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Bar opening hours, alcohol consumption and workplace accidents

Nicolau Martin Bassols^a, Judit Vall Castello^{a,b,*}^a Centre for Research in Health and Economics Universitat Pompeu Fabra, Spain^b Universitat De Barcelona, Institut D'economia De Barcelona (IEB), Spain

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ABSTRACT

It is widely proven that individuals that consume more alcohol are also much more likely to suffer from a working accident. However, this observed correlation may be due to other unobserved factors affecting both alcohol consumption and working accidents (such as the type of job). Thus, in this paper we establish the causal impact of alcohol consumption on working accidents by exploiting a reduction in Spanish bar opening hours that was introduced progressively throughout regions and time. We first show that the policy effectively reduced working accidents. Although there may be many channels by which bar closing hours affect working accidents, we provide evidence that alcohol consumption, which stands as one of these potential channels, is also reduced after the introduction of the policy. Our paper is the first one to provide evidence that stricter closing times for bars causally reduce accidents at work. This is important from a policy point of view as working accidents stand as a very important determinant of productivity levels and entail very high costs in terms of health and disability.

1. Introduction

In this paper we analyze the causal effect of a policy that reduced bar opening hours in Spain on workplace accidents. Furthermore, we also study the impact of this policy on several proxies of alcohol consumption: household expenditure in bars, self-assessed alcohol consumption as well as hospitalizations due to excessive alcohol consumption. Our results show that reducing bar opening hours causes a decrease in both working accidents as well as alcohol consumption. Thus, we provide the first evidence on the existence of spill over effects of restricting the timing of alcohol sales on the probability of suffering from a working accident. We also show that these effects are heterogeneous across gender and economic sectors.

This analysis is important for several reasons: first, workplace accidents entail massive economic and social costs, affecting not only individuals involved in the accident but also the society as a whole. According to Takala et al. (2014) in 2012, 2.3 million individuals died worldwide due to workplace related accidents. For the different countries, this implied an average economic cost between 1.8% and 6% of their GDP. Second, we focus on a country, Spain, which stands at a relatively negative position with respect to its European neighbours regarding workplace safety. Tejedor (2006) examines differences in workplace accidents among EU15 countries for the years 1996 and 2003 and concludes that, in almost all outcomes, Spain was at the back tail of workplace safety standards. For instance, during the period analyzed Spain was the country with the largest number of workplace accidents that

required three or more days of sick leave in order to recover. Regarding mortal workplace accidents, Spain was behind the average in the EU15 and almost tripled the number of accidents in which at least one person dies with respect to countries such as Sweden or the UK. Finally, even if there is a large body of literature that reports a strong positive correlation between alcohol consumption and workplace accidents (Van Charante et al., 1990; Zwerling et al., 1996; Wells, 1999 amongst others) causality has not yet been established.

Our identification strategy is based on a policy that reduced bar opening hours from 6am to 2–3.30am in Spain. This represents a strong reduction on the number of hours that bars can remain open and, thus, may have affected the probability of suffering a working accident. There are many channels through which limiting the number of opening hours for bars can result in reductions in workplace accidents. For example, one argument is that individuals will stop drinking alcohol before which will improve concentration the next day at work. However, there could be also alternative explanations that do not entail a reduction in alcohol consumption. For example, individuals could drink the same amount than before (although in a shorter period of time) but, because they go to sleep earlier and get more hours of rest, they could also be in better shape the next day and, thus, avoid having accidents while working. Another argument can be that, even if the amount of alcohol or the number of hours of sleep do not change, if individuals spent at home the time that they would have spent in the bar, then they may potentially be less tired which, in turn, can reduce the probability of suffering a working accident the next day. Additionally, it could even be the case that individuals that do not go to bars are less disturbed by noise at nights and

* Corresponding author.

E-mail address: judit.vall@upf.edu (J. Vall Castello).<https://doi.org/10.1016/j.labeco.2018.04.011>

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are less exposed to fatigue and, thus, they may be in better shape to work and to avoid a workplace accident. Therefore, it is not feasible for us to identify all the channels potentially operating and in this paper we focus on the effects of the reform on one other outcome (and potentially mediator) which is alcohol consumption.

Thus, we exploit the staggered implementation of the reduction in bar opening hours across regions in Spain in order to identify any causal effect of the policy on working accidents, the expenditure of individuals in bars, self-assessed alcohol consumption and hospitalizations related to alcohol consumption. To be best of our knowledge, this is the first paper that reports a drop in the probability of suffering from a working accident when bars are no longer allowed to remain open until sunrise.

