Health Policy 111 (2013) 116–126

Contents lists available at SciVerse ScienceDirect

Health Policy

journal homepage: www.elsevier.com/locate/healthpol

The role of anti-smoking legislation on cigarette and alcohol consumption habits in Italy

Luca Pieroni[a,b,*], Manuela Chiavarini[c], Liliana Minelli[c], Luca Salmasi[c]

[a] Department of Economics, Finance and Statistics, University of Perugia, via Pascoli 20, 06123 Perugia, Italy
[b] University of the West of England, UK
[c] Department of Medical and Surgery Specialities and Public Health, Division of Public Health, University of Perugia, via del Giochetto, 06123 Perugia, Italy

ARTICLE INFO

Article history:
Received 20 October 2012
Received in revised form 30 March 2013
Accepted 2 April 2013

JEL classification:
I10
I12
I18

Keywords:
Anti-smoking legislation
Regression discontinuity
Difference-in-Differences
Cost-effectiveness analysis

ABSTRACT

The short-term effects of public smoking bans on individual smoking and drinking habits were investigated in this paper. In 2005, a smoking ban was introduced in Italy, and we exploited this exogenous variation to measure the effect on both smoking participation and intensity and the indirect effect on alcohol consumption. Using data from the Everyday Life Aspects survey, for the period 2001–2007, we show that the introduction of smoke-free legislation in Italy significantly affected smoking behavior. We also document significant indirect effects on alcohol consumption for the main alcoholic beverage categories. A robustness analysis is also performed, to test the extent to which unobservable variables may bias our estimated parameters. Our results are then used to perform a cost-effectiveness analysis of the anti-smoking legislation in Italy.

1. Introduction

The most important expected implication of clean indoor air laws (*CIALs*) is their beneficial effect in reducing cigarette consumption. Since smoking is an ongoing and substantial problem for national health service authorities, it is of interest to assess its possible indirect effects on health, such as passive smoking [7], the relationship with weight gains [20,28] and the positive spillover effects on drinking Yörük and Yörük [29]. In this paper, we present evidence of the effectiveness of the *CIAL*, implemented in Italy as from 10 January 2005, in reducing smoking and on its possible indirect effects on alcohol consumption.

The introduction of smoking bans allows us to observe individuals' smoking choices, with similar observable and unobservable characteristics, subjected to different restrictions. Typically, individuals observed in the pre-ban period were exposed to lower restrictions and were freer to choose when and where to smoke. Conversely, in the post-ban period, smoking became more costly – for example, because smokers have to spend more time in reaching appropriate smoking areas at the workplace [17]. In addition smokers also have to spend more time reaching smoking areas at restaurants or pubs, or finding those where smoking rooms are available.

As noted above, one possibility arising from the introduction of smoking bans is measuring the interactions between smoking and drinking habits in causal terms, as smokers usually record higher alcohol consumption levels

* Corresponding author at: Department of Economics, Finance and Statistics, University of Perugia, via Pascoli 20, 06123 Perugia, Italy. Tel.: +39 075 5855280; fax: +39 0755 855299.
E-mail addresses: lpieroni@unipg.it (L. Pieroni), chiavarini@inwind.it (M. Chiavarini), lminelli@unipg.it (L. Minelli), luca.salmasi@progetti.unipg.it (L. Salmasi).

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http://dx.doi.org/10.1016/j.healthpol.2013.04.001

than non-smokers. Dee [6] highlighted complementarities in the consumption of such adult goods, exploiting the minimum legal drinking age (*MLDA*) to assess causal variations in terms of smoking. The same approach was also adopted by Yörük and Yörük [29] and Crost and Guerrero [5] to evaluate the effects of alcohol on marijuana use. Our work is related to these studies, because we share with them the idea of using an exogenous reform to evaluate the effects of smoking on alcohol consumption in Italy. However, our results for the Italian case must be interpreted as an attempt to move from descriptive analysis toward causality given that our dataset is composed by repeated cross-sections before and after the smoking ban introduction. The cited papers of Yörük and Yörük [29] and Crost and Guerrero [5], for the American case, were able to assess causality in strict terms, because they were conducted using more informative data with a panel structure and exploited information about variations in smoking and drinking patterns around the exact date of birth of respondents.

