuberes, D.; González-Val, R.: "The effect of the Spanish Reconquest on Iberian Cities"

2014/5, Durán-Cabré, J.M.; Esteller-Moré, E.: "Tax professionals' view of the Spanish tax system: efficiency, equity and tax planning"

2014/6, Cubel, M.; Sanchez-Pages, S.: "Difference-form group contests"

2014/7, Del Rey, E.; Racionero, M.: "Choosing the type of income-contingent loan: risk-sharing versus risk-pooling"

2014/8, Torregrosa Hetland, S.: "A fiscal revolution? Progressivity in the Spanish tax system, 1960-1990"

2014/9, Piolatto, A.: "Itemised deductions: a device to reduce tax evasion"

2014/10, Costa, M.T.; García-Quevedo, J.; Segarra, A.: "Energy efficiency determinants: an empirical analysis of Spanish innovative firms"

2014/11, García-Quevedo, J.; Pellegrino, G.; Savona, M.: "Reviving demand-pull perspectives: the effect of demand uncertainty and stagnancy on R&D strategy"

2014/12, Calero, J.; Escardíbul, J.O.: "Barriers to non-formal professional training in Spain in periods of economic growth and crisis. An analysis with special attention to the effect of the previous human capital of workers"

2014/13, Cubel, M.; Sanchez-Pages, S.: "Gender differences and stereotypes in the beauty"

2014/14, Piolatto, A.; Schuett, F.: "Media competition and electoral politics"

2014/15, Montolio, D.; Trillas, F.; Trujillo-Baute, E.: "Regulatory environment and firm performance in EU telecommunications services"

2014/16, Lopez-Rodriguez, J.; Martinez, D.: "Beyond the R&D effects on innovation: the contribution of non-R&D activities to TFP growth in the EU"

2014/17, González-Val, R.: "Cross-sectional growth in US cities from 1990 to 2000"

2014/18, Vona, F.; Nicolli, F.: "Energy market liberalization and renewable energy policies in OECD countries"

2014/19, Curto-Grau, M.: "Voters' responsiveness to public employment policies"

2014/20, Duro, J.A.; Teixidó-Figueras, J.; Padilla, E.: "The causal factors of international inequality in co2 emissions per capita: a regression-based inequality decomposition analysis"

2014/21, Fleten, S.E.; Huisman, R.; Kilic, M.; Pennings, E.; Westgaard, S.: "Electricity futures prices: time varying sensitivity to fundamentals"

2014/22, Afcha, S.; García-Quevedo, J,: "The impact of R&D subsidies on R&D employment composition"

2014/23, Mir-Artigues, P.; del Río, P.: "Combining tariffs, investment subsidies and soft loans in a renewable electricity deployment policy"

2014/24, Romero-Jordán, D.; del Río, P.; Peñasco, C.: "Household electricity demand in Spanish regions. Public policy implications"

2014/25, Salinas, P.: "The effect of decentralization on educational outcomes: real autonomy matters!"

2014/26, Solé-Ollé, A.; Sorribas-Navarro, P.: "Does corruption erode trust in government? Evidence from a recent surge of local scandals in Spain"

2014/27, Costas-Pérez, E.: "Political corruption and voter turnout: mobilization or disaffection?"

2014/28, Cubel, M.; Nuevo-Chiquero, A.; Sanchez-Pages, S.; Vidal-Fernandez, M.: "Do personality traits affect productivity? Evidence from the LAB"

2014/29, Teresa Costa, M.T.; Trujillo-Baute, E.: "Retail price effects of feed-in tariff regulation"

2014/30, Kilic, M.; Trujillo-Baute, E.: "The stabilizing effect of hydro reservoir levels on intraday power prices under wind forecast errors"

2014/31, Costa-Campi, M.T.; Duch-Brown, N.: "The diffusion of patented oil and gas technology with environmental uses: a forward patent citation analysis"

2014/32, Ramos, R.; Sanromá, E.; Simón, H.: "Public-private sector wage differentials by type of contract: evidence from Spain"

2014/33, Backus, P.; Esteller-Moré, A.: "Is income redistribution a form of insurance, a public good or both?"

