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Three empirical essays on the deregulation of licensing in the pharmacy retail sector in Italy

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Introduction

This thesis investigates the impact of deregulation of the retail pharmacy market in Italy.

In 2012, Mario Monti, during his technocratic cabinet took a series of measures to promote the country's economic growth and competitiveness. One of these is a reform that modified the number of pharmacies that can be opened in a municipality. Before 2012, one pharmacy for every 5000 residents in municipalities with no more than 25000 residents and one for every 4000 residents in the other municipalities could be opened. Therefore, the regulation reduced the number of residents per pharmacy: one for every 3300 residents. The purpose of this law is to lower barriers to entry and promote competition in a market that is heavily protected by licensing restrictions.

This study stands apart from others for its originality as it assesses the efficacy of the reform through the utilization of official data on new openings, extracted directly from the websites of Italian regions.

The estimation strategy consists in the use of a difference-in-differences design, that is appropriate to properly exploit the exogenous shock of the reform. Furthermore, since the policy is characterized by a staggered adoption, we decide to implement recently developed econometric techniques that allow for a complete and accurate estimation of the results.

The three chapters that compose this thesis are independent research papers that can be read either separately from each other or together, in order to understand what the overall effect of the reform is.

Through three different datasets this work aims to understand the effects of the policy on balance-sheet data of Italian pharmacies, the probability of being hospitalized and the access to service, as well as pharmacists' mobility and income.

The first chapter analyzes balance-sheet data of a sample of Italian pharmacies: the limited liability companies and corporations.

In particular, two balance sheet items are studied, total revenues and net profits. Considering only active pharmacies with no more than one subsidiary for a 9-years period (2011-2019), the work confirms a significant decrease in revenues and net profits in three different cases. The first is when we consider these values at the per capita level, the second is when we calculate total revenues and net profits at the municipal level, and the third is when we consider the total number of pharmacies in the same municipality and calculate revenues (and net profits) per pharmacy.

The result of this study, confirmed by three different estimates and a final event study, is robust and indicates that the deregulation has generated an impact on the pharmaceutical market. Moreover, this study is the only one that assess the effects of reform at the municipal level, which is the correct analysis to do, as new pharmacy openings occurred at the municipal level.

Aida is therefore the only dataset to provide this more detailed information, which is available for free thanks to the service offered by the University of Calabria.

In the second chapter, the study moves to the field of health economics. In fact, we evaluate the impact of this reform on the probability of being hospitalized considering a time period of 6 years (2013-2019). This information is contained in the dataset provided online by Istat: aspects of daily life. This dataset contains many variables that are useful for understanding the impact of this deregulation from a health perspective, because pharmacies are becoming increasingly important as they are going to perform an auxiliary function to that of the hospital.

In this context, wider territorial coverage of pharmacies can significantly reduce hospitalizations in regions where new openings have occurred. The result confirms that there is a decrease in hospitalizations detected by the survey in the last three months in individuals living in treated regions.

In addition, exploiting another crucial variable in this dataset, we can assess whether difficulty in accessing pharmacies has been reduced in treated regions. The result shows that, controlling for individual characteristics of respondents, we can see a significant reduction in difficulty in reaching pharmacies. However, this result should be properly analyzed, as it occurred in areas where there was already a high number of pharmacies and thus a low number of inhabitants per pharmacy, confirming the existing literature that new openings often occur in urban areas and less in rural areas, where there would be more need for these services.

The third chapter use data from Istat's Labor Force Survey to examine the impact of the deregulation on pharmacists who live in provinces that have been affected by new openings. The two labor outcomes that are studied are job mobility (non-employment to-job and job-to-job) and employee wages, from 2014 to 2020.

In the post-treatment periods, mobility for those who were unemployed the year before increases, while we find no effect on job-to-job transitions. Another interesting aspect is the increase in the wages of employed pharmacists, which confirms that there is more competition in the market.

Relaxing licensing in Italy: a staggered difference in differences analysis using balance-sheet data of Italian pharmacies

Abstract

This paper examines the effects of a policy implemented in Italy in 2012, deregulating the market of pharmacies, in order to reduce barriers to entry and improve competition.

Drawing municipal-level data from Aida for the following years 2011-2019, we assess the impact of the reform on revenues and net profits of pharmacies located in municipalities where there have been new openings.

In order to properly examine the policy that is characterized by a staggered implementation we propose an evaluation method that include three different estimation steps, using some recently developed methods to deal with staggered adoption, and an event study to compare our final results.

Our findings show that relaxing licensing decreased both revenues and net profits for incumbents across all different specifications of the dependent variables.

Keywords: licensing, deregulation, staggered difference-in-differences, event-study, pharmacies

JEL Classifications: J01, L43, D45

1.1. Introduction

This paper study the effects of a relaxation of the licensing restrictions in the market of Italian pharmacies that have been affected in the last decade by a very important reform that changed the way a pharmacy is opened and broadened competition and thus reduced barriers to entry into the profession.

Occupational licensing is, for some authors, a natural solution to problems of information asymmetry and consumer protection, for many others it is predominantly a way of creating a monopolistic position and rent-seeking that limits competition by raising prices and creating barriers to entry.

This issue is particularly pervasive in Italy and many other countries across the world because of the protective barrier provided by the law for many different professions, including those of lawyers, architects, accountants, pharmacists, physicians, engineers, etc.

Using data from 1998 to 2018, we can examine Italy's OECD Product Market Regulation index. There are two groups of indicators: an economy-wide indicator that provides a broad quantitative assessment of a country's regulatory posture and a set of sector indicators that evaluate the efficacy of regulation at the level of specific network and service sectors. These indicators are put together using a large database that is filled with information about laws and regulations. The score of Italy fell from 2.36 (1998) to 1.32 (2018). However, if we examine the index's development over the past ten years, from 2008 (1.49) to 2018 (1.32), we can see that it has remained rather consistent, showing that despite the reforms made over those years, Italy's laws for many occupations are still strict and restrict competition.

A reform that attempted to change the licensed market in Italy by responding to the problems this country had during a difficult sovereign financial crisis is certainly the deregulation that the Monti government put in place in 2012. This reform lowered the pharmacies per inhabitant ratio to improve competition and decrease the barriers to entry in the market of pharmacies.

Some Italian authors have examined this normative in literature. Mocetti, Roma, Rubolino (2018) studied the intergenerational persistence of professionals, exploiting the Monti reform and a difference-in-differences strategy, and find that the reform reduces the propensity for career following. Mocetti, Rizzica and Roma (2021) analyzed two similar types of deregulations in Italy (Bersani 2006 and Monti 2012) using a difference in differences design and found that the reform promote entry of new competitors and decreased the wage premium for many categories of professionals. The market for pharmacists has also been studied by Mocetti (2016), finding that positional rents, produced by pharmacy inheritance, account for the majority of the difference between children of pharmacists and other children in the propensity to become pharmacists through

an analysis of intergenerational persistence. Social fluidity can gain if these barriers to competitiveness are eliminated.

Therefore, this paper is intended to be part of a broad research context that examines policies aimed at changing an established regulatory environment in Italy.

We study the exogenous shock derived from the reform implementing a staggered difference in differences design. Using a longitudinal balance-sheet data from Italian limited liability companies and corporations, provided by Aida, we separate the pharmacies that are situated in municipalities where there have been new openings (treated group) from the pharmacies located in other municipalities (control group), investigating how the reform affected their revenues and net profits during a 9-year period, 2011-2019.

In order to yield valid estimates, three different estimation strategies are adopted. First a TWFE model to give a preliminary result, then a difference in differences with multiple time periods estimator (proposed by Callaway and Sant'Anna, 2021), and another difference in difference model using the imputation approach of Borusyak et al. (2022). To compare both methods and corroborate our findings we implement an event-study using the recent developed method proposed by Borusyak et al. (2022).

Our results suggest that the policy attempt seems to be going in a positive direction because both revenues and net profits have declined because of the reform, hence this could justify that greater pharmaceutical coverage in the territory promotes competition.

In the first part of the paper we present an extensive literature review to focus our attention on the occupational licensing research; then we describe in detail what is the normative background of the policy; in the third part we illustrate our data and how the main dependent variables are constructed; in the fourth part we discuss about the estimation methodology used in this paper and what are the steps that we follow to estimate properly the impact of the reform in the Italian context; then we show our result and provide some graphical evidence; in the final part we discuss our main findings and what are the main implications for the market of pharmacies in Italy.

1.2. Literature review

1.2.1. Occupational Licensing: definition and effects on the labor market

Recently, occupational licensing has been extensively researched in the literature of labor economics.

Kleiner (2017) define this phenomenon as the "process by which governments establish qualifications required to practice a trade or profession, so that only licensed practitioners are allowed by law to receive pay for doing work in the occupation". This requirement was first created to reduce the asymmetric information bias (Akerlof 1970) and ensure public health and safety for consumers.

This is known in the literature as the “public interest theory”. The counterpart theory, called “capture theory”, assume that licensing restrict competition increasing the wages of the incumbent professionals, the price of the service and lower its quality. Pagliero (2011) compared these two theories, and the empirical evidence showed that capture theory is the most adequate to explain this phenomenon. In fact, any industry with sufficient political power to influence the government will try to harm the competition through subsidy demands, limiting competitors' entry, price-fixing laws, and controlling firms that provide substitutes or complementary products (Stigler 1971).

Maurizi (1974) said that the greater the likelihood of price and pay increases in that market, the greater the tendency to erect more barriers to entry into a licensed employment, therefore incumbents can impose more difficult entrance requirements and further restrict entry (Kleiner 2000), especially when the elasticity of the demand for services offered by the profession is lower, because the licensing will be more profitable (Stigler 1971).

The debate focuses on the barriers to entry placed in all licensed occupations. Law and Kim (2005) found a justification for this by specifying that the highest entry barriers are those in which consumers directly purchase the good or service and where quality heterogeneity has been caused by knowledge progress, while Gellhorn (1976) stated that the primary effect of licensing is to increase the cost of entering the market and, at the expense of higher costs for the consumer, licensing increases the status of the service provider.

1.2.2. Wage effects of occupational licensing

It is well-known in the literature that licensing results in a wage premium for incumbents, Timmons and Thornton (2008) assessed the impact of licensing on Radiologic Technologists wages, finding that licensing increases wages by as much as 3.3%.

A wage premium seems to appear also from the papers of Gittleman, Klee and Kleiner (2015), around 23.6 percent on average, and Mocetti, Rizzica and Roma (2021), about 9 percent.

Kleiner, Krueger (2009) studied that own a license increases the hourly earnings of the incumbents by 14 percentage points.

Inspired by Gittleman, Klee and Kleiner (2015), Koumenta and Pagliero (2018) used different data of occupational regulation based on European Union (EU-SOR), and obtained that incumbents earn 9.7 percentage points more than unlicensed workers.

Furthermore, licensing appears to increase earnings more on average for workers in occupations marked by high earnings than for workers with low earnings (Kleiner 2000).

1.2.3. Job Mobility

Licensing works as a barrier to entry in the market, reducing market fluidity, generating low levels of employment. Pashigian (1979) studied that professionals' interstate movement has been significantly and quantitatively reduced because of occupational licensing. If licensing requirements are different between two geographically neighboring states or between two regions in close proximity to each other, workers may have to repeat investments made to obtain a license when they move. This can depend by state arrangements for instance, that can restrict interstate mobility for some categories of professionals, such as dentists and lawyers (Holen 1965). Another problem arises when there are differences in grading standards for a specific job from one region to another. This generated inefficient mobility of Italian lawyers from poorer to richer districts (Buonanno and Pagliero 2018).

Requirements for language proficiency may prevent foreigners who want to work in a certain position from moving between states or regions (Federman, Harrington and Krynski, 2006). This result confirm what Gellhorn (1976) says in literature are extremely similar, he found that members of ethnic minorities are systematically discouraged from obtaining a license because of extremely strict requirements.

In general, the main problem is the decrease of the job-to-job movement when a higher coverage of licensing is taking place in one of them (Hermansen OECD working papers 2019).

1.2.4. Prices

As we mentioned before licensing benefits incumbent workers raising their salaries at the expense of consumers. Nonetheless it is interesting also to notice what is the related impact on the price of services if we confront a reduction in the availability of that service.

Shepard (1978) analyse the dental care market and found that if there are huge barriers to entry that discourage the competition, the incumbent tends to raise his fee to gain a rent.

Kleiner and Kudrle (1997), examining data from dental health showed that states that choose to adopt a more stringent license coverage than before do not find an improvement of the service but increase the prices of 14 to 16 percent.

1.2.5. Quality of the service

According to Leland (1979) consumers lack sufficient knowledge about professionals, so there is an adverse selection problem, and licensing acts as a minimal quality requirement. Shapiro (1986) affirmed that if the marginal cost of quality is lower than the value consumers place on it, licensing

may increase welfare. Hovewer, Friedman (1962) already suggested that the decrease in the supply of workers does not rise the quality but force the consumers to "pay more for less satisfactory service". In fact, is challenging to assert that the availability of licenses on the market leads in higher quality because of a lack of data and uncertainty in the findings of some studies. Some evidence about the little impact of licensing on quality can be draw from Angrist and Guryan (2008) that found ambiguity in their results about the effect of a standard test for teachers in some US states on teachers' quality. Carroll and Gaston (1981), examining different markets and occupations found that a more tougher licensing requirement lower received service quality.

Analysing the teacher's occupation Larsen (2013) noticed that if there is an increase of the licensing standards needed for the job the distribution of input quality of a teacher who remain in the occupation for many years tend to raise, while the first-year teachers, especially in high income areas, showed a reduction in the upper tail of their input quality.

Farronato, Fradkin, Larsen, Brynjolfsson (2020) did not find an an increase in customer satisfaction linked to a stricter licensing requirement but only less competition and higher pricing.

To solve this problem, Gellhornt (1976) suggested that is crucial to correctly measure the quality of the service without jeopardizing future employment prospects. Therefore, many authors propose to use other methods to protect the consumers and not harm the competition in the market, such as registration and certification. This is confirmed by Kleiner (2000) who found that certification is more effective if having a quality signal is needed, because anyone can work in a profession, the government accredits skills through exams, and clients decide whether to engage certified workers or not.

1.2.6. Relaxing occupational licensing

It is crucial to understand why a government choose to reduce the licensing requirements in a specific job, because it is what the Italian government did in 2012 to expand the opportunities for new pharmacies to open reducing a very strong barrier to entry imposed by the law many years before.

Kleiner, Marier, Won Park, Wing (2014) studied to what extent wages, employment and prices change when a regulation modifies the structure of a licensed occupation market (registered nurses in this context). They concluded that more restrictive regulation lowers the wage and increases the price of medical services.

An interesting case is reported by Barro (2015). He noted that the app Uber promoted the competition in the taxi labour market and decreased by 23 percent the price of the license to operate as a taxi driver in New York.

Mocetti, Rizzica and Roma (2019) analysed the Monti's reform, using a strategy very close to ours. They studied the impact of the reform on earnings of professionals, finding a sudden fall of professionals' wages affected by this reform.

Genakos, Koutroumpis and Pagliero (2018) investigate the impact of maximum markup regulation on prices. They found that reforming the market significantly decrease the prices of the services.

According to Raitano and Vona's assessment of the 2006 Bersani reform, it lessened the impact of a child's family's legal history on their wages.

1.3. Normative background

In 2012, Mario Monti, during his technocratic cabinet, formed to save Italy from the eurozone sovereign debt crisis, took a series of measures to promote the country's economic growth and competitiveness.

One of these aimed to liberalize the pharmacy market, which needed a change in the distribution service and the access to ownership of pharmacies, to improve competition and limit the drawbacks of licensing. This reform modified the number of pharmacies that can be opened in a municipality.

Before 2012, one pharmacy for every 5000 residents in municipalities with no more than 25000 residents and one for every 4000 residents in the other municipalities could be opened. Therefore, the regulation reduced the number of residents per pharmacy: one for every 3300 residents. After that, regions have been mandated by the government to carry out an identification process of optimal locations where the additional pharmacies can be opened and a selection process of pharmacists who will be the owners of these new activities.