Our analysis is supported by related studies on the effects of smoking bans on smoking habits in other European countries. For instance, Nagelhout et al. [22] showed that (comprehensive) smoking ban in Ireland and England had positive effects on quitting, whereas (partial) ban had no effect in the Netherlands. Jones et al. [17] did not find significant effects of the smoking ban in England or Scotland, nor were non-significant effects found in Germany by Anger et al. [1]. Kennedy et al. [18] provided an analysis of the French smoking ban in hospitality venues; they showed that the indoor smoking ban moved smoking to outdoor spaces and reduced smoking habits. In addition, using data from a survey conducted after the 2004 *CIAL* in Ireland, Anonymous [2] found that, among Irish smokers who quit after the law came into force, 80% not only reported that the law had helped them to quit but, of these, 88% stated that it had helped them to remain non-smokers.[1]

Gallus et al. [12], evaluating the 2005 Italian law for smoke-free public places, estimated that smoking prevalence decreased by 1.9% between 2004 and 2005. For the same period, Gallus et al. [13] showed that cigarette consumption decreased by 8%. These effects were particularly significant in men and in subjects aged 15–44 [14].

Significant effects of the smoke-free policy in Italy were also highlighted recently by Federico et al. [8], with a special focus on the role of education, and Buonanno and Ranzani [4]. These results are also in line with findings from studies analyzing countries outside Europe (e.g., the US, Australia and Canada; Fichtenberg and Glantz [9]).

Our study makes three main contributions to the existing literature. First, it provides new estimates of the short-term effects of smoking bans on smoking habits. We find that smoking restrictions led to a significant reduction in cigarette consumption. In particular, we estimate that the probability of quitting smoking increased by 2.05 percentage points and that the average daily number of cigarettes smoked decreased by almost half a cigarette (i.e., −0.36).

Second, focusing on ever-smokers (defined as current and former smokers), we investigate the indirect effects of the anti-smoking law on alcohol consumption, for the main categories of alcoholic beverages. Although we do not deny evidence of complementarity relations between cigarette and alcohol consumption, we document larger reductions associated with alcoholic beverages prevalently consumed in public houses and restaurants, which are responsible for a re-allocation effect on wine consumed at home.

Third, we use our estimates to provide a cost-effectiveness analysis, showing that the costs associated with the implementation of the smoking ban do not exceed the health benefits to quitters.

The rest of the paper is organized as follows. Section 2 describes the dataset used and the basic facts for empirical analysis. Section 3 specifies our empirical strategy, which uses a regression discontinuity (*RD*) design to estimate the effect on smoking habits, whereas a *Difference-in-Differences* (*DID*) approach is used to evaluate interactions with alcohol consumption. Section 4 presents the main results from our analysis and several robustness checks. Section 5 provides the results of the cost-effectiveness analysis of the Italian CIAL, and Section 6 concludes.

2. Data and basic facts

The dataset used in this paper is the ELA survey, conducted in Italy by the Italian Institute of Statistics (ISTAT). The ELA survey is a representative cross-section sample of the Italian population and provides detailed information on the demographics, social characteristics and health of 20,000 households each year, corresponding to approximately 50,000 individual records yearly.

For the aims of the present study, the importance of this survey lies in the detailed section devoted to the analysis of smoking and drinking habits of individuals aged 18 and over. In particular, we use information about smoking rates and cigarette consumption as well as about the percentage of habitual drinkers for the following categories: beer, wine, alcoholic apéritifs, alcohol consumption outside meals, bitters[2] and spirits. The information from the ELA survey allows us to define various types of alcohol consumers, according to their consumption levels. For the selected alcoholic beverages, we define as "habitual consumers" those who drink at least 1 or 2 glasses of beer or wine, or alcoholic apéritifs, alcohol outside meals, bitters or liquors at least once a week. The reference category is composed of individuals who very rarely or never consume alcohol.

Smoking and drinking outcomes are evaluated by six rounds of the ELA survey, from 2001 to 2007, collected around the discontinuity generated by the smoking ban. Since data for 2004 were not available, we selected a sample of individuals aged from 20 to 60 in the pre-ban period (2001–2003) and compared it with individuals of the same age in the post-ban period (2005–2007). The pre-ban

[1] This result is in line with that of [11].

[2] In this work, the bitters category is intended as alcohol flavored with bitter plant extracts, used as an additive in cocktails or as a medicinal substance to promote appetite or digestion and not as bitter apéritifs.