2014/34, Huisman, R.; Trujillo-Baute, E.: "Costs of power supply flexibility: the indirect impact of a Spanish policy change"

2014/35, Jerrim, J.; Choi, A.; Simancas Rodríguez, R.: "Two-sample two-stage least squares (TSTSLS) estimates of earnings mobility: how consistent are they?"

2014/36, Mantovani, A.; Tarola, O.; Vergari, C.: "Hedonic quality, social norms, and environmental campaigns"

2014/37, Ferraresi, M.; Galmarini, U.; Rizzo, L.: "Local infrastructures and externalities: Does the size matter?"

2014/38, Ferraresi, M.; Rizzo, L.; Zanardi, A.: "Policy outcomes of single and double-ballot elections"

2015

2015/1, Foremny, D.; Freier, R.; Moessinger, M-D.; Yeter, M.: "Overlapping political budget cycles in the legislative and the executive"

2015/2, Colombo, L.; Galmarini, U.: "Optimality and distortionary lobbying: regulating tobacco consumption"

2015/3, Pellegrino, G.: "Barriers to innovation: Can firm age help lower them?"

2015/4, Hémet, C.: "Diversity and employment prospects: neighbors matter!"

2015/5, Cubel, M.; Sanchez-Pages, S.: "An axiomatization of difference-form contest success functions"

2015/6, Choi, A.; Jerrim, J.: "The use (and misuse) of Pisa in guiding policy reform: the case of Spain"

2015/7, Durán-Cabré, J.M.; Esteller-Moré, A.; Salvadori, L.: "Empirical evidence on tax cooperation between sub-central administrations"

2015/8, Batalla-Bejerano, J.; Trujillo-Baute, E.: "Analysing the sensitivity of electricity system operational costs to deviations in supply and demand"

2015/9, Salvadori, L.: "Does tax enforcement counteract the negative effects of terrorism? A case study of the Basque Country"

2015/10, Montolio, D.; Planells-Struse, S.: "How time shapes crime: the temporal impacts of football matches on crime"

2015/11, Piolatto, A.: "Online booking and information: competition and welfare consequences of review aggregators"

2015/12, Boffa, F.; Pingali, V.; Sala, F.: "Strategic investment in merchant transmission: the impact of capacity utilization rules"

2015/13, Slemrod, J.: "Tax administration and tax systems"

2015/14, Arqué-Castells, P.; Cartaxo, R.M.; García-Quevedo, J.; Mira Godinho, M.: "How inventor royalty shares affect patenting and income in Portugal and Spain"

2015/15, Montolio, D.; Planells-Struse, S.: "Measuring the negative externalities of a private leisure activity: hooligans and pickpockets around the stadium"

2015/16, Batalla-Bejerano, J.; Costa-Campi, M.T.; Trujillo-Baute, E.: "Unexpected consequences of liberalisation: metering, losses, load profiles and cost settlement in Spain's electricity system"

2015/17, Batalla-Bejerano, J.; Trujillo-Baute, E.: "Impacts of intermittent renewable generation on electricity system costs"

2015/18, Costa-Campi, M.T.; Paniagua, J.; Trujillo-Baute, E.: "Are energy market integrations a green light for FDI?"

2015/19, Jofre-Monseny, J.; Sánchez-Vidal, M.; Viladecans-Marsal, E.: "Big plant closures and agglomeration economies"

2015/20, Garcia-López, M.A.; Hémet, C.; Viladecans-Marsal, E.: "How does transportation shape intrametropolitan growth? An answer from the regional express rail"

2015/21, Esteller-Moré, A.; Galmarini, U.; Rizzo, L.: "Fiscal equalization under political pressures"

2015/22, Escardíbul, J.O.; Afcha, S.: "Determinants of doctorate holders' job satisfaction. An analysis by employment sector and type of satisfaction in Spain"

2015/23, Aidt, T.; Asatryan, Z.; Badalyan, L.; Heinemann, F.: "Vote buying or (political) business (cycles) as usual?"