In 2016, regions that started this process earlier have begun to open of new pharmacies, followed by the others over the next four years. Hence, the particularity of this regulation consists in the different starting date of new openings between regions, which allow us to have a developing treatment group over time. In addition, since this reform acts as an exogenous shock, it helps us to use a difference in differences design to evaluate its impact on revenues and net profits.

1.4. Data

The main dataset is built merging two different data.

The first is called AIDA and was developed and released by Bureau van Dijk S.p.A. It contains firm-level balance-sheet information from nearly 980000 limited liability companies and corporations, both active and failed (apart from banks, insurance companies, and public entities), updated by the most recent year available and for the previous ten years. The University of Calabria offered AIDA for unrestricted use and distribution online.

Using the 6-digit Ateco code 477310, we gather data about the Italian pharmacies for 9 years, 2011-2019. Since this period includes the five years prior to the official opening of new pharmacies, it enables us to accurately evaluate the reform's effects, because we have enough pre-treatment years. Although the year 2020 was available, it provided information about the Covid-19 Pandemic's first year, which is affected by a surge in pharmacy revenues due to an unusual demand for covid tests and drugs.

This dataset offers crucial data for our research. First, the two dependent variables, net profits and revenues, that will be utilized to analyze the policy outcomes. Second, several factors that are necessary to restrict the sample and identify the pharmacies affected by the reform.

The variables that we extracted from AIDA are described in table 1.

We combined AIDA data with information on new pharmacies' openings to create our dataset. Only 16 Italian regions formally and explicitly give on their website precise information about new openings at municipality level. These data are checked with a dataset downloaded from the Italian Ministry of Health[1] to find the exact date of opening of these pharmacies[2]. This information is then reported in an excel file that also includes the official population for each municipality as well as the number of already existing pharmacies[3].

In table 2 are described the number of openings by region and by year. We can notice that the region with the highest number of openings is Lombardia, and the region with the lowest number is Valle d'Aosta. Only 5 regions began to open in 2016, while the majority of them started in 2018. Moreover, as can be seen from the table, the Campania region never opened any pharmacies during this period, so the observations will be considered as never-treated in our analysis. In order to have a more clear idea of how the national coverage of new openings occurred, in Figure 1 is showed the geographic map of Italy and the sum of openings by province.

After combining the two datasets, we keep only those companies that are still operating, have one or no subsidiaries, and were constituted prior to the opening of new pharmacies in that municipality. Therefore, we have a longitudinal dataset of 1004 pharmacies for 9 years; the larger part is in Lombardia (299) and Campania (236), while Valle d'Aosta has the fewest.

In table 3 are reported the summary statistics for our sub-sample. Revenues and net profits are adjusted for inflation using the consumer price index data from ISTAT[4]. To have a more appropriate

[1] These data can be freely downloaded from the website of the Italian Ministry of Health: https://www.dati.salute.gov.it/dati/dettaglioDataset.jsp?menu=dati&idPag=5

[2] This dataset also contains information about pharmacies' openings, but it is not possible to distinguish between reform-driven and nonreform-driven openings, so it was used only to cross-reference the opening data provided by the regions with the opening date to determine, for each region and each municipality the timing of policy adoption.

[3] These data can be found on this website: http://www.comuni-italiani.it/farmacie/

[4] Data are provided free of charge by ISTAT , from the following websites: http://dati.istat.it/Index.aspx?QueryId=23095#; http://dati.istat.it/Index.aspx?QueryId=23063#

measure of these balance-sheet data we generate 6 dependent variables using information about population and number of pharmacies. First, we divide the revenues by the population of each municipality, generating the variable per capita; second, we sum the revenues by each municipality and year, and divide the final number by the population, creating the variable per municipality; third we divide the sum of revenues, derived before, by the total number of pharmacies for each municipality and for each year, generating the variable per pharmacy. The same method is used for net profits, to have 6 dependent variables that will be useful to assess properly the impact of the reform in our sub-sample.[5]

1.5. Estimation strategy

The difference in differences design is the best choice for this research because it compares the outcome of a treatment group and a control group, thereby focusing on the impact of the policy.

The reform exogenously assigns the pharmacies into two groups: those in municipalities where there have been new openings and those that have been constituted in municipalities where there have been no additions. As we possess the exact information about new openings for each year and for each municipality, we create a treatment variable that indicates which municipalities are impacted by the reform and which are not.

The local government has been delegated to decide where open the additional pharmacies, then carry out a special tender and rank the pharmacists in order to assign the additional pharmacies. These procedures have been applied with different levels of speed in the Italian regions, therefore the regions have started to open the additional pharmacies in their municipalities in different years, some in 2016, some in 2017, some in 2018 and others in 2019. Since there are more than two time periods and units are treated at different points in time, we are no longer in a normal difference in differences setting. As a result, a staggered difference in differences model is more appropriate for our sample and might produce accurate estimates.

There is a lot of current work on the topic, and several estimation techniques have been developed very recently. The first method that can be used to estimate the causal effect of the treatment is the two-way fixed effects model (TWFE) which is a more flexible variant of the standard difference-in-differences model and includes fixed effects for both the treatment group and the control group, as well as for each period. This could be a good choice for our setting because we have more than two time periods.

[5] We identify the impact of outliers on the distributions of these variables using boxplots. As it became clear that these values were not justified and might pose a serious problem for the estimation in terms of producing biased results, we decided to use the winsorization method in Stata, replacing the extreme values with the 5% percentile of the right and left tails of the distribution.

The main equation for the first estimation step is:

$$Y_{it} = \alpha + \beta_1 D_i + \beta T_{it} + \gamma + \delta + \varepsilon_{it}$$

Y_{it} is one of the six main outcomes that we consider in this analysis. D_i is a treatment variable which is 1 in the group that receives the treatment (for each period in our dataset, even before treatment started) and 0 for the control group. T_{it} is another treatment variable (called active treatment) which is 1 in the treatment group after treatment begins, 0 in the same group before treatment begins and is 0 in the control group. Then we control for year and firm fixed effects[6].

However, some authors pointed out that the parameters associated with this model are challenging to interpret. Moreover, if our main purpose is to yield static or dynamic treatment effect estimates, when we use such staggered DID estimators, our estimates may suffer from significant bias (Baker, Larcker, Wang 2022).

A valid solution to this issue is to implement the method proposed by Callaway and Sant'Anna (2021) to produce an unbiased DID estimator in a model with multiple time periods[7].

The disaggregated causal parameter, which the authors refer to as "group-time average treatment effect" and which is an average treatment effect for group g at time t, contains information about the unit's first year of treatment, and is the main distinction between this type of estimation and the other.

This command estimates the average treatment effects of the treated for group g at time t.

We may also get estimates of the average treatment effect on the treated units for all groups across all periods, for each group or cohort across all periods, and for each period across all groups or cohorts by using the post estimation commands.

The main problem that could arise using this method is that it only uses the period just prior to the intervention as part of the control. Hence, it would be more appropriate if we could have more than one pre-treatment period in order to generate a more efficient estimator of the average treatment effect on the treated. Therefore, we implement the imputation approach of Borusyak, Jaravel, and Spiess (2022) that use the whole pre-treatment period as the reference period to compute the ATT for our policy evaluation.

The final step is to compare these two estimates using the event study plot developed by Borusyak et al. (2022)[8]. As Kelchen, Ortagus, Rosinger, and Cassell (2021), we run more than one estimation because each of these methods are characterized by different parallel trends assumptions, so it could

[6] We use the command reghdfe in Stata, and the option "absorb" to control for year and firm fixed effects.

[7] Using the CSDID Stata command developed by Rios-Avila, Callaway, and Sant'Anna (2022).

[8]The author developed two useful commands in Stata, the first is did_imputation, that estimates the effects of a binary treatment with staggered rollout allowing for arbitrary heterogeneity and dynamics of causal effects; the second is event_plot that plot the staggered-adoption diff-in-diff estimates using post treatment and pre-trend coefficients along with confidence intervals.

be more efficient to compare results from more than one method to have a clearer idea of the real effect of the policy.

1.6. Results

1.6.1. Preliminary investigation

Figure 2 shows an analysis of the average revenues (and net profits) trends in Italy before and after the first year the reform was implemented. It is evident from a first look at the graphs for variables per capita and per municipality that the gap between treatment and control group increases after the first year of the adoption of the policy. It is less clear but still consistent with our research intuition the tendency of the revenues per pharmacy average, whereas it is less evident in the last graph. In fact, as we will see later, two estimation methods will confirm a non-significant effect of the reform on net profits per pharmacy.

The main suggestion that we catch from this preliminary evidence is that our reasoning justifies a deeper analysis to investigate the significance of this difference between the two groups.

Furthermore, it is interesting to notice that the control group is always placed at the top of the graph. This could indicate that these observations are located in little municipalities in which there are few other competitors. Indeed, if we compare the minimum population of the municipalities in the two groups, we find that the minimum population in the control group is 374 inhabitants, while the minimum value in the treatment group is 5064.

1.6.2. Estimation results and event study

In table 4 we run a two-way fixed effects model in a generalized difference in differences setting. The policy seems to have a negative effect on the revenues and net profits of the treated pharmacies in our sub-sample. The result is confirmed when we use the dependent variables per municipality. However, when we look to the coefficient of interest generated when we divide the sum of the revenues (or net profits) by the total number of pharmacies in the municipality, we can notice that only the revenues of the treated units are significantly impacted by the reform.

The second step is to calculate the Average Treatment effect on the Treated (ATT) using the method proposed by Callaway and Sant'Anna (2021).

Table 5 summarizes our key findings. It can be noticed that the average impact of the reform on the revenues per capita of the treated pharmacies is negative and statistically significant at the 1% level; the magnitude of the impact is the same given by the generalized DID. We discover a lower effect but less significant than before in the second column when we compared the net profits per capita of the treated groups with the others that had not yet received treatment. The ATT stays

negative but with a smaller effect than before in the variables per municipality. In the last two columns, the outcome for all categories and all time periods is still negative for both variables. In this case it is shown a significant average treatment effect on the treated for net profits per pharmacy.

As we mentioned before, these methods use different assumptions for parallel trends. Therefore, it might be a good strategy to use another estimation method to confirm our results as a robustness check.

In table 6 are presented the average treatment effects on the treated according to Borusyak et al. (2022)[9]. In this setting, we can interpret our estimates as a general reduction in the revenues and net profits for treated pharmacies compared to pharmacies that are located in a municipality without any openings. This result seems to be valid both when we analyse the impact of the policy on balance-sheet's variables per capita and when we consider the variables per municipality. If we compare this outcome to the previous ones, we can notice that the magnitude of revenues per capita is smaller than before, while the impact on revenues (and net profits) per municipality is slightly higher in this case. Again, we do not find any significant effect on net profits per pharmacy, whereas the coefficient for the revenues per pharmacy is quite similar to the previous one.

The event-study graphs in Figures 3 plot the estimates and the 95% confidence intervals for the models used before. The event periods are 8 pre-treatment periods and 3 post-treatment years.
In the first two graphs there is a significant decrease of the revenues and Net Profits per capita after the reform, and the result become stronger in the Borusyak et al. (2022) model.
When we consider the variables per municipality there is a significant negative impact of the reform only for the first-year post treatment for revenues, but when we look to the net profits, the Borusyak et al. (2022) method provides a negative and significant coefficient even in 2019 (third period post treatment). Finally, it can be noticed a consistent and statistically significant decline in the revenues per pharmacy estimates, confirmed by both estimation methods. However, only a moderate negative impact is showed on net profits per pharmacy during the first post-treatment period, while other estimates present wide confidence intervals, and this make it difficult to deduce what is the real effect of the policy in this case.

1.6.3. Discussion

The revenues and net profits per capita estimates illustrate that, controlling for the population of the municipality, the outcome appears to be affected by a variation due to the reform. Hence, even

[9] In order to build our estimation properly, we use the option "allhorizons", to pick all non-negative horizons available in the sample, minn(0) to report all coefficients nevertheless and pretrends(8) to exploit all possible pretrends in our dataset and then perform a test for parallel trends.

considering the different size of the municipalities, this does not affect the final result, which describe a significant impact of the policy on balance-sheet data of the treated pharmacies. The finding is also confirmed by the estimation on net profits, meaning that the result is robust regardless of the company's expenses.

Using the variables per municipality as dependent variables, the analysis indicates that even if we sum up all the revenues (or net profit) per municipality, the main outcome is still an overall decrease. Therefore, one possible explanation could be that the new openings has increased the competition and so now there is more choice for consumers, and this could result in a reduction in demand for pharmacies that offer less quality service or higher prices.

Finally, it is useful to note how the result on revenues is not affected by the number of pharmacies that operate in the same municipality. When we control for the number of pharmacies the outcome remains robust and significant. The effect on net profits is more complicated to explain, given its ambiguity in the estimates.

1.7. Conclusions

In this paper we introduced a policy analysis that implements several estimation strategies and aims to test the effect of a reform that changed the barriers to entry for a licensed profession.

The results describe a well-known situation studied in literature that prompts us to assert that this law can provide an incentive for the market to foster competition among firms.

Therefore, an increase in competition generates lower revenues for pharmacies that experience reduced demand due to a new opening occurring in the same municipality. This outcome remains consistent if we use different specifications of the dependent variable.

This research adds to the existing literature for several reasons. First, this is the only paper that exploits the precise and official municipal-level pharmacy's openings provided by 16 Italian regions. Second, we use an estimation strategy that is appropriate to accurately assess the policy, which consists of estimating three different models that deal with staggered treatment timing. Third, thanks to the data provided by Aida we can use longitudinal information for 9 years at municipal level. This is a feature that is very difficult to find because other datasets are at provincial or regional level, and this does not allow for a complete and comprehensive study of the impact of the reform since the actual opening of pharmacies occurs only at municipal level. Moreover, the Aida dataset contains crucial balance-sheet information, as revenues and net profits, but also data such as the number of subsidiaries and the year the company was constituted, in order to be able to identify exactly who may be affected by new openings and who may not. However, as we consider only balance-sheet data

from limited liability companies and corporations, a sample representation problem might arise, because many pharmacies in Italy are sole proprietorships, especially in small municipalities.

One of the aspects on which this work can be expanded is to analyze data regarding the income of pharmacies' owners, who have been personally affected by the new openings. This evaluation refers to the most important work done in the occupational licensing literature that aim to assess whether there are significant changes in licensed workers' wages.

Moreover, because the reform is still generating new openings it would be interesting to study the effect the policy as pharmacies continue to open, thus considering a treatment intensity in our analysis.

Finally, it would be more appropriate to study the impact of the reform nationwide, hence, adding in our research also the remaining four regions of Italy to get an overall effect of total openings. However, this does not depend on us, as these four regions should provide precise data about openings due to the reform in their official websites.

This paper thus fits into the strand of literature analyzing the impact of a policy that deregulate a licensed profession and furthermore into the recent debate on the analysis of a difference-in-differences staggered model, since two estimation methods developed over the past three years are used in this research.