Our paper also contributes to the literature that demonstrates how changes on the timing of alcohol sales reduce the consumption of alcohol by affected individuals (Wicki et al., 2011; Carpenter et al., 2009; Marcus et al., 2015, amongst others). Some of these papers also explore potential spill over effects of these policies such as impaired driver road crashes and driver breath alcohol (Chikritzhs et al., 2006), emergency ward admissions and suspected drunk driving (Ragnarsdottir et al., 2002), fatal traffic accidents (Lovenheim et al., 2011), total accidents, pedestrian accidents, single-vehicle accidents and multi-vehicle accidents (Raymond, 1969), traffic crash injuries (Smith, 1990), crime rates (Heaton, 2012) and workplace absenteeism (Green et al., 2015). We contribute to this literature and provide evidence of another positive spill over effect (a reduction in workplace accidents) of policies that affect alcohol consumption. One important difference of our paper is that we focus on a restriction in bar opening hours while most of the previous literature considers policies that increase opening hours of alcohol selling establishments. Green et al. (2015) examine the effects of the same policy and find a reduction on the probability that a worker is absent from work as a result of the restriction in bar opening hours. We go one step further than the paper by Green et al. (2015) and focus on an outcome that has much stronger negative effects in terms of health and disability. Furthermore, we use population level data on everyone who suffered from a working accident, which allows us to get a much finer identification than survey data and we also report the impacts of the policy on alcohol consumption, which was unexplored in Green et al. (2015).

2. Spanish context

Spain is divided into 17 regions (Autonomous Communities). Each of these regions implemented the reduction in bar opening hours at some point between 1994 and 2011. Before the reform, bars in Spain were allowed to open until 6am. This was reduced to 2am–3.30am, depending on the region. The progression of these changes through time and regions can be observed in Table 1 and Fig. 1 in the appendix.¹ Both the Table as well as the Figure show the exact timing of the introduction of the reduction in bar opening hours in each region. We can see that the reforms were very staggered over time so that there are no two regions implementing the change at the same time. Thus, in our identification strategy we will make use of this heterogeneous implementation of the reform in order to build a quasi-natural experiment comparing regions that have already implemented the policy against those that have not yet introduced it.

One obvious question that may be asked at this point is the reasons that each region had when taking the decision to implement the reduction in bar opening hours at a specific point in time. In order to understand why different reforms were implemented in such a wide time range it is important to be familiarized with the Spanish political structure. The 17 regional entities in Spain represent first-level political and

administrative divisions. Therefore, these different regions can exercise their right to self-government (limited by the constitution and their regional statutes) and can decide on when to implement these types of reforms. It is important to point out that other related policies affecting bars and alcohol consumption (changes in taxation, etc.) can only be implemented at a national level. That is, apart from bar opening hours, other changes implemented in the considered time period were introduced homogeneously in all regions at the same time and, therefore, will not impose a threat to our identification strategy (as they will be captured by the time fixed effects).

The principal objective of the implementation of these reforms was to reduce problems of social coexistence derived from the activity of bars. These problems referred to the noise, pollution and dirt that agglomerations of individuals generate. This is a notable difference with respect to similar policies studied in the literature (changes in the timing of alcohol sales) which main objective is the reduction in alcohol consumption.² Thus, because the reduction in alcohol consumption was not the prime objective of the reduction in bar opening hours in Spain, we expect the potential endogeneity of the policy to be minimized. That is, our guess is that the timing of the implementation of the policy in each region will not be correlated to previous trends in alcohol consumption in that particular region. Furthermore, it is worth noticing that the policy was not systematically introduced by a concrete political party with a certain ideology. Table 2 in the appendix shows the regional political party at the moment of the implementation of the policy in each region. As it can be seen, there were 6 different political parties in the regional government at the time that the policy was implemented; 8 of them can be considered as left wing parties while 9 of them can be considered as right wing parties. In any case, in the next section we will provide some additional evidence of the exogeneity of the policy in our setting.

In order for the policy to be effective, at least two conditions need to be fulfilled: first, bar activity in the country has to be important so that a large number of individuals are potential affected. This condition is fulfilled in the case of Spain as the number of bars per inhabitant is very high with respect to other countries. According to Sans (2016) in 2016 Spain had around 260.000 bars. This corresponds to one bar for every 176 Spaniards and places Spain as the country with the highest number of bars per capita in the world.

Second, restrictions in bar opening hours should be imposed at a time range in which individuals are, in effect, spending time in bars so that forcing bars to close earlier would, indeed, affect the behaviour of Spanish citizens. This condition is also fulfilled as Spaniards nightlife extends until early in the following morning. For instance according to a report of the Drug Addiction Foundation (FAD) published in 2016, in 2004 66.3% of young individuals reported leaving bars after 3am. Therefore, this suggests that these late night life hours are common in Spain and that restricting bar opening hours until 2.30am or 3.30am affected a time range that was highly used by Spaniards.

3. Data and strategy

3.1. Data

We make use of six different data sources in order to identify our effects of interest. The first one is register data from the Spanish Social Security administration which includes all individuals that experienced a working accident in Spain at some point between 1990 and 2011. The large time span of the data allows us to include at least 4 years before and 4 years after the implementation of the policy in 16 of the 17 regions in Spain. The only exception is Catalonia that introduced the policy in 2011. The database contains information on all workplace

¹ Table 1 has been extracted from Green et al. (2015). We have slightly modified their original table by adding the regions that were not considered in their paper.

² The regional reforms are described in different regional laws (decrees). The justification of this restrictive law differs slightly between regions but all decrees highlight the idea of reducing problems of social coexistence.

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