2015/24, Albæk, K.: "A test of the 'lose it or use it' hypothesis in labour markets around the world"

2015/25, Angelucci, C.; Russo, A.: "Petty corruption and citizen feedback"

2015/26, Moriconi, S.; Picard, P.M.; Zanaj, S.: "Commodity taxation and regulatory competition"

2015/27, Brekke, K.R.; Garcia Pires, A.J.; Schindler, D.; Schjelderup, G.: "Capital taxation and imperfect competition: ACE vs. CBIT"

2015/28, Redonda, A.: "Market structure, the functional form of demand and the sensitivity of the vertical reaction function"

2015/29, Ramos, R.; Sanromá, E.; Simón, H.: "An analysis of wage differentials between full-and part-time workers in Spain"

2015/30, Garcia-López, M.A.; Pasidis, I.; Viladecans-Marsal, E.: "Express delivery to the suburbs the effects of transportation in Europe's heterogeneous cities"

2015/31, Torregrosa, S.: "Bypassing progressive taxation: fraud and base erosion in the Spanish income tax (1970-2001)"

2015/32, Choi, H.; Choi, A.: "When one door closes: the impact of the hagwon curfew on the consumption of private tutoring in the republic of Korea"

2015/33, Escardíbul, J.O.; Helmy, N.: "Decentralisation and school autonomy impact on the quality of education: the case of two MENA countries"

2015/34, González-Val, R.; Marcén, M.: "Divorce and the business cycle: a cross-country analysis"

2015/35, Calero, J.; Choi, A.: "The distribution of skills among the European adult population and unemployment: a comparative approach"

2015/36, Mediavilla, M.; Zancajo, A.: "Is there real freedom of school choice? An analysis from Chile"

2015/37, Daniele, G.: "Strike one to educate one hundred: organized crime, political selection and politicians' ability"

2015/38, González-Val, R.; Marcén, M.: "Regional unemployment, marriage, and divorce"

2015/39, Foremny, D.; Jofre-Monseny, J.; Solé-Ollé, A.: "'Hold that ghost': using notches to identify manipulation of population-based grants"

2015/40, Mancebón, M.J.; Ximénez-de-Embún, D.P.; Mediavilla, M.; Gómez-Sancho, J.M.: "Does educational management model matter? New evidence for Spain by a quasiexperimental approach"

2015/41, Daniele, G.; Geys, B.: "Exposing politicians' ties to criminal organizations: the effects of local government dissolutions on electoral outcomes in Southern Italian municipalities"

2015/42, Ooghe, E.: "Wage policies, employment, and redistributive efficiency"

2016

2016/1, Galletta, S.: "Law enforcement, municipal budgets and spillover effects: evidence from a quasi-experiment in Italy"

2016/2, Flatley, L.; Giulietti, M.; Grossi, L.; Trujillo-Baute, E.; Waterson, M.: "Analysing the potential economic value of energy storage"

2016/3, Calero, J.; Murillo Huertas, I.P.; Raymond Bara, J.L.: "Education, age and skills: an analysis using the PIAAC survey"

2016/4, Costa-Campi, M.T.; Daví-Arderius, D.; Trujillo-Baute, E.: "The economic impact of electricity losses"

2016/5, Falck, O.; Heimisch, A.; Wiederhold, S.: "Returns to ICT skills"

2016/6, Halmenschlager, C.; Mantovani, A.: "On the private and social desirability of mixed bundling in complementary markets with cost savings"

2016/7, Choi, A.; Gil, M.; Mediavilla, M.; Valbuena, J.: "Double toil and trouble: grade retention and academic performance"

2016/8, González-Val, R.: "Historical urban growth in Europe (1300–1800)"

2016/9, Guio, J.; Choi, A.; Escardíbul, J.O.: "Labor markets, academic performance and the risk of school dropout: evidence for Spain"

2016/10, Bianchini, S.; Pellegrino, G.; Tamagni, F.: "Innovation strategies and firm growth"

2016/11, Jofre-Monseny, J.; Silva, J.I.; Vázquez-Grenno, J.: "Local labor market effects of public employment"

2016/12, Sanchez-Vidal, M.: "Small shops for sale! The effects of big-box openings on grocery stores"

2016/13, Costa-Campi, M.T.; García-Quevedo, J.; Martínez-Ros, E.: "What are the determinants of investment in environmental R&D?"