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Appendix of Tables and Figures

Table 1: Description of variables

Name	Description
Id	CCIAA number (given by the Italian Chambers of Commerce)
Year	year categorical variable (from 2011 to 2019)
Region	region identification code provided by Istat
Province	province identification code provided by Istat
Municipality	municipality identification code provided by Istat
Constitution year	constitution year of the firm
Ateco	classification of economic activity provided by ateco 2007 code
Subsidiaries	number of subsidiaries in the company
Revenues	revenues declared in the financial statements in a given year
Net profits	Net profits declared in the financial statements in a given year
Company status	Status of the pharmacy: active, liquidated, insolvency, bankrupt
Legal status	Legal status of the pharmacy according to the Italian laws
Treatment	dummy variable of treatment by year and by municipality
Population	population in a given municipality (provided by Istat)
Pharmacies	number of pharmacies in a given municipality
Openings	number of new openings after the reform
Revenues per capita	total revenues divided by the population of the municipality
Profits per capita	net profits divided by the population of the municipality
Revenues per municipality	sum of the revenues for every municipality divided by the population
Profits per municipality	sum of the net profits for every municipality divided by the population
Revenues per pharmacy	sum of the revenues divided the number of pharmacies by municipality
Profits per pharmacy	sum of the net profits divided the number of pharmacies by municipality

Table 2: number of new openings by region and by year

Region	Year				
	2016	2017	2018	2019	Total
Abruzzo	0	0	0	18	18
Basilicata	0	0	6	4	10
Campania	0	0	0	0	0
Emilia-Romagna	48	24	35	7	114
Friuli-Venezia Giulia	0	0	19	7	26
Lazio	0	0	102	54	156
Liguria	8	6	3	3	20
Lombardia	0	0	211	48	259
Marche	0	0	0	18	18
Piemonte	55	13	4	1	73
Puglia	100	33	13	7	153
Sardegna	0	0	37	0	37
Trentino-Alto Adige	0	0	13	1	14
Umbria	0	0	0	8	8
Valle d'Aosta	2	0	0	0	2
Veneto	0	0	90	36	126
Total	213	76	533	212	1034

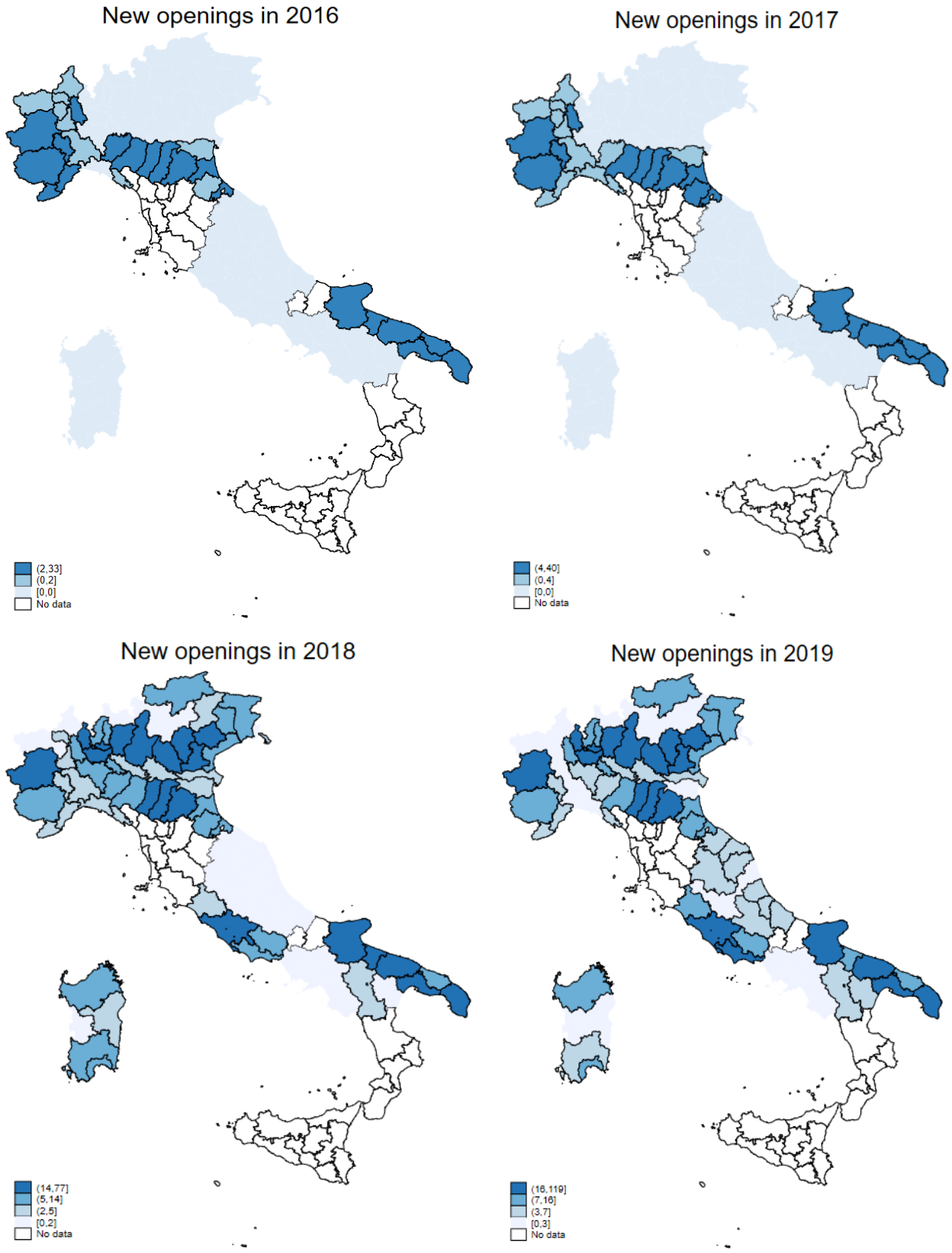
SOURCE: Authors' calculation from the excel file of new openings of pharmacies by municipality extracted by the websites of 16 Italian regions. The reference period is 2011 to 2019.

Table 3: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Subsidiaries	9036	.12	.324	0	1
Revenues	3372	2788589.8	6830847.5	0	1.246e+08
Net profits	3372	72701.558	433689.58	-4794067	10145054
Treatment	9036	.091	.287	0	1
Population	9036	353313.52	771020.6	374	2761632
Pharmacies	9036	100.007	208.506	1	783
Openings	821	8.161	15.213	0	46
Revenues per capita	3372	110.972	112.073	0	356.469
Net profits per capita	3372	3.034	4.788	-2.956	14.766
Revenues per pharmacy	9036	236551.77	282819.74	0	843988.31
Net profits per pharmacy	9036	5141.571	8859.4	-4035.306	25839.551
Revenues per municipality	9036	133.588	986.413	0	25742.209
Net profits per municipality	9036	3.195	20.849	-191.131	462.231

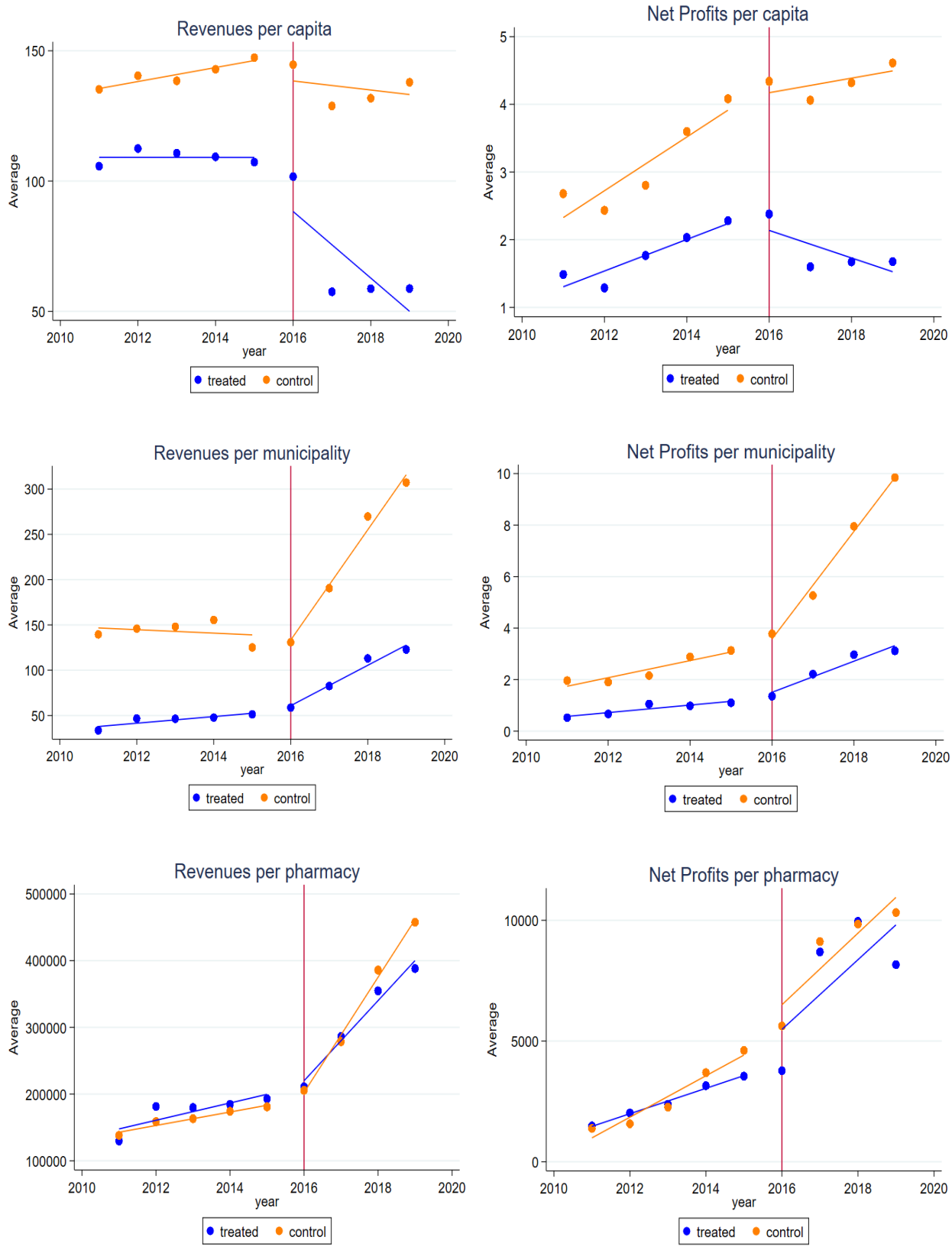
SOURCE: Authors' calculation from the Aida panel merged with the excel file of the new openings by municipality.
The sample includes still active pharmacies that opened before the reform. The reference period is 2011 to 2019. All revenues and net profits variables are adjusted for inflation and are winsorized at 5% to remove the outliers. The openings and the treatment variable are determined using data provided by Italian regions from their websites. Population variable is provided by Istat from the official website.

Figure 1: number of new openings by provinces during the staggered adoption period of the policy



SOURCE: Authors' elaboration from the file that contains the number of new openings, constructed from data provided by 16 Italian regions merged with the shapefile of Italian provinces provided by Istat.

Figure 2: average revenues and average net profits trends in the treatment group and in the control group



SOURCE: Authors' elaboration from the Aida panel merged with the excel file of the new openings by municipality.
The sample includes still active pharmacies that opened before the reform. The variables are adjusted for inflation. The reference period is 2011 to 2019.

Table 4: Generalized Difference in Differences

	(I) Revenues per capita	(II) Profits per capita	(III) Revenues per municipality	(IV) Profits per municipality	(V) Revenues per pharmacy	(VI) Profits per pharmacy
Treatment	-10.362***	-0.678***	-64.971***	-3.311***	-51330.7***	-473.845
	(2.506)	(0.194)	(12.964)	(0.478)	(6742.40)	(299.170)
Observations	3244	3244	9036	9036	9036	9036

Notes: *** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses.

SOURCE: Authors' calculation from the Aida panel merged with the excel file of the new openings by municipality.

The sample includes all still active pharmacies that opened before the reform. The reference period is 2011 to 2019. The dependent variables are adjusted for inflation. The estimates represent the coefficient of the Treatment variable in a Generalized Difference in Differences setting.

Table 5: average treatment effect on treated (according to Callaway and Sant'Anna, 2021)

	(I) Revenues per capita	(II) Profits per capita	(III) Revenues per municipality	(IV) Profits per municipality	(V) Revenues per pharmacy	(VI) Profits per pharmacy
ATT	-10.884***	-0.407*	-57.253***	-2.423***	-54360.9***	-1312.84***
	(2.938)	(0.230)	(13.551)	(0.775)	(11383.32)	(542.802)
Observations	3110	3110	9036	9036	9036	9036

Notes: *** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses.

SOURCE: Authors' calculation from the Aida panel merged with the excel file of the new openings by municipality.

The sample includes all still active pharmacies that opened before the reform. The reference period is 2011 to 2019. The dependent variables are adjusted for inflation. The estimates represent the average treatment effect on the treated given after computing a Difference in Differences with Multiple Periods estimator (Callaway and Sant'Anna, 2021), using the CSDID command, developed by Rios-Avila, Callaway, and Sant'Anna (2022).

Table 6: average treatment effect on treated (according to Borusyak et al., 2021)

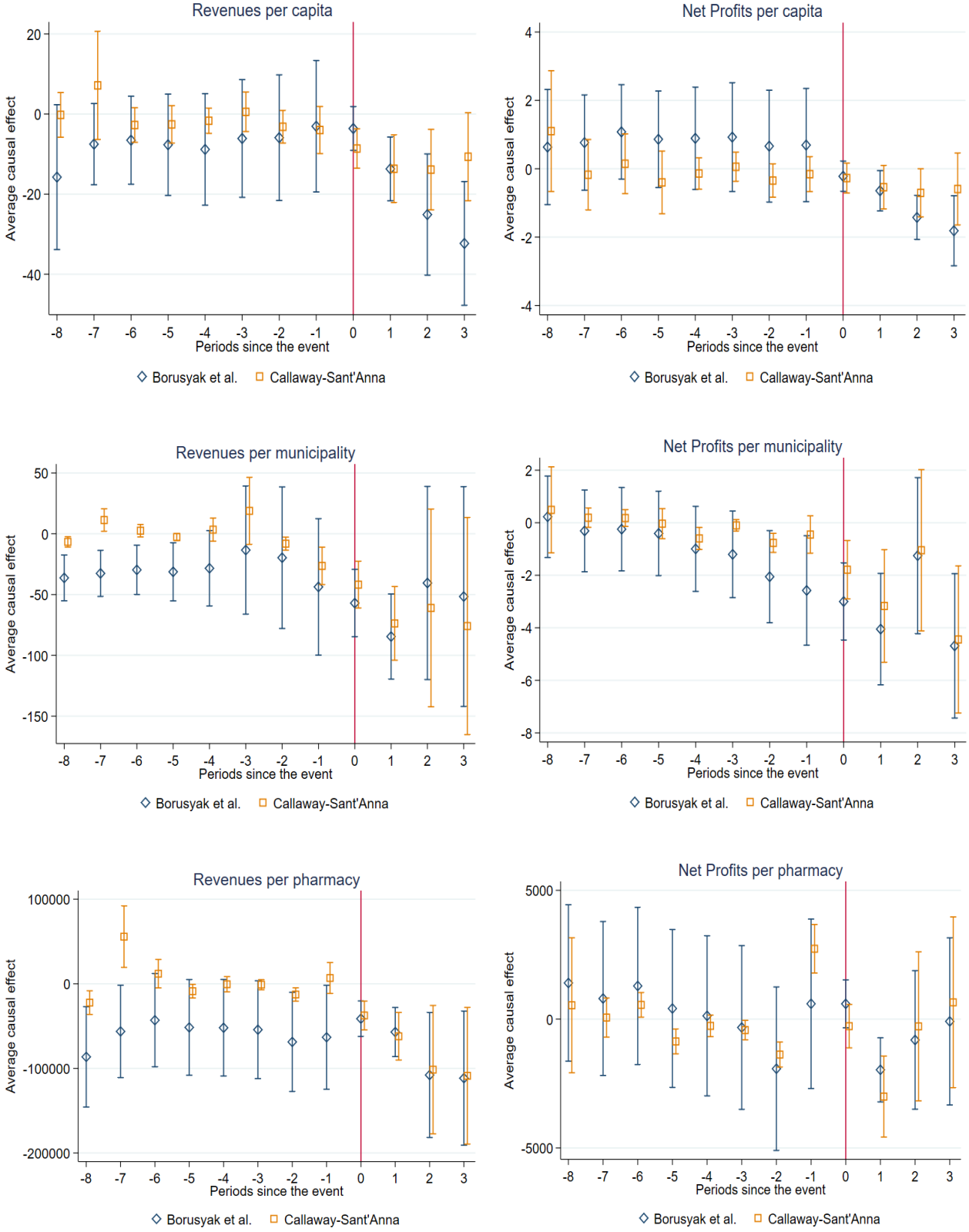
	(I) Revenues per capita	(II) Profits per capita	(III) Revenues per municipality	(IV) Profits per municipality	(V) Revenues per pharmacy	(VI) Profits per pharmacy
ATT	-9.474***	-0.491**	-66.731***	-3.398***	-54770.3***	-536.890
	(3.193)	(0.228)	(16.655)	(0.858)	(12550.81)	(487.143)
Observations	3196	3196	9036	9036	9036	9036

Notes: *** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses.