2016/14, García-López, M.A; Hémet, C.; Viladecans-Marsal, E.: "Next train to the polycentric city: The effect of railroads on subcenter formation"

2016/15, Matas, A.; Raymond, J.L.; Dominguez, A.: "Changes in fuel economy: An analysis of the Spanish car market"

2016/16, Leme, A.; Escardíbul, J.O.: "The effect of a specialized versus a general upper secondary school curriculum on students' performance and inequality. A difference-in-differences cross country comparison"

2016/17, Scandurra, R.I.; Calero, J.: "Modelling adult skills in OECD countries"

2016/18, Fernández-Gutiérrez, M.; Calero, J.: "Leisure and education: insights from a time-use analysis"

2016/19, Del Rio, P.; Mir-Artigues, P.; Trujillo-Baute, E.: "Analysing the impact of renewable energy regulation on retail electricity prices"

2016/20, Taltavull de la Paz, P.; Juárez, F.; Monllor, P.: "Fuel Poverty: Evidence from housing perspective"

2016/21, Ferraresi, M.; Galmarini, U.; Rizzo, L.; Zanardi, A.: "Switch towards tax centralization in Italy: A wake up for the local political budget cycle"

2016/22, Ferraresi, M.; Migali, G.; Nordi, F.; Rizzo, L.: "Spatial interaction in local expenditures among Italian municipalities: evidence from Italy 2001-2011"

2016/23, Daví-Arderius, D.; Sanin, M.E.; Trujillo-Baute, E.: "CO2 content of electricity losses"

2016/24, Arqué-Castells, P.; Viladecans-Marsal, E.: "Banking the unbanked: Evidence from the Spanish banking expansion plan"

2016/25 Choi, Á.; Gil, M.; Mediavilla, M.; Valbuena, J.: "The evolution of educational inequalities in Spain: Dynamic evidence from repeated cross-sections"

2016/26, Brutti, Z.: "Cities drifting apart: Heterogeneous outcomes of decentralizing public education"

2016/27, Backus, P.; Cubel, M.; Guid, M.; Sánchez-Pages, S.; Lopez Manas, E.: "Gender, competition and performance: evidence from real tournaments"

2016/28, Costa-Campi, M.T.; Duch-Brown, N.; García-Quevedo, J.: "Innovation strategies of energy firms"

2016/29, Daniele, G.; Dipoppa, G.: "Mafia, elections and violence against politicians"

2016/30, Di Cosmo, V.; Malaguzzi Valeri, L.: "Wind, storage, interconnection and the cost of electricity"

2017

2017/1, González Pampillón, N.; Jofre-Monseny, J.; Viladecans-Marsal, E.: "Can urban renewal policies reverse neighborhood ethnic dynamics?"
2017/2, Gómez San Román, T.: "Integration of DERs on power systems: challenges and opportunities"
2017/3, Bianchini, S.; Pellegrino, G.: "Innovation persistence and employment dynamics"
2017/4, Curto-Grau, M.; Solé-Ollé, A.; Sorribas-Navarro, P.: "Does electoral competition curb party favoritism?"
2017/5, Solé-Ollé, A.; Viladecans-Marsal, E.: "Housing booms and busts and local fiscal policy"
2017/6, Esteller, A.; Piolatto, A.; Rablen, M.D.: "Taxing high-income earners: Tax avoidance and mobility"
2017/7, Combes, P.P.; Duranton, G.; Gobillon, L.: "The production function for housing: Evidence from France"
2017/8, Nepal, R.; Cram, L.; Jamasb, T.; Sen, A.: "Small systems, big targets: power sector reforms and renewable energy development in small electricity systems"
2017/9, Carozzi, F.; Repetto, L.: "Distributive politics inside the city? The political economy of Spain's plan E"
2017/10, Neisser, C.: "The elasticity of taxable income: A meta-regression analysis"
2017/11, Baker, E.; Bosetti, V.; Salo, A.: "Finding common ground when experts disagree: robust portfolio decision analysis"
2017/12, Murillo, I.P; Raymond, J.L; Calero, J.: "Efficiency in the transformation of schooling into competences: A cross-country analysis using PIAAC data"
2017/13, Ferrer-Esteban, G.; Mediavilla, M.: "The more educated, the more engaged? An analysis of social capital and education"
2017/14, Sanchis-Guarner, R.: "Decomposing the impact of immigration on house prices"
2017/15, Schwab, T.; Todtenhaupt, M.: "Spillover from the haven: Cross-border externalities of patent box regimes within multinational firms"
2017/16, Chacón, M.; Jensen, J.: "The institutional determinants of Southern secession"
2017/17, Gancia, G.; Ponzetto, G.A.M.; Ventura, J.: "Globalization and political structure"
2017/18, González-Val, R.: "City size distribution and space"
2017/19, García-Quevedo, J.; Mas-Verdú, F.; Pellegrino, G.: "What firms don't know can hurt them: Overcoming a lack of information on technology"
2017/20, Costa-Campi, M.T.; García-Quevedo, J.: "Why do manufacturing industries invest in energy R&D?"
2017/21, Costa-Campi, M.T.; García-Quevedo, J.; Trujillo-Baute, E.: "Electricity regulation and economic growth"

2018

2018/1, Boadway, R.; Pestieau, P.: "The tenuous case for an annual wealth tax"
2018/2, Garcia-López, M.À.: "All roads lead to Rome ... and to sprawl? Evidence from European cities"
2018/3, Daniele, G.; Galletta, S.; Geys, B.: "Abandon ship? Party brands and politicians' responses to a political scandal"
2018/4, Cavalcanti, F.; Daniele, G.; Galletta, S.: "Popularity shocks and political selection"
2018/5, Naval, J.; Silva, J. I.; Vázquez-Grenno, J.: "Employment effects of on-the-job human capital acquisition"
2018/6, Agrawal, D. R.; Foremny, D.: "Relocation of the rich: migration in response to top tax rate changes from spanish reforms"
2018/7, García-Quevedo, J.; Kesidou, E.; Martínez-Ros, E.: "Inter-industry differences in organisational eco-innovation: a panel data study"
2018/8, Aastveit, K. A.; Anundsen, A. K.: "Asymmetric effects of monetary policy in regional housing markets"
2018/9, Curci, F.; Masera, F.: "Flight from urban blight: lead poisoning, crime and suburbanization"
2018/10, Grossi, L.; Nan, F.: "The influence of renewables on electricity price forecasting: a robust approach"
2018/11, Fleckinger, P.; Glachant, M.; Tamokoué Kamga, P.-H.: "Energy performance certificates and investments in building energy efficiency: a theoretical analysis"
2018/12, van den Bergh, J. C.J.M.; Angelsen, A.; Baranzini, A.; Botzen, W.J. W.; Carattini, S.; Drews, S.; Dunlop, T.; Galbraith, E.; Gsottbauer, E.; Howarth, R. B.; Padilla, E.; Roca, J.; Schmidt, R.: "Parallel tracks towards a global treaty on carbon pricing"
2018/13, Ayllón, S.; Nollenberger, N.: "The unequal opportunity for skills acquisition during the Great Recession in Europe"
2018/14, Firmino, J.: "Class composition effects and school welfare: evidence from Portugal using panel data"
2018/15, Durán-Cabré, J. M.; Esteller-Moré, A.; Mas-Montserrat, M.; Salvadori, L.: "La brecha fiscal: estudio y aplicación a los impuestos sobre la riqueza"

2018/16, Montolio, D.; Tur-Prats, A.: "Long-lasting social capital and its impact on economic development: the legacy of the commons"
2018/17, Garcia-López, M. À.; Moreno-Monroy, A. I.: "Income segregation in monocentric and polycentric cities: does urban form really matter?"
2018/18, Di Cosmo, V.; Trujillo-Baute, E.: "From forward to spot prices: producers, retailers and loss averse consumers in electricity markets"

IEB Working Paper