SOURCE: Authors' calculation from the Aida panel merged with the excel file of the new openings by municipality.

The sample includes all still active pharmacies that opened before the reform. The reference period is 2011 to 2019. The dependent variables are adjusted for inflation. The estimates represent the average treatment effect on the treated given after computing a Difference in Differences design with staggered adoption of treatment, using the imputation approach of Borusyak et al. (2022).

Figure 3: Event study



SOURCE: Authors' calculation from the Aida panel merged with the excel file of the new openings by municipality.

The sample includes all still active pharmacies that opened before the reform. The reference period is 2011 to 2019. The dependent variables are adjusted for inflation. The graphs represent the event study that compares a Difference in Differences with Multiple Periods estimator (Callaway and Sant'Anna, 2021) with the imputation approach of Borusyak et al. (2022).

Does liberalization of the pharmacy market in Italy influence accessibility of the service and hospitalizations? Evidence from a staggered difference in differences analysis

Abstract

The present study analyzes the 2012 reform implemented by the Monti government in Italy, which aimed at deregulating the pharmaceutical market by promoting competition and decreasing the barriers to entry.

Our research uses a staggered difference-in-differences approach, drawing data from Istat's "Aspects of Daily Life" survey from 2013 to 2019, and incorporates an innovative and newly developed estimation strategy to evaluate the impact of the reform on hospitalizations and accessibility to pharmaceutical services in Italy.

The findings suggest a significant reduction in the probability of hospitalization and a corresponding increase in accessibility to pharmacies in the regions where new openings have been introduced.

Keywords: deregulation, pharmacies, licensing, hospitalizations, staggered difference-in-differences

JEL Classification: I10, D45, L43

2.1. Introduction

Pharmacies, by their widespread distribution, serve as a primary gateway to the national health system within local communities, alongside general practitioners. Furthermore, pharmacies are a vital resource for chronically ill patients and their families, providing a critical point of reference, and can play a significant role in fostering both primary and secondary health education and prevention initiatives.

In Italy, pharmacies have assumed an increasingly responsibility in the healthcare of the population. This transformation has been intensified and accelerated by the recent covid-19 pandemic, which has motivated the implementation of supplementary measures aimed at restricting the transmission of the virus through pharmaceutic services.

In 2012, the Monti government introduced a reform aimed at liberalizing the labor market in Italy.

This law contains an article that modifies the threshold of residents necessary to establish a supplementary pharmacy within a municipality. The execution of this deregulatory measure has resulted in the inauguration of a multitude of pharmacies in nearly all regions that effectively started this process. Consequently, it has expanded the territorial coverage of pharmacy services.

Drawing inspiration from the work of Cintolesi, A., Riganti, A. (2022), the purpose of this research is to investigate the impact of this reform on the healthcare sector in Italy. Specifically, we aim to use the probability of being hospitalized in the last three months as a proxy for this reform's effects. To accomplish this, we rely on data from the Aspects of Daily Life Survey conducted by Istat. This dataset provides us with the necessary variable to carry out our analysis, as well as a set of additional variables to validate our findings.

Moreover, this survey also includes information regarding the difficulty of accessing pharmacies. The difficulty index is a crucial component in determining whether these new pharmacies have truly assisted the population in obtaining necessary services or if they have simply been established in areas already well-served by such facilities.

The utilization of a difference-in-differences design, combined with an innovative econometric approach, enables us to obtain robust findings that facilitate the interpretation of the impact of policy on the lives of Italian citizens. The initial two paragraphs contain a comprehensive literature review regarding the correlation between hospitalizations and the deregulation of the pharmaceutical market, as well as the relationship between difficulty in accessing the service and the establishment of new pharmacies in the region. Subsequently, there is a detailed explanation of the reform and the data utilized for our analysis. Our adopted estimation strategy and its outcomes will then be discussed, followed by an evaluation of the results and an attempt to provide conclusive policy implications for the future.

2.2. Pharmacy as a health network: impact on hospitalizations and reference literature

Pharmacies have traditionally been seen as a necessary component of the territory's healthcare system. However, they have become much more so in recent years as a result of the addition of new services. Hence, they have effectively grown into a significant health network that serves as an important initial point of access to healthcare and does more than just distribute medications.

In Italy an early example of this came with Article 11 of Law No. 69 of June 18, 2009.

This law aims to expand the functions of the pharmacy by going on to add additional functions, such as those related to home care for example.

The role of pharmacy becomes even more important during the recent covid-19 pandemic, in which pharmacy added to its services the administration of serological tests, rapid swabs, and vaccinations.

A recent Italian Council of State Ruling No. 111 of Jan. 4, 2021, says that there has been a profound transition in the role of the pharmacy from a more traditional activity of mere distribution of pharmaceuticals, to a role as a multifunctional social-health network serving the community and the point of connection between hospital and territory.

We take as a starting point the work of Cintolesi, A., Riganti, A. (2022). They visualize pharmacy as an information unit when it is useful for citizens to better understand some problems and thus have a reference guide, as a substitute unit when pharmacy can perform functions that would otherwise be performed in the hospital, and finally as a prevention unit, to prevent patients' health from deteriorating.

Czech et al. (2020) explains that the pharmacy is an important access point with regard to vaccinations. Another important function that can be performed by the pharmacist is psychological services for people with depression (Littlewood, Elizabeth, et al., 2022).

The 2012 reform can thus play an essential role by better serve areas with fewer pharmacies per capita.

Several works have analyzed how unnecessary hospital and emergency room visits (Alexander et al., 2019, Lippi Bruni et al. 2016) could decrease if there were health points closer to those in need.

In addition, Cintolesi, A., Riganti, A. (2022) mention that the number of hospitalizations could decrease if there is a greater coverage of pharmacies in the territory. This result is also confirmed by other works such as Parajuli, Daya Ram, et al. (2019) which shows that an intervention service of pharmacists could significantly reduce heart failure hospitalizations and all-cause hospitalizations. The findings of Pellegrin KL, Krenk L, Oakes SJ, et al (2017) tell us that hospitals that implement a service provided by community pharmacists decrease the medication-related hospitalization rates per 1,000 admissions in individuals aged 65 and older.

What we expect to find from our estimates is that therefore an increase in territorial coverage of pharmacies may decrease the probability of being hospitalized in areas where new openings have occurred.

2.3. Difficulty in accessing pharmacies

Federfarma, which is the national federation representing the more than 18,000 private pharmacies affiliated with the National Health Service, has published a report every year since 2015, entitled "the Italian pharmacy". It is a work that collects important information related to Italian pharmacies, such as their presence in the territory, contacts with the public, services offered, turnover, pharmaceutical spending trends, etc. The goal of the publication is to enable public decision makers, but also all stakeholders in this reality, to better assess the current role of pharmacy as the first territorial health network.

We have constructed a file by extracting from these reports the inhabitants per pharmacy ratio calculated each year from the official number of inhabitants, provided by Istat, and the official number of pharmacies in the territory, provided by Federfarma. Through reading this rate we can better understand the reform we are analyzing and its consequences.

In figure 1 we illustrate this ratio during the staggered adoption period of the policy. The graphs are separated based on the year that some regions began to open new pharmacies. Each graph demonstrates how the rate substantially falls when the reform is put into place in those regions[10].

This trend can also be seen from figure 2 in which we calculate the national average for each year of this ratio. This graphical study appears to demonstrate that there are more pharmacies opening up nearby, but it does not show where these openings have taken place or whether they have truly increased access to this service. Literature suggests that when deregulations like this one take place, openings tend to occur more frequently in metropolitan areas where there is already adequate coverage and less frequently in rural areas where there would be a greater need for these services. After a pro-competitive reform, the allocation of services occurs asymmetrically, favoring urban regions more, according to Martins, L., and Queirós, S. (2015), who researched this phenomenon in Portugal. Similar findings are shown by Vogler et al. (2014), Hiscock et al. (2008), and Barbarisi et al. (2019), who all draw the conclusion that pharmaceutical services should be more equally accessible.

As was mentioned in the introduction, the Istat data also allow us to analyze another crucial factor,

[10] The effect seems to be less noticeable in 2017, but this can be explained by the fact that in that year there is only one region to open, we also cannot fully explain this phenomenon as this region did not provide official data on municipal level openings and therefore we do not know how many pharmacies were opened thanks to the reform.

namely the respondents' reported difficulties in finding pharmacies. Therefore, with the use of this information, we can determine if the reform has genuinely made it easier for residents of the regions where new pharmacies have opened to receive this service compared to residents of other regions by lowering the difficulty of reaching pharmacies.

In Figure 3, we use the respondents' three responses, 1 for no problem, 2 for some difficulty, or 3 for a lot of difficulty, to use the Istat-calculated index of accessibility to pharmacies. In other words, this is a measure of how difficult it is to obtain the service that rises as the difficulty does. We then determined the average by year, treated group, and control group, and the results are graphically represented.

The result is that there is a reduction in the ratio of inhabitants per pharmacy in the treated regions after the reform. However, this ratio, as can be seen in the pre-reform part of the graph, is already much lower than the corresponding one in the control group, which is always at the top of the graph. This shows that pharmacies have opened primarily in urban areas with high pharmaceutical coverage, which is consistent with the preceding research study.

Therefore, we expect to find a significant decrease in the difficulty of reaching pharmacies for those living in the treated regions.

2.4. Normative background

In 2012, Mario Monti, during his technocratic cabinet, formed to save Italy from the eurozone sovereign debt crisis, took a series of measures to promote the country's economic growth and competitiveness.

One of these aimed to liberalize the pharmacy market, which needed a change in the distribution service and the access to ownership of pharmacies, to improve competition and limit the drawbacks of licensing. This reform modified the number of pharmacies that can be opened in a municipality.

Before 2012, one pharmacy for every 5000 residents in municipalities with no more than 25000 residents and one for every 4000 residents in the other municipalities could be opened. Therefore, the regulation reduced the number of residents per pharmacy: one for every 3300 residents. After that, regions have been mandated by the government to carry out an identification process of optimal locations where the additional pharmacies can be opened and a selection process of pharmacists who will be the owners of these new activities.

In 2016, regions that started this process earlier have begun to open of new pharmacies, followed by the others over the next four years. Hence, the particularity of this regulation consists in the different starting date of new openings between regions, which allow us to have a developing treatment group over time.

2.5. Data

We use the ISTAT "Aspects of Daily Life" sample survey to create our main dataset. Since 1993, this survey has been done annually to gather fundamental data about people's and households' daily lives. This survey enables us to learn more about a variety of subjects, including education, employment, family and romantic relationships, housing and neighborhood, leisure activities, political and social involvement, health, and way of life.

The survey is conducted on a sample of roughly 25,000 households spread throughout about 800 Italian municipalities with varying populations' size.

A sampling approach is used to select households at random from the list of names chosen for census surveys, in order to create a sample of the Italian population that is statistically representative of the entire country. Information is gathered using a mixed methodology, either through a direct interview with an electronic and paper questionnaire administered by an interviewer (CAPI/PAPI technique, Computer-Assisted Personal Interviewing and Paper and Pencil Interviewing), or through an online questionnaire that is entirely self-completed by respondents (CAWI technique, Computer-Assisted Web Interviewing).

This survey is available free of charge from Istat's online site for the years 2013-2020, at the regional level. As the first year of the pandemic, 2020 was left out of our research because it could potentially bias our results in two ways. First, because there was an unusual rise in hospitalizations during the first year of the pandemic. The second relates to the distance that respondents noticed it took to get to pharmacies. As there were two lockdowns in Italy in 2020, respondents' responses may have been biased because they were unable to leave their homes for other reasons than the real distance to pharmacies.

For our investigation, this survey gives valuable information. First, respondents are asked if they have been hospitalized within the last three months. Hence, we can analyze the likelihood of being hospitalized in our analysis. Additionally, it offers helpful variables to control this result for various individual aspects, including age, gender, daily routines, and health issues.

Second, it inquiries about respondents' accessibility to the pharmacy. Respondents can select option 1 for no difficulty, option 2 for some difficulty, and option 3 for a lot of difficulty. The last two categories are combined to form a binary variable that indicates whether or not the person has trouble using this service. By doing so, we may examine the actual access to the pharmacy that the survey identified, helping us to better understand the policy's true impact.

The variables that we extracted are described in table 1.

We combined this dataset with information on new pharmacies' openings to create our dataset. This information is officially provided at municipal-level by 16 Italian regions on their website. These

data are then checked with a dataset downloaded from the Italian Ministry of Health[11] to find the exact date of opening of these pharmacies[12]. Since the Istat dataset is at the regional level, we can also add the remaining 4 regions by extrapolating the years of pharmacy openings in those regions based on information from newspaper articles announcing the opening of new pharmacies as a result of reform, and then matching this information with the Ministry of Health file.

In table 2 are reported the summary statistics for our sub-sample.

Men and women seem to be equally represented in our sample, and the average age is around 30 years old[13]. In the last three months, only 3% of our sample has been hospitalized. Table 3 provides more information on this. First, it is clear that there is again a gender balance between the two group. Age shifts toward an average of 45 years old. Half of these participants have chronic health conditions and have been to the emergency room at least once in the last three months.

Returning to Table 2, we can see that 20% of respondents reported having more trouble accessing the pharmacy.

2.6. Estimation strategy

The difference in differences design is the best choice for this research because it compares the outcome of a treatment group and a control group, thereby focusing on the impact of the policy.

The reform exogenously assigns the individuals in our sample into two groups: those in regions where there have been new openings and those that live in regions where there have been no additions. Therefore, we create a treatment variable that indicates which regions are impacted by the reform and which are not.

The local government has been delegated to decide where open the additional pharmacies, then carry out a special tender and rank the pharmacists in order to assign the additional pharmacies. These procedures have been applied with different levels of speed in the Italian regions, therefore the regions have started to open the additional pharmacies in their municipalities in different years, some in 2016, some in 2017, some in 2018 and others in 2019. Since there are more than two time periods and units are treated at different points in time, we are no longer in a normal difference in differences setting. As a result, a staggered difference in differences model is more appropriate for our sample and might produce accurate estimates.

[11] These data can be freely downloaded from the website of the Italian Ministry of Health: https://www.dati.salute.gov.it/dati/dettaglioDataset.jsp?menu=dati&idPag=5

[12] This dataset also contains information about pharmacies' openings, but it is not possible to distinguish between reform-driven and nonreform-driven openings, so it was used only to cross-reference the opening data provided by the regions with the opening date to determine, for each region and each municipality the timing of policy adoption.

[13] In this survey, age was reported in ranges and not in years. Thus, the number reported in the table corresponds to about 30 years of average age.

There is a lot of current work on the topic, and several estimation techniques have been developed very recently. One of these is the method proposed by Callaway and Sant'Anna (2021). They developed an unbiased DID estimator in a model with multiple time periods[14]. The disaggregated causal parameter, which the authors refer to as "group-time average treatment effect" and which is an average treatment effect for group g at time t, contains information about the unit's first year of treatment, and is the main distinction between this type of estimation and the other. This command estimates the average treatment effects of the treated for group g at time t. We may also get estimates of the average treatment effect on the treated units for all groups across all periods, for each group or cohort across all periods, and for each period across all groups or cohorts by using the post estimation commands.

The main problem that could arise using this method is that it only uses the period just prior to the intervention as part of the control. Hence, it would be more appropriate if we could have more than one pre-treatment period in order to generate a more efficient estimator of the average treatment effect on the treated. Therefore, we implement the imputation approach of Borusyak, Jaravel, and Spiess (2022) that use the whole pre-treatment period as the reference period to compute the ATT for our policy evaluation.

The final step is to compare these two estimates using the event study plot developed by Borusyak et al. (2022)[15].

2.7. Results

Table 4 reports the Average Treatment effect on the Treated (ATT) using the method proposed by Callaway and Sant'Anna (2021) compared with Borusyak et al. (2022) on the probability of being hospitalized in the last three months.

We can see that the likelihood of being hospitalized is significantly lower for residents in treated regions compared to the control group.

This result is also confirmed when we control for individual characteristics such as age, sex, body weight control, habit of eating breakfast, drinking water during the day, paying attention to the amount of salt in meals, drinking alcohol outside meals, smoking, having been to the emergency room in the last three months, having a chronic illness.

In order to identify which group of individuals this finding is driven by, we estimate the likelihood of having been hospitalized in the previous three months in a sub-sample made up entirely of

[14] Using the CSDID Stata command developed by Rios-Avila, Callaway, and Sant'Anna (2022).

[15]The author developed two useful commands in Stata, the first is did_imputation, that estimates the effects of a binary treatment with staggered rollout allowing for arbitrary heterogeneity and dynamics of causal effects; the second is event_plot that plot the staggered-adoption diff-in-diff estimates using post treatment and pre-trend coefficients along with confidence intervals.

individuals without chronic conditions. Then, using independent subsamples for all the chronic diseases present in our dataset, we repeat the process as before[16].

Table 5 displays the findings for the sub-sample of healthy individuals. In both models used, we observe a negative chance of getting hospitalized, but it vanishes when we proceed to add controls.

In Table 6 we describe for simplicity only the results for diseases that had at least one significant result in either of the two models used. Only two chronic diseases (heart disorders and osteoporosis) have statistically significant hospitalization reductions that are supported by both models. Although only one out of two models support this finding, other diseases such as gastric and duodenal ulcers, liver cirrhosis, bronchial asthma, and nervous disorders are likewise characterized by a reduced probability.

The next stage is to determine whether the reform has had an impact on how difficult it is to reach pharmacies in treated regions.

Table 7 shows that we find a decrease in the difficulty of accessing this service in treated regions only if we include in our analysis variables like age, gender, whether the person has a chronic illness, whether the area in which they live has a high crime rate (which could increase the difficulty of accessing the service), and whether the respondent owns a car.

The event-study graphs in Figures 4 plot the estimates and the 95% confidence intervals for the models used before.

In the graphs regarding the probability of being hospitalized in the last three months, we find that the two models perform very similarly. In particular, in the graph with controls variables we find a negative and statistically significant result at the first post-treatment period.

In contrast, when we go to illustrate the performance of the estimates in the case of difficulty in accessing pharmacies, we note that when we do not introduce controls into the estimates there is no significance in the results. Whereas when we add these variables, Callaway and Sant'Anna (2021) model shows a significant decrease in the second and third post-treatment periods.

2.8. Discussion

The results of the estimates of the probability of being hospitalized show that pharmacies do indeed play a role in assisting health care operations and thus provide additional and essential services for the target population. In fact, even when we control for personal and health characteristics of the individuals treated the finding remains robust and significant.

[16] We estimate a regression for every chronic disease in our sample: diabetes, hypertension, myocardial infarction, allergic diseases, cancer, stones of the liver or biliary tract, kidney stones, arthrosis and arthritis, diseases of the heart, osteoporosis, gastric and duodenal ulcer, cirrhosis of the liver, bronchial asthma and nervous disorders.

When we examine the factors that contributed to this conclusion, we find that people who are healthy did not contribute significantly, but people who had heart disease (same result of Parajuli, Daya Ram, et al., 2019) and osteoporosis did. Brief online research demonstrates how patients with heart disease and osteoporosis might benefit from tests that are accessible in all Italian pharmacies to manage their conditions and prevent further deterioration. This attests to the validity of our findings.

The second component of our analysis examines whether the reform has made it easier for residents of the areas affected by pharmacy openings to access pharmacies. The outcomes partially support our earlier graphical analysis. That is, only if we include some control factors in our estimates will there be a discernible drop in the difficulty of accessing pharmacy services in the treated locations. Therefore, the reform did certainly enable people to get more services, but as we graphically illustrated before, this reduction primarily took place in urban regions, where there were already a very low inhabitants per pharmacy ratio.

2.9. Conclusions

This study examines the impact of the deregulation of the pharmaceutical market in Italy on the likelihood of hospitalization within the past three months and the accessibility of healthcare services for citizens. The research was carried out using an appropriate econometric design that aims to effectively analyze a policy characterized by staggered adoption. The results demonstrate the relevance of this study to the existing literature. In particular, this work aims to enhance and expand upon the research conducted by Cintolesi, A., Riganti, A. (2022), by utilizing a more suitable econometric approach for analyzing the effects of the policy and accurate data on pharmacy openings at the regional level, obtained from the regions' websites and cross-referenced with Istat data.

The findings indicate a clear reduction in the likelihood of hospitalization in regions impacted by the reform, which is consistent with the results obtained by Cintolesi, A., Riganti, A. (2022), Parajuli, Daya Ram, et al. (2019), and Pellegrin KL, Krenk L, Oakes SJ, et al (2017).

Furthermore, this study examines whether the opening of pharmacies led to an actual reduction in difficulties accessing healthcare services.

As noted by Martins, L., and Queirós, S. (2015), Vogler et al. (2014), Hiscock et al. (2008), and Barbarisi et al. (2019), there is a clear concentration of new pharmacy openings in urban areas, with significantly fewer openings in rural areas. This finding suggests that the implementation of the reform could be improved by identifying areas that require greater access to pharmacy services and implementing a more equitable distribution of these services.

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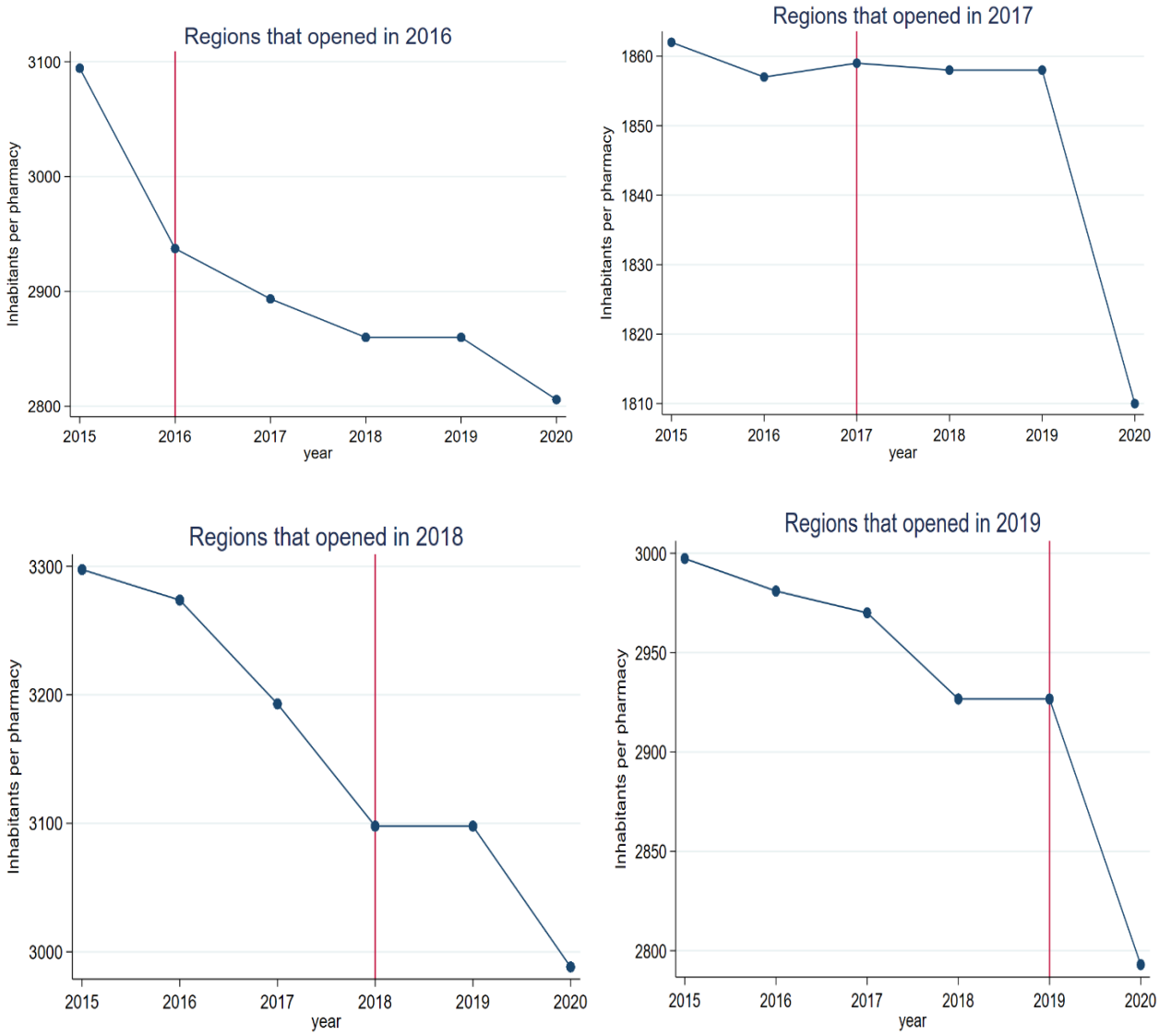
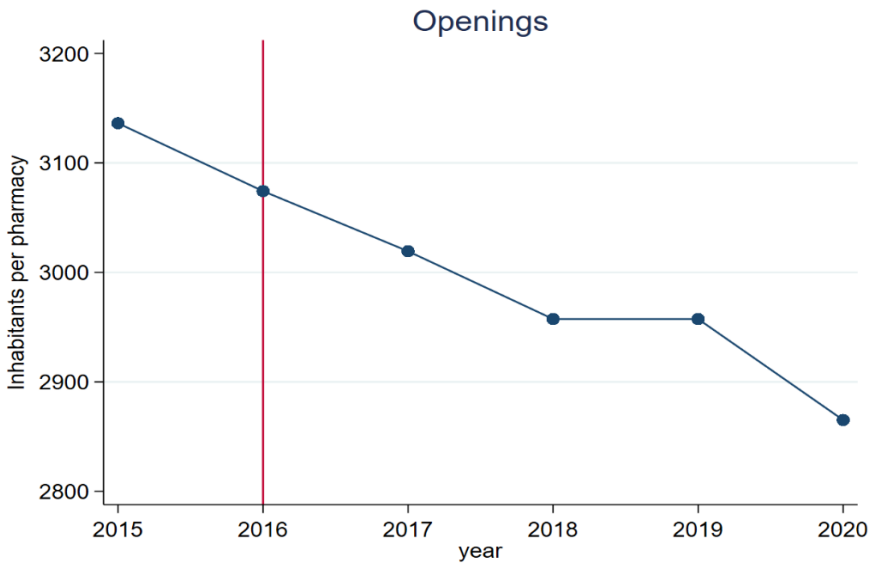
Appendix of Tables and Figures

Figure 1: inhabitants per pharmacy ratio during the staggered adoption period



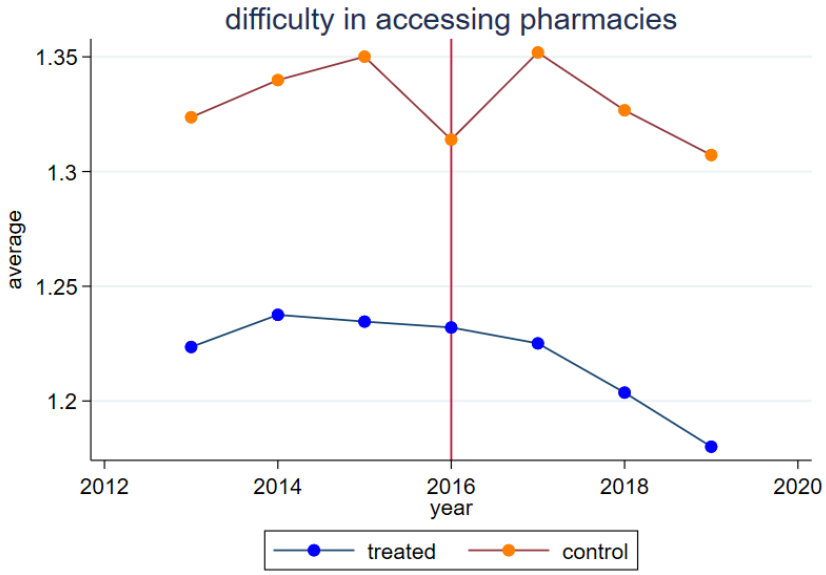
SOURCE: Authors' elaboration on Federfarma annual reports. The reference period is 2015 to 2020. In 2016, 6 regions started to open new pharmacies (Piemonte, Valle d'Aosta, Liguria, Emilia-Romagna, Toscana and Puglia). In 2017 Molise. In 2018 Lombardia, Trentino-Alto Adige, Veneto, Friuli-Venezia Giulia, Lazio, Basilicata, Calabria, Sicilia and Sardegna. In 2019 Umbria, Marche and Abruzzo.

Figure 2: overall inhabitants per pharmacy ratio



SOURCE: Authors' elaboration on Federfarma annual reports. The reference period is 2015 to 2020.

Figure 3: difficulty in accessing pharmacies by group and by year



SOURCE: Authors' elaboration on Istat's Aspects of Daily Life dataset merged with the excel file of the new openings by region. The reference period is 2013 to 2019. The variable used is the index of difficulty in accessing pharmacies computed by asking whether the respondents have faced difficulty in accessing pharmacies during the last 12 months. They have three possible answers: no difficulty, some difficulty, or much difficulty.

Table 1: Description of variables

Name	Description
Year	year categorical variable (from 2013 to 2019)
Region	region identification code provided by Istat
Hospitalization	Dummy variable indicating if the respondent has been hospitalized in the three months prior to the interview
Difficulty	Dummy variable indicating the difficulty in accessing pharmacies during the last 12 months
Age	Categorical variable indicating different age groups
Sex	dummy variable indicating the respondent's sex
Weight	dummy variable indicating whether the respondent keeps his body weight under control
Breakfast	Variable indicating whether the respondent has the habit of having breakfast or not
Water	Variable indicating whether the respondent drinks water regularly
Salt	Variable indicating whether the respondent pays attention to the amount of salt and/or consumption of salty foods
Alcohol	Variable indicating the frequency of alcohol consumption outside meals
Smoke	Variable indicating whether the respondent currently smokes
Emergency Room	Variable indicating whether the respondent in the past 3 months has used emergency rooms
Health problems	Variable indicating whether the respondent has chronic illness or long-term health problems
Crime	Variable indicating whether the area in which the respondent lives presents a risk of crime
Car	Variable indicating whether the respondent or his/her household owns a car
Treatment	dummy variable of treatment by year and by region

Table 2: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Sex	291986	0.483	0.5	0	1
Age	291986	9.381	3.452	1	14
Hospitalization	288707	0.03	0.172	0	1
Difficulty	290272	0.195	0.396	0	1
Weight	284353	0.497	0.5	0	1
Breakfast	282788	0.927	0.261	0	1
Water	261365	0.849	0.358	0	1
Salt	281077	0.722	0.448	0	1
Alcohol	257137	0.07	0.256	0	1
Smoke	260723	0.185	0.388	0	1
Emergency room	287478	0.073	0.26	0	1
Health problems	283915	0.265	0.441	0	1
Crime	281393	0.302	0.459	0	1
Car	290786	0.878	0.327	0	1

SOURCE: Authors' elaboration on Istat's Aspects of Daily Life dataset merged with the excel file of the new openings by region. The reference period is 2013 to 2019.

Table 3: Characteristics of people hospitalized in the last three months

Variable	Obs	Mean	Std. Dev.	Min	Max
Sex	8790	0.476	0.499	0	1
Age	8790	10.689	3.694	1	14
Weight	8566	0.531	0.499	0	1
Breakfast	8269	0.945	0.228	0	1
Water	7905	0.834	0.372	0	1
Salt	8211	0.787	0.409	0	1
Alcohol	7770	0.049	0.215	0	1
Smoke	7894	0.14	0.347	0	1
Emergency room	8687	0.523	0.499	0	1
Health problems	8587	0.552	0.497	0	1

SOURCE: Authors' elaboration on Istat's Aspects of Daily Life dataset merged with the excel file of the new openings by region. The reference period is 2013 to 2019.

Table 4: Hospitalization probability

	Callaway and Sant'Anna (2021)		Borusyak et al. (2022)	
	(I)	(II)	(I)	(II)
ATT	-0.0027*	-0.0028**	-0.0023**	-0.0026***
	(0.0013)	(0.0012)	(0.0010)	(0.0009)
Controls		y		y
Observations	288707	240055	288707	240055

Notes: *** p<0.01, ** p<0.05, * p<0.1. Standard errors clustered at regional level in parentheses.
SOURCE: Authors' elaboration on Istat's Aspects of Daily Life dataset merged with the excel file of the new openings by region. The reference period is 2013 to 2019. The estimates represent the average treatment effect on the treated given after computing a Difference in Differences with Multiple Periods estimator (Callaway and Sant'Anna, 2021), compared with the ATT from the imputation approach of Borusyak et al. (2022).

Table 5: Hospitalization probability (healthy people sub-sample)

	Callaway and Sant'Anna (2021)		Borusyak et al. (2022)	
	(II)	(II)	(II)	(II)
ATT	-0.0031**	-0.0016	-0.0019*	-0.0014
	(0.0013)	(0.0017)	(0.0010)	(0.0011)
Controls		y		y
Observations	207261	171081	207261	171081

Notes: *** p<0.01, ** p<0.05, * p<0.1. Standard errors clustered at regional level in parentheses.
SOURCE: Authors' elaboration on Istat's Aspects of Daily Life dataset merged with the excel file of the new openings by region. The reference period is 2013 to 2019. The estimates represent the average treatment effect on the treated given after computing a Difference in Differences with Multiple Periods estimator (Callaway and Sant'Anna, 2021), compared with the ATT from the imputation approach of Borusyak et al. (2022).

Table 6: Hospitalization probability (health problems)

	Callaway and Sant'Anna (2021)	Borusyak et al.(2022)
diseases of the heart	-0.0319**	-0.0238*
	(0.0160)	(0.0134)
gastric and duodenal ulcer	-0.0180	-0.0236***
	(0.0117)	(0.0065)
cirrhosis of the liver	-0.0333	-0.0680***
	(0.0304)	(0.0180)
bronchial asthma	-0.0260**	-0.0102
	(0.0132)	(0.0089)
osteoporosis	-0.0122*	-0.0110*
	(0.0070)	(0.0064)
nervous disorders	-0.0177	-0.0200***
	(0.0108)	(0.0076)

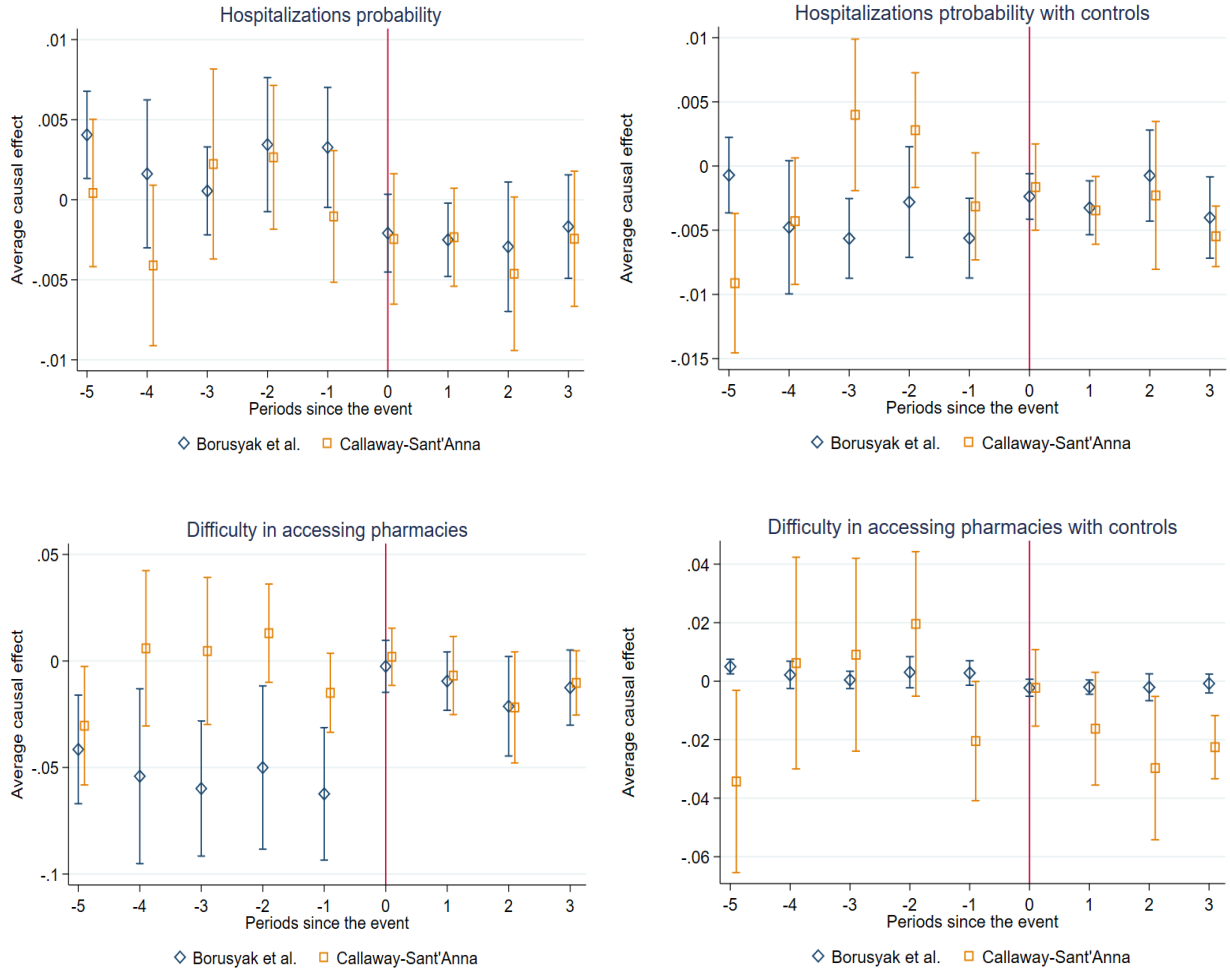
Notes: *** p<0.01, ** p<0.05, * p<0.1. Standard errors clustered at regional level in parentheses.
SOURCE: Authors' elaboration on Istat's Aspects of Daily Life dataset merged with the excel file of the new openings by region.
The reference period is 2013 to 2019. The estimates represent the average treatment effect on the treated given after computing a Difference in Differences with Multiple Periods estimator (Callaway and Sant'Anna, 2021), compared with the ATT from the imputation approach of Borusyak et al. (2022).

Table 7: Difficulty in accessing pharmacies

	Callaway and Sant'Anna (2021)		Borusyak et al. (2022)	
	(III)	(II)	(III)	(II)
ATT	-0.0059	-0.0134**	-0.0088	-0.0019*
	(0.0069)	(0.0064)	(0.0059)	(0.0011)
Controls		y		y
Observations	290272	272136	290272	271099

Notes: *** p<0.01, ** p<0.05, * p<0.1. Standard errors clustered at regional level in parentheses.
SOURCE: Authors' elaboration on Istat's Aspects of Daily Life dataset merged with the excel file of the new openings by region.
The reference period is 2013 to 2019. The estimates represent the average treatment effect on the treated given after computing a Difference in Differences with Multiple Periods estimator (Callaway and Sant'Anna, 2021), compared with the ATT from the imputation approach of Borusyak et al. (2022).

Figure 4: Event-study



SOURCE: Authors' calculation on Istat's Aspects of Daily Life dataset merged with the excel file of the new openings by region. The reference period is 2013 to 2019. The graphs represent the event study that compares a Difference in Differences with Multiple Periods estimator (Callaway and Sant'Anna, 2021) with the imputation approach of Borusyak et al. (2022).

Relaxing licensing in Italy: a staggered difference in differences analysis on pharmacists' mobility and wages

Abstract

This paper examines the effects of an Italian reform that modified, in 2012, the market of the pharmacies, reducing the barriers to entry in this licenced occupation.

We study the impact of this deregulation on job mobility and wages of pharmacists living in a province where new pharmacies have been opened.

Drawing data from 2014 to 2020 using Istat's Labour Force Survey, we exploit this exogenous shock by using a difference in differences estimation, proposed by Callaway and Sant'Anna (2021), that is suitable for the analysis of the staggered adoption of the policy, and an event study to graphically illustrate our results.

We show that relaxing occupational licensing increases the probability to make a Non employment to-job move for treated pharmacists, while the other transition appears not to be affected by the reform. Finally, we find a positive effect on wages for pharmacists who work as employees.

Keywords: licensing, deregulation, pharmacists, staggered difference-in-differences, mobility, wage

JEL Classification: D45, L43, J62, J01

3.1. Introduction

This study assesses the relationship between occupational licensing and job mobility if the labour market is influenced by a government regulation aimed to relax the barriers to entry of a specific licensed job.

Licensing is known in literature as a form of consumers' protection to ensure high quality in the market and avoid asymmetric information bias. However, it produces a decrease in competition, a substantial reduction in the supply of workers in the occupation and can also create a rent-seeking problem in which incumbents try to maintain their status at the expense of the entrants.

Moreover, the presence of greater barriers to entry could affect job mobility and wage of workers.

Therefore, it is interesting to analyse the impact of the 2012 Monti's liberalization reform that reduces the number of residents per pharmacy needed to open a new pharmacy in the Italian municipalities. The aim of this regulation was to increase the total number of pharmacies to improve competition and increase the occupation in this market.

Mocetti, Rizzica and Roma (2021) analyzed two similar types of deregulations in Italy (Bersani 2006 and Monti 2012) using a difference in differences design and found that the reform promote entry of new competitors and decreased the wage premium for many categories of professionals.

Building on this work, we also use a difference in differences model, with similar mobility variables, to analyze how this reform affects pharmacists in more detail, focusing primarily on this labor market by using a recently developed estimation strategy that aim to evaluate the policy by taking advantage of its staggered adoption and finally graphically describing the results through an event study.

Drawing data from the Italian Labor Force Survey during a 6-years period (2014-2020) we find that the reform increased, for pharmacists, the likelihood of finding a job in provinces where new pharmacy openings occurred. On the other hand, pharmacists who were already working did not find it worthwhile to move for a new position. Finally, the wages of pharmacists working as employees increased slightly when we control for personal and job characteristics.

Hence, it is possible to assume that this regulation succeeds in its intent to promote occupation and relax the barriers to entry that hampered the mobility in the pharmacy market.

The paper is structured as follows: we first review the main literature about these issues; second, we describe the normative background, explaining why this reform is so important in this context; third, we illustrate our main dataset and define the estimation strategy; we finally interpret our results to present, in the end, some conclusions to our work.

3.2. Occupational licensing

3.2.1. Definitions and forms

License is a form of recognition, obtained from state or private authority, to prove a certain level of competence that is required to operate in a particular job which is often crucial for the society. Those who do not meet these standards do not have the government authorization to practise.

There are many forms of restrictions that could be applied in this context: increase the difficulty of the pass exam to obtain a license, impose some geographical (residency) or other type of requirements (english proficiency for foreigner workers in the US market for example) to enter in that occupation. In the United States there are two other forms of occupational regulation, the first one being the registration, in which workers only have to provide some basic information (name, address, qualifications etc) to practise this job. The second one is certification. This allows anyone to enter in the occupation, but the government or a private agency has to examine these candidates in order to verify their skills.

3.2.2. Labour market effects of Licensing

Occupational licensing has been used frequently over the last century in order to reduce the asymmetric information bias (Akerlof 1970).

To gain some insight into this topic we could report a simple theory of occupational licensing provided by Gittleman, Klee and Kleiner (2018) in which there are two more agents that operate in the usual labour market: gatekeepers and enforcers. Gatekeepers are responsible for creating barriers to entry, which limit the flow of low skilled workers, while enforcers monitor those who are already in that job to ensure high-quality performances. This process is useful but create some bias because there is a sort of self-selection by individuals who have the possibility to invest more than the others to improve their skills. Moreover, if the incumbents could move easily between occupations avoiding a wage loss, the role of the enforcer becomes useless. To overcome these problems, it is pertinent to gain an additional rent once entered in the occupation, because, in order to maintain this surplus, incumbent should hypothetically increase their human capital investments to improve their performances. This can be explained assuming that high levels of human capital investments imply, for instance, high initial education and continuing training requirements, which could exclude from the market low skilled or less motivated workers, increasing the average quality of the market. These restrictions may result in an increase of general prices, followed by a reduction in the number of workers in that occupation, and subsequently limit access to the service for consumers. Moreover, as Friedman (1962) suggested, this decrease in the supply of workers does not augment the quality.

Instead, it forces the consumers to "pay more for less satisfactory service", due to the lack of competition generated by the restrictions.

Nevertheless, the ability to limit the entrance of individuals in a specific occupation, which is often delegated to incumbents themselves, works as a monopoly power to maintain their position at the expense of high-skilled entrants, generating rent-seeking bias.

In addition, as we will discuss later, licensing also affects job mobility and migration of workers. Mocetti, Rizzica and Roma (2019) pointed out that having a license decreases the probability of entering a given occupation by about four percentage points. Furthermore, migration between states or regions by foreigners that would enter in a particular job could be limited by language proficiency requirements (Federman, Harrington and Krynski, 2006).

3.2.3. Wage effects of licensing

Although quality can be a challenge to analyze, because of the difficulty to find reliable data, several authors have studied the wage difference among non-licensed workers and licensed workers.

Timmons and Thornton (2007) assessed the impact of licensing on Radiologic Technologists wages, finding that licensing increases wages by as much as 3.3%.

A wage premium seems to appear also from the papers of Gittleman, Klee and Kleiner (2018), around 23.6% on average, and Mocetti, Rizzica and Roma (2019), about 9%.

Kleiner, Krueger (2009) studied that owning a license increases the hourly earnings of the incumbents by 14 percentage points.

Inspired by Gittleman, Klee and Kleiner (2018), Koumenta and Pagliero (2019) used different data of occupational regulation based on European Union (EU-SOR), and obtained that incumbents earn 9.7 percentage points more than unlicensed workers.

3.2.4. Relaxing occupational licensing

Many attempts to reduce the problems of licensing have been made by governments in the past years.

Kleiner, Marier, Won Park, Wing (2016) studied the extent of which wages, employment and prices change when a regulation modifies the structure of a licensed occupation market (registered nurses in this context). They concluded that more restrictive regulation lowers the wage and increases the price of medical services.

An interesting case was reported by Barro (2015). He noticed that the app Uber promoted the competition in the taxi labour market and decreased the price of the license to operate as a taxi driver in New York by 23%.

Mocetti, Rizzica and Roma (2019) analysed the Monti's liberalization reform (which also affect pharmacist in our case), using a strategy very close to ours. They studied the impact of the reform on earnings of professionals, finding a sudden decrease in professionals' wages affected by this reform.

3.3. Job mobility

3.3.1. What is job mobility?

Mobility refers to the movement of workers in the labour market. It could be a change in their career (career mobility) if they move across grades in the same firm or between firms, or it could be a movement to find a better collocation in the labour market. So, it can be considered an allocation process and an economic opportunity for workers (to earn higher wages and develop new skills).

These two movements have something in common, an urge to improve the economic situation and to find a more comfortable place to work and, in some cases, to live. These transitions have an important influence on the labour market because job mobility tend to increase workers' productivity and therefore economic growth.

However, as Bosler and Petrosky-Nadeau (2016) demonstrated, this process is more common in the early working age to find the desired job.

In our analysis we studied two transitions of interest, from non-employment to job and job-to-job.

3.3.2. Job mobility and occupational licensing

Many works examined the impact of occupational licensing on labour mobility.

As we explained earlier, licensing works as a barrier to entry in the market, reducing market fluidity, generating low levels of employment and raising incumbents' wages.

More importantly, in areas with higher coverage of licensing there may also be little mobility. This is crucial for our work, since we have regions which started opening new pharmacies earlier than the others. Hypothetically, this could generate a migration of pharmacists towards areas with new openings and more vacancies.

Holen, in 1965, showed that job migration between states varies among different licensed occupation depending on state arrangements. Using cross-sectional data on dentists, lawyers and physician, the empirical evidence seems to confirm that these arrangements restrict interstate mobility for dentists and lawyers.

Buonanno and Pagliero (2018) focused their attention on the job mobility of Italian lawyers. They exploited an inefficiency of this labour market, that is, different levels of difficulty of the exam to become a lawyer among Italian districts. The main outcome of this paper is that differences in grading standards generate inefficient mobility of workers from poorer to richer districts. The researchers

suggested that a trade-off between fairness and efficiency must be taken in consideration to reduce this bias. This work is very important for two reasons: the first is related to the market of interest, an Italian licensed occupation, secondly, these authors are interested in how job mobility could be affected by the entry in that occupation.

Hermansen (OECD working papers 2019), using Job-to-Job Flows database (J2J Data) from the U.S. Census Bureau (from 2012 to 2017), combined a cross-sectional analysis with panel data analysis and constructed some indicators to assess how different regulations (more strict or less strict) have an impact on the level of employment. Although problems of reverse causality the results can be viewed as a confirm of the "quantitative and qualitative" importance of occupational licensing for job mobility and earnings. The main outcome is that workers reduce their job-to-job moves to states with a higher coverage of licensing, while education and training requirements have a positive impact on job-to-job mobility. Earning estimation gives more uncertain and ambiguous results because this variable can be affected both positively and negatively by occupational licensing. In fact, in the short run, the rise of prices and the additional rents produced by licensing could have a positive influence on incumbents' income.

3.3.3. How to estimate job mobility?

Jackson and Mach (2009) are interested in movements of Polish workers, affected by the transition of Poland from state-based economy to market-based economy. They used two multinomial logit models, the first one assesses the probability of an individual state-worker in 1988 make a move toward the private sector and become self-employed, unemployed or leave the workforce. The second one is very similar, the only difference is that the individual is a non-worker. Moreover, they estimate also the earnings associated with these job moves. The results indicated that the transition of the economy produces a significant fraction of workers that must suffer a period of unemployment or exit from the labour force before obtaining a private sector job.

Royalty (1998), using the National Longitudinal Survey of Youth dataset, studied the gender differences in turnover behaviour. Again, a job-to-job transition is taken in consideration, but in this case is accompanied by a job-to-nonemployment transition analysis. These movements have, according to Royalty, usually a negative correlation within sex-education groups. To verify these hypotheses, the author estimated a multinomial probit model.

If we make a comparison with Jackson and Mach (2009), we notice that it is a slightly different model, and the main reason is that the second one need less restrictive assumptions.

Heim and Lurie (2014) used a strategy very close to ours. They are interested in the impact of the 2006 Massachusetts health reform on job mobility, using a 9-year panel of tax returns from 2002 to

2010. They created a binary variable that is 1 if an individual leaves from the job in a given year and 0 otherwise, using a difference in differences design with a linear probability model.

Since the identification of the coefficient of interest comes from state-to-state variation, the authors clustered standard errors at state level. The main outcome of this work is that job mobility faces two different patterns with respect to the subgroup taken in consideration. A rise in mobility is obtained if young married people or low-income taxpayers are considered, while there is a general reduction for the others.

3.4. Normative background

In 2012, Mario Monti, during his technocratic cabinet, appointed to save Italy from the eurozone sovereign debt crisis, took a series of measures to promote the country's economic growth and competitiveness.

One of these aimed to deregulate the pharmacy market, to improve competition and limit the drawbacks of licensing. This reform modified the number of pharmacies that can be opened in a municipality. Before 2012, one pharmacy for every 5000 residents in municipalities with no more than 25000 residents and one for every 4000 residents in the other municipalities could be opened. The regulation reduced the number of residents per pharmacy: one for every 3300 residents.

After that, regions have been mandated by the government to carry out an identification process of optimal locations where the additional pharmacies can be opened and a selection process of pharmacists who will be the owners of these new activities.

In 2016, regions that started this process earlier have begun to open of new pharmacies, followed by the others over the next four years.

Hence, the particularity of this regulation consists in the different starting date of new openings between regions, which allow us to have a developing treatment group over time.

In addition, since this reform acts as an exogenous shock on the labour market, it helps us to use a difference in differences design to evaluate its impact on mobility and wages.

3.5. Data

We use the Italian Labour Force Survey, which is a quarterly survey implemented by ISTAT (Italian National Institute of Statistics), began in 1959.

For each year four waves are carried out. The survey collects information on 75000 households and therefore more than 150000 individuals. Households are randomly chosen from general registers of Italian Municipalities and the sample design is two-stages with stratification of primary units in

the first stage and rotation of secondary units in the second. Each household is included in two consecutive quarters, and, after two waves, back in the sample for another two quarters.

In this research we use microdata provided online by Istat, which are deliberately restricted to avoid the risk of violating the confidentiality of the data.

This dataset contains information about Italian workers for the following 6 years: 2014-2020. This range of time enables us to assess properly the impact of the liberalization on pharmacists' mobility and wage because it includes 2 years before the effective opening of new pharmacies and 4 years later. Moreover, it provides crucial variables that are useful to create indicators of mobility and covariates to control for individual effects. In table 1 are described the variables that we will use in order to analyze the impact of the reform. For example, we will use a categorical variable that describes the status of the worker one year before his interview, which will be compared to the current status to determine his mobility, and the logarithm of the monthly net salary reported by workers to estimate the impact of the regulation on wage.

In addition, other variables will be used as covariates, such as age, sex, job tenure, hours worked, marital status, type of contract (fixed term contract for instance) and full/part time status. However, this survey contains information on employee's retribution only. Hence the change in wage that could be found will be a lower or upper bound of the real estimate (Mocetti, Rizzica and Roma, 2019).

The original sample is restricted for our analysis, taking in consideration only pharmacists that works or have worked in a pharmacy. We identify pharmacists by matching several pieces of information. First, their degree, using the variable provided by the survey that assigns a different code for each degree recognized by Italian law. The second piece of information we use is the occupational code that identifies the respondent's profession. Since in Italy a pharmacist can also work in other fields than pharmacy then we further match this information with the Ateco code, which identifies whether the respondent works in a pharmacy.

In table 2 it can be seen that there are 2356 pharmacists, most of them are women, with an average age of 45, a good chance of having a child and living in a household with at least two other people. A good portion of these pharmacists work full time, 37 hours of work per week on average, and earned last month about 1390 euros on average.

Because of the characteristics of this survey, these workers are all employees and therefore not pharmacy owners.

In addition, we can analyze in table 3 the different characteristics of the job movers in our analysis. Job-to-job movers are older by about 6 years, are less likely to have a child and live with less than 3 people in the same household. They are also less likely to have a fixed-term contract, work about one hour more, and earn more than those who now have a job but were unemployed the year before the

survey. We combined LFS data with information on new pharmacies' openings to create our dataset. Only 16 Italian regions formally and explicitly give on their website precise information about new openings at municipality level. These data are checked with a dataset downloaded from the Italian Ministry of Health[17] to find the exact date of opening of these pharmacies[18].

In table 4 are described the number of openings by region and by year. We can notice that the region with the highest number of openings is Lombardia, and the region with the lowest number is Valle d'Aosta. Only 5 regions began to open in 2016, while the majority of them started in 2018. Moreover, as can be seen from the table, the Campania region never opened any pharmacies during this period, so the observations will be considered as never-treated in our analysis.

3.6. Estimation Strategy

As mentioned before, difference in differences is the appropriate design, as it compares the outcome of a treatment and a control group, isolating the effect of the policy.

The reform assigned pharmacists in two categories, those who lives in municipalities affected by new openings and those who lives in municipalities which do not count any additions.

Drawing data from Italian regions' websites makes possible to identify which regions have opened a new pharmacy each year and in which municipalities these pharmacies were added. Using this information, we create a treatment variable that specifies which municipality is affected by the reform and which is not. Unfortunately, our data are restricted to preserve confidentiality, so we cannot use a municipality-level treatment variable, as the information about the residency of the workers is absent, but a provincial one, using the province of residence of the same individual.

This dataset contains two variables that are very useful to define job mobility, the first states: "in the current week how do you consider your status as a worker?". The second states: "in the same month of the previous year how do you consider your status as a worker?". A multiple answer can be given to these questions, the respondent can be employed, unemployed, student, retired from work, in other condition (not specified).

As Mocetti, Rizzica and Roma (2019) and Heim and Lurie (2014) we create a variable that define the change of the employment status of the worker, making a comparison with the status one year before.

The first variable, called "non-employment to job", identifies a transition between a non-employment status in the previous year to an occupation status in the current year. The second

[17] These data can be freely downloaded from the website of the Italian Ministry of Health: https://www.dati.salute.gov.it/dati/dettaglioDataset.jsp?menu=dati&idPag=5

[18] This dataset also contains information about pharmacies' openings, but it is not possible to distinguish between reform-driven and nonreform-driven openings, so it was used only to cross-reference the opening data provided by the regions with the opening date to determine, for each region and each municipality the timing of policy adoption.

variable, called "job-to-job", describes a transition between two consecutive years of occupation status but in different occupations or firms. To make sure that it is not the same occupation we exploit the job tenure variable. The job tenure variable is expressed in months and tells us the "period between the start of the current job and the reference week". This gives us the opportunity to specify that the period between the start of the current job and the reference week must be lower than 12 months in the job-to-job transition.

We can now specify our equations.

$$Y_{it} = \beta_1 + \beta_2 T_{it} + \gamma_r + \delta_t + \alpha X_{it} + \varepsilon_{it}$$

The first equation describes two of our job-mobility estimations: in the first case Y equals one if the pharmacist i makes a transition from a non-employment status to a job status in year t, and zero otherwise. In the second case Y equals one if the pharmacist i makes a transition from a job/firm to a different job/firm in year t, and zero otherwise.

T is the treatment variable, which is 1 if the pharmacist i lives in a treated region in the post-reform period and 0 otherwise. γ is a province fixed effect, while δ is a year fixed effect.

X contains some covariates, such as sex and age, that helps us to control for individual effects.

The second equation considers the impact of the regulation on pharmacists' wages. As said before, this variable is observed only for employees, therefore the estimation sample will be reduced.

$$\log(mns)_{it} = \beta_1 + \beta_2 T_{it} + \gamma_r + \delta_t + \alpha X_{it} + \varepsilon_{it}$$

In this case the dependent variable is the logarithm of the monthly net salary of the pharmacist i at time t, whereas X includes also several regressors that defines the status of the worker and other ones which are useful to control for individual effects in a wage estimation: full/part time, job tenure, hours worked, marital status, duration of the contract.

Since there are more than two time periods and units are treated at different points in time, we are no longer in a normal difference in differences setting. As a result, a staggered difference in differences model is more appropriate for our sample and might produce accurate estimates.

There is a lot of current work on the topic, and several estimation techniques have been developed very recently. A valid solution to this issue is to implement the method proposed by Callaway and Sant'Anna (2021) to produce an unbiased DID estimator in a model with multiple time periods[19]. The

[19] Using the CSDID Stata command developed by Rios-Avila, Callaway, and Sant'Anna (2022).

disaggregated causal parameter, which the authors refer to as "group-time average treatment effect" and which is an average treatment effect for group g at time t, contains information about the unit's first year of treatment, and is the main distinction between this type of estimation and the other. This command estimates the average treatment effects of the treated for group g at time t. We may also get estimates of the average treatment effect on the treated units for all groups across all periods, for each group or cohort across all periods, and for each period across all groups or cohorts by using the post estimation commands.

The final step is to graphically illustrate the estimates for every period (pre and post treatment) using the event study plot developed by Borusyak et al. (2022)[20].

3.7. Expected results

The research question that will be answered in this work is related to the job-mobility change and the possible variation in wages caused by the 2012 reform. Hence, understand why this analysis consist of two different estimations become crucial to examine in a more confident way our results.

An explanation can be provided by Bryson and Kleiner (2019), which use a simple graphical model to describe occupational licensing.

Before showing this model, it is useful to remind that the labour market is the relationship between workers and employers. This interaction gives the equilibrium which determines the optimal wage (price) and level of employment (quantity).

If the labour market is perfectly competitive the worker moves around different jobs to find the equilibrium wage, which is given by the marginal product of labour. Furthermore, if they have the same initial endowment, it could be eliminated the problem of turnover in the firm.

The graph below illustrates that licensing influence both demand and supply in the labour market.

The supply curve shifts to the left in response to the restrictions that limit the flow of workers.

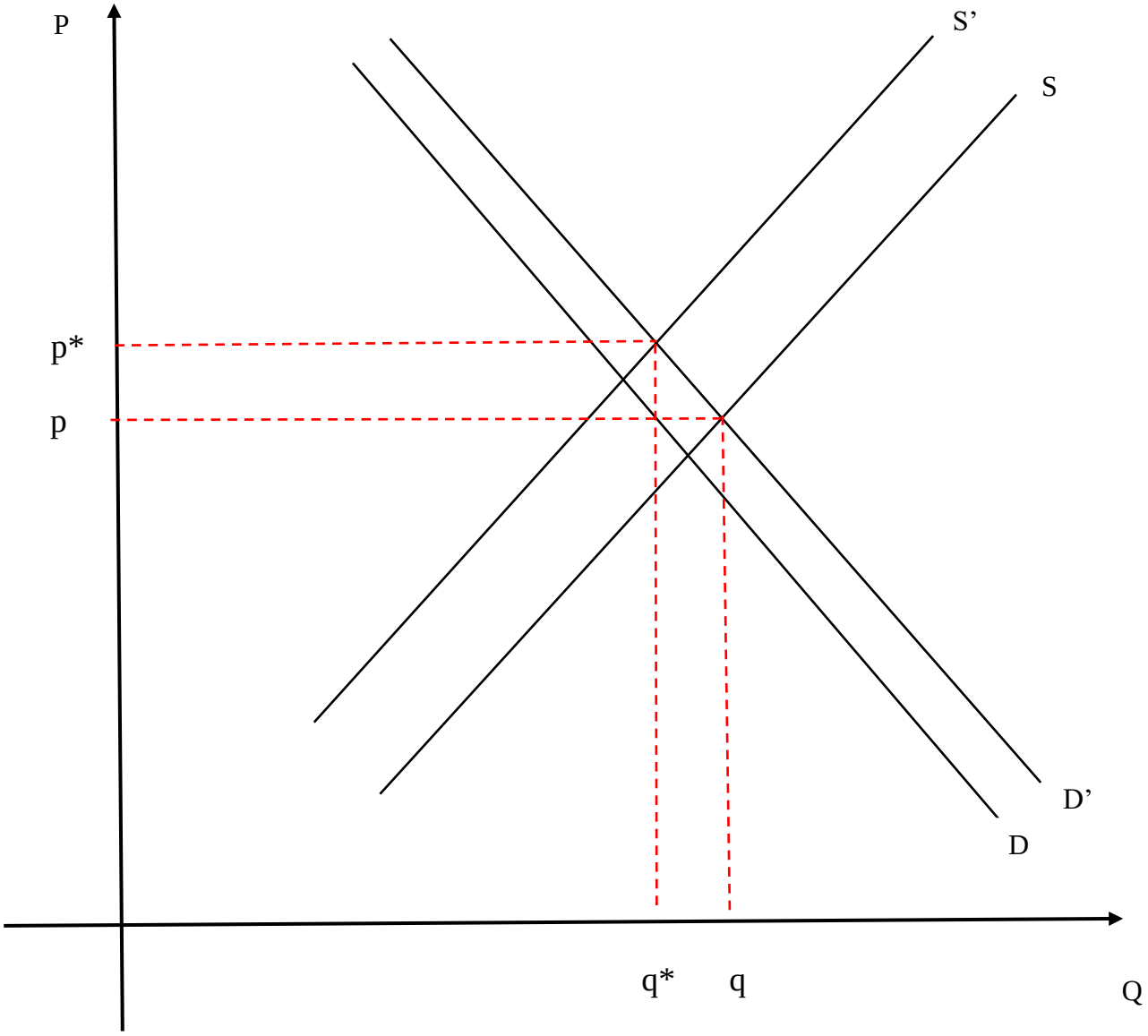
The demand curve, instead, shows a different movement, to the right, which indicates the high quality perceived by the consumers in that market. In this example, consumers consider more the limited access to the service caused by the restrictions than the perception of high quality. The result is an increase of wage and a fall in the level of employment.

Therefore, this reform could have increased the occupation flow in the pharmacy market shifting to the right the second supply curve. This could be explained if the regulation, changing the main barrier to entry in this market (the number of pharmacies per residents that can be opened in a given municipality), could become an incentive to move for pharmacists to search for different

[20]The author developed the command event_plot that plots the staggered-adoption diff-in-diff estimates using post treatment and pre-trend coefficients along with confidence intervals.

opportunities, as more remunerative conditions or a more comfortable place (nearer their home for instance) to operate their profession.

To conclude, what we expect to see in our results is a significant positive effect on mobility which could be accompanied by a significant effect on wages. We do not know what the movement of the demand curve will be, since we should have examined the reaction of consumers to a possible variation in the quality level of pharmacy's service caused by the reform. Therefore, the previous equilibrium may not be changed after the regulation, as a response to a demand curve movement that we do not observe in this case. Hence it could be possible that the coefficient of interest (treatment effect) in our wage equation is not significant, neither positively nor negatively.



3.8. Results

Table 5 reports the Average Treatment effect on the Treated (ATT) using the method proposed by Callaway and Sant'Anna (2021) for the job mobility analysis.

The left-hand column illustrates the non-employment to job transitions' results, while the right hand reports the coefficients for job-to-job movements.

The probability of making a non-employment to-job transition for treated pharmacists appear to be positively affected by the policy, even when we control for sex, age, son, marital status and people in the same household. However, the probability of moving job-to-job seems to be not significantly impacted.

In table 6 the evaluation of the effect of the policy on wages shows that when we control for individual and/or job characteristics there is a significant and positive increase of wages of pharmacist who works as employees compared to those who live in provinces without new openings.

The event-study graphs in Figures 1 plot the estimates and the 95% confidence intervals for the model used before.

The non-employment to-job transition shows in both graphs that in the first period after the implementation of the policy there is a significant and positive effect that confirm our previous result.

The third and fourth graphs illustrate the tendency of the estimates regarding to the job-to-job movement. In this case we do not notice any significant impact in the post-treatment periods, as we found in the average treatment effects on the treated pharmacists.

Finally, in the part related to the log-wage analysis there is a slightly positive and significant effect during the first post-treatment period when we control for individual characteristics and in the final estimation when we account for individual and job aspects of pharmacists who live in province where there have been new openings.

3.9. Discussion

The reform affects positively the probability to make a non-employment to-job move and increase the wages of pharmacists who work as employees.

Therefore, appears plausible that the 2012 reform increased the general level of occupation in the pharmacist's labour market. This can be illustrated if we turn back to our licensing graph and shift to the right the second supply curve (S'), which means that this regulation increased the supply of workers in the pharmacy market.

Moreover, given the employee status of the subjects in our analysis, an additional outcome necessitates explanation. Specifically, we have observed a positive correlation between the occurrence of new pharmacy openings in certain provinces and an increase in wages among employed

pharmacists. This phenomenon can be attributed to the rise in competition for workers within the same province, as failing to offer higher wages may result in potential employee attrition to rival businesses. The resultant increase in demand for skilled labor ultimately drives up employee wages.

3.10. Conclusions

This research helps us to understand what the labor market outcomes are if a government tries to relax occupational licensing.

We have tried to answer to these questions analysing a reform that modified the criteria for opening a new pharmacy by improving competition in a licensed occupation in Italy.

Using data from the Italian Labour Force Survey we find that pharmacists who lives in provinces affected by new pharmacies' openings are more likely to find a new job, after being unemployed, than those who lives in provinces where no pharmacies have opened. Moreover, the wages of treated pharmacists increase after the implementation of the policy.

Therefore, we could assume that this regulation seems to have had a significant and positive impact on pharmacists' mobility and wages. Using the graph drawn before we could explain that in terms of increased labour supply in the pharmacists' market.

This paper would like to offer a broader view on this topic, following the pre-existing literature and trying to offer a new standpoint that is closely linked to the Italian licensing market, which is still very restrictive for some professions and requires further government's measures.

However, there are many critical aspects that deserve to be taken into consideration and from which this work needs to be improved in the future. Firstly, it would be more accurate to consider the longitudinal dimension of this dataset, which is available only at the ADELE laboratory, set up by the Italian National Institute of Statistics. This would allow us to consider the same individuals in the analysis avoiding problems of endogeneity that could biased our estimates. Moreover, Adele laboratory offers a municipal-level dataset, that is more appropriate for our analysis because the treatment variable used here also contains pharmacists that have not been affected by the reform, since the effective opening occurs at municipal level. Secondly, it would be better to evaluate separately the impact of this policy on wages, using different data that contains information about the income of the pharmacists who are also owners.

Finally, perhaps a longer ex post observation window would be needed to better understand what the real effects on mobility are.

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Appendix of Tables and Figures

Table 1: Description of variables

Name	Description
Year	year categorical variable (from 2014 to 2020)
Region	region identification code provided by Istat
Province	province identification code provided by Istat
Household	Number of people in the same household
Son	Dummy variable indicating if the respondent has a son/daughter
Marital status	Categorical variable indicating the respondent's current marital status
Ateco	4-digit classification of economic activity provided by Ateco 2007 code
Degree	Type of degree
Profession	ISCO 4 digit code classification of occupation
Current Job status	Job status during the year of the interview
Previous Job status	Job status during the year before the interview
Non-job to Job	Non-employment to Job transition
Job-to-Job	Job-to-Job transition
Wage	Monthly wage of employees
Age	Respondent's age at the interview
Weekly hours	number of working hours per week
Sex	dummy variable indicating the respondent's sex
Full-time	respondent's type of job (full or part-time)
Fixed-term contract	dummy variable indicating if the worker has a fixed-term contract
Treatment	dummy variable of treatment by year and by provinces

Table 2: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Sex	2356	0.306	0.461	0	1
Age	2356	45.492	12.771	24	75
Son	2222	0.676	0.468	0	1
Household	2356	2.89	1.143	1	8
Full-time	2356	0.721	0.449	0	1
Fixed-term contract	1591	0.138	0.345	0	1
Weekly hours	2314	37.457	10.28	4	84
Wage	1591	1388.593	445.743	250.25	3003.003
Log wage	1591	7.184	0.332	5.522	8.007

SOURCE: Authors' calculation from Istat's Labor Force Survey merged with the excel file of the new openings by provinces. Restricted sample containing only pharmacists during the period 2014-2020.

Table 3: Characteristics of job movers

	Non-employment to Job	Job-to-Job
Sex	0.257	0.278
	(0.439)	(0.45)
Age	32.206	38.341
	(10.738)	(11.41)
Son	0.806	0.707
	(0.397)	(0.457)
Household	3.14	2.81
	(1.012)	(1.025)
Full-time	0.625	0.706
	(0.486)	(0.457)
Fixed-term contract	0.714	0.436
	(0.454)	(0.498)
Weekly hours	34.007	35.738
	(8.787)	(9.108)
Log wage	6.977	7.125
	(0.363)	(0.335)

Notes: Standard deviations in parentheses. Mean and standard deviation are computed using weights provided by Istat.
Source: Authors' elaboration on Istat's Labor Force Survey merged with the excel file of the new openings by provinces. Restricted sample containing only pharmacists during the period 2014-2020.

Table 4: number of new openings by region and by year

Region	year					
	2016	2017	2018	2019	2020	Total
Abruzzo	0	0	0	18	3	21
Basilicata	0	0	6	4	5	15
Campania	0	0	0	0	0	0
Emilia-Romagna	48	24	35	7	19	133
Friuli-Venezia Giulia	0	0	19	7	6	32
Lazio	0	0	102	54	17	173
Liguria	8	6	3	3	3	23
Lombardia	0	0	211	48	29	288
Marche	0	0	0	18	0	18
Piemonte	55	13	4	1	0	73
Puglia	100	33	13	7	5	158
Sardegna	0	0	37	0	0	37
Trentino-Alto Adige	0	0	13	1	0	14
Umbria	0	0	0	8	0	8
Valle d'Aosta	2	0	0	0	0	2
Veneto	0	0	90	36	26	152
Total	213	76	533	212	113	1147

SOURCE: Authors' calculation from the excel file of new openings of pharmacies by municipality extracted by the websites of 16 Italian regions. The reference period is 2011 to 2020.

Table 5: Job mobility of pharmacists

	Non-employment to Job		Job-to-Job	
	(IV)	(II)	(IV)	(II)
ATT	0.0467*	0.0720**	-0.0145	-0.0238
	(0.0279)	(0.0345)	(0.0220)	(0.0241)
Controls		y		y
Observations	2356	2222	2356	2222

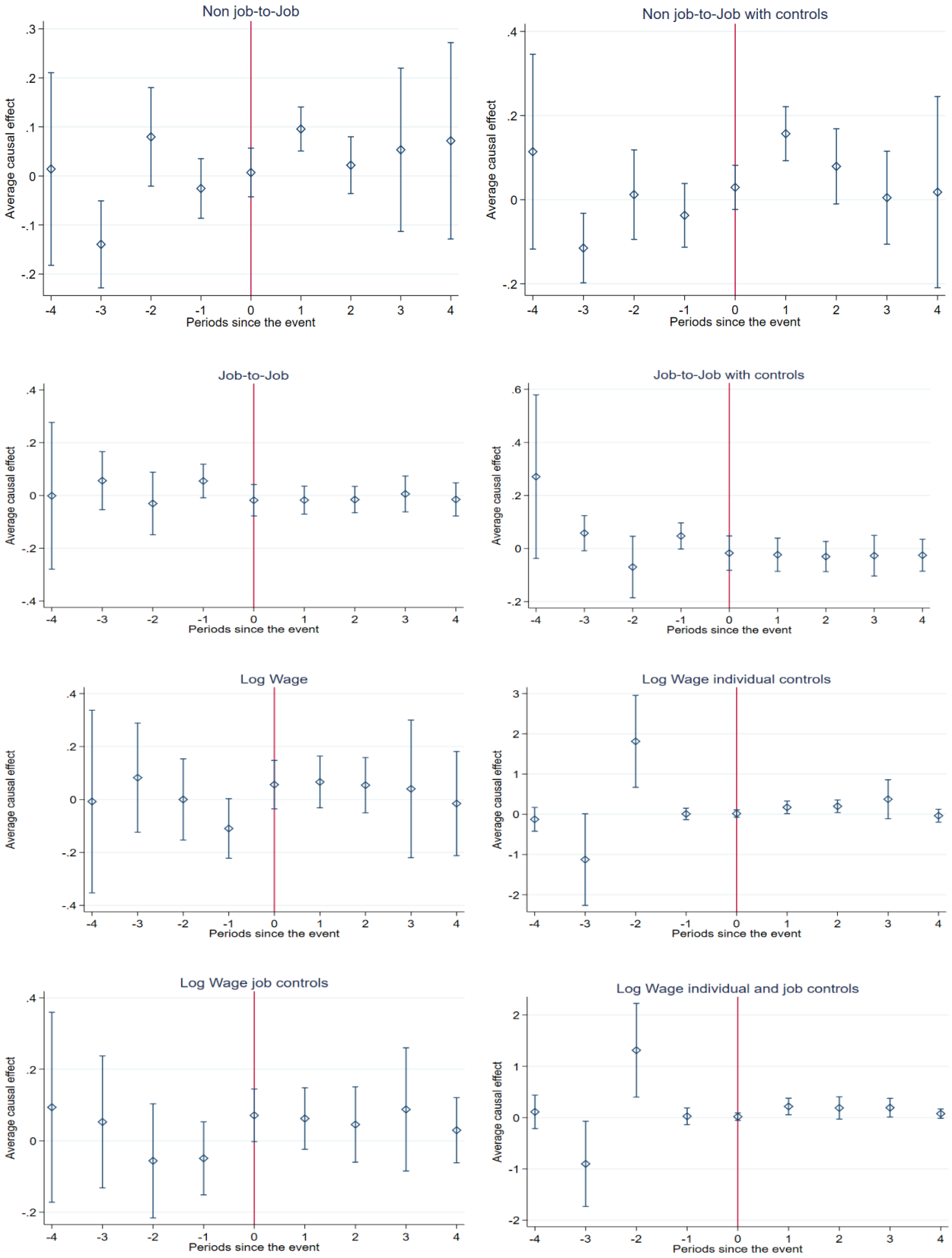
Notes: *** p<0.01, ** p<0.05, * p<0.1. Standard errors clustered at provincial level in parentheses.
SOURCE: Authors' elaboration on Istat's Labor Force Survey dataset merged with the excel file of the new openings by provinces. Restricted sample containing only pharmacists during the period 2014-2020. Covariates are sex, age, marital status, son, household. The estimates represent the average treatment effect on the treated given after computing a Difference in Differences with Multiple Periods estimator (Callaway and Sant'Anna, 2021).

Table 6: Wage analysis on pharmacists' sub-sample

Log wage				
	(I)	(II)	(III)	(IV)
ATT	0.0502	0.1343***	0.0600*	0.1368***
	(0.0399)	(0.0468)	(0.0308)	(0.0493)
Individual controls		y		y
Job characteristics			y	y
Observations	1591	1496	1586	1485

Notes: *** p<0.01, ** p<0.05, * p<0.1. Standard errors clustered at provincial level in parentheses.
SOURCE: Authors' elaboration on Istat's Labor Force Survey dataset merged with the excel file of the new openings by provinces. Restricted sample containing only pharmacists during the period 2014-2020. The wage variable is adjusted for inflation. Individual controls are sex, age, marital status, son and household. Job controls are full, fixed-term contract and weekly hours. The estimates represent the average treatment effect on the treated given after computing a Difference in Differences with Multiple Periods estimator (Callaway and Sant'Anna, 2021).

Figure 1: Event-study



SOURCE: Authors' calculation on Istat's Labor Force Survey dataset merged with the excel file of the new openings by provinces. Restricted sample containing only pharmacists during the period 2014-2020. The wage variable is adjusted for inflation. The graphs represent the event study computed after a Difference in Differences with Multiple Periods estimation (Callaway and Sant'Anna, 2021).

Conclusions

The thesis analyzes the deregulation of the pharmaceutical market in Italy that occurred in 2012.

In order to examine the policy properly, recently developed estimation techniques are used in a difference-in-differences design. The analysis focuses on the role of various economic actors who are, directly or indirectly, affected by the reform.

In the first chapter we study an economic entity that might be affected by the effects of the policy: pharmacies.

Analyzing balance sheet data referring to a 9-year time span we find that pharmacies that were established in a municipality where new openings occurred in that year have lower revenues and net profits than pharmacies in the other municipalities.

Through the use of specific dependent variables that consider different aspects of municipalities and pharmacies in the sample, we describe a robust finding that does not depend on the population of the municipality, does not depend on the expenditures of the individual pharmacy (as the result is also confirmed in the net profit analysis), but most importantly shows how greater competitiveness generates lower revenues for all pharmacies in that municipality.

The second analysis aims to study the phenomenon of pharmacies as a support for health care services. In this area, we can see that there is a decrease in hospitalizations in the treated regions. This leads us to say that pharmacies seem to assist health care operations and thus improve the welfare of citizens living in that area.

On the other hand, the result related to the difficulty in accessing pharmacies leads us to assert that the application of the reform should be improved. In fact, in areas where there would be the greatest need for a pharmacy the rate of inhabitants per pharmacy remains unchanged, while the treated regions (where new openings have occurred) are predominantly those where there is already a very high density of pharmacies. Therefore, to achieve better service coverage, we advise pushing the opening of additional pharmacies in a direction of greater equity.

Finally, the third chapter focuses on pharmacists working in the provinces where new openings have occurred. These individuals benefit from increased job opportunities due to the new pharmacies in the area. In addition, those who already work in a pharmacy experience an increase in their wages due to high competition. Thus, we can infer that in the labor market of pharmacists, the reform has generated positive outcomes for both incumbents and entrants.